# Montclair 2020 General Plan Update and Arrow Highway Mixed-Use District (AHMUD) Specific Plan

*Administrative Draft*

Final Environmental Impact Report
SCH# 2020110481

*prepared by*


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**November 2024**

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## Appendices

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# 1 Introduction

## 1.1 Final EIR Contents

This Final Environmental Impact Report (Final EIR) has been prepared by the City of Montclair, Community Development Department, Planning Division (City) to evaluate the potential environmental impacts of the proposed Montclair 2020 General Plan Update and Arrow Highway Mixed-Use District (AHMUD) Specific Plan Project (the Plan).

As prescribed by the California Environmental Quality Act (CEQA) *Guidelines* Sections 15088 and 15132, the lead agency, the City, is required to evaluate comments on environmental issues received from persons who have reviewed the Draft EIR and to prepare written responses to those comments. This document, together with the Draft EIR (incorporated by reference) comprise the Final EIR for the Plan. This Final EIR includes individual responses to each comment letter received during the public review period for the Draft EIR. In accordance with CEQA *Guidelines* Section 15088(c), the written responses describe the disposition of significant environmental issues raised.

The City has provided a good faith effort to respond to all significant environmental issues raised by the comments. The Final EIR also includes amendments to the Draft EIR consisting of changes arising from responses to certain comment letters, as well as minor clarifications, corrections, or revisions to the Draft EIR. The Final EIR includes the following contents:

- Chapter 1: Introduction
- Chapter 2: Responses to Comments on the Draft EIR, which also includes a list of all commenters and public comment letters
- Chapter 3: Amendments to the Draft EIR
- Appendix A: Mitigation Monitoring and Reporting Program (MMRP). This is the only appendix to the Final EIR. The appendices to the Draft EIR were released for public review with the Draft EIR and did not require any revisions based on the Final EIR

## 1.2 Draft EIR Public Review Process

### 1.2.1 Notice of Preparation and Project Scoping

Pursuant to CEQA Guidelines Section 15082, the City filed a Notice of Preparation (NOP) with the State Clearinghouse in the Office of Planning and Research (State Clearinghouse No. 2023050665) as an indication that an EIR would be prepared. The City's Community Development Department published the NOP for the Draft EIR on November 18, 2020, for a 30-day public review period that ran from November 18, 2020, to December 18, 2020. The NOP was distributed to trustee agencies, responsible agencies, and other interested parties to request information and concerns relative to the potential environmental impacts of the Plan.

Information, data, and observations addressing comments from these letters were included throughout the Draft EIR where relevant. The NOP and NOP comment letters received are included in Appendix A of the Draft EIR. The City also held a public EIR Scoping Meeting on December 1, 2020, which was held remotely due to the COVID-19 pandemic. The Scoping Meeting provided early consultation for the public to express their concerns about the Plan and acquire information and make recommendations on issues to be addressed in the Draft EIR, including the scope of impacts, alternatives, and potential mitigation.

### 1.2.2 Public Review of the Draft EIR

A Draft Environmental Impact Report (Draft EIR) was prepared for the Plan. The City filed a Notice of Completion (NOC) with the Governor's Office of Planning and Research to begin the 45-day public review period (Public Resources Code [PRC] Section 21161) for the Draft EIR, which began on July 26, 2022 and ended on September 8, 2022. A Notice of Availability (NOA) of the Draft EIR was published on July 26, 2022. The Draft EIR was made available on the project website (https://montclairplan.org/plans/), and at the City of Montclair Planning Division, 5111 Benito Street, Montclair.

As a result of these notification efforts, one comment letter on the content of the Draft EIR. Chapter 2, *Responses to Comments on the Draft EIR*, identifies the commenting party, their comments, and responses to these comments. None of the comments received, or the responses provided, constitute "significant new information" by CEQA standards (CEQA Guidelines CCR Section 15088.5).

## 1.3 EIR Certification Process and Project Approval

Before adopting a proposed project, the lead agency is required to certify that the EIR has been completed in compliance with CEQA, that the decision-making body reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the lead agency.

Upon certification of an EIR, the lead agency makes a decision on the project analyzed in the EIR. A lead agency may: (a) disapprove a project because of its significant environmental effects; (b) require changes to a project to reduce or avoid significant environmental effects; or (c) approve a project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (CEQA Guidelines Sections 15042 and 15043).

In approving a project, for each significant impact of the project identified in the EIR, the lead or responsible agency must find, based on substantial evidence, that either: (a) the project has been changed to avoid or substantially reduce the magnitude of the impact; (b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or (c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible (CEQA Guidelines Section 15091). Per PRC Section 21061.1, feasible means capable of being accomplished in a successful manner within a reasonable period of time, taking into account, economic, environmental, legal, social, and technological factors.

If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that sets forth the specific social, economic, or other reasons supporting the agency's decision and explains why the project's benefits outweigh the significant environmental effects (CEQA Guidelines Section 15093).

When an agency makes findings on significant effects identified in the EIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects (CEQA Guidelines Section 15091[d]).

## 1.4 Draft EIR Recirculation Not Required

CEQA Guidelines Section 15088.5 requires Draft EIR recirculation when comments on the Draft EIR or responses thereto identify “significant new information.” Significant new information is defined as including:

1. A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented
2. A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance
3. A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of the project, but the project's proponents decline to adopt it
4. The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded

The comments, responses, and Draft EIR amendments presented in this document do not constitute such “significant new information;” instead, they clarify, amplify, or make insignificant modifications to the Draft EIR. For example, none of the comments, responses, and Draft EIR amendments disclose new or substantially more severe significant environmental effects of the Plan, or new feasible mitigation measures or alternatives considerably different than those analyzed in the Draft EIR that would clearly lessen the Plan’s significant effects.

## 1.5 Summary of the Plan

The Plan is an update of the City of Montclair General Plan as well as other related actions. The Plan is the first comprehensive update of the City’s General Plan since 1999. It establishes the community’s vision for orderly development and growth in Montclair. The Plan provides comprehensive goals and policies that reflect the community's vision of Montclair.

The Planning Area for the Plan includes all land within Montclair’s City Limits and its City’s Sphere of Influence (SOI), but the Plan does not involve any annexation of lands or adjustments to the City’s SOI. If any annexations are pursued in the future, they would require approval from the Los Angeles County Local Agency Formation Commission.

As part of the Plan, the General Plan has been reorganized and reformatted, with updated goals and policies that reflect the community’s vision of Montclair that the proposed General Plan Update seeks to achieve. The General Plan Land Use Map has also been updated.

The State requires every General Plan to include seven elements: land use, circulation, conservation, housing, noise, open space, and safety, or for those topics to be covered in the General Plan. The proposed General Plan Update includes the following eight chapters:

- Our Natural Community
- Our Prosperous Community
- Our Well Planned Community
- Our Accessible Community
- Our Healthy Community
- Our Safe Community
- Our Active Community
- Our Creative Community

These chapters are conceived with a more readily understood vision-based title for each General Plan element. This organization also allows an integration of related aspects from each element. As shown in Table A.1 of the General Plan and Table 2-1 of the Draft EIR, the Plan format satisfies the State requirements described above and addresses many optional elements as well.

To achieve the above elements above, the Plan recognizes certain key concepts. The Plan focuses on a green network for the City, mainly along the San Antonio Creek, connecting the western portion of the City from south to north with open parks, public space, and more to increase amenities and ecology. City streets are to be used for increased green and transit infrastructure for the public, with a focus on four main street corridors: Central Avenue, Holt Avenue, Arrow Highway, and Mission Boulevard. For most of the City, the Plan preserves the existing pattern of uses and establishes improvements, polices, and protections for long-term maintenance of established neighborhoods. The Plan envisions a new transit-oriented downtown north of the I-10 that would be created by transforming the mall into the town center and preserving and enhancing the current industrial areas. These key concepts will assist in fulfilling the vision of the City of Montclair.

An updated Housing Element for the City of Montclair is included in the Plan and analyzed in the EIR. All proposed population and housing growth relative to the updated Housing Element and the rest of the Plan is accounted for and analyzed in the EIR. Rather than analyzing a “maximum buildout” scenario, the EIR makes reasonable assumptions about the pace and location of future growth based on existing population forecasts and economic and market factors. Generally, new development would result from re-use of properties, conversion of uses in response to market demand (e.g., select industrial to commercial), and more intense use of land in defined areas.

The proposed Arrow Highway Mixed-Use District (AHMUD) Specific Plan has been developed concurrently with the proposed General Plan Update and is a component of the General Plan. It focuses on the northwest and northeast corners of Montclair. The area covered by the AHMUD Specific Plan is located along the Arrow Highway Corridor. Community engagement was a core part of the development of the Specific Plan. The AHMUD Specific Plan builds off previous specific plans of increased pedestrian and transit oriented downtown. AHMUD West’s focus is Arrow Highway enhancement, and new residential development west of the creek and north and south of the creek. AHMUD East focuses on Arrow Highway enhancement, a new public park, new development on the north and south sides of Arrow Highway, and new development facing Central Avenue. The AHMUD Specific Plan incorporates public areas, such as greenways, a central park, and private and public open spaces. It also increases mobility through updated streetways, transit, sidewalks, bike lanes, and more. The AHMUD Specific Plan includes phasing of public infrastructure such as improvements to streetscapes, San Antonio Creek Channel Trail, and parks.

The three ways the AHMUD approaches the policies was through resilience, social equity, and vision zero. Resilience keeps in mind the betterment of current residents while thinking of future adversities. Social equity seeks to integrate equal opportunity to all who reside in Montclair by improving opportunities through jobs, affordable housing, parks, mobility, and inclusion. Vision zero includes eliminating traffic fatalities and creating safe, healthy, and equitable mobility.

# 2 Responses to Comments on the Draft EIR

This section includes comments received during the circulation of the Draft Environmental Impact Report prepared for the City of Montclair 2020 General Plan Update and Arrow Highway Mixed-Use District (AHMUD) Specific Plan (Plan).

The Draft EIR was circulated for a 45-day public review period that began on July 26, 2022 and ended on September 8, 2022. The City of Montclair received one comment letter on the Draft EIR. The commenter and the page number on which the commenter's letter appears is listed below.

| Letter No. and Commenter | | Page No. |
|---|---|---|
| 1 | Mitchell M. Tsai, Attorney At Law | 2-3 |

The comment letter and response follow. Each issue raised by the commenter, if more than one, has been assigned a number. The responses to each comment identify first the number of the comment letter (in this case there is only one), and then the number assigned to each issue (Response 1.1, for example, indicates that the response is for the first issue raised in comment letter 1).

Where a comment resulted in a change to the Draft EIR text, a notation is made in the response indicating that the text is revised. Changes in text are signified by strikeouts (~~strikeouts~~) where text is removed and by underlined font (<u>underlined font</u>) where text is added. Other minor changes were made to the text of the Draft EIR but are not shown here because they were not made in response to a comment on the Draft EIR. These changes are, except as noted below, minor typographical corrections or minor wording changes and are noted in the full text of the Final EIR as changes from the Draft EIR.

Mitigation measures BIO-1 and BIO-2 are the only mitigation measures that were revised as a result of these responses. The City revised these mitigation measures to accommodate the commenter's request to provide more specificity in these mitigation measures regarding the qualifications of the qualified biologist required under these measures, as shown below and further explained in Response 1.10. Only the portions of each mitigation measure showing the revisions and other portions relevant to the context of the revisions are shown, not the whole measure.

### *BIO-1 Pre-Construction Biological Resources Reconnaissance Survey and Reporting*

For projects that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas) that contain or have the potential to support special-status species, sensitive natural communities, or suitable habitat to support special-status species, the following shall apply:

Prior to the issuance of a grading permit, a qualified biologist <u>from a list of qualified wildlife biologists set forth by the City of Montclair</u> shall be retained by the project applicant to conduct a biological resources reconnaissance survey of the site. <u>The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements</u>

for avian species (including burrowing owl) in place at the time of application for the grading permit. The biological resources assessment shall characterize the biological resources present on the project site and evaluate the presence or absence of sensitive species and habitats.

### *BIO-2 Pre-Construction Bird Surveys, Avoidance, and Notification*

Construction activities initiated during the bird nesting season (February 1 through August 31) involving removal of trees, vegetation or other nesting bird habitat, including abandoned structures and other man-made features, a pre-construction nesting bird survey shall be conducted no more than three days prior to initiation of ground disturbance and vegetation removal activities. The nesting bird pre-construction survey shall be conducted on foot and shall include a 500-foot buffer around the construction site. The survey shall be conducted by a biologist familiar with the identification of avian species known to occur in southern California inland communities (i.e., qualified biologist) selected from a list of qualified wildlife biologists set forth by the City of Montclair. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. If nests are found, an avoidance buffer shall be determined by a qualified biologist dependent upon the species, the proposed work activity, and existing disturbances associated with land uses outside of the site, which shall be demarcated by the biologist with bright orange construction fencing, flagging, construction lathe, or other means to demarcate the boundary. All construction personnel shall be notified as to the existence of the buffer zone and to avoid entering the buffer zone during the nesting season. No ground disturbing activities shall occur within the buffer until the biologist has confirmed that breeding/ nesting is completed, and the young have fledged the nest. Encroachment into the buffer shall occur only at the discretion of the qualified biologist on the basis that the encroachment will not be detrimental to an active nest. A report summarizing the pre-construction survey(s) shall be prepared by a qualified biologist from a list of qualified wildlife biologists set forth by the City of Montclair. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. This report ~~and~~ shall be submitted to the City prior to the commencement of construction activities.

Letter 1

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**VIA E-MAIL**

September 8, 2022

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Em: mdiaz@cityofmontclair.org

RE: Environmental Impact Report for the City of Montclair's 2020 General Plan Update and Arrow Highway Mixed-Used District Specific Plan Project

Dear Michael Diaz,

On behalf of the Southwest Regional Council of Carpenters ("**SWRCC**" or "**Southwest Carpenters**"), my Office is submitting these comments on the City of Montclair's ("**City**" or "**Lead Agency**") Draft Environmental Impact Report ("**DEIR**" or "**EIR**") (SCH No. 2020110481) for the 2020 General Plan Update and Arrow Highway Mixed-Used District (AHMUD) Specific Plan Project ("**Project**").

The Southwest Carpenters is a labor union representing more than 50,000 union carpenters in six states and has a strong interest in well ordered land use planning and addressing the environmental impacts of development projects.

Individual members of the Southwest Carpenters live, work and recreate in the City and surrounding communities and would be directly affected by the Project's environmental impacts. 1-1

The Southwest Carpenters expressly reserves the right to supplement these comments at or prior to hearings on the Project, and at any later hearings and proceedings related to this Project. Cal. Gov. Code § 65009(b); Cal. Pub. Res. Code § 21177(a); *Bakersfield Citizens for Local Control v. Bakersfield* (2004) 124 Cal. App. 4th 1184, 1199-1203; see *Galante Vineyards v. Monterey Water Dist.* (1997) 60 Cal. App. 4th 1109, 1121.

SWRCC incorporates by reference all comments raising issues regarding the EIR submitted prior to certification of the EIR for the Project. *Citizens for Clean Energy v City of Woodland* (2014) 225 Cal. App. 4th 173, 191 (finding that any party who has objected to the Project's environmental documentation may assert any issue timely raised by other parties).

Moreover, SWRCC requests that the Lead Agency provide notice for any and all notices referring or related to the Project issued under the California Environmental Quality Act ("**CEQA**"), Cal Public Resources Code ("**PRC**") § 21000 *et seq*, and the 1-1
California Planning and Zoning Law ("**Planning and Zoning Law**"), Cal. Gov't Code §§ 65000–65010. California Public Resources Code Sections 21092.2, and 21167(f) and Government Code Section 65092 require agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

The City should require the Applicant provide additional community benefits such as requiring local hire and use of a skilled and trained workforce to build the Project. The City should require the use of workers who have graduated from a Joint Labor Management apprenticeship training program approved by the State of California, or have at least as many hours of on-the-job experience in the applicable craft which would be required to graduate from such a state approved apprenticeship training program or who are registered apprentices in an apprenticeship training program approved by the State of California.

Community benefits such as local hire and skilled and trained workforce requirements can also be helpful to reduce environmental impacts and improve the positive economic impact of the Project. Local hire provisions requiring that a certain 1-2
percentage of workers reside within 10 miles or less of the Project Site can reduce the length of vendor trips, reduce greenhouse gas emissions and providing localized economic benefits. Local hire provisions requiring that a certain percentage of workers reside within 10 miles or less of the Project Site can reduce the length of vendor trips, reduce greenhouse gas emissions and providing localized economic benefits. As environmental consultants Matt Hagemann and Paul E. Rosenfeld note:

> [A]ny local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the reduction would vary based on the location and urbanization level of the project site.

March 8, 2021 SWAPE Letter to Mitchell M. Tsai re Local Hire Requirements and Considerations for Greenhouse Gas Modeling.

Skilled and trained workforce requirements promote the development of skilled trades that yield sustainable economic development. As the California Workforce Development Board and the UC Berkeley Center for Labor Research and Education concluded:

> . . . labor should be considered an investment rather than a cost – and investments in growing, diversifying, and upskilling California's workforce can positively affect returns on climate mitigation efforts. In other words, well trained workers are key to delivering emissions reductions and moving California closer to its climate targets.[1]

1-3

Recently, on May 7, 2021, the South Coast Air Quality Management District found that the "[u]se of a local state-certified apprenticeship program or a skilled and trained workforce with a local hire component" can result in air pollutant reductions.[2]

Cities are increasingly adopting local skilled and trained workforce policies and requirements into general plans and municipal codes. For example, the City of Hayward 2040 General Plan requires the City to "promote local hiring . . . to help achieve a more positive jobs-housing balance, and reduce regional commuting, gas consumption, and greenhouse gas emissions."[3]

1-4

In fact, the City of Hayward has gone as far as to adopt a Skilled Labor Force policy into its Downtown Specific Plan and municipal code, requiring developments in its Downtown area to requiring that the City "[c]ontribute to the stabilization of regional construction markets by spurring applicants of housing and nonresidential developments to require contractors to utilize apprentices from state-approved, joint

[1] California Workforce Development Board (2020) Putting California on the High Road: A Jobs and Climate Action Plan for 2030 at p. ii, *available at* https://laborcenter.berkeley.edu/wp-content/uploads/2020/09/Putting-California-on-the-High-Road.pdf

[2] South Coast Air Quality Management District (May 7, 2021) Certify Final Environmental Assessment and Adopt Proposed Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions Program, and Proposed Rule 316 – Fees for Rule 2305, Submit Rule 2305 for Inclusion Into the SIP, and Approve Supporting Budget Actions, *available at* http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-May7-027.pdf?sfvrsn=10

[3] City of Hayward (2014) Hayward 2040 General Plan Policy Document at p. 3-99, *available at* https://www.hayward-ca.gov/sites/default/files/documents/General_Plan_FINAL.pdf.

labor-management training programs, . . ."[4] In addition, the City of Hayward requires all projects 30,000 square feet or larger to "utilize apprentices from state-approved, joint labor-management training programs."[5] 1-4

Locating jobs closer to residential areas can have significant environmental benefits. As the California Planning Roundtable noted in 2008:

> People who live and work in the same jurisdiction would be more likely to take transit, walk, or bicycle to work than residents of less balanced communities and their vehicle trips would be shorter. Benefits would include potential reductions in both vehicle miles traveled and vehicle hours traveled.[6]

In addition, local hire mandates as well as skill training are critical facets of a strategy to reduce vehicle miles traveled. As planning experts Robert Cervero and Michael Duncan noted, simply placing jobs near housing stock is insufficient to achieve VMT reductions since the skill requirements of available local jobs must be matched to those held by local residents.[7] Some municipalities have tied local hire and skilled and trained workforce policies to local development permits to address transportation issues. As Cervero and Duncan note: 1-5

> In nearly built-out Berkeley, CA, the approach to balancing jobs and housing is to create local jobs rather than to develop new housing." The city's First Source program encourages businesses to hire local residents, especially for entry- and intermediate-level jobs, and sponsors vocational training to ensure residents are employment-ready. While the program is voluntary, some 300 businesses have used it to date, placing more than 3,000 city residents in local jobs since it was launched in 1986. When

[4] City of Hayward (2019) Hayward Downtown Specific Plan at p. 5-24, *available at* https://www.hayward-ca.gov/sites/default/files/Hayward%20Downtown%20Specific%20Plan.pdf.

[5] City of Hayward Municipal Code, Chapter 10, § 28.5.3.020(C).

[6] California Planning Roundtable (2008) Deconstructing Jobs-Housing Balance at p. 6, *available at* https://cproundtable.org/static/media/uploads/publications/cpr-jobs-housing.pdf

[7] Cervero, Robert and Duncan, Michael (2006) Which Reduces Vehicle Travel More: Jobs-Housing Balance or Retail-Housing Mixing? Journal of the American Planning Association 72 (4), 475-490, 482, *available at* http://reconnectingamerica.org/assets/Uploads/UTCT-825.pdf.

needed, these carrots are matched by sticks, since the city is not shy about negotiating corporate participation in First Source as a condition of approval for development permits.

The City should consider utilizing skilled and trained workforce policies and requirements to benefit the local area economically and mitigate greenhouse gas, air quality and transportation impacts. 1-5

The City should also require the Project to be built to standards exceeding the current 2019 California Green Building Code to mitigate the Project's environmental impacts and to advance progress towards the State of California's environmental goals. 1-6

## I. THE PROJECT WOULD BE APPROVED IN VIOLATION OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

### A. Background Concerning the California Environmental Quality Act

CEQA has two basic purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project. 14 California Code of Regulations ("**CCR**" or "**CEQA Guidelines**") § 15002(a)(1).[8] "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made. Thus, the EIR 'protects not only the environment but also informed self-government.' [Citation.]" *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553, 564. The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return." *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs.* (2001) 91 Cal. App. 4th 1344, 1354 ("*Berkeley Jets*"); *County of Inyo v. Yorty* (1973) 32 Cal. App. 3d 795, 810. 1-7

Second, CEQA directs public agencies to avoid or reduce environmental damage, when possible, by requiring alternatives or mitigation measures. CEQA Guidelines § 15002(a)(2) and (3). *See also, Berkeley Jets,* 91 Cal. App. 4th 1344, 1354; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553; *Laurel Heights Improvement Ass'n v.*

[8] The CEQA Guidelines, codified in Title 14 of the California Code of Regulations, section 15000 *et seq*, are regulatory guidelines promulgated by the state Natural Resources Agency for the implementation of CEQA. Cal. Pub. Res. Code § 21083. The CEQA Guidelines are given "great weight in interpreting CEQA except when . . . clearly unauthorized or erroneous." *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal. 4th 204, 217.

*Regents of the University of California* (1988) 47 Cal. 3d 376, 400. The EIR serves to provide public agencies and the public in general with information about the effect that a proposed project is likely to have on the environment and to "identify ways that environmental damage can be avoided or significantly reduced." CEQA Guidelines § 15002(a)(2). If the project has a significant effect on the environment, the agency may approve the project only upon finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns" specified in CEQA section 21081. CEQA Guidelines § 15092(b)(2)(A–B).

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position.' A 'clearly inadequate or unsupported study is entitled to no judicial deference.'" *Berkeley Jets*, 91 Cal. App. 4th 1344, 1355 (emphasis added) (quoting *Laurel Heights,* 47 Cal. 3d at 391, 409 fn. 12). Drawing this line and determining whether the EIR complies with CEQA's information disclosure requirements presents a question of law subject to independent review by the courts. *Sierra Club v. Cnty. of Fresno* (2018) 6 Cal. 5th 502, 515; *Madera Oversight Coalition, Inc. v. County of Madera* (2011) 199 Cal. App. 4th 48, 102, 131. As the court stated in *Berkeley Jets*, 91 Cal. App. 4th at 1355: 1-7

> A prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decision-making and informed public participation, thereby thwarting the statutory goals of the EIR process.

The preparation and circulation of an EIR is more than a set of technical hurdles for agencies and developers to overcome. The EIR's function is to ensure that government officials who decide to build or approve a project do so with a full understanding of the environmental consequences and, equally important, that the public is assured those consequences have been considered. For the EIR to serve these goals it must present information so that the foreseeable impacts of pursuing the project can be understood and weighed, and the public must be given an adequate opportunity to comment on that presentation before the decision to go forward is made. *Communities for a Better Environment v. Richmond* (2010) 184 Cal. App. 4th 70, 80 (quoting *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, 449–450).

### B. CEQA Requires Revision and Recirculation of an Environmental Impact Report When Substantial Changes or New Information Comes to Light

Section 21092.1 of the California Public Resources Code requires that "[w]hen significant new information is added to an environmental impact report after notice has been given pursuant to Section 21092 … but prior to certification, the public agency shall give notice again pursuant to Section 21092, and consult again pursuant to Sections 21104 and 21153 before certifying the environmental impact report" in order to give the public a chance to review and comment upon the information. CEQA Guidelines § 15088.5.

Significant new information includes "changes in the project or environmental setting as well as additional data or other information" that "deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative)." CEQA Guidelines § 15088.5(a). Examples of significant new information requiring recirculation include "new significant environmental impacts from the project or from a new mitigation measure," "substantial increase in the severity of an environmental impact," "feasible project alternative or mitigation measure considerably different from others previously analyzed" as well as when "the draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded." *Id.* 1-7

An agency has an obligation to recirculate an environmental impact report for public notice and comment due to "significant new information" regardless of whether the agency opts to include it in a project's environmental impact report. *Cadiz Land Co. v. Rail Cycle* (2000) 83 Cal. App. 4th 74, 95 [finding that in light of a new expert report disclosing potentially significant impacts to groundwater supply "the EIR should have been revised and recirculated for purposes of informing the public and governmental agencies of the volume of groundwater at risk and to allow the public and governmental agencies to respond to such information."]. If significant new information was brought to the attention of an agency prior to certification, an agency is required to revise and recirculate that information as part of the environmental impact report.

C. Due to the COVID-19 Crisis, the City Must Adopt a Mandatory Finding of Significance that the Project May Cause a Substantial Adverse Effect on Human Beings and Mitigate COVID-19 Impacts

CEQA requires that an agency make a finding of significance when a Project may cause a significant adverse effect on human beings. PRC § 21083(b)(3); CEQA Guidelines § 15065(a)(4).

Public health risks related to construction work requires a mandatory finding of significance under CEQA. Construction work has been defined as a Lower to High-risk activity for COVID-19 spread by the Occupations Safety and Health Administration. Recently, several construction sites have been identified as sources of community spread of COVID-19.[9]

SWRCC recommends that the Lead Agency adopt additional CEQA mitigation measures to mitigate public health risks from the Project's construction activities. SWRCC requests that the Lead Agency require safe on-site construction work practices as well as training and certification for any construction workers on the Project Site. 1-8

In particular, based upon SWRCC's experience with safe construction site work practices, SWRCC recommends that the Lead Agency require that while construction activities are being conducted at the Project Site:

**Construction Site Design:**

- The Project Site will be limited to two controlled entry points.
- Entry points will have temperature screening technicians taking temperature readings when the entry point is open.
- The Temperature Screening Site Plan shows details regarding access to the Project Site and Project Site logistics for conducting temperature screening.
- A 48-hour advance notice will be provided to all trades prior to the first day of temperature screening.

[9] Santa Clara County Public Health (June 12, 2020) COVID-19 CASES AT CONSTRUCTION SITES HIGHLIGHT NEED FOR CONTINUED VIGILANCE IN SECTORS THAT HAVE REOPENED, *available at* https://www.sccgov.org/sites/covid19/Pages/press-release-06-12-2020-cases-at-construction-sites.aspx.

- The perimeter fence directly adjacent to the entry points will be clearly marked indicating the appropriate 6-foot social distancing position for when you approach the screening area. Please reference the Apex temperature screening site map for additional details.
- There will be clear signage posted at the project site directing you through temperature screening.
- Provide hand washing stations throughout the construction site.

**Testing Procedures:**

- The temperature screening being used are non-contact devices.
- Temperature readings will not be recorded.
- Personnel will be screened upon entering the testing center and should only take 1-2 seconds per individual.
- Hard hats, head coverings, sweat, dirt, sunscreen or any other cosmetics must be removed on the forehead before temperature screening. 1-8
- Anyone who refuses to submit to a temperature screening or does not answer the health screening questions will be refused access to the Project Site.
- Screening will be performed at both entrances from 5:30 am to 7:30 am.; main gate [ZONE 1] and personnel gate [ZONE 2]
- After 7:30 am only the main gate entrance [ZONE 1] will continue to be used for temperature testing for anybody gaining entry to the project site such as returning personnel, deliveries, and visitors.
- If the digital thermometer displays a temperature reading above 100.0 degrees Fahrenheit, a second reading will be taken to verify an accurate reading.

- If the second reading confirms an elevated temperature, DHS will instruct the individual that he/she will not be allowed to enter the Project Site. DHS will also instruct the individual to promptly notify his/her supervisor and his/her human resources (HR) representative and provide them with a copy of Annex A.

**Planning**

- Require the development of an Infectious Disease Preparedness and Response Plan that will include basic infection prevention measures (requiring the use of personal protection equipment), policies and procedures for prompt identification and isolation of sick individuals, social distancing (prohibiting gatherings of no more than 10 people including all-hands meetings and all-hands lunches) communication and training and workplace controls that meet standards that may be promulgated by the Center for Disease Control, Occupational Safety and Health Administration, Cal/OSHA, California Department of Public Health or applicable local public health agencies.[10]

1-8

The United Brotherhood of Carpenters and Carpenters International Training Fund has developed COVID-19 Training and Certification to ensure that Carpenter union members and apprentices conduct safe work practices. The Agency should require that all construction workers undergo COVID-19 Training and Certification before being allowed to conduct construction activities at the Project Site.

SWRCC has also developed a rigorous Infection Control Risk Assessment ("**ICRA**") training program to ensure it delivers a workforce that understands how to identify and control infection risks by implementing protocols to protect themselves and all others during renovation and construction projects in healthcare environments.[11]

[10] *See also* The Center for Construction Research and Training, North America's Building Trades Unions (April 27 2020) NABTU and CPWR COVIC-19 Standards for U.S Constructions Sites, *available at* https://www.cpwr.com/sites/default/files/NABTU_CPWR_Standards_COVID-19.pdf; Los Angeles County Department of Public Works (2020) Guidelines for Construction Sites During COVID-19 Pandemic, *available at* https://dpw.lacounty.gov/building-and-safety/docs/pw_guidelines-construction-sites.pdf.

[11] For details concerning SWRCC's ICRA training program, *see* https://icrahealthcare.com/.

ICRA protocols are intended to contain pathogens, control airflow, and protect patients during the construction, maintenance and renovation of healthcare facilities. ICRA protocols prevent cross contamination, minimizing the risk of secondary infections in patients at hospital facilities. 1-8

The City should require the Project to be built using a workforce trained in ICRA protocols.

## II. THE EIR IMPROPERLY DEFERS THE DEVELOPMENT OF ENVIRONMENTAL MITIGATION MEASURES

### A. CEQA Bars the Deferred Development of Environmental Mitigation Measures

CEQA mitigation measures proposed and adopted into an environmental impact report are required to describe what actions that will be taken to reduce or avoid an environmental impact. (CEQA Guidelines § 15126.4(a)(1)(B) [providing "[f]ormulation of mitigation measures should not be deferred until some future time."].) While the same Guidelines section 15126.5(a)(1)(B) acknowledges an exception to the rule against deferrals, but such exception is narrowly proscribed to situations where "measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way." (*Id.*) Courts have also recognized a similar exception to the general rule against deferral of mitigation measures where the performance criteria for each mitigation measure is identified and described in the EIR. (*Sacramento Old City Ass'n v. City Council* (1991) 229 Cal.App.3d 1011.) 1-9

Impermissible deferral can occur when an EIR calls for mitigation measures to be created based on future studies or describes mitigation measures in general terms but the agency fails to commit itself to specific performance standards. (*Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281 [city improperly deferred mitigation to butterfly habitat by failing to provide standards or guidelines for its management]; *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645, 671 [EIR failed to provide and commit to specific criteria or standard of performance for mitigating impacts to biological habitats]; *see also Cleveland Nat'l Forest Found. v San Diego Ass'n of Gov'ts* (2017) 17 Cal.App.5th 413, 442 [generalized air quality measures in the EIR failed to set performance standards]; *California Clean Energy Comm. v City of Woodland* (2014) 225 Cal.App.4th 173, 195 [agency could not rely on a future report on urban decay with no standards for determining whether mitigation required]; *POET, LLC v. State Air Resources Bd.* (2013) 218 Cal.App.4th 681, 740 [agency could not rely on future rulemaking to establish specifications to ensure emissions of nitrogen oxide would not increase because it did not establish objective performance criteria for measuring whether that goal would be achieved]; *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1119 [rejecting mitigation measure requiring replacement water to be provided to neighboring landowners because it identified a general goal for mitigation rather than specific performance standard]; *Endangered Habitats League, Inc. v. County of Orange* (2005) 131 Cal.App.4th 777, 794 [requiring report without established standards is impermissible delay].) 1-9

B. The EIR Fails to Mitigate the Project' Biological Resources Impacts Because MM BIO-1 Is Impermissibly Vague and Defers Critical Details to Some Future Time

According to the EIR, local special-status species and nesting birds are expected to occur within the Plan Area during potential construction periods and may be affected by construction activity. Mitigation measure MM BIO-1 seeks to "reduce potential impacts to special-status, locally important species, sensitive habitats, and nesting birds to less than significant levels." DEIR, p. ES-14.

While the EIR mentions the requirement of a qualified biologist in general terms, it fails to commit to specific performance standards. For example, MM BIO-1 states that "[p]rior to the issuance of a grading permit, a qualified biologist shall be retained by the project applicant to conduct a biological resources reconnaissance survey of the site." DEIR, p. ES-14. 1-10

Wildlife biologists are specialists in creating and managing wild animal populations and habitats; According to the American Forest Foundation, most biological scientists have a Ph.D. in biology or one of its subfields and they work in independent research or development positions.[12]

At the very least, the nesting bird survey within MM BIO-1 shall be conducted by a qualified wildlife biologist from the consultant list set forth by the Environmental Procedures of the Redlands Municipal Code; who is familiar with the identification of

[12] American Forest Foundation, Why Wildlife Biologists, *available at,* https://mylandplan.org/content/wildlife-biologists

avian species, including raptors and the rest of migratory bird species covered under the Migratory Bird Treaty Act and Fish and Game Code sections 3503, 3503.5, and 3513 that are known to occur area located between the Audubon important bird areas of San Jacinto Valley and the Upper Santa Ana River, in the County of San Bernardino.

There are already widely accepted protocols and guidelines for the qualifications requirements for biologists evaluating and mitigating impacts to biological resources that could be employed to avoid the deferred development of MM BIO-1, some of them are discussed below.

*1. Wildlife Biologist Certification Program by The Wildlife Society*

The Wildlife Society, a nonprofit scientific and educational organization devoted to stewardship and appreciation of wildlife, developed a professional certification program designed to evaluate the education and professional experience of wildlife biologists.[13]

The Wildlife Society certifies wildlife biologists as follows: 1-10

> "Certified Wildlife Biologist: A Certified Wildlife Biologist is a professional who meets requisite educational and experience requirements and has demonstrated expertise in the art and science of applying the principles of ecology to the conservation and management of wildlife and its habitats.
>
> Associate Wildlife Biologist: An associate wildlife biologist is an applicant for professional certification who has limited experience but who has completed the rigorous academic standards and is judged to be able to represent the profession as an ethical practitioner.
>
> Professional Development Program: A graduate of the Professional Development Program from the Wildlife Society receives a Professional Development Certificate."[14]

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[13] The Wildlife Society, Wildlife Biologist Certification Program Policies & Procedures Manual (2020), *available at*, https://wildlife.org/wp-content/uploads/2021/01/Certification-Program-Manual_2021_FINAL.pdf

[14] American Forest Foundation, Why Wildlife Biologists, *available at,* https://mylandplan.org/content/wildlife-biologists

### 2. *Biologist Qualifications Set Forth by the State of California, Department of Fish and Wildlife's Survey and Monitoring Protocols and Guidelines*

The California Natural Resources Agency, Department of Fish and Wildlife's (formerly Department of Fish Game) Survey and Monitoring Protocols and Guidelines establish the biologist qualification requirements for avian species surveying.[15]

While the Project's potential impacts on avian species such include the loggerhead shrike as well as nesting migratory birds, the biggest concern would be on the burrowing owl. According to the Department of Fish and Wildlife, the qualifications for a biologist to perform surveys relating to Burrowing Owls are: 1-10

> "Biologist Qualifications
>
> The current scientific literature indicates that only individuals meeting the following minimum qualifications should perform burrowing owl habitat assessments, surveys, and impact assessments:
>
> 1. Familiarity with the species and its local ecology;
>
> 2. Experience conducting habitat assessments and non-breeding and breeding season surveys, or experience with these surveys conducted under the direction of an experienced surveyor;
>
> 3. Familiarity with the appropriate state and federal statutes related to burrowing owls, scientific research, and conservation;
>
> 4. Experience with analyzing impacts of development on burrowing owls and their habitat."[16]

[15] *See* California Natural Resources Agency, Department of Fish and Wildlife's (formerly Department of Fish Game) Survey and Monitoring Protocols and Guidelines for Several Avian Species, *available at*, https://wildlife.ca.gov/Conservation/Survey-Protocols#377281284-birds

[16] California Natural Resources Agency, Department of Fish and Wildlife's (formerly Department of Fish Game) Survey and Monitoring Protocols and Guidelines, for Burrowing Owls, Page 5 (2012), *available at,* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline

### 3. *U.S. Department of the Interior's Qualification Requirements for Wildlife Biologists*

The Department of the Interior has several levels of wildlife biologist qualifications. Basic education requirements include:

> "Successful completion of a full 4-year course of study in an accredited college or university leading to a bachelor's or higher degree in biological science that included:
>
> - at least 9 semester hours in such wildlife subjects as mammalogy, ornithology, animal ecology, wildlife management, or research course in the field of wildlife biology; and
> - at least 12 semester hours in zoology in such subjects as general zoology, invertebrate zoology, vertebrate zoology, comparative anatomy, physiology, genetics, ecology, cellular biology, parasitology, entomology, or research courses in such subjects (Excess courses in wildlife biology may be used to meet the zoology requirements where appropriate.); and
> - at least 9 semester hours in botany or the related plant sciences."[17]

1-10

### 4. *Wildlife Biologist Qualification Requirements Under the U.S. Fish and Wildlife Service*

According to the U.S. Fish and Wildlife Service, the qualifications requirements for a Wildlife Biologist are:

> "Positions that require professional knowledge and competence in the science of wildlife biology to perform work involving: the conservation, propagation, management, protection, and administration of wildlife species; or the determination, establishment, and application of biological facts, principles, methods, techniques, and procedures necessary for the conservation and management of wildlife resources and habitats.
>
> Degree Requirements: Successful completion of a full 4-year course of study in an accredited college or university leading to a bachelor's or

[17] Department of the Interior's Qualification Requirements for Wildlife Biologists, *available at,* https://www.usgs.gov/human-capital/wildlife-biologist-gs-0486

> higher degree in biological science which includes at least 12 semester hours in subjects such as general zoology, invertebrate or vertebrate zoology, comparative anatomy, physiology, genetics, ecology, cellular biology, parasitology, entomology, or research courses in such subjects. Where appropriate, excess coursework in wildlife biology may be used to meet the zoology requirements. Additionally, the position requires nine semester hours in wildlife courses such as mammalogy, ornithology, animal ecology, and wildlife management or research courses in the field of wildlife biology; and nine semester hours in botany or the related plant disciplines"[18]

*5. Qualified Environmental Consultants Requirements Set Forth by the City of Redlands Municipal Code*

The City of Redlands Municipal Code sets forth specific guidelines requiring the use of qualified consultants to prepare environmental documents and related technical reports in accordance with the California Environmental Quality Act for proposed private development projects, stating that: 1-10

> "Certain environmental technical studies may be dependent on timing or annual seasons to produce a valid study and valid conclusions Examples include biological habitat assessments during the Spring season, wildlife surveys during the peak seasonal activity period of a given species, or traffic studies near schools when in session, or other unique traffic generators Applicants may choose to prepare one or more technical report( s) in the interest of expediting the processing of their project, the City may require a third- party peer review contracted through the City and paid for by the Applicant"[19]

Therefore, the City should amend MM BIO-1 to specify what performance standards will be used to ensure that biological impacts relating to the burrowing owl will be less than significant.

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[18] U.S. Fish and Wildlife Service, Wildlife Biologist Qualification Requirements, *available at*, https://www.fws.gov/sites/default/files/documents/Basic%20Qualification%20Requirements.pdf

[19] Resolution No. 7744 of the City Council of the City of Redlands, *available at,* https://www.cityofredlands.org/sites/main/files/file-attachments/council_resolution_no._7744.pdf

## III. CONCLUSION

The Southwest Carpenters request that the City revise and recirculate the Project's environmental impact report to address the aforementioned concerns. If the City has any questions or concerns, feel free to contact my Office. 1-11

Sincerely,

Mitchell M. Tsai
Attorneys for the Southwest
Regional Council of Carpenters

Attached:

March 8, 2021 SWAPE Letter to Mitchell M. Tsai re Local Hire Requirements and Considerations for Greenhouse Gas Modeling (Exhibit A);

Air Quality and GHG Expert Paul Rosenfeld CV (Exhibit B); and

Air Quality and GHG Expert Matt Hagemann CV (Exhibit C).

1-12*

# EXHIBIT A

* Every page after this is Comment 1-12, and is shown in Appendix B of this Final EIR

# Letter 1

**COMMENTER:** Mitchell M. Tsai, Attorney At Law, on behalf of Southwest Regional Council of Carpenters (SWRCC)

**DATE:** September 8, 2022

## Response 1.1

The commenter offers an introduction to the labor union that is submitting the comment and notes the legal precedents for commenting on an EIR under CEQA during the approval process. The commenter requests that the City of Montclair send all notices referring or related to the Plan to SWRCC.

SWRCC has been added to the Plan mailing list. Individual responses to each comment are provided below.

## Response 1.2

The commenter states that the City should require the use of a local skilled and trained workforce to benefit the community's economic development and environment. The commenter provides supporting statements and notes that local hire and skilled and trained workforce requirements would assist with reducing environmental impacts, such as greenhouse gas (GHG) emissions, air quality, and transportation, and improving the Plan's economic impact as the length of vendor trips would likely be reduced due to workers residing within 10 miles or less of project sites, , as well as localized economic benefits.

Implementation of the requirement to use a local skilled and trained workforce is beyond the scope of the Draft EIR since labor and employment is not a required topic under CEQA. Nonetheless, the commenter's recommendations are noted for review and consideration by the City's decision-makers. The Draft EIR properly analyzed the Plan's air quality and transportation-related impacts in Section 4.3, *Air Quality* and Section 4.17, *Transportation*, and the comment does not address the adequacy of this analysis. In addition, as discussed in Section 4.8, *Greenhouse Gas Emissions*, of the Draft EIR, the Plan's GHG emissions impacts would be less than significant because, with City adoption of the climate action plan (CAP) prepared concurrently with the rest of the Plan, implementation of projects carried out under the Plan would not increase per capita GHG Emissions. While the CAP is a separate document from the Plan, relevant portions of the CAP have been integrated into Plan goals, policies, and implementation programs throughout the relevant Plan chapters and sections. The Plan will act as the comprehensive policy document and the CAP will provide mechanisms to implement and monitor the GHG reduction opportunities associated with City planning policies. The CAP is part of the Plan and would reduce emissions over time. The Plan would also be consistent with the goals of applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions, including (as explained above) the City of Montclair CAP, and the Southern California Association of Government's (SCAG's) 2020-2045 SCS/RTP. The comment does not address the adequacy of the GHG analysis in the EIR. Therefore, no revisions are required for the Final EIR, and no further response is required.

## Response 1.3

The commenter quotes statements from the GHG technical report attached to the letter and notes that skilled and trained workforce requirements yield sustainable economic development and can result in air pollutant reductions.

Refer to Response 1.2 regarding skilled and trained workforce requirements and policies and associated GHG emissions and air quality impacts.

Please note, the reports attached as appendices to Letter 1 are included as Appendix B of this Final EIR.

## Response 1.4

The commenter notes that cities are increasingly adopting local skilled and trained workforce policies and requirements into general plans and municipal codes and provides the City of Hayward as an example.

The comment is noted but does not raise specific concerns that pertain to the adequacy of the Draft EIR. The comment will be provided to the City's decisionmakers for their consideration. No further response is required.

## Response 1.5

The commenter provides statements to support their thesis that locating jobs closer to residential areas can have significant environmental benefits. They note that local hire mandates and skill training are critical facets of a strategy to reduce VMT and that placing jobs near housing is insufficient to achieve VMT reductions since the skill requirements of available local jobs must be matched to those held by local residents. The commenter also provides supporting statements and notes that some municipalities have tied local hire and skilled and trained workforce policies to local development permits to address transportation issues.

Refer to Response 1.2 regarding skilled and trained workforce requirements and policies and associated transportation-related impacts. Specifically, the Draft EIR looked at VMT impacts and found that Plan implementation would decrease the City's VMT/Service Population from 32.3 to 25.7 by 2040. (See Draft EIR, pp. 4.17-21 through 4.17-24; 4.17-25.) The cumulative VMT would also decrease from 13.17 to 9.08. (Draft EIR, p. 4.17-25.) The Plan would therefore have no VMT impact. (*Id*.)

## Response 1.6

The commenter states that "The City should also require the Project to be built to standards exceeding the current 2019 California Green Building Code to mitigate the Project's environmental impacts and to advance progress towards the State of California's environmental goals."

When referring to "the Project" being built, the commenter is apparently referring to projects carried out under the Plan. As explained on page 4.6-8 of the Draft EIR, Montclair's Municipal Code Chapter 10.30, California Building Code (CBC), adopts the California Green Building Standards Code (CalGreen), 2019 edition, as published in Part 11 of Title 24 of the California Code of Regulations. As analyzed in Section 4.6, *Energy*, the EIR concluded that the Plan would result in less than significant impacts relating to energy. The commenter does not explain in what way and to what extent the

City should require projects to exceed CalGreen; how, specifically, that would help mitigate environmental impacts of projects carried out under the Plan; or what impacts it would reduce. The City will consider the commenter's request, but no revisions to the EIR are required to address this comment.

## Response 1.7

The heading of Section I of the commenter's letter is "THE PROJECT WOULD BE APPROVED IN VIOLATION OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT." In part A of this section the commenter provides background information concerning CEQA but makes no comment on the Plan or the EIR. In part B of this section the commenter explains that CEQA requires revision and recirculation of an EIR when substantial changes or new information come to light. This background information is appreciated but requires no response since it does not comment on the EIR.

## Response 1.8

In part C of Section I of their letter, the commenter claims that, "Due to the COVID-19 crisis, the City must Adopt a Mandatory Finding of Significance that the Project may Cause a Substantial Adverse Effect on Human Beings and Mitigate COVID-19 Impacts," citing the fact that CEQA requires an agency to make a finding of significance when a project may cause a significant adverse effect on human beings. They state that construction work may be a high risk activity for contracting COVID-19 and that construction sites have been identified as sources of community spread of COVID-19. They recommend that the lead agency adopt additional CEQA mitigation measures requiring safe on-site construction work practices as well as training and certification for any construction workers on the Project Site. They also recommend that the lead agency require specific actions including construction site design measures, testing procedures, development of an infectious disease preparedness and response plan, COVID-19 training and certification developed by the commenter, and an Infection Control Risk Assessment (ICRA) training program. They conclude by stating that the City should require the Project to be built using a workforce trained in ICRA protocols.

Public Resources Code Section 21083(b)(3) and CEQA Guidelines Section 15065(a)(4) provide a project may have a significant effect on the environment if the environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly. COVID-19 is not an environmental effect of the project, however, as it is already present in the population unrelated to project development. As a general rule, CEQA does not require an analysis of the impact of the existing environment on a proposed project unless the project will worsen existing environmental hazards or conditions. *California Bldg. Indus. Assn. v. Bay Area Air Quality Mgmt. Dist*. (2015) 62 Cal.4th 369, 377. Development of the Plan will not worsen COVID-19 conditions.

When referring to "the Project" being built, the commenter is apparently referring to projects carried out under the Plan. Although the City will consider the commenter's recommendations, construction projects would occur either with or without adoption of the Plan and the commenter does not demonstrate any increased risk of COVID-19 impacts that would result from Plan adoption. Any construction project carried out under the Plan would be subject to applicable local, county, and state health and occupational safety requirements in effect at the time. Specifically, the California Department of Industrial Relations, Division of Occupational Safety and Health (DOSH) protects workers from safety hazards through its Cal/OSHA program and provides consultative assistance to employers. (https://www.dir.ca.gov/occupational_safety.html) Workplace safety and health regulations in California require employers to take steps to protect workers exposed to infectious diseases like the Novel Coronavirus (COVID-19), which is widespread in the community. Cal/OSHA has posted resources to help employers comply with these requirements and to provide workers information on how to protect themselves and prevent the spread of the disease. (www.dir.ca.gov/covid19/). Therefore, the Plan would not have a substantial adverse effect on human beings related to COVID-19 and no mandatory finding of significance related to COVID-19, nor any other changes to the EIR, are required to address this comment.

## Response 1.9

In Section II, Comment A of their letter, the commenter describes guidance in CEQA and the CEQA Guidelines prohibiting deferred development of environmental mitigation measures (deferral), case law supporting this prohibition of deferral, examples of deferral, and exceptions to the rule against deferrals.

While the City acknowledges these facts about CEQA, the commenter does not relate them to the Plan until their subsequent comments. The City's response to these subsequent comments is described below in the response to these comments.

## Response 1.10

In Section II, Comment B of their letter, the commenter claims that the EIR fails to mitigate the Plan's Biological Resources impacts because the mitigation measures (Mitigation Measure (MM) BIO-1 and MM BIO-2) are impermissibly vague and defer critical details to some future time, and MM BIO-1 fails to commit to adequately specific performance standards regarding the qualified biologist required to conduct future nesting bird surveys under that mitigation measure. They then claim that the nesting bird survey required under MM BIO-2 (which they refer to as MM BIO-1) should, at the very least, "be conducted by a qualified wildlife biologist from the consultant list set forth by the Environmental Procedures of the Redlands Municipal Code; who is familiar with the identification of avian species, including raptors and the rest of migratory bird species covered under the Migratory Bird Treaty Act and Fish and Game Code sections 3503, 3503.5, and 3513 that are known to occur area located between the Audubon important bird areas of San Jacinto Valley and the Upper Santa Ana River, in the County of San Bernardino." They conclude by stating that there are already widely accepted protocols and guidelines for the qualifications requirements for such biologists and then describe five examples of such requirements from the Wildlife Society, the State Department of Fish and Wildlife, the U.S. Department of the Interior, the U.S. Fish and Wildlife Service, and the City of Redlands Municipal Code. The commenter requests that the City "amend MM BIO-1 to specify what performance standards will be used to ensure that biological impacts relating to the burrowing owl will be less than significant."

The commenter's key request seems to be that the qualified biologists required under MM BIO-1 and MM BIO-2 be, at the very least, selected from a list of qualified wildlife biologists set forth by the City of Redlands. The relevance of this comment to Montclair is undermined by the fact that it refers to the City of Redlands and its Municipal Code rather than the City of Montclair, which seems to indicate that this comment was written for another project and copied to this comment letter. However, the City can accommodate the commenter's request to provide more specificity in these mitigation measures regarding the qualifications of the qualified biologist required under these measures, as shown below. Only the portions of each mitigation measure showing the revisions and other portions relevant to the context of the revisions are shown, not the whole measure.

### *BIO-1 Pre-Construction Biological Resources Reconnaissance Survey and Reporting*

For projects that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas) that contain or have the potential to support special-status species, sensitive natural communities, or suitable habitat to support special-status species, the following shall apply:

Prior to the issuance of a grading permit, a qualified biologist from a list of qualified wildlife biologists set forth by the City of Montclair shall be retained by the project applicant to conduct a biological resources reconnaissance survey of the site. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. The biological resources assessment shall characterize the biological resources present on the project site and evaluate the presence or absence of sensitive species and habitats.

### *BIO-2 Pre-Construction Bird Surveys, Avoidance, and Notification*

Construction activities initiated during the bird nesting season (February 1 through August 31) involving removal of trees, vegetation or other nesting bird habitat, including abandoned structures and other man-made features, a pre-construction nesting bird survey shall be conducted no more than three days prior to initiation of ground disturbance and vegetation removal activities. The nesting bird pre-construction survey shall be conducted on foot and shall include a 500-foot buffer around the construction site. The survey shall be conducted by a biologist familiar with the identification of avian species known to occur in southern California inland communities (i.e., qualified biologist) selected from a list of qualified wildlife biologists set forth by the City of Montclair. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. If nests are found, an avoidance buffer shall be determined by a qualified biologist dependent upon the species, the proposed work activity, and existing disturbances associated with land uses outside of the site, which shall be demarcated by the biologist with bright orange construction fencing, flagging, construction lathe, or other means to demarcate the boundary. All construction personnel shall be notified as to the existence of the buffer zone and to avoid entering the buffer zone during the nesting season. No ground disturbing activities shall occur within the buffer until the biologist has confirmed that breeding/ nesting is completed, and the young have fledged the nest. Encroachment into the buffer shall occur only at the discretion of the qualified biologist on the basis that the encroachment will not be detrimental to an active nest. A report summarizing the pre-construction survey(s) shall be prepared by a qualified biologist from a list of qualified wildlife biologists set forth by the City of Montclair. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. This report ~~and~~ shall be submitted to the City prior to the commencement of construction activities.

These revisions adequately address the commenter's request for more information in these mitigation measures regarding the qualifications of the qualified biologist required under these measures.

## Response 1.11

The commenter concludes their letter by requesting that the City revise and recirculate the Draft EIR to address their aforementioned concerns.

As described above, the City has revised the Draft EIR to address the commenter's concerns. These revisions do not, however, add new information to the EIR that would meet CEQA's requirements for recirculating a Draft EIR. Section 15088.5 of the CEQA Guidelines explains that "A lead agency is required to recirculate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification." According to Section 15088.5, "significant new information" may include the following: a new significant impact that would result from the project or a new mitigation measure; a substantial increase in the severity of an environmental impact; availability of a feasible project alternative or mitigation measure considerably different from others previously analyzed that would clearly lessen the project's environmental impacts; or a disclosure that the Draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. None of the information provided by the commenter, or the revisions to the Draft EIR made in response to their comment letter, rise to this level. Recirculation of the Draft EIR is therefore not required.

## Response 1.12

The commenter includes three attachments referenced in previous comments: Exhibit A - March 8, 2021 SWAPE Letter re Local Hire Requirements and Considerations for Greenhouse Gas Modeling; Exhibit B – Air Quality and GHG Expert Paul Rosenfeld CV; and Exhibit C – Air Quality and GHG Expert Matt Hagemann CV. These exhibits/attachments are shown in Appendix B of this Final EIR. None of them raise any specific issues concerning the adequacy of the EIR; they only serve as general advisory information to supplement the commenter's prior comments. Because no new environmental issues were identified, no further analysis is necessary.

# 3 Amendments to the Draft EIR

This chapter of the Final EIR provides a summary record of all proposed text amendments to the Draft EIR. Most amendments are the result of comments received during the public review period, and directly respond to those comments, or provide correction of typographical errors within the Draft EIR. These amendments serve as clarifications and amplifications on the content of the Draft EIR. Other amendments relate to the fact that the Climate Action Plan (CAP) prepared concurrently with the Plan needed to be revised because, since the time the CAP was completed and circulated for public review as an appendix to the Draft EIR, new legislation has been adopted by the State and new case law has been established that are related to climate action planning. The Updated CAP (dated October 2024) is included as an appendix to this Final EIR. The Updated CAP is briefly discussed in the *Climate Action Plan (CAP) Update* section at the end of this chapter of the Final EIR, and amendments to the Draft EIR to reflect and be consistent with the Updated CAP are shown in the *Amendments to the Draft EIR Related to the CAP Update* section below that.

None of the changes shown in this chapter of the Final EIR would warrant recirculation of the EIR pursuant to CEQA Guidelines Section 15088.5. The amendments serve to clarify and strengthen the content of the EIR, but do not introduce significant new information.

Changes in text are signified by strikeouts (~~strikeouts~~) where text is removed and by underlined font (<u>underline font</u>) where text is added. The page number cited is the page number in the Draft EIR.

## Executive Summary

Page ES-3:

> The Arrow Highway Mixed-Use District (AHMUD) Specific Plan is a component of the Plan and focuses on the northwest and northeast corners of Montclair. ~~The AHMUD builds off the previous specific plans of increased pedestrian and transit oriented downtown.~~

Pages ES-10 through ES-18

**Table ES-2 Summary of Impacts, Mitigation Measures, and Significance after Mitigation**

| Impact | Mitigation Measure | Significance After Mitigation |
|---|---|---|
| **Biological Resources** | | |
| **Impact BIO-1:** The Plan Area is largely urbanized, and the Plan would prioritize development on infill sites that have been previously developed and/or disturbed. Nevertheless, reasonably foreseeable development carried out under the Plan could potentially adversely impact special-status species or their habitat. Local special-status species and nesting birds are expected to occur within the Plan Area during potential construction periods and may be affected by | **MM-BIO-1 Pre-Construction Biological Resources Reconnaissance Survey and Reporting**<br>For projects that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas) that contain or have the potential to support special-status species, sensitive natural communities, or suitable | Implementation of Mitigation Measures BIO-1 through BIO-4 would reduce potential impacts to special-status, locally important species, sensitive habitats, and nesting birds to less than significant levels. |

| Impact | Mitigation Measure | Significance After Mitigation |
| --- | --- | --- |
| construction activity. Impacts would be less than significant with adherence to Plan goals and policies and Mitigation Measures BIO-1 through BIO-4. | habitat to support special-status species, the following shall apply:<br>Prior to the issuance of a grading permit, a qualified biologist from a list of qualified wildlife biologists set forth by the City of Montclair shall be retained by the project applicant to conduct a biological resources reconnaissance survey of the site. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit.<br>If it is determined that a special-status species and/or habitats may be impacted by a project, the biological report shall identify additional mitigation measures such as avoidance, minimization, restoration, or compensation to reduce impacts to a less than~~t~~ significant level prior to issuance of a development permit from the City. | |
| | **MM-BIO-2 Pre-Construction Bird Surveys, Avoidance, and Notification**<br>Construction activities initiated during the bird nesting season (February 1 through August 31) involving removal of trees, vegetation or other nesting bird habitat, including abandoned structures and other man-made features, a pre-construction nesting bird survey shall be conducted no more than three days prior to initiation of ground disturbance and vegetation removal activities. The nesting bird pre-construction survey shall be conducted on foot and shall include a 500-foot buffer around the construction site. The survey shall be conducted by a biologist familiar with the identification of avian species known to occur in southern California coastal communities (i.e., qualified biologist) selected from a list of qualified wildlife biologists set forth by the City of Montclair. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit.<br>A report summarizing the pre-construction survey(s) shall be prepared by a qualified biologist from a list of qualified wildlife biologists set forth by the City of | |

| Impact | Mitigation Measure | Significance After Mitigation |
|---|---|---|
| | Montclair. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. This report ~~and~~ shall be submitted to the City prior to the commencement of construction activities. | |

## Chapter 2, Project Description

Page 2-5:

To achieve the above elements above, the Plan recognizes certain key concepts. The Plan focuses on a green network for the City, mainly along the San Antonio Creek, connecting the western portion of the City from south to north with open parks, public space, and more to increase amenities and ecology. City streets are to be used for increased green and transit infrastructure for the public, with a focus on four main street corridors: Central Avenue, Holt Avenue, Arrow Highway, and Mission Boulevard. These elements of the Plan (except along Arrow Highway, which is covered by the AHMUD Specific Plan) will be implemented through a Corridors Code that will define the zoning along these corridors, including objective design standards. The Corridors Code will be adopted with the Plan.

Page 2-20:

This Specific Plan is a component of the General Plan and focuses on the northwest and northeast corners of Montclair. The study area is located along the Arrow Highway Corridor mentioned above. Community engagement was a core part of the Specific Plan. ~~The AHMUD builds off the previous specific plans of increased pedestrian and transit oriented downtown.~~

Page 2-24:

The City will amend its Development Code following adoption of the Plan to maintain consistency between the Plan and the Development Code, including specific land use regulations for parcel development defined in the Development Code. This action will, however, be carried out subsequent to, and separately from, the discretionary actions analyzed in this EIR. Changes to the City's Development Code along the key corridors of Central Avenue, Holt Avenue, and Mission Boulevard are defined in, and will be implemented through, a Corridors Code that will define the zoning along these corridors, including objective design standards. The Corridors Code will be adopted with the Plan and implements the improvements described for these areas in the Plan and analyzed in this EIR.

## Section 4.3, Air Quality

Page 4.3-17:

**Impact AQ-1 INDIVIDUAL DEVELOPMENT PROJECTS CARRIED OUT UNDER THE PLAN WOULD GENERATE CONSTRUCTION AND ~~O~~OPERATIONAL-RELATED EMISSIONS. SUCH EMISSIONS MAY CONFLICT WITH OR OBSTRUCT THE IMPLEMENTATION OF THE SCAQMD'S AIR QUALITY MANAGEMENT PLAN. IMPLEMENTATION OF PLAN POLICIES, COMPLIANCE WITH EXISTING REGULATIONS, AND IMPLEMENTATION OF MITIGATION WOULD REDUCE CONSTRUCTION- AND OPERATIONAL EMISSIONS, BUT NOT ALWAYS TO A LESS THAN SIGNIFICANT LEVEL. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.**

Page 4.3-21:

As shown in Table 4.3-8, with incorporation of Mitigation Measures AQ-1~~2~~ ~~and~~ through AQ-3, emissions from construction activities could be reduced to less than significant levels for individual projects implemented under the Plan.

## Section 4.4, Biological Resources

Page 4.4-17:

### BIO-1 Pre-Construction Biological Resources Reconnaissance Survey and Reporting

For projects that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas) that contain or have the potential to support special-status species, sensitive natural communities, or suitable habitat to support special-status species, the following shall apply:

Prior to the issuance of a grading permit, a qualified biologist from a list of qualified wildlife biologists set forth by the City of Montclair shall be retained by the project applicant to conduct a biological resources reconnaissance survey of the site. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. The biological resources assessment shall characterize the biological resources present on the project site and evaluate the presence or absence of sensitive species and habitats.

Page 4.4-18:

### BIO-2 Pre-Construction Bird Surveys, Avoidance, and Notification

Construction activities initiated during the bird nesting season (February 1 through August 31) involving removal of trees, vegetation or other nesting bird habitat, including abandoned structures and other man-made features, a pre-construction nesting bird survey shall be conducted no more than three days prior to initiation of ground disturbance and vegetation removal activities. The nesting bird pre-construction survey shall be conducted on foot and shall include a 500-foot buffer around the construction site. The survey shall be conducted by a biologist familiar with the identification of avian species known to occur in southern California coastal communities (i.e., qualified biologist) selected from a list of qualified wildlife biologists set forth by the City of Montclair. The qualified biologist shall also meet the California

Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. If nests are found, an avoidance buffer shall be determined by a qualified biologist dependent upon the species, the proposed work activity, and existing disturbances associated with land uses outside of the site, which shall be demarcated by the biologist with bright orange construction fencing, flagging, construction lathe, or other means to demarcate the boundary. All construction personnel shall be notified as to the existence of the buffer zone and to avoid entering the buffer zone during the nesting season. No ground disturbing activities shall occur within the buffer until the biologist has confirmed that breeding/ nesting is completed, and the young have fledged the nest. Encroachment into the buffer shall occur only at the discretion of the qualified biologist on the basis that the encroachment will not be detrimental to an active nest. A report summarizing the pre-construction survey(s) shall be prepared by a qualified biologist from a list of qualified wildlife biologists set forth by the City of Montclair. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. This report ~~and~~ shall be submitted to the City prior to the commencement of construction activities.

## Climate Action Plan (CAP) Update Summary

As described in various places in the Draft EIR (first occurring on page ES-3), a CAP Update for the City of Montclair was prepared concurrently with the Plan. While the CAP is a separate document from the Plan, relevant portions of the CAP have been integrated into Plan goals, policies, and implementation programs throughout the relevant Plan chapters and sections. The Plan will act as the comprehensive policy document and the CAP will provide mechanisms to implement and monitor the GHG reduction opportunities associated with City planning policies. Additionally, in this format, the Plan will meet the criteria of a "qualified plan for the reduction of greenhouse gases" according to the criteria specified in the CEQA Guidelines, which provides a mechanism for tiering and streamlining of GHG emissions analysis for projects that are consistent with such a plan.

The amendments relate to the fact that the Climate Action Plan (CAP) prepared concurrently with the Plan needed to be revised because, since the time the CAP was completed and circulated for public review as an appendix to the Draft EIR, new legislation has been adopted by the State and new case law has been established that are related to climate action planning. These amendments do not increase the severity of any environmental impacts of the Plan or introduce significant new information warranting recirculation of the EIR pursuant to CEQA Guidelines Section 15088.5.

## Amendments to the Draft EIR Related to the CAP Update

### Section 4.6, Energy

Page 4.6-12:

Additionally, the Plan includes implementation of proposed policies to reduce energy use and increase energy efficiency throughout the City, including the following:

A1.1a Develop a trail along the San Antonio Creek Channel.

A.1e Encourage simple, small, and low-cost demonstration green infrastructure projects both in the public and private realm.

A1.3a Achieve the community's short-term goal to reduce community-based GHG emissions by 40 percent below 1990 baseline levels by 2030.

A1.3b ~~Strive to achieve~~ Make substantial progress towards the community's long-term goal to achieve carbon neutrality by 2045. ~~Reduce community-based GHG emissions by 80 percent by 2050.~~

## Section 4.8, Greenhouse Gas Emissions

Page 4.8-3:

As part of the Climate Action Plan that is in turn part of the Plan analyzed in this EIR (Appendix D), the City of Montclair determined Citywide emissions estimates for 2017 (baseline) ~~as well as 2020~~. Based on the CAP emissions inventories, the City's baseline emissions in 2017 were 283,075 MT $CO_2e$. ~~In 2020, with the implementation of State policies to reduce GHG emissions accounted for, the City of Montclair emitted 293,883 MT $CO_2e$.~~

Page 4.8-9:

### *Executive Order N-79-20*

On September 23, 2020, Governor Newsom issued Executive Order (EO) N-79-20, which established the following new statewide goals:

- All new passenger cars and trucks sold in-state to be zero-emission by 2035
- All medium- and heavy-duty vehicles in the state to be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks
- All off-road vehicles and equipment to be zero-emission by 2035 where feasible

EO N-79-20 directs CARB, the Governor's Office of Business and Economic Development, the CEC, the California Department of Transportation, and other state agencies to take steps toward drafting regulations and strategies and leveraging agency resources toward achieving these goals.

### *Senate Bill 1020*

Adopted in September 2022, SB 1020 advances the State's trajectory to 100 percent clean energy procurement by 2045 by creating clean energy targets of 90 percent by 2035 and 95 percent by 2040. SB 1020 builds upon SB 100, which accelerated the State's RPS and requires electricity providers to increase procurement from eligible renewable energy resources to 60 percent by 2030 and 100 percent by 2045.

### *California Climate Crisis Act (Assembly Bill 1279)*

Signed into law in 2022, AB 1279, also known as the California Climate Crisis Act, formally codifies California's goal to achieve carbon neutrality by 2045. AB 1279 defines carbon neutrality as reducing statewide GHG emissions to 85 percent below 1990 levels and offsetting the remaining 15 percent of emissions through practices such as carbon sequestration. The pathway to achieving AB 1279 carbon neutrality goals was established in the 2022 Scoping Plan Update, which was adopted by CARB in November, 2022. Building upon the 2017 Scoping Plan, which provided a framework to reach California's 2030 GHG reduction targets, the 2022 Scoping Plan represents a further evolution in California's climate action strategies to reach carbon neutrality by 2045.

Page 4.8-11:

**P1.3 Consider Climate Action Plan's emission reduction goals in all major decisions on land use and investments in public infrastructure.**

A1.3a Achieve the community's short-term goal to reduce community-based GHG emissions by 40 percent below 2017 baseline levels by 2030.

A1.3b Strive to achieve the community's long-term goal to ~~reduce community-based~~ achieve carbon neutrality ~~GHG emissions by 80 percent~~ by ~~2050~~2045.

A1.3c Reduce potential GHG emissions from development by encouraging electrification of new developments, promoting energy conservation in existing buildings, plan new development and redevelopment to reduce single-occupancy vehicle miles traveled, and consider green space during development.

Page 4.8-14:

## City of Montclair Climate Action Plan (CAP) (2024~~1~~)

The City of Montclair has developed a Climate Action Plan (CAP) as part of the Plan analyzed in this EIR to reduce emissions in a fair way and make Montclair a more sustainable, healthier, and resilient place. Pursuant with CEQA Guidelines Section 15183.5, the CAP would meet the requirements of a qualified CAP and future projects developed under the Plan would be able to tier from the CAP for analysis purposes. The following are the CAP policies being introduced to reduce the City's emissions in conjunction with the State reduction goals.

### BUILDING ENERGY

- Measure BE.1: Join the CPA [Clean Power Alliance] at the 100% Green Power rate and strive for a less than 4% opt-out rate for residential and commercial customers by 2030 and maintain through 2045.
- Measure BE.2: Electrify 100% of newly constructed buildings by 2030.
- Measure BE.3: Improve energy efficiency by 17% in existing residential buildings and 15% in existing commercial buildings by 2030, and 52% in existing residential and 41% in existing commercial buildings by 2045. ~~Increase building energy efficiency to reduce residential energy use by 25% and commercial energy use by 20% by 2030.~~

### TRANSPORTATION

- Measure TR.1: Develop and implement an Active Transportation Plan to shift 6% of passenger car vehicle miles traveled to active transportation by ~~[~~2030,~~]~~ and 12% by ~~2050~~ 2045.
- Measure TR.2: Implement a public and shared transit programs to achieve 10% of public transit mode share by 2030 and 30% by ~~2050~~ 2045.
- Measure T.3: Increase electric/alternative fuel vehicle adoption to 20% for passenger and 10% for commercial vehicles by 2030, and 65% passenger and 50% commercial by 2045. ~~Passenger electric/alternative fuel vehicle adoption to 20% and commercial electric/alternative fuel vehicle adoption to 10% by 2030.~~

- Measure TR.4: Equitably increase use of EVs, promote active transportation and public transit use by disadvantaged communities.

#### WATER AND WASTEWATER

- Measure W.1: Reduce per capita water consumption by 10% compared with 2017 levels by 2030 and 25% by ~~2050~~ 2045.

#### SOLID WASTE

- Measure SW.1: Implement SB 1383 requirements and reduce community-wide landfilled organics 75% by 2025 and inorganic waste by 35% by 2030 and reduce all waste to 100% by ~~2050~~ 2045.

#### CARBON SEQUESTRATION

- Measure CS.1: Increase carbon sequestration and green space by planting ~~1,000~~ 500 new trees through the community by 2030, and 1,000 by 2045.
- Measure CS.2: Achieve and maintain compost procurement requirements of SB 1383 by 2030.

Page 4.8-15:

The City of Montclair has established per-capita GHG reduction targets consistent with the State's SB 32 goal of reducing emissions 40% below 1990 levels by 2030, and aligned with the trajectory to achieve carbon neutrality by 2045 consistent with AB 1279 and CARB's 2022 Scoping Plan ~~with the statewide per capita goals set in the 2017 Scoping Plan of 6 MT $CO_2$e per service population by 2030 and 2 MT $CO_2$e per service population by 2050~~. As recommended by the 2017 Scoping Plan for cities anticipating significant growth, GHG targets are established on a per capita basis. These targets were used to derive the significance threshold for this analysis (CARB 2017). ~~Assuming a linear trajectory, an intermediary threshold of 4 MT $CO_2$e per service population by 2040 would be consistent with statewide targets for 2030 and 2050.~~

Page 4.8-16:

As part of the CAP, Montclair has derived City specific emissions targets that will allow the City to support the State's overall reduction goals. The following goals have been established and will be adopted by the City as part of the Plan. The following emissions thresholds are being used as the significance threshold for the operational portion of this analysis only. Per capita targets for Montclair are as follows: 4.9 MT $CO_2$e per capita by 2030, ~~3.3~~ 1.6 MT $CO_2$e per capita by 2040, and ~~1.6~~ 0.0 MT $CO_2$e per capita by ~~2050~~ 2045. Per-capita community emissions are generally calculated by dividing total community emissions by the population of Montclair. Montclair's 2040 With Plan community emissions were calculated by adding project emissions to the 2020 projected emissions (see Appendix D) of 354,216 MT $CO_2$e, without reductions from State Measures and 234,197 MT $CO_2$e with State Reductions incorporated. Plan emissions were derived from the land use changes facilitated by the Plan, and quantified using CalEEMod, as described below. The 2040 With Plan emissions were then divided by the projected 2040 population (residents [51,414]) to determine Montclair's per capita emissions in 2040.

Page 4.8-16-17:

## Operational Emissions

A GHG emissions inventory identifies the major sources and quantities of GHG emissions produced by City government (municipal) operations and community-wide activities within a jurisdiction's boundaries for a given year. The CAP includes a 2017 baseline inventory of GHG emissions from community-wide activities within the City, as well as a ~~2020,~~ 2030, 2040, and ~~2050~~ 2045 "business-as-usual" forecast of how emissions in Montclair would change if consumption trends and behavior continue as they did through 2017, absent any new federal, State, regional, or local policies or action that would reduce those emissions.

However, since 2017, several State regulations (i.e., SB 1, SB 100, SB 1020, AB 1493) have been enacted that will reduce future local emissions. These regulations have been incorporated into an adjusted forecast, which provides a more accurate picture of future emissions growth and the emission reduction the City and community will be responsible for after State regulations have been implemented.

After analyzing the City's baseline inventory and forecast scenarios, emission targets were set to create quantitative goals that will further the City's ability to measure emission reduction progress from the baseline scenario. Consistent with State guidance, the 2017 inventory results were used to back-cast GHG emissions to 1990 levels to ensure consistency with state goals.

As identified in the CAP, Montclair would need to implement local reduction measures to meet the State targets established for 2030 and ~~2050~~ 2045, even after accounting for reductions that will result from State regulations. These reductions will be achieved through implementation of local measures and actions developed from best practices of other similar and neighboring jurisdictions, as well as those recommended by State organizations and agencies.

The inventories are divided into four sectors, or sources of emissions: energy (electricity and natural gas), transportation, solid waste, and water consumption. Like all GHG emissions inventories, the CAP relies on the best available data and calculation methodologies. Emissions estimates are subject to change as better data and calculation methodologies become available in the future, but the findings of the CAP provide a solid basis upon which Montclair can begin planning and acting to reduce its GHG emissions.

This analysis relies on the operational emissions quantifications in the CAP because buildout under the CAP is the same as buildout under the Plan. Full methodology and calculations for the quantification of operational emissions can be found in Appendix D.

Page 4.8-18:

## Operation

The City of Montclair has completed a total Montclair (i.e., community and municipal) GHG emissions inventory for the year 2017, which is summarized in Table 4.8-1. As part of the CAP, Montclair is committed to an emissions reduction target of 40 percent below 2017 levels by 2030 and reaching a longer-term goal of ~~80 percent below 2017 levels~~ carbon neutrality by ~~2050~~ 2045. This 2030 GHG emissions goal is selected to be consistent with ~~EO-B-3-05~~ SB 32 State emissions targets and CEQA Guidelines Section 15183.5 for a qualified GHG emissions reduction strategy as well as to be achievable by City-supported measures identified in the CAP. The CAP includes a business-as-usual (BAU) forecast of GHG emissions that will enable the City to estimate the amount of emissions reductions needed to meet its goal. The projected community emissions by year under the BAU scenario, the adjusted emissions accounting for implementation of State actions to reduce GHG emissions, the emissions needed to be reduced by the CAP, and the emissions targets are shown in Table 4.8-1 and ~~Figure 4.8-~~.

The CAP includes a list of 10 measures intended to reduce Montclair's GHG emissions. Implementation of the CAP would result in the reduction of community and municipal operational GHG emissions. Additionally, the CAP would serve as a pathway to reduce GHG emissions and introduce other beneficial environmental and sustainability effects. These benefits include reduction in building energy consumption and VMT (and thus air pollution), water consumption, and solid waste generation. Therefore, the CAP would result in a less-than-significant impact related to generation of GHG emissions.

Development carried out under the Plan, added to the existing CAP estimate for the year 2017, is estimated to result in ~~2040~~ 2030 emissions of approximately 199,283 MT $CO_2$e, ~~168,874~~ 150,832 MT $CO_2$e in 2040, and 113,266 MT $CO_2$e in 2045 as shown in Table 4.8-1. ~~This total,~~ These totals, divided by the estimated service population for the given year ~~2040~~ (see Table 4.8-1 ~~51,414 persons~~) would equate to an estimated 4.0 MT $CO_2$e per capita in 2030, ~~3.3~~ 2.9 MT $CO_2$e per capita in 2040, and 2.2 MT $CO_2$e per capita in 2045. As shown in Table 4.8-2, these per capita emissions would be within the applicable threshold in 2030 but exceed the applicable threshold in 2040 and 2045. However, because it would contribute to long-term reductions in per capita GHG emissions, the Plan would result in a less-than-significant impact related to generation of GHG emissions.

Page 4.8-19:

### Table 4.8-1 Montclair Future GHG Emissions Projection and Reduction Target

| Description | Emissions ($MTCO_2e$) | Per Capita Emissions ($MTCO_2e$) [1] | Threshold ($MTCO_2e$/capita) (CAP/State) | Exceed Threshold |
|---|---|---|---|---|
| 2017 Base Year Emissions | 283,074 | NA | | |
| 2030 BAU Emissions | 330,412 | | | |
| 2030 Adjusted Emissions[2] | 262,166 | | | |
| 2030 CAP Reductions[3] | (63,675) | | | |
| 2030 Total Emissions[4] | 199,283 | 4.0 | 4.0/4.9 | **No** |
| 2040 BAU Emissions | 354,216 | | | |
| 2040 Adjusted Emissions[2] | 234,197 | | | |
| 2040 CAP Reductions[3] | (84,158 ~~66,115~~) | | | |
| 2040 Total Emissions[4] | ~~168,874~~ 150,832 | ~~3.3~~ 2.9 | ~~3.3/6~~ 2.9/1.6 | **~~No~~ Yes** |
| 2045 ~~2050~~ BAU Emissions | 366,102 ~~378,035~~ | | | |
| 2045 ~~2050~~ Adjusted Emissions[2] | 225,157 ~~232,091~~ | | | |
| 2045 ~~2050~~ CAP Reductions[3] | (112,683 ~~145,203~~) | | | |
| 2045 ~~2050~~ Total Emissions[4] | ~~87,680~~ 113,266 | ~~1.6~~ 2.2 | ~~1.6/2~~ 2.2/0.0 | **~~No~~ Yes** |

[1] Per Capita emissions are the total emissions divided by the population, which is estimated at 49,672 in 2030, 51,414 in 2040, and 52,285 ~~53,156~~ in ~~2050~~ 2045. (See Appendix D Table 4.)

[2] Adjusted emissions account for BAU emissions minus state implemented reductions.

[3] CAP reductions are the reductions achieved from implementation of the Montclair specific reduction measures identified in the CAP.

[4] Total emissions are the Adjusted emissions plus annual construction emissions minus the CAP reductions.

NA = Information not available.

Source: Appendix C, Appendix D

~~**Figure 4.8-1 Community Emissions, Targets, and Reductions Needed to Meet Targets**~~

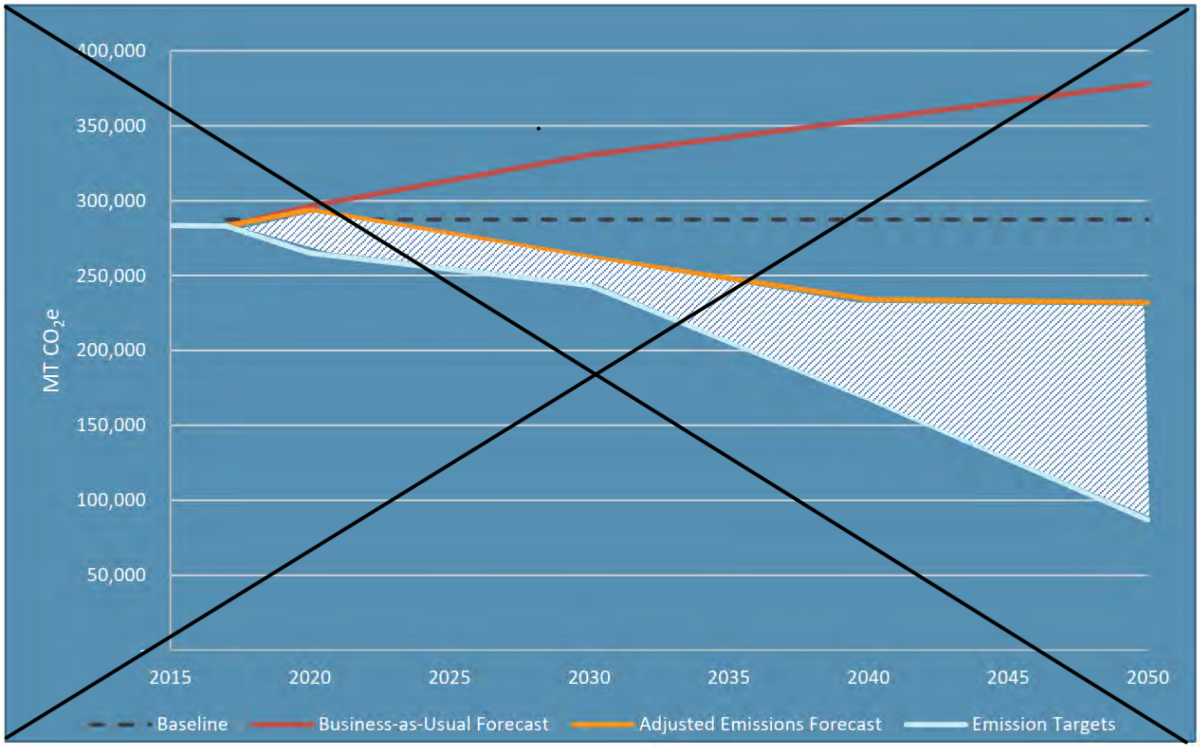
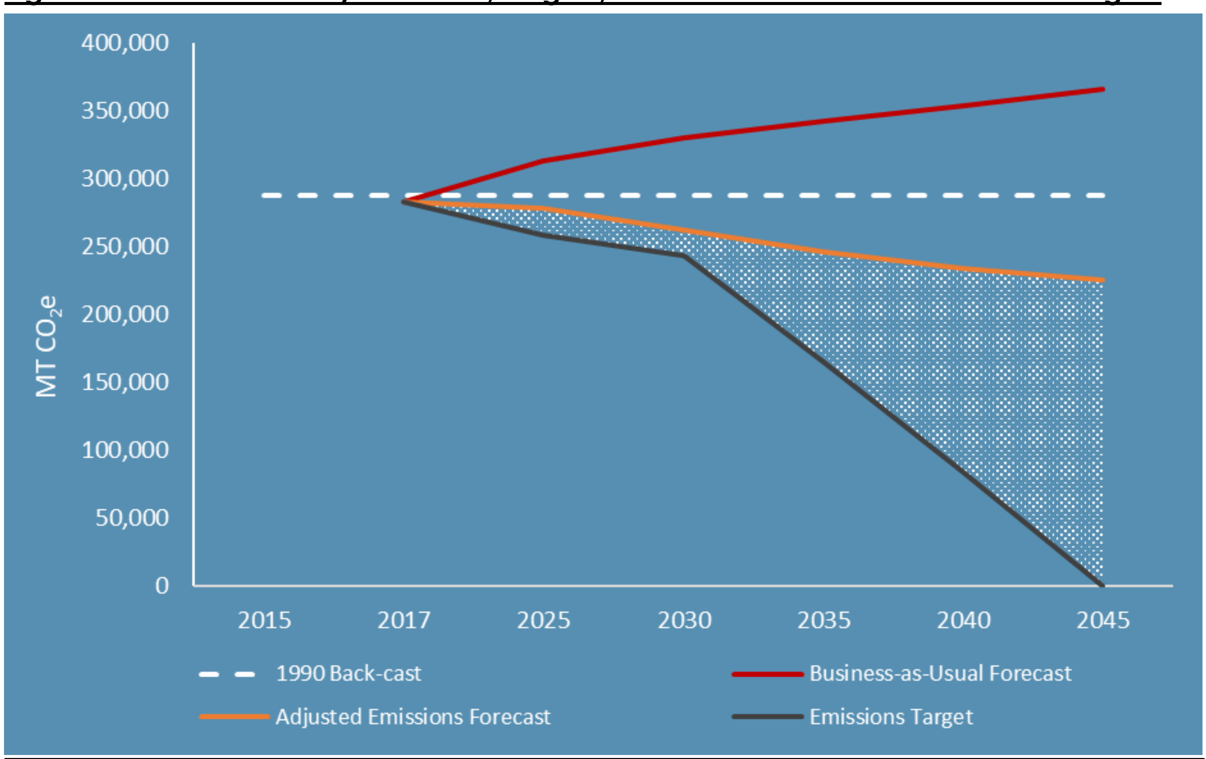



**Figure 4.8-1 Community Emissions, Targets, and Reductions Needed to Meet Targets**



Page 4.8-20:

Development carried out under the Plan is estimated to result in ~~2050~~ 2045 emissions of approximately 113,266 ~~87,680~~ MT $CO_2$e, as shown in Table 4.8-1. This total, divided by the estimated service population for the year ~~2050~~ 2045 (52,285 ~~53,156~~ persons) would equate to an estimated ~~1.6~~ 2.2 MT $CO_2$e per capita. This ~~is in line with~~ exceeds the ~~2050~~ 2045 statewide per-capita target of ~~2~~ 0 MT $CO_2$e, or carbon neutrality ~~and the City specific target of 1.6 MT $CO_2$e~~.

The Plan includes various goals and policies to directly and indirectly reduce per-capita GHG emissions in Montclair. These policies are intended to increase the use of alternative transportation, shorten vehicle trips throughout the City, and improve efficiency (e.g., water conservation), causing a decrease in VMT and energy use and, consequently, a decrease in GHG emissions.[1] General Plan policies and CAP measures that would reduce GHG emissions throughout the City are detailed in Section 4.8.2, *Regulatory Framework* under Regional and Local Regulations.

These policies, which promote mixed-use development, an enhanced pedestrian and bicycle network, improved access to and quality of public transportation, and infill and mixed-use housing, would encourage the use of alternative transportation and discourage vehicle trips. Because the Plan would encourage infill development and promote the establishment and use of alternative transportation such as walking, bicycling, and public transit, it would contribute to long-term reductions in per capita GHG emissions consistent with SCAG's 2020-2040 RTP/SCS (see Impact GHG-2). Impacts would be less than significant.

Page 4.8-20:

## City of Montclair Climate Action Plan

The City of Montclair, as part of the Plan, is adopting a Climate Action Plan (Appendix D). The CAP analyzes GHG emission sources within the City, forecasts future emissions, and establishes emission reduction targets. The CAP establishes a path for the City to reduce GHG emissions to 40 percent below 1990 levels by 2030 as outlined in SB 32, as well as make substantial progress towards reducing emissions in line with ~~EO S-3-05,~~ AB 1279, which established a goal to ~~reduce emissions by 80 percent below 1990 levels~~ achieve carbon neutrality by ~~2050~~ 2045. The CAP also provides a framework for implementation and monitoring reduction activities, and further promotes adaptation and preparedness actions. ~~As discussed in Impact GHG-1 above,~~ Because it would make substantial progress towards reducing emissions in line with AB 1279, City emissions with implementation of the Plan would be consistent with the City and State goals for reducing GHG emissions by ~~2050~~ 2045, and therefore the Plan would be consistent with SB ~~23~~ 32 and ~~EO S-3-05~~ AB 1279.

[1] Based on the traffic study, the Plan results in a VMT of 25.7 per service population with the Plan vs. 27.8 existing and 32.3 future without the plan (Fehr & Peers, March 2022).

Page 4.8-21:

## SCAG 2020-2045 RTP/SCS

SB 375 requires CARB to set regional targets for GHG emissions from use of light duty vehicles associated with land use decisions. Metropolitan Planning Organizations (MPOs) must address their regional GHG reductions targets in an SCS as part of the MPO's RTP. SCAG's 2020-2045 RTP/SCS provides land use and transportation strategies to reduce regional GHG emissions, such as:

- Reflect the Changing Population and Demands
- Focus New Growth Around Transit
- Provide More Options for Short Trips
- Encouraging Active Transportation for Short Trips
- Promote Safety and Security
- Active Transportation

The 2020-2045 RTP/SCS includes goals with corresponding implementation strategies for focusing growth near destinations and mobility options, promoting diverse housing choices, leveraging technology innovations, and supporting implementation of sustainability policies. **Error! Reference source not found.** summarizes policies contained in SCAG's RTP/SCS and Montclair's CAP that are applicable to the Plan and evaluates the Plan's consistency with these policies. By promoting infill and mixed-use development, and alternative transportation modes, the Plan would be consistent with the major initiatives identified in the 2020-2045 RTP/SCS and the City's CAP to reduce GHG emissions (see **Error! Reference source not found.**). In addition, as discussed above, the Plan would result in per-capita GHG emissions consistent with <u>the 2030</u> statewide target~~s, including the 2030 target~~ codified in SB 32<u> and would make substantial progress towards reducing emissions in line with AB 1279</u>. Because the Plan is consistent with adopted plans, policies, and regulations to reduce GHG emissions, impacts would be less than significant.

# Appendix A

Mitigation Monitoring and Reporting Program

# Mitigation Monitoring and Reporting Program

CEQA requires that a reporting or monitoring program be adopted for the conditions of project approval that are necessary to mitigate or avoid significant effects on the environment (Public Resources Code 21081.6). This mitigation monitoring and reporting program (MMRP) is intended to track and ensure compliance with adopted mitigation measures during the project implementation phase. For each mitigation measure recommended in the Final Environmental Impact Report (Final EIR), specifications are made herein that identify the action required, the monitoring that must occur, and the agency or department responsible for oversight.

The proposed project to which these mitigation measures apply is an update of the City of Montclair General Plan (hereafter referred to as the Plan), which includes adoption of the Plan itself and the following documents, some of which (such as the Housing Element Update) are part of the General Plan Update but others of which are separate but related documents also analyzed in the EIR as part of the Plan:

- Arrow Highway Mixed-Use District (AHMUD) Specific Plan, the focus of which is on enhancing Arrow Highway and surrounding land uses through streetscape improvements, creation of new public areas, and encouraging new development in focused areas.
- 2021 Draft Update of the Housing Element of the City's General Plan, written to be consistent with State Housing Element law, accommodate the City's Regional Housing Needs Allocation (RHNA), and be consistent with the other aspects of the Plan.
- Climate Action Plan (CAP), which provides mechanisms to implement and monitor the greenhouse gas (GHG) reduction opportunities associated with City planning policies, including the Plan. Because relevant portions of the CAP have been integrated into Plan goals, policies, and implementation programs, the Plan meets the criteria of a "qualified plan for the reduction of greenhouse gases" according to the criteria specified in the CEQA Guidelines, which provides a mechanism for tiering and streamlining of GHG emissions analysis for projects that are consistent with such a plan.
- Corridors Code focusing on four main street corridors: Central Avenue, Holt Avenue, Arrow Highway, and Mission Boulevard, which will implement certain elements of the Plan along these corridors (except along Arrow Highway, which is covered by the AHMUD Specific Plan) by defining zoning along these corridors, including objective design standards.

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| **Air Quality** | | | | | | | |
| **MM-AQ-1 Tier 4 and Alternatively Fueled Equipment** | | | | | | | |
| All mobile off-road equipment (wheeled or tracked) greater than 50 horsepower used during construction activities shall meet the United States Environmental Protection Agency (USEPA) Tier 4 final standards. Tier 4 certification can be for the original equipment or equipment that is retrofitted to meet the Tier 4 Final standards. In the event of specialized equipment where Tier 4 Final equipment is not commercially available at the time of construction, the equipment shall meet Tier 3 standards at a minimum. Alternative Fuel (natural gas, propane, electric, etc.) construction equipment shall be incorporated where available. Where electric vehicles are feasible, electrical vehicles shall be incorporated into the construction fleet. These requirements shall be incorporated into the contract agreement with the construction contractor. A copy of the equipment's certification or model year specifications shall be available upon request for all equipment onsite. All equipment less than 50 horsepower shall be alternatively fueled. Electricity shall be supplied to the site from the existing power grid to support the electric construction equipment. If connection to the grid is determined to be infeasible for portions of the project, a non-diesel fueled generator shall be used. | Confirm that the actions required under this mitigation measure are implemented for construction activities carried out under the Plan | At beginning of and periodically during construction | Once | City of Montclair Planning Division | | | |
| **MM-AQ-2 Architectural Coating** | | | | | | | |
| All architectural coating phases shall be extended, or Low/zero VOC coatings shall be implemented such that emissions are reduced to below 75 lbs/day. | During plan check, confirm that architectural coating recommendations as described in this mitigation measure are specified on the project plans for use during construction | Prior to granting building permits | Once | City of Montclair Planning Division | | | |

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| **MM-AQ-3 Hearth** | | | | | | | |
| Multi-family residential developments shall not incorporate wood or natural gas fireplaces. Electric fireplaces are allowable under this mitigation measure. | During plan check, confirm that all multi-family residential projects do not include wood or natural gas fireplace on the project plans | Prior to granting building permits | Once | City of Montclair Planning Division | | | |
| **Biological Resources** | | | | | | | |
| **MM-BIO-1 Pre-Construction Biological Resources Reconnaissance Survey and Reporting** | | | | | | | |
| For projects that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas) that contain or have the potential to support special-status species, sensitive natural communities, or suitable habitat to support special-status species, the following shall apply:<br>Prior to the issuance of a grading permit, a qualified biologist from a list of qualified wildlife biologists set forth by the City of Montclair shall be retained by the project applicant to conduct a biological resources reconnaissance survey of the site. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. The biological resources assessment shall characterize the biological resources present on the project site and evaluate the presence or absence of sensitive species and habitats.<br>If the biologist determines that special-status plant species may occur, focused surveys for special-status plants shall be completed in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant | 1. Confirm that a biological resources reconnaissance survey has been prepared by qualified biologist, consistent with the requirements of this mitigation measure<br>2. If the biologist determines that biological resources may exist onsite, confirm that focused surveys have been prepared consistent with the requirements of this mitigation measure<br>3. If it is determined that biological resources may be impacted by a project, confirm that any necessary mitigation measures identified in the biological resources assessment are carried out, consistent with the requirements of this mitigation measure<br>4. If ESA and/or CESA listed species or wildlife movement corridors are identified by the biological resources assessment confirm that consultation with the appropriate agencies, as required under this mitigation measure, takes place | 1. Prior to granting grading permits<br>2. Prior to granting grading permits<br>3. Prior to granting grading permits<br>4. Prior to issuing a development permit | 1. Once<br>2. Once<br>3. Once<br>4. Once | City of Montclair Planning Division | | | |

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| Populations and Sensitive Natural Communities (CDFW, March 20, 2018) and Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS, September 23, 1996). If it is determined that the project site has suitable habitat for special-status wildlife such as burrowing owl, focused surveys shall be conducted to determine presence/absence including species-specific surveys in accordance with CDFW or USFWS protocols for sensitive, State or federally listed species, respectively, that may occur. If the biologist determines that sensitive habitats and/or regulated aquatic resources may be present, additional focused studies to further assess and delineate the habitat (such as a formal jurisdictional determination for wetlands and waters) will be conducted.<br>A report shall be prepared that identifies 1) approximate population size and distribution of any sensitive plant or animal species, 2) any sensitive habitats or sensitive natural communities (such as wetlands or riparian areas), and 3) any potential impacts of proposed project on wildlife corridors. Off-site areas that may be directly or indirectly affected by the individual project shall also be surveyed. The report shall include site location, literature sources, methodology, timing of surveys, vegetation map, site photographs, and descriptions of on-site biological resources (e.g., observed and detected species, as well as an analysis of those species with the potential to occur on-site). The biological resources assessment report and surveys shall be conducted by a qualified biologist, and any special status species surveys shall be conducted according to standard methods of surveying for the species as appropriate.<br>If sensitive species and/or habitat are absent | | | | | | | |

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| from the individual project site and adjacent lands potentially affected by the individual project, a written report substantiating such shall be submitted to the City Planning Division prior to issuance of a grading permit, and the project may proceed without any further biological investigation.<br>If it is determined that a special-status species and/or habitats may be impacted by a project, the biological report shall identify additional mitigation measures such as avoidance, minimization, restoration, or compensation to reduce impacts to a less than~~t~~ significant level prior to issuance of a development permit from the City. In the case of ESA and/or CESA listed species consultation with USFWS and/or CDFW shall occur prior to issuance of a development permit from the City to determine measures to address impacts such as avoidance, minimization, restoration, or compensation. In the case of regulated aquatic resources, the USACE, CDFW, and RWQCB will be consulted regarding their respective jurisdictions and any necessary permits obtained prior to issuance of a development permit from the City.<br>If the biologist determines that wildlife movement corridors are present on a project site, consultation with the appropriate agency (i.e. City, USFWS, and/or CDFW) shall occur prior to issuance of a development permit from the City to determine measures to address impacts such as avoidance, minimization, restoration, or compensation. The analyses shall also describe project impacts to wildlife movement, considering the existing and post-project opportunities present to wildlife to enter and exit the project site. | | | | | | | |

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| **MM-BIO-2 Pre-Construction Bird Surveys, Avoidance, and Notification** | | | | | | | |
| Construction activities initiated during the bird nesting season (February 1 through August 31) involving removal of trees, vegetation or other nesting bird habitat, including abandoned structures and other man-made features, a pre-construction nesting bird survey shall be conducted no more than three days prior to initiation of ground disturbance and vegetation removal activities. The nesting bird pre-construction survey shall be conducted on foot and shall include a 500-foot buffer around the construction site. The survey shall be conducted by a biologist familiar with the identification of avian species known to occur in southern California coastal communities (i.e., qualified biologist) selected from a list of qualified wildlife biologists set forth by the City of Montclair. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. If nests are found, an avoidance buffer shall be determined by a qualified biologist dependent upon the species, the proposed work activity, and existing disturbances associated with land uses outside of the site, which shall be demarcated by the biologist with bright orange construction fencing, flagging, construction lathe, or other means to demarcate the boundary. All construction personnel shall be notified as to the existence of the buffer zone and to avoid entering the buffer zone during the nesting season. No ground disturbing activities shall occur within the buffer until the biologist has confirmed that breeding/ nesting is completed, and the young have fledged the nest. Encroachment into the buffer shall occur only at the discretion of the qualified biologist | 1. Confirm that a pre-construction nesting bird survey has been prepared by a qualified biologist, consistent with the requirements of this mitigation measure<br>2. If the nests are found, confirm that the requirements of this mitigation measure are enacted on the construction site<br>3. Confirm that a report summarizing the pre-construction survey(s) prepared by a qualified biologist has been submitted to the City<br>4. Confirm that project site plans include a statement acknowledging compliance with the federal MBTA and CFGC | 1. Prior to construction activities carried out from February 1 through August 31<br>2. Whenever nests are found<br>3. Prior to commencement of construction activities<br>4. Prior to granting building and grading permits | 1. Once<br>2. Periodically<br>3. Once<br>4. Once | City of Montclair Planning Division | | | |

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| on the basis that the encroachment will not be detrimental to an active nest. A report summarizing the pre-construction survey(s) shall be prepared by a qualified biologist from a list of qualified wildlife biologists set forth by the City of Montclair. The qualified biologist shall also meet the California Department of Fish and Wildlife's Biologist surveying qualification requirements for avian species (including burrowing owl) in place at the time of application for the grading permit. This report shall be submitted to the City prior to the commencement of construction activities. Proposed project site plans shall include a statement acknowledging compliance with the federal MBTA and CFGC that includes avoidance of active bird nests and identification of Best Management Practices to avoid impacts to active nests, including checking for nests prior to construction activities during February 1 to August 31 and what to do if an active nest is found so that the nest is not inadvertently impacted during grading or construction activities. | | | | | | | |
| **MM-BIO-3 Pre-Construction Bat Surveys** | | | | | | | |
| To avoid the direct loss of bats that could result from removal of trees and/or structures that are confirmed to support a maternity bat roost (e.g., in cavities, under loose bark or in structures such as bridges and abandoned buildings), tree removal or structure demolition shall be scheduled between October 1 and February 28, outside of the maternity roosting season. If trees and/or structures must be removed during the maternity season (March 1 to September 30), a qualified bat specialist shall conduct a focused survey to identify those trees and/or structures proposed for disturbance that could provide | 1. Confirm that tree removal or structure demolition is scheduled between October 1 and February 28<br>2. If trees and/or structures must be removed between March 1 to September 30, confirm that a qualified bat specialist has conducted a focused survey<br>3. If it is determined that a bat roost may be present, confirm that a Bat Avoidance Plan has been prepared and approved by CDFW | 1. Prior to granting building and grading permits<br>2. Prior to granting building and grading permits<br>3. Prior to granting building and grading permits | 1. Once<br>2. Once<br>3. Once | City of Montclair Planning Division | | | |

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| hibernacula or nursery colony roosting habitat for bats. Each tree and/or structure identified as potentially supporting an active maternity roost shall be closely inspected by the bat specialist prior to tree disturbance to determine the presence or absence of roosting bats. If it is determined that a bat roost may be present, a Bat Avoidance Plan shall be prepared and approved by CDFW prior to issuance of a development permit from the City. The Plan shall identify bat survey methods and materials and methods to exclude or prevent bats from using the roost without directly impacting any bats. | | | | | | | |
| **MM-BIO-4 Worker Environmental Awareness Program and Construction Monitoring** | | | | | | | |
| A biological monitor shall also conduct a pre-project environmental education program for all personnel working at the site, which shall be focused on conditions and protocols necessary to avoid and minimize potential impacts to biological resources. Prior to initiation of all construction activities (including staging and mobilization), all personnel associated with project construction shall attend a Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in recognizing special status biological resources potentially occurring in the project area. This training will include information about the special-status species with potential to occur in the project area. The specifics of this program shall include identification of special-status species and habitats, a description of the regulatory status and general ecological characteristics of special-status resources, and review of the limits of construction and measures required to avoid and minimize impacts to biological resources | Confirm that the WEAP training required under this mitigation measure is implemented for individual projects carried out under the Plan by confirming that the City has received a copy of the form signed by all personnel working at the site documenting they have attended the WEAP and understand the information presented to them | Prior to initiation of all construction activities (including staging and mobilization) | Once | City of Montclair Planning Division | | | |

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| within the work area. A fact sheet conveying this information shall also be prepared for distribution to all contractors, their employees, and other personnel involved with construction of the project. All employees shall sign a form provided by the trainer documenting they have attended the WEAP and understand the information presented to them. The crew foreman shall be responsible for ensuring crew members adhere to the guidelines and restrictions designed to avoid impacts to special-status species and sensitive natural communities. | | | | | | | |
| **Cultural Resources** | | | | | | | |
| **MM-CUL-1 Historical Resources** | | | | | | | |
| A historical resources evaluation shall be prepared for any discretionary project carried out under the General Plan Update involving the demolition or physical alteration of any building, structure, object, or other built environment feature that is 45 years of age or older. The evaluation shall be prepared by a qualified architectural historian or historian who meets the Secretary of the Interior’s Professional Qualifications Standards (PQS) in architectural history or history. The qualified architectural historian or historian shall conduct an intensive-level evaluation in accordance with the guidelines and best practices promulgated by the State Office of Historic Preservation to identify any potential historical resources within the proposed development site. All properties 45 years of age or older shall be evaluated within their historic context and documented in a report meeting the State Office of Historic Preservation guidelines. All evaluated properties shall be documented on Department of Parks and Recreation Series 523 Forms. The report will | 1. Confirm that a historic resources evaluation has been prepared by a qualified architectural historian or historian who meets the Secretary of the Interior’s Professional Qualifications Standards (PQS) in architectural history or history, consistent with the requirements of this mitigation measure<br>2. If historical resources are identified within the project area of a proposed development, confirm that efforts are made, to the extent feasible, to ensure that impacts are mitigated, consistent with the requirements of this mitigation measure | 1. Prior to construction and grading activities for any discretionary project carried out under the General Plan Update involving the demolition or physical alteration of any building, structure, object, or other built environment feature that is 45 years of age or older<br>2. Prior to construction and grading activities for each project area containing a historical resource identified by the historic resources evaluation | 1. Once<br>2. Once | City of Montclair Planning Division | | | |

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| be submitted to the City for review and concurrence. If the property is already listed in the NRHP, CRHR, or as a Landmark in Montclair, the historical resources evaluation described above shall not be required.<br>If historical resources are identified within the development site of a proposed development, efforts shall be made to the extent feasible to ensure that impacts are mitigated. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place). In conjunction with any development application that may affect the historical resource, the historical resources evaluation report shall also identify and specify the treatment of character-defining features and construction activities. Efforts shall be made to the greatest extent feasible to ensure that the relocation, rehabilitation, or alteration of the resource is consistent with the Secretary of the Interior's Standards for the Treatments of Historic Properties (Standards). In accordance with CEQA, a project that has been determined to conform with the Standards generally would not cause a significant adverse direct or indirect impact to historical resources (14 CCR § 15126.4(b)(1)). Application of the Standards shall be overseen by a qualified architectural historian or historic architect meeting the PQS. In conjunction with any development application that may affect the historical resource, a report identifying and specifying the treatment of character-defining features and construction activities shall be provided to the City for review and concurrence. As applicable, the report shall demonstrate how the project complies with the Standards and be submitted to the City for review and approval prior to the issuance of any permits. | 3. If historical resources are identified within the project area of a proposed development, confirm that efforts have been made to the greatest extent possible to ensure that the relocation, rehabilitation, or alteration of the resource is consistent with the Secretary of the Interior's Standards for the Treatments of Historic Properties (Standards) and the requirements of this mitigation measure<br>4. If significant historical resources are identified on a development site and compliance with the Standards and or avoidance is not possible, confirm that appropriate site-specific mitigation measures are established and undertaken, consistent with the requirements of this mitigation measure | 3. Prior to construction and grading activities for each project area containing a historical resource identified by the historic resources evaluation<br>4. Once prior to, and then periodically during, construction and grading activities whenever significant historical resources are identified on a development site and compliance with the Standards and or avoidance is not possible | 3. Once<br>4. Once prior to and periodically during | | | | |

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| If significant historical resources are identified on a development site and compliance with the Standards and or avoidance is not possible, appropriate site-specific mitigation measures shall be established and undertaken. Mitigation measures may include documentation of the historical resource in the form of a Historic American Building Survey (HABS)-Like report. The report shall comply with the Secretary of the Interior's Standards for Architectural and Engineering Documentation and shall generally follow the HABS Level III requirements, including digital photographic recordation, detailed historic narrative report, and compilation of historic research. The documentation shall be completed by a qualified architectural historian or historian who meets the PQS and submitted to the City prior to issuance of any permits for demolition or alteration of the historical resource. | | | | | | | |
| **MM-CUL-2 Phase 1 Archaeological Resources Study** | | | | | | | |
| For any project carried out under the General Plan Update, the City and/or project applicant shall investigate the potential to disturb archaeological resources. If the project will involve any ground disturbance (unless the project site is within soils that can be reliably demonstrated as being non-native or artificial fill) a Phase I cultural resources study shall be performed by a qualified professional meeting the Secretary of the Interior's (SOI's) Professional Qualification Standards (PQS) for archaeology (National Park Service 1983). If a project would solely involve the refurbishment of an existing building and no ground disturbance would occur, this measure would not be required. The Phase I cultural resources study shall include a pedestrian survey of the project site and sufficient background research | 1. If any project carried out under the General Plan Update will involve any ground disturbance (unless the project site is within soils that can be reliably demonstrated as being non-native or artificial fill) confirm that a Phase I cultural resources study consistent with the requirements of this mitigation measure has been performed by a qualified professional meeting the Secretary of the Interior's (SOI's) Professional Qualification Standards (PQS) for archaeology (National Park Service 1983), and review and approve this study | 1. Prior to issuance of construction and grading permits | 1. Once | City of Montclair Planning Division | | | |

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| and field sampling to determine whether archaeological resources may be present. Archival research shall include a records search of the South Central Coastal Information Center no more than two years old and a Sacred Lands File search with the NAHC. The Phase I technical report documenting the study shall include recommendations that must be implemented prior to and/or during construction to avoid or reduce impacts on archaeological resources. The report shall be submitted to the City of Montclair for review and approval prior to the issuance of any grading or construction permits. Recommendations in the Phase I technical report shall be made Conditions of Approval and shall be implemented throughout all ground disturbance activities. | 2. Make all recommendations of the Phase I technical report Conditions of Approval of the project<br>3. Confirm that all Conditions of Approval are carried out throughout all ground disturbance activities | 2. Prior to issuance of construction and grading permits<br>3. During ground disturbance activities | 2. Once<br>3. Periodically | | | | |
| **MM-CUL-3 Extended Phase 1 Testing** | | | | | | | |
| For any projects proposed within 100 feet of a known archaeological site and/or in areas identified as sensitive by a Phase I study [Mitigation Measure CUL-2], the project applicant shall retain a qualified archaeologist to conduct an Extended Phase I (XPI) study to determine the presence/absence and extent of archaeological resources on the project site. XPI testing should comprise a series of shovel test pits and/or hand augured units and/or mechanical trenching to establish the boundaries of archaeological site(s) on the project site. If the boundaries of the archaeological site are already well understood from previous archaeological work, an XPI will not be required. If the archaeological resource(s) of concern are Native American in origin, the qualified archaeologist shall confer with local California Native American tribe(s).<br>All archaeological excavation shall be conducted by a qualified archaeologist(s) under the | 1. Confirm that an XPI study has been done by a qualified archaeologist retained by the project applicant if required under this mitigation measure, and review and approve the XPI<br>2. Confirm that all recommendations of the XPI are carried out throughout all ground disturbance activities | 1. Prior to issuance of construction and grading permits<br>2. During ground disturbance activities | 1. Once<br>2. Periodically | City of Montclair Planning Division | | | |

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| direction of a principal investigator meeting the SOI's PQS for archaeology (National Park Service 1983). If an XPI report is prepared, it shall be submitted to the City of Montclair for review and approval prior to the issuance of any grading or construction permits. Recommendations contained therein shall be implemented for all ground disturbance activities. | | | | | | | |
| **MM-CUL-4 Archaeological Site Avoidance** | | | | | | | |
| Any identified archaeological sites (determined after implementing mitigation measures CUL-2 and/or CUL-3) shall be avoided by project-related construction activities, where feasible. A barrier (temporary fencing) and flagging shall be placed between the work location and any resources within 60 feet of a work location to minimize the potential for inadvertent impacts. | Confirm that the avoidance measures described in this mitigation measure are carried out during project-related construction activities | During construction and grading activities | Periodically | City of Montclair Planning Division | | | |
| **MM-CUL-5 Phase II Site Evaluation** | | | | | | | |
| If the results of any Phase I and/or XPI (mitigation measures CUL-2 and/or CUL-3) indicate the presence of archaeological resources that cannot be avoided by the project (Mitigation Measure CUL-4) and that have not been adequately evaluated for the NRHP or CRHR listing at the project site, the qualified archaeologist shall conduct a Phase II investigation to determine if intact deposits remain and if they may be eligible for the CRHR or qualify as unique archaeological resources. If the archaeological resource(s) of concern are Native American in origin, the qualified archaeologist shall confer with local California Native American tribe(s).<br>A Phase II evaluation shall include any necessary archival research to identify significant historical associations and mapping of surface artifacts, collection of functionally or temporally diagnostic tools and debris, and excavation of a | 1. If the results of any Phase I and/or XPI (mitigation measures CUL-2 and/or CUL-3) indicate the presence of archaeological resources that cannot be avoided by the project (Mitigation Measure CUL-4) and that have not been adequately evaluated for the NRHP or CRHR listing at the project site, confirm that a Phase II cultural resources study consistent with the requirements of this mitigation measure has been performed by a qualified professional meeting the Secretary of the Interior's (SOI's) Professional Qualification Standards (PQS) for archaeology (National Park Service 1983), and review and approve this study | 1. Prior to issuance of construction and grading permits | 1. Once | City of Montclair Planning Division | | | |

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| sample of the cultural deposit. The sample excavation will characterize the nature of the sites, define the artifact and feature contents, determine horizontal and vertical boundaries, and retrieve representative samples of artifacts and other remains.<br>If the archeologist and, if applicable, a Native American monitor (see Mitigation Measure TCR-2) or other interested tribal representative determine it is appropriate, cultural materials collected from the site shall be processed and analyzed in a laboratory according to standard archaeological procedures. The age of the materials shall be determined using radiocarbon dating and/or other appropriate procedures; lithic artifacts, faunal remains, and other cultural materials shall be identified and analyzed according to current professional standards. The significance of the sites shall be evaluated according to the criteria of the CRHR. The results of the investigations shall be presented in a technical report following the standards of the California Office of Historic Preservation publication "Archaeological Resource Management Reports: Recommended Content and Format (1990 or latest edition)." The report shall be submitted to the City of Montclair for review and approval prior to the issuance of any grading or construction permits. Recommendations in the Phase II report shall be implemented for all ground disturbance activities. | 2. Make all recommendations of the Phase II technical report Conditions of Approval of the project<br>3. Confirm that all Conditions of Approval are carried out throughout all ground disturbance activities | 2. Prior to issuance of construction and grading permits<br>3. During ground disturbance activities | 2. Once<br>3. Periodically | | | | |

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| **MM-CUL-6 Phase III Data Recovery** | | | | | | | |
| Should the results of the Phase II site evaluation (Mitigation Measure CUL-5) yield resources that meet CRHR significance standards and if the resource cannot be avoided by project construction in accordance with CUL-4, the project applicant shall ensure that all feasible recommendations for mitigation of archaeological impacts are incorporated into the final design and approved by the City of Montclair prior to construction. Any necessary Phase III data recovery excavation, conducted to exhaust the data potential of significant archaeological sites, shall be carried out by a qualified archaeologist meeting the SOI PQS for archaeology according to a research design reviewed and approved by the City of Montclair prepared in advance of fieldwork and using appropriate archaeological field and laboratory methods consistent with the California Office of Historic Preservation Planning Bulletin 5 (1991), Guidelines for Archaeological Research Design, or the latest edition thereof. If the archaeological resource(s) of concern are Native American in origin, the qualified archaeologist shall confer with local California Native American tribe(s). If applicable, a Native American monitor shall be present.<br>As applicable, the final Phase III Data Recovery reports shall be submitted to the City of Montclair prior to issuance of any grading or construction permit. Recommendations contained therein shall be implemented throughout all ground disturbance activities. | 1. Confirm that any reports found to be necessary under the requirements of this mitigation measure have been submitted to, and reviewed and approved by, the City of Montclair<br>2. Confirm that all feasible recommendations of the reports required under this mitigation measure have been incorporated into the final design of the project and approved by the City of Montclair<br>3. Confirm that all feasible recommendations of the reports required under this mitigation measure are carried out as described in this mitigation measure | 1. Prior to issuance of construction and grading permits<br>2. Prior to issuance of construction and grading permits<br>3. During construction | 1. Once<br>2. Once<br>3. Periodically | City of Montclair Planning Division | | | |

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| **MM-CUL-7 Cultural Resources Monitoring** | | | | | | | |
| If recommended by Phase I, XPI, Phase II, or Phase III studies [mitigation measures CUL-2, CUL-3, CUL-5, and/or CUL-6], the project applicant shall retain a qualified archaeologist to monitor project-related, ground-disturbing activities. If archaeological resources are encountered during ground-disturbing activities, mitigation measures CUL-4 through CUL-6 shall be implemented, as appropriate. | 1. Confirm that the applicant has retained a qualified archaeologist to monitor project-related ground-disturbing activities if required under this mitigation measure<br>2. Confirm that mitigation measures CUL-4 through CUL-6 are implemented, as appropriate, if archaeological resources are encountered during ground-disturbing activities | 1. Prior to construction and grading activities<br>2. Per each occurrence of archaeological resources being encountered during ground-disturbing activities | 1. Once<br>2. Once | City of Montclair Planning Division | | | |
| **MM-CUL-8 Unanticipated Discovery of Archaeological Resource** | | | | | | | |
| If archaeological resources are encountered during ground-disturbing activities, work within 60 feet shall be halted and the project archaeologist meeting the SOI's Professional Qualification Standards for archaeology (National Park Service 1983) shall immediately evaluate the find. If necessary, the evaluation may require preparation of a treatment plan and archaeological testing for CRHR eligibility. If the discovery proves to be significant under CEQA and cannot be avoided by the project, additional work may be warranted, such as data recovery excavation, to mitigate any significant impacts to historical resources. Any reports required to document and/or evaluate unanticipated discoveries shall be submitted to the City of Montclair for review and approval. Recommendations contained therein shall be implemented throughout the remainder of ground disturbance activities. | 1. Confirm that any reports required to document and/or evaluate unanticipated discoveries have been submitted to the City of Montclair for review and approval<br>2. Confirm that recommendations contained therein are implemented throughout the remainder of ground disturbance activities | 1. Prior to issuance of construction and grading permits<br>2. During construction and grading activities | 1. Once<br>2. Periodically | City of Montclair Planning Division | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification Initial | Date | Comments |
|---|---|---|---|---|---|---|---|
| **Geology and Soils** | | | | | | | |
| **MM-GEO-1 Geotechnical Investigation** | | | | | | | |
| A Certified Engineering Geologist shall complete a geotechnical investigation of the soils and geologic condition of new development project sites located in areas of potential subsidence, as identified by the USGS, to assess the potential for geologic hazards. The investigation shall provide recommendations for appropriate means of mitigating any potential geologic hazards identified, including expansive soils. Project construction shall implement the recommendations contained in the geotechnical investigation, which may include, but not limited to, site preparation, foundation, drainage control, soil corrosion, concrete slabs and flatwork, excavations, grading, and structural design. The geotechnical investigation and the construction plans incorporating its recommendations shall be reviewed and approved by the City of Montclair prior to issuance of construction related permits. | 1. Confirm that any geotechnical reports required under this mitigation measure have been submitted to the City of Montclair for review and approval<br>2. Confirm that recommendations contained therein are implemented throughout the remainder of ground disturbance activities | 1. Prior to issuance of construction and grading permits<br>2. During construction and grading activities | 1. Once<br>2. Periodically | City of Montclair Planning Division | | | |
| **MM-GEO-2 Paleontologist Assessment** | | | | | | | |
| In the event that paleontological resources (fossil materials) or unique geologic features are exposed during construction activities for future development, all construction work occurring within 50 feet of the project site find shall immediately stop until a qualified paleontologist, as defined by the Society of Vertebrate Paleontology, can assess the nature and importance of the find. Depending upon the significance of the find, the paleontologist may record the find and allow work to continue or may recommend salvage and recovery of the resource. All recommendations shall be made in accordance with the Society of Vertebrate Paleontology's 1995 guidelines and shall be | 1. Confirm that construction is stopped until all required paleontological reports are completed<br>2. Confirm that all required paleontological reports have been submitted to the City of Montclair for review and approval<br>3. Confirm that recommendations contained in the paleontological report for the site are implemented throughout the remainder of ground disturbance activities | 1. Per discovery of any paleontological materials during construction activities<br>2. Per discovery of any paleontological materials during construction activities<br>3. During construction and grading activities after discovery of paleontological materials on a project site | 1. Once<br>2. Once<br>3. Periodically | City of Montclair Planning Division | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| subject to review and approval by the City. Work in the area of the find may only resume upon approval of a qualified paleontologist. | | | | | | | |
| **Noise** | | | | | | | |
| **MM-NOI-1 Pile Driving** | | | | | | | |
| Where future development under the Plan requires the use of pile driving equipment, the developer shall provide the City with a noise and vibration study quantifying potential vibration levels from planned use of the pile driving equipment, and potential vibration impacts on nearby receptors. If vibration from pile driving cannot be reduced to below structural damage or human annoyance levels then an alternative method for construction shall be required at that location. The City shall review and approve the noise and vibration study before it approves the project. | 1. Confirm that any required noise and vibration studies have been submitted to the City of Montclair for review and approval<br>2. Confirm that recommendations contained in any required noise and vibration studies are implemented throughout ground disturbance and construction activities | 1. Prior to issuance of construction and grading permits<br>2. During construction and grading activities | 1. Once<br>2. Periodically | City of Montclair Planning Division | | | |
| **MM-NOI-2 Operational Activities** | | | | | | | |
| Where future development under the Plan would include operational activities that would result in perceptible offsite vibration, the developer shall provide the City with a noise and vibration study to quantify these vibration levels and their potential impacts on nearby receptors. Vibrational activities that exceed structural damage or human annoyance levels shall be mitigated to below regulatory levels through the implementation of vibration dampening features, increased distance between source and receptor, or other measures applicable to the nature of the operation. The City shall review and approve the noise and vibration study before it approves the project. | 1. Confirm that any required noise and vibration studies have been submitted to the City of Montclair for review and approval<br>2. Confirm that recommendations contained therein are implemented throughout operation of the project | 1. Prior to issuance of construction and grading permits<br>2. During project operations | 1. Once<br>2. Periodically | City of Montclair Planning Division | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| **Tribal Cultural Resources** | | | | | | | |
| **MM-TCR-1 Native American Monitoring** | | | | | | | |
| Prior to the issuance of a grading permit for a proposed project, the City of Montclair (City) shall ensure that the project applicant retains the services of a tribal monitor(s) approved by the Gabrieleño Band of Mission Indians Kizh Nation to provide Native American monitoring during ground-disturbing activities. This provision shall be included on the proposed project contractor's plans and specifications. Ground-disturbing activities are defined by the Gabrieleño Band of Mission Indians Kizh Nation as activities that may include but are not limited to pavement removal, pot-holing or auguring, grubbing, tree removals, borings, grading, excavation, drilling, and/or trenching within the project area. The project site shall be made accessible to the monitor(s), provided adequate notice is given to the construction contractor and that a construction safety hazard does not occur. The monitor(s) shall possess Hazardous Waste Operations and Emergency Response (HAZWOPER) certification. In addition, the monitor(s) shall be required to provide insurance certificates, including liability insurance.<br>If evidence of tribal cultural resources is found during ground-disturbing activities, the monitor(s) shall have the capacity to halt construction in the immediate vicinity of the find to recover and/or determine the appropriate plan of recovery for the resource in consultation with a qualified archaeologist. The recovery process shall not unreasonably delay the construction process and must be carried out consistent with CEQA and local regulations. Construction activity shall not be contingent on the presence or availability of a monitor, and construction may proceed regardless of whether | Confirm that a tribal monitor has been approved by the relevant tribes to provide Native American monitoring during ground-disturbing activities, consistent with the requirements of this mitigation measure | Prior to issuance of a grading permit for a project under the Plan | Once | City of Montclair Planning Division | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| or not a monitor is present on site. The monitor shall complete daily monitoring logs that will provide descriptions of the day's activities and general observations and whether the Native American monitor believes they observed a TCR and what action they took. The on-site monitoring shall end when the project site grading and excavation activities are completed or prior to the completion if the monitor has indicated that the site has a low potential for tribal cultural resources. | | | | | | | |
| **MM-TCR-2 Unanticipated Discovery of Tribal Cultural Resources** | | | | | | | |
| Upon discovery of any tribal cultural resources, the Native American monitor has the ability to halt construction activities in the immediate vicinity (within 50 feet) of the find until the find can be assessed. All tribal cultural resources unearthed during project construction activities shall be evaluated by the Native American monitor approved by the Gabrieleño Band of Mission Indians Kizh Nation and a qualified archaeologist. Construction work shall be permitted to continue on other parts of the project site while evaluation and, if necessary, additional investigations and/or preservation measures take place (CEQA Guidelines Section15064.5(f)). If the resources are Native American in origin, the Gabrieleño Band of Mission Indians Kizh Nation tribe shall coordinate with the landowner regarding treatment and curation of these resources. If a resource is determined by the qualified archaeologist to constitute a "historical resource" or "unique archaeological resource," time allotment and funding sufficient to allow for implementation of avoidance measures shall be made available through coordination between the Gabrieleño Band of Mission Indians Kizh Nation and the project applicant. The | 1. Confirm construction has been halted per the Native American monitor's assessment<br>2. Confirm that the avoidance measures described in this mitigation measure have been implemented | 1. Upon the discovery of any tribal cultural resources<br>2. Throughout construction and grading activities after the discovery of any tribal cultural resource | 1. Once for each occurrence<br>2. Periodically | City of Montclair Planning Division | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| treatment plan established for the resources shall be in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15064.5(f) for historical resources and Public Resources Code (PRC) Sections 21083.2(b) for unique archaeological resources. Preservation in place (i.e., avoidance) shall be the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. | | | | | | | |

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# Appendix B

Attachments to Mitchell M. Tsai Comment Letter

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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March 8, 2021

Mitchell M. Tsai
155 South El Molino, Suite 104
Pasadena, CA 91101

**Subject: Local Hire Requirements and Considerations for Greenhouse Gas Modeling**

Dear Mr. Tsai,

Soil Water Air Protection Enterprise ("SWAPE") is pleased to provide the following draft technical report explaining the significance of worker trips required for construction of land use development projects with respect to the estimation of greenhouse gas ("GHG") emissions. The report will also discuss the potential for local hire requirements to reduce the length of worker trips, and consequently, reduced or mitigate the potential GHG impacts.

## Worker Trips and Greenhouse Gas Calculations

The California Emissions Estimator Model ("CalEEMod") is a "statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects."[1] CalEEMod quantifies construction-related emissions associated with land use projects resulting from off-road construction equipment; on-road mobile equipment associated with workers, vendors, and hauling; fugitive dust associated with grading, demolition, truck loading, and on-road vehicles traveling along paved and unpaved roads; and architectural coating activities; and paving.[2]

The number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[3]

[1] "California Emissions Estimator Model." CAPCOA, 2017*, available at:* http://www.aqmd.gov/caleemod/home.
[2] "California Emissions Estimator Model." CAPCOA, 2017*, available at:* http://www.aqmd.gov/caleemod/home.
[3] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.

Specifically, the number and length of vehicle trips is utilized to estimate the vehicle miles travelled ("VMT") associated with construction. Then, utilizing vehicle-class specific EMFAC 2014 emission factors, CalEEMod calculates the vehicle exhaust, evaporative, and dust emissions resulting from construction-related VMT, including personal vehicles for worker commuting.[4]

Specifically, in order to calculate VMT, CalEEMod multiplies the average daily trip rate by the average overall trip length (see excerpt below):

"$VMT_d = \Sigma(\text{Average Daily Trip Rate}_i * \text{Average Overall Trip Length}_i)_n$

Where:

n = Number of land uses being modeled."[5]

Furthermore, to calculate the on-road emissions associated with worker trips, CalEEMod utilizes the following equation (see excerpt below):

"$Emissions_{pollutant} = VMT * EF_{running,pollutant}$

Where:

$Emissions_{pollutant}$ = emissions from vehicle running for each pollutant

VMT = vehicle miles traveled

$EF_{running,pollutant}$ = emission factor for running emissions."[6]

Thus, there is a direct relationship between trip length and VMT, as well as a direct relationship between VMT and vehicle running emissions. In other words, when the trip length is increased, the VMT and vehicle running emissions increase as a result. Thus, vehicle running emissions can be reduced by decreasing the average overall trip length, by way of a local hire requirement or otherwise.

## Default Worker Trip Parameters and Potential Local Hire Requirements

As previously discussed, the number, length, and vehicle class of worker trips are utilized by CalEEMod to calculate emissions associated with the on-road vehicle trips required to transport workers to and from the Project site during construction.[7] In order to understand how local hire requirements and associated worker trip length reductions impact GHG emissions calculations, it is important to consider the CalEEMod default worker trip parameters. CalEEMod provides recommended default values based on site-specific information, such as land use type, meteorological data, total lot acreage, project type and typical equipment associated with project type. If more specific project information is known, the user can change the default values and input project-specific values, but the California Environmental Quality Act ("CEQA") requires that such changes be justified by substantial evidence.[8] The default number of construction-related worker trips is calculated by multiplying the

[4] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14-15.
[5] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 23.
[6] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[7] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[8] CalEEMod User Guide, *available at:* http://www.caleemod.com/, p. 1, 9.

number of pieces of equipment for all phases by 1.25, with the exception of worker trips required for the building construction and architectural coating phases.[9] Furthermore, the worker trip vehicle class is a 50/25/25 percent mix of light duty autos, light duty truck class 1 and light duty truck class 2, respectively."[10] Finally, the default worker trip length is consistent with the length of the operational home-to-work vehicle trips.[11] The operational home-to-work vehicle trip lengths are:

> "[B]ased on the _location_ and _urbanization_ selected on the project characteristic screen. These values were _supplied by the air districts or use a default average for the state_. Each district (or county) also assigns trip lengths for urban and rural settings" (emphasis added). [12]

Thus, the default worker trip length is based on the location and urbanization level selected by the User when modeling emissions. The below table shows the CalEEMod default rural and urban worker trip lengths by air basin (see excerpt below and Attachment A).[13]

| Worker Trip Length by Air Basin | | |
|---|---|---|
| **Air Basin** | **Rural (miles)** | **Urban (miles)** |
| Great Basin Valleys | 16.8 | 10.8 |
| Lake County | 16.8 | 10.8 |
| Lake Tahoe | 16.8 | 10.8 |
| Mojave Desert | 16.8 | 10.8 |
| Mountain Counties | 16.8 | 10.8 |
| North Central Coast | 17.1 | 12.3 |
| North Coast | 16.8 | 10.8 |
| Northeast Plateau | 16.8 | 10.8 |
| Sacramento Valley | 16.8 | 10.8 |
| Salton Sea | 14.6 | 11 |
| San Diego | 16.8 | 10.8 |
| San Francisco Bay Area | 10.8 | 10.8 |
| San Joaquin Valley | 16.8 | 10.8 |
| South Central Coast | 16.8 | 10.8 |
| South Coast | 19.8 | 14.7 |
| **Average** | **16.47** | **11.17** |
| **Minimum** | **10.80** | **10.80** |
| **Maximum** | **19.80** | **14.70** |
| **Range** | **9.00** | **3.90** |

[9] "CalEEMod User's Guide." CAPCOA, November 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4, p. 34.
[10] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 15.
[11] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 14.
[12] "Appendix A Calculation Details for CalEEMod." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6, p. 21.
[13] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-84 – D-86.

As demonstrated above, default rural worker trip lengths for air basins in California vary from 10.8- to 19.8-miles, with an average of 16.47 miles. Furthermore, default urban worker trip lengths vary from 10.8- to 14.7-miles, with an average of 11.17 miles. Thus, while default worker trip lengths vary by location, default urban worker trip lengths tend to be shorter in length. Based on these trends evident in the CalEEMod default worker trip lengths, we can reasonably assume that the efficacy of a local hire requirement is especially dependent upon the urbanization of the project site, as well as the project location.

## Practical Application of a Local Hire Requirement and Associated Impact

To provide an example of the potential impact of a local hire provision on construction-related GHG emissions, we estimated the significance of a local hire provision for the Village South Specific Plan ("Project") located in the City of Claremont ("City"). The Project proposed to construct 1,000 residential units, 100,000-SF of retail space, 45,000-SF of office space, as well as a 50-room hotel, on the 24-acre site. The Project location is classified as Urban and lies within the Los Angeles-South Coast County. As a result, the Project has a default worker trip length of 14.7 miles.[14] In an effort to evaluate the potential for a local hire provision to reduce the Project's construction-related GHG emissions, we prepared an updated model, reducing all worker trip lengths to 10 miles (see Attachment B). Our analysis estimates that if a local hire provision with a 10-mile radius were to be implemented, the GHG emissions associated with Project construction would decrease by approximately 17% (see table below and Attachment C).

| Local Hire Provision Net Change | |
|---|---|
| **Without Local Hire Provision** | |
| Total Construction GHG Emissions (MT $CO_2e$) | 3,623 |
| Amortized Construction GHG Emissions (MT $CO_2e$/year) | 120.77 |
| **With Local Hire Provision** | |
| Total Construction GHG Emissions (MT CO2e) | 3,024 |
| Amortized Construction GHG Emissions (MT $CO_2e$/year) | 100.80 |
| ***% Decrease in Construction-related GHG Emissions*** | ***17%*** |

As demonstrated above, by implementing a local hire provision requiring 10 mile worker trip lengths, the Project could reduce potential GHG emissions associated with construction worker trips. More broadly, any local hire requirement that results in a decreased worker trip length from the default value has the potential to result in a reduction of construction-related GHG emissions, though the significance of the reduction would vary based on the location and urbanization level of the project site.

This serves as an example of the potential impacts of local hire requirements on estimated project-level GHG emissions, though it does not indicate that local hire requirements would result in reduced construction-related GHG emission for all projects. As previously described, the significance of a local hire requirement depends on the worker trip length enforced and the default worker trip length for the project's urbanization level and location.

[14] "Appendix D Default Data Tables." CAPCOA, October 2017, *available at:* http://www.aqmd.gov/docs/default-source/caleemod/05_appendix-d2016-3-2.pdf?sfvrsn=4, p. D-85.

## Disclaimer

SWAPE has received limited discovery. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,

Matt Hagemann, P.G., C.Hg.

Paul E. Rosenfeld, Ph.D.

Attachment A

| Location Type | Location Name | Rural H-W (miles) | Urban H-W (miles) |
|---|---|---|---|
| Air Basin | Great Basin | 16.8 | 10.8 |
| Air Basin | Lake County | 16.8 | 10.8 |
| Air Basin | Lake Tahoe | 16.8 | 10.8 |
| Air Basin | Mojave Desert | 16.8 | 10.8 |
| Air Basin | Mountain | 16.8 | 10.8 |
| Air Basin | North Central | 17.1 | 12.3 |
| Air Basin | North Coast | 16.8 | 10.8 |
| Air Basin | Northeast | 16.8 | 10.8 |
| Air Basin | Sacramento | 16.8 | 10.8 |
| Air Basin | Salton Sea | 14.6 | 11 |
| Air Basin | San Diego | 16.8 | 10.8 |
| Air Basin | San Francisco | 10.8 | 10.8 |
| Air Basin | San Joaquin | 16.8 | 10.8 |
| Air Basin | South Central | 16.8 | 10.8 |
| Air Basin | South Coast | 19.8 | 14.7 |
| Air District | Amador County | 16.8 | 10.8 |
| Air District | Antelope Valley | 16.8 | 10.8 |
| Air District | Bay Area AQMD | 10.8 | 10.8 |
| Air District | Butte County | 12.54 | 12.54 |
| Air District | Calaveras | 16.8 | 10.8 |
| Air District | Colusa County | 16.8 | 10.8 |
| Air District | El Dorado | 16.8 | 10.8 |
| Air District | Feather River | 16.8 | 10.8 |
| Air District | Glenn County | 16.8 | 10.8 |
| Air District | Great Basin | 16.8 | 10.8 |
| Air District | Imperial County | 10.2 | 7.3 |
| Air District | Kern County | 16.8 | 10.8 |
| Air District | Lake County | 16.8 | 10.8 |
| Air District | Lassen County | 16.8 | 10.8 |
| Air District | Mariposa | 16.8 | 10.8 |
| Air District | Mendocino | 16.8 | 10.8 |
| Air District | Modoc County | 16.8 | 10.8 |
| Air District | Mojave Desert | 16.8 | 10.8 |
| Air District | Monterey Bay | 16.8 | 10.8 |
| Air District | North Coast | 16.8 | 10.8 |
| Air District | Northern Sierra | 16.8 | 10.8 |
| Air District | Northern | 16.8 | 10.8 |
| Air District | Placer County | 16.8 | 10.8 |
| Air District | Sacramento | 15 | 10 |

| | | | |
|---|---|---|---|
| Air District | San Diego | 16.8 | 10.8 |
| Air District | San Joaquin | 16.8 | 10.8 |
| Air District | San Luis Obispo | 13 | 13 |
| Air District | Santa Barbara | 8.3 | 8.3 |
| Air District | Shasta County | 16.8 | 10.8 |
| Air District | Siskiyou County | 16.8 | 10.8 |
| Air District | South Coast | 19.8 | 14.7 |
| Air District | Tehama County | 16.8 | 10.8 |
| Air District | Tuolumne | 16.8 | 10.8 |
| Air District | Ventura County | 16.8 | 10.8 |
| Air District | Yolo/Solano | 15 | 10 |
| County | Alameda | 10.8 | 10.8 |
| County | Alpine | 16.8 | 10.8 |
| County | Amador | 16.8 | 10.8 |
| County | Butte | 12.54 | 12.54 |
| County | Calaveras | 16.8 | 10.8 |
| County | Colusa | 16.8 | 10.8 |
| County | Contra Costa | 10.8 | 10.8 |
| County | Del Norte | 16.8 | 10.8 |
| County | El Dorado-Lake | 16.8 | 10.8 |
| County | El Dorado- | 16.8 | 10.8 |
| County | Fresno | 16.8 | 10.8 |
| County | Glenn | 16.8 | 10.8 |
| County | Humboldt | 16.8 | 10.8 |
| County | Imperial | 10.2 | 7.3 |
| County | Inyo | 16.8 | 10.8 |
| County | Kern-Mojave | 16.8 | 10.8 |
| County | Kern-San | 16.8 | 10.8 |
| County | Kings | 16.8 | 10.8 |
| County | Lake | 16.8 | 10.8 |
| County | Lassen | 16.8 | 10.8 |
| County | Los Angeles- | 16.8 | 10.8 |
| County | Los Angeles- | 19.8 | 14.7 |
| County | Madera | 16.8 | 10.8 |
| County | Marin | 10.8 | 10.8 |
| County | Mariposa | 16.8 | 10.8 |
| County | Mendocino- | 16.8 | 10.8 |
| County | Mendocino- | 16.8 | 10.8 |
| County | Mendocino- | 16.8 | 10.8 |
| County | Mendocino- | 16.8 | 10.8 |
| County | Merced | 16.8 | 10.8 |
| County | Modoc | 16.8 | 10.8 |
| County | Mono | 16.8 | 10.8 |
| County | Monterey | 16.8 | 10.8 |
| County | Napa | 10.8 | 10.8 |

| | | | |
|---|---|---|---|
| County | Nevada | 16.8 | 10.8 |
| County | Orange | 19.8 | 14.7 |
| County | Placer-Lake | 16.8 | 10.8 |
| County | Placer-Mountain | 16.8 | 10.8 |
| County | Placer- | 16.8 | 10.8 |
| County | Plumas | 16.8 | 10.8 |
| County | Riverside- | 16.8 | 10.8 |
| County | Riverside- | 19.8 | 14.7 |
| County | Riverside-Salton | 14.6 | 11 |
| County | Riverside-South | 19.8 | 14.7 |
| County | Sacramento | 15 | 10 |
| County | San Benito | 16.8 | 10.8 |
| County | San Bernardino- | 16.8 | 10.8 |
| County | San Bernardino- | 19.8 | 14.7 |
| County | San Diego | 16.8 | 10.8 |
| County | San Francisco | 10.8 | 10.8 |
| County | San Joaquin | 16.8 | 10.8 |
| County | San Luis Obispo | 13 | 13 |
| County | San Mateo | 10.8 | 10.8 |
| County | Santa Barbara- | 8.3 | 8.3 |
| County | Santa Barbara- | 8.3 | 8.3 |
| County | Santa Clara | 10.8 | 10.8 |
| County | Santa Cruz | 16.8 | 10.8 |
| County | Shasta | 16.8 | 10.8 |
| County | Sierra | 16.8 | 10.8 |
| County | Siskiyou | 16.8 | 10.8 |
| County | Solano- | 15 | 10 |
| County | Solano-San | 16.8 | 10.8 |
| County | Sonoma-North | 16.8 | 10.8 |
| County | Sonoma-San | 10.8 | 10.8 |
| County | Stanislaus | 16.8 | 10.8 |
| County | Sutter | 16.8 | 10.8 |
| County | Tehama | 16.8 | 10.8 |
| County | Trinity | 16.8 | 10.8 |
| County | Tulare | 16.8 | 10.8 |
| County | Tuolumne | 16.8 | 10.8 |
| County | Ventura | 16.8 | 10.8 |
| County | Yolo | 15 | 10 |
| County | Yuba | 16.8 | 10.8 |
| Statewide | Statewide | 16.8 | 10.8 |

| Worker Trip Length by Air Basin | | |
|---|---|---|
| **Air Basin** | **Rural (miles)** | **Urban (miles)** |
| Great Basin Valleys | 16.8 | 10.8 |
| Lake County | 16.8 | 10.8 |
| Lake Tahoe | 16.8 | 10.8 |
| Mojave Desert | 16.8 | 10.8 |
| Mountain Counties | 16.8 | 10.8 |
| North Central Coast | 17.1 | 12.3 |
| North Coast | 16.8 | 10.8 |
| Northeast Plateau | 16.8 | 10.8 |
| Sacramento Valley | 16.8 | 10.8 |
| Salton Sea | 14.6 | 11 |
| San Diego | 16.8 | 10.8 |
| San Francisco Bay Area | 10.8 | 10.8 |
| San Joaquin Valley | 16.8 | 10.8 |
| South Central Coast | 16.8 | 10.8 |
| South Coast | 19.8 | 14.7 |
| **Average** | **16.47** | **11.17** |
| **Mininum** | **10.80** | **10.80** |
| **Maximum** | **19.80** | **14.70** |
| **Range** | **9.00** | **3.90** |

# Village South Specific Plan (Proposed)

## Los Angeles-South Coast County, Annual

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 45.00 | 1000sqft | 1.03 | 45,000.00 | 0 |
| High Turnover (Sit Down Restaurant) | 36.00 | 1000sqft | 0.83 | 36,000.00 | 0 |
| Hotel | 50.00 | Room | 1.67 | 72,600.00 | 0 |
| Quality Restaurant | 8.00 | 1000sqft | 0.18 | 8,000.00 | 0 |
| Apartments Low Rise | 25.00 | Dwelling Unit | 1.56 | 25,000.00 | 72 |
| Apartments Mid Rise | 975.00 | Dwelling Unit | 25.66 | 975,000.00 | 2789 |
| Regional Shopping Center | 56.00 | 1000sqft | 1.29 | 56,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 33 |
| **Climate Zone** | 9 | | | **Operational Year** | 2028 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 702.44 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | NumberWood | 1.25 | 0.00 |
| tblFireplaces | NumberWood | 48.75 | 0.00 |
| tblVehicleTrips | ST_TR | 7.16 | 6.17 |
| tblVehicleTrips | ST_TR | 6.39 | 3.87 |
| tblVehicleTrips | ST_TR | 2.46 | 1.39 |
| tblVehicleTrips | ST_TR | 158.37 | 79.82 |
| tblVehicleTrips | ST_TR | 8.19 | 3.75 |
| tblVehicleTrips | ST_TR | 94.36 | 63.99 |
| tblVehicleTrips | ST_TR | 49.97 | 10.74 |
| tblVehicleTrips | SU_TR | 6.07 | 6.16 |
| tblVehicleTrips | SU_TR | 5.86 | 4.18 |
| tblVehicleTrips | SU_TR | 1.05 | 0.69 |
| tblVehicleTrips | SU_TR | 131.84 | 78.27 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | SU_TR | 5.95 | 3.20 |
| tblVehicleTrips | SU_TR | 72.16 | 57.65 |
| tblVehicleTrips | SU_TR | 25.24 | 6.39 |
| tblVehicleTrips | WD_TR | 6.59 | 5.83 |
| tblVehicleTrips | WD_TR | 6.65 | 4.13 |
| tblVehicleTrips | WD_TR | 11.03 | 6.41 |
| tblVehicleTrips | WD_TR | 127.15 | 65.80 |
| tblVehicleTrips | WD_TR | 8.17 | 3.84 |
| tblVehicleTrips | WD_TR | 89.95 | 62.64 |
| tblVehicleTrips | WD_TR | 42.70 | 9.43 |
| tblWoodstoves | NumberCatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberCatalytic | 48.75 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 48.75 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2021 | 0.1713 | 1.8242 | 1.1662 | 2.4000e-003 | 0.4169 | 0.0817 | 0.4986 | 0.1795 | 0.0754 | 0.2549 | 0.0000 | 213.1969 | 213.1969 | 0.0601 | 0.0000 | 214.6993 |
| 2022 | 0.6904 | 4.1142 | 6.1625 | 0.0189 | 1.3058 | 0.1201 | 1.4259 | 0.3460 | 0.1128 | 0.4588 | 0.0000 | 1,721.6826 | 1,721.6826 | 0.1294 | 0.0000 | 1,724.9187 |
| 2023 | 0.6148 | 3.3649 | 5.6747 | 0.0178 | 1.1963 | 0.0996 | 1.2959 | 0.3203 | 0.0935 | 0.4138 | 0.0000 | 1,627.5295 | 1,627.5295 | 0.1185 | 0.0000 | 1,630.4925 |
| 2024 | 4.1619 | 0.1335 | 0.2810 | 5.9000e-004 | 0.0325 | 6.4700e-003 | 0.0390 | 8.6300e-003 | 6.0400e-003 | 0.0147 | 0.0000 | 52.9078 | 52.9078 | 8.0200e-003 | 0.0000 | 53.1082 |
| **Maximum** | **4.1619** | **4.1142** | **6.1625** | **0.0189** | **1.3058** | **0.1201** | **1.4259** | **0.3460** | **0.1128** | **0.4588** | **0.0000** | **1,721.6826** | **1,721.6826** | **0.1294** | **0.0000** | **1,724.9187** |

## 2.1 Overall Construction

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2021 | 0.1713 | 1.8242 | 1.1662 | 2.4000e-003 | 0.4169 | 0.0817 | 0.4986 | 0.1795 | 0.0754 | 0.2549 | 0.0000 | 213.1967 | 213.1967 | 0.0601 | 0.0000 | 214.6991 |
| 2022 | 0.6904 | 4.1142 | 6.1625 | 0.0189 | 1.3058 | 0.1201 | 1.4259 | 0.3460 | 0.1128 | 0.4588 | 0.0000 | 1,721.6823 | 1,721.6823 | 0.1294 | 0.0000 | 1,724.9183 |
| 2023 | 0.6148 | 3.3648 | 5.6747 | 0.0178 | 1.1963 | 0.0996 | 1.2959 | 0.3203 | 0.0935 | 0.4138 | 0.0000 | 1,627.5291 | 1,627.5291 | 0.1185 | 0.0000 | 1,630.4921 |
| 2024 | 4.1619 | 0.1335 | 0.2810 | 5.9000e-004 | 0.0325 | 6.4700e-003 | 0.0390 | 8.6300e-003 | 6.0400e-003 | 0.0147 | 0.0000 | 52.9077 | 52.9077 | 8.0200e-003 | 0.0000 | 53.1082 |
| **Maximum** | **4.1619** | **4.1142** | **6.1625** | **0.0189** | **1.3058** | **0.1201** | **1.4259** | **0.3460** | **0.1128** | **0.4588** | **0.0000** | **1,721.6823** | **1,721.6823** | **0.1294** | **0.0000** | **1,724.9183** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **9-1-2021** | **11-30-2021** | 1.4103 | 1.4103 |
| **2** | **12-1-2021** | **2-28-2022** | 1.3613 | 1.3613 |
| **3** | **3-1-2022** | **5-31-2022** | 1.1985 | 1.1985 |
| **4** | **6-1-2022** | **8-31-2022** | 1.1921 | 1.1921 |
| **5** | **9-1-2022** | **11-30-2022** | 1.1918 | 1.1918 |
| **6** | **12-1-2022** | **2-28-2023** | 1.0774 | 1.0774 |
| **7** | **3-1-2023** | **5-31-2023** | 1.0320 | 1.0320 |
| **8** | **6-1-2023** | **8-31-2023** | 1.0260 | 1.0260 |

| | | | | |
|---|---|---|---|---|
| **9** | **9-1-2023** | **11-30-2023** | 1.0265 | 1.0265 |
| **10** | **12-1-2023** | **2-29-2024** | 2.8857 | 2.8857 |
| **11** | **3-1-2024** | **5-31-2024** | 1.6207 | 1.6207 |
| | | **Highest** | 2.8857 | 2.8857 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 5.1437 | 0.2950 | 10.3804 | 1.6700e-003 | | 0.0714 | 0.0714 | | 0.0714 | 0.0714 | 0.0000 | 220.9670 | 220.9670 | 0.0201 | 3.7400e-003 | 222.5835 |
| Energy | 0.1398 | 1.2312 | 0.7770 | 7.6200e-003 | | 0.0966 | 0.0966 | | 0.0966 | 0.0966 | 0.0000 | 3,896.0732 | 3,896.0732 | 0.1303 | 0.0468 | 3,913.2833 |
| Mobile | 1.5857 | 7.9962 | 19.1834 | 0.0821 | 7.7979 | 0.0580 | 7.8559 | 2.0895 | 0.0539 | 2.1434 | 0.0000 | 7,620.4986 | 7,620.4986 | 0.3407 | 0.0000 | 7,629.0162 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 207.8079 | 0.0000 | 207.8079 | 12.2811 | 0.0000 | 514.8354 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 29.1632 | 556.6420 | 585.8052 | 3.0183 | 0.0755 | 683.7567 |
| **Total** | **6.8692** | **9.5223** | **30.3407** | **0.0914** | **7.7979** | **0.2260** | **8.0240** | **2.0895** | **0.2219** | **2.3114** | **236.9712** | **12,294.1807** | **12,531.1519** | **15.7904** | **0.1260** | **12,963.4751** |

## 2.2 Overall Operational

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 5.1437 | 0.2950 | 10.3804 | 1.6700e-003 | | 0.0714 | 0.0714 | | 0.0714 | 0.0714 | 0.0000 | 220.9670 | 220.9670 | 0.0201 | 3.7400e-003 | 222.5835 |
| Energy | 0.1398 | 1.2312 | 0.7770 | 7.6200e-003 | | 0.0966 | 0.0966 | | 0.0966 | 0.0966 | 0.0000 | 3,896.0732 | 3,896.0732 | 0.1303 | 0.0468 | 3,913.2833 |
| Mobile | 1.5857 | 7.9962 | 19.1834 | 0.0821 | 7.7979 | 0.0580 | 7.8559 | 2.0895 | 0.0539 | 2.1434 | 0.0000 | 7,620.4986 | 7,620.4986 | 0.3407 | 0.0000 | 7,629.0162 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 207.8079 | 0.0000 | 207.8079 | 12.2811 | 0.0000 | 514.8354 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 29.1632 | 556.6420 | 585.8052 | 3.0183 | 0.0755 | 683.7567 |
| **Total** | **6.8692** | **9.5223** | **30.3407** | **0.0914** | **7.7979** | **0.2260** | **8.0240** | **2.0895** | **0.2219** | **2.3114** | **236.9712** | **12,294.1807** | **12,531.1519** | **15.7904** | **0.1260** | **12,963.4751** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 9/1/2021 | 10/12/2021 | 5 | 30 | |
| 2 | Site Preparation | Site Preparation | 10/13/2021 | 11/9/2021 | 5 | 20 | |
| 3 | Grading | Grading | 11/10/2021 | 1/11/2022 | 5 | 45 | |
| 4 | Building Construction | Building Construction | 1/12/2022 | 12/12/2023 | 5 | 500 | |
| 5 | Paving | Paving | 12/13/2023 | 1/30/2024 | 5 | 35 | |
| 6 | Architectural Coating | Architectural Coating | 1/31/2024 | 3/19/2024 | 5 | 35 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 112.5**

**Acres of Paving: 0**

**Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Demolition | Excavators | 3 | 8.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 2 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 4 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 2 | 8.00 | 158 | 0.38 |
| Grading | Graders | 1 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Paving | Pavers | 2 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 2 | 8.00 | 132 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 6 | 15.00 | 0.00 | 458.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 7 | 18.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 8 | 20.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 801.00 | 143.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 160.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0496 | 0.0000 | 0.0496 | 7.5100e-003 | 0.0000 | 7.5100e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0475 | 0.4716 | 0.3235 | 5.8000e-004 | | 0.0233 | 0.0233 | | 0.0216 | 0.0216 | 0.0000 | 51.0012 | 51.0012 | 0.0144 | 0.0000 | 51.3601 |
| **Total** | **0.0475** | **0.4716** | **0.3235** | **5.8000e-004** | **0.0496** | **0.0233** | **0.0729** | **7.5100e-003** | **0.0216** | **0.0291** | **0.0000** | **51.0012** | **51.0012** | **0.0144** | **0.0000** | **51.3601** |

## 3.2 Demolition - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.9300e-003 | 0.0634 | 0.0148 | 1.8000e-004 | 3.9400e-003 | 1.9000e-004 | 4.1300e-003 | 1.0800e-003 | 1.8000e-004 | 1.2600e-003 | 0.0000 | 17.4566 | 17.4566 | 1.2100e-003 | 0.0000 | 17.4869 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 9.7000e-004 | 7.5000e-004 | 8.5100e-003 | 2.0000e-005 | 2.4700e-003 | 2.0000e-005 | 2.4900e-003 | 6.5000e-004 | 2.0000e-005 | 6.7000e-004 | 0.0000 | 2.2251 | 2.2251 | 7.0000e-005 | 0.0000 | 2.2267 |
| **Total** | **2.9000e-003** | **0.0641** | **0.0233** | **2.0000e-004** | **6.4100e-003** | **2.1000e-004** | **6.6200e-003** | **1.7300e-003** | **2.0000e-004** | **1.9300e-003** | **0.0000** | **19.6816** | **19.6816** | **1.2800e-003** | **0.0000** | **19.7136** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0496 | 0.0000 | 0.0496 | 7.5100e-003 | 0.0000 | 7.5100e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0475 | 0.4716 | 0.3235 | 5.8000e-004 | | 0.0233 | 0.0233 | | 0.0216 | 0.0216 | 0.0000 | 51.0011 | 51.0011 | 0.0144 | 0.0000 | 51.3600 |
| **Total** | **0.0475** | **0.4716** | **0.3235** | **5.8000e-004** | **0.0496** | **0.0233** | **0.0729** | **7.5100e-003** | **0.0216** | **0.0291** | **0.0000** | **51.0011** | **51.0011** | **0.0144** | **0.0000** | **51.3600** |

### 3.2 Demolition - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.9300e-003 | 0.0634 | 0.0148 | 1.8000e-004 | 3.9400e-003 | 1.9000e-004 | 4.1300e-003 | 1.0800e-003 | 1.8000e-004 | 1.2600e-003 | 0.0000 | 17.4566 | 17.4566 | 1.2100e-003 | 0.0000 | 17.4869 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 9.7000e-004 | 7.5000e-004 | 8.5100e-003 | 2.0000e-005 | 2.4700e-003 | 2.0000e-005 | 2.4900e-003 | 6.5000e-004 | 2.0000e-005 | 6.7000e-004 | 0.0000 | 2.2251 | 2.2251 | 7.0000e-005 | 0.0000 | 2.2267 |
| **Total** | **2.9000e-003** | **0.0641** | **0.0233** | **2.0000e-004** | **6.4100e-003** | **2.1000e-004** | **6.6200e-003** | **1.7300e-003** | **2.0000e-004** | **1.9300e-003** | **0.0000** | **19.6816** | **19.6816** | **1.2800e-003** | **0.0000** | **19.7136** |

### 3.3 Site Preparation - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1807 | 0.0000 | 0.1807 | 0.0993 | 0.0000 | 0.0993 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0389 | 0.4050 | 0.2115 | 3.8000e-004 | | 0.0204 | 0.0204 | | 0.0188 | 0.0188 | 0.0000 | 33.4357 | 33.4357 | 0.0108 | 0.0000 | 33.7061 |
| **Total** | **0.0389** | **0.4050** | **0.2115** | **3.8000e-004** | **0.1807** | **0.0204** | **0.2011** | **0.0993** | **0.0188** | **0.1181** | **0.0000** | **33.4357** | **33.4357** | **0.0108** | **0.0000** | **33.7061** |

## 3.3 Site Preparation - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.7000e-004 | 6.0000e-004 | 6.8100e-003 | 2.0000e-005 | 1.9700e-003 | 2.0000e-005 | 1.9900e-003 | 5.2000e-004 | 1.0000e-005 | 5.4000e-004 | 0.0000 | 1.7801 | 1.7801 | 5.0000e-005 | 0.0000 | 1.7814 |
| **Total** | **7.7000e-004** | **6.0000e-004** | **6.8100e-003** | **2.0000e-005** | **1.9700e-003** | **2.0000e-005** | **1.9900e-003** | **5.2000e-004** | **1.0000e-005** | **5.4000e-004** | **0.0000** | **1.7801** | **1.7801** | **5.0000e-005** | **0.0000** | **1.7814** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1807 | 0.0000 | 0.1807 | 0.0993 | 0.0000 | 0.0993 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0389 | 0.4050 | 0.2115 | 3.8000e-004 | | 0.0204 | 0.0204 | | 0.0188 | 0.0188 | 0.0000 | 33.4357 | 33.4357 | 0.0108 | 0.0000 | 33.7060 |
| **Total** | **0.0389** | **0.4050** | **0.2115** | **3.8000e-004** | **0.1807** | **0.0204** | **0.2011** | **0.0993** | **0.0188** | **0.1181** | **0.0000** | **33.4357** | **33.4357** | **0.0108** | **0.0000** | **33.7060** |

## 3.3 Site Preparation - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.7000e-004 | 6.0000e-004 | 6.8100e-003 | 2.0000e-005 | 1.9700e-003 | 2.0000e-005 | 1.9900e-003 | 5.2000e-004 | 1.0000e-005 | 5.4000e-004 | 0.0000 | 1.7801 | 1.7801 | 5.0000e-005 | 0.0000 | 1.7814 |
| **Total** | **7.7000e-004** | **6.0000e-004** | **6.8100e-003** | **2.0000e-005** | **1.9700e-003** | **2.0000e-005** | **1.9900e-003** | **5.2000e-004** | **1.0000e-005** | **5.4000e-004** | **0.0000** | **1.7801** | **1.7801** | **5.0000e-005** | **0.0000** | **1.7814** |

## 3.4 Grading - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1741 | 0.0000 | 0.1741 | 0.0693 | 0.0000 | 0.0693 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0796 | 0.8816 | 0.5867 | 1.1800e-003 | | 0.0377 | 0.0377 | | 0.0347 | 0.0347 | 0.0000 | 103.5405 | 103.5405 | 0.0335 | 0.0000 | 104.3776 |
| **Total** | **0.0796** | **0.8816** | **0.5867** | **1.1800e-003** | **0.1741** | **0.0377** | **0.2118** | **0.0693** | **0.0347** | **0.1040** | **0.0000** | **103.5405** | **103.5405** | **0.0335** | **0.0000** | **104.3776** |

## 3.4 Grading - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.6400e-003 | 1.2700e-003 | 0.0144 | 4.0000e-005 | 4.1600e-003 | 3.0000e-005 | 4.2000e-003 | 1.1100e-003 | 3.0000e-005 | 1.1400e-003 | 0.0000 | 3.7579 | 3.7579 | 1.1000e-004 | 0.0000 | 3.7607 |
| **Total** | **1.6400e-003** | **1.2700e-003** | **0.0144** | **4.0000e-005** | **4.1600e-003** | **3.0000e-005** | **4.2000e-003** | **1.1100e-003** | **3.0000e-005** | **1.1400e-003** | **0.0000** | **3.7579** | **3.7579** | **1.1000e-004** | **0.0000** | **3.7607** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1741 | 0.0000 | 0.1741 | 0.0693 | 0.0000 | 0.0693 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0796 | 0.8816 | 0.5867 | 1.1800e-003 | | 0.0377 | 0.0377 | | 0.0347 | 0.0347 | 0.0000 | 103.5403 | 103.5403 | 0.0335 | 0.0000 | 104.3775 |
| **Total** | **0.0796** | **0.8816** | **0.5867** | **1.1800e-003** | **0.1741** | **0.0377** | **0.2118** | **0.0693** | **0.0347** | **0.1040** | **0.0000** | **103.5403** | **103.5403** | **0.0335** | **0.0000** | **104.3775** |

## 3.4 Grading - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.6400e-003 | 1.2700e-003 | 0.0144 | 4.0000e-005 | 4.1600e-003 | 3.0000e-005 | 4.2000e-003 | 1.1100e-003 | 3.0000e-005 | 1.1400e-003 | 0.0000 | 3.7579 | 3.7579 | 1.1000e-004 | 0.0000 | 3.7607 |
| **Total** | **1.6400e-003** | **1.2700e-003** | **0.0144** | **4.0000e-005** | **4.1600e-003** | **3.0000e-005** | **4.2000e-003** | **1.1100e-003** | **3.0000e-005** | **1.1400e-003** | **0.0000** | **3.7579** | **3.7579** | **1.1000e-004** | **0.0000** | **3.7607** |

## 3.4 Grading - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0807 | 0.0000 | 0.0807 | 0.0180 | 0.0000 | 0.0180 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0127 | 0.1360 | 0.1017 | 2.2000e-004 | | 5.7200e-003 | 5.7200e-003 | | 5.2600e-003 | 5.2600e-003 | 0.0000 | 19.0871 | 19.0871 | 6.1700e-003 | 0.0000 | 19.2414 |
| **Total** | **0.0127** | **0.1360** | **0.1017** | **2.2000e-004** | **0.0807** | **5.7200e-003** | **0.0865** | **0.0180** | **5.2600e-003** | **0.0233** | **0.0000** | **19.0871** | **19.0871** | **6.1700e-003** | **0.0000** | **19.2414** |

## 3.4 Grading - 2022

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.8000e-004 | 2.1000e-004 | 2.4400e-003 | 1.0000e-005 | 7.7000e-004 | 1.0000e-005 | 7.7000e-004 | 2.0000e-004 | 1.0000e-005 | 2.1000e-004 | 0.0000 | 0.6679 | 0.6679 | 2.0000e-005 | 0.0000 | 0.6684 |
| **Total** | **2.8000e-004** | **2.1000e-004** | **2.4400e-003** | **1.0000e-005** | **7.7000e-004** | **1.0000e-005** | **7.7000e-004** | **2.0000e-004** | **1.0000e-005** | **2.1000e-004** | **0.0000** | **0.6679** | **0.6679** | **2.0000e-005** | **0.0000** | **0.6684** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0807 | 0.0000 | 0.0807 | 0.0180 | 0.0000 | 0.0180 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0127 | 0.1360 | 0.1017 | 2.2000e-004 | | 5.7200e-003 | 5.7200e-003 | | 5.2600e-003 | 5.2600e-003 | 0.0000 | 19.0871 | 19.0871 | 6.1700e-003 | 0.0000 | 19.2414 |
| **Total** | **0.0127** | **0.1360** | **0.1017** | **2.2000e-004** | **0.0807** | **5.7200e-003** | **0.0865** | **0.0180** | **5.2600e-003** | **0.0233** | **0.0000** | **19.0871** | **19.0871** | **6.1700e-003** | **0.0000** | **19.2414** |

## 3.4 Grading - 2022

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.8000e-004 | 2.1000e-004 | 2.4400e-003 | 1.0000e-005 | 7.7000e-004 | 1.0000e-005 | 7.7000e-004 | 2.0000e-004 | 1.0000e-005 | 2.1000e-004 | 0.0000 | 0.6679 | 0.6679 | 2.0000e-005 | 0.0000 | 0.6684 |
| **Total** | **2.8000e-004** | **2.1000e-004** | **2.4400e-003** | **1.0000e-005** | **7.7000e-004** | **1.0000e-005** | **7.7000e-004** | **2.0000e-004** | **1.0000e-005** | **2.1000e-004** | **0.0000** | **0.6679** | **0.6679** | **2.0000e-005** | **0.0000** | **0.6684** |

## 3.5 Building Construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.2158 | 1.9754 | 2.0700 | 3.4100e-003 | | 0.1023 | 0.1023 | | 0.0963 | 0.0963 | 0.0000 | 293.1324 | 293.1324 | 0.0702 | 0.0000 | 294.8881 |
| **Total** | **0.2158** | **1.9754** | **2.0700** | **3.4100e-003** | | **0.1023** | **0.1023** | | **0.0963** | **0.0963** | **0.0000** | **293.1324** | **293.1324** | **0.0702** | **0.0000** | **294.8881** |

## 3.5 Building Construction - 2022

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0527 | 1.6961 | 0.4580 | 4.5500e-003 | 0.1140 | 3.1800e-003 | 0.1171 | 0.0329 | 3.0400e-003 | 0.0359 | 0.0000 | 441.9835 | 441.9835 | 0.0264 | 0.0000 | 442.6435 |
| Worker | 0.4088 | 0.3066 | 3.5305 | 0.0107 | 1.1103 | 8.8700e-003 | 1.1192 | 0.2949 | 8.1700e-003 | 0.3031 | 0.0000 | 966.8117 | 966.8117 | 0.0266 | 0.0000 | 967.4773 |
| **Total** | **0.4616** | **2.0027** | **3.9885** | **0.0152** | **1.2243** | **0.0121** | **1.2363** | **0.3278** | **0.0112** | **0.3390** | **0.0000** | **1,408.7952** | **1,408.7952** | **0.0530** | **0.0000** | **1,410.1208** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.2158 | 1.9754 | 2.0700 | 3.4100e-003 | | 0.1023 | 0.1023 | | 0.0963 | 0.0963 | 0.0000 | 293.1321 | 293.1321 | 0.0702 | 0.0000 | 294.8877 |
| **Total** | **0.2158** | **1.9754** | **2.0700** | **3.4100e-003** | | **0.1023** | **0.1023** | | **0.0963** | **0.0963** | **0.0000** | **293.1321** | **293.1321** | **0.0702** | **0.0000** | **294.8877** |

## 3.5 Building Construction - 2022

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0527 | 1.6961 | 0.4580 | 4.5500e-003 | 0.1140 | 3.1800e-003 | 0.1171 | 0.0329 | 3.0400e-003 | 0.0359 | 0.0000 | 441.9835 | 441.9835 | 0.0264 | 0.0000 | 442.6435 |
| Worker | 0.4088 | 0.3066 | 3.5305 | 0.0107 | 1.1103 | 8.8700e-003 | 1.1192 | 0.2949 | 8.1700e-003 | 0.3031 | 0.0000 | 966.8117 | 966.8117 | 0.0266 | 0.0000 | 967.4773 |
| **Total** | **0.4616** | **2.0027** | **3.9885** | **0.0152** | **1.2243** | **0.0121** | **1.2363** | **0.3278** | **0.0112** | **0.3390** | **0.0000** | **1,408.7952** | **1,408.7952** | **0.0530** | **0.0000** | **1,410.1208** |

## 3.5 Building Construction - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.1942 | 1.7765 | 2.0061 | 3.3300e-003 | | 0.0864 | 0.0864 | | 0.0813 | 0.0813 | 0.0000 | 286.2789 | 286.2789 | 0.0681 | 0.0000 | 287.9814 |
| **Total** | **0.1942** | **1.7765** | **2.0061** | **3.3300e-003** | | **0.0864** | **0.0864** | | **0.0813** | **0.0813** | **0.0000** | **286.2789** | **286.2789** | **0.0681** | **0.0000** | **287.9814** |

## 3.5 Building Construction - 2023

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0382 | 1.2511 | 0.4011 | 4.3000e-003 | 0.1113 | 1.4600e-003 | 0.1127 | 0.0321 | 1.4000e-003 | 0.0335 | 0.0000 | 417.9930 | 417.9930 | 0.0228 | 0.0000 | 418.5624 |
| Worker | 0.3753 | 0.2708 | 3.1696 | 0.0101 | 1.0840 | 8.4100e-003 | 1.0924 | 0.2879 | 7.7400e-003 | 0.2957 | 0.0000 | 909.3439 | 909.3439 | 0.0234 | 0.0000 | 909.9291 |
| **Total** | **0.4135** | **1.5218** | **3.5707** | **0.0144** | **1.1953** | **9.8700e-003** | **1.2051** | **0.3200** | **9.1400e-003** | **0.3292** | **0.0000** | **1,327.3369** | **1,327.3369** | **0.0462** | **0.0000** | **1,328.4916** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.1942 | 1.7765 | 2.0061 | 3.3300e-003 | | 0.0864 | 0.0864 | | 0.0813 | 0.0813 | 0.0000 | 286.2785 | 286.2785 | 0.0681 | 0.0000 | 287.9811 |
| **Total** | **0.1942** | **1.7765** | **2.0061** | **3.3300e-003** | | **0.0864** | **0.0864** | | **0.0813** | **0.0813** | **0.0000** | **286.2785** | **286.2785** | **0.0681** | **0.0000** | **287.9811** |

### 3.5 Building Construction - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0382 | 1.2511 | 0.4011 | 4.3000e-003 | 0.1113 | 1.4600e-003 | 0.1127 | 0.0321 | 1.4000e-003 | 0.0335 | 0.0000 | 417.9930 | 417.9930 | 0.0228 | 0.0000 | 418.5624 |
| Worker | 0.3753 | 0.2708 | 3.1696 | 0.0101 | 1.0840 | 8.4100e-003 | 1.0924 | 0.2879 | 7.7400e-003 | 0.2957 | 0.0000 | 909.3439 | 909.3439 | 0.0234 | 0.0000 | 909.9291 |
| **Total** | **0.4135** | **1.5218** | **3.5707** | **0.0144** | **1.1953** | **9.8700e-003** | **1.2051** | **0.3200** | **9.1400e-003** | **0.3292** | **0.0000** | **1,327.3369** | **1,327.3369** | **0.0462** | **0.0000** | **1,328.4916** |

### 3.6 Paving - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.7100e-003 | 0.0663 | 0.0948 | 1.5000e-004 | | 3.3200e-003 | 3.3200e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 13.0175 | 13.0175 | 4.2100e-003 | 0.0000 | 13.1227 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **6.7100e-003** | **0.0663** | **0.0948** | **1.5000e-004** | | **3.3200e-003** | **3.3200e-003** | | **3.0500e-003** | **3.0500e-003** | **0.0000** | **13.0175** | **13.0175** | **4.2100e-003** | **0.0000** | **13.1227** |

## 3.6 Paving - 2023

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.7000e-004 | 2.7000e-004 | 3.1200e-003 | 1.0000e-005 | 1.0700e-003 | 1.0000e-005 | 1.0800e-003 | 2.8000e-004 | 1.0000e-005 | 2.9000e-004 | 0.0000 | 0.8963 | 0.8963 | 2.0000e-005 | 0.0000 | 0.8968 |
| **Total** | **3.7000e-004** | **2.7000e-004** | **3.1200e-003** | **1.0000e-005** | **1.0700e-003** | **1.0000e-005** | **1.0800e-003** | **2.8000e-004** | **1.0000e-005** | **2.9000e-004** | **0.0000** | **0.8963** | **0.8963** | **2.0000e-005** | **0.0000** | **0.8968** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.7100e-003 | 0.0663 | 0.0948 | 1.5000e-004 | | 3.3200e-003 | 3.3200e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 13.0175 | 13.0175 | 4.2100e-003 | 0.0000 | 13.1227 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **6.7100e-003** | **0.0663** | **0.0948** | **1.5000e-004** | | **3.3200e-003** | **3.3200e-003** | | **3.0500e-003** | **3.0500e-003** | **0.0000** | **13.0175** | **13.0175** | **4.2100e-003** | **0.0000** | **13.1227** |

## 3.6 Paving - 2023

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.7000e-004 | 2.7000e-004 | 3.1200e-003 | 1.0000e-005 | 1.0700e-003 | 1.0000e-005 | 1.0800e-003 | 2.8000e-004 | 1.0000e-005 | 2.9000e-004 | 0.0000 | 0.8963 | 0.8963 | 2.0000e-005 | 0.0000 | 0.8968 |
| **Total** | **3.7000e-004** | **2.7000e-004** | **3.1200e-003** | **1.0000e-005** | **1.0700e-003** | **1.0000e-005** | **1.0800e-003** | **2.8000e-004** | **1.0000e-005** | **2.9000e-004** | **0.0000** | **0.8963** | **0.8963** | **2.0000e-005** | **0.0000** | **0.8968** |

## 3.6 Paving - 2024

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0109 | 0.1048 | 0.1609 | 2.5000e-004 | | 5.1500e-003 | 5.1500e-003 | | 4.7400e-003 | 4.7400e-003 | 0.0000 | 22.0292 | 22.0292 | 7.1200e-003 | 0.0000 | 22.2073 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0109** | **0.1048** | **0.1609** | **2.5000e-004** | | **5.1500e-003** | **5.1500e-003** | | **4.7400e-003** | **4.7400e-003** | **0.0000** | **22.0292** | **22.0292** | **7.1200e-003** | **0.0000** | **22.2073** |

### 3.6 Paving - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.9000e-004 | 4.1000e-004 | 4.9200e-003 | 2.0000e-005 | 1.8100e-003 | 1.0000e-005 | 1.8200e-003 | 4.8000e-004 | 1.0000e-005 | 4.9000e-004 | 0.0000 | 1.4697 | 1.4697 | 4.0000e-005 | 0.0000 | 1.4706 |
| **Total** | **5.9000e-004** | **4.1000e-004** | **4.9200e-003** | **2.0000e-005** | **1.8100e-003** | **1.0000e-005** | **1.8200e-003** | **4.8000e-004** | **1.0000e-005** | **4.9000e-004** | **0.0000** | **1.4697** | **1.4697** | **4.0000e-005** | **0.0000** | **1.4706** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0109 | 0.1048 | 0.1609 | 2.5000e-004 | | 5.1500e-003 | 5.1500e-003 | | 4.7400e-003 | 4.7400e-003 | 0.0000 | 22.0292 | 22.0292 | 7.1200e-003 | 0.0000 | 22.2073 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0109** | **0.1048** | **0.1609** | **2.5000e-004** | | **5.1500e-003** | **5.1500e-003** | | **4.7400e-003** | **4.7400e-003** | **0.0000** | **22.0292** | **22.0292** | **7.1200e-003** | **0.0000** | **22.2073** |

## 3.6 Paving - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.9000e-004 | 4.1000e-004 | 4.9200e-003 | 2.0000e-005 | 1.8100e-003 | 1.0000e-005 | 1.8200e-003 | 4.8000e-004 | 1.0000e-005 | 4.9000e-004 | 0.0000 | 1.4697 | 1.4697 | 4.0000e-005 | 0.0000 | 1.4706 |
| **Total** | **5.9000e-004** | **4.1000e-004** | **4.9200e-003** | **2.0000e-005** | **1.8100e-003** | **1.0000e-005** | **1.8200e-003** | **4.8000e-004** | **1.0000e-005** | **4.9000e-004** | **0.0000** | **1.4697** | **1.4697** | **4.0000e-005** | **0.0000** | **1.4706** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 4.1372 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 3.1600e-003 | 0.0213 | 0.0317 | 5.0000e-005 | | 1.0700e-003 | 1.0700e-003 | | 1.0700e-003 | 1.0700e-003 | 0.0000 | 4.4682 | 4.4682 | 2.5000e-004 | 0.0000 | 4.4745 |
| **Total** | **4.1404** | **0.0213** | **0.0317** | **5.0000e-005** | | **1.0700e-003** | **1.0700e-003** | | **1.0700e-003** | **1.0700e-003** | **0.0000** | **4.4682** | **4.4682** | **2.5000e-004** | **0.0000** | **4.4745** |

### 3.7 Architectural Coating - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0101 | 6.9900e-003 | 0.0835 | 2.8000e-004 | 0.0307 | 2.3000e-004 | 0.0309 | 8.1500e-003 | 2.2000e-004 | 8.3700e-003 | 0.0000 | 24.9407 | 24.9407 | 6.1000e-004 | 0.0000 | 24.9558 |
| **Total** | **0.0101** | **6.9900e-003** | **0.0835** | **2.8000e-004** | **0.0307** | **2.3000e-004** | **0.0309** | **8.1500e-003** | **2.2000e-004** | **8.3700e-003** | **0.0000** | **24.9407** | **24.9407** | **6.1000e-004** | **0.0000** | **24.9558** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 4.1372 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 3.1600e-003 | 0.0213 | 0.0317 | 5.0000e-005 | | 1.0700e-003 | 1.0700e-003 | | 1.0700e-003 | 1.0700e-003 | 0.0000 | 4.4682 | 4.4682 | 2.5000e-004 | 0.0000 | 4.4745 |
| **Total** | **4.1404** | **0.0213** | **0.0317** | **5.0000e-005** | | **1.0700e-003** | **1.0700e-003** | | **1.0700e-003** | **1.0700e-003** | **0.0000** | **4.4682** | **4.4682** | **2.5000e-004** | **0.0000** | **4.4745** |

### 3.7 Architectural Coating - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0101 | 6.9900e-003 | 0.0835 | 2.8000e-004 | 0.0307 | 2.3000e-004 | 0.0309 | 8.1500e-003 | 2.2000e-004 | 8.3700e-003 | 0.0000 | 24.9407 | 24.9407 | 6.1000e-004 | 0.0000 | 24.9558 |
| **Total** | **0.0101** | **6.9900e-003** | **0.0835** | **2.8000e-004** | **0.0307** | **2.3000e-004** | **0.0309** | **8.1500e-003** | **2.2000e-004** | **8.3700e-003** | **0.0000** | **24.9407** | **24.9407** | **6.1000e-004** | **0.0000** | **24.9558** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 1.5857 | 7.9962 | 19.1834 | 0.0821 | 7.7979 | 0.0580 | 7.8559 | 2.0895 | 0.0539 | 2.1434 | 0.0000 | 7,620.4986 | 7,620.4986 | 0.3407 | 0.0000 | 7,629.0162 |
| Unmitigated | 1.5857 | 7.9962 | 19.1834 | 0.0821 | 7.7979 | 0.0580 | 7.8559 | 2.0895 | 0.0539 | 2.1434 | 0.0000 | 7,620.4986 | 7,620.4986 | 0.3407 | 0.0000 | 7,629.0162 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments Low Rise | 145.75 | 154.25 | 154.00 | 506,227 | 506,227 |
| Apartments Mid Rise | 4,026.75 | 3,773.25 | 4075.50 | 13,660,065 | 13,660,065 |
| General Office Building | 288.45 | 62.55 | 31.05 | 706,812 | 706,812 |
| High Turnover (Sit Down Restaurant) | 2,368.80 | 2,873.52 | 2817.72 | 3,413,937 | 3,413,937 |
| Hotel | 192.00 | 187.50 | 160.00 | 445,703 | 445,703 |
| Quality Restaurant | 501.12 | 511.92 | 461.20 | 707,488 | 707,488 |
| Regional Shopping Center | 528.08 | 601.44 | 357.84 | 1,112,221 | 1,112,221 |
| Total | 8,050.95 | 8,164.43 | 8,057.31 | 20,552,452 | 20,552,452 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments Low Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| Apartments Mid Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| General Office Building | 16.60 | 8.40 | 6.90 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| High Turnover (Sit Down | 16.60 | 8.40 | 6.90 | 8.50 | 72.50 | 19.00 | 37 | 20 | 43 |
| Hotel | 16.60 | 8.40 | 6.90 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Quality Restaurant | 16.60 | 8.40 | 6.90 | 12.00 | 69.00 | 19.00 | 38 | 18 | 44 |
| Regional Shopping Center | 16.60 | 8.40 | 6.90 | 16.30 | 64.70 | 19.00 | 54 | 35 | 11 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments Low Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Apartments Mid Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| General Office Building | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| High Turnover (Sit Down Restaurant) | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Hotel | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Quality Restaurant | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Regional Shopping Center | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2,512.646 5 | 2,512.646 5 | 0.1037 | 0.0215 | 2,521.635 6 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2,512.646 5 | 2,512.646 5 | 0.1037 | 0.0215 | 2,521.635 6 |
| NaturalGas Mitigated | 0.1398 | 1.2312 | 0.7770 | 7.6200e-003 | | 0.0966 | 0.0966 | | 0.0966 | 0.0966 | 0.0000 | 1,383.426 7 | 1,383.426 7 | 0.0265 | 0.0254 | 1,391.647 8 |
| NaturalGas Unmitigated | 0.1398 | 1.2312 | 0.7770 | 7.6200e-003 | | 0.0966 | 0.0966 | | 0.0966 | 0.0966 | 0.0000 | 1,383.426 7 | 1,383.426 7 | 0.0265 | 0.0254 | 1,391.647 8 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments Low Rise | 408494 | 2.2000e-003 | 0.0188 | 8.0100e-003 | 1.2000e-004 | | 1.5200e-003 | 1.5200e-003 | | 1.5200e-003 | 1.5200e-003 | 0.0000 | 21.7988 | 21.7988 | 4.2000e-004 | 4.0000e-004 | 21.9284 |
| Apartments Mid Rise | 1.30613e+007 | 0.0704 | 0.6018 | 0.2561 | 3.8400e-003 | | 0.0487 | 0.0487 | | 0.0487 | 0.0487 | 0.0000 | 696.9989 | 696.9989 | 0.0134 | 0.0128 | 701.1408 |
| General Office Building | 468450 | 2.5300e-003 | 0.0230 | 0.0193 | 1.4000e-004 | | 1.7500e-003 | 1.7500e-003 | | 1.7500e-003 | 1.7500e-003 | 0.0000 | 24.9983 | 24.9983 | 4.8000e-004 | 4.6000e-004 | 25.1468 |
| High Turnover (Sit Down Restaurant) | 8.30736e+006 | 0.0448 | 0.4072 | 0.3421 | 2.4400e-003 | | 0.0310 | 0.0310 | | 0.0310 | 0.0310 | 0.0000 | 443.3124 | 443.3124 | 8.5000e-003 | 8.1300e-003 | 445.9468 |
| Hotel | 1.74095e+006 | 9.3900e-003 | 0.0853 | 0.0717 | 5.1000e-004 | | 6.4900e-003 | 6.4900e-003 | | 6.4900e-003 | 6.4900e-003 | 0.0000 | 92.9036 | 92.9036 | 1.7800e-003 | 1.7000e-003 | 93.4557 |
| Quality Restaurant | 1.84608e+006 | 9.9500e-003 | 0.0905 | 0.0760 | 5.4000e-004 | | 6.8800e-003 | 6.8800e-003 | | 6.8800e-003 | 6.8800e-003 | 0.0000 | 98.5139 | 98.5139 | 1.8900e-003 | 1.8100e-003 | 99.0993 |
| Regional Shopping Center | 91840 | 5.0000e-004 | 4.5000e-003 | 3.7800e-003 | 3.0000e-005 | | 3.4000e-004 | 3.4000e-004 | | 3.4000e-004 | 3.4000e-004 | 0.0000 | 4.9009 | 4.9009 | 9.0000e-005 | 9.0000e-005 | 4.9301 |
| **Total** | | **0.1398** | **1.2312** | **0.7770** | **7.6200e-003** | | **0.0966** | **0.0966** | | **0.0966** | **0.0966** | **0.0000** | **1,383.4268** | **1,383.4268** | **0.0265** | **0.0254** | **1,391.6478** |

## 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments Low Rise | 408494 | 2.2000e-003 | 0.0188 | 8.0100e-003 | 1.2000e-004 | | 1.5200e-003 | 1.5200e-003 | | 1.5200e-003 | 1.5200e-003 | 0.0000 | 21.7988 | 21.7988 | 4.2000e-004 | 4.0000e-004 | 21.9284 |
| Apartments Mid Rise | 1.30613e+007 | 0.0704 | 0.6018 | 0.2561 | 3.8400e-003 | | 0.0487 | 0.0487 | | 0.0487 | 0.0487 | 0.0000 | 696.9989 | 696.9989 | 0.0134 | 0.0128 | 701.1408 |
| General Office Building | 468450 | 2.5300e-003 | 0.0230 | 0.0193 | 1.4000e-004 | | 1.7500e-003 | 1.7500e-003 | | 1.7500e-003 | 1.7500e-003 | 0.0000 | 24.9983 | 24.9983 | 4.8000e-004 | 4.6000e-004 | 25.1468 |
| High Turnover (Sit Down Restaurant) | 8.30736e+006 | 0.0448 | 0.4072 | 0.3421 | 2.4400e-003 | | 0.0310 | 0.0310 | | 0.0310 | 0.0310 | 0.0000 | 443.3124 | 443.3124 | 8.5000e-003 | 8.1300e-003 | 445.9468 |
| Hotel | 1.74095e+006 | 9.3900e-003 | 0.0853 | 0.0717 | 5.1000e-004 | | 6.4900e-003 | 6.4900e-003 | | 6.4900e-003 | 6.4900e-003 | 0.0000 | 92.9036 | 92.9036 | 1.7800e-003 | 1.7000e-003 | 93.4557 |
| Quality Restaurant | 1.84608e+006 | 9.9500e-003 | 0.0905 | 0.0760 | 5.4000e-004 | | 6.8800e-003 | 6.8800e-003 | | 6.8800e-003 | 6.8800e-003 | 0.0000 | 98.5139 | 98.5139 | 1.8900e-003 | 1.8100e-003 | 99.0993 |
| Regional Shopping Center | 91840 | 5.0000e-004 | 4.5000e-003 | 3.7800e-003 | 3.0000e-005 | | 3.4000e-004 | 3.4000e-004 | | 3.4000e-004 | 3.4000e-004 | 0.0000 | 4.9009 | 4.9009 | 9.0000e-005 | 9.0000e-005 | 4.9301 |
| **Total** | | **0.1398** | **1.2312** | **0.7770** | **7.6200e-003** | | **0.0966** | **0.0966** | | **0.0966** | **0.0966** | **0.0000** | **1,383.4268** | **1,383.4268** | **0.0265** | **0.0254** | **1,391.6478** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments Low Rise | 106010 | 33.7770 | 1.3900e-003 | 2.9000e-004 | 33.8978 |
| Apartments Mid Rise | 3.94697e+006 | 1,257.5879 | 0.0519 | 0.0107 | 1,262.0869 |
| General Office Building | 584550 | 186.2502 | 7.6900e-003 | 1.5900e-003 | 186.9165 |
| High Turnover (Sit Down Restaurant) | 1.58904e+006 | 506.3022 | 0.0209 | 4.3200e-003 | 508.1135 |
| Hotel | 550308 | 175.3399 | 7.2400e-003 | 1.5000e-003 | 175.9672 |
| Quality Restaurant | 353120 | 112.5116 | 4.6500e-003 | 9.6000e-004 | 112.9141 |
| Regional Shopping Center | 756000 | 240.8778 | 9.9400e-003 | 2.0600e-003 | 241.7395 |
| **Total** | | **2,512.6465** | **0.1037** | **0.0215** | **2,521.6356** |

## 5.3 Energy by Land Use - Electricity

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments Low Rise | 106010 | 33.7770 | 1.3900e-003 | 2.9000e-004 | 33.8978 |
| Apartments Mid Rise | 3.94697e+006 | 1,257.5879 | 0.0519 | 0.0107 | 1,262.0869 |
| General Office Building | 584550 | 186.2502 | 7.6900e-003 | 1.5900e-003 | 186.9165 |
| High Turnover (Sit Down Restaurant) | 1.58904e+006 | 506.3022 | 0.0209 | 4.3200e-003 | 508.1135 |
| Hotel | 550308 | 175.3399 | 7.2400e-003 | 1.5000e-003 | 175.9672 |
| Quality Restaurant | 353120 | 112.5116 | 4.6500e-003 | 9.6000e-004 | 112.9141 |
| Regional Shopping Center | 756000 | 240.8778 | 9.9400e-003 | 2.0600e-003 | 241.7395 |
| **Total** | | **2,512.6465** | **0.1037** | **0.0215** | **2,521.6356** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 5.1437 | 0.2950 | 10.3804 | 1.6700e-003 | | 0.0714 | 0.0714 | | 0.0714 | 0.0714 | 0.0000 | 220.9670 | 220.9670 | 0.0201 | 3.7400e-003 | 222.5835 |
| Unmitigated | 5.1437 | 0.2950 | 10.3804 | 1.6700e-003 | | 0.0714 | 0.0714 | | 0.0714 | 0.0714 | 0.0000 | 220.9670 | 220.9670 | 0.0201 | 3.7400e-003 | 222.5835 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.4137 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 4.3998 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0206 | 0.1763 | 0.0750 | 1.1200e-003 | | 0.0143 | 0.0143 | | 0.0143 | 0.0143 | 0.0000 | 204.1166 | 204.1166 | 3.9100e-003 | 3.7400e-003 | 205.3295 |
| Landscaping | 0.3096 | 0.1187 | 10.3054 | 5.4000e-004 | | 0.0572 | 0.0572 | | 0.0572 | 0.0572 | 0.0000 | 16.8504 | 16.8504 | 0.0161 | 0.0000 | 17.2540 |
| **Total** | **5.1437** | **0.2950** | **10.3804** | **1.6600e-003** | | **0.0714** | **0.0714** | | **0.0714** | **0.0714** | **0.0000** | **220.9670** | **220.9670** | **0.0201** | **3.7400e-003** | **222.5835** |

## 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.4137 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 4.3998 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0206 | 0.1763 | 0.0750 | 1.1200e-003 | | 0.0143 | 0.0143 | | 0.0143 | 0.0143 | 0.0000 | 204.1166 | 204.1166 | 3.9100e-003 | 3.7400e-003 | 205.3295 |
| Landscaping | 0.3096 | 0.1187 | 10.3054 | 5.4000e-004 | | 0.0572 | 0.0572 | | 0.0572 | 0.0572 | 0.0000 | 16.8504 | 16.8504 | 0.0161 | 0.0000 | 17.2540 |
| **Total** | **5.1437** | **0.2950** | **10.3804** | **1.6600e-003** | | **0.0714** | **0.0714** | | **0.0714** | **0.0714** | **0.0000** | **220.9670** | **220.9670** | **0.0201** | **3.7400e-003** | **222.5835** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 585.8052 | 3.0183 | 0.0755 | 683.7567 |
| Unmitigated | 585.8052 | 3.0183 | 0.0755 | 683.7567 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments Low Rise | 1.62885 / 1.02688 | 10.9095 | 0.0535 | 1.3400e-003 | 12.6471 |
| Apartments Mid Rise | 63.5252 / 40.0485 | 425.4719 | 2.0867 | 0.0523 | 493.2363 |
| General Office Building | 7.99802 / 4.90201 | 53.0719 | 0.2627 | 6.5900e-003 | 61.6019 |
| High Turnover (Sit Down Restaurant) | 10.9272 / 0.697482 | 51.2702 | 0.3580 | 8.8200e-003 | 62.8482 |
| Hotel | 1.26834 / 0.140927 | 6.1633 | 0.0416 | 1.0300e-003 | 7.5079 |
| Quality Restaurant | 2.42827 / 0.154996 | 11.3934 | 0.0796 | 1.9600e-003 | 13.9663 |
| Regional Shopping Center | 4.14806 / 2.54236 | 27.5250 | 0.1363 | 3.4200e-003 | 31.9490 |
| **Total** | | **585.8052** | **3.0183** | **0.0755** | **683.7567** |

### 7.2 Water by Land Use

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments Low Rise | 1.62885 / 1.02688 | 10.9095 | 0.0535 | 1.3400e-003 | 12.6471 |
| Apartments Mid Rise | 63.5252 / 40.0485 | 425.4719 | 2.0867 | 0.0523 | 493.2363 |
| General Office Building | 7.99802 / 4.90201 | 53.0719 | 0.2627 | 6.5900e-003 | 61.6019 |
| High Turnover (Sit Down Restaurant) | 10.9272 / 0.697482 | 51.2702 | 0.3580 | 8.8200e-003 | 62.8482 |
| Hotel | 1.26834 / 0.140927 | 6.1633 | 0.0416 | 1.0300e-003 | 7.5079 |
| Quality Restaurant | 2.42827 / 0.154996 | 11.3934 | 0.0796 | 1.9600e-003 | 13.9663 |
| Regional Shopping Center | 4.14806 / 2.54236 | 27.5250 | 0.1363 | 3.4200e-003 | 31.9490 |
| **Total** | | **585.8052** | **3.0183** | **0.0755** | **683.7567** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 207.8079 | 12.2811 | 0.0000 | 514.8354 |
| Unmitigated | 207.8079 | 12.2811 | 0.0000 | 514.8354 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments Low Rise | 11.5 | 2.3344 | 0.1380 | 0.0000 | 5.7834 |
| Apartments Mid Rise | 448.5 | 91.0415 | 5.3804 | 0.0000 | 225.5513 |
| General Office Building | 41.85 | 8.4952 | 0.5021 | 0.0000 | 21.0464 |
| High Turnover (Sit Down Restaurant) | 428.4 | 86.9613 | 5.1393 | 0.0000 | 215.4430 |
| Hotel | 27.38 | 5.5579 | 0.3285 | 0.0000 | 13.7694 |
| Quality Restaurant | 7.3 | 1.4818 | 0.0876 | 0.0000 | 3.6712 |
| Regional Shopping Center | 58.8 | 11.9359 | 0.7054 | 0.0000 | 29.5706 |
| **Total** | | **207.8079** | **12.2811** | **0.0000** | **514.8354** |

## 8.2 Waste by Land Use

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments Low Rise | 11.5 | 2.3344 | 0.1380 | 0.0000 | 5.7834 |
| Apartments Mid Rise | 448.5 | 91.0415 | 5.3804 | 0.0000 | 225.5513 |
| General Office Building | 41.85 | 8.4952 | 0.5021 | 0.0000 | 21.0464 |
| High Turnover (Sit Down Restaurant) | 428.4 | 86.9613 | 5.1393 | 0.0000 | 215.4430 |
| Hotel | 27.38 | 5.5579 | 0.3285 | 0.0000 | 13.7694 |
| Quality Restaurant | 7.3 | 1.4818 | 0.0876 | 0.0000 | 3.6712 |
| Regional Shopping Center | 58.8 | 11.9359 | 0.7054 | 0.0000 | 29.5706 |
| **Total** | | **207.8079** | **12.2811** | **0.0000** | **514.8354** |

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# Village South Specific Plan (Proposed)

## Los Angeles-South Coast County, Summer

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 45.00 | 1000sqft | 1.03 | 45,000.00 | 0 |
| High Turnover (Sit Down Restaurant) | 36.00 | 1000sqft | 0.83 | 36,000.00 | 0 |
| Hotel | 50.00 | Room | 1.67 | 72,600.00 | 0 |
| Quality Restaurant | 8.00 | 1000sqft | 0.18 | 8,000.00 | 0 |
| Apartments Low Rise | 25.00 | Dwelling Unit | 1.56 | 25,000.00 | 72 |
| Apartments Mid Rise | 975.00 | Dwelling Unit | 25.66 | 975,000.00 | 2789 |
| Regional Shopping Center | 56.00 | 1000sqft | 1.29 | 56,000.00 | 0 |

### 1.2 Other Project Characteristics

**Urbanization** Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 33

**Climate Zone** 9 **Operational Year** 2028

**Utility Company** Southern California Edison

**CO2 Intensity (lb/MWhr)** 702.44 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

| Table Name | Column Name | Default Value | New Value |
| --- | --- | --- | --- |
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | NumberWood | 1.25 | 0.00 |
| tblFireplaces | NumberWood | 48.75 | 0.00 |
| tblVehicleTrips | ST_TR | 7.16 | 6.17 |
| tblVehicleTrips | ST_TR | 6.39 | 3.87 |
| tblVehicleTrips | ST_TR | 2.46 | 1.39 |
| tblVehicleTrips | ST_TR | 158.37 | 79.82 |
| tblVehicleTrips | ST_TR | 8.19 | 3.75 |
| tblVehicleTrips | ST_TR | 94.36 | 63.99 |
| tblVehicleTrips | ST_TR | 49.97 | 10.74 |
| tblVehicleTrips | SU_TR | 6.07 | 6.16 |
| tblVehicleTrips | SU_TR | 5.86 | 4.18 |
| tblVehicleTrips | SU_TR | 1.05 | 0.69 |
| tblVehicleTrips | SU_TR | 131.84 | 78.27 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | SU_TR | 5.95 | 3.20 |
| tblVehicleTrips | SU_TR | 72.16 | 57.65 |
| tblVehicleTrips | SU_TR | 25.24 | 6.39 |
| tblVehicleTrips | WD_TR | 6.59 | 5.83 |
| tblVehicleTrips | WD_TR | 6.65 | 4.13 |
| tblVehicleTrips | WD_TR | 11.03 | 6.41 |
| tblVehicleTrips | WD_TR | 127.15 | 65.80 |
| tblVehicleTrips | WD_TR | 8.17 | 3.84 |
| tblVehicleTrips | WD_TR | 89.95 | 62.64 |
| tblVehicleTrips | WD_TR | 42.70 | 9.43 |
| tblWoodstoves | NumberCatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberCatalytic | 48.75 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 48.75 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 4.2769 | 46.4588 | 31.6840 | 0.0643 | 18.2675 | 2.0461 | 20.3135 | 9.9840 | 1.8824 | 11.8664 | 0.0000 | 6,234.7974 | 6,234.7974 | 1.9495 | 0.0000 | 6,283.5352 |
| 2022 | 5.3304 | 38.8967 | 49.5629 | 0.1517 | 9.8688 | 1.6366 | 10.7727 | 3.6558 | 1.5057 | 5.1615 | 0.0000 | 15,251.5674 | 15,251.5674 | 1.9503 | 0.0000 | 15,278.5288 |
| 2023 | 4.8957 | 26.3317 | 46.7567 | 0.1472 | 9.8688 | 0.7794 | 10.6482 | 2.6381 | 0.7322 | 3.3702 | 0.0000 | 14,807.5269 | 14,807.5269 | 1.0250 | 0.0000 | 14,833.1521 |
| 2024 | 237.1630 | 9.5575 | 15.1043 | 0.0244 | 1.7884 | 0.4698 | 1.8628 | 0.4743 | 0.4322 | 0.5476 | 0.0000 | 2,361.3989 | 2,361.3989 | 0.7177 | 0.0000 | 2,379.3421 |
| **Maximum** | **237.1630** | **46.4588** | **49.5629** | **0.1517** | **18.2675** | **2.0461** | **20.3135** | **9.9840** | **1.8824** | **11.8664** | **0.0000** | **15,251.5674** | **15,251.5674** | **1.9503** | **0.0000** | **15,278.5288** |

## 2.1 Overall Construction (Maximum Daily Emission)

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 4.2769 | 46.4588 | 31.6840 | 0.0643 | 18.2675 | 2.0461 | 20.3135 | 9.9840 | 1.8824 | 11.8664 | 0.0000 | 6,234.7974 | 6,234.7974 | 1.9495 | 0.0000 | 6,283.5352 |
| 2022 | 5.3304 | 38.8967 | 49.5629 | 0.1517 | 9.8688 | 1.6366 | 10.7727 | 3.6558 | 1.5057 | 5.1615 | 0.0000 | 15,251.5674 | 15,251.5674 | 1.9503 | 0.0000 | 15,278.5288 |
| 2023 | 4.8957 | 26.3317 | 46.7567 | 0.1472 | 9.8688 | 0.7794 | 10.6482 | 2.6381 | 0.7322 | 3.3702 | 0.0000 | 14,807.5269 | 14,807.5269 | 1.0250 | 0.0000 | 14,833.1520 |
| 2024 | 237.1630 | 9.5575 | 15.1043 | 0.0244 | 1.7884 | 0.4698 | 1.8628 | 0.4743 | 0.4322 | 0.5476 | 0.0000 | 2,361.3989 | 2,361.3989 | 0.7177 | 0.0000 | 2,379.3421 |
| **Maximum** | **237.1630** | **46.4588** | **49.5629** | **0.1517** | **18.2675** | **2.0461** | **20.3135** | **9.9840** | **1.8824** | **11.8664** | **0.0000** | **15,251.5674** | **15,251.5674** | **1.9503** | **0.0000** | **15,278.5288** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

### Unmitigated Operational

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |
| Energy | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.9832 | 8,355.9832 | 0.1602 | 0.1532 | 8,405.6387 |
| Mobile | 9.8489 | 45.4304 | 114.8495 | 0.4917 | 45.9592 | 0.3360 | 46.2951 | 12.2950 | 0.3119 | 12.6070 | | 50,306.6034 | 50,306.6034 | 2.1807 | | 50,361.1208 |
| **Total** | **41.1168** | **67.2262** | **207.5497** | **0.6278** | **45.9592** | **2.4626** | **48.4217** | **12.2950** | **2.4385** | **14.7336** | **0.0000** | **76,811.1816** | **76,811.1816** | **2.8282** | **0.4832** | **77,025.8786** |

### Mitigated Operational

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |
| Energy | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.9832 | 8,355.9832 | 0.1602 | 0.1532 | 8,405.6387 |
| Mobile | 9.8489 | 45.4304 | 114.8495 | 0.4917 | 45.9592 | 0.3360 | 46.2951 | 12.2950 | 0.3119 | 12.6070 | | 50,306.6034 | 50,306.6034 | 2.1807 | | 50,361.1208 |
| **Total** | **41.1168** | **67.2262** | **207.5497** | **0.6278** | **45.9592** | **2.4626** | **48.4217** | **12.2950** | **2.4385** | **14.7336** | **0.0000** | **76,811.1816** | **76,811.1816** | **2.8282** | **0.4832** | **77,025.8786** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 9/1/2021 | 10/12/2021 | 5 | 30 | |
| 2 | Site Preparation | Site Preparation | 10/13/2021 | 11/9/2021 | 5 | 20 | |
| 3 | Grading | Grading | 11/10/2021 | 1/11/2022 | 5 | 45 | |
| 4 | Building Construction | Building Construction | 1/12/2022 | 12/12/2023 | 5 | 500 | |
| 5 | Paving | Paving | 12/13/2023 | 1/30/2024 | 5 | 35 | |
| 6 | Architectural Coating | Architectural Coating | 1/31/2024 | 3/19/2024 | 5 | 35 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 112.5**

**Acres of Paving: 0**

**Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Demolition | Excavators | 3 | 8.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 2 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 4 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 2 | 8.00 | 158 | 0.38 |
| Grading | Graders | 1 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Paving | Pavers | 2 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 2 | 8.00 | 132 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 6 | 15.00 | 0.00 | 458.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 7 | 18.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 8 | 20.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 801.00 | 143.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 160.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 3.3074 | 0.0000 | 3.3074 | 0.5008 | 0.0000 | 0.5008 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1651 | 31.4407 | 21.5650 | 0.0388 | | 1.5513 | 1.5513 | | 1.4411 | 1.4411 | | 3,747.944 9 | 3,747.944 9 | 1.0549 | | 3,774.317 4 |
| **Total** | **3.1651** | **31.4407** | **21.5650** | **0.0388** | **3.3074** | **1.5513** | **4.8588** | **0.5008** | **1.4411** | **1.9419** | | **3,747.944 9** | **3,747.944 9** | **1.0549** | | **3,774.317 4** |

## 3.2 Demolition - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1273 | 4.0952 | 0.9602 | 0.0119 | 0.2669 | 0.0126 | 0.2795 | 0.0732 | 0.0120 | 0.0852 | | 1,292.241 3 | 1,292.241 3 | 0.0877 | | 1,294.433 7 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0643 | 0.0442 | 0.6042 | 1.7100e-003 | 0.1677 | 1.3500e-003 | 0.1690 | 0.0445 | 1.2500e-003 | 0.0457 | | 170.8155 | 170.8155 | 5.0300e-003 | | 170.9413 |
| **Total** | **0.1916** | **4.1394** | **1.5644** | **0.0136** | **0.4346** | **0.0139** | **0.4485** | **0.1176** | **0.0133** | **0.1309** | | **1,463.056 8** | **1,463.056 8** | **0.0927** | | **1,465.375 0** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 3.3074 | 0.0000 | 3.3074 | 0.5008 | 0.0000 | 0.5008 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1651 | 31.4407 | 21.5650 | 0.0388 | | 1.5513 | 1.5513 | | 1.4411 | 1.4411 | 0.0000 | 3,747.944 9 | 3,747.944 9 | 1.0549 | | 3,774.317 4 |
| **Total** | **3.1651** | **31.4407** | **21.5650** | **0.0388** | **3.3074** | **1.5513** | **4.8588** | **0.5008** | **1.4411** | **1.9419** | **0.0000** | **3,747.944 9** | **3,747.944 9** | **1.0549** | | **3,774.317 4** |

## 3.2 Demolition - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1273 | 4.0952 | 0.9602 | 0.0119 | 0.2669 | 0.0126 | 0.2795 | 0.0732 | 0.0120 | 0.0852 | | 1,292.241 3 | 1,292.241 3 | 0.0877 | | 1,294.433 7 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0643 | 0.0442 | 0.6042 | 1.7100e-003 | 0.1677 | 1.3500e-003 | 0.1690 | 0.0445 | 1.2500e-003 | 0.0457 | | 170.8155 | 170.8155 | 5.0300e-003 | | 170.9413 |
| **Total** | **0.1916** | **4.1394** | **1.5644** | **0.0136** | **0.4346** | **0.0139** | **0.4485** | **0.1176** | **0.0133** | **0.1309** | | **1,463.056 8** | **1,463.056 8** | **0.0927** | | **1,465.375 0** |

## 3.3 Site Preparation - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.8882 | 40.4971 | 21.1543 | 0.0380 | | 2.0445 | 2.0445 | | 1.8809 | 1.8809 | | 3,685.656 9 | 3,685.656 9 | 1.1920 | | 3,715.457 3 |
| **Total** | **3.8882** | **40.4971** | **21.1543** | **0.0380** | **18.0663** | **2.0445** | **20.1107** | **9.9307** | **1.8809** | **11.8116** | | **3,685.656 9** | **3,685.656 9** | **1.1920** | | **3,715.457 3** |

## 3.3 Site Preparation - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0772 | 0.0530 | 0.7250 | 2.0600e-003 | 0.2012 | 1.6300e-003 | 0.2028 | 0.0534 | 1.5000e-003 | 0.0549 | | 204.9786 | 204.9786 | 6.0400e-003 | | 205.1296 |
| **Total** | **0.0772** | **0.0530** | **0.7250** | **2.0600e-003** | **0.2012** | **1.6300e-003** | **0.2028** | **0.0534** | **1.5000e-003** | **0.0549** | | **204.9786** | **204.9786** | **6.0400e-003** | | **205.1296** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.8882 | 40.4971 | 21.1543 | 0.0380 | | 2.0445 | 2.0445 | | 1.8809 | 1.8809 | 0.0000 | 3,685.6569 | 3,685.6569 | 1.1920 | | 3,715.4573 |
| **Total** | **3.8882** | **40.4971** | **21.1543** | **0.0380** | **18.0663** | **2.0445** | **20.1107** | **9.9307** | **1.8809** | **11.8116** | **0.0000** | **3,685.6569** | **3,685.6569** | **1.1920** | | **3,715.4573** |

### 3.3 Site Preparation - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0772 | 0.0530 | 0.7250 | 2.0600e-003 | 0.2012 | 1.6300e-003 | 0.2028 | 0.0534 | 1.5000e-003 | 0.0549 | | 204.9786 | 204.9786 | 6.0400e-003 | | 205.1296 |
| **Total** | **0.0772** | **0.0530** | **0.7250** | **2.0600e-003** | **0.2012** | **1.6300e-003** | **0.2028** | **0.0534** | **1.5000e-003** | **0.0549** | | **204.9786** | **204.9786** | **6.0400e-003** | | **205.1296** |

### 3.4 Grading - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.1912 | 46.3998 | 30.8785 | 0.0620 | | 1.9853 | 1.9853 | | 1.8265 | 1.8265 | | 6,007.0434 | 6,007.0434 | 1.9428 | | 6,055.6134 |
| **Total** | **4.1912** | **46.3998** | **30.8785** | **0.0620** | **8.6733** | **1.9853** | **10.6587** | **3.5965** | **1.8265** | **5.4230** | | **6,007.0434** | **6,007.0434** | **1.9428** | | **6,055.6134** |

### 3.4 Grading - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0857 | 0.0589 | 0.8056 | 2.2900e-003 | 0.2236 | 1.8100e-003 | 0.2254 | 0.0593 | 1.6600e-003 | 0.0610 | | 227.7540 | 227.7540 | 6.7100e-003 | | 227.9217 |
| **Total** | **0.0857** | **0.0589** | **0.8056** | **2.2900e-003** | **0.2236** | **1.8100e-003** | **0.2254** | **0.0593** | **1.6600e-003** | **0.0610** | | **227.7540** | **227.7540** | **6.7100e-003** | | **227.9217** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.1912 | 46.3998 | 30.8785 | 0.0620 | | 1.9853 | 1.9853 | | 1.8265 | 1.8265 | 0.0000 | 6,007.0434 | 6,007.0434 | 1.9428 | | 6,055.6134 |
| **Total** | **4.1912** | **46.3998** | **30.8785** | **0.0620** | **8.6733** | **1.9853** | **10.6587** | **3.5965** | **1.8265** | **5.4230** | **0.0000** | **6,007.0434** | **6,007.0434** | **1.9428** | | **6,055.6134** |

### 3.4 Grading - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0857 | 0.0589 | 0.8056 | 2.2900e-003 | 0.2236 | 1.8100e-003 | 0.2254 | 0.0593 | 1.6600e-003 | 0.0610 | | 227.7540 | 227.7540 | 6.7100e-003 | | 227.9217 |
| **Total** | **0.0857** | **0.0589** | **0.8056** | **2.2900e-003** | **0.2236** | **1.8100e-003** | **0.2254** | **0.0593** | **1.6600e-003** | **0.0610** | | **227.7540** | **227.7540** | **6.7100e-003** | | **227.9217** |

### 3.4 Grading - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6248 | 38.8435 | 29.0415 | 0.0621 | | 1.6349 | 1.6349 | | 1.5041 | 1.5041 | | 6,011.4105 | 6,011.4105 | 1.9442 | | 6,060.0158 |
| **Total** | **3.6248** | **38.8435** | **29.0415** | **0.0621** | **8.6733** | **1.6349** | **10.3082** | **3.5965** | **1.5041** | **5.1006** | | **6,011.4105** | **6,011.4105** | **1.9442** | | **6,060.0158** |

## 3.4 Grading - 2022

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0803 | 0.0532 | 0.7432 | 2.2100e-003 | 0.2236 | 1.7500e-003 | 0.2253 | 0.0593 | 1.6100e-003 | 0.0609 | | 219.7425 | 219.7425 | 6.0600e-003 | | 219.8941 |
| **Total** | **0.0803** | **0.0532** | **0.7432** | **2.2100e-003** | **0.2236** | **1.7500e-003** | **0.2253** | **0.0593** | **1.6100e-003** | **0.0609** | | **219.7425** | **219.7425** | **6.0600e-003** | | **219.8941** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6248 | 38.8435 | 29.0415 | 0.0621 | | 1.6349 | 1.6349 | | 1.5041 | 1.5041 | 0.0000 | 6,011.4105 | 6,011.4105 | 1.9442 | | 6,060.0158 |
| **Total** | **3.6248** | **38.8435** | **29.0415** | **0.0621** | **8.6733** | **1.6349** | **10.3082** | **3.5965** | **1.5041** | **5.1006** | **0.0000** | **6,011.4105** | **6,011.4105** | **1.9442** | | **6,060.0158** |

## 3.4 Grading - 2022

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0803 | 0.0532 | 0.7432 | 2.2100e-003 | 0.2236 | 1.7500e-003 | 0.2253 | 0.0593 | 1.6100e-003 | 0.0609 | | 219.7425 | 219.7425 | 6.0600e-003 | | 219.8941 |
| **Total** | **0.0803** | **0.0532** | **0.7432** | **2.2100e-003** | **0.2236** | **1.7500e-003** | **0.2253** | **0.0593** | **1.6100e-003** | **0.0609** | | **219.7425** | **219.7425** | **6.0600e-003** | | **219.8941** |

## 3.5 Building Construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | | 2,554.3336 | 2,554.3336 | 0.6120 | | 2,569.6322 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | | **2,554.3336** | **2,554.3336** | **0.6120** | | **2,569.6322** |

## 3.5 Building Construction - 2022

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.4079 | 13.2032 | 3.4341 | 0.0364 | 0.9155 | 0.0248 | 0.9404 | 0.2636 | 0.0237 | 0.2873 | | 3,896.548 2 | 3,896.548 2 | 0.2236 | | 3,902.138 4 |
| Worker | 3.2162 | 2.1318 | 29.7654 | 0.0883 | 8.9533 | 0.0701 | 9.0234 | 2.3745 | 0.0646 | 2.4390 | | 8,800.685 7 | 8,800.685 7 | 0.2429 | | 8,806.758 2 |
| **Total** | **3.6242** | **15.3350** | **33.1995** | **0.1247** | **9.8688** | **0.0949** | **9.9637** | **2.6381** | **0.0883** | **2.7263** | | **12,697.23 39** | **12,697.23 39** | **0.4665** | | **12,708.89 66** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | 0.0000 | 2,554.333 6 | 2,554.333 6 | 0.6120 | | 2,569.632 2 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | **0.0000** | **2,554.333 6** | **2,554.333 6** | **0.6120** | | **2,569.632 2** |

## 3.5 Building Construction - 2022

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.4079 | 13.2032 | 3.4341 | 0.0364 | 0.9155 | 0.0248 | 0.9404 | 0.2636 | 0.0237 | 0.2873 | | 3,896.548 2 | 3,896.548 2 | 0.2236 | | 3,902.138 4 |
| Worker | 3.2162 | 2.1318 | 29.7654 | 0.0883 | 8.9533 | 0.0701 | 9.0234 | 2.3745 | 0.0646 | 2.4390 | | 8,800.685 7 | 8,800.685 7 | 0.2429 | | 8,806.758 2 |
| **Total** | **3.6242** | **15.3350** | **33.1995** | **0.1247** | **9.8688** | **0.0949** | **9.9637** | **2.6381** | **0.0883** | **2.7263** | | **12,697.23 39** | **12,697.23 39** | **0.4665** | | **12,708.89 66** |

## 3.5 Building Construction - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | | 2,555.209 9 | 2,555.209 9 | 0.6079 | | 2,570.406 1 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | | **2,555.209 9** | **2,555.209 9** | **0.6079** | | **2,570.406 1** |

### 3.5 Building Construction - 2023

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3027 | 10.0181 | 3.1014 | 0.0352 | 0.9156 | 0.0116 | 0.9271 | 0.2636 | 0.0111 | 0.2747 | | 3,773.876 2 | 3,773.876 2 | 0.1982 | | 3,778.830 0 |
| Worker | 3.0203 | 1.9287 | 27.4113 | 0.0851 | 8.9533 | 0.0681 | 9.0214 | 2.3745 | 0.0627 | 2.4372 | | 8,478.440 8 | 8,478.440 8 | 0.2190 | | 8,483.916 0 |
| **Total** | **3.3229** | **11.9468** | **30.5127** | **0.1203** | **9.8688** | **0.0797** | **9.9485** | **2.6381** | **0.0738** | **2.7118** | | **12,252.31 70** | **12,252.31 70** | **0.4172** | | **12,262.74 60** |

**Mitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | 0.0000 | 2,555.209 9 | 2,555.209 9 | 0.6079 | | 2,570.406 1 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | **0.0000** | **2,555.209 9** | **2,555.209 9** | **0.6079** | | **2,570.406 1** |

## 3.5 Building Construction - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3027 | 10.0181 | 3.1014 | 0.0352 | 0.9156 | 0.0116 | 0.9271 | 0.2636 | 0.0111 | 0.2747 | | 3,773.876 2 | 3,773.876 2 | 0.1982 | | 3,778.830 0 |
| Worker | 3.0203 | 1.9287 | 27.4113 | 0.0851 | 8.9533 | 0.0681 | 9.0214 | 2.3745 | 0.0627 | 2.4372 | | 8,478.440 8 | 8,478.440 8 | 0.2190 | | 8,483.916 0 |
| **Total** | **3.3229** | **11.9468** | **30.5127** | **0.1203** | **9.8688** | **0.0797** | **9.9485** | **2.6381** | **0.0738** | **2.7118** | | **12,252.31 70** | **12,252.31 70** | **0.4172** | | **12,262.74 60** |

## 3.6 Paving - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0327 | 10.1917 | 14.5842 | 0.0228 | | 0.5102 | 0.5102 | | 0.4694 | 0.4694 | | 2,207.584 1 | 2,207.584 1 | 0.7140 | | 2,225.433 6 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.0327** | **10.1917** | **14.5842** | **0.0228** | | **0.5102** | **0.5102** | | **0.4694** | **0.4694** | | **2,207.584 1** | **2,207.584 1** | **0.7140** | | **2,225.433 6** |

## 3.6 Paving - 2023

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0566 | 0.0361 | 0.5133 | 1.5900e-003 | 0.1677 | 1.2800e-003 | 0.1689 | 0.0445 | 1.1700e-003 | 0.0456 | | 158.7723 | 158.7723 | 4.1000e-003 | | 158.8748 |
| **Total** | **0.0566** | **0.0361** | **0.5133** | **1.5900e-003** | **0.1677** | **1.2800e-003** | **0.1689** | **0.0445** | **1.1700e-003** | **0.0456** | | **158.7723** | **158.7723** | **4.1000e-003** | | **158.8748** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0327 | 10.1917 | 14.5842 | 0.0228 | | 0.5102 | 0.5102 | | 0.4694 | 0.4694 | 0.0000 | 2,207.5841 | 2,207.5841 | 0.7140 | | 2,225.4336 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.0327** | **10.1917** | **14.5842** | **0.0228** | | **0.5102** | **0.5102** | | **0.4694** | **0.4694** | **0.0000** | **2,207.5841** | **2,207.5841** | **0.7140** | | **2,225.4336** |

## 3.6 Paving - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0566 | 0.0361 | 0.5133 | 1.5900e-003 | 0.1677 | 1.2800e-003 | 0.1689 | 0.0445 | 1.1700e-003 | 0.0456 | | 158.7723 | 158.7723 | 4.1000e-003 | | 158.8748 |
| **Total** | **0.0566** | **0.0361** | **0.5133** | **1.5900e-003** | **0.1677** | **1.2800e-003** | **0.1689** | **0.0445** | **1.1700e-003** | **0.0456** | | **158.7723** | **158.7723** | **4.1000e-003** | | **158.8748** |

## 3.6 Paving - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9882 | 9.5246 | 14.6258 | 0.0228 | | 0.4685 | 0.4685 | | 0.4310 | 0.4310 | | 2,207.5472 | 2,207.5472 | 0.7140 | | 2,225.3963 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9882** | **9.5246** | **14.6258** | **0.0228** | | **0.4685** | **0.4685** | | **0.4310** | **0.4310** | | **2,207.5472** | **2,207.5472** | **0.7140** | | **2,225.3963** |

### 3.6 Paving - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0535 | 0.0329 | 0.4785 | 1.5400e-003 | 0.1677 | 1.2600e-003 | 0.1689 | 0.0445 | 1.1600e-003 | 0.0456 | | 153.8517 | 153.8517 | 3.7600e-003 | | 153.9458 |
| **Total** | **0.0535** | **0.0329** | **0.4785** | **1.5400e-003** | **0.1677** | **1.2600e-003** | **0.1689** | **0.0445** | **1.1600e-003** | **0.0456** | | **153.8517** | **153.8517** | **3.7600e-003** | | **153.9458** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9882 | 9.5246 | 14.6258 | 0.0228 | | 0.4685 | 0.4685 | | 0.4310 | 0.4310 | 0.0000 | 2,207.547 2 | 2,207.547 2 | 0.7140 | | 2,225.396 3 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9882** | **9.5246** | **14.6258** | **0.0228** | | **0.4685** | **0.4685** | | **0.4310** | **0.4310** | **0.0000** | **2,207.547 2** | **2,207.547 2** | **0.7140** | | **2,225.396 3** |

### 3.6 Paving - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0535 | 0.0329 | 0.4785 | 1.5400e-003 | 0.1677 | 1.2600e-003 | 0.1689 | 0.0445 | 1.1600e-003 | 0.0456 | | 153.8517 | 153.8517 | 3.7600e-003 | | 153.9458 |
| **Total** | **0.0535** | **0.0329** | **0.4785** | **1.5400e-003** | **0.1677** | **1.2600e-003** | **0.1689** | **0.0445** | **1.1600e-003** | **0.0456** | | **153.8517** | **153.8517** | **3.7600e-003** | | **153.9458** |

### 3.7 Architectural Coating - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 236.4115 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1808 | 1.2188 | 1.8101 | 2.9700e-003 | | 0.0609 | 0.0609 | | 0.0609 | 0.0609 | | 281.4481 | 281.4481 | 0.0159 | | 281.8443 |
| **Total** | **236.5923** | **1.2188** | **1.8101** | **2.9700e-003** | | **0.0609** | **0.0609** | | **0.0609** | **0.0609** | | **281.4481** | **281.4481** | **0.0159** | | **281.8443** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.5707 | 0.3513 | 5.1044 | 0.0165 | 1.7884 | 0.0134 | 1.8018 | 0.4743 | 0.0123 | 0.4866 | | 1,641.085 2 | 1,641.085 2 | 0.0401 | | 1,642.088 6 |
| **Total** | **0.5707** | **0.3513** | **5.1044** | **0.0165** | **1.7884** | **0.0134** | **1.8018** | **0.4743** | **0.0123** | **0.4866** | | **1,641.085 2** | **1,641.085 2** | **0.0401** | | **1,642.088 6** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 236.4115 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1808 | 1.2188 | 1.8101 | 2.9700e-003 | | 0.0609 | 0.0609 | | 0.0609 | 0.0609 | 0.0000 | 281.4481 | 281.4481 | 0.0159 | | 281.8443 |
| **Total** | **236.5923** | **1.2188** | **1.8101** | **2.9700e-003** | | **0.0609** | **0.0609** | | **0.0609** | **0.0609** | **0.0000** | **281.4481** | **281.4481** | **0.0159** | | **281.8443** |

### 3.7 Architectural Coating - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.5707 | 0.3513 | 5.1044 | 0.0165 | 1.7884 | 0.0134 | 1.8018 | 0.4743 | 0.0123 | 0.4866 | | 1,641.085 2 | 1,641.085 2 | 0.0401 | | 1,642.088 6 |
| **Total** | **0.5707** | **0.3513** | **5.1044** | **0.0165** | **1.7884** | **0.0134** | **1.8018** | **0.4743** | **0.0123** | **0.4866** | | **1,641.085 2** | **1,641.085 2** | **0.0401** | | **1,642.088 6** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 9.8489 | 45.4304 | 114.8495 | 0.4917 | 45.9592 | 0.3360 | 46.2951 | 12.2950 | 0.3119 | 12.6070 | | 50,306.6034 | 50,306.6034 | 2.1807 | | 50,361.1208 |
| Unmitigated | 9.8489 | 45.4304 | 114.8495 | 0.4917 | 45.9592 | 0.3360 | 46.2951 | 12.2950 | 0.3119 | 12.6070 | | 50,306.6034 | 50,306.6034 | 2.1807 | | 50,361.1208 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments Low Rise | 145.75 | 154.25 | 154.00 | 506,227 | 506,227 |
| Apartments Mid Rise | 4,026.75 | 3,773.25 | 4075.50 | 13,660,065 | 13,660,065 |
| General Office Building | 288.45 | 62.55 | 31.05 | 706,812 | 706,812 |
| High Turnover (Sit Down Restaurant) | 2,368.80 | 2,873.52 | 2817.72 | 3,413,937 | 3,413,937 |
| Hotel | 192.00 | 187.50 | 160.00 | 445,703 | 445,703 |
| Quality Restaurant | 501.12 | 511.92 | 461.20 | 707,488 | 707,488 |
| Regional Shopping Center | 528.08 | 601.44 | 357.84 | 1,112,221 | 1,112,221 |
| Total | 8,050.95 | 8,164.43 | 8,057.31 | 20,552,452 | 20,552,452 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments Low Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| Apartments Mid Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| General Office Building | 16.60 | 8.40 | 6.90 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| High Turnover (Sit Down | 16.60 | 8.40 | 6.90 | 8.50 | 72.50 | 19.00 | 37 | 20 | 43 |
| Hotel | 16.60 | 8.40 | 6.90 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Quality Restaurant | 16.60 | 8.40 | 6.90 | 12.00 | 69.00 | 19.00 | 38 | 18 | 44 |
| Regional Shopping Center | 16.60 | 8.40 | 6.90 | 16.30 | 64.70 | 19.00 | 54 | 35 | 11 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments Low Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Apartments Mid Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| General Office Building | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| High Turnover (Sit Down Restaurant) | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Hotel | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Quality Restaurant | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Regional Shopping Center | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |
| NaturalGas Unmitigated | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Apartments Low Rise | 1119.16 | 0.0121 | 0.1031 | 0.0439 | 6.6000e-004 | | 8.3400e-003 | 8.3400e-003 | | 8.3400e-003 | 8.3400e-003 | | 131.6662 | 131.6662 | 2.5200e-003 | 2.4100e-003 | 132.4486 |
| Apartments Mid Rise | 35784.3 | 0.3859 | 3.2978 | 1.4033 | 0.0211 | | 0.2666 | 0.2666 | | 0.2666 | 0.2666 | | 4,209.9164 | 4,209.9164 | 0.0807 | 0.0772 | 4,234.9339 |
| General Office Building | 1283.42 | 0.0138 | 0.1258 | 0.1057 | 7.5000e-004 | | 9.5600e-003 | 9.5600e-003 | | 9.5600e-003 | 9.5600e-003 | | 150.9911 | 150.9911 | 2.8900e-003 | 2.7700e-003 | 151.8884 |
| High Turnover (Sit Down Restaurant) | 22759.9 | 0.2455 | 2.2314 | 1.8743 | 0.0134 | | 0.1696 | 0.1696 | | 0.1696 | 0.1696 | | 2,677.6342 | 2,677.6342 | 0.0513 | 0.0491 | 2,693.5460 |
| Hotel | 4769.72 | 0.0514 | 0.4676 | 0.3928 | 2.8100e-003 | | 0.0355 | 0.0355 | | 0.0355 | 0.0355 | | 561.1436 | 561.1436 | 0.0108 | 0.0103 | 564.4782 |
| Quality Restaurant | 5057.75 | 0.0545 | 0.4959 | 0.4165 | 2.9800e-003 | | 0.0377 | 0.0377 | | 0.0377 | 0.0377 | | 595.0298 | 595.0298 | 0.0114 | 0.0109 | 598.5658 |
| Regional Shopping Center | 251.616 | 2.7100e-003 | 0.0247 | 0.0207 | 1.5000e-004 | | 1.8700e-003 | 1.8700e-003 | | 1.8700e-003 | 1.8700e-003 | | 29.6019 | 29.6019 | 5.7000e-004 | 5.4000e-004 | 29.7778 |
| **Total** | | **0.7660** | **6.7463** | **4.2573** | **0.0418** | | **0.5292** | **0.5292** | | **0.5292** | **0.5292** | | **8,355.9832** | **8,355.9832** | **0.1602** | **0.1532** | **8,405.6387** |

## 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Apartments Low Rise | 1.11916 | 0.0121 | 0.1031 | 0.0439 | 6.6000e-004 | | 8.3400e-003 | 8.3400e-003 | | 8.3400e-003 | 8.3400e-003 | | 131.6662 | 131.6662 | 2.5200e-003 | 2.4100e-003 | 132.4486 |
| Apartments Mid Rise | 35.7843 | 0.3859 | 3.2978 | 1.4033 | 0.0211 | | 0.2666 | 0.2666 | | 0.2666 | 0.2666 | | 4,209.9164 | 4,209.9164 | 0.0807 | 0.0772 | 4,234.9339 |
| General Office Building | 1.28342 | 0.0138 | 0.1258 | 0.1057 | 7.5000e-004 | | 9.5600e-003 | 9.5600e-003 | | 9.5600e-003 | 9.5600e-003 | | 150.9911 | 150.9911 | 2.8900e-003 | 2.7700e-003 | 151.8884 |
| High Turnover (Sit Down Restaurant) | 22.7599 | 0.2455 | 2.2314 | 1.8743 | 0.0134 | | 0.1696 | 0.1696 | | 0.1696 | 0.1696 | | 2,677.6342 | 2,677.6342 | 0.0513 | 0.0491 | 2,693.5460 |
| Hotel | 4.76972 | 0.0514 | 0.4676 | 0.3928 | 2.8100e-003 | | 0.0355 | 0.0355 | | 0.0355 | 0.0355 | | 561.1436 | 561.1436 | 0.0108 | 0.0103 | 564.4782 |
| Quality Restaurant | 5.05775 | 0.0545 | 0.4959 | 0.4165 | 2.9800e-003 | | 0.0377 | 0.0377 | | 0.0377 | 0.0377 | | 595.0298 | 595.0298 | 0.0114 | 0.0109 | 598.5658 |
| Regional Shopping Center | 0.251616 | 2.7100e-003 | 0.0247 | 0.0207 | 1.5000e-004 | | 1.8700e-003 | 1.8700e-003 | | 1.8700e-003 | 1.8700e-003 | | 29.6019 | 29.6019 | 5.7000e-004 | 5.4000e-004 | 29.7778 |
| **Total** | | **0.7660** | **6.7463** | **4.2573** | **0.0418** | | **0.5292** | **0.5292** | | **0.5292** | **0.5292** | | **8,355.9832** | **8,355.9832** | **0.1602** | **0.1532** | **8,405.6387** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.59 50 | 18,148.59 50 | 0.4874 | 0.3300 | 18,259.11 92 |
| Unmitigated | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.59 50 | 18,148.59 50 | 0.4874 | 0.3300 | 18,259.11 92 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.2670 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 24.1085 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Hearth | 1.6500 | 14.1000 | 6.0000 | 0.0900 | | 1.1400 | 1.1400 | | 1.1400 | 1.1400 | 0.0000 | 18,000.00 00 | 18,000.00 00 | 0.3450 | 0.3300 | 18,106.96 50 |
| Landscaping | 2.4766 | 0.9496 | 82.4430 | 4.3600e-003 | | 0.4574 | 0.4574 | | 0.4574 | 0.4574 | | 148.5950 | 148.5950 | 0.1424 | | 152.1542 |
| **Total** | **30.5020** | **15.0496** | **88.4430** | **0.0944** | | **1.5974** | **1.5974** | | **1.5974** | **1.5974** | **0.0000** | **18,148.59 50** | **18,148.59 50** | **0.4874** | **0.3300** | **18,259.11 92** |

### 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.2670 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 24.1085 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Hearth | 1.6500 | 14.1000 | 6.0000 | 0.0900 | | 1.1400 | 1.1400 | | 1.1400 | 1.1400 | 0.0000 | 18,000.0000 | 18,000.0000 | 0.3450 | 0.3300 | 18,106.9650 |
| Landscaping | 2.4766 | 0.9496 | 82.4430 | 4.3600e-003 | | 0.4574 | 0.4574 | | 0.4574 | 0.4574 | | 148.5950 | 148.5950 | 0.1424 | | 152.1542 |
| **Total** | **30.5020** | **15.0496** | **88.4430** | **0.0944** | | **1.5974** | **1.5974** | | **1.5974** | **1.5974** | **0.0000** | **18,148.5950** | **18,148.5950** | **0.4874** | **0.3300** | **18,259.1192** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
| --- | --- | --- | --- | --- | --- | --- |

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
| --- | --- | --- | --- | --- | --- |

**User Defined Equipment**

| Equipment Type | Number |
| --- | --- |

## 11.0 Vegetation

# Village South Specific Plan (Proposed)

**Los Angeles-South Coast County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 45.00 | 1000sqft | 1.03 | 45,000.00 | 0 |
| High Turnover (Sit Down Restaurant) | 36.00 | 1000sqft | 0.83 | 36,000.00 | 0 |
| Hotel | 50.00 | Room | 1.67 | 72,600.00 | 0 |
| Quality Restaurant | 8.00 | 1000sqft | 0.18 | 8,000.00 | 0 |
| Apartments Low Rise | 25.00 | Dwelling Unit | 1.56 | 25,000.00 | 72 |
| Apartments Mid Rise | 975.00 | Dwelling Unit | 25.66 | 975,000.00 | 2789 |
| Regional Shopping Center | 56.00 | 1000sqft | 1.29 | 56,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 33 |
| **Climate Zone** | 9 | | | **Operational Year** | 2028 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 702.44 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | NumberWood | 1.25 | 0.00 |
| tblFireplaces | NumberWood | 48.75 | 0.00 |
| tblVehicleTrips | ST_TR | 7.16 | 6.17 |
| tblVehicleTrips | ST_TR | 6.39 | 3.87 |
| tblVehicleTrips | ST_TR | 2.46 | 1.39 |
| tblVehicleTrips | ST_TR | 158.37 | 79.82 |
| tblVehicleTrips | ST_TR | 8.19 | 3.75 |
| tblVehicleTrips | ST_TR | 94.36 | 63.99 |
| tblVehicleTrips | ST_TR | 49.97 | 10.74 |
| tblVehicleTrips | SU_TR | 6.07 | 6.16 |
| tblVehicleTrips | SU_TR | 5.86 | 4.18 |
| tblVehicleTrips | SU_TR | 1.05 | 0.69 |
| tblVehicleTrips | SU_TR | 131.84 | 78.27 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | SU_TR | 5.95 | 3.20 |
| tblVehicleTrips | SU_TR | 72.16 | 57.65 |
| tblVehicleTrips | SU_TR | 25.24 | 6.39 |
| tblVehicleTrips | WD_TR | 6.59 | 5.83 |
| tblVehicleTrips | WD_TR | 6.65 | 4.13 |
| tblVehicleTrips | WD_TR | 11.03 | 6.41 |
| tblVehicleTrips | WD_TR | 127.15 | 65.80 |
| tblVehicleTrips | WD_TR | 8.17 | 3.84 |
| tblVehicleTrips | WD_TR | 89.95 | 62.64 |
| tblVehicleTrips | WD_TR | 42.70 | 9.43 |
| tblWoodstoves | NumberCatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberCatalytic | 48.75 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 48.75 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 4.2865 | 46.4651 | 31.6150 | 0.0642 | 18.2675 | 2.0461 | 20.3135 | 9.9840 | 1.8824 | 11.8664 | 0.0000 | 6,221.4937 | 6,221.4937 | 1.9491 | 0.0000 | 6,270.2214 |
| 2022 | 5.7218 | 38.9024 | 47.3319 | 0.1455 | 9.8688 | 1.6366 | 10.7736 | 3.6558 | 1.5057 | 5.1615 | 0.0000 | 14,630.3099 | 14,630.3099 | 1.9499 | 0.0000 | 14,657.2663 |
| 2023 | 5.2705 | 26.4914 | 44.5936 | 0.1413 | 9.8688 | 0.7800 | 10.6488 | 2.6381 | 0.7328 | 3.3708 | 0.0000 | 14,210.3424 | 14,210.3424 | 1.0230 | 0.0000 | 14,235.9160 |
| 2024 | 237.2328 | 9.5610 | 15.0611 | 0.0243 | 1.7884 | 0.4698 | 1.8628 | 0.4743 | 0.4322 | 0.5476 | 0.0000 | 2,352.4178 | 2,352.4178 | 0.7175 | 0.0000 | 2,370.3550 |
| **Maximum** | **237.2328** | **46.4651** | **47.3319** | **0.1455** | **18.2675** | **2.0461** | **20.3135** | **9.9840** | **1.8824** | **11.8664** | **0.0000** | **14,630.3099** | **14,630.3099** | **1.9499** | **0.0000** | **14,657.2663** |

## 2.1 Overall Construction (Maximum Daily Emission)

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 4.2865 | 46.4651 | 31.6150 | 0.0642 | 18.2675 | 2.0461 | 20.3135 | 9.9840 | 1.8824 | 11.8664 | 0.0000 | 6,221.4937 | 6,221.4937 | 1.9491 | 0.0000 | 6,270.2214 |
| 2022 | 5.7218 | 38.9024 | 47.3319 | 0.1455 | 9.8688 | 1.6366 | 10.7736 | 3.6558 | 1.5057 | 5.1615 | 0.0000 | 14,630.3099 | 14,630.3099 | 1.9499 | 0.0000 | 14,657.2663 |
| 2023 | 5.2705 | 26.4914 | 44.5936 | 0.1413 | 9.8688 | 0.7800 | 10.6488 | 2.6381 | 0.7328 | 3.3708 | 0.0000 | 14,210.3424 | 14,210.3424 | 1.0230 | 0.0000 | 14,235.9160 |
| 2024 | 237.2328 | 9.5610 | 15.0611 | 0.0243 | 1.7884 | 0.4698 | 1.8628 | 0.4743 | 0.4322 | 0.5476 | 0.0000 | 2,352.4178 | 2,352.4178 | 0.7175 | 0.0000 | 2,370.3550 |
| **Maximum** | **237.2328** | **46.4651** | **47.3319** | **0.1455** | **18.2675** | **2.0461** | **20.3135** | **9.9840** | **1.8824** | **11.8664** | **0.0000** | **14,630.3099** | **14,630.3099** | **1.9499** | **0.0000** | **14,657.2663** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.59 50 | 18,148.59 50 | 0.4874 | 0.3300 | 18,259.11 92 |
| Energy | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |
| Mobile | 9.5233 | 45.9914 | 110.0422 | 0.4681 | 45.9592 | 0.3373 | 46.2965 | 12.2950 | 0.3132 | 12.6083 | | 47,917.80 05 | 47,917.80 05 | 2.1953 | | 47,972.68 39 |
| **Total** | **40.7912** | **67.7872** | **202.7424** | **0.6043** | **45.9592** | **2.4640** | **48.4231** | **12.2950** | **2.4399** | **14.7349** | **0.0000** | **74,422.37 87** | **74,422.37 87** | **2.8429** | **0.4832** | **74,637.44 17** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.59 50 | 18,148.59 50 | 0.4874 | 0.3300 | 18,259.11 92 |
| Energy | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |
| Mobile | 9.5233 | 45.9914 | 110.0422 | 0.4681 | 45.9592 | 0.3373 | 46.2965 | 12.2950 | 0.3132 | 12.6083 | | 47,917.80 05 | 47,917.80 05 | 2.1953 | | 47,972.68 39 |
| **Total** | **40.7912** | **67.7872** | **202.7424** | **0.6043** | **45.9592** | **2.4640** | **48.4231** | **12.2950** | **2.4399** | **14.7349** | **0.0000** | **74,422.37 87** | **74,422.37 87** | **2.8429** | **0.4832** | **74,637.44 17** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 9/1/2021 | 10/12/2021 | 5 | 30 | |
| 2 | Site Preparation | Site Preparation | 10/13/2021 | 11/9/2021 | 5 | 20 | |
| 3 | Grading | Grading | 11/10/2021 | 1/11/2022 | 5 | 45 | |
| 4 | Building Construction | Building Construction | 1/12/2022 | 12/12/2023 | 5 | 500 | |
| 5 | Paving | Paving | 12/13/2023 | 1/30/2024 | 5 | 35 | |
| 6 | Architectural Coating | Architectural Coating | 1/31/2024 | 3/19/2024 | 5 | 35 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 112.5**

**Acres of Paving: 0**

**Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Demolition | Excavators | 3 | 8.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 2 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 4 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 2 | 8.00 | 158 | 0.38 |
| Grading | Graders | 1 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Paving | Pavers | 2 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 2 | 8.00 | 132 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 6 | 15.00 | 0.00 | 458.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 7 | 18.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 8 | 20.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 801.00 | 143.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 160.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 3.3074 | 0.0000 | 3.3074 | 0.5008 | 0.0000 | 0.5008 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1651 | 31.4407 | 21.5650 | 0.0388 | | 1.5513 | 1.5513 | | 1.4411 | 1.4411 | | 3,747.944 9 | 3,747.944 9 | 1.0549 | | 3,774.317 4 |
| **Total** | **3.1651** | **31.4407** | **21.5650** | **0.0388** | **3.3074** | **1.5513** | **4.8588** | **0.5008** | **1.4411** | **1.9419** | | **3,747.944 9** | **3,747.944 9** | **1.0549** | | **3,774.317 4** |

## 3.2 Demolition - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1304 | 4.1454 | 1.0182 | 0.0117 | 0.2669 | 0.0128 | 0.2797 | 0.0732 | 0.0122 | 0.0854 | | 1,269.855 5 | 1,269.855 5 | 0.0908 | | 1,272.125 2 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0715 | 0.0489 | 0.5524 | 1.6100e-003 | 0.1677 | 1.3500e-003 | 0.1690 | 0.0445 | 1.2500e-003 | 0.0457 | | 160.8377 | 160.8377 | 4.7300e-003 | | 160.9560 |
| **Total** | **0.2019** | **4.1943** | **1.5706** | **0.0133** | **0.4346** | **0.0141** | **0.4487** | **0.1176** | **0.0135** | **0.1311** | | **1,430.693 2** | **1,430.693 2** | **0.0955** | | **1,433.081 2** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 3.3074 | 0.0000 | 3.3074 | 0.5008 | 0.0000 | 0.5008 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1651 | 31.4407 | 21.5650 | 0.0388 | | 1.5513 | 1.5513 | | 1.4411 | 1.4411 | 0.0000 | 3,747.944 9 | 3,747.944 9 | 1.0549 | | 3,774.317 4 |
| **Total** | **3.1651** | **31.4407** | **21.5650** | **0.0388** | **3.3074** | **1.5513** | **4.8588** | **0.5008** | **1.4411** | **1.9419** | **0.0000** | **3,747.944 9** | **3,747.944 9** | **1.0549** | | **3,774.317 4** |

## 3.2 Demolition - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1304 | 4.1454 | 1.0182 | 0.0117 | 0.2669 | 0.0128 | 0.2797 | 0.0732 | 0.0122 | 0.0854 | | 1,269.855 5 | 1,269.855 5 | 0.0908 | | 1,272.125 2 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0715 | 0.0489 | 0.5524 | 1.6100e-003 | 0.1677 | 1.3500e-003 | 0.1690 | 0.0445 | 1.2500e-003 | 0.0457 | | 160.8377 | 160.8377 | 4.7300e-003 | | 160.9560 |
| **Total** | **0.2019** | **4.1943** | **1.5706** | **0.0133** | **0.4346** | **0.0141** | **0.4487** | **0.1176** | **0.0135** | **0.1311** | | **1,430.693 2** | **1,430.693 2** | **0.0955** | | **1,433.081 2** |

## 3.3 Site Preparation - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.8882 | 40.4971 | 21.1543 | 0.0380 | | 2.0445 | 2.0445 | | 1.8809 | 1.8809 | | 3,685.656 9 | 3,685.656 9 | 1.1920 | | 3,715.457 3 |
| **Total** | **3.8882** | **40.4971** | **21.1543** | **0.0380** | **18.0663** | **2.0445** | **20.1107** | **9.9307** | **1.8809** | **11.8116** | | **3,685.656 9** | **3,685.656 9** | **1.1920** | | **3,715.457 3** |

## 3.3 Site Preparation - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0858 | 0.0587 | 0.6629 | 1.9400e-003 | 0.2012 | 1.6300e-003 | 0.2028 | 0.0534 | 1.5000e-003 | 0.0549 | | 193.0052 | 193.0052 | 5.6800e-003 | | 193.1472 |
| **Total** | **0.0858** | **0.0587** | **0.6629** | **1.9400e-003** | **0.2012** | **1.6300e-003** | **0.2028** | **0.0534** | **1.5000e-003** | **0.0549** | | **193.0052** | **193.0052** | **5.6800e-003** | | **193.1472** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.8882 | 40.4971 | 21.1543 | 0.0380 | | 2.0445 | 2.0445 | | 1.8809 | 1.8809 | 0.0000 | 3,685.6569 | 3,685.6569 | 1.1920 | | 3,715.4573 |
| **Total** | **3.8882** | **40.4971** | **21.1543** | **0.0380** | **18.0663** | **2.0445** | **20.1107** | **9.9307** | **1.8809** | **11.8116** | **0.0000** | **3,685.6569** | **3,685.6569** | **1.1920** | | **3,715.4573** |

### 3.3 Site Preparation - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0858 | 0.0587 | 0.6629 | 1.9400e-003 | 0.2012 | 1.6300e-003 | 0.2028 | 0.0534 | 1.5000e-003 | 0.0549 | | 193.0052 | 193.0052 | 5.6800e-003 | | 193.1472 |
| **Total** | **0.0858** | **0.0587** | **0.6629** | **1.9400e-003** | **0.2012** | **1.6300e-003** | **0.2028** | **0.0534** | **1.5000e-003** | **0.0549** | | **193.0052** | **193.0052** | **5.6800e-003** | | **193.1472** |

### 3.4 Grading - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.1912 | 46.3998 | 30.8785 | 0.0620 | | 1.9853 | 1.9853 | | 1.8265 | 1.8265 | | 6,007.0434 | 6,007.0434 | 1.9428 | | 6,055.6134 |
| **Total** | **4.1912** | **46.3998** | **30.8785** | **0.0620** | **8.6733** | **1.9853** | **10.6587** | **3.5965** | **1.8265** | **5.4230** | | **6,007.0434** | **6,007.0434** | **1.9428** | | **6,055.6134** |

## 3.4 Grading - 2021

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0954 | 0.0652 | 0.7365 | 2.1500e-003 | 0.2236 | 1.8100e-003 | 0.2254 | 0.0593 | 1.6600e-003 | 0.0610 | | 214.4502 | 214.4502 | 6.3100e-003 | | 214.6080 |
| **Total** | **0.0954** | **0.0652** | **0.7365** | **2.1500e-003** | **0.2236** | **1.8100e-003** | **0.2254** | **0.0593** | **1.6600e-003** | **0.0610** | | **214.4502** | **214.4502** | **6.3100e-003** | | **214.6080** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.1912 | 46.3998 | 30.8785 | 0.0620 | | 1.9853 | 1.9853 | | 1.8265 | 1.8265 | 0.0000 | 6,007.0434 | 6,007.0434 | 1.9428 | | 6,055.6134 |
| **Total** | **4.1912** | **46.3998** | **30.8785** | **0.0620** | **8.6733** | **1.9853** | **10.6587** | **3.5965** | **1.8265** | **5.4230** | **0.0000** | **6,007.0434** | **6,007.0434** | **1.9428** | | **6,055.6134** |

### 3.4 Grading - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0954 | 0.0652 | 0.7365 | 2.1500e-003 | 0.2236 | 1.8100e-003 | 0.2254 | 0.0593 | 1.6600e-003 | 0.0610 | | 214.4502 | 214.4502 | 6.3100e-003 | | 214.6080 |
| **Total** | **0.0954** | **0.0652** | **0.7365** | **2.1500e-003** | **0.2236** | **1.8100e-003** | **0.2254** | **0.0593** | **1.6600e-003** | **0.0610** | | **214.4502** | **214.4502** | **6.3100e-003** | | **214.6080** |

### 3.4 Grading - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6248 | 38.8435 | 29.0415 | 0.0621 | | 1.6349 | 1.6349 | | 1.5041 | 1.5041 | | 6,011.4105 | 6,011.4105 | 1.9442 | | 6,060.0158 |
| **Total** | **3.6248** | **38.8435** | **29.0415** | **0.0621** | **8.6733** | **1.6349** | **10.3082** | **3.5965** | **1.5041** | **5.1006** | | **6,011.4105** | **6,011.4105** | **1.9442** | | **6,060.0158** |

## 3.4 Grading - 2022

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0896 | 0.0589 | 0.6784 | 2.0800e-003 | 0.2236 | 1.7500e-003 | 0.2253 | 0.0593 | 1.6100e-003 | 0.0609 | | 206.9139 | 206.9139 | 5.7000e-003 | | 207.0563 |
| **Total** | **0.0896** | **0.0589** | **0.6784** | **2.0800e-003** | **0.2236** | **1.7500e-003** | **0.2253** | **0.0593** | **1.6100e-003** | **0.0609** | | **206.9139** | **206.9139** | **5.7000e-003** | | **207.0563** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6248 | 38.8435 | 29.0415 | 0.0621 | | 1.6349 | 1.6349 | | 1.5041 | 1.5041 | 0.0000 | 6,011.4105 | 6,011.4105 | 1.9442 | | 6,060.0158 |
| **Total** | **3.6248** | **38.8435** | **29.0415** | **0.0621** | **8.6733** | **1.6349** | **10.3082** | **3.5965** | **1.5041** | **5.1006** | **0.0000** | **6,011.4105** | **6,011.4105** | **1.9442** | | **6,060.0158** |

### 3.4 Grading - 2022

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0896 | 0.0589 | 0.6784 | 2.0800e-003 | 0.2236 | 1.7500e-003 | 0.2253 | 0.0593 | 1.6100e-003 | 0.0609 | | 206.9139 | 206.9139 | 5.7000e-003 | | 207.0563 |
| **Total** | **0.0896** | **0.0589** | **0.6784** | **2.0800e-003** | **0.2236** | **1.7500e-003** | **0.2253** | **0.0593** | **1.6100e-003** | **0.0609** | | **206.9139** | **206.9139** | **5.7000e-003** | | **207.0563** |

### 3.5 Building Construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | | 2,554.3336 | 2,554.3336 | 0.6120 | | 2,569.6322 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | | **2,554.3336** | **2,554.3336** | **0.6120** | | **2,569.6322** |

### 3.5 Building Construction - 2022

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.4284 | 13.1673 | 3.8005 | 0.0354 | 0.9155 | 0.0256 | 0.9412 | 0.2636 | 0.0245 | 0.2881 | | 3,789.075 0 | 3,789.075 0 | 0.2381 | | 3,795.028 3 |
| Worker | 3.5872 | 2.3593 | 27.1680 | 0.0832 | 8.9533 | 0.0701 | 9.0234 | 2.3745 | 0.0646 | 2.4390 | | 8,286.901 3 | 8,286.901 3 | 0.2282 | | 8,292.605 8 |
| **Total** | **4.0156** | **15.5266** | **30.9685** | **0.1186** | **9.8688** | **0.0957** | **9.9645** | **2.6381** | **0.0891** | **2.7271** | | **12,075.97 63** | **12,075.97 63** | **0.4663** | | **12,087.63 41** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | 0.0000 | 2,554.333 6 | 2,554.333 6 | 0.6120 | | 2,569.632 2 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | **0.0000** | **2,554.333 6** | **2,554.333 6** | **0.6120** | | **2,569.632 2** |

## 3.5 Building Construction - 2022

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.4284 | 13.1673 | 3.8005 | 0.0354 | 0.9155 | 0.0256 | 0.9412 | 0.2636 | 0.0245 | 0.2881 | | 3,789.0750 | 3,789.0750 | 0.2381 | | 3,795.0283 |
| Worker | 3.5872 | 2.3593 | 27.1680 | 0.0832 | 8.9533 | 0.0701 | 9.0234 | 2.3745 | 0.0646 | 2.4390 | | 8,286.9013 | 8,286.9013 | 0.2282 | | 8,292.6058 |
| **Total** | **4.0156** | **15.5266** | **30.9685** | **0.1186** | **9.8688** | **0.0957** | **9.9645** | **2.6381** | **0.0891** | **2.7271** | | **12,075.9763** | **12,075.9763** | **0.4663** | | **12,087.6341** |

## 3.5 Building Construction - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | | 2,555.2099 | 2,555.2099 | 0.6079 | | 2,570.4061 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | | **2,555.2099** | **2,555.2099** | **0.6079** | | **2,570.4061** |

## 3.5 Building Construction - 2023

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3183 | 9.9726 | 3.3771 | 0.0343 | 0.9156 | 0.0122 | 0.9277 | 0.2636 | 0.0116 | 0.2752 | | 3,671.400 7 | 3,671.400 7 | 0.2096 | | 3,676.641 7 |
| Worker | 3.3795 | 2.1338 | 24.9725 | 0.0801 | 8.9533 | 0.0681 | 9.0214 | 2.3745 | 0.0627 | 2.4372 | | 7,983.731 8 | 7,983.731 8 | 0.2055 | | 7,988.868 3 |
| **Total** | **3.6978** | **12.1065** | **28.3496** | **0.1144** | **9.8688** | **0.0803** | **9.9491** | **2.6381** | **0.0743** | **2.7124** | | **11,655.13 25** | **11,655.13 25** | **0.4151** | | **11,665.50 99** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | 0.0000 | 2,555.209 9 | 2,555.209 9 | 0.6079 | | 2,570.406 1 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | **0.0000** | **2,555.209 9** | **2,555.209 9** | **0.6079** | | **2,570.406 1** |

## 3.5 Building Construction - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3183 | 9.9726 | 3.3771 | 0.0343 | 0.9156 | 0.0122 | 0.9277 | 0.2636 | 0.0116 | 0.2752 | | 3,671.400 7 | 3,671.400 7 | 0.2096 | | 3,676.641 7 |
| Worker | 3.3795 | 2.1338 | 24.9725 | 0.0801 | 8.9533 | 0.0681 | 9.0214 | 2.3745 | 0.0627 | 2.4372 | | 7,983.731 8 | 7,983.731 8 | 0.2055 | | 7,988.868 3 |
| **Total** | **3.6978** | **12.1065** | **28.3496** | **0.1144** | **9.8688** | **0.0803** | **9.9491** | **2.6381** | **0.0743** | **2.7124** | | **11,655.13 25** | **11,655.13 25** | **0.4151** | | **11,665.50 99** |

## 3.6 Paving - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0327 | 10.1917 | 14.5842 | 0.0228 | | 0.5102 | 0.5102 | | 0.4694 | 0.4694 | | 2,207.584 1 | 2,207.584 1 | 0.7140 | | 2,225.433 6 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.0327** | **10.1917** | **14.5842** | **0.0228** | | **0.5102** | **0.5102** | | **0.4694** | **0.4694** | | **2,207.584 1** | **2,207.584 1** | **0.7140** | | **2,225.433 6** |

## 3.6 Paving - 2023

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0633 | 0.0400 | 0.4677 | 1.5000e-003 | 0.1677 | 1.2800e-003 | 0.1689 | 0.0445 | 1.1700e-003 | 0.0456 | | 149.5081 | 149.5081 | 3.8500e-003 | | 149.6043 |
| **Total** | **0.0633** | **0.0400** | **0.4677** | **1.5000e-003** | **0.1677** | **1.2800e-003** | **0.1689** | **0.0445** | **1.1700e-003** | **0.0456** | | **149.5081** | **149.5081** | **3.8500e-003** | | **149.6043** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0327 | 10.1917 | 14.5842 | 0.0228 | | 0.5102 | 0.5102 | | 0.4694 | 0.4694 | 0.0000 | 2,207.5841 | 2,207.5841 | 0.7140 | | 2,225.4336 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.0327** | **10.1917** | **14.5842** | **0.0228** | | **0.5102** | **0.5102** | | **0.4694** | **0.4694** | **0.0000** | **2,207.5841** | **2,207.5841** | **0.7140** | | **2,225.4336** |

## 3.6 Paving - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0633 | 0.0400 | 0.4677 | 1.5000e-003 | 0.1677 | 1.2800e-003 | 0.1689 | 0.0445 | 1.1700e-003 | 0.0456 | | 149.5081 | 149.5081 | 3.8500e-003 | | 149.6043 |
| **Total** | **0.0633** | **0.0400** | **0.4677** | **1.5000e-003** | **0.1677** | **1.2800e-003** | **0.1689** | **0.0445** | **1.1700e-003** | **0.0456** | | **149.5081** | **149.5081** | **3.8500e-003** | | **149.6043** |

## 3.6 Paving - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9882 | 9.5246 | 14.6258 | 0.0228 | | 0.4685 | 0.4685 | | 0.4310 | 0.4310 | | 2,207.5472 | 2,207.5472 | 0.7140 | | 2,225.3963 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9882** | **9.5246** | **14.6258** | **0.0228** | | **0.4685** | **0.4685** | | **0.4310** | **0.4310** | | **2,207.5472** | **2,207.5472** | **0.7140** | | **2,225.3963** |

## 3.6 Paving - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0601 | 0.0364 | 0.4354 | 1.4500e-003 | 0.1677 | 1.2600e-003 | 0.1689 | 0.0445 | 1.1600e-003 | 0.0456 | | 144.8706 | 144.8706 | 3.5300e-003 | | 144.9587 |
| **Total** | **0.0601** | **0.0364** | **0.4354** | **1.4500e-003** | **0.1677** | **1.2600e-003** | **0.1689** | **0.0445** | **1.1600e-003** | **0.0456** | | **144.8706** | **144.8706** | **3.5300e-003** | | **144.9587** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9882 | 9.5246 | 14.6258 | 0.0228 | | 0.4685 | 0.4685 | | 0.4310 | 0.4310 | 0.0000 | 2,207.547 2 | 2,207.547 2 | 0.7140 | | 2,225.396 3 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9882** | **9.5246** | **14.6258** | **0.0228** | | **0.4685** | **0.4685** | | **0.4310** | **0.4310** | **0.0000** | **2,207.547 2** | **2,207.547 2** | **0.7140** | | **2,225.396 3** |

## 3.6 Paving - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0601 | 0.0364 | 0.4354 | 1.4500e-003 | 0.1677 | 1.2600e-003 | 0.1689 | 0.0445 | 1.1600e-003 | 0.0456 | | 144.8706 | 144.8706 | 3.5300e-003 | | 144.9587 |
| **Total** | **0.0601** | **0.0364** | **0.4354** | **1.4500e-003** | **0.1677** | **1.2600e-003** | **0.1689** | **0.0445** | **1.1600e-003** | **0.0456** | | **144.8706** | **144.8706** | **3.5300e-003** | | **144.9587** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 236.4115 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1808 | 1.2188 | 1.8101 | 2.9700e-003 | | 0.0609 | 0.0609 | | 0.0609 | 0.0609 | | 281.4481 | 281.4481 | 0.0159 | | 281.8443 |
| **Total** | **236.5923** | **1.2188** | **1.8101** | **2.9700e-003** | | **0.0609** | **0.0609** | | **0.0609** | **0.0609** | | **281.4481** | **281.4481** | **0.0159** | | **281.8443** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.6406 | 0.3886 | 4.6439 | 0.0155 | 1.7884 | 0.0134 | 1.8018 | 0.4743 | 0.0123 | 0.4866 | | 1,545.286 0 | 1,545.286 0 | 0.0376 | | 1,546.226 2 |
| **Total** | **0.6406** | **0.3886** | **4.6439** | **0.0155** | **1.7884** | **0.0134** | **1.8018** | **0.4743** | **0.0123** | **0.4866** | | **1,545.286 0** | **1,545.286 0** | **0.0376** | | **1,546.226 2** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 236.4115 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1808 | 1.2188 | 1.8101 | 2.9700e-003 | | 0.0609 | 0.0609 | | 0.0609 | 0.0609 | 0.0000 | 281.4481 | 281.4481 | 0.0159 | | 281.8443 |
| **Total** | **236.5923** | **1.2188** | **1.8101** | **2.9700e-003** | | **0.0609** | **0.0609** | | **0.0609** | **0.0609** | **0.0000** | **281.4481** | **281.4481** | **0.0159** | | **281.8443** |

## 3.7 Architectural Coating - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.6406 | 0.3886 | 4.6439 | 0.0155 | 1.7884 | 0.0134 | 1.8018 | 0.4743 | 0.0123 | 0.4866 | | 1,545.2860 | 1,545.2860 | 0.0376 | | 1,546.2262 |
| **Total** | **0.6406** | **0.3886** | **4.6439** | **0.0155** | **1.7884** | **0.0134** | **1.8018** | **0.4743** | **0.0123** | **0.4866** | | **1,545.2860** | **1,545.2860** | **0.0376** | | **1,546.2262** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 9.5233 | 45.9914 | 110.0422 | 0.4681 | 45.9592 | 0.3373 | 46.2965 | 12.2950 | 0.3132 | 12.6083 | | 47,917.8005 | 47,917.8005 | 2.1953 | | 47,972.6839 |
| Unmitigated | 9.5233 | 45.9914 | 110.0422 | 0.4681 | 45.9592 | 0.3373 | 46.2965 | 12.2950 | 0.3132 | 12.6083 | | 47,917.8005 | 47,917.8005 | 2.1953 | | 47,972.6839 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments Low Rise | 145.75 | 154.25 | 154.00 | 506,227 | 506,227 |
| Apartments Mid Rise | 4,026.75 | 3,773.25 | 4075.50 | 13,660,065 | 13,660,065 |
| General Office Building | 288.45 | 62.55 | 31.05 | 706,812 | 706,812 |
| High Turnover (Sit Down Restaurant) | 2,368.80 | 2,873.52 | 2817.72 | 3,413,937 | 3,413,937 |
| Hotel | 192.00 | 187.50 | 160.00 | 445,703 | 445,703 |
| Quality Restaurant | 501.12 | 511.92 | 461.20 | 707,488 | 707,488 |
| Regional Shopping Center | 528.08 | 601.44 | 357.84 | 1,112,221 | 1,112,221 |
| Total | 8,050.95 | 8,164.43 | 8,057.31 | 20,552,452 | 20,552,452 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments Low Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| Apartments Mid Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| General Office Building | 16.60 | 8.40 | 6.90 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| High Turnover (Sit Down | 16.60 | 8.40 | 6.90 | 8.50 | 72.50 | 19.00 | 37 | 20 | 43 |
| Hotel | 16.60 | 8.40 | 6.90 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Quality Restaurant | 16.60 | 8.40 | 6.90 | 12.00 | 69.00 | 19.00 | 38 | 18 | 44 |
| Regional Shopping Center | 16.60 | 8.40 | 6.90 | 16.30 | 64.70 | 19.00 | 54 | 35 | 11 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments Low Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Apartments Mid Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| General Office Building | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| High Turnover (Sit Down Restaurant) | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Hotel | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Quality Restaurant | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Regional Shopping Center | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |
| NaturalGas Unmitigated | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Apartments Low Rise | 1119.16 | 0.0121 | 0.1031 | 0.0439 | 6.6000e-004 | | 8.3400e-003 | 8.3400e-003 | | 8.3400e-003 | 8.3400e-003 | | 131.6662 | 131.6662 | 2.5200e-003 | 2.4100e-003 | 132.4486 |
| Apartments Mid Rise | 35784.3 | 0.3859 | 3.2978 | 1.4033 | 0.0211 | | 0.2666 | 0.2666 | | 0.2666 | 0.2666 | | 4,209.9164 | 4,209.9164 | 0.0807 | 0.0772 | 4,234.9339 |
| General Office Building | 1283.42 | 0.0138 | 0.1258 | 0.1057 | 7.5000e-004 | | 9.5600e-003 | 9.5600e-003 | | 9.5600e-003 | 9.5600e-003 | | 150.9911 | 150.9911 | 2.8900e-003 | 2.7700e-003 | 151.8884 |
| High Turnover (Sit Down Restaurant) | 22759.9 | 0.2455 | 2.2314 | 1.8743 | 0.0134 | | 0.1696 | 0.1696 | | 0.1696 | 0.1696 | | 2,677.6342 | 2,677.6342 | 0.0513 | 0.0491 | 2,693.5460 |
| Hotel | 4769.72 | 0.0514 | 0.4676 | 0.3928 | 2.8100e-003 | | 0.0355 | 0.0355 | | 0.0355 | 0.0355 | | 561.1436 | 561.1436 | 0.0108 | 0.0103 | 564.4782 |
| Quality Restaurant | 5057.75 | 0.0545 | 0.4959 | 0.4165 | 2.9800e-003 | | 0.0377 | 0.0377 | | 0.0377 | 0.0377 | | 595.0298 | 595.0298 | 0.0114 | 0.0109 | 598.5658 |
| Regional Shopping Center | 251.616 | 2.7100e-003 | 0.0247 | 0.0207 | 1.5000e-004 | | 1.8700e-003 | 1.8700e-003 | | 1.8700e-003 | 1.8700e-003 | | 29.6019 | 29.6019 | 5.7000e-004 | 5.4000e-004 | 29.7778 |
| **Total** | | **0.7660** | **6.7463** | **4.2573** | **0.0418** | | **0.5292** | **0.5292** | | **0.5292** | **0.5292** | | **8,355.9832** | **8,355.9832** | **0.1602** | **0.1532** | **8,405.6387** |

## 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Apartments Low Rise | 1.11916 | 0.0121 | 0.1031 | 0.0439 | 6.6000e-004 | | 8.3400e-003 | 8.3400e-003 | | 8.3400e-003 | 8.3400e-003 | | 131.6662 | 131.6662 | 2.5200e-003 | 2.4100e-003 | 132.4486 |
| Apartments Mid Rise | 35.7843 | 0.3859 | 3.2978 | 1.4033 | 0.0211 | | 0.2666 | 0.2666 | | 0.2666 | 0.2666 | | 4,209.9164 | 4,209.9164 | 0.0807 | 0.0772 | 4,234.9339 |
| General Office Building | 1.28342 | 0.0138 | 0.1258 | 0.1057 | 7.5000e-004 | | 9.5600e-003 | 9.5600e-003 | | 9.5600e-003 | 9.5600e-003 | | 150.9911 | 150.9911 | 2.8900e-003 | 2.7700e-003 | 151.8884 |
| High Turnover (Sit Down Restaurant) | 22.7599 | 0.2455 | 2.2314 | 1.8743 | 0.0134 | | 0.1696 | 0.1696 | | 0.1696 | 0.1696 | | 2,677.6342 | 2,677.6342 | 0.0513 | 0.0491 | 2,693.5460 |
| Hotel | 4.76972 | 0.0514 | 0.4676 | 0.3928 | 2.8100e-003 | | 0.0355 | 0.0355 | | 0.0355 | 0.0355 | | 561.1436 | 561.1436 | 0.0108 | 0.0103 | 564.4782 |
| Quality Restaurant | 5.05775 | 0.0545 | 0.4959 | 0.4165 | 2.9800e-003 | | 0.0377 | 0.0377 | | 0.0377 | 0.0377 | | 595.0298 | 595.0298 | 0.0114 | 0.0109 | 598.5658 |
| Regional Shopping Center | 0.251616 | 2.7100e-003 | 0.0247 | 0.0207 | 1.5000e-004 | | 1.8700e-003 | 1.8700e-003 | | 1.8700e-003 | 1.8700e-003 | | 29.6019 | 29.6019 | 5.7000e-004 | 5.4000e-004 | 29.7778 |
| **Total** | | **0.7660** | **6.7463** | **4.2573** | **0.0418** | | **0.5292** | **0.5292** | | **0.5292** | **0.5292** | | **8,355.9832** | **8,355.9832** | **0.1602** | **0.1532** | **8,405.6387** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |
| Unmitigated | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.2670 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 24.1085 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Hearth | 1.6500 | 14.1000 | 6.0000 | 0.0900 | | 1.1400 | 1.1400 | | 1.1400 | 1.1400 | 0.0000 | 18,000.0000 | 18,000.0000 | 0.3450 | 0.3300 | 18,106.9650 |
| Landscaping | 2.4766 | 0.9496 | 82.4430 | 4.3600e-003 | | 0.4574 | 0.4574 | | 0.4574 | 0.4574 | | 148.5950 | 148.5950 | 0.1424 | | 152.1542 |
| **Total** | **30.5020** | **15.0496** | **88.4430** | **0.0944** | | **1.5974** | **1.5974** | | **1.5974** | **1.5974** | **0.0000** | **18,148.5950** | **18,148.5950** | **0.4874** | **0.3300** | **18,259.1192** |

## 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.2670 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 24.1085 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Hearth | 1.6500 | 14.1000 | 6.0000 | 0.0900 | | 1.1400 | 1.1400 | | 1.1400 | 1.1400 | 0.0000 | 18,000.0000 | 18,000.0000 | 0.3450 | 0.3300 | 18,106.9650 |
| Landscaping | 2.4766 | 0.9496 | 82.4430 | 4.3600e-003 | | 0.4574 | 0.4574 | | 0.4574 | 0.4574 | | 148.5950 | 148.5950 | 0.1424 | | 152.1542 |
| **Total** | **30.5020** | **15.0496** | **88.4430** | **0.0944** | | **1.5974** | **1.5974** | | **1.5974** | **1.5974** | **0.0000** | **18,148.5950** | **18,148.5950** | **0.4874** | **0.3300** | **18,259.1192** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# Village South Specific Plan (Proposed)

**Los Angeles-South Coast County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 45.00 | 1000sqft | 1.03 | 45,000.00 | 0 |
| High Turnover (Sit Down Restaurant) | 36.00 | 1000sqft | 0.83 | 36,000.00 | 0 |
| Hotel | 50.00 | Room | 1.67 | 72,600.00 | 0 |
| Quality Restaurant | 8.00 | 1000sqft | 0.18 | 8,000.00 | 0 |
| Apartments Low Rise | 25.00 | Dwelling Unit | 1.56 | 25,000.00 | 72 |
| Apartments Mid Rise | 975.00 | Dwelling Unit | 25.66 | 975,000.00 | 2789 |
| Regional Shopping Center | 56.00 | 1000sqft | 1.29 | 56,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 33 |
| **Climate Zone** | 9 | | | **Operational Year** | 2028 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 702.44 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Annual

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | NumberWood | 1.25 | 0.00 |
| tblFireplaces | NumberWood | 48.75 | 0.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblVehicleTrips | ST_TR | 7.16 | 6.17 |
| tblVehicleTrips | ST_TR | 6.39 | 3.87 |
| tblVehicleTrips | ST_TR | 2.46 | 1.39 |
| tblVehicleTrips | ST_TR | 158.37 | 79.82 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | ST_TR | 8.19 | 3.75 |
| tblVehicleTrips | ST_TR | 94.36 | 63.99 |
| tblVehicleTrips | ST_TR | 49.97 | 10.74 |
| tblVehicleTrips | SU_TR | 6.07 | 6.16 |
| tblVehicleTrips | SU_TR | 5.86 | 4.18 |
| tblVehicleTrips | SU_TR | 1.05 | 0.69 |
| tblVehicleTrips | SU_TR | 131.84 | 78.27 |
| tblVehicleTrips | SU_TR | 5.95 | 3.20 |
| tblVehicleTrips | SU_TR | 72.16 | 57.65 |
| tblVehicleTrips | SU_TR | 25.24 | 6.39 |
| tblVehicleTrips | WD_TR | 6.59 | 5.83 |
| tblVehicleTrips | WD_TR | 6.65 | 4.13 |
| tblVehicleTrips | WD_TR | 11.03 | 6.41 |
| tblVehicleTrips | WD_TR | 127.15 | 65.80 |
| tblVehicleTrips | WD_TR | 8.17 | 3.84 |
| tblVehicleTrips | WD_TR | 89.95 | 62.64 |
| tblVehicleTrips | WD_TR | 42.70 | 9.43 |
| tblWoodstoves | NumberCatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberCatalytic | 48.75 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 48.75 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2021 | 0.1704 | 1.8234 | 1.1577 | 2.3800e-003 | 0.4141 | 0.0817 | 0.4958 | 0.1788 | 0.0754 | 0.2542 | 0.0000 | 210.7654 | 210.7654 | 0.0600 | 0.0000 | 212.2661 |
| 2022 | 0.5865 | 4.0240 | 5.1546 | 0.0155 | 0.9509 | 0.1175 | 1.0683 | 0.2518 | 0.1103 | 0.3621 | 0.0000 | 1,418.6554 | 1,418.6554 | 0.1215 | 0.0000 | 1,421.6925 |
| 2023 | 0.5190 | 3.2850 | 4.7678 | 0.0147 | 0.8497 | 0.0971 | 0.9468 | 0.2283 | 0.0912 | 0.3195 | 0.0000 | 1,342.4412 | 1,342.4412 | 0.1115 | 0.0000 | 1,345.2291 |
| 2024 | 4.1592 | 0.1313 | 0.2557 | 5.0000e-004 | 0.0221 | 6.3900e-003 | 0.0285 | 5.8700e-003 | 5.9700e-003 | 0.0118 | 0.0000 | 44.6355 | 44.6355 | 7.8300e-003 | 0.0000 | 44.8311 |
| **Maximum** | **4.1592** | **4.0240** | **5.1546** | **0.0155** | **0.9509** | **0.1175** | **1.0683** | **0.2518** | **0.1103** | **0.3621** | **0.0000** | **1,418.6554** | **1,418.6554** | **0.1215** | **0.0000** | **1,421.6925** |

## 2.1 Overall Construction

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2021 | 0.1704 | 1.8234 | 1.1577 | 2.3800e-003 | 0.4141 | 0.0817 | 0.4958 | 0.1788 | 0.0754 | 0.2542 | 0.0000 | 210.7651 | 210.7651 | 0.0600 | 0.0000 | 212.2658 |
| 2022 | 0.5865 | 4.0240 | 5.1546 | 0.0155 | 0.9509 | 0.1175 | 1.0683 | 0.2518 | 0.1103 | 0.3621 | 0.0000 | 1,418.6550 | 1,418.6550 | 0.1215 | 0.0000 | 1,421.6921 |
| 2023 | 0.5190 | 3.2850 | 4.7678 | 0.0147 | 0.8497 | 0.0971 | 0.9468 | 0.2283 | 0.0912 | 0.3195 | 0.0000 | 1,342.4409 | 1,342.4409 | 0.1115 | 0.0000 | 1,345.2287 |
| 2024 | 4.1592 | 0.1313 | 0.2557 | 5.0000e-004 | 0.0221 | 6.3900e-003 | 0.0285 | 5.8700e-003 | 5.9700e-003 | 0.0118 | 0.0000 | 44.6354 | 44.6354 | 7.8300e-003 | 0.0000 | 44.8311 |
| **Maximum** | **4.1592** | **4.0240** | **5.1546** | **0.0155** | **0.9509** | **0.1175** | **1.0683** | **0.2518** | **0.1103** | **0.3621** | **0.0000** | **1,418.6550** | **1,418.6550** | **0.1215** | **0.0000** | **1,421.6921** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **9-1-2021** | **11-30-2021** | 1.4091 | 1.4091 |
| **2** | **12-1-2021** | **2-28-2022** | 1.3329 | 1.3329 |
| **3** | **3-1-2022** | **5-31-2022** | 1.1499 | 1.1499 |
| **4** | **6-1-2022** | **8-31-2022** | 1.1457 | 1.1457 |
| **5** | **9-1-2022** | **11-30-2022** | 1.1415 | 1.1415 |
| **6** | **12-1-2022** | **2-28-2023** | 1.0278 | 1.0278 |
| **7** | **3-1-2023** | **5-31-2023** | 0.9868 | 0.9868 |
| **8** | **6-1-2023** | **8-31-2023** | 0.9831 | 0.9831 |

| | | | | |
|---|---|---|---|---|
| **9** | **9-1-2023** | **11-30-2023** | 0.9798 | 0.9798 |
| **10** | **12-1-2023** | **2-29-2024** | 2.8757 | 2.8757 |
| **11** | **3-1-2024** | **5-31-2024** | 1.6188 | 1.6188 |
| | | **Highest** | 2.8757 | 2.8757 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 5.1437 | 0.2950 | 10.3804 | 1.6700e-003 | | 0.0714 | 0.0714 | | 0.0714 | 0.0714 | 0.0000 | 220.9670 | 220.9670 | 0.0201 | 3.7400e-003 | 222.5835 |
| Energy | 0.1398 | 1.2312 | 0.7770 | 7.6200e-003 | | 0.0966 | 0.0966 | | 0.0966 | 0.0966 | 0.0000 | 3,896.0732 | 3,896.0732 | 0.1303 | 0.0468 | 3,913.2833 |
| Mobile | 1.5857 | 7.9962 | 19.1834 | 0.0821 | 7.7979 | 0.0580 | 7.8559 | 2.0895 | 0.0539 | 2.1434 | 0.0000 | 7,620.4986 | 7,620.4986 | 0.3407 | 0.0000 | 7,629.0162 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 207.8079 | 0.0000 | 207.8079 | 12.2811 | 0.0000 | 514.8354 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 29.1632 | 556.6420 | 585.8052 | 3.0183 | 0.0755 | 683.7567 |
| **Total** | **6.8692** | **9.5223** | **30.3407** | **0.0914** | **7.7979** | **0.2260** | **8.0240** | **2.0895** | **0.2219** | **2.3114** | **236.9712** | **12,294.1807** | **12,531.1519** | **15.7904** | **0.1260** | **12,963.4751** |

## 2.2 Overall Operational

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 5.1437 | 0.2950 | 10.3804 | 1.6700e-003 | | 0.0714 | 0.0714 | | 0.0714 | 0.0714 | 0.0000 | 220.9670 | 220.9670 | 0.0201 | 3.7400e-003 | 222.5835 |
| Energy | 0.1398 | 1.2312 | 0.7770 | 7.6200e-003 | | 0.0966 | 0.0966 | | 0.0966 | 0.0966 | 0.0000 | 3,896.0732 | 3,896.0732 | 0.1303 | 0.0468 | 3,913.2833 |
| Mobile | 1.5857 | 7.9962 | 19.1834 | 0.0821 | 7.7979 | 0.0580 | 7.8559 | 2.0895 | 0.0539 | 2.1434 | 0.0000 | 7,620.4986 | 7,620.4986 | 0.3407 | 0.0000 | 7,629.0162 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 207.8079 | 0.0000 | 207.8079 | 12.2811 | 0.0000 | 514.8354 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 29.1632 | 556.6420 | 585.8052 | 3.0183 | 0.0755 | 683.7567 |
| **Total** | **6.8692** | **9.5223** | **30.3407** | **0.0914** | **7.7979** | **0.2260** | **8.0240** | **2.0895** | **0.2219** | **2.3114** | **236.9712** | **12,294.1807** | **12,531.1519** | **15.7904** | **0.1260** | **12,963.4751** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 9/1/2021 | 10/12/2021 | 5 | 30 | |
| 2 | Site Preparation | Site Preparation | 10/13/2021 | 11/9/2021 | 5 | 20 | |
| 3 | Grading | Grading | 11/10/2021 | 1/11/2022 | 5 | 45 | |
| 4 | Building Construction | Building Construction | 1/12/2022 | 12/12/2023 | 5 | 500 | |
| 5 | Paving | Paving | 12/13/2023 | 1/30/2024 | 5 | 35 | |
| 6 | Architectural Coating | Architectural Coating | 1/31/2024 | 3/19/2024 | 5 | 35 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 112.5**

**Acres of Paving: 0**

**Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)**

**<u>OffRoad Equipment</u>**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Demolition | Excavators | 3 | 8.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 2 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 4 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 2 | 8.00 | 158 | 0.38 |
| Grading | Graders | 1 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Paving | Pavers | 2 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 2 | 8.00 | 132 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 6 | 15.00 | 0.00 | 458.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 7 | 18.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 8 | 20.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 801.00 | 143.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 160.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0496 | 0.0000 | 0.0496 | 7.5100e-003 | 0.0000 | 7.5100e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0475 | 0.4716 | 0.3235 | 5.8000e-004 | | 0.0233 | 0.0233 | | 0.0216 | 0.0216 | 0.0000 | 51.0012 | 51.0012 | 0.0144 | 0.0000 | 51.3601 |
| **Total** | **0.0475** | **0.4716** | **0.3235** | **5.8000e-004** | **0.0496** | **0.0233** | **0.0729** | **7.5100e-003** | **0.0216** | **0.0291** | **0.0000** | **51.0012** | **51.0012** | **0.0144** | **0.0000** | **51.3601** |

## 3.2 Demolition - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.9300e-003 | 0.0634 | 0.0148 | 1.8000e-004 | 3.9400e-003 | 1.9000e-004 | 4.1300e-003 | 1.0800e-003 | 1.8000e-004 | 1.2600e-003 | 0.0000 | 17.4566 | 17.4566 | 1.2100e-003 | 0.0000 | 17.4869 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.2000e-004 | 5.3000e-004 | 6.0900e-003 | 2.0000e-005 | 1.6800e-003 | 1.0000e-005 | 1.6900e-003 | 4.5000e-004 | 1.0000e-005 | 4.6000e-004 | 0.0000 | 1.5281 | 1.5281 | 5.0000e-005 | 0.0000 | 1.5293 |
| **Total** | **2.6500e-003** | **0.0639** | **0.0209** | **2.0000e-004** | **5.6200e-003** | **2.0000e-004** | **5.8200e-003** | **1.5300e-003** | **1.9000e-004** | **1.7200e-003** | **0.0000** | **18.9847** | **18.9847** | **1.2600e-003** | **0.0000** | **19.0161** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0496 | 0.0000 | 0.0496 | 7.5100e-003 | 0.0000 | 7.5100e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0475 | 0.4716 | 0.3235 | 5.8000e-004 | | 0.0233 | 0.0233 | | 0.0216 | 0.0216 | 0.0000 | 51.0011 | 51.0011 | 0.0144 | 0.0000 | 51.3600 |
| **Total** | **0.0475** | **0.4716** | **0.3235** | **5.8000e-004** | **0.0496** | **0.0233** | **0.0729** | **7.5100e-003** | **0.0216** | **0.0291** | **0.0000** | **51.0011** | **51.0011** | **0.0144** | **0.0000** | **51.3600** |

## 3.2 Demolition - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.9300e-003 | 0.0634 | 0.0148 | 1.8000e-004 | 3.9400e-003 | 1.9000e-004 | 4.1300e-003 | 1.0800e-003 | 1.8000e-004 | 1.2600e-003 | 0.0000 | 17.4566 | 17.4566 | 1.2100e-003 | 0.0000 | 17.4869 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.2000e-004 | 5.3000e-004 | 6.0900e-003 | 2.0000e-005 | 1.6800e-003 | 1.0000e-005 | 1.6900e-003 | 4.5000e-004 | 1.0000e-005 | 4.6000e-004 | 0.0000 | 1.5281 | 1.5281 | 5.0000e-005 | 0.0000 | 1.5293 |
| **Total** | **2.6500e-003** | **0.0639** | **0.0209** | **2.0000e-004** | **5.6200e-003** | **2.0000e-004** | **5.8200e-003** | **1.5300e-003** | **1.9000e-004** | **1.7200e-003** | **0.0000** | **18.9847** | **18.9847** | **1.2600e-003** | **0.0000** | **19.0161** |

## 3.3 Site Preparation - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1807 | 0.0000 | 0.1807 | 0.0993 | 0.0000 | 0.0993 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0389 | 0.4050 | 0.2115 | 3.8000e-004 | | 0.0204 | 0.0204 | | 0.0188 | 0.0188 | 0.0000 | 33.4357 | 33.4357 | 0.0108 | 0.0000 | 33.7061 |
| **Total** | **0.0389** | **0.4050** | **0.2115** | **3.8000e-004** | **0.1807** | **0.0204** | **0.2011** | **0.0993** | **0.0188** | **0.1181** | **0.0000** | **33.4357** | **33.4357** | **0.0108** | **0.0000** | **33.7061** |

### 3.3 Site Preparation - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.8000e-004 | 4.3000e-004 | 4.8700e-003 | 1.0000e-005 | 1.3400e-003 | 1.0000e-005 | 1.3500e-003 | 3.6000e-004 | 1.0000e-005 | 3.7000e-004 | 0.0000 | 1.2225 | 1.2225 | 4.0000e-005 | 0.0000 | 1.2234 |
| **Total** | **5.8000e-004** | **4.3000e-004** | **4.8700e-003** | **1.0000e-005** | **1.3400e-003** | **1.0000e-005** | **1.3500e-003** | **3.6000e-004** | **1.0000e-005** | **3.7000e-004** | **0.0000** | **1.2225** | **1.2225** | **4.0000e-005** | **0.0000** | **1.2234** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1807 | 0.0000 | 0.1807 | 0.0993 | 0.0000 | 0.0993 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0389 | 0.4050 | 0.2115 | 3.8000e-004 | | 0.0204 | 0.0204 | | 0.0188 | 0.0188 | 0.0000 | 33.4357 | 33.4357 | 0.0108 | 0.0000 | 33.7060 |
| **Total** | **0.0389** | **0.4050** | **0.2115** | **3.8000e-004** | **0.1807** | **0.0204** | **0.2011** | **0.0993** | **0.0188** | **0.1181** | **0.0000** | **33.4357** | **33.4357** | **0.0108** | **0.0000** | **33.7060** |

## 3.3 Site Preparation - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.8000e-004 | 4.3000e-004 | 4.8700e-003 | 1.0000e-005 | 1.3400e-003 | 1.0000e-005 | 1.3500e-003 | 3.6000e-004 | 1.0000e-005 | 3.7000e-004 | 0.0000 | 1.2225 | 1.2225 | 4.0000e-005 | 0.0000 | 1.2234 |
| **Total** | **5.8000e-004** | **4.3000e-004** | **4.8700e-003** | **1.0000e-005** | **1.3400e-003** | **1.0000e-005** | **1.3500e-003** | **3.6000e-004** | **1.0000e-005** | **3.7000e-004** | **0.0000** | **1.2225** | **1.2225** | **4.0000e-005** | **0.0000** | **1.2234** |

## 3.4 Grading - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1741 | 0.0000 | 0.1741 | 0.0693 | 0.0000 | 0.0693 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0796 | 0.8816 | 0.5867 | 1.1800e-003 | | 0.0377 | 0.0377 | | 0.0347 | 0.0347 | 0.0000 | 103.5405 | 103.5405 | 0.0335 | 0.0000 | 104.3776 |
| **Total** | **0.0796** | **0.8816** | **0.5867** | **1.1800e-003** | **0.1741** | **0.0377** | **0.2118** | **0.0693** | **0.0347** | **0.1040** | **0.0000** | **103.5405** | **103.5405** | **0.0335** | **0.0000** | **104.3776** |

## 3.4 Grading - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.2200e-003 | 9.0000e-004 | 0.0103 | 3.0000e-005 | 2.8300e-003 | 2.0000e-005 | 2.8600e-003 | 7.5000e-004 | 2.0000e-005 | 7.8000e-004 | 0.0000 | 2.5808 | 2.5808 | 8.0000e-005 | 0.0000 | 2.5828 |
| **Total** | **1.2200e-003** | **9.0000e-004** | **0.0103** | **3.0000e-005** | **2.8300e-003** | **2.0000e-005** | **2.8600e-003** | **7.5000e-004** | **2.0000e-005** | **7.8000e-004** | **0.0000** | **2.5808** | **2.5808** | **8.0000e-005** | **0.0000** | **2.5828** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.1741 | 0.0000 | 0.1741 | 0.0693 | 0.0000 | 0.0693 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0796 | 0.8816 | 0.5867 | 1.1800e-003 | | 0.0377 | 0.0377 | | 0.0347 | 0.0347 | 0.0000 | 103.5403 | 103.5403 | 0.0335 | 0.0000 | 104.3775 |
| **Total** | **0.0796** | **0.8816** | **0.5867** | **1.1800e-003** | **0.1741** | **0.0377** | **0.2118** | **0.0693** | **0.0347** | **0.1040** | **0.0000** | **103.5403** | **103.5403** | **0.0335** | **0.0000** | **104.3775** |

### 3.4 Grading - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.2200e-003 | 9.0000e-004 | 0.0103 | 3.0000e-005 | 2.8300e-003 | 2.0000e-005 | 2.8600e-003 | 7.5000e-004 | 2.0000e-005 | 7.8000e-004 | 0.0000 | 2.5808 | 2.5808 | 8.0000e-005 | 0.0000 | 2.5828 |
| **Total** | **1.2200e-003** | **9.0000e-004** | **0.0103** | **3.0000e-005** | **2.8300e-003** | **2.0000e-005** | **2.8600e-003** | **7.5000e-004** | **2.0000e-005** | **7.8000e-004** | **0.0000** | **2.5808** | **2.5808** | **8.0000e-005** | **0.0000** | **2.5828** |

### 3.4 Grading - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0807 | 0.0000 | 0.0807 | 0.0180 | 0.0000 | 0.0180 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0127 | 0.1360 | 0.1017 | 2.2000e-004 | | 5.7200e-003 | 5.7200e-003 | | 5.2600e-003 | 5.2600e-003 | 0.0000 | 19.0871 | 19.0871 | 6.1700e-003 | 0.0000 | 19.2414 |
| **Total** | **0.0127** | **0.1360** | **0.1017** | **2.2000e-004** | **0.0807** | **5.7200e-003** | **0.0865** | **0.0180** | **5.2600e-003** | **0.0233** | **0.0000** | **19.0871** | **19.0871** | **6.1700e-003** | **0.0000** | **19.2414** |

## 3.4 Grading - 2022

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.1000e-004 | 1.5000e-004 | 1.7400e-003 | 1.0000e-005 | 5.2000e-004 | 0.0000 | 5.3000e-004 | 1.4000e-004 | 0.0000 | 1.4000e-004 | 0.0000 | 0.4587 | 0.4587 | 1.0000e-005 | 0.0000 | 0.4590 |
| **Total** | **2.1000e-004** | **1.5000e-004** | **1.7400e-003** | **1.0000e-005** | **5.2000e-004** | **0.0000** | **5.3000e-004** | **1.4000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **0.4587** | **0.4587** | **1.0000e-005** | **0.0000** | **0.4590** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0807 | 0.0000 | 0.0807 | 0.0180 | 0.0000 | 0.0180 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0127 | 0.1360 | 0.1017 | 2.2000e-004 | | 5.7200e-003 | 5.7200e-003 | | 5.2600e-003 | 5.2600e-003 | 0.0000 | 19.0871 | 19.0871 | 6.1700e-003 | 0.0000 | 19.2414 |
| **Total** | **0.0127** | **0.1360** | **0.1017** | **2.2000e-004** | **0.0807** | **5.7200e-003** | **0.0865** | **0.0180** | **5.2600e-003** | **0.0233** | **0.0000** | **19.0871** | **19.0871** | **6.1700e-003** | **0.0000** | **19.2414** |

## 3.4 Grading - 2022

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.1000e-004 | 1.5000e-004 | 1.7400e-003 | 1.0000e-005 | 5.2000e-004 | 0.0000 | 5.3000e-004 | 1.4000e-004 | 0.0000 | 1.4000e-004 | 0.0000 | 0.4587 | 0.4587 | 1.0000e-005 | 0.0000 | 0.4590 |
| **Total** | **2.1000e-004** | **1.5000e-004** | **1.7400e-003** | **1.0000e-005** | **5.2000e-004** | **0.0000** | **5.3000e-004** | **1.4000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **0.4587** | **0.4587** | **1.0000e-005** | **0.0000** | **0.4590** |

## 3.5 Building Construction - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.2158 | 1.9754 | 2.0700 | 3.4100e-003 | | 0.1023 | 0.1023 | | 0.0963 | 0.0963 | 0.0000 | 293.1324 | 293.1324 | 0.0702 | 0.0000 | 294.8881 |
| **Total** | **0.2158** | **1.9754** | **2.0700** | **3.4100e-003** | | **0.1023** | **0.1023** | | **0.0963** | **0.0963** | **0.0000** | **293.1324** | **293.1324** | **0.0702** | **0.0000** | **294.8881** |

## 3.5 Building Construction - 2022

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0527 | 1.6961 | 0.4580 | 4.5500e-003 | 0.1140 | 3.1800e-003 | 0.1171 | 0.0329 | 3.0400e-003 | 0.0359 | 0.0000 | 441.9835 | 441.9835 | 0.0264 | 0.0000 | 442.6435 |
| Worker | 0.3051 | 0.2164 | 2.5233 | 7.3500e-003 | 0.7557 | 6.2300e-003 | 0.7619 | 0.2007 | 5.7400e-003 | 0.2065 | 0.0000 | 663.9936 | 663.9936 | 0.0187 | 0.0000 | 664.4604 |
| **Total** | **0.3578** | **1.9125** | **2.9812** | **0.0119** | **0.8696** | **9.4100e-003** | **0.8790** | **0.2336** | **8.7800e-003** | **0.2424** | **0.0000** | **1,105.9771** | **1,105.9771** | **0.0451** | **0.0000** | **1,107.1039** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.2158 | 1.9754 | 2.0700 | 3.4100e-003 | | 0.1023 | 0.1023 | | 0.0963 | 0.0963 | 0.0000 | 293.1321 | 293.1321 | 0.0702 | 0.0000 | 294.8877 |
| **Total** | **0.2158** | **1.9754** | **2.0700** | **3.4100e-003** | | **0.1023** | **0.1023** | | **0.0963** | **0.0963** | **0.0000** | **293.1321** | **293.1321** | **0.0702** | **0.0000** | **294.8877** |

## 3.5 Building Construction - 2022

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0527 | 1.6961 | 0.4580 | 4.5500e-003 | 0.1140 | 3.1800e-003 | 0.1171 | 0.0329 | 3.0400e-003 | 0.0359 | 0.0000 | 441.9835 | 441.9835 | 0.0264 | 0.0000 | 442.6435 |
| Worker | 0.3051 | 0.2164 | 2.5233 | 7.3500e-003 | 0.7557 | 6.2300e-003 | 0.7619 | 0.2007 | 5.7400e-003 | 0.2065 | 0.0000 | 663.9936 | 663.9936 | 0.0187 | 0.0000 | 664.4604 |
| **Total** | **0.3578** | **1.9125** | **2.9812** | **0.0119** | **0.8696** | **9.4100e-003** | **0.8790** | **0.2336** | **8.7800e-003** | **0.2424** | **0.0000** | **1,105.9771** | **1,105.9771** | **0.0451** | **0.0000** | **1,107.1039** |

## 3.5 Building Construction - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.1942 | 1.7765 | 2.0061 | 3.3300e-003 | | 0.0864 | 0.0864 | | 0.0813 | 0.0813 | 0.0000 | 286.2789 | 286.2789 | 0.0681 | 0.0000 | 287.9814 |
| **Total** | **0.1942** | **1.7765** | **2.0061** | **3.3300e-003** | | **0.0864** | **0.0864** | | **0.0813** | **0.0813** | **0.0000** | **286.2789** | **286.2789** | **0.0681** | **0.0000** | **287.9814** |

## 3.5 Building Construction - 2023

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0382 | 1.2511 | 0.4011 | 4.3000e-003 | 0.1113 | 1.4600e-003 | 0.1127 | 0.0321 | 1.4000e-003 | 0.0335 | 0.0000 | 417.9930 | 417.9930 | 0.0228 | 0.0000 | 418.5624 |
| Worker | 0.2795 | 0.1910 | 2.2635 | 6.9100e-003 | 0.7377 | 5.9100e-003 | 0.7436 | 0.1960 | 5.4500e-003 | 0.2014 | 0.0000 | 624.5363 | 624.5363 | 0.0164 | 0.0000 | 624.9466 |
| **Total** | **0.3177** | **1.4420** | **2.6646** | **0.0112** | **0.8490** | **7.3700e-003** | **0.8564** | **0.2281** | **6.8500e-003** | **0.2349** | **0.0000** | **1,042.5294** | **1,042.5294** | **0.0392** | **0.0000** | **1,043.5090** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.1942 | 1.7765 | 2.0061 | 3.3300e-003 | | 0.0864 | 0.0864 | | 0.0813 | 0.0813 | 0.0000 | 286.2785 | 286.2785 | 0.0681 | 0.0000 | 287.9811 |
| **Total** | **0.1942** | **1.7765** | **2.0061** | **3.3300e-003** | | **0.0864** | **0.0864** | | **0.0813** | **0.0813** | **0.0000** | **286.2785** | **286.2785** | **0.0681** | **0.0000** | **287.9811** |

## 3.5 Building Construction - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0382 | 1.2511 | 0.4011 | 4.3000e-003 | 0.1113 | 1.4600e-003 | 0.1127 | 0.0321 | 1.4000e-003 | 0.0335 | 0.0000 | 417.9930 | 417.9930 | 0.0228 | 0.0000 | 418.5624 |
| Worker | 0.2795 | 0.1910 | 2.2635 | 6.9100e-003 | 0.7377 | 5.9100e-003 | 0.7436 | 0.1960 | 5.4500e-003 | 0.2014 | 0.0000 | 624.5363 | 624.5363 | 0.0164 | 0.0000 | 624.9466 |
| **Total** | **0.3177** | **1.4420** | **2.6646** | **0.0112** | **0.8490** | **7.3700e-003** | **0.8564** | **0.2281** | **6.8500e-003** | **0.2349** | **0.0000** | **1,042.5294** | **1,042.5294** | **0.0392** | **0.0000** | **1,043.5090** |

## 3.6 Paving - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.7100e-003 | 0.0663 | 0.0948 | 1.5000e-004 | | 3.3200e-003 | 3.3200e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 13.0175 | 13.0175 | 4.2100e-003 | 0.0000 | 13.1227 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **6.7100e-003** | **0.0663** | **0.0948** | **1.5000e-004** | | **3.3200e-003** | **3.3200e-003** | | **3.0500e-003** | **3.0500e-003** | **0.0000** | **13.0175** | **13.0175** | **4.2100e-003** | **0.0000** | **13.1227** |

## 3.6 Paving - 2023

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.8000e-004 | 1.9000e-004 | 2.2300e-003 | 1.0000e-005 | 7.3000e-004 | 1.0000e-005 | 7.3000e-004 | 1.9000e-004 | 1.0000e-005 | 2.0000e-004 | 0.0000 | 0.6156 | 0.6156 | 2.0000e-005 | 0.0000 | 0.6160 |
| **Total** | **2.8000e-004** | **1.9000e-004** | **2.2300e-003** | **1.0000e-005** | **7.3000e-004** | **1.0000e-005** | **7.3000e-004** | **1.9000e-004** | **1.0000e-005** | **2.0000e-004** | **0.0000** | **0.6156** | **0.6156** | **2.0000e-005** | **0.0000** | **0.6160** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.7100e-003 | 0.0663 | 0.0948 | 1.5000e-004 | | 3.3200e-003 | 3.3200e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 13.0175 | 13.0175 | 4.2100e-003 | 0.0000 | 13.1227 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **6.7100e-003** | **0.0663** | **0.0948** | **1.5000e-004** | | **3.3200e-003** | **3.3200e-003** | | **3.0500e-003** | **3.0500e-003** | **0.0000** | **13.0175** | **13.0175** | **4.2100e-003** | **0.0000** | **13.1227** |

## 3.6 Paving - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.8000e-004 | 1.9000e-004 | 2.2300e-003 | 1.0000e-005 | 7.3000e-004 | 1.0000e-005 | 7.3000e-004 | 1.9000e-004 | 1.0000e-005 | 2.0000e-004 | 0.0000 | 0.6156 | 0.6156 | 2.0000e-005 | 0.0000 | 0.6160 |
| **Total** | **2.8000e-004** | **1.9000e-004** | **2.2300e-003** | **1.0000e-005** | **7.3000e-004** | **1.0000e-005** | **7.3000e-004** | **1.9000e-004** | **1.0000e-005** | **2.0000e-004** | **0.0000** | **0.6156** | **0.6156** | **2.0000e-005** | **0.0000** | **0.6160** |

## 3.6 Paving - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0109 | 0.1048 | 0.1609 | 2.5000e-004 | | 5.1500e-003 | 5.1500e-003 | | 4.7400e-003 | 4.7400e-003 | 0.0000 | 22.0292 | 22.0292 | 7.1200e-003 | 0.0000 | 22.2073 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0109** | **0.1048** | **0.1609** | **2.5000e-004** | | **5.1500e-003** | **5.1500e-003** | | **4.7400e-003** | **4.7400e-003** | **0.0000** | **22.0292** | **22.0292** | **7.1200e-003** | **0.0000** | **22.2073** |

## 3.6 Paving - 2024

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 4.4000e-004 | 2.9000e-004 | 3.5100e-003 | 1.0000e-005 | 1.2300e-003 | 1.0000e-005 | 1.2400e-003 | 3.3000e-004 | 1.0000e-005 | 3.4000e-004 | 0.0000 | 1.0094 | 1.0094 | 3.0000e-005 | 0.0000 | 1.0100 |
| **Total** | **4.4000e-004** | **2.9000e-004** | **3.5100e-003** | **1.0000e-005** | **1.2300e-003** | **1.0000e-005** | **1.2400e-003** | **3.3000e-004** | **1.0000e-005** | **3.4000e-004** | **0.0000** | **1.0094** | **1.0094** | **3.0000e-005** | **0.0000** | **1.0100** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0109 | 0.1048 | 0.1609 | 2.5000e-004 | | 5.1500e-003 | 5.1500e-003 | | 4.7400e-003 | 4.7400e-003 | 0.0000 | 22.0292 | 22.0292 | 7.1200e-003 | 0.0000 | 22.2073 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0109** | **0.1048** | **0.1609** | **2.5000e-004** | | **5.1500e-003** | **5.1500e-003** | | **4.7400e-003** | **4.7400e-003** | **0.0000** | **22.0292** | **22.0292** | **7.1200e-003** | **0.0000** | **22.2073** |

## 3.6 Paving - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 4.4000e-004 | 2.9000e-004 | 3.5100e-003 | 1.0000e-005 | 1.2300e-003 | 1.0000e-005 | 1.2400e-003 | 3.3000e-004 | 1.0000e-005 | 3.4000e-004 | 0.0000 | 1.0094 | 1.0094 | 3.0000e-005 | 0.0000 | 1.0100 |
| **Total** | **4.4000e-004** | **2.9000e-004** | **3.5100e-003** | **1.0000e-005** | **1.2300e-003** | **1.0000e-005** | **1.2400e-003** | **3.3000e-004** | **1.0000e-005** | **3.4000e-004** | **0.0000** | **1.0094** | **1.0094** | **3.0000e-005** | **0.0000** | **1.0100** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 4.1372 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 3.1600e-003 | 0.0213 | 0.0317 | 5.0000e-005 | | 1.0700e-003 | 1.0700e-003 | | 1.0700e-003 | 1.0700e-003 | 0.0000 | 4.4682 | 4.4682 | 2.5000e-004 | 0.0000 | 4.4745 |
| **Total** | **4.1404** | **0.0213** | **0.0317** | **5.0000e-005** | | **1.0700e-003** | **1.0700e-003** | | **1.0700e-003** | **1.0700e-003** | **0.0000** | **4.4682** | **4.4682** | **2.5000e-004** | **0.0000** | **4.4745** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.4800e-003 | 4.9300e-003 | 0.0596 | 1.9000e-004 | 0.0209 | 1.6000e-004 | 0.0211 | 5.5500e-003 | 1.5000e-004 | 5.7000e-003 | 0.0000 | 17.1287 | 17.1287 | 4.3000e-004 | 0.0000 | 17.1394 |
| **Total** | **7.4800e-003** | **4.9300e-003** | **0.0596** | **1.9000e-004** | **0.0209** | **1.6000e-004** | **0.0211** | **5.5500e-003** | **1.5000e-004** | **5.7000e-003** | **0.0000** | **17.1287** | **17.1287** | **4.3000e-004** | **0.0000** | **17.1394** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 4.1372 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 3.1600e-003 | 0.0213 | 0.0317 | 5.0000e-005 | | 1.0700e-003 | 1.0700e-003 | | 1.0700e-003 | 1.0700e-003 | 0.0000 | 4.4682 | 4.4682 | 2.5000e-004 | 0.0000 | 4.4745 |
| **Total** | **4.1404** | **0.0213** | **0.0317** | **5.0000e-005** | | **1.0700e-003** | **1.0700e-003** | | **1.0700e-003** | **1.0700e-003** | **0.0000** | **4.4682** | **4.4682** | **2.5000e-004** | **0.0000** | **4.4745** |

## 3.7 Architectural Coating - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.4800e-003 | 4.9300e-003 | 0.0596 | 1.9000e-004 | 0.0209 | 1.6000e-004 | 0.0211 | 5.5500e-003 | 1.5000e-004 | 5.7000e-003 | 0.0000 | 17.1287 | 17.1287 | 4.3000e-004 | 0.0000 | 17.1394 |
| **Total** | **7.4800e-003** | **4.9300e-003** | **0.0596** | **1.9000e-004** | **0.0209** | **1.6000e-004** | **0.0211** | **5.5500e-003** | **1.5000e-004** | **5.7000e-003** | **0.0000** | **17.1287** | **17.1287** | **4.3000e-004** | **0.0000** | **17.1394** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 1.5857 | 7.9962 | 19.1834 | 0.0821 | 7.7979 | 0.0580 | 7.8559 | 2.0895 | 0.0539 | 2.1434 | 0.0000 | 7,620.4986 | 7,620.4986 | 0.3407 | 0.0000 | 7,629.0162 |
| Unmitigated | 1.5857 | 7.9962 | 19.1834 | 0.0821 | 7.7979 | 0.0580 | 7.8559 | 2.0895 | 0.0539 | 2.1434 | 0.0000 | 7,620.4986 | 7,620.4986 | 0.3407 | 0.0000 | 7,629.0162 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments Low Rise | 145.75 | 154.25 | 154.00 | 506,227 | 506,227 |
| Apartments Mid Rise | 4,026.75 | 3,773.25 | 4075.50 | 13,660,065 | 13,660,065 |
| General Office Building | 288.45 | 62.55 | 31.05 | 706,812 | 706,812 |
| High Turnover (Sit Down Restaurant) | 2,368.80 | 2,873.52 | 2817.72 | 3,413,937 | 3,413,937 |
| Hotel | 192.00 | 187.50 | 160.00 | 445,703 | 445,703 |
| Quality Restaurant | 501.12 | 511.92 | 461.20 | 707,488 | 707,488 |
| Regional Shopping Center | 528.08 | 601.44 | 357.84 | 1,112,221 | 1,112,221 |
| Total | 8,050.95 | 8,164.43 | 8,057.31 | 20,552,452 | 20,552,452 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments Low Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| Apartments Mid Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| General Office Building | 16.60 | 8.40 | 6.90 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| High Turnover (Sit Down | 16.60 | 8.40 | 6.90 | 8.50 | 72.50 | 19.00 | 37 | 20 | 43 |
| Hotel | 16.60 | 8.40 | 6.90 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Quality Restaurant | 16.60 | 8.40 | 6.90 | 12.00 | 69.00 | 19.00 | 38 | 18 | 44 |
| Regional Shopping Center | 16.60 | 8.40 | 6.90 | 16.30 | 64.70 | 19.00 | 54 | 35 | 11 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments Low Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Apartments Mid Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| General Office Building | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| High Turnover (Sit Down Restaurant) | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Hotel | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Quality Restaurant | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Regional Shopping Center | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2,512.646 5 | 2,512.646 5 | 0.1037 | 0.0215 | 2,521.635 6 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2,512.646 5 | 2,512.646 5 | 0.1037 | 0.0215 | 2,521.635 6 |
| NaturalGas Mitigated | 0.1398 | 1.2312 | 0.7770 | 7.6200e-003 | | 0.0966 | 0.0966 | | 0.0966 | 0.0966 | 0.0000 | 1,383.426 7 | 1,383.426 7 | 0.0265 | 0.0254 | 1,391.647 8 |
| NaturalGas Unmitigated | 0.1398 | 1.2312 | 0.7770 | 7.6200e-003 | | 0.0966 | 0.0966 | | 0.0966 | 0.0966 | 0.0000 | 1,383.426 7 | 1,383.426 7 | 0.0265 | 0.0254 | 1,391.647 8 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments Low Rise | 408494 | 2.2000e-003 | 0.0188 | 8.0100e-003 | 1.2000e-004 | | 1.5200e-003 | 1.5200e-003 | | 1.5200e-003 | 1.5200e-003 | 0.0000 | 21.7988 | 21.7988 | 4.2000e-004 | 4.0000e-004 | 21.9284 |
| Apartments Mid Rise | 1.30613e+007 | 0.0704 | 0.6018 | 0.2561 | 3.8400e-003 | | 0.0487 | 0.0487 | | 0.0487 | 0.0487 | 0.0000 | 696.9989 | 696.9989 | 0.0134 | 0.0128 | 701.1408 |
| General Office Building | 468450 | 2.5300e-003 | 0.0230 | 0.0193 | 1.4000e-004 | | 1.7500e-003 | 1.7500e-003 | | 1.7500e-003 | 1.7500e-003 | 0.0000 | 24.9983 | 24.9983 | 4.8000e-004 | 4.6000e-004 | 25.1468 |
| High Turnover (Sit Down Restaurant) | 8.30736e+006 | 0.0448 | 0.4072 | 0.3421 | 2.4400e-003 | | 0.0310 | 0.0310 | | 0.0310 | 0.0310 | 0.0000 | 443.3124 | 443.3124 | 8.5000e-003 | 8.1300e-003 | 445.9468 |
| Hotel | 1.74095e+006 | 9.3900e-003 | 0.0853 | 0.0717 | 5.1000e-004 | | 6.4900e-003 | 6.4900e-003 | | 6.4900e-003 | 6.4900e-003 | 0.0000 | 92.9036 | 92.9036 | 1.7800e-003 | 1.7000e-003 | 93.4557 |
| Quality Restaurant | 1.84608e+006 | 9.9500e-003 | 0.0905 | 0.0760 | 5.4000e-004 | | 6.8800e-003 | 6.8800e-003 | | 6.8800e-003 | 6.8800e-003 | 0.0000 | 98.5139 | 98.5139 | 1.8900e-003 | 1.8100e-003 | 99.0993 |
| Regional Shopping Center | 91840 | 5.0000e-004 | 4.5000e-003 | 3.7800e-003 | 3.0000e-005 | | 3.4000e-004 | 3.4000e-004 | | 3.4000e-004 | 3.4000e-004 | 0.0000 | 4.9009 | 4.9009 | 9.0000e-005 | 9.0000e-005 | 4.9301 |
| **Total** | | **0.1398** | **1.2312** | **0.7770** | **7.6200e-003** | | **0.0966** | **0.0966** | | **0.0966** | **0.0966** | **0.0000** | **1,383.4268** | **1,383.4268** | **0.0265** | **0.0254** | **1,391.6478** |

## 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments Low Rise | 408494 | 2.2000e-003 | 0.0188 | 8.0100e-003 | 1.2000e-004 | | 1.5200e-003 | 1.5200e-003 | | 1.5200e-003 | 1.5200e-003 | 0.0000 | 21.7988 | 21.7988 | 4.2000e-004 | 4.0000e-004 | 21.9284 |
| Apartments Mid Rise | 1.30613e+007 | 0.0704 | 0.6018 | 0.2561 | 3.8400e-003 | | 0.0487 | 0.0487 | | 0.0487 | 0.0487 | 0.0000 | 696.9989 | 696.9989 | 0.0134 | 0.0128 | 701.1408 |
| General Office Building | 468450 | 2.5300e-003 | 0.0230 | 0.0193 | 1.4000e-004 | | 1.7500e-003 | 1.7500e-003 | | 1.7500e-003 | 1.7500e-003 | 0.0000 | 24.9983 | 24.9983 | 4.8000e-004 | 4.6000e-004 | 25.1468 |
| High Turnover (Sit Down Restaurant) | 8.30736e+006 | 0.0448 | 0.4072 | 0.3421 | 2.4400e-003 | | 0.0310 | 0.0310 | | 0.0310 | 0.0310 | 0.0000 | 443.3124 | 443.3124 | 8.5000e-003 | 8.1300e-003 | 445.9468 |
| Hotel | 1.74095e+006 | 9.3900e-003 | 0.0853 | 0.0717 | 5.1000e-004 | | 6.4900e-003 | 6.4900e-003 | | 6.4900e-003 | 6.4900e-003 | 0.0000 | 92.9036 | 92.9036 | 1.7800e-003 | 1.7000e-003 | 93.4557 |
| Quality Restaurant | 1.84608e+006 | 9.9500e-003 | 0.0905 | 0.0760 | 5.4000e-004 | | 6.8800e-003 | 6.8800e-003 | | 6.8800e-003 | 6.8800e-003 | 0.0000 | 98.5139 | 98.5139 | 1.8900e-003 | 1.8100e-003 | 99.0993 |
| Regional Shopping Center | 91840 | 5.0000e-004 | 4.5000e-003 | 3.7800e-003 | 3.0000e-005 | | 3.4000e-004 | 3.4000e-004 | | 3.4000e-004 | 3.4000e-004 | 0.0000 | 4.9009 | 4.9009 | 9.0000e-005 | 9.0000e-005 | 4.9301 |
| **Total** | | **0.1398** | **1.2312** | **0.7770** | **7.6200e-003** | | **0.0966** | **0.0966** | | **0.0966** | **0.0966** | **0.0000** | **1,383.4268** | **1,383.4268** | **0.0265** | **0.0254** | **1,391.6478** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments Low Rise | 106010 | 33.7770 | 1.3900e-003 | 2.9000e-004 | 33.8978 |
| Apartments Mid Rise | 3.94697e+006 | 1,257.5879 | 0.0519 | 0.0107 | 1,262.0869 |
| General Office Building | 584550 | 186.2502 | 7.6900e-003 | 1.5900e-003 | 186.9165 |
| High Turnover (Sit Down Restaurant) | 1.58904e+006 | 506.3022 | 0.0209 | 4.3200e-003 | 508.1135 |
| Hotel | 550308 | 175.3399 | 7.2400e-003 | 1.5000e-003 | 175.9672 |
| Quality Restaurant | 353120 | 112.5116 | 4.6500e-003 | 9.6000e-004 | 112.9141 |
| Regional Shopping Center | 756000 | 240.8778 | 9.9400e-003 | 2.0600e-003 | 241.7395 |
| **Total** | | **2,512.6465** | **0.1037** | **0.0215** | **2,521.6356** |

## 5.3 Energy by Land Use - Electricity

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments Low Rise | 106010 | 33.7770 | 1.3900e-003 | 2.9000e-004 | 33.8978 |
| Apartments Mid Rise | 3.94697e+006 | 1,257.5879 | 0.0519 | 0.0107 | 1,262.0869 |
| General Office Building | 584550 | 186.2502 | 7.6900e-003 | 1.5900e-003 | 186.9165 |
| High Turnover (Sit Down Restaurant) | 1.58904e+006 | 506.3022 | 0.0209 | 4.3200e-003 | 508.1135 |
| Hotel | 550308 | 175.3399 | 7.2400e-003 | 1.5000e-003 | 175.9672 |
| Quality Restaurant | 353120 | 112.5116 | 4.6500e-003 | 9.6000e-004 | 112.9141 |
| Regional Shopping Center | 756000 | 240.8778 | 9.9400e-003 | 2.0600e-003 | 241.7395 |
| **Total** | | **2,512.6465** | **0.1037** | **0.0215** | **2,521.6356** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 5.1437 | 0.2950 | 10.3804 | 1.6700e-003 | | 0.0714 | 0.0714 | | 0.0714 | 0.0714 | 0.0000 | 220.9670 | 220.9670 | 0.0201 | 3.7400e-003 | 222.5835 |
| Unmitigated | 5.1437 | 0.2950 | 10.3804 | 1.6700e-003 | | 0.0714 | 0.0714 | | 0.0714 | 0.0714 | 0.0000 | 220.9670 | 220.9670 | 0.0201 | 3.7400e-003 | 222.5835 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.4137 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 4.3998 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0206 | 0.1763 | 0.0750 | 1.1200e-003 | | 0.0143 | 0.0143 | | 0.0143 | 0.0143 | 0.0000 | 204.1166 | 204.1166 | 3.9100e-003 | 3.7400e-003 | 205.3295 |
| Landscaping | 0.3096 | 0.1187 | 10.3054 | 5.4000e-004 | | 0.0572 | 0.0572 | | 0.0572 | 0.0572 | 0.0000 | 16.8504 | 16.8504 | 0.0161 | 0.0000 | 17.2540 |
| **Total** | **5.1437** | **0.2950** | **10.3804** | **1.6600e-003** | | **0.0714** | **0.0714** | | **0.0714** | **0.0714** | **0.0000** | **220.9670** | **220.9670** | **0.0201** | **3.7400e-003** | **222.5835** |

## 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.4137 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 4.3998 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0206 | 0.1763 | 0.0750 | 1.1200e-003 | | 0.0143 | 0.0143 | | 0.0143 | 0.0143 | 0.0000 | 204.1166 | 204.1166 | 3.9100e-003 | 3.7400e-003 | 205.3295 |
| Landscaping | 0.3096 | 0.1187 | 10.3054 | 5.4000e-004 | | 0.0572 | 0.0572 | | 0.0572 | 0.0572 | 0.0000 | 16.8504 | 16.8504 | 0.0161 | 0.0000 | 17.2540 |
| **Total** | **5.1437** | **0.2950** | **10.3804** | **1.6600e-003** | | **0.0714** | **0.0714** | | **0.0714** | **0.0714** | **0.0000** | **220.9670** | **220.9670** | **0.0201** | **3.7400e-003** | **222.5835** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 585.8052 | 3.0183 | 0.0755 | 683.7567 |
| Unmitigated | 585.8052 | 3.0183 | 0.0755 | 683.7567 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments Low Rise | 1.62885 / 1.02688 | 10.9095 | 0.0535 | 1.3400e-003 | 12.6471 |
| Apartments Mid Rise | 63.5252 / 40.0485 | 425.4719 | 2.0867 | 0.0523 | 493.2363 |
| General Office Building | 7.99802 / 4.90201 | 53.0719 | 0.2627 | 6.5900e-003 | 61.6019 |
| High Turnover (Sit Down Restaurant) | 10.9272 / 0.697482 | 51.2702 | 0.3580 | 8.8200e-003 | 62.8482 |
| Hotel | 1.26834 / 0.140927 | 6.1633 | 0.0416 | 1.0300e-003 | 7.5079 |
| Quality Restaurant | 2.42827 / 0.154996 | 11.3934 | 0.0796 | 1.9600e-003 | 13.9663 |
| Regional Shopping Center | 4.14806 / 2.54236 | 27.5250 | 0.1363 | 3.4200e-003 | 31.9490 |
| **Total** | | **585.8052** | **3.0183** | **0.0755** | **683.7567** |

## 7.2 Water by Land Use

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments Low Rise | 1.62885 / 1.02688 | 10.9095 | 0.0535 | 1.3400e-003 | 12.6471 |
| Apartments Mid Rise | 63.5252 / 40.0485 | 425.4719 | 2.0867 | 0.0523 | 493.2363 |
| General Office Building | 7.99802 / 4.90201 | 53.0719 | 0.2627 | 6.5900e-003 | 61.6019 |
| High Turnover (Sit Down Restaurant) | 10.9272 / 0.697482 | 51.2702 | 0.3580 | 8.8200e-003 | 62.8482 |
| Hotel | 1.26834 / 0.140927 | 6.1633 | 0.0416 | 1.0300e-003 | 7.5079 |
| Quality Restaurant | 2.42827 / 0.154996 | 11.3934 | 0.0796 | 1.9600e-003 | 13.9663 |
| Regional Shopping Center | 4.14806 / 2.54236 | 27.5250 | 0.1363 | 3.4200e-003 | 31.9490 |
| **Total** | | **585.8052** | **3.0183** | **0.0755** | **683.7567** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 207.8079 | 12.2811 | 0.0000 | 514.8354 |
| Unmitigated | 207.8079 | 12.2811 | 0.0000 | 514.8354 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments Low Rise | 11.5 | 2.3344 | 0.1380 | 0.0000 | 5.7834 |
| Apartments Mid Rise | 448.5 | 91.0415 | 5.3804 | 0.0000 | 225.5513 |
| General Office Building | 41.85 | 8.4952 | 0.5021 | 0.0000 | 21.0464 |
| High Turnover (Sit Down Restaurant) | 428.4 | 86.9613 | 5.1393 | 0.0000 | 215.4430 |
| Hotel | 27.38 | 5.5579 | 0.3285 | 0.0000 | 13.7694 |
| Quality Restaurant | 7.3 | 1.4818 | 0.0876 | 0.0000 | 3.6712 |
| Regional Shopping Center | 58.8 | 11.9359 | 0.7054 | 0.0000 | 29.5706 |
| **Total** | | **207.8079** | **12.2811** | **0.0000** | **514.8354** |

### 8.2 Waste by Land Use

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments Low Rise | 11.5 | 2.3344 | 0.1380 | 0.0000 | 5.7834 |
| Apartments Mid Rise | 448.5 | 91.0415 | 5.3804 | 0.0000 | 225.5513 |
| General Office Building | 41.85 | 8.4952 | 0.5021 | 0.0000 | 21.0464 |
| High Turnover (Sit Down Restaurant) | 428.4 | 86.9613 | 5.1393 | 0.0000 | 215.4430 |
| Hotel | 27.38 | 5.5579 | 0.3285 | 0.0000 | 13.7694 |
| Quality Restaurant | 7.3 | 1.4818 | 0.0876 | 0.0000 | 3.6712 |
| Regional Shopping Center | 58.8 | 11.9359 | 0.7054 | 0.0000 | 29.5706 |
| **Total** | | **207.8079** | **12.2811** | **0.0000** | **514.8354** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# Village South Specific Plan (Proposed)

## Los Angeles-South Coast County, Summer

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 45.00 | 1000sqft | 1.03 | 45,000.00 | 0 |
| High Turnover (Sit Down Restaurant) | 36.00 | 1000sqft | 0.83 | 36,000.00 | 0 |
| Hotel | 50.00 | Room | 1.67 | 72,600.00 | 0 |
| Quality Restaurant | 8.00 | 1000sqft | 0.18 | 8,000.00 | 0 |
| Apartments Low Rise | 25.00 | Dwelling Unit | 1.56 | 25,000.00 | 72 |
| Apartments Mid Rise | 975.00 | Dwelling Unit | 25.66 | 975,000.00 | 2789 |
| Regional Shopping Center | 56.00 | 1000sqft | 1.29 | 56,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 33 |
| **Climate Zone** | 9 | | | **Operational Year** | 2028 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 702.44 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | NumberWood | 1.25 | 0.00 |
| tblFireplaces | NumberWood | 48.75 | 0.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblVehicleTrips | ST_TR | 7.16 | 6.17 |
| tblVehicleTrips | ST_TR | 6.39 | 3.87 |
| tblVehicleTrips | ST_TR | 2.46 | 1.39 |
| tblVehicleTrips | ST_TR | 158.37 | 79.82 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | ST_TR | 8.19 | 3.75 |
| tblVehicleTrips | ST_TR | 94.36 | 63.99 |
| tblVehicleTrips | ST_TR | 49.97 | 10.74 |
| tblVehicleTrips | SU_TR | 6.07 | 6.16 |
| tblVehicleTrips | SU_TR | 5.86 | 4.18 |
| tblVehicleTrips | SU_TR | 1.05 | 0.69 |
| tblVehicleTrips | SU_TR | 131.84 | 78.27 |
| tblVehicleTrips | SU_TR | 5.95 | 3.20 |
| tblVehicleTrips | SU_TR | 72.16 | 57.65 |
| tblVehicleTrips | SU_TR | 25.24 | 6.39 |
| tblVehicleTrips | WD_TR | 6.59 | 5.83 |
| tblVehicleTrips | WD_TR | 6.65 | 4.13 |
| tblVehicleTrips | WD_TR | 11.03 | 6.41 |
| tblVehicleTrips | WD_TR | 127.15 | 65.80 |
| tblVehicleTrips | WD_TR | 8.17 | 3.84 |
| tblVehicleTrips | WD_TR | 89.95 | 62.64 |
| tblVehicleTrips | WD_TR | 42.70 | 9.43 |
| tblWoodstoves | NumberCatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberCatalytic | 48.75 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 48.75 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 4.2561 | 46.4415 | 31.4494 | 0.0636 | 18.2032 | 2.0456 | 20.2488 | 9.9670 | 1.8820 | 11.8490 | 0.0000 | 6,163.4166 | 6,163.4166 | 1.9475 | 0.0000 | 6,212.1039 |
| 2022 | 4.5441 | 38.8811 | 40.8776 | 0.1240 | 8.8255 | 1.6361 | 10.4616 | 3.6369 | 1.5052 | 5.1421 | 0.0000 | 12,493.4403 | 12,493.4403 | 1.9485 | 0.0000 | 12,518.5707 |
| 2023 | 4.1534 | 25.7658 | 38.7457 | 0.1206 | 7.0088 | 0.7592 | 7.7679 | 1.8799 | 0.7136 | 2.5935 | 0.0000 | 12,150.4890 | 12,150.4890 | 0.9589 | 0.0000 | 12,174.4615 |
| 2024 | 237.0219 | 9.5478 | 14.9642 | 0.0239 | 1.2171 | 0.4694 | 1.2875 | 0.3229 | 0.4319 | 0.4621 | 0.0000 | 2,313.1808 | 2,313.1808 | 0.7166 | 0.0000 | 2,331.0956 |
| **Maximum** | **237.0219** | **46.4415** | **40.8776** | **0.1240** | **18.2032** | **2.0456** | **20.2488** | **9.9670** | **1.8820** | **11.8490** | **0.0000** | **12,493.4403** | **12,493.4403** | **1.9485** | **0.0000** | **12,518.5707** |

## 2.1 Overall Construction (Maximum Daily Emission)

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 4.2561 | 46.4415 | 31.4494 | 0.0636 | 18.2032 | 2.0456 | 20.2488 | 9.9670 | 1.8820 | 11.8490 | 0.0000 | 6,163.416 6 | 6,163.416 6 | 1.9475 | 0.0000 | 6,212.103 9 |
| 2022 | 4.5441 | 38.8811 | 40.8776 | 0.1240 | 8.8255 | 1.6361 | 10.4616 | 3.6369 | 1.5052 | 5.1421 | 0.0000 | 12,493.44 03 | 12,493.44 03 | 1.9485 | 0.0000 | 12,518.57 07 |
| 2023 | 4.1534 | 25.7658 | 38.7457 | 0.1206 | 7.0088 | 0.7592 | 7.7679 | 1.8799 | 0.7136 | 2.5935 | 0.0000 | 12,150.48 90 | 12,150.48 90 | 0.9589 | 0.0000 | 12,174.46 15 |
| 2024 | 237.0219 | 9.5478 | 14.9642 | 0.0239 | 1.2171 | 0.4694 | 1.2875 | 0.3229 | 0.4319 | 0.4621 | 0.0000 | 2,313.180 8 | 2,313.180 8 | 0.7166 | 0.0000 | 2,331.095 5 |
| **Maximum** | **237.0219** | **46.4415** | **40.8776** | **0.1240** | **18.2032** | **2.0456** | **20.2488** | **9.9670** | **1.8820** | **11.8490** | **0.0000** | **12,493.44 03** | **12,493.44 03** | **1.9485** | **0.0000** | **12,518.57 07** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |
| Energy | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.9832 | 8,355.9832 | 0.1602 | 0.1532 | 8,405.6387 |
| Mobile | 9.8489 | 45.4304 | 114.8495 | 0.4917 | 45.9592 | 0.3360 | 46.2951 | 12.2950 | 0.3119 | 12.6070 | | 50,306.6034 | 50,306.6034 | 2.1807 | | 50,361.1208 |
| **Total** | **41.1168** | **67.2262** | **207.5497** | **0.6278** | **45.9592** | **2.4626** | **48.4217** | **12.2950** | **2.4385** | **14.7336** | **0.0000** | **76,811.1816** | **76,811.1816** | **2.8282** | **0.4832** | **77,025.8786** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |
| Energy | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.9832 | 8,355.9832 | 0.1602 | 0.1532 | 8,405.6387 |
| Mobile | 9.8489 | 45.4304 | 114.8495 | 0.4917 | 45.9592 | 0.3360 | 46.2951 | 12.2950 | 0.3119 | 12.6070 | | 50,306.6034 | 50,306.6034 | 2.1807 | | 50,361.1208 |
| **Total** | **41.1168** | **67.2262** | **207.5497** | **0.6278** | **45.9592** | **2.4626** | **48.4217** | **12.2950** | **2.4385** | **14.7336** | **0.0000** | **76,811.1816** | **76,811.1816** | **2.8282** | **0.4832** | **77,025.8786** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 9/1/2021 | 10/12/2021 | 5 | 30 | |
| 2 | Site Preparation | Site Preparation | 10/13/2021 | 11/9/2021 | 5 | 20 | |
| 3 | Grading | Grading | 11/10/2021 | 1/11/2022 | 5 | 45 | |
| 4 | Building Construction | Building Construction | 1/12/2022 | 12/12/2023 | 5 | 500 | |
| 5 | Paving | Paving | 12/13/2023 | 1/30/2024 | 5 | 35 | |
| 6 | Architectural Coating | Architectural Coating | 1/31/2024 | 3/19/2024 | 5 | 35 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 112.5**

**Acres of Paving: 0**

**Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Demolition | Excavators | 3 | 8.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 2 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 4 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 2 | 8.00 | 158 | 0.38 |
| Grading | Graders | 1 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Paving | Pavers | 2 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 2 | 8.00 | 132 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 6 | 15.00 | 0.00 | 458.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 7 | 18.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 8 | 20.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 801.00 | 143.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 160.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 3.3074 | 0.0000 | 3.3074 | 0.5008 | 0.0000 | 0.5008 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1651 | 31.4407 | 21.5650 | 0.0388 | | 1.5513 | 1.5513 | | 1.4411 | 1.4411 | | 3,747.944 9 | 3,747.944 9 | 1.0549 | | 3,774.317 4 |
| **Total** | **3.1651** | **31.4407** | **21.5650** | **0.0388** | **3.3074** | **1.5513** | **4.8588** | **0.5008** | **1.4411** | **1.9419** | | **3,747.944 9** | **3,747.944 9** | **1.0549** | | **3,774.317 4** |

## 3.2 Demolition - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1273 | 4.0952 | 0.9602 | 0.0119 | 0.2669 | 0.0126 | 0.2795 | 0.0732 | 0.0120 | 0.0852 | | 1,292.2413 | 1,292.2413 | 0.0877 | | 1,294.4337 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0487 | 0.0313 | 0.4282 | 1.1800e-003 | 0.1141 | 9.5000e-004 | 0.1151 | 0.0303 | 8.8000e-004 | 0.0311 | | 117.2799 | 117.2799 | 3.5200e-003 | | 117.3678 |
| **Total** | **0.1760** | **4.1265** | **1.3884** | **0.0131** | **0.3810** | **0.0135** | **0.3946** | **0.1034** | **0.0129** | **0.1163** | | **1,409.5212** | **1,409.5212** | **0.0912** | | **1,411.8015** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 3.3074 | 0.0000 | 3.3074 | 0.5008 | 0.0000 | 0.5008 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1651 | 31.4407 | 21.5650 | 0.0388 | | 1.5513 | 1.5513 | | 1.4411 | 1.4411 | 0.0000 | 3,747.9449 | 3,747.9449 | 1.0549 | | 3,774.3174 |
| **Total** | **3.1651** | **31.4407** | **21.5650** | **0.0388** | **3.3074** | **1.5513** | **4.8588** | **0.5008** | **1.4411** | **1.9419** | **0.0000** | **3,747.9449** | **3,747.9449** | **1.0549** | | **3,774.3174** |

## 3.2 Demolition - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1273 | 4.0952 | 0.9602 | 0.0119 | 0.2669 | 0.0126 | 0.2795 | 0.0732 | 0.0120 | 0.0852 | | 1,292.241 3 | 1,292.241 3 | 0.0877 | | 1,294.433 7 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0487 | 0.0313 | 0.4282 | 1.1800e-003 | 0.1141 | 9.5000e-004 | 0.1151 | 0.0303 | 8.8000e-004 | 0.0311 | | 117.2799 | 117.2799 | 3.5200e-003 | | 117.3678 |
| **Total** | **0.1760** | **4.1265** | **1.3884** | **0.0131** | **0.3810** | **0.0135** | **0.3946** | **0.1034** | **0.0129** | **0.1163** | | **1,409.521 2** | **1,409.521 2** | **0.0912** | | **1,411.801 5** |

## 3.3 Site Preparation - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.8882 | 40.4971 | 21.1543 | 0.0380 | | 2.0445 | 2.0445 | | 1.8809 | 1.8809 | | 3,685.656 9 | 3,685.656 9 | 1.1920 | | 3,715.457 3 |
| **Total** | **3.8882** | **40.4971** | **21.1543** | **0.0380** | **18.0663** | **2.0445** | **20.1107** | **9.9307** | **1.8809** | **11.8116** | | **3,685.656 9** | **3,685.656 9** | **1.1920** | | **3,715.457 3** |

### 3.3 Site Preparation - 2021

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0584 | 0.0375 | 0.5139 | 1.4100e-003 | 0.1369 | 1.1400e-003 | 0.1381 | 0.0363 | 1.0500e-003 | 0.0374 | | 140.7359 | 140.7359 | 4.2200e-003 | | 140.8414 |
| **Total** | **0.0584** | **0.0375** | **0.5139** | **1.4100e-003** | **0.1369** | **1.1400e-003** | **0.1381** | **0.0363** | **1.0500e-003** | **0.0374** | | **140.7359** | **140.7359** | **4.2200e-003** | | **140.8414** |

**Mitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.8882 | 40.4971 | 21.1543 | 0.0380 | | 2.0445 | 2.0445 | | 1.8809 | 1.8809 | 0.0000 | 3,685.6569 | 3,685.6569 | 1.1920 | | 3,715.4573 |
| **Total** | **3.8882** | **40.4971** | **21.1543** | **0.0380** | **18.0663** | **2.0445** | **20.1107** | **9.9307** | **1.8809** | **11.8116** | **0.0000** | **3,685.6569** | **3,685.6569** | **1.1920** | | **3,715.4573** |

## 3.3 Site Preparation - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0584 | 0.0375 | 0.5139 | 1.4100e-003 | 0.1369 | 1.1400e-003 | 0.1381 | 0.0363 | 1.0500e-003 | 0.0374 | | 140.7359 | 140.7359 | 4.2200e-003 | | 140.8414 |
| **Total** | **0.0584** | **0.0375** | **0.5139** | **1.4100e-003** | **0.1369** | **1.1400e-003** | **0.1381** | **0.0363** | **1.0500e-003** | **0.0374** | | **140.7359** | **140.7359** | **4.2200e-003** | | **140.8414** |

## 3.4 Grading - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.1912 | 46.3998 | 30.8785 | 0.0620 | | 1.9853 | 1.9853 | | 1.8265 | 1.8265 | | 6,007.0434 | 6,007.0434 | 1.9428 | | 6,055.6134 |
| **Total** | **4.1912** | **46.3998** | **30.8785** | **0.0620** | **8.6733** | **1.9853** | **10.6587** | **3.5965** | **1.8265** | **5.4230** | | **6,007.0434** | **6,007.0434** | **1.9428** | | **6,055.6134** |

## 3.4 Grading - 2021

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0649 | 0.0417 | 0.5710 | 1.5700e-003 | 0.1521 | 1.2700e-003 | 0.1534 | 0.0404 | 1.1700e-003 | 0.0415 | | 156.3732 | 156.3732 | 4.6900e-003 | | 156.4904 |
| **Total** | **0.0649** | **0.0417** | **0.5710** | **1.5700e-003** | **0.1521** | **1.2700e-003** | **0.1534** | **0.0404** | **1.1700e-003** | **0.0415** | | **156.3732** | **156.3732** | **4.6900e-003** | | **156.4904** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.1912 | 46.3998 | 30.8785 | 0.0620 | | 1.9853 | 1.9853 | | 1.8265 | 1.8265 | 0.0000 | 6,007.0434 | 6,007.0434 | 1.9428 | | 6,055.6134 |
| **Total** | **4.1912** | **46.3998** | **30.8785** | **0.0620** | **8.6733** | **1.9853** | **10.6587** | **3.5965** | **1.8265** | **5.4230** | **0.0000** | **6,007.0434** | **6,007.0434** | **1.9428** | | **6,055.6134** |

## 3.4 Grading - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0649 | 0.0417 | 0.5710 | 1.5700e-003 | 0.1521 | 1.2700e-003 | 0.1534 | 0.0404 | 1.1700e-003 | 0.0415 | | 156.3732 | 156.3732 | 4.6900e-003 | | 156.4904 |
| **Total** | **0.0649** | **0.0417** | **0.5710** | **1.5700e-003** | **0.1521** | **1.2700e-003** | **0.1534** | **0.0404** | **1.1700e-003** | **0.0415** | | **156.3732** | **156.3732** | **4.6900e-003** | | **156.4904** |

## 3.4 Grading - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6248 | 38.8435 | 29.0415 | 0.0621 | | 1.6349 | 1.6349 | | 1.5041 | 1.5041 | | 6,011.4105 | 6,011.4105 | 1.9442 | | 6,060.0158 |
| **Total** | **3.6248** | **38.8435** | **29.0415** | **0.0621** | **8.6733** | **1.6349** | **10.3082** | **3.5965** | **1.5041** | **5.1006** | | **6,011.4105** | **6,011.4105** | **1.9442** | | **6,060.0158** |

## 3.4 Grading - 2022

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0607 | 0.0376 | 0.5263 | 1.5100e-003 | 0.1521 | 1.2300e-003 | 0.1534 | 0.0404 | 1.1300e-003 | 0.0415 | | 150.8754 | 150.8754 | 4.2400e-003 | | 150.9813 |
| **Total** | **0.0607** | **0.0376** | **0.5263** | **1.5100e-003** | **0.1521** | **1.2300e-003** | **0.1534** | **0.0404** | **1.1300e-003** | **0.0415** | | **150.8754** | **150.8754** | **4.2400e-003** | | **150.9813** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6248 | 38.8435 | 29.0415 | 0.0621 | | 1.6349 | 1.6349 | | 1.5041 | 1.5041 | 0.0000 | 6,011.4105 | 6,011.4105 | 1.9442 | | 6,060.0158 |
| **Total** | **3.6248** | **38.8435** | **29.0415** | **0.0621** | **8.6733** | **1.6349** | **10.3082** | **3.5965** | **1.5041** | **5.1006** | **0.0000** | **6,011.4105** | **6,011.4105** | **1.9442** | | **6,060.0158** |

### 3.4 Grading - 2022

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0607 | 0.0376 | 0.5263 | 1.5100e-003 | 0.1521 | 1.2300e-003 | 0.1534 | 0.0404 | 1.1300e-003 | 0.0415 | | 150.8754 | 150.8754 | 4.2400e-003 | | 150.9813 |
| **Total** | **0.0607** | **0.0376** | **0.5263** | **1.5100e-003** | **0.1521** | **1.2300e-003** | **0.1534** | **0.0404** | **1.1300e-003** | **0.0415** | | **150.8754** | **150.8754** | **4.2400e-003** | | **150.9813** |

### 3.5 Building Construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | | 2,554.333 6 | 2,554.333 6 | 0.6120 | | 2,569.632 2 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | | **2,554.333 6** | **2,554.333 6** | **0.6120** | | **2,569.632 2** |

## 3.5 Building Construction - 2022

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.4079 | 13.2032 | 3.4341 | 0.0364 | 0.9155 | 0.0248 | 0.9404 | 0.2636 | 0.0237 | 0.2873 | | 3,896.548 2 | 3,896.548 2 | 0.2236 | | 3,902.138 4 |
| Worker | 2.4299 | 1.5074 | 21.0801 | 0.0607 | 6.0932 | 0.0493 | 6.1425 | 1.6163 | 0.0454 | 1.6617 | | 6,042.558 5 | 6,042.558 5 | 0.1697 | | 6,046.800 0 |
| **Total** | **2.8378** | **14.7106** | **24.5142** | **0.0971** | **7.0087** | **0.0741** | **7.0828** | **1.8799** | **0.0691** | **1.9490** | | **9,939.106 7** | **9,939.106 7** | **0.3933** | | **9,948.938 4** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | 0.0000 | 2,554.333 6 | 2,554.333 6 | 0.6120 | | 2,569.632 2 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | **0.0000** | **2,554.333 6** | **2,554.333 6** | **0.6120** | | **2,569.632 2** |

## 3.5 Building Construction - 2022

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.4079 | 13.2032 | 3.4341 | 0.0364 | 0.9155 | 0.0248 | 0.9404 | 0.2636 | 0.0237 | 0.2873 | | 3,896.548 2 | 3,896.548 2 | 0.2236 | | 3,902.138 4 |
| Worker | 2.4299 | 1.5074 | 21.0801 | 0.0607 | 6.0932 | 0.0493 | 6.1425 | 1.6163 | 0.0454 | 1.6617 | | 6,042.558 5 | 6,042.558 5 | 0.1697 | | 6,046.800 0 |
| **Total** | **2.8378** | **14.7106** | **24.5142** | **0.0971** | **7.0087** | **0.0741** | **7.0828** | **1.8799** | **0.0691** | **1.9490** | | **9,939.106 7** | **9,939.106 7** | **0.3933** | | **9,948.938 4** |

## 3.5 Building Construction - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | | 2,555.209 9 | 2,555.209 9 | 0.6079 | | 2,570.406 1 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | | **2,555.209 9** | **2,555.209 9** | **0.6079** | | **2,570.406 1** |

## 3.5 Building Construction - 2023

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3027 | 10.0181 | 3.1014 | 0.0352 | 0.9156 | 0.0116 | 0.9271 | 0.2636 | 0.0111 | 0.2747 | | 3,773.876 2 | 3,773.876 2 | 0.1982 | | 3,778.830 0 |
| Worker | 2.2780 | 1.3628 | 19.4002 | 0.0584 | 6.0932 | 0.0479 | 6.1411 | 1.6163 | 0.0441 | 1.6604 | | 5,821.402 8 | 5,821.402 8 | 0.1529 | | 5,825.225 4 |
| **Total** | **2.5807** | **11.3809** | **22.5017** | **0.0936** | **7.0088** | **0.0595** | **7.0682** | **1.8799** | **0.0552** | **1.9350** | | **9,595.279 0** | **9,595.279 0** | **0.3511** | | **9,604.055 4** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | 0.0000 | 2,555.209 9 | 2,555.209 9 | 0.6079 | | 2,570.406 1 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | **0.0000** | **2,555.209 9** | **2,555.209 9** | **0.6079** | | **2,570.406 1** |

## 3.5 Building Construction - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3027 | 10.0181 | 3.1014 | 0.0352 | 0.9156 | 0.0116 | 0.9271 | 0.2636 | 0.0111 | 0.2747 | | 3,773.876 2 | 3,773.876 2 | 0.1982 | | 3,778.830 0 |
| Worker | 2.2780 | 1.3628 | 19.4002 | 0.0584 | 6.0932 | 0.0479 | 6.1411 | 1.6163 | 0.0441 | 1.6604 | | 5,821.402 8 | 5,821.402 8 | 0.1529 | | 5,825.225 4 |
| **Total** | **2.5807** | **11.3809** | **22.5017** | **0.0936** | **7.0088** | **0.0595** | **7.0682** | **1.8799** | **0.0552** | **1.9350** | | **9,595.279 0** | **9,595.279 0** | **0.3511** | | **9,604.055 4** |

## 3.6 Paving - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0327 | 10.1917 | 14.5842 | 0.0228 | | 0.5102 | 0.5102 | | 0.4694 | 0.4694 | | 2,207.584 1 | 2,207.584 1 | 0.7140 | | 2,225.433 6 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.0327** | **10.1917** | **14.5842** | **0.0228** | | **0.5102** | **0.5102** | | **0.4694** | **0.4694** | | **2,207.584 1** | **2,207.584 1** | **0.7140** | | **2,225.433 6** |

### 3.6 Paving - 2023

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0427 | 0.0255 | 0.3633 | 1.0900e-003 | 0.1141 | 9.0000e-004 | 0.1150 | 0.0303 | 8.3000e-004 | 0.0311 | | 109.0150 | 109.0150 | 2.8600e-003 | | 109.0866 |
| **Total** | **0.0427** | **0.0255** | **0.3633** | **1.0900e-003** | **0.1141** | **9.0000e-004** | **0.1150** | **0.0303** | **8.3000e-004** | **0.0311** | | **109.0150** | **109.0150** | **2.8600e-003** | | **109.0866** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0327 | 10.1917 | 14.5842 | 0.0228 | | 0.5102 | 0.5102 | | 0.4694 | 0.4694 | 0.0000 | 2,207.5841 | 2,207.5841 | 0.7140 | | 2,225.4336 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.0327** | **10.1917** | **14.5842** | **0.0228** | | **0.5102** | **0.5102** | | **0.4694** | **0.4694** | **0.0000** | **2,207.5841** | **2,207.5841** | **0.7140** | | **2,225.4336** |

## 3.6 Paving - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0427 | 0.0255 | 0.3633 | 1.0900e-003 | 0.1141 | 9.0000e-004 | 0.1150 | 0.0303 | 8.3000e-004 | 0.0311 | | 109.0150 | 109.0150 | 2.8600e-003 | | 109.0866 |
| **Total** | **0.0427** | **0.0255** | **0.3633** | **1.0900e-003** | **0.1141** | **9.0000e-004** | **0.1150** | **0.0303** | **8.3000e-004** | **0.0311** | | **109.0150** | **109.0150** | **2.8600e-003** | | **109.0866** |

## 3.6 Paving - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9882 | 9.5246 | 14.6258 | 0.0228 | | 0.4685 | 0.4685 | | 0.4310 | 0.4310 | | 2,207.5472 | 2,207.5472 | 0.7140 | | 2,225.3963 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9882** | **9.5246** | **14.6258** | **0.0228** | | **0.4685** | **0.4685** | | **0.4310** | **0.4310** | | **2,207.5472** | **2,207.5472** | **0.7140** | | **2,225.3963** |

## 3.6 Paving - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0403 | 0.0233 | 0.3384 | 1.0600e-003 | 0.1141 | 8.8000e-004 | 0.1150 | 0.0303 | 8.1000e-004 | 0.0311 | | 105.6336 | 105.6336 | 2.6300e-003 | | 105.6992 |
| **Total** | **0.0403** | **0.0233** | **0.3384** | **1.0600e-003** | **0.1141** | **8.8000e-004** | **0.1150** | **0.0303** | **8.1000e-004** | **0.0311** | | **105.6336** | **105.6336** | **2.6300e-003** | | **105.6992** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9882 | 9.5246 | 14.6258 | 0.0228 | | 0.4685 | 0.4685 | | 0.4310 | 0.4310 | 0.0000 | 2,207.547 2 | 2,207.547 2 | 0.7140 | | 2,225.396 3 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9882** | **9.5246** | **14.6258** | **0.0228** | | **0.4685** | **0.4685** | | **0.4310** | **0.4310** | **0.0000** | **2,207.547 2** | **2,207.547 2** | **0.7140** | | **2,225.396 3** |

## 3.6 Paving - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0403 | 0.0233 | 0.3384 | 1.0600e-003 | 0.1141 | 8.8000e-004 | 0.1150 | 0.0303 | 8.1000e-004 | 0.0311 | | 105.6336 | 105.6336 | 2.6300e-003 | | 105.6992 |
| **Total** | **0.0403** | **0.0233** | **0.3384** | **1.0600e-003** | **0.1141** | **8.8000e-004** | **0.1150** | **0.0303** | **8.1000e-004** | **0.0311** | | **105.6336** | **105.6336** | **2.6300e-003** | | **105.6992** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 236.4115 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1808 | 1.2188 | 1.8101 | 2.9700e-003 | | 0.0609 | 0.0609 | | 0.0609 | 0.0609 | | 281.4481 | 281.4481 | 0.0159 | | 281.8443 |
| **Total** | **236.5923** | **1.2188** | **1.8101** | **2.9700e-003** | | **0.0609** | **0.0609** | | **0.0609** | **0.0609** | | **281.4481** | **281.4481** | **0.0159** | | **281.8443** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.4296 | 0.2481 | 3.6098 | 0.0113 | 1.2171 | 9.4300e-003 | 1.2266 | 0.3229 | 8.6800e-003 | 0.3315 | | 1,126.758 3 | 1,126.758 3 | 0.0280 | | 1,127.458 3 |
| **Total** | **0.4296** | **0.2481** | **3.6098** | **0.0113** | **1.2171** | **9.4300e-003** | **1.2266** | **0.3229** | **8.6800e-003** | **0.3315** | | **1,126.758 3** | **1,126.758 3** | **0.0280** | | **1,127.458 3** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 236.4115 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1808 | 1.2188 | 1.8101 | 2.9700e-003 | | 0.0609 | 0.0609 | | 0.0609 | 0.0609 | 0.0000 | 281.4481 | 281.4481 | 0.0159 | | 281.8443 |
| **Total** | **236.5923** | **1.2188** | **1.8101** | **2.9700e-003** | | **0.0609** | **0.0609** | | **0.0609** | **0.0609** | **0.0000** | **281.4481** | **281.4481** | **0.0159** | | **281.8443** |

### 3.7 Architectural Coating - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.4296 | 0.2481 | 3.6098 | 0.0113 | 1.2171 | 9.4300e-003 | 1.2266 | 0.3229 | 8.6800e-003 | 0.3315 | | 1,126.758 3 | 1,126.758 3 | 0.0280 | | 1,127.458 3 |
| **Total** | **0.4296** | **0.2481** | **3.6098** | **0.0113** | **1.2171** | **9.4300e-003** | **1.2266** | **0.3229** | **8.6800e-003** | **0.3315** | | **1,126.758 3** | **1,126.758 3** | **0.0280** | | **1,127.458 3** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 9.8489 | 45.4304 | 114.8495 | 0.4917 | 45.9592 | 0.3360 | 46.2951 | 12.2950 | 0.3119 | 12.6070 | | 50,306.6034 | 50,306.6034 | 2.1807 | | 50,361.1208 |
| Unmitigated | 9.8489 | 45.4304 | 114.8495 | 0.4917 | 45.9592 | 0.3360 | 46.2951 | 12.2950 | 0.3119 | 12.6070 | | 50,306.6034 | 50,306.6034 | 2.1807 | | 50,361.1208 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments Low Rise | 145.75 | 154.25 | 154.00 | 506,227 | 506,227 |
| Apartments Mid Rise | 4,026.75 | 3,773.25 | 4075.50 | 13,660,065 | 13,660,065 |
| General Office Building | 288.45 | 62.55 | 31.05 | 706,812 | 706,812 |
| High Turnover (Sit Down Restaurant) | 2,368.80 | 2,873.52 | 2817.72 | 3,413,937 | 3,413,937 |
| Hotel | 192.00 | 187.50 | 160.00 | 445,703 | 445,703 |
| Quality Restaurant | 501.12 | 511.92 | 461.20 | 707,488 | 707,488 |
| Regional Shopping Center | 528.08 | 601.44 | 357.84 | 1,112,221 | 1,112,221 |
| Total | 8,050.95 | 8,164.43 | 8,057.31 | 20,552,452 | 20,552,452 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments Low Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| Apartments Mid Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| General Office Building | 16.60 | 8.40 | 6.90 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| High Turnover (Sit Down | 16.60 | 8.40 | 6.90 | 8.50 | 72.50 | 19.00 | 37 | 20 | 43 |
| Hotel | 16.60 | 8.40 | 6.90 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Quality Restaurant | 16.60 | 8.40 | 6.90 | 12.00 | 69.00 | 19.00 | 38 | 18 | 44 |
| Regional Shopping Center | 16.60 | 8.40 | 6.90 | 16.30 | 64.70 | 19.00 | 54 | 35 | 11 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments Low Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Apartments Mid Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| General Office Building | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| High Turnover (Sit Down Restaurant) | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Hotel | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Quality Restaurant | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Regional Shopping Center | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |
| NaturalGas Unmitigated | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Apartments Low Rise | 1119.16 | 0.0121 | 0.1031 | 0.0439 | 6.6000e-004 | | 8.3400e-003 | 8.3400e-003 | | 8.3400e-003 | 8.3400e-003 | | 131.6662 | 131.6662 | 2.5200e-003 | 2.4100e-003 | 132.4486 |
| Apartments Mid Rise | 35784.3 | 0.3859 | 3.2978 | 1.4033 | 0.0211 | | 0.2666 | 0.2666 | | 0.2666 | 0.2666 | | 4,209.9164 | 4,209.9164 | 0.0807 | 0.0772 | 4,234.9339 |
| General Office Building | 1283.42 | 0.0138 | 0.1258 | 0.1057 | 7.5000e-004 | | 9.5600e-003 | 9.5600e-003 | | 9.5600e-003 | 9.5600e-003 | | 150.9911 | 150.9911 | 2.8900e-003 | 2.7700e-003 | 151.8884 |
| High Turnover (Sit Down Restaurant) | 22759.9 | 0.2455 | 2.2314 | 1.8743 | 0.0134 | | 0.1696 | 0.1696 | | 0.1696 | 0.1696 | | 2,677.6342 | 2,677.6342 | 0.0513 | 0.0491 | 2,693.5460 |
| Hotel | 4769.72 | 0.0514 | 0.4676 | 0.3928 | 2.8100e-003 | | 0.0355 | 0.0355 | | 0.0355 | 0.0355 | | 561.1436 | 561.1436 | 0.0108 | 0.0103 | 564.4782 |
| Quality Restaurant | 5057.75 | 0.0545 | 0.4959 | 0.4165 | 2.9800e-003 | | 0.0377 | 0.0377 | | 0.0377 | 0.0377 | | 595.0298 | 595.0298 | 0.0114 | 0.0109 | 598.5658 |
| Regional Shopping Center | 251.616 | 2.7100e-003 | 0.0247 | 0.0207 | 1.5000e-004 | | 1.8700e-003 | 1.8700e-003 | | 1.8700e-003 | 1.8700e-003 | | 29.6019 | 29.6019 | 5.7000e-004 | 5.4000e-004 | 29.7778 |
| **Total** | | **0.7660** | **6.7463** | **4.2573** | **0.0418** | | **0.5292** | **0.5292** | | **0.5292** | **0.5292** | | **8,355.9832** | **8,355.9832** | **0.1602** | **0.1532** | **8,405.6387** |

## 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Apartments Low Rise | 1.11916 | 0.0121 | 0.1031 | 0.0439 | 6.6000e-004 | | 8.3400e-003 | 8.3400e-003 | | 8.3400e-003 | 8.3400e-003 | | 131.6662 | 131.6662 | 2.5200e-003 | 2.4100e-003 | 132.4486 |
| Apartments Mid Rise | 35.7843 | 0.3859 | 3.2978 | 1.4033 | 0.0211 | | 0.2666 | 0.2666 | | 0.2666 | 0.2666 | | 4,209.9164 | 4,209.9164 | 0.0807 | 0.0772 | 4,234.9339 |
| General Office Building | 1.28342 | 0.0138 | 0.1258 | 0.1057 | 7.5000e-004 | | 9.5600e-003 | 9.5600e-003 | | 9.5600e-003 | 9.5600e-003 | | 150.9911 | 150.9911 | 2.8900e-003 | 2.7700e-003 | 151.8884 |
| High Turnover (Sit Down Restaurant) | 22.7599 | 0.2455 | 2.2314 | 1.8743 | 0.0134 | | 0.1696 | 0.1696 | | 0.1696 | 0.1696 | | 2,677.6342 | 2,677.6342 | 0.0513 | 0.0491 | 2,693.5460 |
| Hotel | 4.76972 | 0.0514 | 0.4676 | 0.3928 | 2.8100e-003 | | 0.0355 | 0.0355 | | 0.0355 | 0.0355 | | 561.1436 | 561.1436 | 0.0108 | 0.0103 | 564.4782 |
| Quality Restaurant | 5.05775 | 0.0545 | 0.4959 | 0.4165 | 2.9800e-003 | | 0.0377 | 0.0377 | | 0.0377 | 0.0377 | | 595.0298 | 595.0298 | 0.0114 | 0.0109 | 598.5658 |
| Regional Shopping Center | 0.251616 | 2.7100e-003 | 0.0247 | 0.0207 | 1.5000e-004 | | 1.8700e-003 | 1.8700e-003 | | 1.8700e-003 | 1.8700e-003 | | 29.6019 | 29.6019 | 5.7000e-004 | 5.4000e-004 | 29.7778 |
| **Total** | | **0.7660** | **6.7463** | **4.2573** | **0.0418** | | **0.5292** | **0.5292** | | **0.5292** | **0.5292** | | **8,355.9832** | **8,355.9832** | **0.1602** | **0.1532** | **8,405.6387** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |
| Unmitigated | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.2670 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 24.1085 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Hearth | 1.6500 | 14.1000 | 6.0000 | 0.0900 | | 1.1400 | 1.1400 | | 1.1400 | 1.1400 | 0.0000 | 18,000.0000 | 18,000.0000 | 0.3450 | 0.3300 | 18,106.9650 |
| Landscaping | 2.4766 | 0.9496 | 82.4430 | 4.3600e-003 | | 0.4574 | 0.4574 | | 0.4574 | 0.4574 | | 148.5950 | 148.5950 | 0.1424 | | 152.1542 |
| **Total** | **30.5020** | **15.0496** | **88.4430** | **0.0944** | | **1.5974** | **1.5974** | | **1.5974** | **1.5974** | **0.0000** | **18,148.5950** | **18,148.5950** | **0.4874** | **0.3300** | **18,259.1192** |

## 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.2670 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 24.1085 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Hearth | 1.6500 | 14.1000 | 6.0000 | 0.0900 | | 1.1400 | 1.1400 | | 1.1400 | 1.1400 | 0.0000 | 18,000.0000 | 18,000.0000 | 0.3450 | 0.3300 | 18,106.9650 |
| Landscaping | 2.4766 | 0.9496 | 82.4430 | 4.3600e-003 | | 0.4574 | 0.4574 | | 0.4574 | 0.4574 | | 148.5950 | 148.5950 | 0.1424 | | 152.1542 |
| **Total** | **30.5020** | **15.0496** | **88.4430** | **0.0944** | | **1.5974** | **1.5974** | | **1.5974** | **1.5974** | **0.0000** | **18,148.5950** | **18,148.5950** | **0.4874** | **0.3300** | **18,259.1192** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# Village South Specific Plan (Proposed)

## Los Angeles-South Coast County, Winter

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Office Building | 45.00 | 1000sqft | 1.03 | 45,000.00 | 0 |
| High Turnover (Sit Down Restaurant) | 36.00 | 1000sqft | 0.83 | 36,000.00 | 0 |
| Hotel | 50.00 | Room | 1.67 | 72,600.00 | 0 |
| Quality Restaurant | 8.00 | 1000sqft | 0.18 | 8,000.00 | 0 |
| Apartments Low Rise | 25.00 | Dwelling Unit | 1.56 | 25,000.00 | 72 |
| Apartments Mid Rise | 975.00 | Dwelling Unit | 25.66 | 975,000.00 | 2789 |
| Regional Shopping Center | 56.00 | 1000sqft | 1.29 | 56,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 33 |
| **Climate Zone** | 9 | | | **Operational Year** | 2028 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 702.44 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Consistent with the DEIR's model.

Land Use - See SWAPE comment regarding residential and retail land uses.

Construction Phase - See SWAPE comment regarding individual construction phase lengths.

Demolition - Consistent with the DEIR's model. See SWAPE comment regarding demolition.

Vehicle Trips - Saturday trips consistent with the DEIR's model. See SWAPE comment regarding weekday and Sunday trips.

Woodstoves - Woodstoves and wood-burning fireplaces consistent with the DEIR's model. See SWAPE comment regarding gas fireplaces.

Energy Use -

Construction Off-road Equipment Mitigation - See SWAPE comment on construction-related mitigation.

Area Mitigation - See SWAPE comment regarding operational mitigation measures.

Water Mitigation - See SWAPE comment regarding operational mitigation measures.

Trips and VMT - Local hire provision

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | FireplaceWoodMass | 1,019.20 | 0.00 |
| tblFireplaces | NumberWood | 1.25 | 0.00 |
| tblFireplaces | NumberWood | 48.75 | 0.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblTripsAndVMT | WorkerTripLength | 14.70 | 10.00 |
| tblVehicleTrips | ST_TR | 7.16 | 6.17 |
| tblVehicleTrips | ST_TR | 6.39 | 3.87 |
| tblVehicleTrips | ST_TR | 2.46 | 1.39 |
| tblVehicleTrips | ST_TR | 158.37 | 79.82 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | ST_TR | 8.19 | 3.75 |
| tblVehicleTrips | ST_TR | 94.36 | 63.99 |
| tblVehicleTrips | ST_TR | 49.97 | 10.74 |
| tblVehicleTrips | SU_TR | 6.07 | 6.16 |
| tblVehicleTrips | SU_TR | 5.86 | 4.18 |
| tblVehicleTrips | SU_TR | 1.05 | 0.69 |
| tblVehicleTrips | SU_TR | 131.84 | 78.27 |
| tblVehicleTrips | SU_TR | 5.95 | 3.20 |
| tblVehicleTrips | SU_TR | 72.16 | 57.65 |
| tblVehicleTrips | SU_TR | 25.24 | 6.39 |
| tblVehicleTrips | WD_TR | 6.59 | 5.83 |
| tblVehicleTrips | WD_TR | 6.65 | 4.13 |
| tblVehicleTrips | WD_TR | 11.03 | 6.41 |
| tblVehicleTrips | WD_TR | 127.15 | 65.80 |
| tblVehicleTrips | WD_TR | 8.17 | 3.84 |
| tblVehicleTrips | WD_TR | 89.95 | 62.64 |
| tblVehicleTrips | WD_TR | 42.70 | 9.43 |
| tblWoodstoves | NumberCatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberCatalytic | 48.75 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 1.25 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 48.75 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveDayYear | 25.00 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |
| tblWoodstoves | WoodstoveWoodMass | 999.60 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 4.2621 | 46.4460 | 31.4068 | 0.0635 | 18.2032 | 2.0456 | 20.2488 | 9.9670 | 1.8820 | 11.8490 | 0.0000 | 6,154.3377 | 6,154.3377 | 1.9472 | 0.0000 | 6,203.0186 |
| 2022 | 4.7966 | 38.8851 | 39.6338 | 0.1195 | 8.8255 | 1.6361 | 10.4616 | 3.6369 | 1.5052 | 5.1421 | 0.0000 | 12,035.3440 | 12,035.3440 | 1.9482 | 0.0000 | 12,060.6013 |
| 2023 | 4.3939 | 25.8648 | 37.5031 | 0.1162 | 7.0088 | 0.7598 | 7.7685 | 1.8799 | 0.7142 | 2.5940 | 0.0000 | 11,710.4080 | 11,710.4080 | 0.9617 | 0.0000 | 11,734.4497 |
| 2024 | 237.0656 | 9.5503 | 14.9372 | 0.0238 | 1.2171 | 0.4694 | 1.2875 | 0.3229 | 0.4319 | 0.4621 | 0.0000 | 2,307.0517 | 2,307.0517 | 0.7164 | 0.0000 | 2,324.9627 |
| **Maximum** | **237.0656** | **46.4460** | **39.6338** | **0.1195** | **18.2032** | **2.0456** | **20.2488** | **9.9670** | **1.8820** | **11.8490** | **0.0000** | **12,035.3440** | **12,035.3440** | **1.9482** | **0.0000** | **12,060.6013** |

## 2.1 Overall Construction (Maximum Daily Emission)

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 4.2621 | 46.4460 | 31.4068 | 0.0635 | 18.2032 | 2.0456 | 20.2488 | 9.9670 | 1.8820 | 11.8490 | 0.0000 | 6,154.3377 | 6,154.3377 | 1.9472 | 0.0000 | 6,203.0186 |
| 2022 | 4.7966 | 38.8851 | 39.6338 | 0.1195 | 8.8255 | 1.6361 | 10.4616 | 3.6369 | 1.5052 | 5.1421 | 0.0000 | 12,035.3440 | 12,035.3440 | 1.9482 | 0.0000 | 12,060.6013 |
| 2023 | 4.3939 | 25.8648 | 37.5031 | 0.1162 | 7.0088 | 0.7598 | 7.7685 | 1.8799 | 0.7142 | 2.5940 | 0.0000 | 11,710.4080 | 11,710.4080 | 0.9617 | 0.0000 | 11,734.4497 |
| 2024 | 237.0656 | 9.5503 | 14.9372 | 0.0238 | 1.2171 | 0.4694 | 1.2875 | 0.3229 | 0.4319 | 0.4621 | 0.0000 | 2,307.0517 | 2,307.0517 | 0.7164 | 0.0000 | 2,324.9627 |
| **Maximum** | **237.0656** | **46.4460** | **39.6338** | **0.1195** | **18.2032** | **2.0456** | **20.2488** | **9.9670** | **1.8820** | **11.8490** | **0.0000** | **12,035.3440** | **12,035.3440** | **1.9482** | **0.0000** | **12,060.6013** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |
| Energy | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.9832 | 8,355.9832 | 0.1602 | 0.1532 | 8,405.6387 |
| Mobile | 9.5233 | 45.9914 | 110.0422 | 0.4681 | 45.9592 | 0.3373 | 46.2965 | 12.2950 | 0.3132 | 12.6083 | | 47,917.8005 | 47,917.8005 | 2.1953 | | 47,972.6839 |
| **Total** | **40.7912** | **67.7872** | **202.7424** | **0.6043** | **45.9592** | **2.4640** | **48.4231** | **12.2950** | **2.4399** | **14.7349** | **0.0000** | **74,422.3787** | **74,422.3787** | **2.8429** | **0.4832** | **74,637.4417** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |
| Energy | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.9832 | 8,355.9832 | 0.1602 | 0.1532 | 8,405.6387 |
| Mobile | 9.5233 | 45.9914 | 110.0422 | 0.4681 | 45.9592 | 0.3373 | 46.2965 | 12.2950 | 0.3132 | 12.6083 | | 47,917.8005 | 47,917.8005 | 2.1953 | | 47,972.6839 |
| **Total** | **40.7912** | **67.7872** | **202.7424** | **0.6043** | **45.9592** | **2.4640** | **48.4231** | **12.2950** | **2.4399** | **14.7349** | **0.0000** | **74,422.3787** | **74,422.3787** | **2.8429** | **0.4832** | **74,637.4417** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 9/1/2021 | 10/12/2021 | 5 | 30 | |
| 2 | Site Preparation | Site Preparation | 10/13/2021 | 11/9/2021 | 5 | 20 | |
| 3 | Grading | Grading | 11/10/2021 | 1/11/2022 | 5 | 45 | |
| 4 | Building Construction | Building Construction | 1/12/2022 | 12/12/2023 | 5 | 500 | |
| 5 | Paving | Paving | 12/13/2023 | 1/30/2024 | 5 | 35 | |
| 6 | Architectural Coating | Architectural Coating | 1/31/2024 | 3/19/2024 | 5 | 35 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 112.5**

**Acres of Paving: 0**

**Residential Indoor: 2,025,000; Residential Outdoor: 675,000; Non-Residential Indoor: 326,400; Non-Residential Outdoor: 108,800; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

Village South Specific Plan (Proposed) - Los Angeles-South Coast County, Winter

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Demolition | Excavators | 3 | 8.00 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 2 | 8.00 | 247 | 0.40 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 247 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | 4 | 8.00 | 97 | 0.37 |
| Grading | Excavators | 2 | 8.00 | 158 | 0.38 |
| Grading | Graders | 1 | 8.00 | 187 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 7.00 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Paving | Pavers | 2 | 8.00 | 130 | 0.42 |
| Paving | Paving Equipment | 2 | 8.00 | 132 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 6 | 15.00 | 0.00 | 458.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 7 | 18.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 8 | 20.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 801.00 | 143.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 160.00 | 0.00 | 0.00 | 10.00 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 3.3074 | 0.0000 | 3.3074 | 0.5008 | 0.0000 | 0.5008 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1651 | 31.4407 | 21.5650 | 0.0388 | | 1.5513 | 1.5513 | | 1.4411 | 1.4411 | | 3,747.944 9 | 3,747.944 9 | 1.0549 | | 3,774.317 4 |
| **Total** | **3.1651** | **31.4407** | **21.5650** | **0.0388** | **3.3074** | **1.5513** | **4.8588** | **0.5008** | **1.4411** | **1.9419** | | **3,747.944 9** | **3,747.944 9** | **1.0549** | | **3,774.317 4** |

## 3.2 Demolition - 2021

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1304 | 4.1454 | 1.0182 | 0.0117 | 0.2669 | 0.0128 | 0.2797 | 0.0732 | 0.0122 | 0.0854 | | 1,269.855 5 | 1,269.855 5 | 0.0908 | | 1,272.125 2 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0532 | 0.0346 | 0.3963 | 1.1100e-003 | 0.1141 | 9.5000e-004 | 0.1151 | 0.0303 | 8.8000e-004 | 0.0311 | | 110.4707 | 110.4707 | 3.3300e-003 | | 110.5539 |
| **Total** | **0.1835** | **4.1800** | **1.4144** | **0.0128** | **0.3810** | **0.0137** | **0.3948** | **0.1034** | **0.0131** | **0.1165** | | **1,380.326 2** | **1,380.326 2** | **0.0941** | | **1,382.679 1** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 3.3074 | 0.0000 | 3.3074 | 0.5008 | 0.0000 | 0.5008 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.1651 | 31.4407 | 21.5650 | 0.0388 | | 1.5513 | 1.5513 | | 1.4411 | 1.4411 | 0.0000 | 3,747.944 9 | 3,747.944 9 | 1.0549 | | 3,774.317 4 |
| **Total** | **3.1651** | **31.4407** | **21.5650** | **0.0388** | **3.3074** | **1.5513** | **4.8588** | **0.5008** | **1.4411** | **1.9419** | **0.0000** | **3,747.944 9** | **3,747.944 9** | **1.0549** | | **3,774.317 4** |

## 3.2 Demolition - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.1304 | 4.1454 | 1.0182 | 0.0117 | 0.2669 | 0.0128 | 0.2797 | 0.0732 | 0.0122 | 0.0854 | | 1,269.855 5 | 1,269.855 5 | 0.0908 | | 1,272.125 2 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0532 | 0.0346 | 0.3963 | 1.1100e-003 | 0.1141 | 9.5000e-004 | 0.1151 | 0.0303 | 8.8000e-004 | 0.0311 | | 110.4707 | 110.4707 | 3.3300e-003 | | 110.5539 |
| **Total** | **0.1835** | **4.1800** | **1.4144** | **0.0128** | **0.3810** | **0.0137** | **0.3948** | **0.1034** | **0.0131** | **0.1165** | | **1,380.326 2** | **1,380.326 2** | **0.0941** | | **1,382.679 1** |

## 3.3 Site Preparation - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.8882 | 40.4971 | 21.1543 | 0.0380 | | 2.0445 | 2.0445 | | 1.8809 | 1.8809 | | 3,685.656 9 | 3,685.656 9 | 1.1920 | | 3,715.457 3 |
| **Total** | **3.8882** | **40.4971** | **21.1543** | **0.0380** | **18.0663** | **2.0445** | **20.1107** | **9.9307** | **1.8809** | **11.8116** | | **3,685.656 9** | **3,685.656 9** | **1.1920** | | **3,715.457 3** |

### 3.3 Site Preparation - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0638 | 0.0415 | 0.4755 | 1.3300e-003 | 0.1369 | 1.1400e-003 | 0.1381 | 0.0363 | 1.0500e-003 | 0.0374 | | 132.5649 | 132.5649 | 3.9900e-003 | | 132.6646 |
| **Total** | **0.0638** | **0.0415** | **0.4755** | **1.3300e-003** | **0.1369** | **1.1400e-003** | **0.1381** | **0.0363** | **1.0500e-003** | **0.0374** | | **132.5649** | **132.5649** | **3.9900e-003** | | **132.6646** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.8882 | 40.4971 | 21.1543 | 0.0380 | | 2.0445 | 2.0445 | | 1.8809 | 1.8809 | 0.0000 | 3,685.6569 | 3,685.6569 | 1.1920 | | 3,715.4573 |
| **Total** | **3.8882** | **40.4971** | **21.1543** | **0.0380** | **18.0663** | **2.0445** | **20.1107** | **9.9307** | **1.8809** | **11.8116** | **0.0000** | **3,685.6569** | **3,685.6569** | **1.1920** | | **3,715.4573** |

## 3.3 Site Preparation - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0638 | 0.0415 | 0.4755 | 1.3300e-003 | 0.1369 | 1.1400e-003 | 0.1381 | 0.0363 | 1.0500e-003 | 0.0374 | | 132.5649 | 132.5649 | 3.9900e-003 | | 132.6646 |
| **Total** | **0.0638** | **0.0415** | **0.4755** | **1.3300e-003** | **0.1369** | **1.1400e-003** | **0.1381** | **0.0363** | **1.0500e-003** | **0.0374** | | **132.5649** | **132.5649** | **3.9900e-003** | | **132.6646** |

## 3.4 Grading - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.1912 | 46.3998 | 30.8785 | 0.0620 | | 1.9853 | 1.9853 | | 1.8265 | 1.8265 | | 6,007.0434 | 6,007.0434 | 1.9428 | | 6,055.6134 |
| **Total** | **4.1912** | **46.3998** | **30.8785** | **0.0620** | **8.6733** | **1.9853** | **10.6587** | **3.5965** | **1.8265** | **5.4230** | | **6,007.0434** | **6,007.0434** | **1.9428** | | **6,055.6134** |

## 3.4 Grading - 2021

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0709 | 0.0462 | 0.5284 | 1.4800e-003 | 0.1521 | 1.2700e-003 | 0.1534 | 0.0404 | 1.1700e-003 | 0.0415 | | 147.2943 | 147.2943 | 4.4300e-003 | | 147.4051 |
| **Total** | **0.0709** | **0.0462** | **0.5284** | **1.4800e-003** | **0.1521** | **1.2700e-003** | **0.1534** | **0.0404** | **1.1700e-003** | **0.0415** | | **147.2943** | **147.2943** | **4.4300e-003** | | **147.4051** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.1912 | 46.3998 | 30.8785 | 0.0620 | | 1.9853 | 1.9853 | | 1.8265 | 1.8265 | 0.0000 | 6,007.0434 | 6,007.0434 | 1.9428 | | 6,055.6134 |
| **Total** | **4.1912** | **46.3998** | **30.8785** | **0.0620** | **8.6733** | **1.9853** | **10.6587** | **3.5965** | **1.8265** | **5.4230** | **0.0000** | **6,007.0434** | **6,007.0434** | **1.9428** | | **6,055.6134** |

### 3.4 Grading - 2021

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0709 | 0.0462 | 0.5284 | 1.4800e-003 | 0.1521 | 1.2700e-003 | 0.1534 | 0.0404 | 1.1700e-003 | 0.0415 | | 147.2943 | 147.2943 | 4.4300e-003 | | 147.4051 |
| **Total** | **0.0709** | **0.0462** | **0.5284** | **1.4800e-003** | **0.1521** | **1.2700e-003** | **0.1534** | **0.0404** | **1.1700e-003** | **0.0415** | | **147.2943** | **147.2943** | **4.4300e-003** | | **147.4051** |

### 3.4 Grading - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6248 | 38.8435 | 29.0415 | 0.0621 | | 1.6349 | 1.6349 | | 1.5041 | 1.5041 | | 6,011.4105 | 6,011.4105 | 1.9442 | | 6,060.0158 |
| **Total** | **3.6248** | **38.8435** | **29.0415** | **0.0621** | **8.6733** | **1.6349** | **10.3082** | **3.5965** | **1.5041** | **5.1006** | | **6,011.4105** | **6,011.4105** | **1.9442** | | **6,060.0158** |

## 3.4 Grading - 2022

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0665 | 0.0416 | 0.4861 | 1.4300e-003 | 0.1521 | 1.2300e-003 | 0.1534 | 0.0404 | 1.1300e-003 | 0.0415 | | 142.1207 | 142.1207 | 4.0000e-003 | | 142.2207 |
| **Total** | **0.0665** | **0.0416** | **0.4861** | **1.4300e-003** | **0.1521** | **1.2300e-003** | **0.1534** | **0.0404** | **1.1300e-003** | **0.0415** | | **142.1207** | **142.1207** | **4.0000e-003** | | **142.2207** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 8.6733 | 0.0000 | 8.6733 | 3.5965 | 0.0000 | 3.5965 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6248 | 38.8435 | 29.0415 | 0.0621 | | 1.6349 | 1.6349 | | 1.5041 | 1.5041 | 0.0000 | 6,011.4105 | 6,011.4105 | 1.9442 | | 6,060.0158 |
| **Total** | **3.6248** | **38.8435** | **29.0415** | **0.0621** | **8.6733** | **1.6349** | **10.3082** | **3.5965** | **1.5041** | **5.1006** | **0.0000** | **6,011.4105** | **6,011.4105** | **1.9442** | | **6,060.0158** |

### 3.4 Grading - 2022

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0665 | 0.0416 | 0.4861 | 1.4300e-003 | 0.1521 | 1.2300e-003 | 0.1534 | 0.0404 | 1.1300e-003 | 0.0415 | | 142.1207 | 142.1207 | 4.0000e-003 | | 142.2207 |
| **Total** | **0.0665** | **0.0416** | **0.4861** | **1.4300e-003** | **0.1521** | **1.2300e-003** | **0.1534** | **0.0404** | **1.1300e-003** | **0.0415** | | **142.1207** | **142.1207** | **4.0000e-003** | | **142.2207** |

### 3.5 Building Construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | | 2,554.3336 | 2,554.3336 | 0.6120 | | 2,569.6322 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | | **2,554.3336** | **2,554.3336** | **0.6120** | | **2,569.6322** |

## 3.5 Building Construction - 2022

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.4284 | 13.1673 | 3.8005 | 0.0354 | 0.9155 | 0.0256 | 0.9412 | 0.2636 | 0.0245 | 0.2881 | | 3,789.0750 | 3,789.0750 | 0.2381 | | 3,795.0283 |
| Worker | 2.6620 | 1.6677 | 19.4699 | 0.0571 | 6.0932 | 0.0493 | 6.1425 | 1.6163 | 0.0454 | 1.6617 | | 5,691.9354 | 5,691.9354 | 0.1602 | | 5,695.9408 |
| **Total** | **3.0904** | **14.8350** | **23.2704** | **0.0926** | **7.0087** | **0.0749** | **7.0836** | **1.8799** | **0.0699** | **1.9498** | | **9,481.0104** | **9,481.0104** | **0.3984** | | **9,490.9691** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7062 | 15.6156 | 16.3634 | 0.0269 | | 0.8090 | 0.8090 | | 0.7612 | 0.7612 | 0.0000 | 2,554.3336 | 2,554.3336 | 0.6120 | | 2,569.6322 |
| **Total** | **1.7062** | **15.6156** | **16.3634** | **0.0269** | | **0.8090** | **0.8090** | | **0.7612** | **0.7612** | **0.0000** | **2,554.3336** | **2,554.3336** | **0.6120** | | **2,569.6322** |

## 3.5 Building Construction - 2022

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.4284 | 13.1673 | 3.8005 | 0.0354 | 0.9155 | 0.0256 | 0.9412 | 0.2636 | 0.0245 | 0.2881 | | 3,789.075 0 | 3,789.075 0 | 0.2381 | | 3,795.028 3 |
| Worker | 2.6620 | 1.6677 | 19.4699 | 0.0571 | 6.0932 | 0.0493 | 6.1425 | 1.6163 | 0.0454 | 1.6617 | | 5,691.935 4 | 5,691.935 4 | 0.1602 | | 5,695.940 8 |
| **Total** | **3.0904** | **14.8350** | **23.2704** | **0.0926** | **7.0087** | **0.0749** | **7.0836** | **1.8799** | **0.0699** | **1.9498** | | **9,481.010 4** | **9,481.010 4** | **0.3984** | | **9,490.969 1** |

## 3.5 Building Construction - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | | 2,555.209 9 | 2,555.209 9 | 0.6079 | | 2,570.406 1 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | | **2,555.209 9** | **2,555.209 9** | **0.6079** | | **2,570.406 1** |

### 3.5 Building Construction - 2023

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3183 | 9.9726 | 3.3771 | 0.0343 | 0.9156 | 0.0122 | 0.9277 | 0.2636 | 0.0116 | 0.2752 | | 3,671.400 7 | 3,671.400 7 | 0.2096 | | 3,676.641 7 |
| Worker | 2.5029 | 1.5073 | 17.8820 | 0.0550 | 6.0932 | 0.0479 | 6.1411 | 1.6163 | 0.0441 | 1.6604 | | 5,483.797 4 | 5,483.797 4 | 0.1442 | | 5,487.402 0 |
| **Total** | **2.8211** | **11.4799** | **21.2591** | **0.0893** | **7.0088** | **0.0601** | **7.0688** | **1.8799** | **0.0557** | **1.9356** | | **9,155.198 1** | **9,155.198 1** | **0.3538** | | **9,164.043 7** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5728 | 14.3849 | 16.2440 | 0.0269 | | 0.6997 | 0.6997 | | 0.6584 | 0.6584 | 0.0000 | 2,555.209 9 | 2,555.209 9 | 0.6079 | | 2,570.406 1 |
| **Total** | **1.5728** | **14.3849** | **16.2440** | **0.0269** | | **0.6997** | **0.6997** | | **0.6584** | **0.6584** | **0.0000** | **2,555.209 9** | **2,555.209 9** | **0.6079** | | **2,570.406 1** |

## 3.5 Building Construction - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3183 | 9.9726 | 3.3771 | 0.0343 | 0.9156 | 0.0122 | 0.9277 | 0.2636 | 0.0116 | 0.2752 | | 3,671.400 7 | 3,671.400 7 | 0.2096 | | 3,676.641 7 |
| Worker | 2.5029 | 1.5073 | 17.8820 | 0.0550 | 6.0932 | 0.0479 | 6.1411 | 1.6163 | 0.0441 | 1.6604 | | 5,483.797 4 | 5,483.797 4 | 0.1442 | | 5,487.402 0 |
| **Total** | **2.8211** | **11.4799** | **21.2591** | **0.0893** | **7.0088** | **0.0601** | **7.0688** | **1.8799** | **0.0557** | **1.9356** | | **9,155.198 1** | **9,155.198 1** | **0.3538** | | **9,164.043 7** |

## 3.6 Paving - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0327 | 10.1917 | 14.5842 | 0.0228 | | 0.5102 | 0.5102 | | 0.4694 | 0.4694 | | 2,207.584 1 | 2,207.584 1 | 0.7140 | | 2,225.433 6 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.0327** | **10.1917** | **14.5842** | **0.0228** | | **0.5102** | **0.5102** | | **0.4694** | **0.4694** | | **2,207.584 1** | **2,207.584 1** | **0.7140** | | **2,225.433 6** |

## 3.6 Paving - 2023

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0469 | 0.0282 | 0.3349 | 1.0300e-003 | 0.1141 | 9.0000e-004 | 0.1150 | 0.0303 | 8.3000e-004 | 0.0311 | | 102.6928 | 102.6928 | 2.7000e-003 | | 102.7603 |
| **Total** | **0.0469** | **0.0282** | **0.3349** | **1.0300e-003** | **0.1141** | **9.0000e-004** | **0.1150** | **0.0303** | **8.3000e-004** | **0.0311** | | **102.6928** | **102.6928** | **2.7000e-003** | | **102.7603** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0327 | 10.1917 | 14.5842 | 0.0228 | | 0.5102 | 0.5102 | | 0.4694 | 0.4694 | 0.0000 | 2,207.5841 | 2,207.5841 | 0.7140 | | 2,225.4336 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.0327** | **10.1917** | **14.5842** | **0.0228** | | **0.5102** | **0.5102** | | **0.4694** | **0.4694** | **0.0000** | **2,207.5841** | **2,207.5841** | **0.7140** | | **2,225.4336** |

### 3.6 Paving - 2023

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0469 | 0.0282 | 0.3349 | 1.0300e-003 | 0.1141 | 9.0000e-004 | 0.1150 | 0.0303 | 8.3000e-004 | 0.0311 | | 102.6928 | 102.6928 | 2.7000e-003 | | 102.7603 |
| **Total** | **0.0469** | **0.0282** | **0.3349** | **1.0300e-003** | **0.1141** | **9.0000e-004** | **0.1150** | **0.0303** | **8.3000e-004** | **0.0311** | | **102.6928** | **102.6928** | **2.7000e-003** | | **102.7603** |

### 3.6 Paving - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9882 | 9.5246 | 14.6258 | 0.0228 | | 0.4685 | 0.4685 | | 0.4310 | 0.4310 | | 2,207.5472 | 2,207.5472 | 0.7140 | | 2,225.3963 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9882** | **9.5246** | **14.6258** | **0.0228** | | **0.4685** | **0.4685** | | **0.4310** | **0.4310** | | **2,207.5472** | **2,207.5472** | **0.7140** | | **2,225.3963** |

## 3.6 Paving - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0444 | 0.0257 | 0.3114 | 1.0000e-003 | 0.1141 | 8.8000e-004 | 0.1150 | 0.0303 | 8.1000e-004 | 0.0311 | | 99.5045 | 99.5045 | 2.4700e-003 | | 99.5663 |
| **Total** | **0.0444** | **0.0257** | **0.3114** | **1.0000e-003** | **0.1141** | **8.8000e-004** | **0.1150** | **0.0303** | **8.1000e-004** | **0.0311** | | **99.5045** | **99.5045** | **2.4700e-003** | | **99.5663** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9882 | 9.5246 | 14.6258 | 0.0228 | | 0.4685 | 0.4685 | | 0.4310 | 0.4310 | 0.0000 | 2,207.5472 | 2,207.5472 | 0.7140 | | 2,225.3963 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9882** | **9.5246** | **14.6258** | **0.0228** | | **0.4685** | **0.4685** | | **0.4310** | **0.4310** | **0.0000** | **2,207.5472** | **2,207.5472** | **0.7140** | | **2,225.3963** |

### 3.6 Paving - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0444 | 0.0257 | 0.3114 | 1.0000e-003 | 0.1141 | 8.8000e-004 | 0.1150 | 0.0303 | 8.1000e-004 | 0.0311 | | 99.5045 | 99.5045 | 2.4700e-003 | | 99.5663 |
| **Total** | **0.0444** | **0.0257** | **0.3114** | **1.0000e-003** | **0.1141** | **8.8000e-004** | **0.1150** | **0.0303** | **8.1000e-004** | **0.0311** | | **99.5045** | **99.5045** | **2.4700e-003** | | **99.5663** |

### 3.7 Architectural Coating - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 236.4115 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1808 | 1.2188 | 1.8101 | 2.9700e-003 | | 0.0609 | 0.0609 | | 0.0609 | 0.0609 | | 281.4481 | 281.4481 | 0.0159 | | 281.8443 |
| **Total** | **236.5923** | **1.2188** | **1.8101** | **2.9700e-003** | | **0.0609** | **0.0609** | | **0.0609** | **0.0609** | | **281.4481** | **281.4481** | **0.0159** | | **281.8443** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.4734 | 0.2743 | 3.3220 | 0.0107 | 1.2171 | 9.4300e-003 | 1.2266 | 0.3229 | 8.6800e-003 | 0.3315 | | 1,061.3818 | 1,061.3818 | 0.0264 | | 1,062.0410 |
| **Total** | **0.4734** | **0.2743** | **3.3220** | **0.0107** | **1.2171** | **9.4300e-003** | **1.2266** | **0.3229** | **8.6800e-003** | **0.3315** | | **1,061.3818** | **1,061.3818** | **0.0264** | | **1,062.0410** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 236.4115 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1808 | 1.2188 | 1.8101 | 2.9700e-003 | | 0.0609 | 0.0609 | | 0.0609 | 0.0609 | 0.0000 | 281.4481 | 281.4481 | 0.0159 | | 281.8443 |
| **Total** | **236.5923** | **1.2188** | **1.8101** | **2.9700e-003** | | **0.0609** | **0.0609** | | **0.0609** | **0.0609** | **0.0000** | **281.4481** | **281.4481** | **0.0159** | | **281.8443** |

### 3.7 Architectural Coating - 2024

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.4734 | 0.2743 | 3.3220 | 0.0107 | 1.2171 | 9.4300e-003 | 1.2266 | 0.3229 | 8.6800e-003 | 0.3315 | | 1,061.3818 | 1,061.3818 | 0.0264 | | 1,062.0410 |
| **Total** | **0.4734** | **0.2743** | **3.3220** | **0.0107** | **1.2171** | **9.4300e-003** | **1.2266** | **0.3229** | **8.6800e-003** | **0.3315** | | **1,061.3818** | **1,061.3818** | **0.0264** | | **1,062.0410** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 9.5233 | 45.9914 | 110.0422 | 0.4681 | 45.9592 | 0.3373 | 46.2965 | 12.2950 | 0.3132 | 12.6083 | | 47,917.8005 | 47,917.8005 | 2.1953 | | 47,972.6839 |
| Unmitigated | 9.5233 | 45.9914 | 110.0422 | 0.4681 | 45.9592 | 0.3373 | 46.2965 | 12.2950 | 0.3132 | 12.6083 | | 47,917.8005 | 47,917.8005 | 2.1953 | | 47,972.6839 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments Low Rise | 145.75 | 154.25 | 154.00 | 506,227 | 506,227 |
| Apartments Mid Rise | 4,026.75 | 3,773.25 | 4075.50 | 13,660,065 | 13,660,065 |
| General Office Building | 288.45 | 62.55 | 31.05 | 706,812 | 706,812 |
| High Turnover (Sit Down Restaurant) | 2,368.80 | 2,873.52 | 2817.72 | 3,413,937 | 3,413,937 |
| Hotel | 192.00 | 187.50 | 160.00 | 445,703 | 445,703 |
| Quality Restaurant | 501.12 | 511.92 | 461.20 | 707,488 | 707,488 |
| Regional Shopping Center | 528.08 | 601.44 | 357.84 | 1,112,221 | 1,112,221 |
| Total | 8,050.95 | 8,164.43 | 8,057.31 | 20,552,452 | 20,552,452 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments Low Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| Apartments Mid Rise | 14.70 | 5.90 | 8.70 | 40.20 | 19.20 | 40.60 | 86 | 11 | 3 |
| General Office Building | 16.60 | 8.40 | 6.90 | 33.00 | 48.00 | 19.00 | 77 | 19 | 4 |
| High Turnover (Sit Down | 16.60 | 8.40 | 6.90 | 8.50 | 72.50 | 19.00 | 37 | 20 | 43 |
| Hotel | 16.60 | 8.40 | 6.90 | 19.40 | 61.60 | 19.00 | 58 | 38 | 4 |
| Quality Restaurant | 16.60 | 8.40 | 6.90 | 12.00 | 69.00 | 19.00 | 38 | 18 | 44 |
| Regional Shopping Center | 16.60 | 8.40 | 6.90 | 16.30 | 64.70 | 19.00 | 54 | 35 | 11 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments Low Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Apartments Mid Rise | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| General Office Building | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| High Turnover (Sit Down Restaurant) | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Hotel | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Quality Restaurant | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |
| Regional Shopping Center | 0.543088 | 0.044216 | 0.209971 | 0.116369 | 0.014033 | 0.006332 | 0.021166 | 0.033577 | 0.002613 | 0.001817 | 0.005285 | 0.000712 | 0.000821 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |
| NaturalGas Unmitigated | 0.7660 | 6.7462 | 4.2573 | 0.0418 | | 0.5292 | 0.5292 | | 0.5292 | 0.5292 | | 8,355.983 2 | 8,355.983 2 | 0.1602 | 0.1532 | 8,405.638 7 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Apartments Low Rise | 1119.16 | 0.0121 | 0.1031 | 0.0439 | 6.6000e-004 | | 8.3400e-003 | 8.3400e-003 | | 8.3400e-003 | 8.3400e-003 | | 131.6662 | 131.6662 | 2.5200e-003 | 2.4100e-003 | 132.4486 |
| Apartments Mid Rise | 35784.3 | 0.3859 | 3.2978 | 1.4033 | 0.0211 | | 0.2666 | 0.2666 | | 0.2666 | 0.2666 | | 4,209.9164 | 4,209.9164 | 0.0807 | 0.0772 | 4,234.9339 |
| General Office Building | 1283.42 | 0.0138 | 0.1258 | 0.1057 | 7.5000e-004 | | 9.5600e-003 | 9.5600e-003 | | 9.5600e-003 | 9.5600e-003 | | 150.9911 | 150.9911 | 2.8900e-003 | 2.7700e-003 | 151.8884 |
| High Turnover (Sit Down Restaurant) | 22759.9 | 0.2455 | 2.2314 | 1.8743 | 0.0134 | | 0.1696 | 0.1696 | | 0.1696 | 0.1696 | | 2,677.6342 | 2,677.6342 | 0.0513 | 0.0491 | 2,693.5460 |
| Hotel | 4769.72 | 0.0514 | 0.4676 | 0.3928 | 2.8100e-003 | | 0.0355 | 0.0355 | | 0.0355 | 0.0355 | | 561.1436 | 561.1436 | 0.0108 | 0.0103 | 564.4782 |
| Quality Restaurant | 5057.75 | 0.0545 | 0.4959 | 0.4165 | 2.9800e-003 | | 0.0377 | 0.0377 | | 0.0377 | 0.0377 | | 595.0298 | 595.0298 | 0.0114 | 0.0109 | 598.5658 |
| Regional Shopping Center | 251.616 | 2.7100e-003 | 0.0247 | 0.0207 | 1.5000e-004 | | 1.8700e-003 | 1.8700e-003 | | 1.8700e-003 | 1.8700e-003 | | 29.6019 | 29.6019 | 5.7000e-004 | 5.4000e-004 | 29.7778 |
| **Total** | | **0.7660** | **6.7463** | **4.2573** | **0.0418** | | **0.5292** | **0.5292** | | **0.5292** | **0.5292** | | **8,355.9832** | **8,355.9832** | **0.1602** | **0.1532** | **8,405.6387** |

## 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Apartments Low Rise | 1.11916 | 0.0121 | 0.1031 | 0.0439 | 6.6000e-004 | | 8.3400e-003 | 8.3400e-003 | | 8.3400e-003 | 8.3400e-003 | | 131.6662 | 131.6662 | 2.5200e-003 | 2.4100e-003 | 132.4486 |
| Apartments Mid Rise | 35.7843 | 0.3859 | 3.2978 | 1.4033 | 0.0211 | | 0.2666 | 0.2666 | | 0.2666 | 0.2666 | | 4,209.9164 | 4,209.9164 | 0.0807 | 0.0772 | 4,234.9339 |
| General Office Building | 1.28342 | 0.0138 | 0.1258 | 0.1057 | 7.5000e-004 | | 9.5600e-003 | 9.5600e-003 | | 9.5600e-003 | 9.5600e-003 | | 150.9911 | 150.9911 | 2.8900e-003 | 2.7700e-003 | 151.8884 |
| High Turnover (Sit Down Restaurant) | 22.7599 | 0.2455 | 2.2314 | 1.8743 | 0.0134 | | 0.1696 | 0.1696 | | 0.1696 | 0.1696 | | 2,677.6342 | 2,677.6342 | 0.0513 | 0.0491 | 2,693.5460 |
| Hotel | 4.76972 | 0.0514 | 0.4676 | 0.3928 | 2.8100e-003 | | 0.0355 | 0.0355 | | 0.0355 | 0.0355 | | 561.1436 | 561.1436 | 0.0108 | 0.0103 | 564.4782 |
| Quality Restaurant | 5.05775 | 0.0545 | 0.4959 | 0.4165 | 2.9800e-003 | | 0.0377 | 0.0377 | | 0.0377 | 0.0377 | | 595.0298 | 595.0298 | 0.0114 | 0.0109 | 598.5658 |
| Regional Shopping Center | 0.251616 | 2.7100e-003 | 0.0247 | 0.0207 | 1.5000e-004 | | 1.8700e-003 | 1.8700e-003 | | 1.8700e-003 | 1.8700e-003 | | 29.6019 | 29.6019 | 5.7000e-004 | 5.4000e-004 | 29.7778 |
| **Total** | | **0.7660** | **6.7463** | **4.2573** | **0.0418** | | **0.5292** | **0.5292** | | **0.5292** | **0.5292** | | **8,355.9832** | **8,355.9832** | **0.1602** | **0.1532** | **8,405.6387** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |
| Unmitigated | 30.5020 | 15.0496 | 88.4430 | 0.0944 | | 1.5974 | 1.5974 | | 1.5974 | 1.5974 | 0.0000 | 18,148.5950 | 18,148.5950 | 0.4874 | 0.3300 | 18,259.1192 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.2670 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 24.1085 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Hearth | 1.6500 | 14.1000 | 6.0000 | 0.0900 | | 1.1400 | 1.1400 | | 1.1400 | 1.1400 | 0.0000 | 18,000.0000 | 18,000.0000 | 0.3450 | 0.3300 | 18,106.9650 |
| Landscaping | 2.4766 | 0.9496 | 82.4430 | 4.3600e-003 | | 0.4574 | 0.4574 | | 0.4574 | 0.4574 | | 148.5950 | 148.5950 | 0.1424 | | 152.1542 |
| **Total** | **30.5020** | **15.0496** | **88.4430** | **0.0944** | | **1.5974** | **1.5974** | | **1.5974** | **1.5974** | **0.0000** | **18,148.5950** | **18,148.5950** | **0.4874** | **0.3300** | **18,259.1192** |

## 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.2670 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 24.1085 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Hearth | 1.6500 | 14.1000 | 6.0000 | 0.0900 | | 1.1400 | 1.1400 | | 1.1400 | 1.1400 | 0.0000 | 18,000.0000 | 18,000.0000 | 0.3450 | 0.3300 | 18,106.9650 |
| Landscaping | 2.4766 | 0.9496 | 82.4430 | 4.3600e-003 | | 0.4574 | 0.4574 | | 0.4574 | 0.4574 | | 148.5950 | 148.5950 | 0.1424 | | 152.1542 |
| **Total** | **30.5020** | **15.0496** | **88.4430** | **0.0944** | | **1.5974** | **1.5974** | | **1.5974** | **1.5974** | **0.0000** | **18,148.5950** | **18,148.5950** | **0.4874** | **0.3300** | **18,259.1192** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

Attachment C

| **Local Hire Provision Net Change** | |
|---|---|
| **Without Local Hire Provision** | |
| Total Construction GHG Emissions (MT CO2e) | 3,623 |
| Amortized (MT CO2e/year) | 120.77 |
| **With Local Hire Provision** | |
| Total Construction GHG Emissions (MT CO2e) | 3,024 |
| Amortized (MT CO2e/year) | 100.80 |
| ***% Decrease in Construction-related GHG Emissions*** | ***17%*** |

**EXHIBIT B**

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

**SOIL WATER AIR PROTECTION ENTERPRISE**
2656 29th Street, Suite 201
Santa Monica, California 90405
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# *Paul Rosenfeld, Ph.D.*

**Chemical Fate and Transport & Air Dispersion Modeling**

*Principal Environmental Chemist*

**Risk Assessment & Remediation Specialist**

## Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on volatile organic compound filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

## Professional Experience

Dr. Rosenfeld has over 25 years' experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from unconventional oil drilling operations, oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, and many other industrial and agricultural sources. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at dozens of sites and has testified as an expert witness on more than ten cases involving exposure to air contaminants from industrial sources.

## Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex $H_2O$ Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

## Publications:

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health.* 18:48

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## Presentations:

**Rosenfeld, P.E.,** Sutherland, A; Hesse, R.; Zapata, A. (October 3-6, 2013). Air dispersion modeling of volatile organic emissions from multiple natural gas wells in Decatur, TX. *44th Western Regional Meeting, American Chemical Society.* Lecture conducted from Santa Clara, CA.

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**Rosenfeld, P. E.** (October 15-18, 2007). Moss Point Community Exposure To Contaminants From A Releasing Facility. *The 23rd Annual International Conferences on Soils Sediment and Water.* Platform lecture conducted from University of Massachusetts, Amherst MA.

**Rosenfeld, P. E.** (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

**Rosenfeld, P. E.** (October 15-18, 2007). Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions. The *23rd Annual International Conferences on Soils Sediment and Water*. Lecture conducted from University of Massachusetts, Amherst MA.

**Rosenfeld P. E.** (March 2007). Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP). *The Association for Environmental Health and Sciences (AEHS) Annual Meeting*. Lecture conducted from San Diego, CA.

**Rosenfeld P. E.** (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama. *The AEHS Annual Meeting.* Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition.* Lecture conducted from Boston Massachusetts.

**Paul Rosenfeld Ph.D**. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference.* Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

**Paul Rosenfeld Ph.D**. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

**Paul Rosenfeld Ph.D**. (September 19, 2005). Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP. *PEMA Emerging Contaminant Conference.* Lecture conducted from Hilton Hotel in Irvine, California.

**Paul Rosenfeld Ph.D**. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference.* Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

**Paul Rosenfeld Ph.D**. (June 7-8, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. *International Society of Environmental Forensics: Focus On Emerging Contaminants*. Lecture conducted from Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

**Paul Rosenfeld Ph.D**. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water And Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

**Paul Rosenfeld Ph.D**. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference.* Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

**Paul Rosenfeld, Ph.D.** and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

**Paul Rosenfeld, Ph.D.** (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse (2004). Perchlorate Contamination of the Colorado River. *Meeting of tribal representatives*. Lecture conducted from Parker, AZ.

**Paul Rosenfeld, Ph.D.** (April 7, 2004). A National Damage Assessment Model For PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

**Rosenfeld, P. E**., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference* Orlando, FL.

**Paul Rosenfeld, Ph.D.** and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants*.. Lecture conducted from Hyatt Regency Phoenix Arizona.

**Paul Rosenfeld, Ph.D.** (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

**Paul Rosenfeld, Ph.D**. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

**Rosenfeld, P.E**. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

**Rosenfeld, P.E**. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

**Rosenfeld, P.E.** and Grey, M. A. (September 22-24, 2002). Biocycle Composting For Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington..

**Rosenfeld, P.E**. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conferenc*e. Lecture conducted from Indianapolis, Maryland.

**Rosenfeld. P.E.** (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation.* Lecture conducted from Anaheim California.

**Rosenfeld. P.E. (**October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest.* Lecture conducted from Ocean Shores, California.

**Rosenfeld, P.E. (**2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

**Rosenfeld, P.E**., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

**Rosenfeld, P.E.**, and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

**Rosenfeld, P.E.**, C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell.* Lecture conducted from Seattle Washington.

**Rosenfeld, P.E.**, C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest.* Lecture conducted from Lake Chelan, Washington.

**Rosenfeld, P.E,** C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

**Rosenfeld, P.E.**, C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

## Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

## Academic Grants Awarded:

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University.
Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993

## **Deposition and/or Trial Testimony:**

In the United States District Court For The District of New Jersey
Duarte et al, *Plaintiffs,* vs. United States Metals Refining Company et. al. *Defendant.*
Case No.: 2:17-cv-01624-ES-SCM
Rosenfeld Deposition. 6-7-2019

In the United States District Court of Southern District of Texas Galveston Division
M/T Carla Maersk, *Plaintiffs,* vs. Conti 168., Schiffahrts-GMBH & Co. Bulker KG MS "Conti Perdido" *Defendant.*
Case No.: 3:15-CV-00106 consolidated with 3:15-CV-00237
Rosenfeld Deposition. 5-9-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
Carole-Taddeo-Bates et al., vs. Ifran Khan et al., Defendants
Case No.: No. BC615636
Rosenfeld Deposition, 1-26-2019

In The Superior Court of the State of California In And For The County Of Los Angeles – Santa Monica
The San Gabriel Valley Council of Governments et al. vs El Adobe Apts. Inc. et al., Defendants
Case No.: No. BC646857
Rosenfeld Deposition, 10-6-2018; Trial 3-7-19

In United States District Court For The District of Colorado
Bells et al. Plaintiff vs. The 3M Company et al., Defendants
Case: No 1:16-cv-02531-RBJ
Rosenfeld Deposition, 3-15-2018 and 4-3-2018

In The District Court Of Regan County, Texas, 112th Judicial District
Phillip Bales et al., Plaintiff vs. Dow Agrosciences, LLC, et al., Defendants
Cause No 1923
Rosenfeld Deposition, 11-17-2017

In The Superior Court of the State of California In And For The County Of Contra Costa
Simons et al., Plaintiffs vs. Chevron Corporation, et al., Defendants
Cause No C12-01481
Rosenfeld Deposition, 11-20-2017

In The Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al., Plaintiff vs. Cerro Flow Products, Inc., Defendants
Case No.: No. 0i9-L-2295
Rosenfeld Deposition, 8-23-2017

In The Superior Court of the State of California, For The County of Los Angeles
Warrn Gilbert and Penny Gilber, Plaintiff vs. BMW of North America LLC
Case No.:  LC102019 (c/w BC582154)
Rosenfeld Deposition, 8-16-2017, Trail 8-28-2018

In the Northern District Court of Mississippi, Greenville Division
Brenda J. Cooper, et al., *Plaintiffs,* vs. Meritor Inc., et al., *Defendants*
Case Number: 4:16-cv-52-DMB-JVM
Rosenfeld Deposition: July 2017

In The Superior Court of the State of Washington, County of Snohomish
Michael Davis and Julie Davis et al., Plaintiff vs. Cedar Grove Composting Inc., Defendants
Case No.: No. 13-2-03987-5
Rosenfeld Deposition, February 2017
Trial, March 2017

In The Superior Court of the State of California, County of Alameda
Charles Spain., Plaintiff vs. Thermo Fisher Scientific, et al., Defendants
Case No.: RG14711115
Rosenfeld Deposition, September 2015

In The Iowa District Court In And For Poweshiek County
Russell D. Winburn, et al., Plaintiffs vs. Doug Hoksbergen, et al., Defendants
Case No.: LALA002187
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Jerry Dovico, et al., Plaintiffs vs. Valley View Sine LLC, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Iowa District Court For Wapello County
Doug Pauls, et al.,, et al., Plaintiffs vs. Richard Warren, et al., Defendants
Law No,: LALA105144 - Division A
Rosenfeld Deposition, August 2015

In The Circuit Court of Ohio County, West Virginia
Robert Andrews, et al. v. Antero, et al.
Civil Action N0. 14-C-30000
Rosenfeld Deposition, June 2015

In The Third Judicial District County of Dona Ana, New Mexico
Betty Gonzalez, et al. Plaintiffs vs. Del Oro Dairy, Del Oro Real Estate LLC, Jerry Settles and Deward DeRuyter, Defendants
Rosenfeld Deposition: July 2015

In The Iowa District Court For Muscatine County
Laurie Freeman et. al. Plaintiffs vs. Grain Processing Corporation, Defendant
Case No 4980
Rosenfeld Deposition: May 2015

In the Circuit Court of the 17th Judicial Circuit, in and For Broward County, Florida
Walter Hinton, et. al. Plaintiff, vs. City of Fort Lauderdale, Florida, a Municipality, Defendant.
Case Number CACE07030358 (26)
Rosenfeld Deposition: December 2014

In the United States District Court Western District of Oklahoma
Tommy McCarty, et al., Plaintiffs, v. Oklahoma City Landfill, LLC d/b/a Southeast Oklahoma City Landfill, et al. Defendants.
Case No. 5:12-cv-01152-C
Rosenfeld Deposition: July 2014

In the County Court of Dallas County Texas
Lisa Parr et al, *Plaintiff*, vs. Aruba et al, *Defendant.*
Case Number cc-11-01650-E
Rosenfeld Deposition: March and September 2013
Rosenfeld Trial: April 2014

In the Court of Common Pleas of Tuscarawas County Ohio
John Michael Abicht, et al., *Plaintiffs,* vs. Republic Services, Inc., et al., *Defendants*
Case Number: 2008 CT 10 0741 (Cons. w/ 2009 CV 10 0987)
Rosenfeld Deposition: October 2012

In the United States District Court of Southern District of Texas Galveston Division
Kyle Cannon, Eugene Donovan, Genaro Ramirez, Carol Sassler, and Harvey Walton, each Individually and on behalf of those similarly situated, *Plaintiffs,* vs. BP Products North America, Inc., *Defendant.*
Case 3:10-cv-00622
Rosenfeld Deposition: February 2012
Rosenfeld Trial: April 2013

In the Circuit Court of Baltimore County Maryland
Philip E. Cvach, II et al., *Plaintiffs* vs. Two Farms, Inc. d/b/a Royal Farms, Defendants
Case Number: 03-C-12-012487 OT
Rosenfeld Deposition: September 2013

**EXHIBIT C**

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Email: mhagemann@swape.com

# Matthew F. Hagemann, P.G., C.Hg., QSD, QSP

**Geologic and Hydrogeologic Characterization**
**Industrial Stormwater Compliance**
**Investigation and Remediation Strategies**
**Litigation Support and Testifying Expert**
**CEQA Review**

## Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

## Professional Certifications:

California Professional Geologist
California Certified Hydrogeologist
Qualified SWPPP Developer and Practitioner

## Professional Experience:

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Geology Instructor, Golden West College, 2010 – 2014;
- Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);

- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);
- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

**Senior Regulatory and Litigation Support Analyst:**

With SWAPE, Matt's responsibilities have included:

- Lead analyst and testifying expert in the review of over 100 environmental impact reports since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, Valley Fever, greenhouse gas emissions, and geologic hazards. Make recommendations for additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce worker exposure to hazards from toxins and Valley Fever.
- Stormwater analysis, sampling and best management practice evaluation at industrial facilities.
- Manager of a project to provide technical assistance to a community adjacent to a former Naval shipyard under a grant from the U.S. EPA.
- Technical assistance and litigation support for vapor intrusion concerns.
- Lead analyst and testifying expert in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.
- Expert witness on two cases involving MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.
- Expert witness in litigation at a former plywood plant.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.

- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.

- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

**Executive Director:**

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

**Hydrogeology:**

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.

- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

**Policy:**

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

**Geology:**

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

**Teaching:**

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Matt taught physical geology (lecture and lab and introductory geology at Golden West College in Huntington Beach, California from 2010 to 2014.

**Invited Testimony, Reports, Papers and Presentations:**

**Hagemann, M.F**., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

**Hagemann, M.F**., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

**Hagemann, M.F.,** 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

**Hagemann, M.F.,** 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

**Hagemann, M.F.**, 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

**Hagemann, M.F.,** 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

**Hagemann, M.F.,** 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

**Hagemann, M.F**., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

**Hagemann, M.F**., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

**Hagemann, M.F**., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

**Hagemann, M.F**., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

**Hagemann, M.F**., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

**Hagemann, M.F**., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

**Hagemann, M.F**., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

**Hagemann, M.F**., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

**Hagemann, M.F**., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

**Hagemann, M.F**., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

**Hagemann, M.F**., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

**Hagemann, M.F**., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

**Hagemann, M.F**., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

**Hagemann, M.F**., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

**Hagemann, M.F**., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

**Hagemann, M.F**., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

**Hagemann, M.F**., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

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**Hagemann, M.F.**, 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

**<u>Other Experience:</u>**

Selected as subject matter expert for the California Professional Geologist licensing examination, 2009-2011.

# Appendix C

Montclair Climate Action Plan Update

# Montclair Climate Action Plan

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# City of Montclair Climate Action Plan

*We must rapidly begin the shift from a 'thing-oriented' society to a 'person-oriented' society.*
*– Dr. Martin Luther King Jr.*

Public Draft
October 2024

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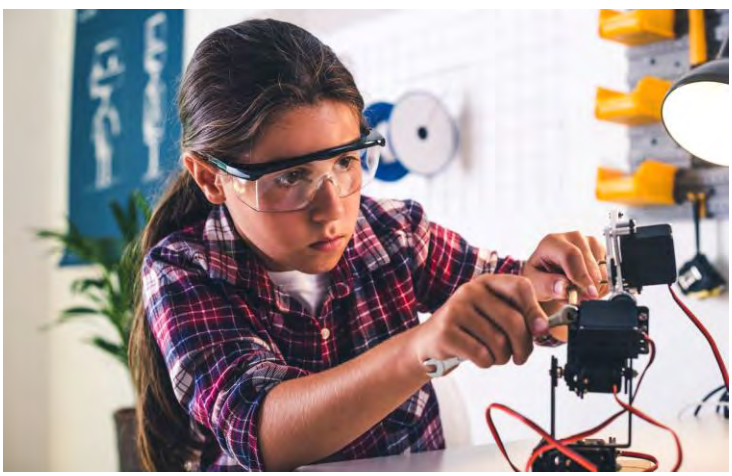
# Table of Contents

## Climate Resilience

Ability to prepare for, recover from, and adapt to impacts from our changing climate.[1]



## Climate Mitigation

Avoiding and reducing emissions of heat-trapping greenhouse gases into the atmosphere to prevent the planet from warming to more extreme temperatures.[2]

## Climate Adaptation

Altering our behavior and systems to protect our families, economies, and the environment from the impacts of climate change.[2]

1. https://www.c2es.org/document/what-is-climate-resilience-and-why-does-it-matter/?gclid=CjwKCAiAtouOBhA6EiwA2nLKH1iHNDMdt-S2tqbW0NynC1MUOXsIj7w4M8COvxf00-mJZ8LIgG4qnhoC4mwQAvD_BwE
2. https://www.worldwildlife.org/stories/what-s-the-difference-between-climate-change-mitigation-and-adaptation

# Section 1: Introduction

# Vision

Montclair is a diverse and forward-thinking community with a young population. Approximately 33.7 percent of the population was born outside of the United States and 63.6 percent of the population speaks a language other than English at home.[3] The community's diversity is highly valued and is part of the foundation that supports the City's first Climate Action Plan (CAP). This CAP presents a pathway for Montclair to reduce greenhouse gas (GHG) emissions, prepare for and mitigate climate risks, and chart the course towards a more sustainable and resilient future. Key components of that future include healthy, accessible, and safe communities that attract and retain jobs, while providing and promoting equitable access to the advancements made through the implementation of the CAP.

***Equity*** in Montclair is defined as a strategic focus of policies, programs, and processes targeted towards communities at greatest risk, and those that require the greatest support.

The goal of this CAP is to interweave equity considerations throughout the Plan because we are committed to working together to reduce our emissions in a fair way and make Montclair, our surrounding communities, and the world a more sustainable, healthier, and resilient place. As such, the role of the CAP is to protect those most vulnerable, including, disadvantaged communities and small businesses, against the impacts of climate change.

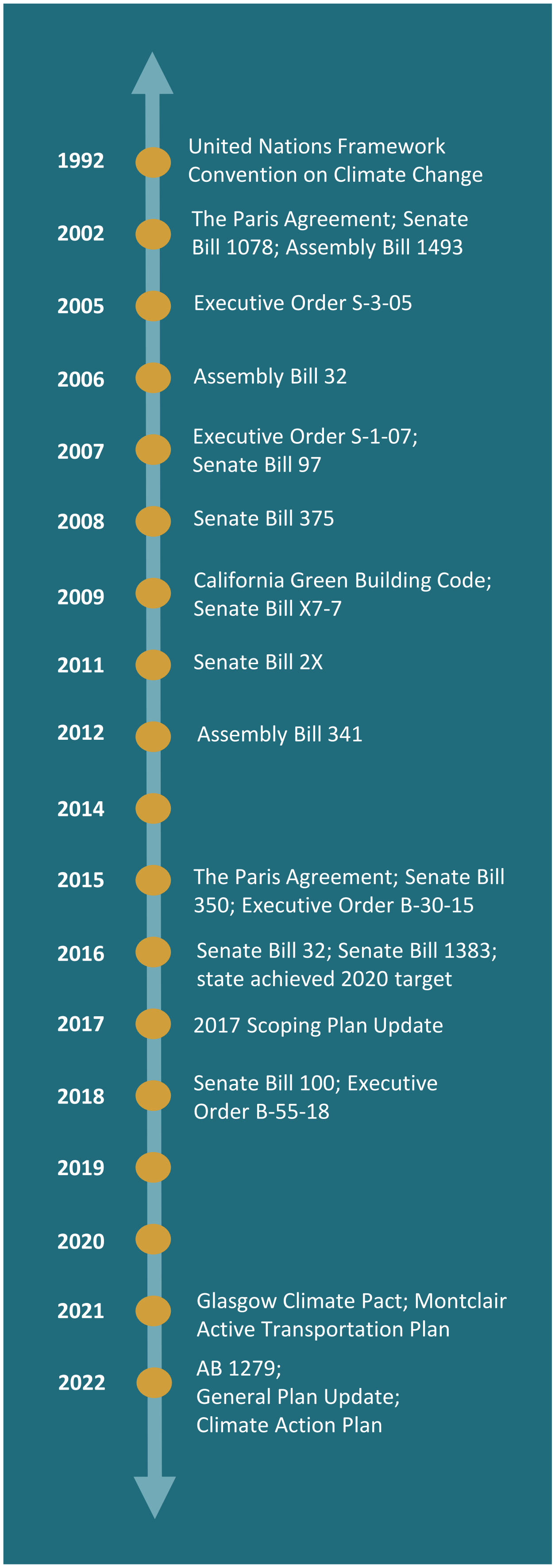
3. https://www.census.gov/quickfacts/montclaircitycalifornia

# Background

The effects of climate change are already felt on the local level and are projected to worsen over the next century without a concerted global effort to address the sources of GHG emissions (see *Climate Change in the City of Montclair* for more information on local climate impacts).[4] Therefore, the City of Montclair is looking to the future and preparing for a changing climate and the risks that come with it by adopting our first community CAP. The CAP is a long-range planning document that guides the City towards GHG emissions reductions in accordance with State of California's climate goals and the fair share reductions necessary to limit global warming to 1.5°C compared to pre-industrial levels. The 1.5°C goal was set by the Paris Agreement (2015), which is a legally binding international treaty on climate change, that aims to limit global warming to well below 2°C, preferably to 1.5°C. These goals were reiterated in the Glasgow Climate Pact (2021). See Appendix A for more information on the Paris Agreement and the Glasgow Climate Pact, as well as information on other relevant climate regulations. Figure 1 also includes a timeline of relevant regulations.

4. https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/

**Figure 1 Climate Action Timeline**




The CAP analyzes GHG emission sources within the City, forecasts future emissions, and establishes emission reduction targets (See Section 2 and Appendix C). This CAP builds upon the San Bernardino County Regional Greenhouse Gas Reduction Plans (GGRP)[5] that were completed in 2014 and 2021, setting a pathway for the City to reduce GHG emissions to 40 percent below 1990 levels by 2030, as outlined in Senate Bill (SB) 32. This CAP also was developed to make substantial progress towards reducing emissions in line with Assembly Bill (AB) 1279, which aims for carbon neutrality by 2045, with 15 percent of the reductions achieved through carbon capture and sequestration solutions. The CAP also provides a framework for implementation and monitoring reduction activities, and further promotes adaptation and preparedness actions. The Plan is intended to be a qualified GHG Reduction Plan and meets the requirements of the California Environmental Quality Act (CEQA) 15183.5(b), see *Purpose* for more information.

## COVID-19 and Climate Action

The COVID-19 pandemic disrupted daily life and strained both local and national economies, highlighting the intersection of climate change and community health. It also exposed how vulnerable communities are disproportionately impacted. Frontline communities, already facing higher exposure to toxic air pollution and respiratory illnesses, were hit hardest by the pandemic and continue to experience disproportionate impacts. Likewise, while the economic shutdown affected everyone, small business owners and income-insecure workers were among the least equipped to endure the crisis and await recovery. However, the global response to the pandemic demonstrated that swift, large-scale action in the face of disasters is both possible and essential. Together, we can make a difference.

---

5. The Regional GGRP provides the information for partner jurisdictions to use, if they so choose. The City of Montclair can choose whether to adopt the Regional GGRP's established strategies or make their own. The Regional GGRP shows what reductions are possible if every jurisdiction were to adopt the proposed strategies. Source: https://www.gosbcta.com/plan/regional-greenhouse-gas-reduction-plan/
6. https://www.worldbank.org/en/news/press-release/2021/11/03/covid-19-responses-could-help-fight-climate-change

Although GHG emissions in the United States dropped by about 12 percent and global GHG emissions dropped by about 7 percent between 2019 and 2020 due to the restrictions from COVID-19,[7] global GHG emissions rebounded in 2021,[8] which puts an emphasis on how important it is to act now. This CAP has been developed with a goal of reducing GHG emissions consistent with state goals while also addressing environmental justice and climate equity for our frontline communities. This CAP outlines how Montclair can work towards a safe and equitable future.

# Purpose

This CAP will guide the City of Montclair towards reducing GHG emissions consistent with the targets set out by SB 32 and AB 1279, as well as fulfill the requirements of the CEQA Guidelines Section 15183.5(b). CEQA Guidelines Section 15183.5(b) includes the following required criteria for a qualified CAP:

A. Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area (See Section 2)
B. Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable (See Section 2)
C. Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area (See Section 2)
D. Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level (See Section 3)
E. Establish a mechanism to monitor the Plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels (See Section 5)
F. Be adopted in a public process following environmental review (See Appendix E)

If projects are consistent with the CAP, CEQA analysis can be streamlined by presuming that the project is consistent with the measures included in the CAP and the project's GHG emissions are not significant.[10]

# Greenhouse Gas Emissions Background

Most of the energy that affects Earth's climate comes from the sun. When solar radiation reaches the Earth's atmosphere, some of it is reflected back into space and a small portion is absorbed by Earth's surface. As Earth absorbs the solar radiation, its surface gains heat and then re-radiates it back into the atmosphere. Some of this heat gets trapped by gases in the atmosphere, causing Earth to stay warm enough to sustain life. This is known as the *greenhouse effect* and the gases trapping the heat are known as *greenhouse gases*.[11] See the infographic depicting the *greenhouse effect and impacts* on the following page.

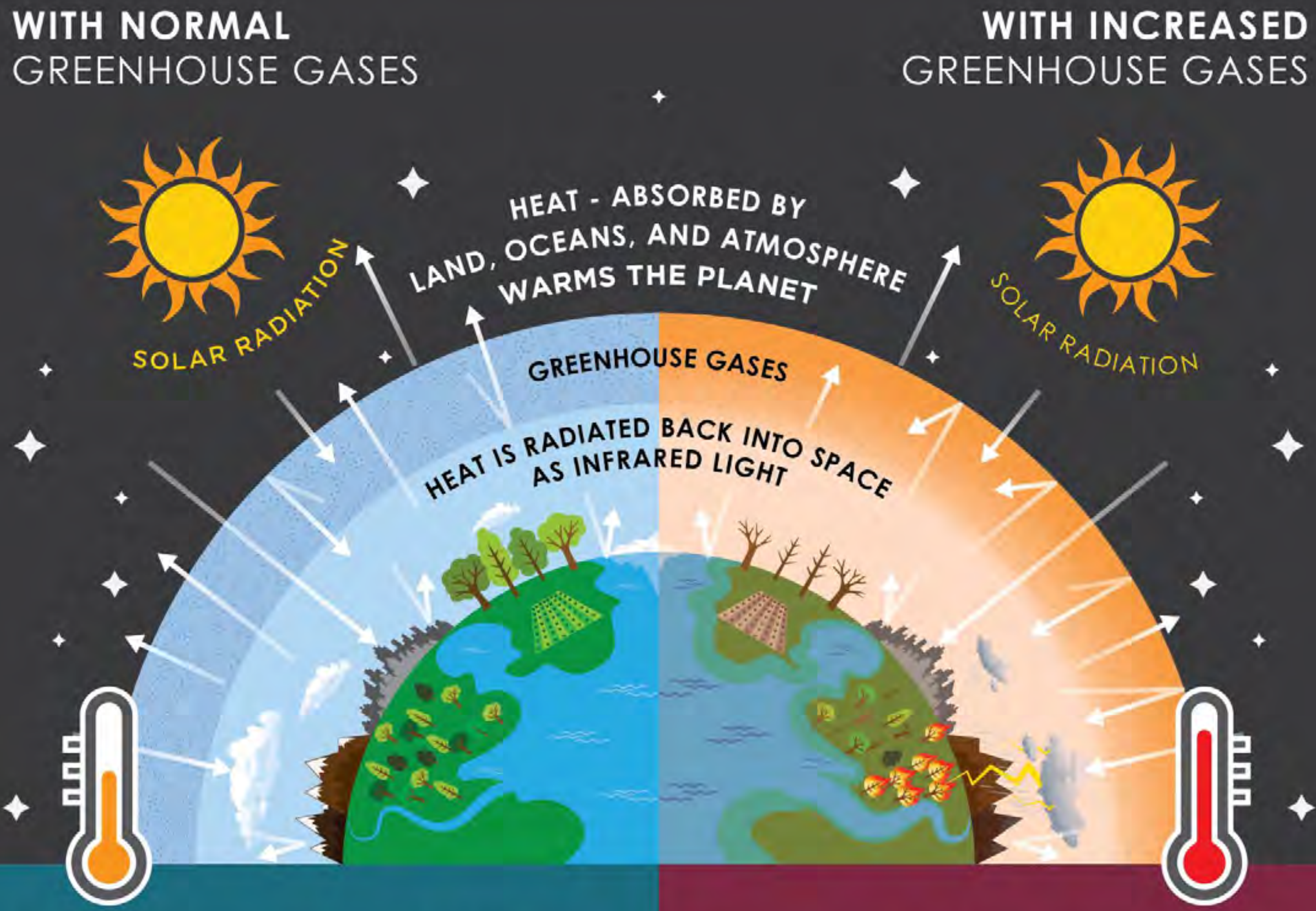
The greenhouse effect is integral to sustaining life on Earth. However, human activities emit GHGs in excess of natural ambient concentrations, thereby contributing to the enhancement of the natural greenhouse effect. This enhanced greenhouse effect contributes to global warming, an accelerated rate of warming of Earth's average surface temperature. More specifically, by burning fossil fuels to power homes, businesses, and automobiles, we increase the amount of GHGs emitted into the atmosphere,[12] which, in turn, leads to increased absorption of infrared radiation by the Earth's atmosphere and increasing temperatures near the surface.

7. https://earth.stanford.edu/news/covid-lockdown-causes-record-drop-carbon-emissions-2020#gs.iu69fg
8. https://www.globalcarbonproject.org/carbonbudget/21/files/Norway_CICERO_GCB2021.pdf
9. Please Appendix A for a full summary on the regulatory background that drives the climate action planning process.
10. https://opr.ca.gov/docs/OPR_C8_final.pdf
11. https://scied.ucar.edu/learning-zone/how-climate-works/greenhouse-effect
12. https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

# GREENHOUSE EFFECT

In the last century, human activities such as burning fossil fuels and deforestation have caused a jump in the concentration of greenhouse gases in the atmosphere.

**THE RESULT: Extra trapped heat and higher global temperatures.**




Some heat continues into space while the rest, trapped by greenhouse gases, help maintain the planet's relatively comfortable temperatures.

**LESS GAS =**
**LESS HEAT TRAPPED IN THE ATMOSPHERE**

**Retaining more reliable:**

- **Weather**
- **Rainfall**
- **Temperature**
- **Sea Level**

Increased greenhouse gases means less heat escapes to space. Between preindustrial times and now, the earth's average temperature has risen by 1.8°F (1.0°C).

**MORE GAS =**
**MORE HEAT TRAPPED IN THE ATMOSPHERE**

**More intense:**

- **Storms**
- **Drought**
- **Heat**
- **Sea Level Rise**

## Types of Greenhouse Gases

Greenhouse gases listed by the United Nations Intergovernmental Panel on Climate Change (IPCC) include: carbon dioxide ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_2O$), as well as chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, which are collectively called fluorinated gases.[13] In the United States, 97 percent of the annual GHG emissions generated consist of $CO_2$, $CH_4$, and $N_2O$ collectively,[14] while fluorinated gases[15] result in the remaining three percent of emissions. Because $CO_2$, $CH_4$, and $N_2O$ comprise a large majority of GHG emissions at the community level, these are the gases considered in this analysis.

Each of these gases has its own global warming potential (GWP), or extent to which it traps energy in the atmosphere, ranging from a decade to several thousand years. Often, $CO_2$ is used as the reference point to compare the potential impact of different GHGs; therefore, $CO_2$ has a GWP of 1. The GWPs for the emissions included in this analysis are summarized below.

| GHG | GWP |
|---|---|
| $CO_2$ | 1 |
| $CH_4$ | 25 |
| $N_2O$ | 298 |

When all GHG's are normalized based on their GWP's they are referred to as carbon dioxide equivalents or $CO_2e$. It is important to also note that there are a variety of GWPs, based on different timeframes and the lifespan of the GHG; however, to be consistent with California's state-wide inventory we have relied upon those included in the Fourth IPCC Assessment Report (2007).[16]

### Sources of Greenhouse Gas Emissions

The combustion of fossil fuels (such as natural gas and gasoline), the decomposition of waste, and industrial processes are the primary sources of GHG emissions. With the accelerated increase in fossil fuel combustion and deforestation since the Industrial Revolution of the 19th century, concentrations of GHG emissions in the atmosphere have increased exponentially. The

13. https://www.c2es.org/content/main-greenhouse-gases/
14. https://www.wri.org/insights/4-charts-explain-greenhouse-gas-emissions-countries-and-sectors
15. Fluorinated gases, which includes four main types: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride ($SF_6$) and nitrogen trifluoride ($NF_3$), are man-made gases that can stay in the atmosphere for centuries and contribute to the GHG effect.

16. https://www.ipcc.ch/assessment-report/ar4/

California Air Resources Board (CARB) tracks the statewide emissions and publishes an annual report: *California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators.*[17]

According to CARB, in 2019 statewide emissions were 418.2 million metric tons of carbon dioxide equivalent (MMT $CO_2e$), 7.2 MMT $CO_2e$ lower than 2018 levels and almost 13 MMT $CO_2e$ below the 2020 GHG limit of 431 MMT $CO_2e$. Between 2018 and 2019, emissions from transportation and electric power decreased due to a significant increase in renewable diesel (up 61 percent from 2018), making diesel fuel bio-components (biodiesel and renewable diesel) 27 percent of total on-road diesel sold in California. Additionally, there was a continued increase in renewable energy generation, including a 46 percent increase in available in-state hydropower in 2019. General trends in CARB's inventory also demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product (GDP) is declining.

### Emissions in Montclair

As part of the development of this CAP, the City of Montclair developed a 2017 GHG Inventory for its community and municipal emissions sources. A GHG inventory provides information about a community's GHG emissions profile and break that down into individual sectors looking at specific emissions by source. Montclair's inventory is broken down into four sectors: transportation, energy, water, and solid waste for both municipal and community GHG emissions profiles. See Section 2 for more information on the inventory, as well as the forecast and targets established as part of this climate action planning process.

## Climate Impacts

Anthropogenic (human) caused climate change is well-understood and widely accepted by the scientific community, with over 97 percent of climate scientists agreeing that the planet is warming and human activities are the root cause.[18] Essentially, climate change is the addition of excess GHGs to the atmosphere which traps energy (heat) and causes changes to temperature, wind patterns, and precipitation. Because of human activities, these GHGs are now higher than they have been in the past 400,000 years, raising carbon dioxide levels from 280 parts per million to 400 parts per million in the last 150 years.[19] Although many changes to climate are governed by natural processes, human activities have contributed an increasing amount of GHGs to the atmosphere at a rate that is unprecedented in Earth's history. The Paris Agreement establishes a roadmap to keep the world under 2° C of warming with a goal of limiting an increase of temperature to 1.5° C. As mentioned above, the CAP guides the City towards GHG emissions reductions in accordance with these climate goals and establishes a path that allows the City to achieve the fair share reductions necessary to limit global warming to 1.5°C compared to pre-industrial levels.

### Effects of Climate Change

Globally, climate change is already linked to several changes which will impact the earth and its population. Scientists have measured shrinking ice sheets, warming oceans, increasing global temperatures, less snow cover, sea level rise, and species extinction. Consequently, global climate change has the potential to result in reduction of fresh-water supply (due to rainfall and snowfall changes), adverse changes to biological resources and public health (due to increased temperature, less-productive habitats, and expansion of disease vectors), as well as many other adverse environmental consequences.[20]

Globally, a warming trend is abundantly clear, with both the years 2016 and 2020 being the hottest years on record.[21] Additionally, the 20 hottest years on record have all occurred since 1998.[22] Climate change is a global phenomenon that has the potential to impact local health, natural resources, infrastructure, emergency response, and many other facets of society. The direct impacts projected for the City of Montclair include increased temperatures and potential changes in precipitation patterns.

17. https://ww2.arb.ca.gov/sites/default/files/classic/cc/ghg_inventory_trends_00-19.pdf
18. https://climate.nasa.gov/scientific-consensus/
19. https://climate.nasa.gov/evidence/
20. https://www.ipcc.ch/sr15/chapter/chapter-3/
21. https://climate.nasa.gov/evidence/
22. https://www.ncdc.noaa.gov/cag/

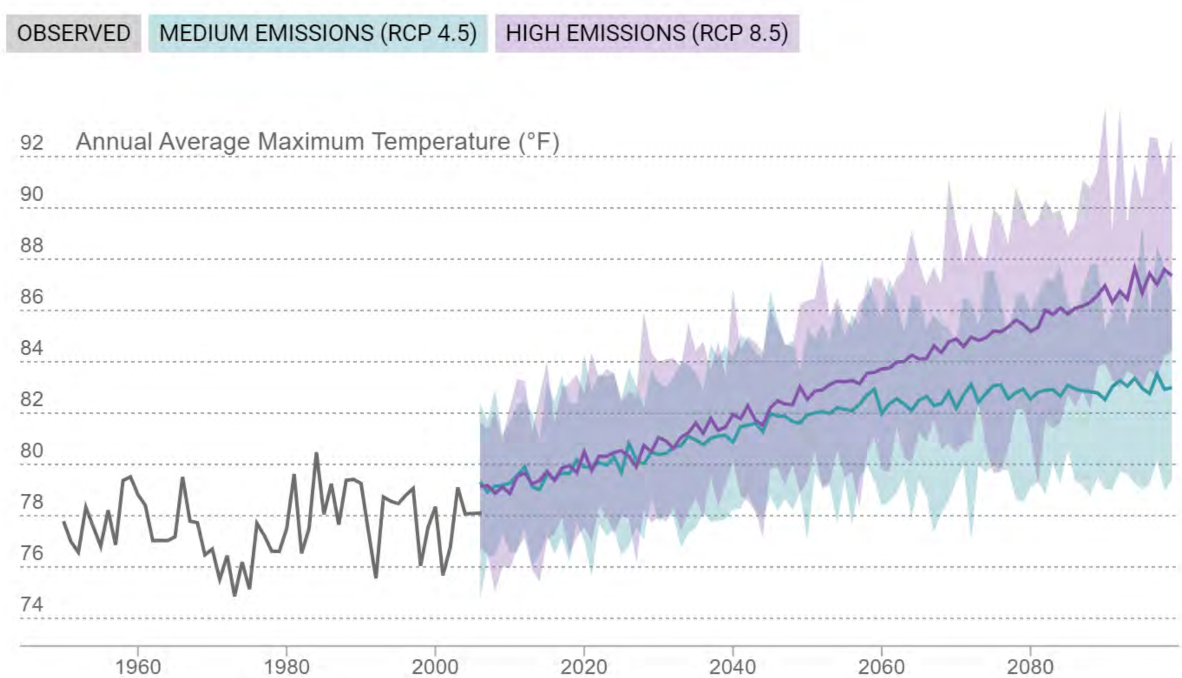
## Climate Change in the City of Montclair

In the City of Montclair, the most pronounced effects of climate change will be increased average temperature, more days of extreme heat, and elevated drought risk. The projections used in this analysis were taken from Cal-Adapt, an interactive platform that allows users to explore how climate change might affect California at the local level under different emissions scenarios and climate models, which was developed by the Geospatial Innovation Facility (GIF), University of California, Berkeley with funding and advisory oversight by the California Energy Commission. The conservative emissions scenario used in this analysis is Representative Concentration Pathway (RCP) 8.5, also known as the high emissions scenario, which is intended to project a business-as-usual continuation of current emissions. A range of climate models exist to cover the variability of physical processes, leading to warm/dry simulations and cool/wet simulations. Best practices for conservative planning indicates that an average of all models gives the most representative value. See Appendix B for further information on RCPs and climate models used.

As shown in Figure 2, The projected maximum temperatures in the City of Montclair are expected to rise between 4.4°F and 5.3°F by the end of the century depending on the emissions scenario.[23] Montclair is also projected to experience more extreme heat conditions (Figure 3). The annual number of heat waves, defined as the number of days in a year when the daily maximum temperature is above a threshold temperature of 101.4°F, is projected to increase from 12 to 16 days depending on the scenario by the end of the century. In Southern California, the top five warmest years in terms of annual average temperature have all occurred since 2012:[24] 2014 was the warmest, followed by 2015, 2017, 2016, and 2012.  A trend is forming and has been observed. This shows that climate change is already impacting the City of Montclair in the form of hotter annual temperatures and longer and more potent extreme heat days.

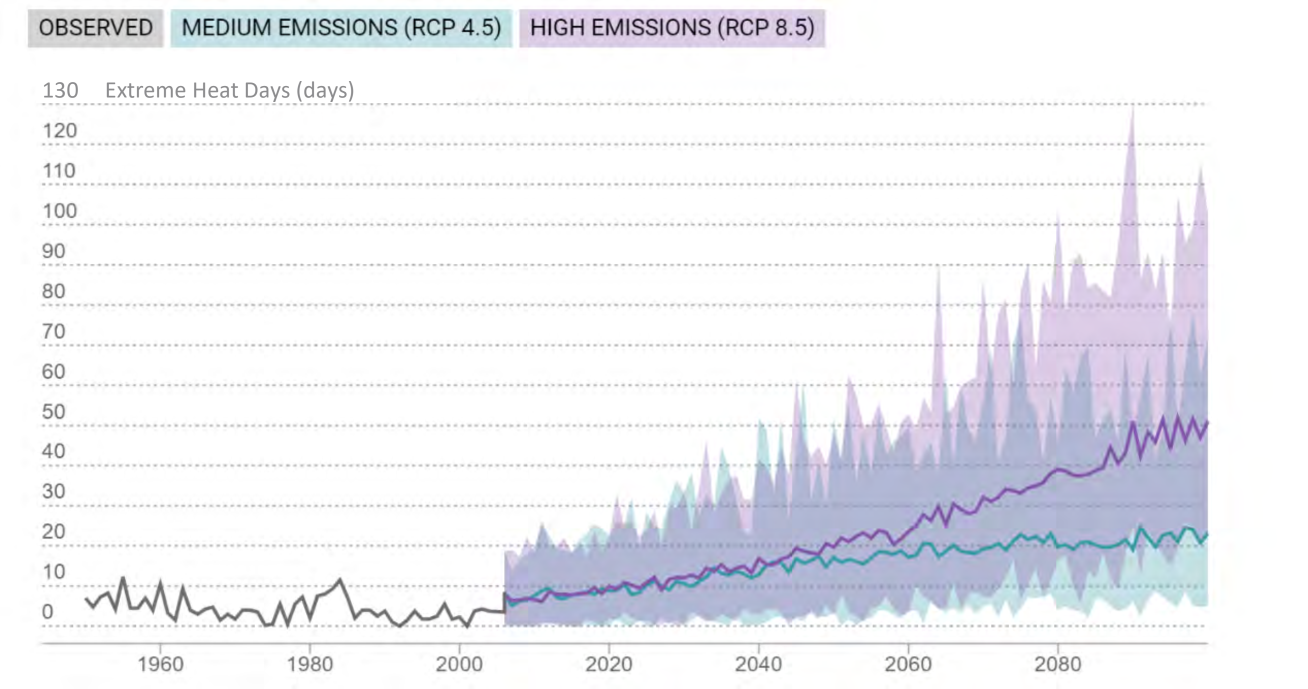
The Cal-Adapt projections shows some change in the variability in total annual precipitation in Montclair with increased precipitation in years with high precipitation and a slight decrease in precipitation in low precipitation years, as illustrated in Figure 4. Even small changes in the variability of precipitation can lead to significant

**Figure 2 Historical and Projected Maximum Temperatures for the City of Montclair**

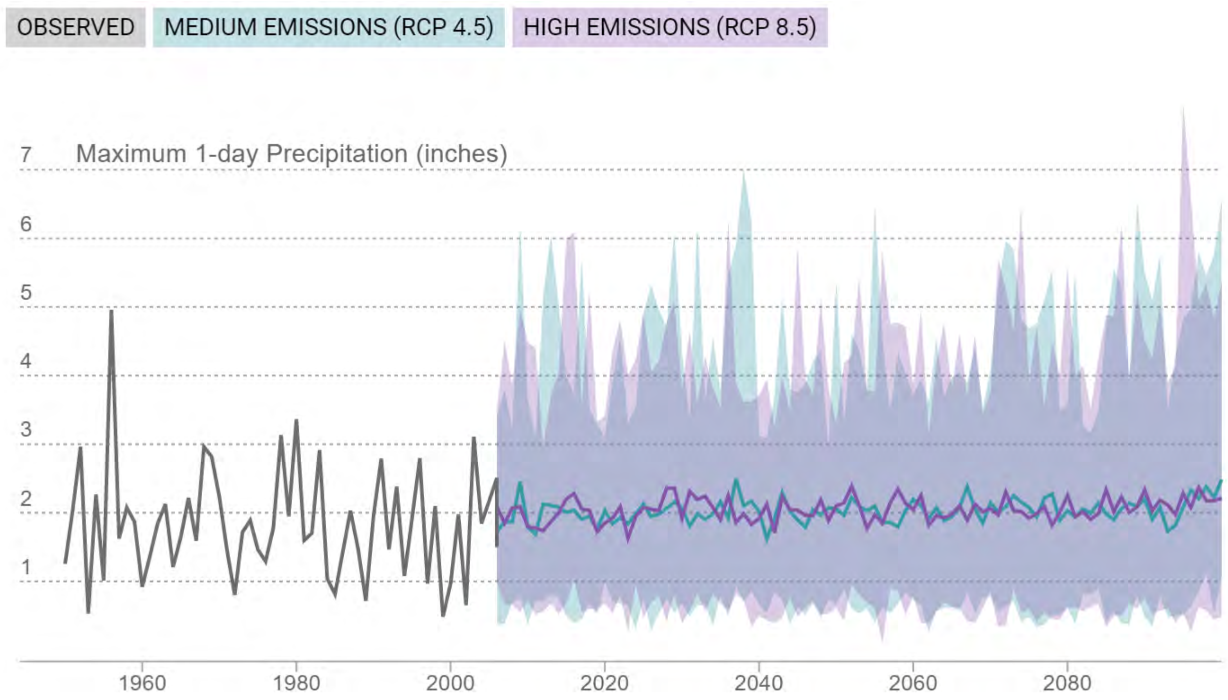


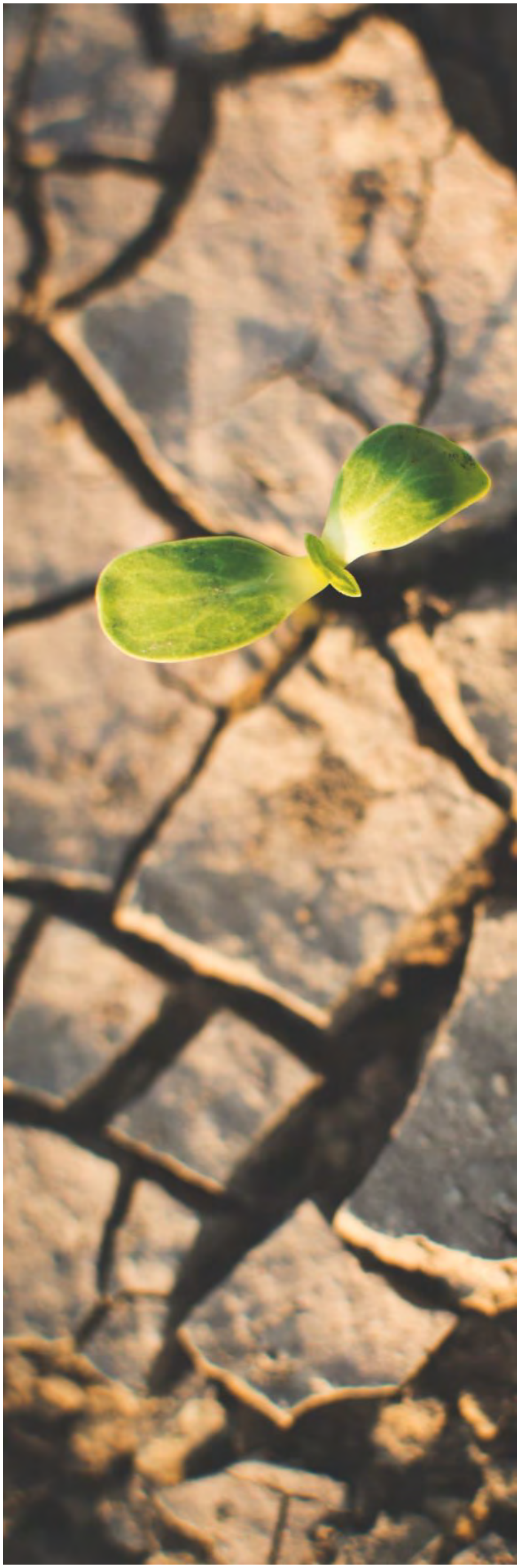

23. https://cal-adapt.org/tools/local-climate-change-snapshot/
24. https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles_ADA.pdf

## Figure 3 Number of Extreme Heat Days for the City of Montclair




## Figure 4 Annual Average Precipitation





impacts such as altered water availability throughout the year, decreased agricultural output in the region, and altered seasonal patterns which could cause increased droughts and/or flooding.

The western section of San Bernardino County, like the adjacent Los Angeles (LA) region, experiences small changes in average precipitation, dry and wet extremes, and both are expected to increase in the future. By the late-21st century, the wettest day of the year is expected to increase across most of the LA region, with some locations experiencing 25-30 percent increases under RCP 8.5. These wet day events may come in the form of an atmospheric river. Atmospheric rivers are regions of high-water vapor transport from the tropics to the Pacific Coast of the U.S. that can produce intense topographic-induced precipitation along Southern California mountain ranges.[25]

The frequency of atmospheric river events may increase in the future, and the storms themselves will be associated with higher water vapor transport rates compared to historical conditions. It is projected that we will experience a nearly 40 percent increase in precipitation during atmospheric river events over Southern California by the late-21st century under RCP 8.5. The number of atmospheric river events is also projected to increase in the future, possibly around a doubling of days by the end of the century. Moreover, the peak season of atmospheric rivers may also lengthen, which could extend the flood-hazard season in California.[26]

Extremely dry years are also projected to increase over Southern California, potentially a doubling or more in frequency by the late-21st century. Regional mountains could lose up to half their snowpack above 6,500 feet by mid-century without the implementation of climate mitigation strategies. Increases in temperature could also worsen local heat island effects in Montclair and the surrounding area, meaning that urban areas could experience a compounded level of heating due to built environments absorbing more heat than rural communities.[27] Children, the elderly, asthmatics, and others susceptible to harm from air pollution exposure, are at the greatest risk of the negative impacts associated with climate change.[28]

25. https://www.usgs.gov/news/featured-story/rivers-sky-6-facts-you-should-know-about-atmospheric-rivers
26. https://www.usgs.gov/news/featured-story/rivers-sky-6-facts-you-should-know-about-atmospheric-rivers
27. https://www.epa.gov/heatislands/learn-about-heat-islands
28. https://ww2.arb.ca.gov/capp-resource-center/community-assessment/sensitive-receptor-assessment

## Social Vulnerability

Those that are most vulnerable will bear the greatest burden associated with the potential impacts of a changing climate. Race, ethnicity, gender identity, sexual orientation, age, social class, physical ability, religious or ethical value systems, national origin, immigration status, linguistic ability, and zip code do not make an individual inherently vulnerable. Instead, vulnerabilities relate to deficiencies in the system rather than a judgement of any particular community member or neighborhood. This document aims to provide a foundation to ultimately reduce potential burdens of climate change on vulnerable populations.

According to the California Healthy Places Index (HPI), Montclair is in the 3.3 percentile for a clean environment in California. Meaning, that the City has a cleaner environment than just 3.3 percent of other California census tracts. This includes air quality Ozone, $PM_{2.5}$, and Diesel PM as well as access to safe drinking water. Overall, the City of Montclair is in the 38.6 percentile, which means it is a healthier community than 38.6 percent of other California census tracts.[29] The HPI identifies challenges that could be exacerbated as climate changes impacts unfold.

29. https://map.healthyplacesindex.org/

## Potential Impacts to the Community

The City of Montclair may experience a variety of impacts due to climate change including an increase in average temperature and changes in precipitation, as outlined above under *Climate Change in the City of Montclair*. Increased temperatures have the potential to affect public health as a result of changing environmental conditions including extreme weather events, changes in temperature and rainfall, worsening air quality, and increases in allergens and disease vectors.[30] This could lead to hazardous conditions such as heat stroke and respiratory ailments for community members. Potential impacts to public health include cardiovascular disease, exacerbation of asthma, increased risk of skin cancer and cataracts, and heat-related illnesses such as heat stroke, heat exhaustion, and kidney stones.[25] Those in the community without health insurance (about 12.9

30. A disease vector is a living organism that transmits an infectious agent from an infected animal to a human or another animal. Source: https://www.who.int/news-room/fact-sheets/detail/vector-borne-diseases

31. https://resources.ca.gov/CNRALegacyFiles/docs/climate/01APG_Planning_for_Adaptive_Communities.pdf

percent of the population under 65) and those living under the poverty line (approximately 14.6 percent of the population) are particularly vulnerable.[32]

With anticipated increases in temperature, those without health insurance and/or those that are economically disadvantaged may find it more difficult to afford the additional costs of cooling their homes. Consequently, many low-income households, especially those of seniors and disabled individuals may become physically vulnerable to the effects of extreme heat events. It is imperative that the City of Montclair take action now to mitigate and prepare for these climate threats and hazards.

32. https://www.census.gov/quickfacts/montclaircitycalifornia

# Section 2: Inventory, Forecast, and Targets

# Emissions Inventory

A GHG emissions inventory identifies the major sources and quantities of GHG emissions produced by City government (municipal) operations and community-wide activities within a jurisdiction's boundaries for a given year. Estimating GHG emissions enables local governments to establish an emissions baseline, track emissions trends, identify the greatest sources of GHG emissions within their jurisdiction, and set targets for future reductions.

This CAP includes a 2017 baseline inventory of GHG emissions from municipal operations and community-wide activities within the City, as well as a 2030, 2040, and 2045 "business-as-usual" forecast of how emissions in Montclair would change if consumption trends and behavior continue as they did in 2017, absent any new federal, State, regional, or local policies or action that would reduce those emissions. It is important to note that the municipal operations inventory is a subset of the community inventory, meaning that the municipal emissions are included within the community-wide inventory.

The inventories are divided into four sectors, or sources of emissions: energy (electricity and natural gas), transportation, solid waste, and water consumption. Like all GHG emissions inventories, this document must rely on the best available data and calculation methodologies. Emissions estimates are subject to change as better data and calculation methodologies become available in the future. Nevertheless, the findings of this analysis provide a solid basis upon which Montclair can begin planning and acting to reduce its GHG emissions.

## Municipal Emissions

In 2017, the City of Montclair's municipal GHG emissions totaled 2,594 metric tons of carbon dioxide equivalents (MT $CO_2$e).[33] As shown in Table 1 and Figure 5, the most emissions were generated

### Table 1 2017 Municipal Emissions Summary by Sector

| Sector | | GHG Emissions (MT $CO_2$e) | Percentage of Total Emissions |
|---|---|---|---|
| **Energy** | | **1,129** | **44%** |
| | Electricity | 1,008 | 39% |
| | Natural Gas | 121 | 5% |
| **Transportation** | | **1,270** | **49%** |
| | Vehicle Fleet | 736 | 28% |
| | Employee Commute | 534 | 21% |
| **Water and Wastewater** | | **138** | **5%** |
| **Solid Waste** | | **56** | **2%** |
| **Total** | | **2,594** | **100%** |

Notes: MT $CO_2$e: Metric tons of carbon dioxide equivalent
1. Emissions have been rounded and therefore sums may not match.
Source: Emissions were calculated following ICLEI LGOP (May 2010) and using data provided and approved by the City. See Appendix C.

33. According to the United States Environmental Protection Agency (USEPA), "the unit "$CO_2$e" represents an amount of a GHG whose atmospheric impact has been standardized to that of one-unit mass of carbon dioxide ($CO_2$), based on the global warming potential (GWP) of the gas." USEPA. October 2014. Pollution Prevention Greenhouse Gas (GHG) Calculator Guidance. https://www.epa.gov/sites/production/files/2014-12/documents/ghgcalculatorhelp.pdf

**Figure 5 2017 Municipal Emissions Summary by Sector**

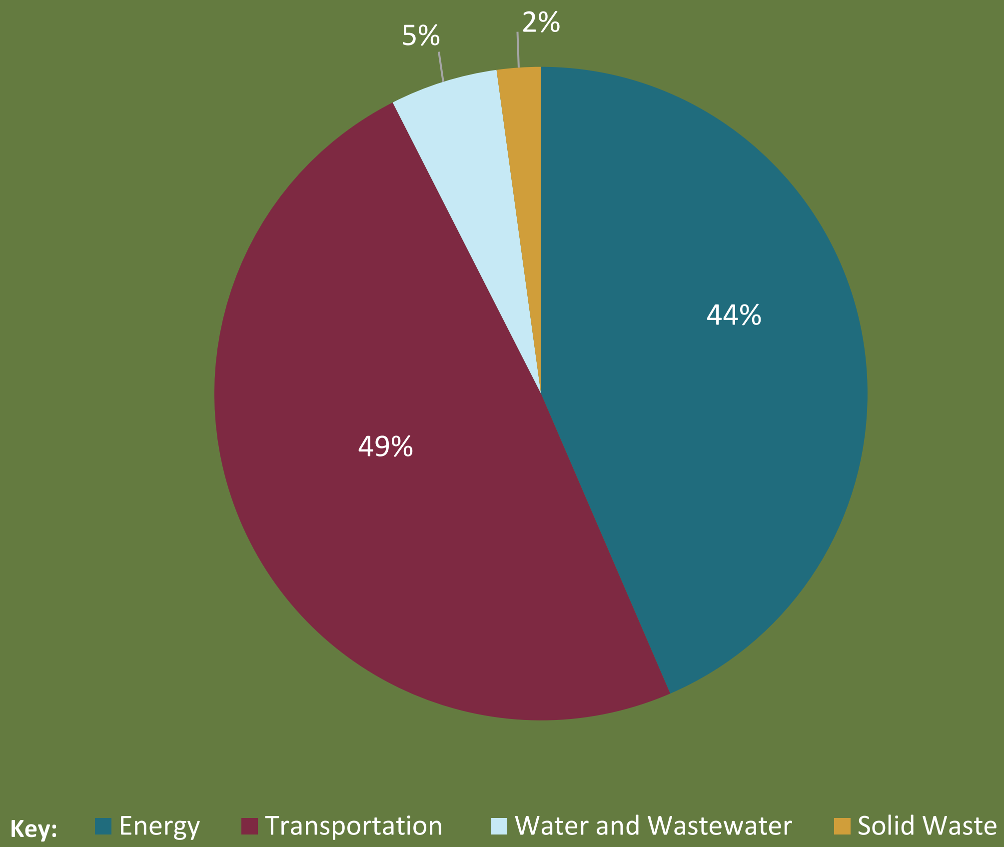
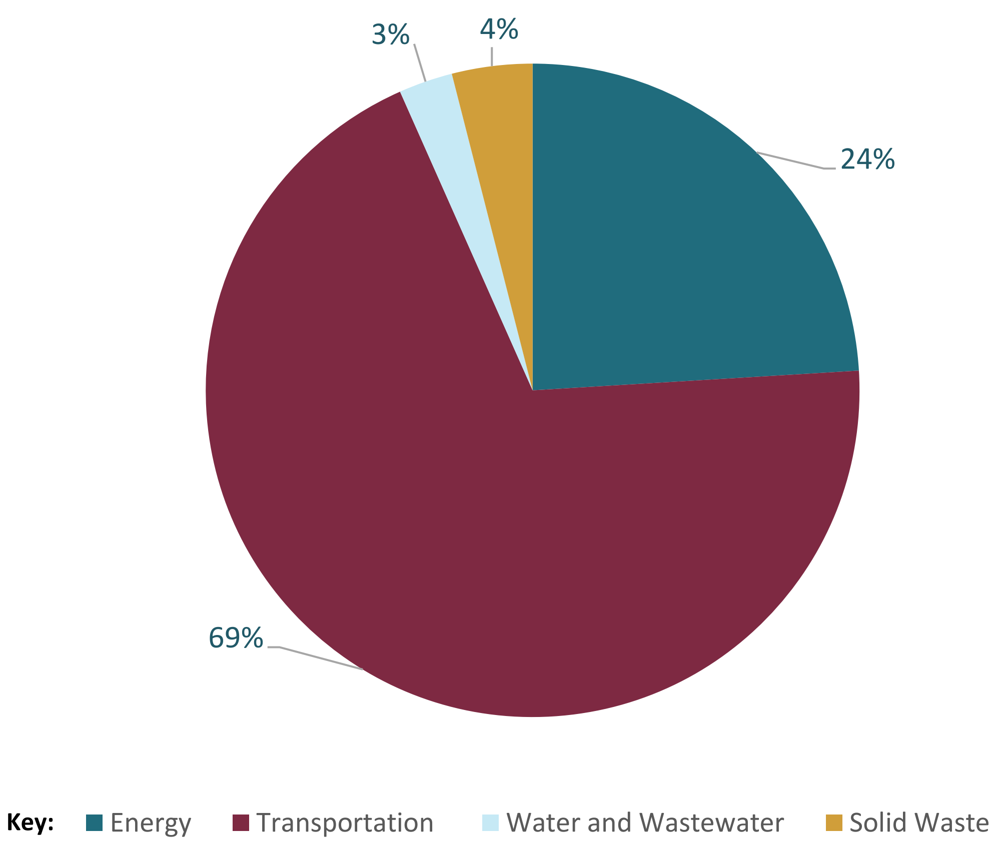



**Figure 6 2017 Community Emissions Summary by Sector**



by the transportation sector (1,270 MT $CO_2$e, or 49 percent). The second largest source of emissions (1,129 MT $CO_2$e, or 44 percent) were from energy (e.g., electricity and natural gas consumed in the City's buildings and facilities.

## Community Emissions

In 2017, the Montclair community emitted approximately 283,074 MT $CO_2$e. As shown in Figure 6 on the previous page and Table 2 below, the transportation sector was the largest source of emissions, generating approximately 196,213 MT $CO_2$e, or 69 percent of total emissions in 2017. Electricity and natural gas consumption (energy) within the residential, commercial, and industrial sectors was the second largest source of 2017 emissions, generating 68,047 MT $CO_2$e, or 24 percent of the total. Waste generation, including processing and excluding collection and transportation resulted in four percent of the City's emissions, while water use (one percent) and wastewater generation (two percent) resulted in the remaining three percent.

# Emissions Forecast

Emissions forecasts (what we predict GHG emissions to be in the future) are generated from the 2017 baseline inventory to help identify actions that must be taken now in order to meet future

**Table 2 2017 Community-wide Emissions Summary by Sector**

| Sector | | GHG Emissions (MT $CO_2$e) | Percentage of Total Emissions |
|---|---|---|---|
| **Energy** | | **68,047** | **24%** |
| | Electricity | 43,306 | 15% |
| | Natural Gas | 24,741 | 9% |
| **Transportation** | | **196,213** | **69%** |
| | On-road Transportation | 183,577 | 65% |
| | Off-road Equipment | 8,802 | 3% |
| | Transit | 3,834 | 1% |
| **Water and Wastewater** | | **7,557** | **3%** |
| | Water transport, distribution and treatment | 3,342 | 1% |
| | Wastewater collection and treatment | 4,215 | 2% |
| **Solid Waste** | | **11,258** | **4%** |
| | Waste Sent to Landfills | 10,879 | 4% |
| | Process Emissions | 355 | <1% |
| | *Transportation & Collection Emissions[2]* | *831* | *<1%* |
| | Combustion Emissions | 24 | <1% |
| **Total[2]** | | **283,074** | **100%** |

Notes: MT $CO_2$e: Metric tons of carbon dioxide equivalent
1. Emissions have been rounded and therefore sums may not match.
2. Waste transportation and collection emissions are accounted for in the on-road transportation sector of the inventory and are included here only for informational purposes.
Source: Emissions were calculated following ICLEI Community Protocol and using data provided and approved by the City. See Appendix C.

targets. This CAP identifies GHG emissions reduction targets for the years 2030 (SB 32 target year), 2040 (City of Montclair's General Plan horizon year), and 2045 (AB 1279).[34]

A business-as-usual scenario (BAU) provides a forecast of how GHG emissions would change in the years 2030, 2040, and 2045 if consumption trends continue as they did in 2017 and growth were to occur as projected in the City's General Plan. Montclair's BAU emissions were projected to increase to 330,412 MT $CO_2e$ in 2030, 354,216 MT $CO_2e$ in 2040, and 366,102 MT $CO_2e$ in 2045 (see row one of Table 3).

However, since 2017, several State regulations (i.e., SB 1, SB 100, AB 1493) have been enacted that will reduce future local emissions. These regulations have been incorporated into an *adjusted forecast*, which is more representative of future emissions growth and the emission reduction the City and community will be responsible for after State regulations have been implemented (see row three of Table 3).

## Emissions Targets

After analyzing the City's baseline inventory and forecast scenarios, emission targets were set to create quantitative goals that will further the City's ability to measure emission reduction progress from the baseline scenario. Consistent with State guidance, the 2017 inventory results were used to back-cast GHG emissions to 1990 levels to ensure consistency with state goals.

In line with the California Air Resources Board (CARB) 2017 Scoping Plan methodology and the statewide goal established by SB 32, GHG targets can be set using an efficiency pathway. This approach sets GHG targets on a per capita basis and is recommended by the 2017 Scoping Plan for cities anticipating significant growth. Regardless of growth projections, AB 1279 mandates the State reach carbon neutrality by 2045. For Montclair, the efficiency target was set based on 1990 per capita emission levels of 8.2 MT $CO_2e$.

The City of Montclair established GHG reduction targets consistent with the State's SB 32 goal of reducing emissions 40% below 1990 levels by 2030, and aligned with the trajectory to achieve carbon neutrality by 2045 consistent with AB 1279 and CARB's 2022 Scoping Plan:

- **SB 32 target-** Reduce GHG emissions to 4.9 MT $CO_2e$ per capita by 2030
- **AB 1279 target-** Reduce GHG emissions to 0.0 MT $CO_2e$ per capita by 2045

Table 4 and Figure 7 illustrate the per capita reductions needed to meet the goals (MT $CO_2e$ per capita) after accounting for reductions from State regulations. Table 4 translates efficiency metrics into mass emission reductions for Montclair, which corresponds to a reduction of 18,583 MT $CO_2e$ by 2030 and 225,157 MT $CO_2e$ by 2045 to meet the State goals.

These reductions will be achieved through local measures and actions drawn from best practices in similar jurisdictions and recommendations from State organizations. Vetted by City staff and the community, these measures are quantified to show their contribution to meeting the City's 2030 and 2045 GHG reduction targets. For more details on the forecast and targets, see Appendix C.

34. Because the state achieved the 2020 target in 2016, it is assumed that the City similarly achieved the 2020 target. Therefore, a 2020 target and forecast is not included in this CAP.

### Table 3 Business-as-Usual and Adjusted Forecast for City of Montclair

| Emission Forecast | 2030 (MT $CO_2e$) | 2040 (MT $CO_2e$) | 2045 (MT $CO_2e$) |
|---|---|---|---|
| Business-as-Usual Forecast | 330,412 | 354,216 | 366,102 |
| Emission Reductions from State Measures | 68,247 | 120,019 | 140,944 |
| **Adjusted Forecast** | **262,166** | **234,197** | **225,157** |

Notes: BAU forecast: Forecast of how GHG emissions would change if consumption trends continue as they did in 2017 and growth were to occur as projected in the City's General Plan. See Appendix C for more information on the forecast and targets. MT $CO_2e$ = metric tons of carbon dioxide equivalent

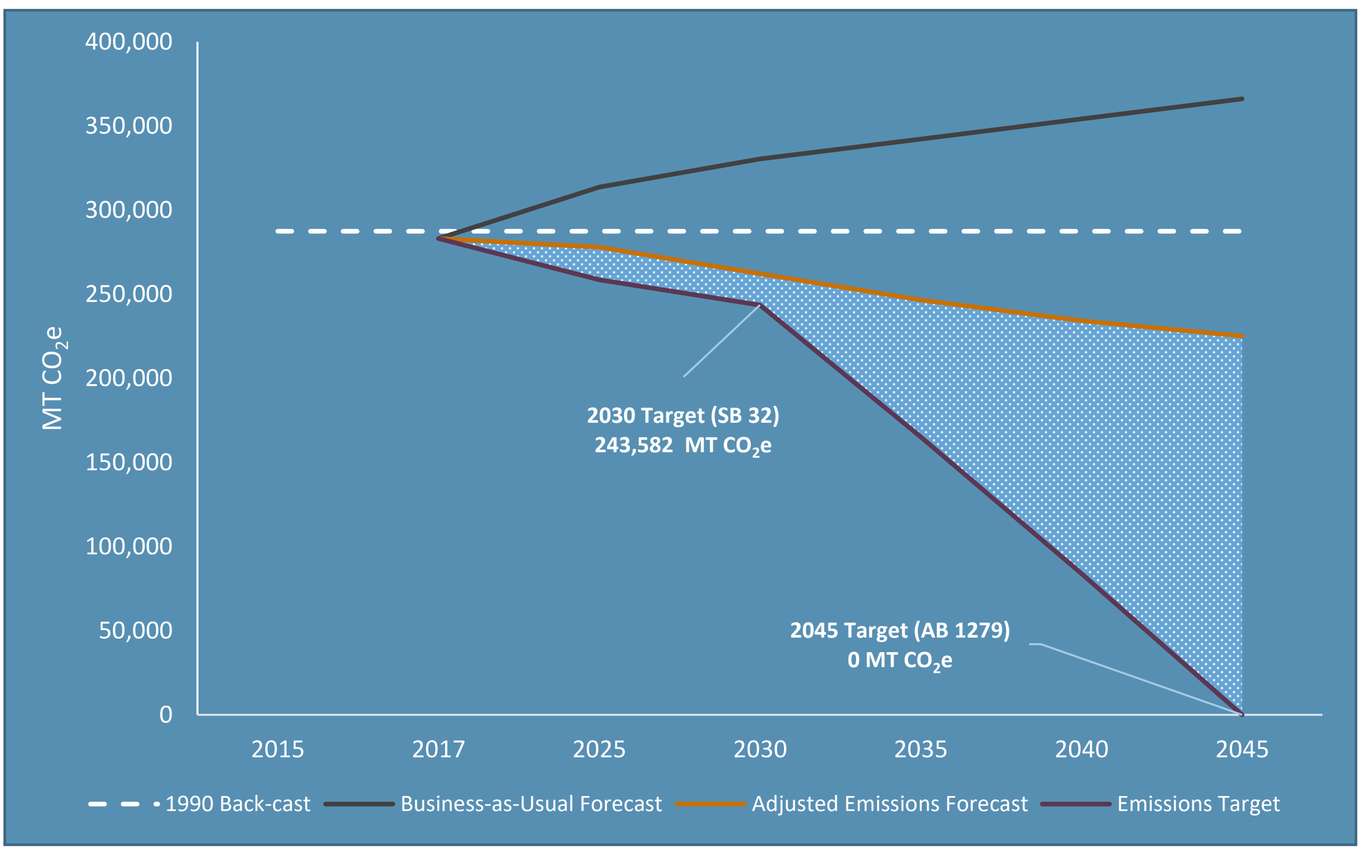
## Table 4 Community Emissions, Targets, and Reductions Needed to Meet Targets

| Emission Forecast | 2030 (MT $CO_2e$) | 2040 (MT $CO_2e$) | 2045 (MT $CO_2e$) |
|---|---|---|---|
| Population[1,2] | 49,672 | 51,414 | 52,285 |
| Adjusted Forecast | 262,166 | 234,197 | 225,157 |
| Per Capita Adjusted Forecast (MT $CO_2e$ per capita) | 5.3 | 4.6 | 4.3 |
| Per Capita Targets (MT $CO_2e$ per capita) | 4.9 | 1.6 | 0.0 |
| **Remaining Per Capita Reductions Needed to Meet Target (MT $CO_2e$ per capita)** | 0.4 | 2.9 | 4.3 |
| *Estimated Absolute Emission Reductions Needed to Meet Target (MT $CO_2e$)[3]* | *18,583* | *150,156* | *225,157* |

1. Population from SCAG 2020 RTP/SCS Demographic and Growth Forecast. https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579
2. Population values were adjusted to account for RHNA allocation of housing needs for Montclair during the 2021-2029 cycle. https://scag.ca.gov/sites/main/files/file-attachments/6th_cycle_final_rhna_allocation_plan_070121.pdf?1646938785
3. Efficiency emission reductions needed have been translated to mass emissions by multiplying the per capita reductions by the population.

Note: BAU forecast: Forecast of how GHG emissions would change if consumption trends continue as they did in 2017 and growth were to occur as projected in the City's General Plan. Adjusted forecast: Forecast of future emissions including state regulations (i.e., SB 1, SB 100, AB 1493) that have been enacted to reduce the impacts of climate change. See Appendix C for more information on the emissions forecast calculations. MT $CO_2e$ = metric tons of carbon dioxide equivalent

## Figure 7 Community Emissions, Targets, and Reductions Needed to Meet Targets




** The shaded area on graph represents the gap remaining between the emissions reduction forecasts and emissions reduction targets.*

# Section 3: Emissions Reduction Measures

# Reduction Strategy

Montclair's GHG emissions reduction strategy, which is outlined in this section, includes measures and supporting actions that will set the City on a path to reduce emissions and meet the adopted target detailed in Section 2 for 2030, while also putting the City on the trajectory to meet the longer-term target established for 2045. We recognize that achieving the targets will require collective participation from the entire community. Therefore, it was essential that voices from the community were heard, and feedback was incorporated, as applicable, throughout the design of the measures and actions included in this CAP. This ensured a collaborative platform which allowed the strategy to be developed and refined by a team of City Staff, key stakeholders, and community members. We appreciate your time and support and look forward to continue working together to make Montclair, and the world, a better place – *thank you!*

## Measures and Actions in Montclair

In the energy sector, electrification will shift energy use from natural gas to electricity, maximizing GHG reductions from increasingly clean electricity, while also being cost-effective and improving indoor air quality. Emission reductions from the transportation sector will come from increasing the adoption of electric vehicles (EV), as well as achieving a shift towards more use of and opportunities for alternative transportation in the community, such as public transit, biking, and walking. Waste sector strategies focus on implementing the requirements of SB 1383, which will decrease the amount of organic waste (e.g., food scraps) that is landfilled, whereas measures in the water sector aim to reduce water consumption and thereby reduce the energy associated with treatment, transport, and disposal of that finite resource. Finally, the carbon sequestration sector will help reduce Montclair's net emissions through better management practices on natural lands. Other GHG reduction measures focus on municipal facilities and operations. With full implementation of measures and actions, the City is expected to meet its 2030 emissions reduction target. Table 5 summarizes the measures and expected GHG reductions in 2030 and 2045.

## Table 5 Greenhouse Gas Emissions Reduction Measure Potential

| Measure | | GHG Emissions Reduction Potential |
|---|---|---|
| **Building Energy** | | |
| BE.1 | Join the Clean Power Alliance at the 100% Green Power rate and strive for a less than 4% opt-out rate for residential and commercial customers by 2030 and maintain through 2045. | 2030: 29,500 MT $CO_2e$<br>2045: 0 MT $CO_2e$ |
| BE.2 | Electrify 100% of newly constructed buildings by 2030. | 2030: 2,180 MT $CO_2e$<br>2045: 3,615 MT $CO_2e$ |
| BE.3 | Improve energy efficiency by 17% in existing residential buildings and 15% in existing commercial buildings by 2030, and 52% in existing residential and 41% in existing commercial buildings by 2045. | 2030: 4,579 MT $CO_2e$<br>2045: 13,741 MT $CO_2e$ |
| **Transportation** | | |
| TR.1 | Develop and implement an Active Transportation Plan to shift 6% of passenger car vehicle miles traveled to active transportation, and 12% by 2045. | 2030: 569 MT $CO_2e$<br>2045: 1,321 MT $CO_2e$ |
| TR.2 | Implement a public and shared transit programs to achieve 10% of public transit mode share by 2030 and 30% by 2045. | 2030: 5,205 MT $CO_2e$<br>2045: 19,121 MT $CO_2e$ |
| TR.3 | Increase electric/alternative fuel vehicle adoption to 20% for passenger and 10% for commercial vehicles by 2030, and 65% passenger and 50% commercial by 2045. | 2030: 17,904 MT $CO_2e$<br>2045: 70,317 MT $CO_2e$ |
| TR.4 | Equitably increase use of electric vehicles, promote active transportation and public transit use by disadvantaged communities. | 2030: Supportive<br>2045: Supportive |
| **Water** | | |
| W.1 | Reduce per capita water consumption by 10% compared with 2017 levels by 2030 and 25% by 2045. | 2030: 252 MT $CO_2e$<br>2045: 0 MT $CO_2e$ |
| **Solid Waste** | | |
| SW.1 | Implement SB 1383 requirements and reduce community-wide landfilled organics by 75% by 2025 and inorganic waste by 35% by 2030 and reduce all landfilled waste by 100% by 2045. | 2030: 2,553 MT $CO_2e$<br>2045: 3,571 MT $CO_2e$ |
| **Carbon Sequestration** | | |
| CS.1 | Increase carbon sequestration and green space by planting 500 new trees through the community by 2030, and 1,000 by 2045. | 2030: 18 MT $CO_2e$<br>2045: 35 MT $CO_2e$ |
| CS.2 | Achieve and maintain compost procurement requirements of SB 1383 by 2030. | 2030: 914 MT $CO_2e$<br>2045: 962 MT $CO_2e$ |
| **Total** | | **2030: 63,675 MT $CO_2e$**<br>**2045: 112,683 MT $CO_2e$** |

## Climate Action Co-benefits

Measures and actions that aim to reduce the impacts of climate change often have co-benefits associated with them, which are considered positive factors that are additional to the primary emission reductions achieved. For example, actions that increase electrification in homes have the co-benefit of reducing indoor air pollutants, and, therefore, improve air quality and public health. The specific co-benefits that are considered in this CAP include clean air, cost savings, public health, resource efficiency, and opportunity to develop partnerships, and are each defined below.

- **Air Quality** – reducing GHG emissions improves air quality[35] and can prevent illness and/or premature deaths
- **Jobs/Economic Gain** – new infrastructure and systems will require a skilled workforce to install, implement, and maintain it;[36] additionally, thoughtful climate action improves competitiveness and future-proofs the economy; this co-benefit could also be attributed to measures and actions that aim to reduce the financial burden on low-income households or disadvantaged communities
- **Public Health** – increased physical activity from active transportation improves health;[37] additionally, improving air quality through reduced GHG emissions increases public health
- **Resource Efficiency**[38] – many resources that we rely on are finite and shifting what and how we use them will allow us to develop a sustainable long-term strategy for emissions reductions that establishes a safe and reliable space for future generations
- **Increased Biodiversity** – healthy, diverse ecosystems are essential for regulating climate and absorbing or storing carbon;[39] damaged and fragmented ecosystems impact nature's ability to regulate GHG emissions and protect against extreme weather

Each of the actions in Table 6 includes a summary of the associated co-benefits in order to provide a holistic understanding of climate action.

35. https://www.epa.gov/air-research/air-quality-and-climate-change-research
36. https://www.wri.org/insights/10-charts-show-economic-benefits-us-climate-action
37. https://www.cdc.gov/climateandhealth/effects/default.htm
38. https://www.unep.org/resources/report/resource-efficiency-and-climate-change-material-efficiency-strategies-low-carbon
39. https://ec.europa.eu/environment/nature/climatechange/index_en.htm

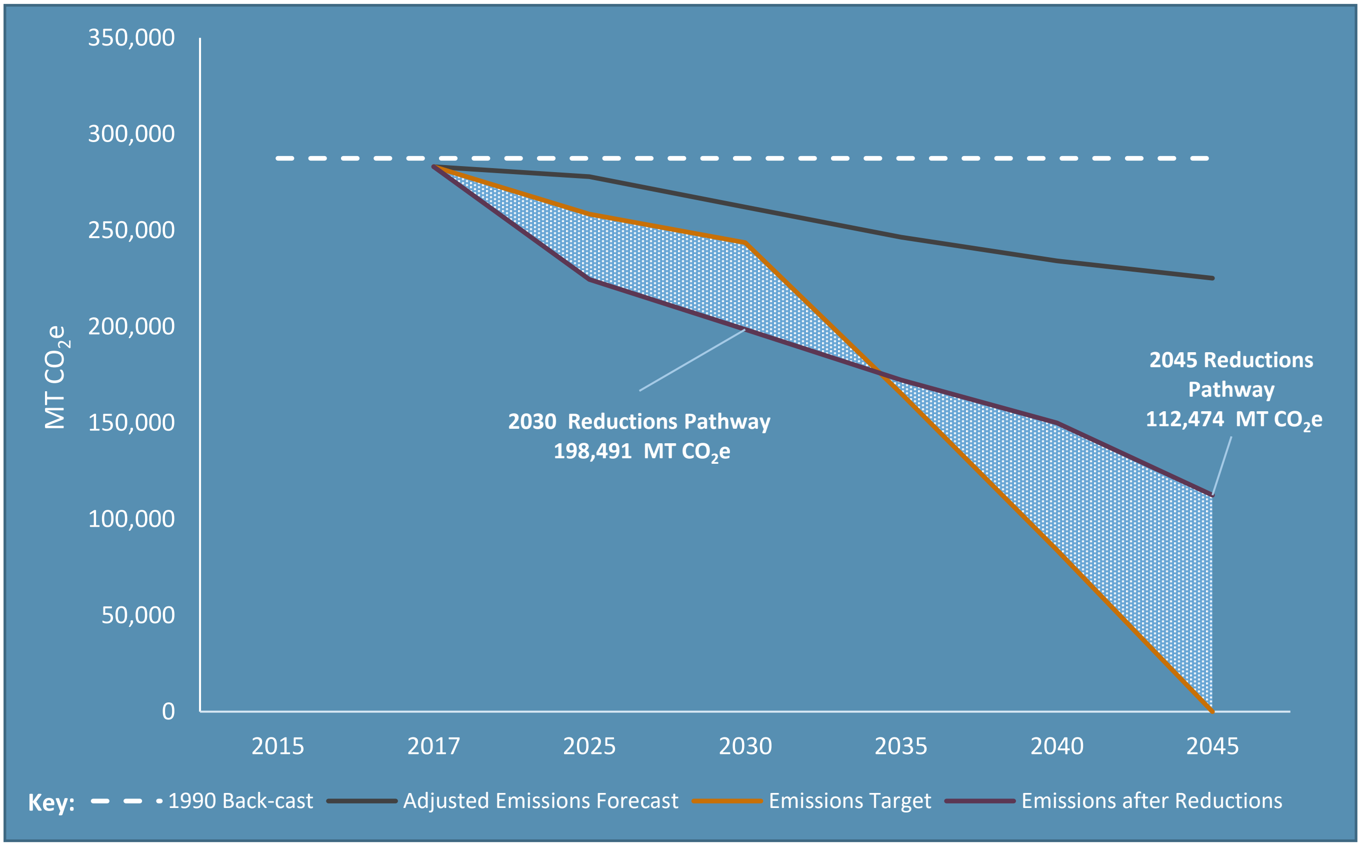
# Meeting the State's Goals

The measures and supporting actions outlined in this section were established and refined to meet the City's GHG emissions reduction target for 2030 and provide substantial progress towards meeting the longer-term target of carbon neutrality by 2045. The 2030 and 2045 targets represent the City's fair share reductions towards achieving the State's overall climate goals (see Appendix D for more information on the emission reductions anticipated to be achieved from each measure).

As shown in Figure 8, the measures and actions established in this CAP help the City meet the 2030 target and put the City on the trajectory towards meeting the 2045 target. The 2030 efficiency target allows flexibility as the City grows, accommodating new technologies, legislation, and projects as they come online. However, while these measures are effective for meeting the 2030 goals, much steeper reductions will be required post-2030 to achieve the 2045 carbon neutrality target. Future iterations of the CAP will outline additional strategies to meet the longer-term 2045 emissions reduction target as new technologies and solutions become available.

**90% of natural disasters** are considered **weather/climate-related**, costing the world economy **$520 billion each year**, with **26 million people forced into poverty**
*- United Nations*[40]

**Figure 8 Emissions Over Time with and without Emissions Reduction Measures**




40. https://www.un.org/en/un75/climate-crisis-race-we-can-win

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## Table 6 Montclair Emissions Reductions Measures and Actions

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Building Energy** | | | |
| **Measure BE.1: Join the CPA at the 100% Green Power rate and strive for a less than 4% opt-out rate for residential and commercial customers by 2030 and maintain through 2045.** | | | |
| 1 | Conduct a feasibility study comparing enrollment in the Clean Power Alliance at the different rates versus rates through SCE, including the SCE Green Rate Program. | Phase 1 | |
| 2 | Join the CPA at the 100% Green Power rate and strive for a less than 4% opt-out rate by 2025. | Phase 1 | |
| 3 | Perform public outreach and education campaigns highlighting the benefits of using renewable energy and the CPA, including:<br>▪ Monitoring opt-out rates<br>▪ Tabling at community events<br>▪ Establishing an informational resource page on the City website<br>▪ Regular social media posts<br>▪ Energy bill inserts | Phase 1 | |
| 4 | Develop a benchmarking system to track annual opt-out rates and ensure opt-out rate remains low. | Phase 2 | |
| 5 | Coordinate with CPA to identify rebates or cost incentives for low-income and disadvantaged families. | Phase 2 | |
| **Measure BE.2: Electrify 100% of newly constructed buildings by 2030.** | | | |
| 1 | In alignment with the California Energy Commission's efforts to advance clean energy in buildings, adopt a Local Building Energy Standard Ordinance that requires new construction to be more energy efficient than all-electric unless cost prohibitive. Implement through the building permit process which limits expansion of natural gas infrastructure and promotes HVAC systems, hot water heaters, and other | Phase 1 | |

**Timeframe:**

| Phase 1 | Phase 2 | Phase 3 |
|---|---|---|
| 1 - 2 Years | 3 - 4 Years | 5+ Years |

**Co-benefits:**

Clean Air | Jobs/Economic Gain | Public Health | Resource Efficiency | Biodiversity

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Building Energy** | | | |
| 1 cont. | appliances to be all-electric at time of installation, or in major renovations after 2025. The following steps will be used to develop the reach code:<br>▪ Develop idea for the ordinance.<br>▪ Work with stakeholders.<br>▪ Obtain a cost-effectiveness study.<br>▪ Develop and draft an ordinance.<br>▪ Public process and revisions.<br>▪ Formal adoption process. | | |
| 2 | Engage with an organization such as Building Decarbonization Coalition to work with local building industry stakeholders in development of the electrification ordinance. | Phase 1 | |
| 3 | Enforce ordinance compliance through a comprehensive permitting compliance program which includes routine training of staff, dedicating staff time to building inspections, charging fees for noncompliance, providing easy to understand compliance checklists online and with permit applications, and facilitating permitting online. | Phase 2 | |
| 4 | Develop a webpage and materials at City Hall containing benefits of electrification and resources that can assist in the process. Consider working with regional partners to maintain a database of qualified contractors and consultants for electrification retrofits. | Phase 2 | |
| 5 | Host outreach events to educate the community on use, versatility and benefits on all-electric appliances. | Phase 2 | |
| **Measure BE.3: Improve energy efficiency by 17% in existing residential buildings and 15% in existing commercial buildings by 2030, and 52% in existing residential and 41% in existing commercial buildings by 2045.** | | | |
| 1 | In alignment with the California Energy Commission's efforts to advance clean energy in buildings, adopt a Local Building Energy Standard Ordinance by 2025 that requires retrofits or renovations in existing buildings that include natural gas to be more energy efficient than all-electric buildings. The ordinance may include the following type of | Phase 1 | |

**Timeframe:**

| Phase 1 | Phase 2 | Phase 3 |
|---|---|---|
| 1 - 2 Years | 3 - 4 Years | 5+ Years |

**Co-benefits:**

Clean Air | Jobs/Economic Gain | Public Health | Resource Efficiency | Biodiversity

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Energy** | | | |
| 1 cont. | amendments: a) Requires mixed-fuel single family and duplex residential buildings to exceed the 2019 Energy Code by 15 percent; b) Requires mixed-fuel office buildings to exceed the 2019 Energy Code by 10 percent; c) Requires prewiring for possible future electric appliances in mixed-fuel buildings; d) For new mixed-fuel construction, require CalGreen Tier 1 for residential buildings, require 5 percent reduced energy budget for hotel/motel and high-rise residential, require 10 percent reduced energy budget for non-residential. | | |
| 2 | Adopt and implement local amendments to the 2019 California Energy Code incentivizing all electric development (Clean Energy Choice Program). | Phase 1 | |
| 3 | Work with SoCal Gas to provide opportunities for funding energy efficiency projects and improved natural gas infrastructure to increase energy efficiency in existing buildings. | Phase 1 | |
| 4 | Create a rebate and incentive programs for appliance replacement, ENERGY STAR appliance program, and Energy Conservation Programs, with public outreach. Work with SCE and/or Clean Power Alliance to provide rebates for residential replacement of old appliances with electric-powered or more energy efficient appliances. | Phase 1 | |
| 5 | Provide information to staff and community regarding annual energy savings from energy conservation programs for CAP implementation tracking. | Phase 1 | |
| 6 | Work with and educate businesses on partnerships designed to maximize the use of renewable energy including solar/ storage, appropriate tariff changes and microgrid opportunities. | Phase 2 | |
| 7 | Identify funding for upgrading ventilation systems and natural gas appliances in disadvantaged community homes to improve air quality and increase energy efficiency. | Phase 2 | |
| 8 | Seek out funding partnerships with local financiers and work with partners such as local turnkey retrofit program that leverages existing funding, which offers low-cost financing of electrification and energy efficiency retrofits for residents and local businesses. | Phase 3 | |

**Timeframe:**

| Phase 1 | Phase 2 | Phase 3 |
|---|---|---|
| 1 - 2 Years | 3 - 4 Years | 5+ Years |

**Co-benefits:**

Clean Air | Jobs/Economic Gain | Public Health | Resource Efficiency | Biodiversity

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Transportation** | | | |
| **Measure TR.1: Develop and implement an Active Transportation Plan to shift 6% of passenger car vehicle miles traveled to active transportation, and 12% by 2045.** | | | |
| 1 | Develop and adopt an Active Transportation Plan consistent with the City General Plan Policies that will identify funding strategies and policies for development of pedestrian, bicycle, and other alternative modes of transportation projects. Establish Citywide events, outreach, educational programs, or platforms to promote active transportation in the community. | Phase 1 | |
| 2 | Conduct a Complete Street Feasibility Study on street improvement options to identify streets and intersections that can be improved for pedestrians and bicyclists through traffic calming measures and/or where multi-use pathway opportunities exist to increase active transportation. | Phase 1 | |
| 3 | Obtain funding and implement "mobility hub" projects consistent with City General Plan. Work to identify grant funding opportunities to implement Complete Our Streets projects included in the Complete Our Streets Plan. | Phase 2 | |
| 4 | Install and upgrade end-of-trip facilities (lockers, bike racks, etc.) at transit center to encourage active transportation as part of commute for community members using public transit. Improve and ensure there are safe bicycle and pedestrian infrastructure to access transit center. | Phase 2 | |
| 5 | Engage the Bicycle Pedestrian Commission, Safe Routes to School network, and community groups to identify additional short-term and long-term bikeway and pedestrian infrastructure improvement projects to implement. | Phase 2 | |
| 6 | Ensure there is equitable access to safe bicycle and pedestrian infrastructure in all areas of the city. Facilitate transportation equity through targeted provision of programs that encourage minority, low-income, and senior populations to take transit, walk, bike, use rideshare or car share. | Phase 3 | |
| 7 | Evaluate and update the City's Zoning Code, Transportation Demand Management Ordinance, and California Green Building Code to ensure the City requires installation | Phase 3 | |

**Timeframe:**

| Phase 1 | Phase 2 | Phase 3 |
|---|---|---|
| 1 - 2 Years | 3 - 4 Years | 5+ Years |

**Co-benefits:**

Clean Air · Jobs/Economic Gain · Public Health · Resource Efficiency · Biodiversity

| ID # | Action | Phase | Co-benefits |
| --- | --- | --- | --- |
| **Transportation** | | | |
| 7 cont. | of accessible, shaded, and secure bicycle parking for new commercial development and retrofits and requires installation of bicycle parking areas in instances where off-street parking is required. | | |
| **Measure TR.2: Implement a public and shared transit programs to achieve 10% of public transit mode share by 2030 and 30% by 2045.** | | | |
| 1 | Conduct local transportation surveys to better understand the community's needs and motivation for traveling by car versus other alternatives such as bus or Metro Gold Line light rail. Use survey results to inform transit expansion and improvement projects. | Phase 1 | Clean Air, Public Health, Resource Efficiency |
| 2 | Adopt policy to encourage new development of public space to be transit accessible and multi-functional by co-locating public facilities. | Phase 1 | Resource Efficiency |
| 3 | Adopt a Transportation Demand Management (TDM) Plan for the City that includes a transit system focus. Provide incentives for implementation of TDM measures at local businesses and for new developments. Incentives and incentives to encourage use of transit instead of driving alone may include:<br>▪ Offer monetary incentives for employees to use car share, carpool, take the bus, bike, or walk.<br>▪ Require large employers (more than 25 employees) to offer subsidies to employees for the transit system<br>▪ Offer car/vanpool matching<br>▪ Offer emergency ride homes for employees utilizing transit<br>▪ Market-rate parking fee charged directly to employees or patrons at businesses or new developments<br>▪ Offer priority/discounted HOV parking at businesses or new developments<br>▪ Daily parking charge available for occasional drivers instead of monthly parking pass | Phase 1 | Clean Air, Public Health, Resource Efficiency |
| 4 | Continue to work with federal legislative advocate and congress member to secure funds for Metro's Gold Line plan and supporting infrastructure. | Phase 2 | Clean Air, Resource Efficiency |
| 5 | Obtain funding and grants to upgrade City-owned or operated facilities and infrastructure, such as parking, transit stops, and community hubs (e.g., the library, | Phase 2 | Clean Air, Jobs/Economic Gain, Public Health, Resource Efficiency |

**Timeframe:**

| Phase 1 | Phase 2 | Phase 3 |
| --- | --- | --- |
| 1 - 2 Years | 3 - 4 Years | 5+ Years |

**Co-benefits:**

Clean Air · Jobs/Economic Gain · Public Health · Resource Efficiency · Biodiversity

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Transportation** | | | |
| 5 cont. | City recreational center), that promote use of public transit. | Phase 2 | |
| **Measure TR.3: Increase electric/alternative fuel vehicle adoption to 20% for passenger and 10% for commercial vehicles by 2030, and 65% passenger and 50% commercial by 2045.** | | | |
| 1 | Adopt an EV Readiness Reach Code by 2026 requiring new commercial and multifamily construction to install the minimum number of EV chargers based on Tier 2 CalGreen requirements (20% of total). | Phase 1 | |
| 2 | Adopt an EV Charging Retrofits in existing Commercial and Multifamily Buildings Reach Code by 2026 requiring major retrofits, with either a building permit with square footage larger than 10,000 square feet or including modification of electric service panels, to meet CalGreen requirements for "EV Ready" charging spaces and infrastructure. | Phase 1 | |
| 3 | Conduct a survey of existing publicly accessible electric vehicle chargers and their locations and identify a prioritized list of locations for new electric vehicle charging stations with particular consideration for equitable distribution of chargers to residents of multi-family homes, low-income people, people on a fixed income, and communities of color. | Phase 2 | |
| 4 | Add 240 new publicly accessible Level 2 and 3 electric vehicle charging stations to the City by 2030. | Phase 2 – 3 | |
| 5 | Promote public and private conversion to zero-emission vehicles; including use of City events, social media, and the City website to educate on benefits of zero-emission vehicles and available incentives. | Phase 2 – 3 | |
| 6 | Investigate commercial vehicle fleets in Montclair and identify businesses/employers to target for accelerating zero emission vehicle (ZEV) adoption. Identify and implement incentives for commercial fleet electrification, such as tax breaks or use of Low Carbon Fuel Standard credits. | Phase 2 – 3 | |
| 7 | Collaborate with local businesses/employers to develop and implement a plan for City-supported accelerated fleet electrification. As part of the plan, identify opportunities | Phase 2 – 3 | |

**Timeframe:**

Phase 1: 1 - 2 Years
Phase 2: 3 - 4 Years
Phase 3: 5+ Years

**Co-benefits:**

Clean Air
Jobs/Economic Gain
Public Health
Resource Efficiency
Biodiversity

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Transportation** | | | |
| 7 cont. | for accelerated fleet electrification and promote ZEV adoption within major private and employee fleets in the city. | | |
| 8 | Work with SCE to incentivize electric vehicle charger installations through on-bill financing. | Phase 2 – 3 | |
| **Measure TR.4: Equitably increase use of electric vehicles, promote active transportation and public transit use by disadvantaged communities.** | | | |
| 1 | Conduct a feasibility study identifying barriers for disadvantaged and low-income families related to mobility for active transportation, use of public transit, and access identified barriers. | Phase 1 | |
| 2 | As part of Complete Streets Feasibility Study, evaluate streets within disadvantage communities and identify streets for improvements that would increase mobility within the neighborhood. | Phase 1 | |
| 3 | Pilot a transit shuttle program for disadvantaged communities to increase access to the transit center. | Phase 2 | |
| 4 | Investigate and pursue funding opportunities for EV car share for low-income neighborhoods, such as the Zero Emissions Mobility and Community pilot Project Fund. Partner with local community group to identify funding opportunities for purchasing EVs or other pilot projects for deployment in disadvantaged communities. | Phase 2 | |
| 5 | Work with Metro and Foothill Transit to expand use of LIFE low-income EZ Pass transit subsidy by Montclair low-income households who ride Metro and Foothill Transit buses and commuter inter-city rails. | Phase 3 | |
| **Water and Wastewater** | | | |
| **Measure W.1: Reduce per capita water consumption by 10% compared with 2017 levels by 2030 and 25% by 2045.** | | | |
| 1 | Adopt ordinance by 2026 requiring non-residential buildings over 20,000 square feet (including municipal buildings over 7,500 square feet) to disclosure water use annually for benchmarking purposes and then take action to reduce their consumption. | Phase 1 | |

**Timeframe:**

Phase 1: 1 - 2 Years
Phase 2: 3 - 4 Years
Phase 3: 5+ Years

**Co-benefits:**

Clean Air
Jobs/Economic Gain
Public Health
Resource Efficiency
Biodiversity

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Water and Wastewater** | | | |
| **Measure W.1: Reduce per capita water consumption by 10% compared with 2017 levels by 2030 and 25% by 2045.** | | | |
| 2 | Adopt a cool pavement ordinance by 2026 to reduce heat island effect improving water quality. | Phase 1 | |
| 3 | Continue to enforce Model Water Efficient Landscapes Ordinance. | Phase 1 – 3 | |
| 4 | Adopt an ordinance by 2026 restricting the use of potable water for non-potable uses and requiring greywater capture for land uses that are excess water users (e.g., car washes, large fields, etc.). | Phase 1 | |
| 5 | Develop a Recycled Water Use and Implementation Strategy that identifies new and existing access to recycled water and quantity of recycled water available to the City for use from MVWD's. The strategy shall identify land use types (i.e., landscaping and golf courses) and specific projects that will switch from potable to recycled water use allowing for a goal of 20% of City's potable water use to be replaced with recycled water provided by MVWD by 2030. | Phase 2 | |
| 6 | Conduct a citywide study identifying impermeable surfaces that can be targeted for a transition to increase infiltration. | Phase 2 | |
| 7 | Promote alternative driveways/sidewalk materials and greenscaping through educational pamphlets and programs; incentivize residents to transition from impervious to pervious hardscapes. | Phase 2 | |
| 8 | Provide rebates or other funding to low- and medium-incomes homes for installing greywater, rainwater catchment system, EnergyStar appliances, and low-flow fixtures and fittings (e.g., faucets, sprinklers). | Phase 2 | |
| 9 | Work with schools to educate youth about water conversation. | Phase 2 | |
| 10 | Establish a system to track implementation progress of low-flow devices and to track use of rebates offered through the City. | Phase 2 | |

**Timeframe:**

Phase 1: 1 - 2 Years
Phase 2: 3 - 4 Years
Phase 3: 5+ Years

**Co-benefits:**

Clean Air | Jobs/Economic Gain | Public Health | Resource Efficiency | Biodiversity

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Solid Waste** | | | |
| **Measure SW.1: Implement SB 1383 requirements and reduce community-wide landfilled organics 75% and inorganic waste by 35% by 2030 and reduce all waste by 100% by 2045.** | | | |
| 1 | Enforce adopted ordinance 22-1001 requiring compliance with SB 1383. Ensure ordinances established are consistent with SB 1383 requirements; revise if necessary. | Phase 1 | |
| 2 | Engage with waste hauler operating within the City to discuss SB 1383 requirements for waste haulers (i.e., organics receptacles and labeling requirements). | Phase 1 | |
| 3 | Adopt procurement policies to comply with SB 1383 requirements for jurisdictions to purchase recovered organic waste products. | Phase 1 | |
| 4 | Adopt an Edible Food Recovery Ordinance for edible food generators, food recovery services, or organization that are required to comply with SB 1383. | Phase 1 | |
| 5 | Partner with City waste hauler, to provide organic waste collection and recycling services to all commercial and residential generators of organic waste. | Phase 1 | |
| 6 | Enforce ordinance 22-1001 requiring all residential and commercial customers to subscribe to an organic waste collection program and/or report self-hauling or backhauling of organics. | Phase 1 | |
| 7 | Conduct a Feasibility Study and prepare an action plan to ensure edible food reuse infrastructure is sufficient to accept capacity needed to recover 20% of edible food disposed or identify proposed new or expanded food recovery capacity. | Phase 1 | |
| 8 | Establish an education and outreach program for school children and adults around food waste prevention, nutrition education, and the importance of edible food recovery. | Phase 1 | |
| 9 | Establish an edible food recovery program to minimize food waste. Leverage CalRecycle support for projects that prevent food waste or rescue edible food. | Phase 1 – 2 | |
| 10 | Adopt an ordinance or enforceable mechanism to regulate haulers collecting organic waste, including collection program requirements and identification of organic waste receiving facilities. | Phase 1 – 2 | |

**Timeframe:**

| Phase 1 | Phase 2 | Phase 3 |
|---|---|---|
| 1 - 2 Years | 3 - 4 Years | 5+ Years |

**Co-benefits:**

Clean Air | Jobs/Economic Gain | Public Health | Resource Efficiency | Biodiversity

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Solid Waste** | | | |
| 11 | Partner with waste hauler within the City to:<br>▪ Ensure organic waste collection from mixed waste containers are transported to a high diversion organic waste processing facility.<br>▪ Provide quarterly route reviews to identify prohibited contaminants potentially found in containers that are collected along route. | Phase 2 | |
| **Carbon Sequestration** | | | |
| **Measure CS.1: Increase carbon sequestration and green space by planting 500 new trees through the community by 2030, and 1,000 by 2045.** | | | |
| 1 | Adopt Greenscaping Ordinance that has a street tree requirement for all zoning districts, has a shade tree requirement for new development, requires greening of parking lots, and increases permeable surfaces in new development. | Phase 1 | |
| 2 | Adopt a standard policy in alignment with City's General Plan and set of practices for expanding urban tree canopy and placing vegetative barriers between busy roadways and developments to reduce exposure to air pollutants from traffic. | Phase 1 | |
| 3 | Prepare and adopt an Urban Forest Management Plan for the City that includes an inventory of existing trees, identifies future tree planting opportunities and a climate-ready tree palette, as well as ongoing operations and maintenance needs. | Phase 2 | |
| 4 | Identify and participate in partnership opportunities necessary to plant and maintain an increase in the City's tree inventory by 15% by 2030 and convert priority public space into green space. | Phase 2 – 3 | |
| 5 | Promote incentives to property owners and developers for greenspace inclusion through educational pamphlets, programs, and webpages and track the use of incentives. | Phase 2 – 3 | |
| **Measure CS.2: Achieve and maintain compost procurement requirements of SB 1383 by 2030.** | | | |
| 1 | Implement all required activities under SB 1383 including achieving compost procurement requirements effective. Effective January 2022, CalRecycle's regulations | Phase 1 | |

**Timeframe:**

| Phase 1 | Phase 2 | Phase 3 |
|---|---|---|
| 1 - 2 Years | 3 - 4 Years | 5+ Years |

**Co-benefits:**

Clean Air · Jobs/Economic Gain · Public Health · Resource Efficiency · Biodiversity

| ID # | Action | Phase | Co-benefits |
|---|---|---|---|
| **Carbon Sequestration** | | | |
| 1 cont. | require cities to purchase a minimum of 0.08 tons per resident of recovered organic composts. | | |
| **Municipal Operations** | | | |
| **Measure M.1: Electrify the municipal vehicle fleet and mobile equipment by 50% by 2030 and 100% by 2045.** | | | |
| 1 | Develop and adopt a policy to apply lifecycle assessment to all new vehicle and equipment purchases. | Phase 1 | |
| 2 | Implement the City Fleet Alternative Fuel Conversion Policy such that as municipal vehicles turn over, they are replaced with alternative-fuel vehicles in alignment with the state's Advanced Clean Fleet Rule. | Phase 1 | |
| 3 | Install EV charging stations at municipal buildings. | Phase 1 – 2 | |
| **Measure M.2: Reduce carbon intensity of City operations.** | | | |
| 1 | Adopt retrofitting policy for City owned buildings such that energy efficient and electrification retrofits are incorporated into City buildings as they become available. | Phase 1 | |
| 2 | Complete energy audits for all City facilities and implement all feasible recommendations for fuel switching and efficiency upgrades. | Phase 1 – 2 | |
| 3 | Establish a replacement plan for replacing natural gas fueled equipment with electric where practical and technologically feasible in City-buildings. | Phase 1 – 2 | |
| 4 | Switch City electricity accounts to SCE 100% Green Rate until joining CPA at 100% Green Power rate by 2025. | Phase 1 | |
| 5 | Investigate funding and grant opportunities and partnerships to install photovoltaic systems at all City buildings as feasible. | Phase 1 – 2 | |

**Timeframe:**

| Phase 1 | Phase 2 | Phase 3 |
|---|---|---|
| 1 - 2 Years | 3 - 4 Years | 5+ Years |

**Co-benefits:**

Clean Air | Jobs/Economic Gain | Public Health | Resource Efficiency | Biodiversity

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# Section 4: Adaptation

# Adaptation and Resilience in the City of Montclair

As mentioned in the *Introduction*, the City of Montclair is likely to experience more extreme heat events, increases in droughts due to reductions in fresh-water supply, and increased average temperatures.[41] These impacts will have varying effects on the City's residents, business owners, and visitors; infrastructure; environment; and economy; therefore, steps to increase the community's adaptive capacity[42] must be taken to prepare for the future and increase the City's resilience. This section connects the measures and actions presented in this CAP and the City's General Plan to opportunities to further adapt and increase the City's resilience to climate change.

41. https://www.ipcc.ch/sr15/chapter/chapter-3/
42. Adaptive capacity is the potential or ability of a system, region, or community to adapt to the effects or impacts of climate change.

## Increased Average Temperatures and Extreme Heat Events

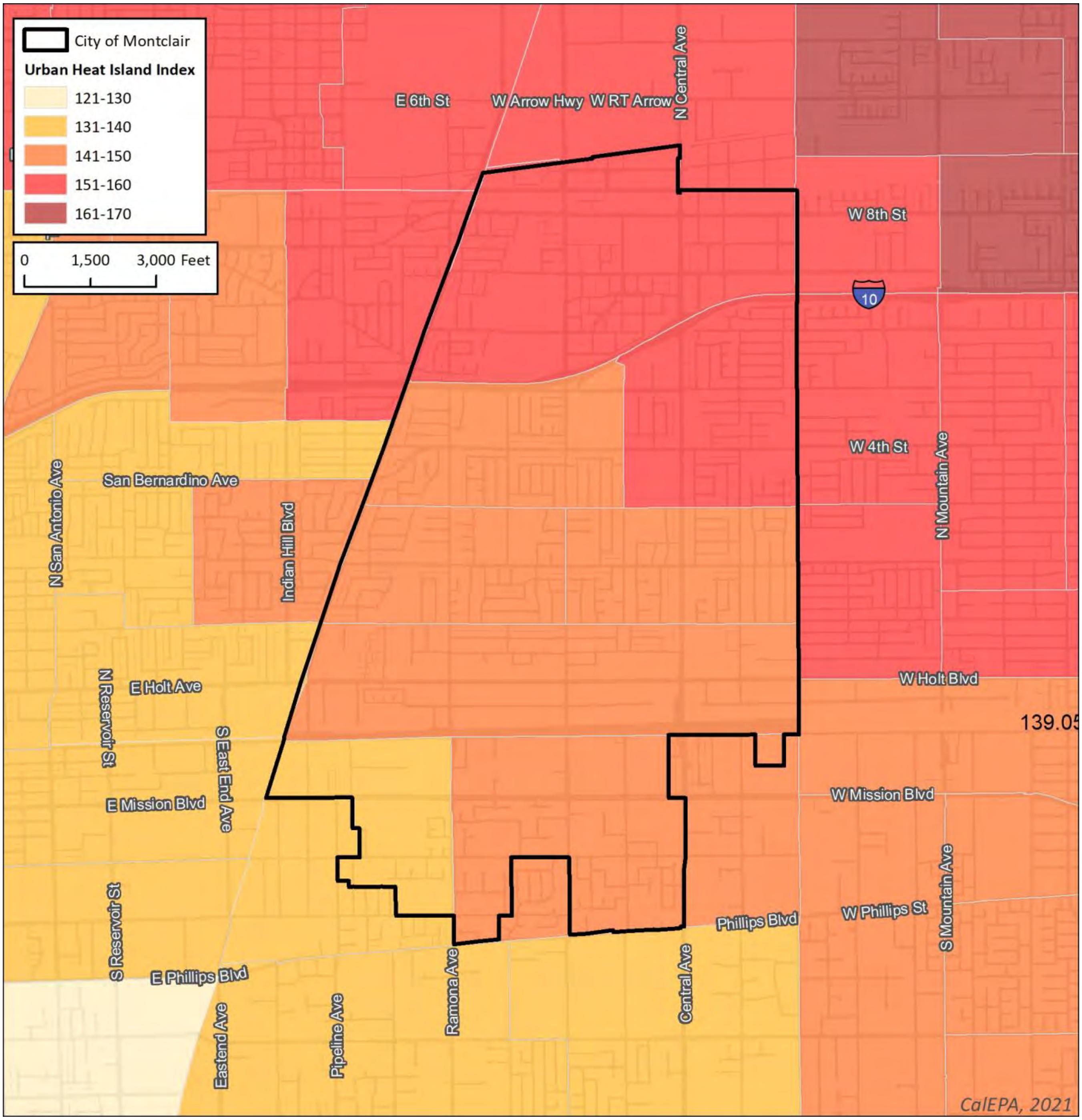
An increase in extreme heat days coupled with more heat waves will result in longer heat waves.[43] Extreme heat events will have greater effects on frontline communities and populations such as the homeless, aging adults, outdoor workers, people with chronic illnesses, and pregnant women. According to The California Healthy Places Index, the City of Montclair has less tree coverage compared with other parts of the State, which may leave vulnerable populations at increased risk of heat related illnesses.[44] To help increase the City's resilience to these events there are long-term preventative strategies such as strategic planting of trees and vegetation cover and improvements in the built environment, which are included in the various measures and actions of the CAP and General Plan because trees provide shade and reduce temperatures through evapotranspiration.

43. https://cal-adapt.org/tools/annual-averages/
44. https://map.healthyplacesindex.org/

For example, Measure CS-1 includes Action 4, which aims to identify and participate in partnership opportunities necessary to plant and maintain an increase in the City's tree inventory by 15 percent by 2030, as well as Action 5, which promotes incentives to property owners and developers for greenspace inclusion. Additionally, each of the energy measures aims to improve the built environment. Measure BE-2 relates to new buildings, while Measures BE-3 is designed for existing buildings already within the City. Likewise, the General Plan includes projects that promote cooling strategies, which include planting shade trees, and installing cool paving as well as shade structures.

Benefits from strategically planted trees and vegetation can help reduce peak summer

## Figure 8 City of Montclair Urban Heat Island Effect Map



temperatures by 2-9°F, depending on the species and planting location.[45] Increased tree cover and vegetation will help mitigate the effects of urban heat islands. Urban heat islands are defined as urban areas, where these structures are highly concentrated and greenery is limited, and they become "islands" of higher temperatures relative to outlying areas. According to the California Environmental Protection Agency (CalEPA) Urban Heat Island Interactive Maps, which show urban heat islands in California as measured by the Urban Heat Island Index, the City of Montclair already experiences significant impacts related to the urban heat island effect.[46] See Figure 8.

## Reductions in Fresh Water

As weather patterns continue to change, more precipitation is likely to occur as rain which will affect regional snowpack, and therefore, Montclair's imported water resources. Although a majority of Montclair's water supply comes from the Chino Groundwater Basin, the remaining comes from snow melt in the Sierra's.[47] The concern regarding shifts in imported water availability is echoed by the Department of Water Resources (DWR), which announced its initial State Water Project (SWP) allocation for 2022 along with several steps to manage the State's water supply in anticipation of a third dry year with reservoirs at or near historic lows in December 2021. DWR has advised these water agencies to expect an initial allocation that prioritizes health and safety water needs and that the SWP will not be planning water deliveries through its typical allocation process until the State has a clearer picture of the hydrologic and reservoir conditions going into the spring.[48] This shift in water resource availability will likely be ongoing into the future and will require us to adapt.

Further, as mentioned in the *Introduction*, Montclair itself will likely experience changes in precipitation, in addition to changes in available water resources from the SWP. Changes in precipitation coupled with increased temperatures can cause periods of abnormally dry weather, further affecting water-supply and groundwater recharge. While many of these issues occur at a greater regional and even global scale, the City and community can take steps to conserve water at a local level. Planting drought-tolerant landscaping can lessen the demand for irrigation and help decrease stormwater runoff. At home, residents can install high-efficiency toilets and showerheads, only run full loads of laundry and dishes, and take shorter showers; these small changes can collectively save hundreds of gallons of water a month.[49]

This CAP includes a measure that specifically aims to reduce per capita water consumption with specific goals for 2030 and 2045. The anticipated reduction in per capita water consumption would be achieved by adopting an ordinance that requires non-residential water use disclosure; adopting a cool pavement ordinance to reduce the urban heat island effect and improve water quality; adopting an ordinance that restricts the use of potable water for non-potable uses and requires grey water capture for excessive water using land uses; and developing a Recycled Water Master Plan that identifies access to recycled water and the quantity available to the City, as well as additional supportive actions. Further, Measure W.1 includes Action 6, which aims to convert impermeable surface and increase infiltration. Additionally, the General Plan includes actions to promote the use of captured rainwater, grey water, or recycled water (A.1.1d) and Policy P1.7, which states that Montclair will protect, conserve, and replenish existing and future water resources.

### Air Pollution

The combustion of fossil fuels, especially within the transportation sector, leads to decreased local air quality and health consequences for local communities. If temperatures continue to rise as predicted in the Cal-Adapt scenarios, there will be more days with weather conducive to ozone formation, leading to reduced air quality and increased health problems. To help improve local air quality, community members can opt to bike, take public transit, or carpool instead of taking their personal vehicle.[50]

45. https://www.i4es.org/benefits-of-urban-forestry/
46. https://calepa.ca.gov/climate/urban-heat-island-index-for-california/urban-heat-island-interactive-maps/
47. https://www.mvwd.org/175/Groundwater
48. https://water.ca.gov/News/News-Releases/2021/Dec-21/SWP-December-Allocation
49. https://water.ca.gov/Water-Basics/Conservation-Tips
50. https://ww2.arb.ca.gov/our-work/topics/simple-solutions-improve-air-quality

# Section 5: Implementation

# There is Hope – Shifting the Narrative

Despite the very real impacts of climate change that we currently face and will continue to experience, there is hope and we can work collectively to reduce the burdens from climate change in order to establish a more resilient and sustainable future. The actions that we take in our home, at work, and in the community shape our world. As a team, we must act swiftly, yet strategically to support a cause bigger than ourselves. That being said – it's not too late.

This section details the implementation timeframes, responsible parties for implementation, and performance metrics necessary to help monitor and track the success of CAP implementation.

## Moving the Dial

This CAP represents the City's first climate planning document and it aims to set the City on a course to reduce GHG emissions consistent with the State's goals in order to build a safer, healthier, and more sustainable future for everyone in Montclair. Achieving the emission reduction targets included in this CAP and meeting the State goals outlined in SB 32 and AB 1279 will require considerable changes and participation from the entire community, including residents, businesses, and the City.

The measures and actions outlined in Section 3, *Emission Reduction Strategies,* provide the first steps towards reducing our impact and will be reevaluated and reestablished as time goes on and progress is made. Additional work will need to be done and updates to the CAP will be required in the future as new technologies and solutions become available. It is anticipated that the success of the existing measures will be reviewed in 2026 and again in 2028 to ensure that the measures are implemented as currently proposed and the emissions reductions attributable to the measures are anticipated to meet the established targets. The CAP update schedule is summarized below under, *Going Forward.*

# Climate Action Funding/Financing

This section provides a discussion of some of the funding and financing options available to the City of Montclair in order to implement measures and actions.

## Funding

One of the greatest obstacles associated with climate action planning is finding and securing funding to implement various projects and initiatives. Therefore, when considering fostering sustainability in Montclair, one of the most important aspects was how the community could cost-effectively implement GHG reduction strategies in both the present and future. As such, the implementation schedule was developed based on the measures and actions that had either no or low-costs for the community.

Full implementation of the City's CAP will require investments on the part of the City, local households and property owners, and commercial businesses. In most cases, the expenditures will not only help to reduce GHG emissions but will also bring other valuable co-benefits as described in the measures and actions. The CAP will be implemented over time. Funding sources for some actions can be identified at the outset, while the best means to fund other actions will be determined at the time the City is ready to implement them, depending on the resources available. In general, three main principles should guide how future climate action initiatives should be funded, which include equity, cost-effectiveness, and leveraging local resources, as shown in Figure 9.

## Financing

One of the major financial tools available to make large investments into infrastructure, vehicles, or buildings is financing. Financing allows us to leverage the time value of money and put future expected money flows to use today. Further, understanding the ranges of cost savings and revenue streams, and how those costs and revenues accrue over time into a payback or return on investment calculation, are prudent factors to structuring partnerships, engaging stakeholders, and making optimal financial decisions. For example, energy efficiency retrofits can generate cost savings of more than 30% for 15 to 20 years. If external partners are involved, such as with an energy savings performance contract, cities may not need to provide any upfront capital, but the project's cost savings would accrue with a private

**Figure 9 Funding Strategy Principals**

**Equity**
Limit the imposition of new costs on the segments of the community that have the least ability to shoulder increased cost; target assistance to low- and moderate-income households

**Cost-Effectiveness**
Prioritize the use of available local resources to implement the measures and actions that have the highest GHG reduction potential; when possible, the measures and actions in the CAP will generate long-term cost savings that will repay and even generate a return on investment.

**Leveraging Local Resources**
Leverage General Fund resources and in-kind staff time to aggressively seek grants, matching funds, in-kind contributions, and other resources from State, federal, and philanthropic sources to help pay for actions and limit the cost to the City, local residents, and businesses

third-party and be lost by the City. An anaerobic digester may need $5M to $10M in upfront capital but could also generate $1 to $2M annually in natural gas delivery revenue. Over 20 years, that can be an attractive financial investment for a City. Cities must consider the estimated return on investment, how project costs and revenues balance out over the useful life of the project, and whether they are willing to forego long-term cost savings or revenue generation capacity by partnering with a private third-party.

## Cost of Doing Nothing

The alternative to implementing climate action measures is not zero. One immediate example is the cost to install conduit and panel capacity for EV chargers for all new construction. While this action increases upfront construction costs by a few hundred dollars, doing that same work after the building is completed can be an order of magnitude higher (~$3,000). Given the move towards electric vehicles, the cost of not installing electric vehicles infrastructure today could cost the community significantly more in the future. In a similar vein, adaptation measures will cost the City and the community today. Planting trees, installing microgrids, and setting up cooling centers all have upfront costs. However, it's imperative that we weigh these costs against the costs of a future without these adaptive measures given what we know about the climate.

*The Red Cross and Red Crescent Societies estimate that the number of* ***people in need of humanitarian aid each year could double to 200 million annually by 2050*** *due to climate change* ***costing $20 billion per year.*** [51]

Research published in the journal, Nature, predicts the cost of not decreasing emissions to carbon neutrality by mid-century could range between $149.78 to $791.98 trillion by the end of the century.[52] That same study found that if we mitigate climate change and achieve carbon neutrality by mid-century the world could see a $127 to $616 trillion economic benefit after considering the cost of mitigation. The humanitarian impact is also significant. Furthermore, the World Resources Institute has found that investing in adaptation and resilience provides a benefit-cost ratio ranging from 2:1 to 10:1, meaning that for every dollar invested in resilience and adaptation we stand to see $2 to $10 dollars' worth of benefits.

51. https://www.ifrc.org/press-release/200-million-people-need-us20billion-respond-new-report-estimates-escalating-humanitarian-cost
52. https://www.nature.com/articles/s41467-020-15453-z

# Going Forward – Monitoring Success and Correcting Course

If substantial progress has not been made towards reaching the GHG emissions reduction targets by the second review (2028), a CAP update may be required to establish new or more robust emissions reduction measures and actions to increase emission reductions and maintain status as a CEQA-qualified GHG emissions reduction plan. The CAP update could require additional implementation of the existing actions and/or additional actions such as shifting incentive and educational programs to mandatory requirements. A complete CAP update for post-2030 emissions reductions targets will also be required, and City Staff should begin this effort by 2031, during the second review.

## Who's Responsible?

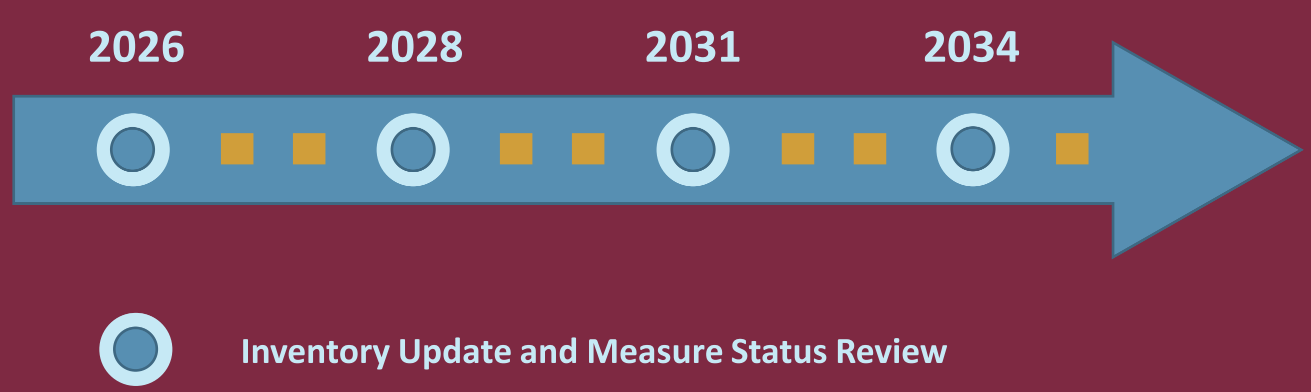
Climate action starts with us  and achieving long-term emission reduction goals will require participation from everyone. Without concentrated, collective action, achieving our long-term goals will be nearly impossible and under that scenario, the impacts of climate change are only anticipated to intensify. The City can update building codes, provide electric vehicle charging infrastructure and designate bike lanes, but it is up to the broader community to embrace these new services and technologies and gain the benefits outlined in this Plan.

Making meaningful progress towards reducing our GHG emissions starts with City leadership, through policies, education, ordinances, and investments that act as catalysts for change throughout the wider community. Community partners then support these policies with incentives and programs. Businesses can then leverage these policies to provide new services and adopt more sustainable practices. Finally, residents and visitors that have been provided with the incentives and education, can actively work together to reduce our impacts and decrease GHG emissions. As policies and programs are developed and infrastructure is constructed, City Staff will continue to engage the community, provide informative progress updates, and create ongoing opportunities to solicit community feedback. We look forward to working together to reduce our long-term impact from GHG emissions.

## Looking Ahead

New iterations of the CAP will be required as time goes on and new technology and information become available. It is anticipated that the inventory will be updated and the measures will be reviewed every three years, as shown in Figure 10. Successful implementation of a long-range planning document requires detailed tracking that will be done by City Staff in all departments. This approach is essential to successful implementation because it gives everyone a seat at the table and demonstrates that climate action requires collective participation to result in real change. Table 7 shows each of the measures with supporting actions and includes the lead or responsible department that is in charge of overseeing and implementing each item. The notes column is provided for tracking and monitoring initiatives over time.

**Figure 10 Implementation Monitoring Schedule**



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## Table 7 Montclair Implementation Plan

| ID # | Action | Lead Department | Notes |
|---|---|---|---|
| **Building Energy** | | | |
| **Measure BE.1: Join the Clean Power Alliance at the 100% Green Power rate and strive for a less than 4% opt-out rate for residential and commercial customers by 2030 and maintain through 2045.** | | | **Performance Metric:** Track Opt-out Rate |
| 1 | Conduct a feasibility study comparing enrollment in the Clean Power Alliance at the different rates versus rates through SCE, including the SCE Green Rate Program. | Community Development | |
| 2 | Join the CPA at the 100% Green Power rate and strive for a less than 4% opt-out rate by 2025. | Community Development | |
| 3 | Perform public outreach and education campaigns highlighting the benefits of using renewable energy and the CPA, including:<br>▪ Monitoring opt-out rates<br>▪ Tabling at community events<br>▪ Establishing an informational resource page on the City website<br>▪ Regular social media posts<br>▪ Energy bill inserts | Community Development | |
| 4 | Develop a benchmarking system to track annual opt-out rates and ensure opt-out rate remains low. | Community Development | |
| 5 | Coordinate with CPA to identify rebates or cost incentives for low-income and disadvantaged families. | Community Development | |
| **Measure BE.2: Electrify 100% of newly constructed buildings by 2030.** | | | **Performance Metric:** Track natural gas and electricity use of buildings constructed post-2025 |
| 1 | In alignment with the California Energy Commission's efforts to advance clean energy in buildings, adopt a Local Building Energy Standard Ordinance that requires new construction to be more energy efficient than all-electric unless cost prohibitive. Implement through the building permit process which limits expansion of natural gas infrastructure and promotes HVAC systems, hot water heaters, and other appliances to be all-electric at time of installation, or in major renovations after 2025. The following steps will be used to develop the reach code:<br>▪ Develop idea for a reach code ordinance.<br>▪ Work with stakeholders. | Community Development | |

| ID # | Action | Lead Department | Notes |
|---|---|---|---|
| **Building Energy** | | | |
| 1 cont. | ▪ Obtain a cost-effectiveness study.<br>▪ Develop and draft an ordinance.<br>▪ Public process and revisions.<br>▪ Formal adoption process. | | |
| 2 | Engage with an organization such as Building Decarbonization Coalition to work with local building industry stakeholders in development of the electrification reach code. | Community Development | |
| 3 | Enforce ordinance compliance through a comprehensive permitting compliance program which includes routine training of staff, dedicating staff time to building inspections, charging fees for noncompliance, providing easy to understand compliance checklists online and with permit applications, and facilitating permitting online. | Community Development | |
| 4 | Develop a webpage and materials at City Hall containing benefits of electrification and resources that can assist in the process. Consider working with regional partners to maintain a database of qualified contractors and consultants for electrification retrofits. | Community Development | |
| 5 | Host outreach events to educate the community on use, versatility and benefits on all-electric appliances. | Community Development | |
| **Measure BE.3: Improve energy efficiency by 17% in existing residential buildings and 15% in existing commercial buildings by 2030, and 52% in existing residential and 41% in existing commercial buildings by 2045.** | | | **Performance Metric:** **Track natural gas and electricity use of buildings constructed post-2025** |
| 1 | In alignment with the California Energy Commission's efforts to advance clean energy in buildings, adopt a Local Building Energy Standard Ordinance by 2025 that requires retrofits or renovations in existing buildings that include natural gas to be more energy efficient than all-electric buildings. The ordinance may include the following type of amendments: a) Requires mixed-fuel single family and duplex residential buildings to exceed the 2019 Energy Code by 15 percent; b) Requires mixed-fuel office buildings to exceed the 2019 Energy Code by 10 percent; c) Requires prewiring for possible future electric appliances in mixed-fuel; | Community Development | |

| ID # | Action | Lead Department | Notes |
|---|---|---|---|
| **Building Energy** | | | |
| 1 cont. | d) For new mixed-fuel construction, require CalGreen Tier 1 for residential buildings, require 5 percent reduced energy budget for hotel/motel and high-rise residential, require 10 percent reduced energy budget for non-residential. | | |
| 2 | Adopt and implement local amendments to the 2019 California Energy Code incentivizing all electric development (Clean Energy Choice Program). | Community Development | |
| 3 | Work with SoCal Gas to provide opportunities for funding energy efficiency projects and improved natural gas infrastructure to increase energy efficiency in existing building. | Community Development | |
| 4 | Create a rebate and incentive programs for appliance replacement, ENERGY STAR appliance program, and Energy Conservation Programs, with public outreach. Work with SCE and/or Clean Power Alliance to provide rebates for residential replacement of old appliances with electric-powered or more energy efficient appliances. | Community Development | |
| 5 | Provide information to staff and community regarding annual energy savings from energy conservation programs for CAP implementation tracking. | Community Development | |
| 6 | Work with and educate businesses on partnerships designed to maximize the use of renewable energy including solar/ storage, appropriate tariff changes and microgrid opportunities. | Community Development | |
| 7 | Identify funding for upgrading ventilation systems and natural gas appliances in disadvantaged community homes to improve air quality and increase energy efficiency. | Community Development | |
| 8 | Seek out funding partnerships with local financiers and work with partners such as local turnkey retrofit program that leverages existing funding, which offers low-cost  financing of electrification and energy efficiency retrofits for residents and local businesses. | Community Development | |

| ID # | Action | Lead Department | Notes |
|---|---|---|---|
| **Transportation** | | | |
| **Measure TR.1: Develop and implement an Active Transportation Plan to shift 6% of passenger car vehicle miles traveled to active transportation, and 12% by 2045.** | | | **Performance Metric:** **Develop an Active Transportation Plan and track mode shift** |
| 1 | Develop and adopt an Active Transportation Plan consistent with the City General Plan Policies that will identify funding strategies and policies for development of pedestrian, bicycle, and other alternative modes of transportation projects. Establish Citywide events, outreach, educational programs, or platforms to promote active transportation in the community. | Public Works | |
| 2 | Conduct a Complete Street Feasibility Study on street improvement options to identify streets and intersections that can be improved for pedestrians and bicyclists through traffic calming measures and/or where multi-use pathway opportunities exist to increase active transportation. | Public Works | |
| 3 | Obtain funding and implement "mobility hub" projects consistent with City General Plan. Work to identify grant funding opportunities to implement Complete Our Streets projects included in the Complete Our Streets Plan. | Public Works/Community Development | |
| 4 | Install and upgrade end-of-trip facilities (lockers, bike racks, etc.) at transit center to encourage active transportation as part of commute for community members using public transit. Improve and ensure there are safe bicycle and pedestrian infrastructure to access transit center. | Public Works | |
| 5 | Engage the Bicycle Pedestrian Commission, Safe Routes to School network, and community groups to identify additional short-term and long-term bikeway and pedestrian infrastructure improvement projects to implement. | Public Works/Community Development | |
| 6 | Ensure there is equitable access to safe bicycle and pedestrian infrastructure in all areas of the city. Facilitate transportation equity through targeted provision of programs that encourage minority, low-income, and senior populations to take transit, walk, bike, use rideshare or car share. | Public Works | |

| ID # | Action | Lead Department | Notes |
| --- | --- | --- | --- |
| **Transportation** | | | |
| 7 | Evaluate and update the City's Zoning Code, Transportation Demand Management Ordinance, and California Green Building Code to ensure the City requires installation of accessible, shaded, and secure bicycle parking for new commercial development and retrofits and requires installation of bicycle parking areas in instances where off-street parking is required. | Community Development/Public Works | |
| **Measure TR.2: Implement a public and shared transit programs to achieve 10% of public transit mode share by 2030 and 30% by 2045.** | | | **Performance Metric:** **Implement a Public and Shared Transit Program and track mode shift to transit** |
| 1 | Conduct local transportation surveys to better understand the community's needs and motivation for traveling by car versus other alternatives such as bus or Metro Gold Line light rail. Use survey results to inform transit expansion and improvement projects. | Community Development/Public Works | |
| 2 | Adopt policy to encourage new development of public space to be transit accessible and multi-functional by co-locating public facilities. | Community Development | |
| 3 | Adopt a Transportation Demand Management (TDM) Plan for the City that includes a transit system focus. Provide incentives for implementation of TDM measures at local businesses and for new developments. Incentives and incentives to encourage use of transit instead of driving alone may include:<br>▪ Offer monetary incentives for employees to use car share, carpool, take the bus, bike, or walk.<br>▪ Require large employers (more than 25 employees) to offer subsidies to employees for the transit system<br>▪ Offer car/vanpool matching<br>▪ Offer emergency ride homes for employees utilizing transit<br>▪ Market-rate parking fee charged directly to employees or patrons at businesses or new developments | Community Development/Public Works | |

| ID # | Action | Lead Department | Notes |
| --- | --- | --- | --- |
| **Transportation** | | | |
| 3 cont. | ▪ Offer priority/discounted HOV parking at businesses or new developments<br>▪ Daily parking charge available for occasional drivers instead of monthly parking pass | Community Development/Public Works | |
| 4 | Continue to work with federal legislative advocate and congress member to secure funds for Metro's Gold Line plan and supporting infrastructure. | Community Development/Public Works | |
| 5 | Obtain funding and grants to upgrade City-owned or operated facilities and infrastructure, such as parking, transit stops, and community hubs (e.g., the library, City recreational center), that promote use of public transit. | Community Development/Public Works | |
| **Measure TR.3: Increase electric/alternative fuel vehicle adoption to 20% for passenger and 10% for commercial vehicles by 2030, and 65% passenger and 50% commercial by 2045.** | | | **Performance Metric:**<br>**Install 200 EV chargers and track EV registration** |
| 1 | Adopt an EV Readiness Reach Code by 2026 requiring new commercial and multifamily construction to install the minimum number of EV chargers based on Tier 2 CalGreen requirements (20% of total). | Community Development | |
| 2 | Adopt an EV Charging Retrofits in existing Commercial and Multifamily Buildings Reach Code by 2026 requiring major retrofits, with either a building permit with square footage larger than 10,000 square feet or including modification of electric service panels, to meet CalGreen requirements for "EV Ready" charging spaces and infrastructure. | Community Development | |
| 3 | Conduct a survey of existing publicly accessible electric vehicle chargers and their locations and identify a prioritized list of locations for new electric vehicle charging stations with particular consideration for equitable distribution of chargers to residents of multi-family homes, low-income people, people on a fixed income, and communities of color. | Public Works/Community Development | |
| 4 | Add 240 new publicly accessible Level 2 and 3 electric vehicle charging stations to the City by 2030. | Public Works | |

| ID # | Action | Lead Department | Notes |
|---|---|---|---|
| **Transportation** | | | |
| 5 | Promote public and private conversion to zero-emission vehicles; including use of City events, social media, and the City website to educate on benefits of zero-emission vehicles and available incentives. | Public Works/Community Development | |
| 6 | Investigate commercial vehicle fleets in Montclair and identify businesses/employers to target for accelerating zero emission vehicle (ZEV) adoption. Identify and implement incentives for commercial fleet electrification, such as tax breaks or use of Low Carbon Fuel Standard credits. | Community Development | |
| 7 | Collaborate with local businesses/employers to develop and implement a plan for City-supported accelerated fleet electrification. As part of the plan, identify opportunities for accelerated fleet electrification and promote zero-emission vehicle (ZEV) adoption within major private and employee fleets in the city. | Public Works/Community Development | |
| 8 | Work with SCE to incentivize electric vehicle charger installations through on-bill financing. | Public Works/Community Development | |
| **Measure TR.4: Equitably increase use of electric vehicles, promote active transportation and public transit use by disadvantaged communities.** | | | **Performance Metric: Conduct feasibility study** |
| 1 | Conduct a feasibility study identifying barriers for disadvantaged and low-income families related to mobility for active transportation, use of public transit, and access identified barriers. | Public Works/Community Development | |
| 2 | As part of Complete Streets Feasibility Study, evaluate streets within disadvantage communities and identify streets for improvements that would increase mobility within the neighborhood. | Public Works/Community Development | |
| 3 | Pilot a transit shuttle program for disadvantaged communities to increase access to the transit center. | Public Works | |
| 4 | Investigate and pursue funding opportunities for EV car share for low-income neighborhoods, such as the Zero Emissions Mobility and Community pilot Project Fund. Partner with local community group to identify funding opportunities for purchasing EVs or other pilot projects for deployment in disadvantaged communities. | Public Works/Community Development | |

| ID # | Action | Lead Department | Notes |
| --- | --- | --- | --- |
| **Transportation** | | | |
| 5 | Work with Metro and Foothill Transit to expand use of LIFE low-income EZ Pass transit subsidy by Montclair low-income households who ride Metro and Foothill Transit buses and commuter inter-city rails. | Public Works/Community Development | |
| **Waste and Wastewater** | | | |
| **Measure W.1: Reduce per capita water consumption by 10% compared with 2017 levels by 2030 and 25% by 2045.** | | | **Performance Metric:** **Track community water use** |
| 1 | Adopt ordinance by 2026 requiring non-residential buildings over 20,000 square feet (including municipal buildings over 7,500 square feet) to disclosure water use annually for benchmarking purposes and then take action to reduce their consumption. | Community Development | |
| 2 | Adopt a cool pavement ordinance by 2026 to reduce heat island effect improving water quality. | Community Development | |
| 3 | Continue to enforce Model Water Efficient Landscapes Ordinance. | Community Development | |
| 4 | Adopt an ordinance by 2026 restricting the use of potable water for non-potable uses and requiring greywater capture for land uses that are excess water users (e.g., car washes, large fields, etc.). | Community Development | |
| 5 | Develop a Recycled Water Use and Implementation Strategy that identifies new and existing access to recycled water and quantity of recycled water available to the City for use from MVWD’s. The strategy shall identify land use types (i.e., landscaping and golf courses) and specific projects that will switch from potable to recycled water use allowing for a goal of 20% of City's potable water use to be replaced with recycled water provided by MVWD by 2030. | Public Works/Community Development | |
| 6 | Conduct a citywide study identifying impermeable surfaces that can be targeted for a transition to increase infiltration. | Community Development | |
| 7 | Promote alternative driveways/sidewalk materials and greenscaping through educational pamphlets and programs; incentivize residents to transition from impervious to pervious hardscapes. | Community Development | |

| ID # | Action | Lead Department | Notes |
|---|---|---|---|
| **Waste and Wastewater** | | | |
| 8 | Provide rebates or other funding to low- and medium-incomes homes for installing greywater, rainwater catchment system, EnergyStar appliances, and low-flow fixtures and fittings (e.g., faucets, sprinklers). | Community Development | |
| 9 | Work with schools to educate youth about water conversation. | Community Development | |
| 10 | Establish a system to track implementation progress of low-flow devices and to track use of rebates offered through the City. | Community Development | |
| **Solid Waste** | | | |
| **Measure SW.1: Implement SB 1383 requirements and reduce community-wide landfilled organics by 75% by 2025 and inorganic waste by 35% by 2030 and reduce all landfilled waste by 100% by 2045.** | | | **Performance Metric:** Meet SB 1383 Requirements |
| 1 | Enforce adopted ordinance 22-1001 requiring compliance with SB 1383. Ensure ordinances established are consistent with SB 1383 requirements; revise if necessary. | Community Development | |
| 2 | Engage with waste hauler operating within the City to discuss SB 1383 requirements for waste haulers (i.e., organics receptacles and labeling requirements). | Community Development | |
| 3 | Adopt procurement policies to comply with SB 1383 requirements for jurisdictions to purchase recovered organic waste products. | Community Development | |
| 4 | Adopt an Edible Food Recovery Ordinance for edible food generators, food recovery services, or organization that are required to comply with SB 1383. | Community Development | |
| 5 | Partner with all City waste hauler, to provide organic waste collection and recycling services to all commercial and residential generators of organic waste. | Community Development | |
| 6 | Enforce ordinance 22-1001 requiring all residential and commercial customers to subscribe to an organic waste collection program and/or report self-hauling or backhauling of organics. | Community Development | |
| 7 | Conduct a Feasibility Study and prepare an action plan to ensure edible food reuse infrastructure is sufficient to accept capacity needed to recover 20% of edible food disposed or identify proposed new or expanded food recovery capacity. | Community Development | |

| ID # | Action | Lead Department | Notes |
|---|---|---|---|
| **Solid Waste** | | | |
| 8 | Establish an education and outreach program for school children and adults around food waste prevention, nutrition education, and the importance of edible food recovery. | Community Development | |
| 9 | Establish an edible food recovery program to minimize food waste. Leverage CalRecycle support for projects that prevent food waste or rescue edible food. | Community Development | |
| 10 | Adopt an ordinance or enforceable mechanism to regulate haulers collecting organic waste, including collection program requirements and identification of organic waste receiving facilities. | Community Development | |
| 11 | Partner with waste hauler within the City to:<br>▪ Ensure organic waste collection from mixed waste containers are transported to a high diversion organic waste processing facility.<br>▪ Provide quarterly route reviews to identify prohibited contaminants potentially found in containers that are collected along route | Community Development | |
| **Carbon Sequestration** | | | |
| **Measure CS.1: Increase carbon sequestration and green space by planting 500 new trees through the community by 2030, and 1,000 by 2045.** | | | **Performance Metric:**<br>**Plant 500 trees by 2030** |
| 1 | Adopt Greenscaping Ordinance that has a street tree requirement for all zoning districts, has a shade tree requirement for new development, requires greening of parking lots, and increases permeable surfaces in new development. | Community Development | |
| 2 | Adopt a standard policy in alignment with City's General Plan and set of practices for expanding urban tree canopy and placing vegetative barriers between busy roadways and developments to reduce exposure to air pollutants from traffic. | Community Development | |

| ID # | Action | Lead Department | Notes |
|---|---|---|---|
| **Carbon Sequestration** | | | |
| 3 | Prepare and adopt an Urban Forest Management Plan for the City that includes an inventory of existing trees, identifies future tree planting opportunities and a climate-ready tree palette, as well as ongoing operations and maintenance needs. | | |
| 4 | Identify and participate in partnership opportunities necessary to plant and maintain an increase in the City's tree inventory by 15% by 2030 and convert priority public space into green space. | Community Development | |
| 5 | Promote incentives to property owners and developers for greenspace inclusion through educational pamphlets, programs, and webpages and track the use of incentives. | Community Development | |
| **Measure CS.2: Achieve and maintain compost procurement requirements of SB 1383 by 2030.** | | | **Performance Metric:** **Achieve Compost Procurement Requirements of SB 1383** |
| 1 | Implement all required activities under SB 1383 including achieving compost procurement requirements effective. Effective January 2022, CalRecycle's regulations require cities to purchase a minimum of 0.08 tons per resident of recovered organic composts. | Community Development | |
| **Municipal Operations** | | | |
| **Measure M.1: Electrify the municipal vehicle fleet and mobile equipment by 50% by 2030 and 100% by 2045.** | | | **Performance Metric:** **Implement a City fleet Fuel Conversion Policy** |
| 1 | Develop and adopt a policy to apply lifecycle assessment to all new vehicle and equipment purchases. | Community Development | |
| 2 | Implement the City Fleet Alternative Fuel Conversion Policy such that as municipal vehicles turn over, they are replaced with alternative-fuel vehicles in alignment with the state's Advanced Clean Fleet Rule. | Public Works | |
| 3 | Install EV charging stations at municipal buildings. | Public Works | |

| ID # | Action | Lead Department | Notes |
|---|---|---|---|
| **Municipal Operations** | | | |
| **Measure M.2: Reduce carbon intensity of City operations.** | | | **<u>Performance Metric:</u>**<br>**Switch 100% of City accounts to 100% Green Power Electricity** |
| 1 | Adopt retrofitting policy for City owned buildings such that energy efficient and electrification retrofits are incorporated into City buildings as they become available. | Community Development/Public Works | |
| 2 | Complete energy audits for all City facilities and implement all feasible recommendations for fuel switching and efficiency upgrades. | Public Works | |
| 3 | Establish a replacement plan for replacing natural gas fueled equipment with electric where practical and technologically feasible in City-buildings. | Public Works | |
| 4 | Switch City electricity accounts to SCE 100% Green Rate until joining CPA at 100% Green Power rate by 2025. | Community Development/Finance | |
| 5 | Investigate funding and grant opportunities and partnerships to install photovoltaic systems at all City buildings as feasible. | Community Development | |

# Appendix A: Regulatory Context

# Regulatory Context

As the impacts of climate change are being recognized, many strategies that address climate change have emerged at all levels of government. This section provides an overview of the regulatory context at the international, state, and local levels relative to the City of Montclair's actions toward reducing greenhouse gas (GHG) emissions.

## International Climate Action Guidance

### 1992 United Nations Framework Convention on Climate Change

The primary international regulatory framework for GHG reduction is the United Nations Framework Convention on Climate Change Paris Agreement (UNFCCC). The UNFCCC is an international treaty adopted in 1992 with the objective of stabilizing atmospheric GHG concentrations to prevent disruptive anthropogenic climate change. The framework established non-binding limits on global GHG emissions and specified a process for negotiating future international climate-related agreements.[1]

### 1997 Kyoto Protocol

The Kyoto Protocol is an international treaty that was adopted in 1997 to extend and operationalize the UNFCCC. The protocol commits industrialized nations to reduce GHG emissions per county-specific targets, recognizing that they hold responsibility for existing atmospheric GHG levels. The Kyoto Protocol involves two commitment periods during which emissions reductions are to occur, the first of which took place between 2008-2012 and the second of which has not entered into force. [2]

### 2015 The Paris Agreement

The Paris Agreement is the first-ever universal, legally binding global climate agreement that was adopted in 2015 and has been ratified by 189 countries worldwide.[3] The Paris Agreement establishes a roadmap to keep the world under 2° C of warming with a goal of limiting an increase of temperature to 1.5°C. The agreement does not dictate one specific reduction target, instead relying on individual countries to set nationally determined contributions (NDCs) or reductions based on GDP and other factors. According to the International Panel on Climate Change (IPCC) limiting global warming to 1.5° C will require global emissions to reduce through 2030 and hit carbon neutrality by mid-century.[4]

1 United Nations Framework Convention on Climate Change (UNFCCC). United Nations Framework Convention on Climate Change. https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf
2 UNFCCC. What is the Kyoto Protocol? https://unfccc.int/kyoto_protocol
3 UNFCCC. Paris Agreement - Status of Ratification. https://unfccc.int/process/the-paris-agreement/status-of-ratification
4 IPCC. Global Warming of 1.5 C. https://www.ipcc.ch/sr15/

### 2021 Glasgow Climate Pact

The Glasgow Climate Pact[5] (Pact) was adopted by nearly 200 nations in 2021 and builds on the 2015 Paris Agreement. The Pact includes an agreement to revisit the remissions reduction plans to keep the 1.5°C target achievable and is the first global climate agreement that aims commits to phasing down the use of unabated coal. Further, the Pact includes a commitment to provide climate finance to developing countries.

## California Regulations and State GHG Targets

California remains a global leader in the effort to reduce GHG emissions and combat climate change through its mitigation and adaptation strategies. With the passage of Assembly Bill (AB) 32 in 2006, California became the first state in the United States to mandate GHG emission reductions across its entire economy. To support AB 32, California has enacted legislation, regulations, and executive orders (EO) that put the state on course to achieve robust emission reductions and address the impacts of a changing climate. The following is a summary of executive and legislative actions most relevant to the CAP.

### 2002 Senate Bill 1078

In 2002, SB 1078, established the California Renewables Portfolio Standards (RPS) Program and was accelerated in 2006 by SB 107, requiring that 20 percent of retail electricity sales be composed of renewable energy sources by 2010. EO S-14-08 was signed in 2008 to further streamline California's renewable energy project approval process and increase the state's RPS to the most aggressive in the nation at 33 percent renewable power by 2020.

### 2002 Assembly Bill 1493

In 2002, AB 1493, also known as the Pavley Regulations, directed the California Air Resources Board (CARB) to establish regulations to reduce GHG emissions from passenger vehicles to the maximum and most cost-effective extent feasible. CARB approved the first set of regulations to reduce GHG emissions from passenger vehicles in 2004, with the regulations initially taking effect with the 2009 model year.

### 2005 Executive Order S-3-05

Executive Order (EO) S-3-05 was signed in 2005, establishing statewide GHG emissions reduction targets for the years 2020 and 2050. The EO calls for the reduction of GHG emissions in California to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The 2050 emission reductions target would put the state’s emissions in line with the worldwide reductions needed to reach long-term climate stabilization as concluded by the IPCC *2007 Fourth Assessment Report*.

### 2006 Assembly Bill 32

California’s major initiative for reducing GHG emissions is outlined in AB 32, the “California Global Warming Solutions Act of 2006,” which was signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan

5 https://unfccc.int/documents/310475

that outlines the main state strategies for reducing GHG emissions to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions.

Based on this guidance, CARB approved a 1990 statewide GHG baseline and 2020 emissions limit of 427 million metric tons of $CO_2$ equivalent (MMT $CO_2e$). The Scoping Plan was approved by CARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards,[6] and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2014 Scoping Plan update defined CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 statewide goals. The update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the state's longer-term GHG reduction strategies with other state policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014). The state met its goal of reducing GHG emissions to 1990 levels in 2016, achieving the 2020 goal four years ahead of schedule.

### 2007 Executive Order S-1-07

Also known as the Low Carbon Fuel Standard, EO S-1-07, issued in 2007, established a statewide goal that requires transportation fuel providers to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. EO S-1-07 was readopted and amended in 2015 to require a 20 percent reduction in carbon intensity by 2030, the most stringent requirement in the nation. The new requirement aligns with California's overall 2030 target of reducing climate changing emissions 40 percent below 1990 levels by 2030, which was set by Senate Bill 32 and signed by the governor in 2016.

### 2007 Senate Bill 97

Signed in August 2007, SB 97 acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Natural Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

### 2008 Senate Bill 375

SB 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPOs), including the San Bernardino Council of Governments (SBCOG), of which

6 On September 19, 2019 the National Highway Traffic Safety Agency (NHTSA) and the US Environmental Protection Agency (EPA) issued a final action entitled the One National Program on Federal Preemption of State Fuel Economy Standards Rule. This action finalizes Part I of the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule. This rule states that federal law preempts State and local tailpipe greenhouse gas (GHG) emissions standards as well as zero emission vehicle (ZEV) mandates. The SAFE Rule withdraws the Clean Air Act waiver it granted to California in January 2013 as it relates to California's GHG and zero emission vehicle programs.

Montclair is a member of, to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the MPO's Regional Transportation Plan (RTP).

### 2009 California Green Building Code

The California Green Building Standards Code (CALGreen) is Part 11 of the California Building Standards Code or Title 24 and is the first statewide "green" building code in the nation. The purpose of CALGreen is to improve public health, safety, and general welfare by enhancing the design and construction of buildings. Enhancements include reduced negative impact designs, positive environmental impact designs, and encouragement of sustainable construction practices. The first CALGreen Code was adopted in 2009 and has been updated in 2013, 2016, and 2019. The CALGreen Code will have subsequent, and continually more stringent, updates every three years.

### 2009 Senate Bill X7-7

In 2009, SB X7-7, also known as the Water Conservation Act, was signed, requiring all water suppliers to increase water use efficiency. This legislation sets an overall goal of reducing per capita urban water use by 20 percent by2020.

### 2011 Senate Bill 2X

In 2011, SB 2X was signed, requiring California energy providers to buy (or generate) 33 percent of their electricity from renewable energy sources by 2020.

### 2012 Assembly Bill 341

AB 341 directed the California Department of Resources Recycling and Recovery (CalRecycle) to develop and adopt regulations for mandatory commercial recycling. As of July 2012, businesses are required to recycle, and jurisdictions must implement a program that includes education, outreach, and monitoring. AB 341 also set a statewide goal of 75 percent waste diversion by the year 2020.

### 2014 Assembly Bill 32 Scoping Plan Update

In 2014, CARB approved the first update to the Scoping Plan. This update defines CARB's climate change priorities and sets the groundwork to reach the post-2020 targets set forth in EO S-3-05. The update highlights California's progress toward meeting the near-term 2020 GHG emissions reduction target, defined in the original Scoping Plan. It also evaluates how to align California's longer-term GHG reduction strategies with other statewide policy priorities, such as water, waste, natural resources, clean energy, transportation, and land use.

### 2014 Assembly Bill 1826

AB 1826 was signed in 2014 to increase the recycling of organic material. GHG emissions produced by the decomposition of these materials in landfills were identified as a significant source of emissions contributing to climate change. Therefore, reducing organic waste and increasing composting and mulching are goals set out by the AB 32 Scoping Plan. AB 1826 specifically requires jurisdictions to establish organic waste recycling programs by 2016, and phases in mandatory commercial organic waste recycling over time.

### 2015 Senate Bill 379

SB 379 requires cities and counties within California to integrate climate adaptation and resilience into their general plans by January 1, 2017, or January 1, 2022, depending on whether that city or county has adopted a Local Hazard Mitigation Plan. The bill requires that the climate adaptation update include a set of goals, policies, and objectives for the community based on the vulnerability assessment, as well as implementation measures, including the conservation and implementation of natural infrastructure that may be used in adaptation projects. Specifically, the bill requires that upon the next revision of a general plan or local hazard mitigation plan, the safety element is to be updated as necessary to address climate adaptation and resiliency strategies applicable to the city or county. The City is currently in the process of updating their General Plan.

### 2015 Senate Bill 350

SB 350, the Clean Energy and Pollution Reduction Act of 2015, has two objectives: to increase the procurement of electricity from renewable sources from 33 percent to 50 percent by 2030 and to double the energy efficiency of electricity and natural gas end users through energy efficiency and conservation.

### 2015 Executive Order B-30-15

In 2015, EO B-30-15 was signed, establishing an interim GHG emissions reduction target to reduce emissions to 40 percent below 1990 levels by 2030. The EO also calls for another update to the CARB Scoping Plan.

### 2016 Senate Bill 32

On September 8, 2016, the governor signed SB 32 into law, extending AB 32 by requiring the state to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). The bill charges CARB to adopt the regulation so that the maximum technologically feasible emissions reductions are achieved in the most cost-effective way.

### 2016 Senate Bill 1383

Adopted in September 2016, SB 1383 requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

SB 1383 also requires the CalRecycle, in consultation with the CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills. The bill further requires 20% of edible food disposed of at the time to be recovered by 2025.

### 2017 Scoping Plan Update

On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 goal set by SB 32. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies, such as SB 350 and SB 1383 .

The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2014 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of six metric tons (MT) $CO_2e$ by 2030 and two MT $CO_2e$ by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the state (CARB 2017).

### 2018 Senate Bill 100

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the State's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

### 2018 Executive Order B-55-18

Also, on September 10, 2018, the governor issued EO B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

### 2020 Executive Order N-79-20

On September 23, 2020, the governor issued EO N-79-20, which sets a new statewide goals for phasing out gasoline-powered cars and trucks in California, which is applicable to state agencies. The EO requires 100% of in-state sales of new passenger cars and trucks to be zero-emission by 2035; 100% of in-state sales of medium- and heavy-duty trucks and busses to be zero-emission by 2045, where feasible; and 100% of off-road vehicles and equipment sales to be zero-emission by 2035, where feasible.

### 2020 Advanced Clean Trucks Regulation

The Advanced Clean Trucks Regulation was approved on June 25, 2020. The regulation establishes a zero-emissions vehicle sales requirement for trucks or on-road vehicles over 8,500 lbs gross vehicle weight and set a one-time reporting requirement for large entities and fleets. Under the regulation, manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines are required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales need to be 55% of Class 2b – 3 truck sales, 75% of Class 4 – 8 straight truck sales, and 40% of truck tractor sales. Additionally, the regulation established a one-time reporting requirement for large entities and fleets where fleet owners, with 50 or more trucks, are required to report about their existing fleet operations by March 15, 2021.

### 2021 Senate Bill 27

Adopted on September 23, 2021, SB 27 requires the state Natural Resources Agency to establish carbon sequestration goals for natural and working lands by July 2023. SB 27 also requires the Natural Resources Agency to create a registry of projects for public and private investment and track the carbon benefits of each project. The projects that would be part of this program may not generate compliance offsets under California's Cap-and-Trade program. Additionally, as part of the next Scoping Plan Update, CARB is required to establish specific CO2 removal targets starting in 2030.

### 2022 Scoping Plan Update

In November 2022, CARB adopted the 2022 Scoping Plan, which provides a framework for achieving the 2045 carbon neutrality goal set forth by AB 1279. The 2022 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently approved legislation, such as AB 1279. The 2022 Scoping Plan includes discussion of the Natural and Working Lands sector as both an emissions source and carbon sink. The Plan centers equity in terms of State climate investments and climate mitigation strategies.

### 2022 Senate Bill 1020

Adopted in September 2022, SB 1020 advances the State's trajectory to 100 percent clean energy procurement by 2045 by creating clean energy targets of 90 percent by 2035 and 95 percent by 2040. SB 1020 builds upon SB 100, which accelerated the State's RPS and requires electricity providers to increase procurement from eligible renewable energy resources to 60 percent by 2030 and 100 percent by 2045.

### 2022 Assembly Bill 1279

Known as the California Climate Crisis Act and signed by the governor in 2022, AB 1279 codifies the GHG emissions reduction goals of achieving carbon neutrality by 2045 and expands upon this goal to define carbon neutrality as reducing direct emissions 85 percent below 1990 levels and removing the remaining 15 percent of emissions via other technologies and practices, like carbon sequestration. The 2022 Scoping Plan provides the pathway for reaching the State's AB 1279 goal.

### 2022 Advanced Clean Cars II

The Advanced Clean Cars II regulation was adopted in August 2022. The regulation amends the Zero-emission Vehicle Regulation to require an increasing number of zero-emission vehicles, and relies on advanced vehicle technologies, including battery electric, hydrogen fuel cell electric and plug-in hybrid electric-vehicles, to meet air quality, climate change emissions standards, and Executive Order N-79-20, which requires that all new passenger vehicles sold in California be zero emissions by 2035. The regulation also amends standards for gasoline cars and heavier passenger trucks to continue to reduce smog-forming emissions.

### 2023 Advanced Clean Fleet

Approved by CARB on April 28, 2023, the Advanced Clean Fleets Regulation requires fleets, businesses, and public entities that own or direct the operation of medium- and heavy-duty vehicles in California to transition to 100 percent zero-emission capable utility fleets by 2045. Under the regulation, fleet operators may choose to purchase only ZEVs beginning in 2024 and remove internal combustion engine vehicles at the end of their useful life or fleet operators may elect to meet the State's ZEV milestone targets as a percentage of the total fleet starting with vehicle types that are most suitable for electrification.

# City of Montclair Plans

The City of Montclair has developed plans and policies that promote sustainability and reduce the City's GHG emissions. Specifically, Montclair adopted an Active Transportation Plan (2020) that includes actions related to increasing walkability and bicycle access across the City to help improve community health, air quality, and equity. The City also adopted a Safe Routes to School Plan in 2020 and most recently updated the General Plan and developed their first Climate Action Plan.

## 2020 Montclair Active Transportation Plan

The 2020 Active Transportation Plan was updated in November 2020 and has policies aimed at increasing bicycle access and connectivity. The primary goal of this Plan is to help redesign the city to include healthier and more equitable access to safer and more connected roadways through safe and accessible active transportation options. As a co-benefit, the Plan will also improve the community's air quality by encouraging more people to actively commute. The Plan notes that the City's existing pedestrian and bicycle infrastructure is adequate. However, much more can be done. Approximately 72 percent of the City's area is connected by corridors with low Bicycle Level of Traffic Stress - a measure of the comfort of roadways for bicyclists. Furthermore, findings from the Pedestrian Level of Comfort analysis showed that almost the entire city is connected by roadways that are comfortable for pedestrians.[7]

## 2020 Montclair Safe Routes to School Plan

The Montclair Safe Routes to School Plan is a comprehensive framework for the City of Montclair to improve the health, safety, and equity of students, parents, and the Montclair community in the surrounding areas for the seven elementary schools, one middle school, and one high school in Montclair. The Plan builds upon the international Safe Routes to School movement. The movement strives to make communities safer and more convenient for children and their families to walk and bike to school. It is supported by six key components, often known as the six E's of Safe Routes to School, which are: engagement, equity, education, encouragement, engineering, and evaluation.[8]

## 2022 General Plan Update

The City's General Plan update was drafted in 2021 and is anticipated for adoption in 2024. The General Plan is an integrated plan which includes a community driven vision, direction, and policy guidance on the physical structure of the City: the places we preserve, the things we build, and how and where we build them. The General Plan also lays out how the City should harness the tools at its disposal to achieve this vision. According to the General Plan, it establishes the City's long-range vision and serves the following purposes:

- Recasts the 1999 General Plan to incrementally generate a place that fulfills the City's vision by 2040

7 https://storage.googleapis.com/proudcity/montclairca/uploads/2021/03/Montclair-Active-Transportation-Plan.pdf

8 https://storage.googleapis.com/proudcity/montclairca/uploads/2021/03/Safe-Routes-to-School.pdf

- Sets forth the principles, goals, policies, and actions to help achieve the community vision, establishing the basis for evaluating choices and making near- and long-term decisions
- Sets forth the principles, goals, policies, and actions to help achieve the community vision, establishing the basis for evaluating choices and making near- and long-term decisions
- Prioritizes actions to advance on-going implementation

# Appendix B: Cal-Adapt Analysis

# Cal-Adapt Resource Guide

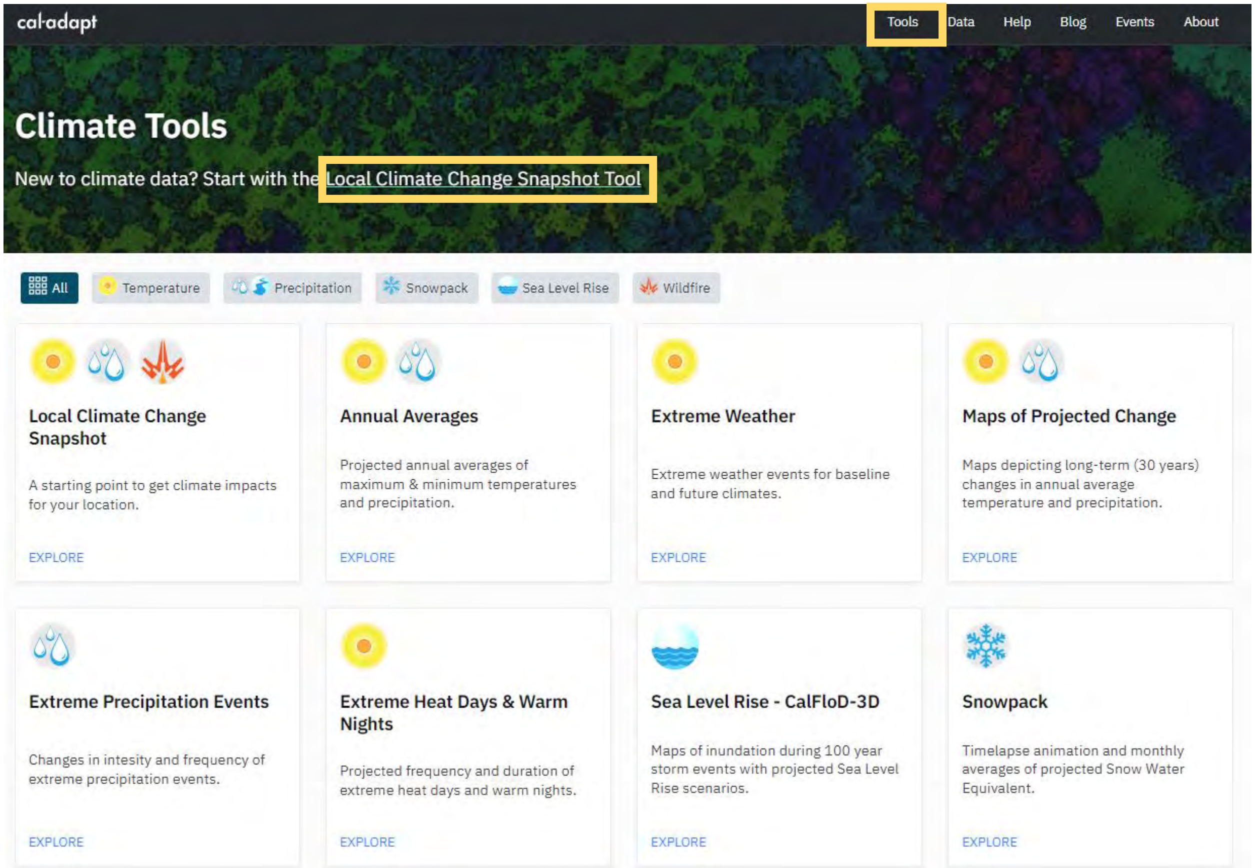
Cal-Adapt[1] is an interactive platform that allows users to explore how climate change might affect California at the local level. The site was developed by the University of California, Berkeley's Geospatial Innovation Facility (GIF) with funding and advisory oversight by the California Energy Commission's Public Interest Energy Research (PIER) Program. The data used within the Cal-Adapt visualization tools have been gathered from California's scientific community, and represent peer-reviewed, high-quality scientific information.[2]

The site includes the following climate change projections:

- Annual Averages (temperature and precipitation)
- Extreme Precipitation Events
- Extreme Heat Days and Warm Nights
- Cooling Degree Days and Heating Degree Days
- Snowpack
- Sea Level Rise
- Wildfire
- Streamflow
- Extended Drought

These localized climate change projections are available on the Cal-Adapt landing page or via the *Tools* tab. The *Tools* tab includes a link to the Local Climate Change Snapshot, which provides interactive visualizations of climate change projections for a location of the user's choice. Another way to download data is through the *Data* tab. The *Data* tab allows you to download spatial and non-spatial data from individual publishers. This technical appendix describes the process of downloading data from the Local Climate Change Snapshot on the *Tools* tab, as it allows the user to select a jurisdictional boundary and is more interactive and provides visualizations of the data, which are included in the Climate Action Plan (CAP).

[1] Cal-Adapt https://cal-adapt.org/
[2] Cal-Adapt https://cal-adapt.org/about/




## Best Practices

The following section details the best practices related to choosing a location, selecting which scenario is most appropriate, establishing a baseline and future timeframes, and choosing climate models.

### Location

When choosing a location from the Local Climate Change Snapshot page, Cal-Adapt will prompt the user to select an option from a range of spatial boundaries, including: address, county, city, census tract, and HUC10 watershed. When the county, city, census tract, or watershed is selected, the data is spatially averaged over that geographic area. For example, Montclair is in Bernardino County, and if Bernardino County is selected, then the data for the entire area would be averaged. However, to provide a more accurate and refined understanding of the specific data in Montclair, the user would create a snapshot and view the data at the City level. Therefore, for the purposes of this analysis, the City of Montclair was selected.

### Representative Concentration Pathways (RCP)

The Representative Concentration Pathways (RCP) are scenarios adopted by the Intergovernmental Panel on Climate Change (IPCC) that describe possible greenhouse gas (GHG) concentration trajectories. Each RCP provides only one of many possible scenarios that would lead to the specific radiative forcing, which is the difference between sunlight absorbed by the Earth and energy radiated back to space.

The California Adaptation Planning Guide[3] recommends always using the high emissions scenario (RCP 8.5).[4] The stabilizing scenario (RCP 4.5)[5] may also be used to provide a wider range of possible futures.

**Past and Future Year Horizons**

To gain an understanding of how climate change may impact a location, it is essential to know the historical and projected conditions. Below are the past and future 30-year time periods[6] used for the *Climate Change in the City of Montclair* subsection of the Montclair CAP.

- Historical: 1961-1990
- Mid-Century: 2035-2064
- End-Century: 2070-2099

It is important to consider a long-term benchmark year when working with climate change projections to understand the potential impacts over a specific period of time.

**Climate Models**

Cal-Adapt allows the user to choose whether to use the minimum, average, or maximum estimates (shown below). These are calculated over all models shown in the chart provided by Cal-Adapt. For a representative value of all models combined, rather than selecting the lowest or highest predicting model, it's best to use the average value. The four models used to generate the average projections in this assessment are:

- HadGEM2-ES: a warm/drier simulation
- CNRM-CM5: a cooler/wetter simulation
- CanESM2: an average simulation
- MIROC5: a complement simulation (most unlike the other three models)

These models were selected by California's Climate Action Team Research Working Group as the priority models for research contributing to California's Fourth Climate Change Assessment. To determine projected timing of extreme heat days, Rincon used the range all four priority models. This allows for conservative planning, recommended by the California Adaptation Planning Guide.

[3] https://resources.ca.gov/CNRALegacyFiles/docs/climate/01APG_Planning_for_Adaptive_Communities.pdf
[4] Under the high emissions scenario, emissions continue to rise through the end of the century before leveling off.
[5] Under the stabilizing scenario, emissions rise through 2050 before leveling off.
[6] 30 years is the traditional length of record used in climatological studies and is known as climatological normal. 30 years is considered the minimum number of years needed to characterize a regional climate.

## Resources

Cal-Adapt https://cal-adapt.org/

California Adaptation Planning Guide

https://resources.ca.gov/CNRALegacyFiles/docs/climate/01APG_Planning_for_Adaptive_Communities.pdf

# Appendix C: Inventory, Forecast, and Targets

# City of Montclair Climate Action Plan

## GHG Emissions: Municipal Inventory, Community Inventory, Forecast and Target Setting Methodology

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# 1 Introduction

California considers greenhouse gas (GHG) emissions and the impacts of climate change to be a serious threat to the public health, environment, economic well-being, and natural resources of the state, and has taken an aggressive stance to mitigate the impact on climate change at the state-level through the adoption of legislation and policies. Many cities have developed local climate action plans and established GHG reduction targets to correspond with state emissions reduction goals. The two major state GHG-related goals are established by Assembly Bill (AB) 32 and Senate Bill (SB) 32. AB 32 required state agencies reduce state GHG emissions to 1990 levels by 2020, whereas SB 32 requires a 40 percent reduction below 1990 levels by 2030. The goals set by AB 32 were achieved by the state in 2016[1] and many jurisdictions completed GHG inventories to quantify progress toward reaching their own 2020 targets, and inform the development of updated targets to align with the requisite GHG reduction goals. A long-term goal of carbon neutrality by 2045 for the state was established through AB 1279, which was codified in 2022 by the State.

This technical appendix provides the detailed methodology used for the City of Montclair 2017 Municipal and Community GHG inventory, Community GHG Emissions Forecast, and the setting of emission reduction targets. Emissions are forecasted for the years 2030, 2040 (the General Plan horizon year), and 2045 to align with state targets.

Estimating GHG emissions enables local governments to establish an emissions baseline, track emissions trends, identify the greatest sources of GHG emissions within their jurisdictions, and set targets for future reductions. This inventory is intended to inform completion of a qualified GHG reduction plan for the City of Montclair and is compliant with the Local Governments for Sustainability (ICLEI) *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*[2] (*Community Protocol*) as well as California Environmental Quality Act (CEQA) Guidelines Section 15183.5(b) for the requirements of a 'qualified' GHG emissions reduction plan. Methodology for some sections has been updated slightly to conform with the industry standard for California cities as recommended in the Association for Environmental Professionals (AEP) *California Supplement to the United States Community-Wide GHG Emissions Protocol* (California Supplement). GHG emission inventories are an iterative process, and each year must be viewed in the context of other inventories and relative trends of each GHG emissions sector to maintain consistency with the emissions inventory methods and factors.

GHG emissions contained within this inventory include activities under the jurisdictional control or significant influence of the City of Montclair, as recommended by AEP in preparing Community Protocol and CEQA-compliant inventories.[3] The municipal operations inventory included herein is a subset of the community-wide inventory, meaning the municipal emissions are included within the community-wide inventory.

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[1] California Air Resources Board. California Greenhouse Gas Emissions Inventory. Accessed at: https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf. Accessed on: October 2021.

[2] ICLEI. 2013. U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.1

[3] Association of Environmental Professionals. 2013. The California Supplement to the United States Community-Wide Greenhouse Gas (GHG) Protocol.

## 1.1 Greenhouse Gases

The 2017 City of Montclair Community Inventory was developed using the Community Protocol[4] and California Supplement.[5] Emissions from nitrous oxide ($N_2O$), methane ($CH_4$), and carbon dioxide ($CO_2$) are included in this assessment. Each GHG has a different capability of trapping heat in the atmosphere, known as its global warming potential (GWP), which is normalized relative to $CO_2$ and expressed as carbon dioxide equivalent, or $CO_2e$. The $CO_2e$ values for these gases are derived from the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) GWP values for consistency with the yearly California Air Resources Board (CARB) GHG inventory, as shown in Table 1.[6]These global warming potentials are the best available and most recent scientific evidence for carbon dioxide and nitrous oxide.

**Table 1 Global Warming Potentials of Greenhouse Gases**

| Greenhouse Gas | Molecular Formula | Global Warming Potential ($CO_2e$) |
|---|---|---|
| Carbon Dioxide | $CO_2$ | 1 |
| Methane | $CH_4$ | 25 |
| Nitrous Oxide | $N_2O$ | 298 |

Notes: MT $CO_2e$ = metric tons of carbon dioxide equivalent

## 1.2 Excluded GHG Emissions and Emission Sources

The following GHG emissions and emission sources are excluded from the 2017 inventory and emissions forecast.

### Consumption-Based GHG Emissions

GHG emissions from consumption of goods and services (such as food, clothing, electronic equipment, etc.) by residents of a city are excluded from the inventory and forecast of City of Montclair emissions. Currently there exists no widely accepted standard methodology for reporting consumption-based inventories.

### Natural and Working Lands

GHG emissions from carbon sinks and sources in natural and working lands are not included in this inventory and forecast due to the lack of granular data and standardized methodology. Natural and working lands are comprised of the forests, woodlands, rangelands, coastal areas, farmlands, and urban green spaces of California. GHG emissions from these lands result from the loss of carbon sequestration through land use change and fires. CARB has included a state-level inventory of

[4] ICLEI. 2012. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions.

[5] Association of Environmental Professionals. 2013. The California Supplement to the United States Community-Wide Greenhouse Gas (GHG) Protocol. Accessed at: https://califaep.org/docs/California_Supplement_to_the_National_Protocol.pdf. Accessed on: March 15, 2021.

[6] Intergovernmental Panel on Climate Change. 2007. Fourth Assessment Report: Climate Change. Direct Global Warming Potentials.

natural and working lands in the 2017 Scoping Plan[7] and 2022 Scoping Plan Update[8] greenhouse gas inventory; however, at the time of this City of Montclair community-wide inventory, sufficient data and tools were not available to conduct a jurisdiction-specific working lands inventory. The Nature Conservancy and California Department of Conservation[9] are exploring options for a tool which may be able to perform these inventories at a more specific geographic level.

### Agricultural Emissions

Emissions from agricultural activities are not included in this inventory as the Community Protocol and California Supplement[10] both note agricultural activity is not a required component of Community Protocol inventories and should be included only if relevant to the community conducting the inventory. Regulations exist to encourage urban agriculture within the City boundaries. Many of the emissions from these activities (e.g. energy) are covered under other sectors included in this inventory and no major commercial-scale livestock activity is noted within the city boundaries. Based on the land use map in the Montclair General Plan, zero percent of the City is utilized for agriculture.[11]

### High GWP

High GWP emissions, including chlorofluorocarbons (CFCs) and hydrofluorocarbons (HFCs) used as substitutes for ozone-depleting substances are not included in this inventory as it is not a required component of the Community Protocol, and the California Supplement notes these emissions are not generally included in California inventories.

## 1.3 Calculating GHG Emissions

GHG emissions are estimated using calculation-based methodologies to derive emissions using activity data and emissions factors. To estimate emissions, the basic equation below is used:

*Activity Data x Emission Factor = Emissions*

Activity data refer to the relevant measurement of energy use or other GHG-generating processes such as fuel consumption by fuel type, metered annual electricity consumption, and annual vehicle miles traveled. Emission factors are used to convert energy usage or other activity data into associated emissions quantities. They are usually expressed in terms of emissions per unit of activity data, such as pounds of carbon dioxide per kilowatt-hour (lbs $CO_2$/kWh).

As mentioned in the *Introduction*, GHG emissions calculation methodologies follow the guidance of the ICLEI Community Protocol for the Community Inventory, and the ICLEI *Local Government Operations Protocols (LGOP)* for the Municipal Inventory.

[7] California Air Resources Board. 2017. California's Climate Change Scoping Plan.

[8] California Air Resources Board. 2022. California's Climate Change Scoping Plan. Available at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents

[9] California Department of Conservation. TerraCount Scenario Planning Tool. Accessed at: https://maps.conservation.ca.gov/terracount/. Accessed on: May 15, 2019

[10] Association of Environmental Professionals. 2013. *The California Supplement to the United States Community-Wide Greenhouse Gas (GHG) Emissions Protocol.* https://califaep.org/docs/California_Supplement_to_the_National_Protocol.pdf

[11] The City of Montclair. 2020. Montclair General Plan

## 1.4 Reporting GHG Emissions

The following section discusses reporting of GHG emissions by scope and sector.

### 1.4.1 GHG Emissions by Scope

For municipal and community-wide inventories, emissions sources can be categorized by “scope” according to the entity’s degree of control over the emissions source and the location of the source. Emissions sources are categorized as direct (scope 1) or indirect (scope 2 or scope 3), in accordance with the World Resources Institute and the World Business Council for Sustainable Development’s *Global protocol for Community-Scale Emissions* and the ICLEI *LGOP*.

#### MUNICIPAL SCOPE DEFINITIONS

- **Scope 1:** Direct GHG emissions from sources within a local government’s operations that it owns and/or controls. This includes stationary combustion to produce electricity, steam, heat, and power equipment; mobile combustion of fuels; process emissions from physical or chemical processing; fugitive emissions that result from production, processing, transmission, storage and use of fuels; and other sources.
- **Scope 2:** Indirect GHG emissions associated with the consumption of electricity, steam, heating, or cooling that are purchased from a utility provider that also provides energy to other jurisdictions and/or is located outside City boundaries.
- **Scope 3:** All other indirect GHG emissions not covered in scope 2, such as emissions resulting from the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the City (e.g., employee commuting and business travel, outsourced activities, waste disposal, etc.).

#### COMMUNITY-WIDE SCOPE DEFINITIONS

- **Scope 1:** Direct GHG emissions from sources located within the jurisdictional boundaries of the community, including direct emissions from natural gas combustion in homes and businesses within the community.
- **Scope 2:** Indirect GHG emissions associated with the consumption of electricity within the community.
- **Scope 3:** All other indirect or embodied GHG emissions not covered in scope 2, which occur because of activity within the jurisdictional boundaries (e.g., methane emitted at landfills outside the community resulting from solid waste generated within the community).

### 1.4.2 Emissions by Sector

In addition to categorizing emissions by scope, ICLEI recommends that local governments examine their emissions in the context of the sector that is responsible for those emissions. Many local governments will find a sector-based analysis more directly relevant to policy making and project management, as it assists in formulating sector-specific reduction measures and Climate Action Plan components.

The municipal and community inventories report emissions by the following sectors:

- Energy

- Transportation
- Water consumption and wastewater treatment
- Solid waste

Table 2 summarizes the interaction of emissions scope and sector in the municipal and community-wide inventories.

**Table 2 Emissions by Sector and Scope**

| Sector | Scope 1 | Scope 2 | Scope 3 |
|---|---|---|---|
| **Municipal Inventory** | | | |
| Energy | Natural Gas | Electricity | NA |
| Vehicle Fleet | Gasoline, Diesel, CNG | NA | Employee Commute |
| Water and Wastewater | NA | NA | Electricity (associated with water conveyance and treatment, and wastewater treatment); |
| Solid Waste | NA | NA | Methane from decomposition of waste at landfill and process emission |
| **Community-wide Inventory** | | | |
| Energy | Natural Gas | Electricity | NA |
| Transportation | On-road transportation, Off-road equipment | NA | Transit (i.e. public transit, freight rail) |
| Water Consumption | NA | NA | Electricity (associated with water conveyance) |
| Wastewater | NA | NA | Electricity (associated with wastewater treatment) |
| Solid Waste | NA | NA | Methane from decomposition of community waste in landfill and process emissions |

Notes: CNG: Compressed natural gas; NA: Not applicable

# 1.5 GHG Emissions Forecast Target Years

The GHG emissions forecast is based on the latest available data from City GHG inventories, in this case the 2017 inventory completed as part of this Climate Action Plan. This forecast uses benchmark years of 2030, 2040, and 2045, consistent with currently codified state GHG reduction goals set by legislation and executive orders, and the City's General Plan horizon year, as summarized below:

- 2030 (SB 32)
- 2040 (General Plan horizon year)
- 2045 (AB 1279)

The 2030 and 2040 targets are required for consistency with SB 32 and the City of 2040 General Plan respectively, while the remainder of the targets identify a clear path and milestones of progress toward the long-term state reduction goals.

# 2 2017 Municipal GHG Inventory

The Municipal GHG Inventory quantifies the GHG emissions generated by local government operations for the City of Montclair. By better understanding the relative scale of emissions from each sector, the City can more effectively focus strategies to achieve the greatest emissions reductions.

Reporting emissions by sector provides a useful way to understand the sources of the City's emissions. The ICLEI *LGOP* further categorizes sectors by the following sub-sectors for local government operations: 1) buildings and other facilities, 2) streetlights and traffic signals, 3) water delivery facilities, 4) port facilities, 5) airport facilities, 6) vehicle fleet, 7) transit fleet, 8) power generation facilities, 9) solid waste facilities, 10) wastewater facilities, and 11) all processes and fugitive emissions. The City of Montclair does not have operational control of a port or airport, or does it manage solid waste facilities; therefore, these emission sub-sectors are excluded. Local government operations are discussed only in terms of sectors and sub-sectors the City has operational control over. Accordingly, the GHG emission sectors reported are provided in Table 3, with the associated GHG emissions sources.

**Table 3 Municipal GHG Emissions Sectors and Sources**

| Sector | Emissions Source |
|---|---|
| Energy | Natural Gas (buildings & facilities) |
| | Electricity (buildings & facilities) |
| | Electricity (traffic signals and streetlights) |
| | Electricity (water delivery facilities) |
| Transportation | Vehicle Fleet |
| | Employee Commute |
| Water and Wastewater | Water Consumption |
| | Wastewater Generation |
| Waste | Solid Waste Generation |

## 2.1 Municipal GHG Inventory Methodology

The Municipal GHG Inventory uses activity data obtained from the City of Montclair to calculate the GHG emissions associated with the local government operations based on the ICLEI *LGOP*, developed in partnership with CARB, California Climate Action Registry, and the Climate Registry.[12] Activity data was obtained from the City of Montclair, primarily through communication with City

[12] CARB, et al. 2010. Local Government Operations Protocol For the quantification and reporting of greenhouse gas emissions inventories. https://www.theclimateregistry.org/tools-resources/reporting-protocols/local-goverment-operations-protocol/

staff. The following is a description of the methodology and data used to calculate emissions for each of the municipal GHG emission sectors.

## Municipal Energy

Energy emissions consist of natural gas burned in City facilities and buildings for water and space heating (scope 1), and electricity consumed in buildings and facilities, lighting, traffic signals, and water delivery facilities (scope 2). Emissions associated with natural gas and electricity consumption were calculated using ICLEI *LGOP* Method 6.1.1 and 6.2.1, respectively. Table 4 provides the activity data and emission factors used for emission calculations, as well as the GHG emission results.

**Table 4 Energy Sector Municipal GHG Emissions**

| Sector/Emission Source | Activity | Emission Factor | Total Emissions (MT $CO_2e$) |
|---|---|---|---|
| **Natural Gas**[1] | | | **121** |
| Buildings and Facilities | 22,789 therms | 0.00531 MT $CO_2e$/Therm[2] | 121 |
| **Electricity**[3] | | | **1008** |
| Traffic and Street Lighting | 1,909,462 kWh | 0.000249 MT $CO_2e$/kWh[4] | 475 |
| Building & Other Facility Use | 2,138,281 kWh | | 532 |
| **Energy Sector Total** | | | **1,129** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = Metric Tons of Carbon Dioxide Equivalent; kWh = kilowatt-hour
1. Natural Gas activity data was provided by the City of Montclair in the form of "SCG - Customer Gas Usage and Total Billed Summary for 2017" on July 5th 2019 for all municipal natural gas accounts.
2. Emission factors obtained from United States Environmental Protection Agency Emission Factors for Greenhouse Gas Inventories, Table 1. https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf
3. SCE provided electricity usage summary data for the City of Montclair.
4. Delivered electricity emission factors as CO2e used (lbs/ MWh) and converted to MT $CO_2e$ / kWh.[13]

## Municipal Transportation

Municipal GHG emissions from the transportation sector are categorized into two primary sources, employee commute and municipal fleet, for which the activity data and emission calculations are described in the following section.

### *Employee Commute*

Employee commute emissions are a scope 3 emissions source and largely out of the direct control of the City; however, the City can provide incentive for employees to utilize less carbon intensive means of commuting, such as cycling/walking/scooting, ridesharing, or public transit. In 2017, the City of Montclair had a total of 154 full-time City employees and 129 part-time employees.[14] Employee commute vehicle miles traveled (VMT) was calculated using the results of an employee commute survey, from one-way mileage measured from the employee's home zip code to the city center of Montclair. Annual VMT was estimated by multiplying the total miles traveled per day for all employees by the number of workdays per year. The employee commuter survey indicated that a

[13] Edison International 2017 Sustainability Report (p. 10), June 2018. https://www.edison.com/content/dam/eix/documents/sustainability/eix-2017-sustainability-report.pdf
[14] City of Montclair provided employee data via Payroll list.

majority (90%) of employees used a passenger vehicle which was applied as mode of transportation. It was estimated that full-time employees work an average of 240 days per year, and part-time employees an average of 120 days per year; assuming all employees did not work on federal holidays and those full-time employees would take two weeks of vacation, with part-time employees assumed to work half the time of full-time employees. Assumptions above are considered to give a conservative estimate of employee commute patterns. CARB's Emission Factors (EMFAC) model EMFAC2021[15] emission factors for the San Bernardino County region in 2017 were used to determine employee commute emissions. The activity data, emission factors, and resulting emissions are provided in Table 5.

**Table 5 Employee Commute Municipal GHG Emissions**

| Sector/Emission Source | Activity[1,2] | Emission Factor | Total Emissions (MT $CO_2e$) |
|---|---|---|---|
| Combustion Vehicles | 1,401,571 VMT/year | 0.0003805 MT $CO_2e$/mile[3] | 533 |
| Electric Vehicles | 8,189 VMT/year | 0.000249 MT $CO_2e$/kWh[4] | 0.7 |
| **Employee Commute Total** | **NA** | **NA** | **534** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
VMT = Vehicle Miles Traveled; EV = Electric Vehicle; MT CO2e = Metric Tons of $CO_2e$
1. Round trip miles traveled were estimated using google maps where one-way mileage was measured from center of employee's home zip code to city center of Montclair. Estimated VMT is the sum of all round-trip mileage for all employees. VMT is broken out as combustion vehicle VMT vs. electric vehicle VMT based on EV-penetration rates reported on a County basis by EMFAC2021.
2. Annual VMT was estimated by multiplying miles traveled per day by workdays. VMT was not further adjusted as employee commute survey indicated that a majority (90%) of employees used an auto to travel to work.
3. Emission factors were obtained from EMFAC2021 where model years and speed were aggregated over vehicle categories and fuels using a VMT-weighted average. Emission factor for combustion vehicles account for distribution of vehicles using different fossil fuel types.
4. EMFAC2021 provides energy data on electric vehicles electricity use, in annual kilowatt-hours. Based on energy consumption by mileage it was determined that 0.338 kWh of electricity was consumed per mile; EV VMT was converted to annual kwh consumed. Emission factor for EV electricity use based on utility provider (i.e. SCE) electricity in 2017.

### *Municipal Fleet*

Municipal fleet vehicles and equipment combust gasoline, diesel, compressed natural gas (CNG), and liquid propane gas (LPG) generating scope 1 GHG emissions. The City owns and operates a number of on-road vehicles, including passenger vehicles, light-duty trucks, and light- and medium-heavy duty trucks, as well as off-road equipment. GHG emissions are calculated using ICLEI *LGOP* Methods 7.1.1 and 7.1.3.2.1, emissions from the City's fleet were calculated by multiplying the activity data from City provided fuel usage reports (gallons of diesel, gasoline, LPG and scf of CNG) by the emission factor for each fuel type. The emission factors for diesel, gasoline, CNG, and LPG were obtained from the United States Environmental Protection Agency's (USEPA) *Emission Factors for Greenhouse Gas Inventories.*[16] This database provides mobile emission factors for fuel in kilograms per gallon (or scf for CNG) for $CO_2$ but grams per mile for $CH_4$ and $N_2O$. Therefore, mileage by vehicle class and fuel type was estimated based on each vehicle's model year and the average fuel economy (in MPG) for each vehicle class obtained from the U.S. Department of Energy's

[15] CARB. (2021) Emissions Inventory, EMFAC 2021 model v1.01.1. Accessed October 2021 from: https://arb.ca.gov/emfac/emissions-inventory/43c4fb407b5290c4aa6bc403e03c79c39ed6224a

[16] USEPA. 2021. Emission Factors for Greenhouse Gas Inventories. https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf

Alternative Fuels Data Center.[17] EPA's GHG $CH_4$ and $N_2O$ mobile emissions factors for each vehicle class and fuel type was applied to the estimated mileage by vehicle class to determine emissions . For off-road equipment the emission factors for general construction equipment by fuel type were applied to the activity data, gallons of fuel consumed. Table 6 provides the fuel consumption associated with the municipal fleet, weighted emission factors by fuel type, and calculated total emissions.

### Table 6 Municipal Fleet GHG Emissions

| Sector/Emission Source | Activity[1] | Emission Factor[2,3,4] | Total Emissions (MT $CO_2e$) |
|---|---|---|---|
| **Fleet Vehicles and Equipment Fuel Consumption** | | | |
| Diesel | 16,187 gal | 0.01035 $CO_2e$/gal | 167 |
| Unleaded Gasoline | 59,305 gal | 0.00882 $CO_2e$/gal | 523 |
| Compressed Natural Gas (CNG) | 2,780 scf | 0.00703 MT $CO_2e$/scf | 20 |
| Liquid Propane Gas (LPG) | 4,558 gal | 0.00583 MT $CO_2e$/gal | 27 |
| **Municipal Fleet Total** | | | **736** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
gal=gallons; ; MT CO2e = Metric Tons of $CO_2e$; scf = standard cubic foot
1. City provided bulk fuel purchases and a fleet list including model years and vin numbers.
2. Emission factors obtained from EPA emission actor database for mobile vehicles. Emission factors for $CO_2$ were provided by fuel type for mobile vehicles.
3. Emission factors for CH4 and N2O were provided as grams/mile by fuel type and based on vehicle class. Therefore, fuel economy in miles per gallon was averaged for each vehicle class and fuel type. Fuel economy by vehicle class was used to estimate mileage from fuel quantity to apply mobile $CH_4$ and $N_2O$ emission factors in g/mile.
4. Presented emission factor is the weighted average by fuel type, including all vehicle classes using consuming that fuel based on provided fleet list.

## Municipal Water and Wastewater

Municipal GHG emissions from water and wastewater were calculated based on the total water consumption of municipal operations. It was conservatively estimated that wastewater generation was equivalent to water consumption. In 2017, the City of Montclair used approximately 87 million gallons (MG) of potable water for facilities operations and irrigation of public parks maintained by the City.[18] Emissions generated from water usage and wastewater generation is due to the indirect electricity used to distribute water and collect and treat wastewater. The energy intensity for water use in the City of Montclair was not available. Based on the characteristics of Montclair's water purveyor, Monte Vista Water District (MVWD), ICLEI Community Protocol default values were applied. Based on groundwater well depth the high value default energy intensity factor for groundwater extraction was used. The median value for local water conveyance and distribution was applied, while the low default value for water treatment was applied based on treatment

[17] U.S. Department of Energy, Alternative Fuels Data Center. (2020). *Average Fuel Economy by Major Vehicle Category*. Accessed December 2021 from: https://afdc.energy.gov/data/10310

[18] Montclair water comes from Monte Vista Water District (MVWD) where 75% is ground water (primarily Chino Basin with some from adjacent Basins) and 25% is imported surface water from the State Water Project (SWP) (MVWD 2015 UWMP).

method and capacity indicated by MVWD. Activity data, energy intensity factors, emission factors , and GHG emission totals are provided in Table 7.

**Table 7 Water and Wastewater Sector Municipal GHG Emissions**

| Emission Source | Activity | Energy Intensity | Emission Factor | Total Emissions (MT $CO_2e$) |
|---|---|---|---|---|
| Water Consumption[1] | 87.3 MG | 5,193 kWh/MG[2] | 0.000249 MT $CO_2e$/kWh[3] | 109 |
| Wastewater Generation | | 1,341.3 kWh/MG[3] | | 29 |
| **Water and Wastewater Sector Total** | | | | **138** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = Metric Tons of Carbon Dioxide Equivalent; MWh = Megawatt-hour; MG = Million Gallons
1. Montclair water comes from Monte Vista Water District (MVWD) where 75% is ground water (primarily Chino Basin with some from adjacent Basins) and 25% is imported surface water from the State Water Project (SWP) (MVWD 2015 UWMP)
2. Energy intensity factor is combined energy intensity of each part of the water cycle including local ground water and imported SWP water. The following characteristics were used to determine the default ICELI CP energy intensities to apply for local groundwater: 1) Water supply: MVWD groundwater wells are in an area where the average depth to groundwater is 515 feet (http://www.cbwm.org/docs/engdocs/maps/Figure%2037%20Depth%20to%20GW%202016.pdf), therefore the high default value for groundwater extraction was used; 2) Water conveyance: Montclair is within the Chino Basin boundaries and is serviced through a pipeline network (MVWD 2015 UWMP), therefore median value for "local water" conveyance was applied; 3) Water treatment: groundwater water is treated with chlorine at the production wells with a 1- 3 mgd capacity prior to distribution (MVWD 2015 UWMP), therefore default low value for water treatments with a 1-5 MGD capacity was used; 4) Water distribution: MVWD is split into 4 pressure zones where approximately half of the city of Montclair falls into MVWD pressure zone 2, a third in pressure zone 1, and 1/6 in pressure zone 3. Water is distributed from wells and a hydrogenator in the area (zone 1), gravity fed reservoirs, booster pumps and pressure reducing valves, therefore the default median water distribution value was used.
3. Energy intensity factor is combined energy intensity factor for water collection and treatment using agency specific energy intensity factors obtained from the IEUA 2015 UWMP Chapter 8: Voluntary Reporting of Energy Intensity.
4. SCE is electricity provider for City of Montclair, therefore SCE emission factors in 2017 used

## Municipal Waste

Many local government facilities and operations generate solid waste, much of which is eventually sent to a landfill. Typical sources of solid waste from local government operations include paper and food waste from offices and facilities, construction waste from public works, and plant debris from parks departments. Organic materials generate methane as they decay in the anaerobic environment of a landfill. The waste generation for the City was calculated using total employees multiplied by the CalRecycle waste generation rate of 0.59 tons per employee per year and ICLEI default emission factors for landfilled waste.[19] GHG emissions were calculated using ICLEI Community Protocol Method SW.4, where the landfill gas capture rate for the facilities for which the community's waste is sent to was estimated at 75 percent efficiency, and the default emission factor of 0.06 short tons of $CH_4$ per short ton of waste. The methodology is further detailed in Section 3.5. Solid waste activity data generated by City operations, emission factors, and total emissions are provided in Table 8.

[19] CalRecycle. Estimate Solid Waste Generation Rates. https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates

**Table 8 Waste Sector Municipal GHG Emissions**

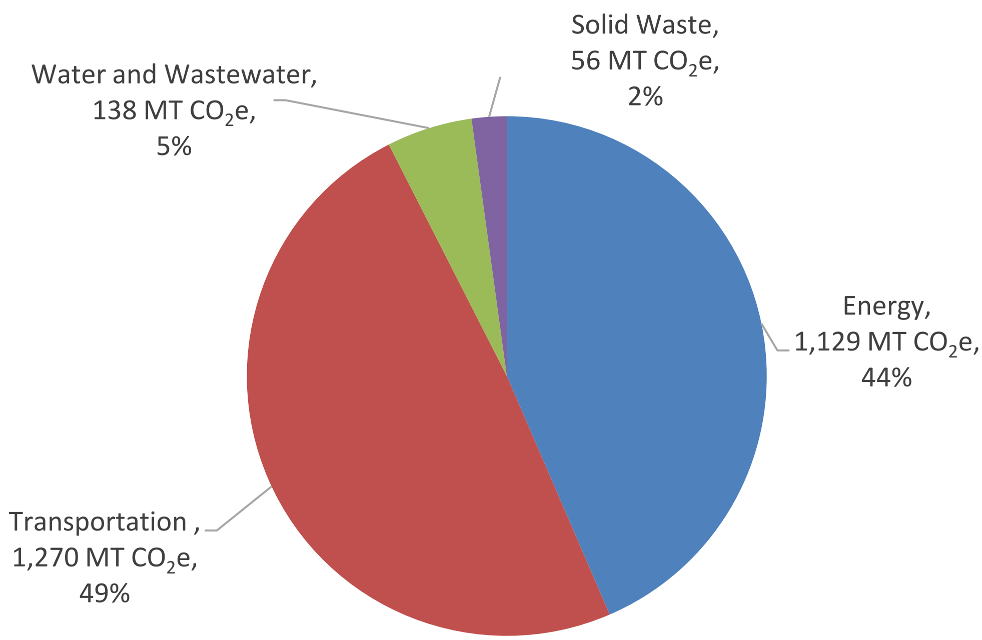
| Emission Source | Activity | LFG capture rate | Emission Factor | Total Emissions (MT $CO_2e$) |
|---|---|---|---|---|
| Solid Waste Landfilled | 167 tons[1] | 0.75 [2] | 0.06 MT $CH_4$/short ton[2] | 56 |
| **Waste Sector Total** | | | | **56** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = Metric Tons of Carbon Dioxide Equivalent; MT $CH_4$ = Metric Tons of Methane; LFG = Landfill Gas Capture
1. In 2017, Montclair had a total of 283 employees on payroll. Tons of waste was estimated by multiplying employees by CalRecycle waste generation rate of 0.59 tons per employee.
2. Calculations and default emission factors from ICELI Community Protocol are used (method SW.4)

## 2.2 Municipal GHG Inventory Results

Municipal operations of the City of Montclair generated a total of 2,594 MT $CO_2e$ in 2017. As shown in Table 9 and Figure 1, transportation use resulted in the greatest quantity of emissions, resulting in 1,270 MT $CO_2e$ (49% of total municipal emissions), where 736 MT $CO_2e$ (28% of total municipal emissions) was due to vehicle fleet and 534 MT $CO_2e$ (21% of total municipal emissions) was due to employee commute. The second greatest quantity of emissions was energy, resulting in 1,129 MT $CO_2e$ (44% of total emissions), where natural gas use generated 121 MT $CO_2e$ (5% of total emissions), building electricity use generated 532 MT $CO_2e$ (21% of total municipal emissions), and the City's streetlights and traffic signals produced 475 MT $CO_2e$ (18% of total municipal emissions). The City's water consumption and wastewater generation were the third largest source of emissions in 2017 with 138 MT $CO_2e$ (5% of total municipal emissions), where water use accounted for 109 MT $CO_2e$ (4% of total municipal emissions), and wastewater generation accounted for 29 MT $CO_2e$ (1% of total municipal emissions). The generation of solid waste was the smallest source of emissions, generating 56 MT $CO_2e$ (2% of total municipal emissions).

**Figure 1 Municipal GHG Emissions by Sector**



### Table 9 Baseline Municipal GHG Emissions Summary by Sector

| Sector | GHG Emissions (MT $CO_2e$) | Percent of Total Emissions |
|---|---|---|
| **Energy** | **1,129** | **44%** |
| Natural Gas (buildings & facilities) | 121 | 5% |
| Electricity (buildings & facilities) | 532 | 21% |
| Electricity (traffic signals and streetlights) | 475 | 18% |
| **Transportation** | **1,270** | **49%** |
| Vehicle Fleet | 736 | 28% |
| Employee Commute | 534 | 21% |
| **Water and Wastewater** | **138** | **5%** |
| Water Consumption | 109 | 4% |
| Wastewater Generation | 29 | 1% |
| **Solid Waste** | **56** | **2%** |
| **Total Emissions** | **2,594** | **100%** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = Metric Tons of Carbon Dioxide Equivalent

# 3 2017 Community GHG Inventory

The 2017 Community GHG Inventory provides a baseline for forecasting of future GHG emissions and setting of GHG reduction targets, to be included as part of the Climate Action Plan (CAP). GHG emissions were calculated and reported based on the guidance of the ICLEI Community Protocol. Methodologies, data sources, calculations, and results of the 2017 Community GHG Inventory are included in this section.

## 3.1 2017 Community GHG Inventory Data Sources

The data used to complete the 2017 Community GHG Inventory came from multiple sources, including utility providers, traffic consultants and the City of Montclair. The data sources for the 2017 Community GHG Inventory are summarized in Table 10.

**Table 10 Community GHG Inventory Data Sources**

| Sector | Activity Data | Unit | Source |
|---|---|---|---|
| Energy | Electricity consumption | kWh | SCE |
| | Natural gas consumption | therms | SCG |
| Transportation | Vehicle miles traveled | VMT | Fehr & Peers |
| Water | Water consumption | MG | Monte Vista Water District |
| Wastewater | Wastewater generation | EDUs | Inland Empire Utilities Agency |
| Solid Waste | Landfilled solid waste | Tons | CalRecycle Jurisdiction Disposal Summary Report |

Notes: kWh = kilowatt hours; SCE = Southern California Electricity; SCG = Southern California Gas Company; VMT = vehicle miles traveled; gpcd = gallons per capita per day; MG = Million Gallons EDU= Equivalent Dwelling Unit
1. 1 EDU=200 gallons

## 3.2 Community Energy

The community energy sector includes GHG emissions resulting from the consumption of electricity and natural gas. Total consumption for electricity is provided from SCE and natural gas data is provided by SCG. These are the two energy sources used in residential, commercial, and industrial buildings and for other power needs throughout the City of Montclair. A summary of the community energy sector GHG emissions is provided in Table 11, with the methodology of emission calculations detailed in the following section.

**Table 11 Community Energy GHG Emissions Summary**

| Emission Source | Activity Data[1] | Emissions (MT $CO_2e$) |
|---|---|---|
| Natural Gas | NA | 24,741 |
| Electricity | NA | 41,540 |
| Transmission and Distribution Losses | NA | 1,765 |
| **Total** | **NA** | **68,047** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide equivalent; NA = Not Applicable
1. Due to California Public Utilities customer privacy rules, natural gas and electricity consumption data requested through the Energy Data Request Program cannot be published.

## Natural Gas

GHG emissions from community natural gas consumption were calculated using the ICLEI Community Protocol Method BE.1.1. The total natural gas consumed was provided by Southern California Gas (SCG) in therms and converted to MMBtu.[20] The natural gas value was then multiplied by the USEPA recommended natural gas emission factors of 53.06 kg $CO_2$/MMBtu, 0.001. kg $CH_4$/MMBtu and 0.0001 kg $N_2O$/MMBtu; equating to 0.00531 MT $CO_2e$/therm.[21] The CPUC prohibits the public disclosure of natural gas consumption data that has been provided through the Energy Data Request Program (EDRP). Therefore, only emission totals for the entire community are provided, which aggregates the residential and non-residential customer classes. Accordingly, Montclair community natural gas consumption in 2017 resulted in GHG emissions equivalent to 24,741 MT $CO_2e$.

## Electricity

GHG emissions from community electricity consumption were calculated using the ICLEI Community Protocol Method BE.2 by multiplying annual electricity consumption in the City of Montclair by an electricity emission factor representing the average emissions associated with generation of one kilowatt hour (kWh) of electricity. In 2017, electricity was supplied to Montclair by SCE. To calculate emissions from electricity, the total electricity use reported by SCE was multiplied by the carbon intensity factor of 549 pounds $CO_2e$ per MWh, which was converted to 0.000249 MT $CO_2e$ per kWh.[22] The community energy consumption was obtained from SCE through the EDRP. Similar to natural gas activity data, the CPUC prohibits the public disclosure of electricity consumption data that has been provided through the EDRP. Therefore, only emission totals for the entire community are provided, which aggregates the residential and non-residential customer classes. Industrial sector consumption is not included in the electricity consumption data. In 2017, a total 41,540 MT $CO_2e$ was generated within the community due to electricity use.

[20] 1 MMBtu = 10.0024 therms; 1 kg $Co_2e$ = 1 kg $CO_2$ + 1/(25 kg $CH_4$) + 1/(298 kg $N_2O$)

[21] USEPA. 2021. Emission Factors for Greenhouse Gas Inventories. https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf

[22] Edison International. 2018. Edison International 2017 Sustainability Report. pp. 10 https://www.edison.com/content/dam/eix/documents/sustainability/eix-2017-sustainability-report.pdf.

### Community Transmission and Distribution Losses

In addition to energy consumption, the amount of GHG emissions generated due to electricity transmission and distribution (T&D) losses were determined, as recommended by the ICLEI Community Protocol. T&D losses occur as electricity is transported from its generation source to its final end use destination. Transmission losses occur in the form of heat as electricity meets the small resistance in wires, and distribution losses occur when electricity is transformed from higher to lower voltage wires. Although emissions generated due to electricity T&D losses are outside of the City's operational control, emissions related to T&D losses are directly related to electricity use within the community and should be included in the community emissions.[23] GHG emissions from community T&D losses were calculated using the ICLEI Community Protocol Method BE.4. T&D loss associated emissions were determined by multiplying the total community electricity consumption in 2017 by 4.23%, the grid loss factor for the California sub-region (CAMX) determined by the USEPA in the 2018 *Emissions and Generating Resource Integrated Databases (eGRID)*.[24] Due to the CPUC data privacy restrictions of the EDRP, the total community electricity consumption cannot be published. Emissions associated with community electricity T&D losses were 1,765 MT of $CO_2$e in 2017.

## 3.3 Community Transportation

The transportation sector for the 2017 Community GHG Inventory consists of GHG emissions from on-road commercial and passenger vehicle travel, public transit buses and rail, and off-road equipment. A summary of the community transportation sector GHG emissions is provided in Table 12, with the methodology of emission calculations detailed in the following section.

**Table 12 Community Transportation GHG Emissions Summary**

| Emission Source | Activity Data | Emissions (MT $CO_2$e) |
|---|---|---|
| Passenger On-Road Transportation | 402,568,507 VMT | 152,492 |
| Commercial On-Road Transportation | 23,008,631 VMT | 31,086 |
| Public Transit – Bus | 465,510 VRM within jurisdiction | 951 |
| Public Transit- Intercity Rail | 1,434 gallons diesel within jurisdiction | 15 |
| Rail Freight | 278,209 gallons of diesel | 2,867 |
| Off-road Equipment - Diesel | 706,725 | 7,2766 |
| Off-road Equipment - Gasoline | 115,576 | 1,046 |
| Off-road Equipment – Natural Gas[1] | 82,468 | 479 |
| **Total** | **NA** | **196,213** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
VMT = Vehicle Miles Traveled; VRM = Vehicle Revenue Miles; MT $CO_2$e = metric tons of carbon dioxide equivalent; NA = Not Applicable

[23] ICLEI 2019. U.S. Community Protocol for Account and Reporting Greenhouse Gas Emissions. Pg. 36.
[24] USEPA's 2017 eGRID database, February 2018. https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid

## Community On-Road Transportation

Community on-road transportation GHG emissions were calculated for passenger and commercial vehicles based on VMT. Accordingly, ICLEI Community Protocol Methods TR.1.B and TR.2.C were used to estimate GHG emissions for 2017. Activity data was obtained through transportation modeling for VMT attributed to the City of Montclair, completed by Fehr & Peers, a traffic consultant. The San Bernardino County Regional Travel model (SBTAM), consistent with the SCAG 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), was used to model traffic volumes, and quantify VMT attributed to Montclair. The VMT modeling results allocate VMT to the City of Montclair using the Origin-Destination (O-D) method. The O-D VMT method is the preferred method recommended by the *Community Protocol* in on-road methodology TR.1 and TR.2 to estimate VMT based on trip start and end locations. Under these recommendations, all VMT associated with trips that start and end entirely within the City (Internal-Internal or I-I) are attributed fully to the City. Additionally, one half of the VMT associated with trips that start internally and end externally and vice versa (Internal-External or I-X and External Internal or X-I) are attributed to the City. The remainder of the trips are considered pass-through trips, which are not attributed to the City, but instead attributed to the Cities in which the trips originate or end.

The GHG emissions associated with on-road transportation were calculated by multiplying the estimated VMT by vehicle class (i.e., passenger vs commercial) by a VMT weighted emission factor calculated using CARB's EMFAC2021 modeling for vehicles within the region. EMFAC2021 provides detailed data on a county-wide basis that includes annual electricity use by electric vehicles (EV) in kilowatt-hours (kWh), VMT associated with electricity powered vehicles, VMT associated with internal combustion engine vehicles (ICE), total VMT, and annual emissions. The data was aggregated into passenger and commercial vehicle categories. EMFAC2021 data was used to determine the percent of EV penetration in 2017 by dividing electric VMT by total VMT and to determine the energy efficiency for passenger and commercial electric vehicles by dividing total energy consumption in kWh by electric VMT for each vehicle category. Annual electric VMT in the City of Montclair in 2017 was estimated by multiplying the total annual City-wide VMT by vehicle category by the corresponding EV penetration rate for that vehicle category. Annual electricity usage by vehicle category was determined by multiplying the calculated electric VMT by the energy efficiency (kWh/mile). The 2017 SCE electricity emission factor was applied to the annual electricity usage for EVs to quantify emissions associated with EVs in Montclair in 2017. To avoid double counting with the energy sector, the electricity usage and associated emissions with EVs was backed out of the SCE reported electricity usage for the community.

Annual ICE VMT was calculated by subtracting the estimated annual electric VMT from the total City VMT for each vehicle category. Emissions due to passenger vehicle operation are calculated using the recommended Community Protocol Method TR.1.A. Because emissions data were not provided, only VMT, ICLEI Methods TR.1.B.2 and TR.1.B.3 are used to convert provided VMT data into emissions data and calculate regional emission factors from CARB's EMFAC2021 model for ICE passenger vehicles by dividing annual $CO_2$, $CH_4$ and $N_2O$ emissions by the ICE VMT. Based on EMFAC2021 data, a weighted emission factor is calculated using the mix of vehicle class specific to the county. EMFAC2021 characterizes the vehicle class mix for each county based on the most recent Department of Motor Vehicle (DMV) registration data as well as several other sources for the heavy-duty vehicle population such as International Registration Plan (IRP) Clearinghouse data, vehicle data from California Highway Patrol (CHP), and the National Transit Database (NTD). Emissions from freight and service trucks (i.e., medium, and heavy-duty trucks) are calculated using Community Protocol Method TR.2.C, which is similar to calculating passenger emissions. The weighted ICE emission factor by vehicle category was applied to the ICE VMT by vehicle category to determined GHG emissions from ICE vehicles.

The activity data, emission factors and total GHG emissions from on-road transportation are provided in Table 13. Activity data is provided in O-D format, with VMT categorized based on whether the associated trips originate and end within the City (I-I), begin outside of the City and end within (X-I), or vice versa (I-X).

## Table 13 Community On-road Transportation GHG Emissions

| Data | 2017 |
|---|---|
| **Passenger Vehicle** | |
| Total Annual Passenger VMT[1,2] | 402,568,507 |
| Percent of Passenger EV Penetration (%)[3] | 0.6% |
| Passenger ICE Vehicle VMT[3] | 400,230,079 |
| ICE Emission Factor (MT $CO_2$e/mile)[4] | 0.000381 |
| Passenger ICE Vehicle Emissions (MT $CO_2$e) | 152,295 |
| Passenger EV VMT[3] | 2,338,428 |
| Passenger Energy Efficiency (kWh/mile)[5] | 0.34 |
| Passenger EV Vehicles kWh | 791,096 |
| Emission Factor (MT $CO_2$e/kWh)[6] | 0.000249 |
| Passenger EV Vehicle Emissions (MT $CO_2$e) | 197 |
| ***Total Passenger Vehicle Emissions (MT $CO_2$e)*** | ***152,492*** |
| **Commercial Vehicle** | |
| Total Commercial VMT[1,2] | 23,008,631 |
| Percent of Commercial EV Penetration (%)[3] | 0.0% |
| Commercial ICE Vehicle VMT[3] | 23,008,631 |
| ICE Emission Factor (MT $CO_2$e/mile)[4] | 0.00135 |
| Commercial ICE Vehicle Emissions (MT $CO_2$e) | 31,086 |
| ***Total Commercial Vehicle Emissions (MT $CO_2$e)*** | ***31,086*** |
| **Total On-road Emissions (MT $CO_2$e)** | **183,577** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2$e = metric tons of carbon dioxide equivalent; VMT = vehicle miles traveled; EVs = electric vehicles; ICE = internal combustion engine
1. O-D trip type represent the origin destination pair designation of each vehicle trip contributing to community VMT. This is based on whether the associated trips originate and end within the City (Internal-Internal or I-I), begin outside of the City and end within (External- Internal or X-I), or vice versa (Internal-External or I-X)
2. Weekday to annual conversion of 347 is used per CARB guidance on VMT modeling.
3. EMFAC2021 EV penetration rate for San Bernardino County by vehicle class applied to VMT to determine ICE vs EV VMT by vehicle class. In 2017, EV penetration for commercial vehicles was 0% so no commercial VMT was allocated as EVs.
4. ICE emission factors are weighted by vehicle type and fuel type within each vehicle class. Determined by dividing ICE emissions by emissions by vehicle class.
5. Energy efficiency of EVs determined by diving energy consumption by EV VMT by vehicle class.
In 2017, EV penetration for commercial vehicles was 0% so no commercial VMT was allocated as EVs.
6. EV emission factor based on electricity utility provide, SCE, 2017 emission factor.

## Community Public Transit

Transit that operates within Montclair were determined based on the Montclair Transcenter website.[25] GHG emissions from public transit are attributed to Montclair based on the miles of public bus routes and commuter rail within the City and the light rail ridership from stops within the City. Operational information for each agency was obtained from the transit agency profiles and annual fuel and energy data were obtained from the National Transit Database (NTD).[26,27] Transit emissions were first calculated for each agency operating in Montclair using ICELI methods TR.4.A and TR.4.B, where NTD reported fuel consumption data was multiplied by the fuels emission factor for buses. ICLEI method TR.4.D was used to determine attribution of emissions to the community based on the amount of total vehicle revenue miles for the agency that were traveled within Montclair's city boundaries. Activity data and emissions attributed to the City from public transit are provided in Table 14.

[25] Foothill Transit. Montclair Transit Center. http://foothilltransit.org/lines-and-schedules/transit-centers/montclair-transcenter/

[26] https://www.transit.dot.gov/ntd/transit-agency-profiles

[27] https://www.transit.dot.gov/ntd/data-product/2015-fuel-and-energy

### Table 14 VMT and GHG Emissions for Bus Services within the City of Montclair

| Route[1] | Annual VRM by Agency[2] | Annual VRM within City[3] | City VRM Attribution[4] | Agency Annual Emissions (MT CO2e)[5] | City Emissions Attribution (MT CO2e) |
|---|---|---|---|---|---|
| Foothill Transit - Silver Streak | 12,435,234 | 95,014 | 0.76% | 37,154 | 284 |
| Foothill Transit - 188 | | 34,882 | 0.28% | | 104 |
| Foothill Transit - 197 | | 12,299 | 0.10% | | 37 |
| Foothill Transit - 480 | | 52,586 | 0.42% | | 157 |
| Foothill Transit - 492 | | 45,802 | 0.37% | | 137 |
| Foothill Transit - 690 | | 1,829 | 0.01% | | 5 |
| Foothill Transit - 699 | | 29,134 | 0.23% | | 87 |
| Omnitrans-66 | 8,833,288 | 34,988 | 0.40% | 528 | 2 |
| Omnitrans-85 | | 70,154 | 0.79% | | 4 |
| Omnitrans-88 | | 43,157 | 0.49% | | 3 |
| Omnitrans-290 | | 19,943 | 0.23% | | 1 |
| Riverside Transit-204 | 1,358,195 | 9,410 | 0.69% | 3,156 | 22 |
| Metrolink-San Bernardino Line | 13,133,012 | 9,580 | 0.07% | 87,162 | 64 |
| Metrolink-Riverside Line | | 6,732 | 0.05% | | 45 |
| **Total** | | | | | **951** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide equivalent; VRM = vehicle revenue miles; NTD = National Transit Database
1. Transit (buses, commuter trains) that operates within Montclair were determined via the Montclair Transcenter website (http://foothilltransit.org/lines-and-schedules/transit-centers/montclair-transcenter/).
2. Operation information, including annual VRMs by agency by mode, are based on Agency profiles (https://www.transit.dot.gov/ntd/transit-agency-profiles)
3. Annual VRMs traveled within the jurisdiction boundaries were estimated by multiplying the miles of a given route within City boundaries by the number of daily route trips by the number of days the route operated. This accounted for weekday, weekend, and holiday schedules in 2017.
4. The attribution of the City to the routes VRMs was calculated by dividing annual City VRMs by annual Agency VRMs. The City attribution was multiplied by the Agency's annual emissions to estimate the amount of transit emissions attributed to Montclair.
5. Agency annual emissions were calculated based on NTD reported fuel consumption and the climate registry emission factors for fuel type.

Emissions from freight rail that use the tracks that run through Montclair and the one switch station located in Montclair were calculated using ICLEI method TR.3. Information related to rail regith movement thorugh Montclair was obtained via Waybill Sample 2010 data[28], while track mileage through Montclair was measured via google maps from where the tracks entered and exited the city boundaries. ICLEI default fuel efficiency for line-haul freight rail and average annual traffic density (millions of gross ton-miles per track mile) was used to estimate fuel consumption on the Union Pacific tracks using data from the Class I Railroad Annual Report (2017) of Union Pacific Railroad

[28] https://www.fra.dot.gov/Page/P0362

Company to the Surface Transportation Board.[29] Fuel consumed at the switchyard in Montclair was estimated using ICLEI default hours of operation and fuel consumption rate. USEPA emission factors for diesel fuel for locomotives was applied to total fuel consumed to calcualte GHG emissions from freight rail attributed to Montclair. Activity data and emissions are summarized in Table 15 below.

### Table 15 Freight Rail GHG Emissions Calculations

| Rail Line | Total Fuel Consumed[1] | Emission Factor[2] | Total Emissions |
|---|---|---|---|
| Union Pacific | 278,209 gallons of diesel | 0.0103 gal/MT $CO_2e$ | 2,868 MT $CO_2e$ |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide equivalent
1. Total fuel consumed for freight rail includes line-haul freight rail fuel consumption associated with freight trains using the tracks through Montclair and one switchyard located in Montclair.
2. USEPA. 2021. Emission Factors for Greenhouse Gas Inventories. https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf

GHG emissions were calculated for inter-city rail using ICLEI method TR.5. The annual passenger train miles attributed to Montcliar were calculated based on the Amtrak schedule and length of track within Montclair city boundaries. Amtrak operational data including total train passenger miles and energy use in British thermal units (BTU) obtained from the Transportation Energy Databook published by Oak Ridge National Laboratory, was used to develop a energy intensity factor (BTU/train-mile).[30] The energy intensity factor was multiplied by annual passenger train miles attributed to Montclair to estimate annual energy consumption in BTU. This was converted to gallons of diesel based on the energy content of diesel fuel (138,000 BTU/gallon diesel). Emissions were calculated by applying USEPA emission facotrs for diesel fuel in locomotives to the calculated annual fuel consumed by Amtrak passenger trains as attrbiuted to Montclair. The activity data, emission factors, and resulting GHG emission for public transit are provided in Table 16.

### Table 16 Inter-City Passenger Rail GHG Emissions Calculations

| Emission Source | Activity Data[1] | Energy Intensity[2] | Fuel Consumption[3] | Emission Factor[4] | Emissions (MT $CO_2e$) |
|---|---|---|---|---|---|
| Amtrak-Sunset Limited/Texas Eagle | 686.4 passenger miles | 288,375 BTU/passenger mile | 1,434 gallons of diesel | 0.0103 MT $CO_2e$/gal diesel | 15 |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
BTU = British Thermal Units; MT $CO_2e$ = metric tons of carbon dioxide equivalent
1. Estimated based on length of track within city boundaries and Amtrak schedule. Based on the Amtrak schedule, six Amtrak passenger trains used the tracks through Montclair weekly. There was approximately 2.2 miles of track within Montclair city boundaries. (6 trains/week*52 weeks/year *2.2 miles = 686.4 miles attributed to Montclair)
2. An energy intensity factor for Amtrak trains calculated using Amtrak operational data obtained from the Transportation Energy Databook published by Oak Ridge National Laboratory (https://cta.ornl.gov/data/index.shtml).
3. Annual energy consumed was calculated as activity data multiplied by the energy intensity factor and converted to gallons based on diesel energy content of 138,000 BTU/gallon.
4. USEPA. 2021. Emission Factors for Greenhouse Gas Inventories. https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf

29 https://www.stb.gov/econdata.nsf/f039526076cc0f8e8525660b006870c9?OpenView&Start=1&Count=300&Expand=3#3
30 https://cta.ornl.gov/data/index.shtml

## Community Off-Road Transportation

GHG emissions from off-road transportation were estimated using ICLEI Community Protocol Method TR. 8, based on the CARB's OFFROAD2021 model. The model provides annual GHG emissions and fuel consumption from various types of off-road equipment operating in San Bernardino County. Equipment categories that were not under the jurisdictional control of the City of Montclair were excluded from the inventory including agricultural, airport ground support, commercial harbor craft, forestry, military tactical support, ocean going vessels, oil drilling, and outboard marine tanks. Emissions from locomotives were excluded from this sector as emissions associated with locomotives used in Montclair were already accounted for under the transportation sector. The OFFROAD results were allocated Montclair using population, jobs, and service population as detailed Table 17.

### Table 17 2018 Community Off-Road Transportation Data

| Equipment | Attribution (% of unincorporated County/entire County)[1] | Attribution Metric |
|---|---|---|
| Cargo Handling Equipment | 2% | Jobs |
| Construction and Mining Equipment | 2% | Jobs |
| Gas Can | 2% | Population |
| Industrial Equipment | 2% | Jobs |
| Lawn and Garden Equipment | 2% | Service Population |
| Light Commercial Equipment | 2% | Jobs |
| Pleasure Craft | 2% | Population |
| Portable Equipment | 2% | Service Population |
| Recreational Equipment | 2% | Population |
| Transport Refrigeration Units | 2% | Jobs |

1. Equipment was attributed to the City based on the percent of the attribution metric associated with the City compared with the entire county.

Annual fuel consumption was multiplied by the emission factor for the corresponding off-road equipment for each fuel type using EPA's emission factors for non-road vehicles.[31] Table 18 summarizes the total annual fuel consumption and GHG emissions by fuel type. Off-road equipment powered by electricity is not included in this estimate to avoid double-counting with the electricity sector.

[31] Emissions Factors for Greenhouse Gas Inventories. U.S. Environmental Protection Agency. April 2021. Accessed September 2021 via online: https://www.epa.gov/climateleadership/ghg-emission-factors-hub

**Table 18 GHG Emissions from Off-road Equipment**

| Data | 2017 |
|---|---|
| **Diesel** | |
| Activity Data (gallons)[1] | 706,725 |
| Emission Factor (MT $CO_2e$/gallon)[2] | 0.01030 |
| Diesel Emissions (MT $CO_2e$)[1] | 7,276 |
| **Gasoline** | |
| Activity Data (gallons)[1] | 115,576 |
| Emission Factor (MT $CO_2e$/gallon)[2] | 0.00905 |
| Gasoline Emissions (MT $CO_2e$)[1] | 1,046 |
| **LPG[3]** | |
| Activity Data (gallons)[1] | 82,468 |
| Emission Factor (MT $CO_2e$/gallon)[2] | 0.00581 |
| LPG Emissions (MT $CO_2e$) | 479 |
| **Total Emissions (MT $CO_2e$)** | **8,802** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide equivalent
1. Activity data is the sum of annual fuel consumption by equipment type by fuel type.
2. Emission factor is weighted based on fuel consumption by equipment type.
3. Natural Gas is not typically used in off-road equipment; LPG is used instead.

# 3.4 Community Water and Wastewater

Water and wastewater sector GHG emissions include those generated from indirect electricity use for water conveyance and distribution as well as wastewater collection and treatment. GHG emissions were calculated using ICELI Community Protocol methodologies. A summary of the water and wastewater GHG emissions is provided in Table 19, with the methodology of emission calculations detailed in the following section.

**Table 19 Community Water and Wastewater GHG Emissions Summary**

| Emission Source | Activity Data | Emissions (MT $CO_2e$) |
|---|---|---|
| Water Supply | 2,676 MG | 3,342 |
| Wastewater Treatment and Collection Emissions | 12,850 MG | 4,215 |
| **Total** | | **7,675** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MG = Million Gallons; MT $CO_2e$ = metric tons of carbon dioxide equivalent

## Community Water Supply

Water supplied to the community generates GHG emissions indirectly through the use of energy to extract, convey, treat, and deliver water. The amount of energy required for community water usage was calculated following ICLEI method WW.14, where energy required for each segment of the water cycle was estimated using energy intensities specific to the water segment. Water supplied to Montclair is from Monte Vista Water District (MVWD) where 75% is ground water and

25% is imported surface water from the State Water Project (SWP). ICELI default energy intensity facotrs were used for each segment of the water cycle for local groundwater based on the characteristics indicated in MVWD's 2015 Urban Water Management Plan (UWMP).[32] Details on characteristics and default ICELI values included in Table 20. For imported surface water, energy intensity proxies in typical urban water systems in Southern California were used where energy intensities include a system loss of 5% for conveyance and treatment, and 6% for distribution. Imported water energy intensity values developed for the State Water Project were obtained from California Energy Commission (CEC)'s report.[33] A default high value for groundwater extraction was used from the ICELI Community Protocol due to the location and depth of groundwater at 515 feet. The default median value for conveyance and distribution from ICELI was applied given Montclair's juridsiction and service though a pipeline network as well as MVWD's distribution system through four pressures zones, pumps and well. The ICELI Community Protocol default low value for water treatment was applied based on the assumption that groundwater is treated with chlorine at the production wells. The total water volume undergoing each process (conveyance, treatment, and pumping) was multiplied by the energy intensity of each process to obtain a total energy consumption, which was then multiplied by the SCE electricity emission factor to obtain total GHG emissions. The activity data, energy intensity, and resulting emissions are provided in Table 20.

[32] Monte Vista Water District. 2016. 2015 Urban Water Management Plan.

[33] CEC. 2006. Refining Estimates of Water-Related Energy Use in California. https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/references/rtcref/ch3.1.3/2014-12-19_CEC2006.pdf

**Table 20 Community Water Consumption GHG Emissions**

| Water Source[1] | Water Cycle Segment | Activity Data | Energy Intensity (kWh/MG) | Emission Factor (MT $CO_2e$/kWh)[7,8] | Emissions (MT $CO_2e$) |
|---|---|---|---|---|---|
| Groundwater | Supply[2] | 2,007 MG | 2,270 | 0.000249 | 1,134 |
| | Conveyance[3] | | 110 | | 55 |
| | Treatment[4] | | 300 | | 150 |
| | Distribution[5] | | 540 | | 270 |
| SWP | Supply[6] | 669 MG | 0 | 0.000233 | 0 |
| | Conveyance[6] | | 9,727 | | 1,518 |
| | Treatment[6] | | 111 | | 17 |
| | Distribution[6] | | 1,272 | | 198 |
| **Total** | | | | | **3,342** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
SWP = State Water Project; MG = million gallons; kWh = kilowatt hours; MT $CO_2e$ = metric tons of carbon dioxide equivalent
1. 75% of total water received by Monte Vista Water District (MVWD) is local ground water and 25% from SWP based on MVWD's 2015 UWMP.
2.Default high value for groundwater extraction was used from ICELI CP given following assumption: MVWD groundwater wells are in an area where the average depth to groundwater is 515 feet (http://www.cbwm.org/docs/engdocs/maps/Figure%203-7%20Depth%20to%20GW%202016.pdf)
3.Default median value for "local water" conveyance from ICELI CP was applied given following assumption: Montclair is within the Chino Basin boundaries and is serviced through a pipeline network. (MVWD UWMP 2015)
4.Default low value for water treatments with a 1-5 MGD capacity was used from ICELI CP given following assumption: groundwater water is treated with chlorine at the production wells with a 1- 3 mgd capacity prior to distribution (MVWD 2015 UWMP).
5.Default median water distribution value was used from ICLEI Community Protocol given following assumption: MVWD is split into 4 pressure zones where approximately half of the city of Montclair falls into MVWD pressure zone 2, a third in pressure zone 1, and 1/6 in pressure zone. Water is distributed from wells and a hydrogenerator in the area (zone 1), gravity fed reservoirs, booster pumps and pressure reducing valves. (MWVD UWMP 2015)
6. SWP energy intensities obtained from California Energy Commission's report, Refining Estimates of Water-Related Energy Use in California (https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/references/rtcref/ch3.1.3/2014-12-19_CEC2006.pdf)
7. SCE is electricity provider for City of Montclair, therefore SCE emission factor used for local ground water.
8. Statewide emission factor was used for imported water obtained from USEPA's eGRID database for CAMX region.

## Community Wastewater

Wastewater generated in the City of Montclair is managed by Inland Empire Utility Agency (IEUA). Each of IEUA's wastewater treatment plants produce recycled water that is then sold for direct use or used to recharge the ground water. Community-wide generated wastewater is accounted for based on the fiscal year data provided by IEUA in equivalent dwelling unit (EDU) and produced recycled water direct use and recharge data was used from IEUA's. Billing information from IEUA was provided, as well as the number of EDUs that generate wastewater. Billing for recycled water was converted to acre feet using IEUA's fee schedule for recycled water direct use and recharge, associated with the billing year. Each member agency is charged for groundwater recharge based on the number of EDUs reported. Based on the number of EDUs sold to Montclair, which was provided by the IEUA, it was estimated that 12,591 million gallons of wastewater per year was generated. Each EDU was equivalent to 200 gallons of water. Recycled water direct use for 2017 was approximately 94 million gallons per year and recycled water recharge was approximately 165 million gallons per year. The City of Montclair does not operate a wastewater facility nor is there one within the City boundaries. Therefore, the data from IEUA was used to calculate emissions associated with indirect electricity use for wastewater collection and treatment. Fugitive and process emissions associated with wastewater were not included.

ICLEI method WW.15 was used to attribute energy-related emissions from wastewater collection and treatment to the community. SCE is the electricity provider for the City; therefore the SCE emission factors were used to calculate GHG emissions from electricity. Activity data and wastewater emissions attributed to Montclair are provided in Table 21.

**Table 21 Community Wastewater Treatment and Collection GHG Emissions**

| Process | Activity Data[1,2] | Energy Intensity (kWh/MG)[3] | Annual Energy Consumption (kWh) | Emission Factor(MT $CO_2e$/kWh)[4] | Emissions (MT $CO_2e$) |
|---|---|---|---|---|---|
| Wastewater Collection | 12,591 (MG/year) | 22.7 | 285,817 | 0.000249 | 71 |
| Wastewater Treatment | | 1,318.6 | 16,602,551 | | 4,134 |
| Recycled Water Direct Use | 94 (MG/year) | 301.6 | 28,403 | | 7 |
| Recycled Water Recharge | 165 (MG/year) | 49.7 | 8,208 | | 2 |
| **Total** | | | | | **4,215** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
kWh = kilowatt hours; MT $CO_2e$ = metric tons of carbon dioxide equivalent; MG = Million Gallons; EDU = equivalent dwelling units
Totals may not add due to rounding
1. Fiscal year data was provided by IEUA where fiscal year ends June 30th, therefore data was calculated as a weighted average of FY 2017 and FY 2018 data.
2. Activity data, in million gallons per year, was calculated from IEUA provided EDU wastewater generation data where 1 EDU = 240 gallons per day, and recycled water acre feet data where 1 million gallons = 3.068-acre feet
3. Agency specific energy intensity factors were obtained from the IEUA 2015 UWMP Chapter 8: Voluntary Reporting of Energy Intensity.
4. SCE is electricity provider for City of Montclair, therefore SCE emission factors used. Edison International 2017 Sustainability Report (p. 10), June 2018. https://www.edison.com/content/dam/eix/documents/sustainability/eix-2017-sustainability-report.pdf

## 3.5 Solid Waste

GHG emissions result from solid waste management and decay of organic material in solid waste. ICLEI Community Protocol provides multiple accounting methods to address both emissions arising from solid waste generated by a community (regardless of where it is disposed of) as well as emissions arising from solid waste disposed of inside a community's boundaries (regardless of where it was generated). GHG emissions from the decomposition of organic material in this sector are broken down into two parts:

- Methane emissions from solid waste generated by the community in the year of the inventory, using ICLEI *U.S. Community Protocol* Method SW.4.
- Methane emissions from existing solid waste-in-place at landfills located within the community limits (waste-in-place), using ICLEI *U.S. Community Protocol* Method SW.1.

No landfills exist within the Montclair 's jurisdictional boundary; therefore, solid waste decay methane emissions were estimated using only ICLEI method SW.4 to calculate the methane commitment of solid waste generated by Montclair in 2017. While these methane emissions are attributed to a single inventory year, the actual emissions will occur over time as waste decays in the landfill.

In addition to the GHG emissions resulting from the decomposition of solid waste in landfills, the collection, transportation, and processing of solid waste produces GHG emissions. Specifically, for the City of Montclair, a portion of the waste stream is sent to combustion facilities, which produces additional GHG emissions. The emissions from the collection of solid waste are included in the solid waste sector total emissions. The following ICLEI methodologies are used to quantify solid waste process emissions:

- Process emissions, generated at landfills, associated with landfilling of community-generated waste, using ICLEI *Community Protocol* Method SW.5
- Methane emissions from solid waste by collection and transportation, using ICLEI *Community Protocol* Method SW.6.
- Combustion emissions associated with community-generated waste sent to combustion facilities, using ICLEI *Community Protocol* Method SW.7

A summary of the community waste sector GHG emissions is provided in Table 22, with the methodology of emission calculations detailed in the following section.

**Table 22 Community Waste GHG Emissions Summary**

| Emission Source | Activity Data | Emissions (MT $CO_2e$) |
|---|---|---|
| Landfill Methane Emissions | 32,235 tons | 10,879 |
| Landfilling Process Emissions | 32,235 tons | 355 |
| Waste Sent to Combustion Facilities | 32 tons | 24 |
| **Total** | | **11,258** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
kWh = kilowatt-hour; MT $CO_2e$ = metric tons of carbon dioxide equivalent; NA = Not Applicable

## Community Generated Waste

In 2017, Montclair produced 40,528 tons of waste, of which 32,235 tons was disposed of in landfills.[34] ICLEI method SW.4.1 was used to calculate methane emissions based on the mass of waste landfilled, organic content of waste, and the landfill gas (LFG) capture rate of the facilities to which waste was sent. Waste generated in Montclair was sent to numerous landfills; therefore, the LFG capture rate used for waste generated in Montclair was derived from CalRecycle and EPA LMOP database it was determined that all landfills that community waste was disposed at had an LFG collection system in place; a default 75% LFG capture efficiency rate was used. The activity data, calculation details, emission factors, and GHG emissions are provided in Table 23.

[34] Waste disposed of by landfill from Montclair was obtained via CalRecycle 2017 Disposal Reports by Jurisdiction. https://www2.calrecycle.ca.gov/LGCentral/DisposalReporting/Destination/DisposalByFacility

### Table 23 Community Waste Landfill Methane Emissions

| Source[1] | Activity Data | Emission Factor ($MT\ CH_4$/ton of waste)[2] | Oxidation Rate[3] | LFG Capture Rate[4] | Emissions ($MT\ CO_2e$)[5] |
|---|---|---|---|---|---|
| Landfilled Solid Waste | 32,235 tons | 0.06 | 0.01 | 0.75 | 10,879 |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
LFG = Landfill Gas ; MT $CO_2e$ = metric tons of carbon dioxide equivalent; MT $CH_4$ = metric tons of methane
1. Emissions calculated using ICELI method SW.4.1.
2. ICELI default parameters and emission factors used for calculations.
3. Oxidation rate represents the remaining fraction of waste mass that is not converted to methane.
4. LFG capture rate derived from CalRecycle and EPA LMOP database default of 75%.

## Landfilling Process Emissions

Landfilling process emissions encompass the contribution of the City of Montclair 's waste to the emissions associated with operations at the destination landfill. These emissions were calculated using ICLEI method SW.5. The primary destination landfills for Montclair 's waste are assumed to use natural gas to fuel their equipment.[35] The activity data, calculation details, emission factors, and GHG emissions are provided in Table 24.

### Table 24 Community Waste Landfilling Process GHG Emissions

| Source[1] | Activity Data | Emission Factor (MT $CO_2$/ton of waste)[2] | Emissions (MT $CO_2e$)[5] |
|---|---|---|---|
| Landfill Processing Equipment | 32,235 (tons) | 0.011 | 355 |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide equivalent
1. Emissions calculated using ICELI method SW.5
2. Default emission factor ICELI used for calculations, assuming natural gas fueled equipment.

## Waste Sent to Combustion Facilities

A small portion of the waste generated in the City of Montclair is sent to waste combustion facilities and ICLEI method SW.7 was used to calculate these emissions. In 2017, the City of Montclair sent 32 tons of waste-to-waste combustion facilities.[36] Emission from the waste-to-energy facilities were attributed to Montclair based on the attribution factor of the proportion of waste sent to the facilities to the total annual waste processed by the facility. The activity data, calculation details, emission factors and GHG emissions associated with Montclair waste sent to combustion facilities is provided in Table 25.

[35] It is assumed that the primary fuel used for processing equipment is natural gas; however, EPA GHG Reports the primary landfills Montclair waste is disposed at use natural gas and propane to power stationary combustion equipment rather than purely natural gas. https://ghgdata.epa.gov/ghgp/main.do.

[36] Total waste sent to destination landfills was obtained from CalRecycle 2017 Disposal Reports by Jurisdiction. https://www2.calrecycle.ca.gov/LGCentral/DisposalReporting/Destination/DisposalByFacility.

**Table 25 Community Waste Sent to Combustion Facilities GHG Emissions**

| Facility | Total Facility Waste Processed (Tons)[1] | Waste Sent from Montclair (Tons)[2] | Attribution Factor | Total Facility Emissions (MT $CO_2e$)[3] | Emissions (MT $CO_2e$)[5] |
|---|---|---|---|---|---|
| Commerce Refuse-To-Energy Facility | 67,350 | 32 | 0.000475 | 50,395 | 24 |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide equivalent
1. Total waste received by the facility in 2017 obtained from CalRecycle Single-year Countywide Destination Detail for Los Angeles County. https://www2.calrecycle.ca.gov/LGCentral/DisposalReporting/Destination/CountywideDetail.
2. Total waste sent to destination landfills was obtained from CalRecycle 2017 Disposal Reports by Jurisdiction. https://www2.calrecycle.ca.gov/LGCentral/DisposalReporting/Destination/DisposalByFacility.
3. Total facility emissions obtained from the U.S. EPA Facility Level Information on Greenhouse gases Tool (FLIGHT). https://ghgdata.epa.gov/ghgp/main.do.

## 3.6 Community GHG Inventory Results

In 2017, the Montclair community emitted approximately 283,074 MT $CO_2e$. As shown in Figure 2 and Table 26, the transportation sector was the largest source of emissions, generating approximately 196,213 MT $CO_2e$, or 69% of total 2017 GHG emissions. Electricity and natural gas consumption within the residential and non-residential sectors were the second largest source of 2017 emissions, generating 68,047 MT $CO_2e$, or 24% of the total. Waste generation, including waste decay and processing resulted in 4% of the City's emissions, while water consumption and wastewater generation resulted in the remaining 3%.

**Figure 2 2017 Community-wide GHG Emissions by Sector**

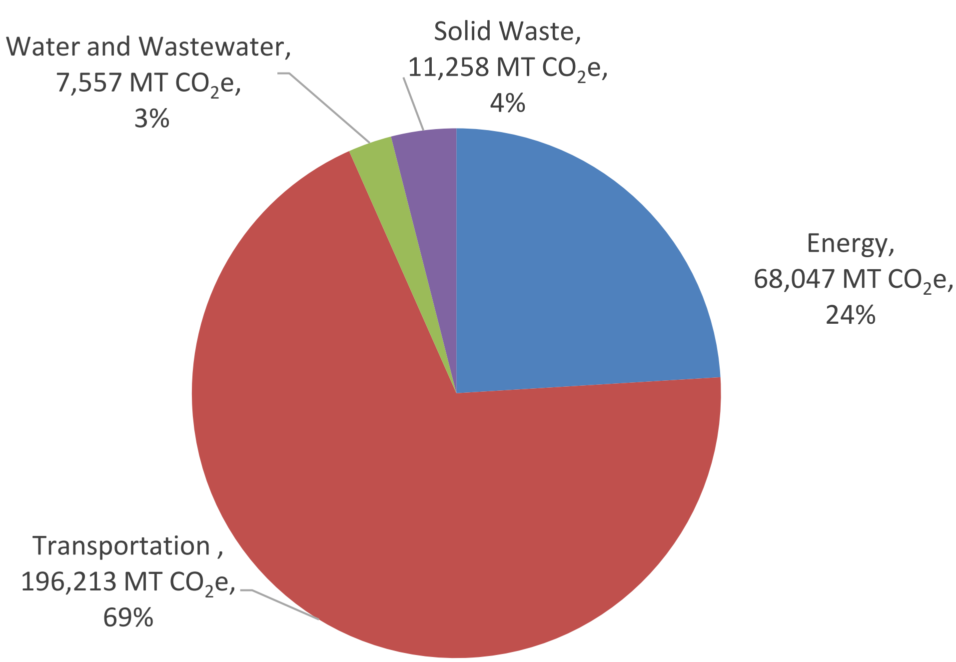


**Table 26 Baseline Community-wide GHG Emissions Summary by Sector**

| Sector | Emissions (MT $CO_2e$) | Percent of Total Emissions |
|---|---|---|
| **Energy** | **68,047** | **24%** |
| Electricity | 41,540 | 15% |
| Natural Gas | 24,741 | 9% |
| Electricity Transmission and Distribution Losses | 1,765 | <1% |
| **Transportation** | **196,213** | **69%** |
| On-road Transportation | 183,577 | 65% |
| Off-road Equipment | 8,802 | 3% |
| Public Transit | 3,834 | 1% |
| **Water** | **7,557** | **3%** |
| Water Conveyance, Distribution, and Treatment | 3,342 | 1% |
| Wastewater Collection and Treatment | 4,215 | 2% |
| **Solid Waste** | **11,258** | **4%** |
| Waste Sent to Landfills | 10,879 | 4% |
| Process Emissions | 355 | <1% |
| Waste Sent to Combustion Facilities | 24 | <1% |
| **Total** | **283,074** | **100%** |

Notes: Emissions have been rounded and therefore sums may not match
MT $CO_2e$ : Metric tons of Carbon Dioxide Equivalent

## 3.7 1990 Baseline

The State of California uses 1990 as a reference year to remain consistent with SB 32, which codified the State's 2030 GHG emission targets by directing CARB to reduce statewide emissions 40 percent below 1990 levels by 2030. Determining 1990 GHG emissions levels for a community is an important step in developing climate action targets. CARB has recommended that jurisdictions establish 2030 GHG emissions reduction goals consistent with the State's goal to reduce emissions 40 percent below 1990 levels, established by SB 32. Because Montclair does not have reliable or sufficient activity data to develop an inventory for 1990, the 2017 inventory results were used to back-cast GHG emissions to 1990 for Montclair.[37] Other jurisdictions, such as the City of South Pasadena, have established a relationship between GHG emissions at the state level for their oldest inventory year (in Montclair's case, 2017) and the state's emissions in 1990, as a way to back-case to

[37] Guidance in CARB's 2008 AB 32 Scoping Plan recommends that 1990 GHG emissions are calculated as 15 percent below 2005-2008 GHG emissions levels. However, Montclair does not have a GHG emissions inventory for 2005-2008.

1990 using best available data.[38] This approach assumes that the City's GHG emissions have tracked approximately with the state's GHG emissions, when controlled for community emissions sources. While not a perfect approximation, this approach is defensible and ensures consistency with state goals. The calculation is done by using published state-wide emissions results from CARB, after removing emissions from sectors not included in the City's inventory (i.e., agricultural, industrial, and high GWP sectors).[39] The 1990 back-cast for Montclair is shown in Table 27.

**Table 27 1990 GHG Emissions Back-cast**

| Source | Total |
|---|---|
| State of CA 1990 Emissions (MMT $CO_2e$) | 306.8 |
| State of CA 2017 Emissions (MMT $CO_2e$) | 302.1 |
| 1990 Change Factor (%) | -1.53% |
| Montclair 2017 Emissions (MT $CO_2e$) | 283,074 |
| Montclair 1990 Emissions (MT $CO_2e$) | 287,411 |

Notes: Emissions have been rounded and therefore sums may not match
$CO_2e$ : Carbon Dioxide Equivalent; MMT = million metric tons; MT = metric tons
1. Sectors not included in the City's inventory were excluded (i.e., agriculture, High GWP and Industrial except for general fuel usage)

[38] The concept of "best available data" is referenced by the World Resources Institute's 2014 Greenhouse Gas Protocol as a guideline for inventory best practices.

[39] California Air Resources Board (2021). California Greenhouse Gas Emission Inventory - 2021 Edition. Data available at: https://ww3.arb.ca.gov/cc/inventory/data/data.htm

# 4 GHG Emissions Forecast

A baseline inventory (i.e., the City of Montclair ’s 2017 community inventory) sets a reference point for a single year; however, annual emissions change over time due to external factors such as population and job growth. Emissions forecast accounts for projected growth and presents an estimate of GHG emissions in a future year. Calculating the difference between the GHG emissions forecast and the reduction targets set by the City determines the gap to be closed through City Climate Action Plan policies. This section quantifies an estimate of the future GHG emissions in Montclair and the reduction impact state regulations will have on the forecasted GHG emissions for the years 2030, 2040 and 2045.

Several indicator growth rates were developed from demographic growth projections and the results of the 2017 Community GHG Inventory and applied to the various emissions sectors to forecast future GHG emissions. These growth rates were developed from the SCAG 2020 RTP/SCS population and job projections. This forecast based solely on the 2017 GHG inventory and growth projections is considered the *business-as-usual scenario* (*BAU*), where it is assumed that no additional action will occur to reduce future GHG emissions. Once *BAU* forecasted GHG emissions are established, a *legislative adjusted* (*adjusted*) *scenario* of future GHG emissions is developed which considers the GHG reduction impact of state and federal legislation on the *BAU* forecasted GHG emissions. The applicable state and federal regulatory requirements, including Corporate Average Fuel Economy standards, Advanced Clean Car Program, Renewable Portfolio Standard, and Title 24 efficiencies, are then incorporated to accurately reflect expected reductions from state programs. The *adjusted scenario* provides a more accurate picture of future emissions growth and the responsibility of the City and community for GHG reductions to algin with state GHG reduction goals.

## 4.1 Demographics

The emission forecast is primarily driven by the anticipated population and jobs growth for the City of Montclair. Regardless of the impact of State legislation, changes in population and jobs data are the primary indicator of how activity data for different emissions sources will change. The *Southern California Association of Governments* (SCAG) modeled future population, housing and employment growth for the region including jurisdiction level growth. As part of the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy, SCAG provides a forecast for housing, population and employment within the City of Montclair for 2016 and 2045.[40]

The forecast in this document uses the population, employment, and housing forecasted estimates from the 2020 SCAG RTP/SCS as a basis for anticipated growth in the City of Montclair. However, the household based growth factors were adjusted to account for the 6th Cycle Regional Housing Needs Assessment (RHNA) allocation of housing needs for the City of Montclair between 2021 and 2029.[41] As such, the number of households in Montclair is expected to grow by 2,593 between 2021 and

[40] SCAG. 2020. *2020-2045 Regional Transportation Plan/Sustainable Communities Strategy; Demographics and Growth Forecast Technical Report*. https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579

[41] SCAG. 2021. SCAG 6th Cycle Final RHNA Allocation Based on Final RHNA Methodology & Final Connect SoCal .https://scag.ca.gov/sites/main/files/file-attachments/6th_cycle_final_rhna_allocation_plan_070121.pdf?1646938785

2029, with steady growth after 2030 at a rate of 45 households per year, consistent with SCAG 2020 RTP/SCS projected growth rates for Montclair.[42] Population growth due to RHNA were accounted for by multiplying the adjusted housing stock by the current average household size (i.e., 3.89 in 2021). Employment projections were not adjusted and remain consistent with SCAG projections. Employment growth after 2045 was calculated assuming a continued growth rate of 55 jobs annually, consistent with SCAG 2020 RTP/SCS projections. The population and housing estimates used in the forecast and in the CAP are different from the population included in the Population and Housing Element Environmental Impact Report (EIR) because the General Plan Update includes estimated growth based on full build out of the Arrow Highway Mixed-Use District (AHMUD) Specific Plan. Additionally, the Department of Housing and Community Development (HCD) recommends that each jurisdiction create a buffer in the housing element inventory of at least 15 to 30 percent more capacity than required to ensure that sufficient capacity exists in the housing element to accommodate the RHNA throughout the planning period.[43] Including the HCD recommended buffer and full build out of the General Plan growth in the CAP could result in an overly conservative emissions reduction forecast and target because these scenarios are in part, calculated based on future population scenarios. Therefore, the forecasts and targets developed for the CAP are based on the SCAG demographic projections with RHNA adjustments.Table 28 presents the demographic projections used to estimate future activity data and GHG emissions for the emissions forecast.

**Table 28 Demographic Projections**

| Sector | 2025 | 2030 | 2035 | 2040 | 2045 |
|---|---|---|---|---|---|
| Population[1,4] | 44,521 | 49,672 | 50,543 | 51,414 | 52,285 |
| Employment[1] | 19,797 | 20,072 | 20,348 | 20,624 | 20,900 |
| Service Population[2] | 64,317 | 69,745 | 70,891 | 72,038 | 73,185 |
| Household[1,3] | 11,459 | 12,785 | 13,009 | 13,233 | 13,457 |

Notes:
1. Employment, population and household projections obtained from SCAG 2020 RTP/SCS.
2. Service population is the sum of employment and population in the jurisdiction
3. Households projections from SCAG were adjusted to correspond with the 6th RHNA cycle (i.e., 2,593 additional housing units between 2021 -2029).
4. Population estimates were adjusted to account for growth by multiplying household projections by the current average household size in 2021 of 3.89.

[42] Southern California Association of Governments. May 2020. Connect SoCal. Demographics and Growth Forecast. https://www.connectsocal.org/Documents/Draft/dConnectSoCal_Demographics-And-Growth-Forecast.pdf. Accessed January 22, 2022.
[43] HCD. June 10, 2020. Housing Element Site Inventory Guidebook Government Code Section 65583.2. https://www.hcd.ca.gov/community-development/housing-element/docs/sites_inventory_memo_final06102020.pdf

## 4.2 Business-as-Usual Scenario GHG Emissions Forecast

The City of Montclair *BAU scenario* forecast provides an estimate of how GHG emissions would change in the forecast years if consumption trends continued as in 2017, absent any new regulations or actions that would reduce local emissions. Several indicator growth rates were developed from the 2017 GHG inventory activity data and applied to the various emissions sectors to project future year activity data. As part of the *BAU scenario,* forecast emission factors are assumed to remain the same as in 2017. Table 29 contains growth and emission factors used to develop the *BAU scenario* forecast. Not included in this table is on-road transportation VMT and off-road equipment. Forecasted emissions from off-road equipment was estimated using the CARB OFFROAD2021 model and the methodology described in the *Community Off-Road Transportation* Section. Forecasted emissions from on-road transportation was estimated using VMT projections provided by Fehr & Peers that correspond with the General Plan Land Use changes and growth projections and emission factors obtained from EMFAC2021.

**Table 29 Business-as-Usual Growth Metrics and Emission Factors**

| Sector | Growth Factor | Emission Factor |
|---|---|---|
| Residential Electricity (EV adjusted) | 6,542.3 kWh/household | 0.000249 MT $CO_2e$/kWh |
| Commercial Electricity (EV adjusted) | 5,945.8 kWh/job | 0.000249 MT $CO_2e$/kWh |
| Residential Natural Gas | 312.8 therm/household | 0.00531 MT $CO_2e$/therm |
| Commercial Natural Gas | 90.0 therm/job | 0.00531 MT $CO_2e$/therm |
| Solid Waste | 0.57 tons/SP | 0.349 MT $CO_2e$/ton |
| Water Conveyance, Distribution and Treatment Electricity | 0.036 MG Groundwater/SP | 0.000249 MT $CO_2e$/kWh |
| | 0.012 MG Imported Water/SP | 0.000233 MT $CO_2e$/kWh |
| Wastewater Collection and Treatment Electricity | 0.2 MG/SP | 0.000249 MT $CO_2e$/kWh |
| Public Transit | 8.3 VRM/SP | 0.00204 MT $CO_2e$/VRM |
| Inter-City Rail | 0.026-gal diesel/SP | 0.01031 MT $CO_2e$/gal |
| Rail Freight | 4.96-gal diesel/SP | 0.01031 MT $CO_2e$/gal |

Notes: Values have been rounded.
kwh = kilowatt-hour; MT $CO_2e$ = Metric Tons of Carbon Dioxide Equivalent; SP = Service Population; VMT = Vehicle Miles Traveled; VRM = vehicle revenue miles

### On-Road Activity Data

Activity data for the forecast of on-road transportation was modeled separately from the above growth metrics and growth indicators, using the SBTAM travel demand model. See *Community On-Road Transportation* for the detailed VMT methodology. Daily VMT data was annualized using the annualization factor of 347, described in the EMFAC2021 documentation. EV penetration percent was obtained from EMFAC2021 and applied to the City's total VMT to determine VMT associated with electric versus internal combustion (ICE) vehicles. For the BAU forecast, EV penetration, electricity emission factors and the ICE emission factors remain the same as in 2017. The results for passenger and commercial VMT and electricity usage for EVs are summarized in Table 30.

**Table 30 BAU GHG Emissions Forecast On-Road Transportation Data**

| Growth Metric | 2025 | 2030 | 2035 | 2040 | 2045 |
|---|---|---|---|---|---|
| Total Passenger VMT | 436,096,113 | 457,050,867 | 478,005,621 | 498,960,375 | 519,915,129 |
| Total Commercial VMT | 24,608,741 | 25,608,810 | 26,608,878 | 27,608,947 | 28,609,015 |
| % Passenger EV Penetration | 4.54% | 6.79% | 8.30% | 9.06% | 9.37% |
| % Commercial EV Penetration | 0.67% | 5.61% | 14.08% | 20.33% | 23.52% |
| Passenger ICE VMT | 416,306,088 | 426,033,000 | 438,341,130 | 453,773,217 | 471,214,854 |
| Commercial ICE VMT | 24,442,967 | 24,171,858 | 22,862,331 | 21,995,482 | 21,879,501 |
| Passenger EV VMT | 19,790,025 | 31,017,867 | 39,664,491 | 45,187,158 | 48,700,276 |
| Commercial EV VMT | 165,774 | 1,436,952 | 3,746,548 | 5,613,465 | 6,729,514 |
| Passenger Fuel Efficiency (kWh/mile) | 0.36 | 0.37 | 0.37 | 0.37 | 0.37 |
| Commercial Fuel Efficiency (kWh/mile) | 1.18 | 1.15 | 1.14 | 1.13 | 1.13 |
| Passenger kWh | 7,216,909 | 11,370,272 | 14,582,403 | 16,633,053 | 17,934,246 |
| Commercial kWh | 195,636 | 1,659,678 | 4,270,511 | 6,326,233 | 7,610,902 |
| ICE Passenger Emission Factor (MT CO2e/mile) | 0.00034 | 0.00031 | 0.00030 | 0.00029 | 0.00028 |
| ICE Commercial Emission Factor (MT CO2e/mile) | 0.00130 | 0.00123 | 0.00121 | 0.00121 | 0.00123 |

Notes: VMT = vehicle miles traveled; kWh = kilowatt hour; EV = electric vehicle; ICE = internal combustion engine

## Off-Road Activity Data

Activity data for the off-road GHG emissions forecast was modeled separately from the above growth metrics and growth indicators, using the outputs from the CARB OFFROAD2021 model. The OFFROAD2021 model was run for San Bernardino County for the forecast years to obtain fuel consumption for gasoline, diesel, and natural gas. As with the inventory, the following equipment sectors were included:

- Cargo Handling Equipment
- Construction and Mining Equipment
- Gas Can
- Industrial Equipment
- Lawn and Garden Equipment
- Light Commercial Equipment
- Portable Equipment
- Pleasure Craft
- Recreational Equipment
- Transport Refrigeration Units

The results of the OFFROAD2021 model were summarized for the above equipment sectors in San Bernardino County. The City of Montclair was allocated a percentage of total county fuel consumption for each sector relative to the City's proportion of jobs or population in the county. The results are summarized in

Table 31. Off-road equipment powered by electricity is not included in this estimate to avoid double-counting with the electricity sector.

**Table 31 BAU GHG Emissions Forecast Off-Road Fuel Consumption**

| Off-road Fuel Category | 2025 | 2030 | 2035 | 2040 | 2045 |
|---|---|---|---|---|---|
| Diesel | 876,661 | 897,262 | 965,371 | 1,038,711 | 1,115,491 |
| Gasoline | 124,694 | 130,710 | 137,613 | 144,433 | 148,022 |
| Natural Gas | 93,455 | 100,800 | 108,947 | 117,863 | 117,863 |

Notes: All values are of the unit gallons of fuel and have been attributed from County-wide values to unincorporated County using the attribution metric discussed in the inventory

Source: California Air Resources Board. 2021. OFFROAD2021 – ORION

## 4.2.1 BAU GHG Emissions Forecast Results

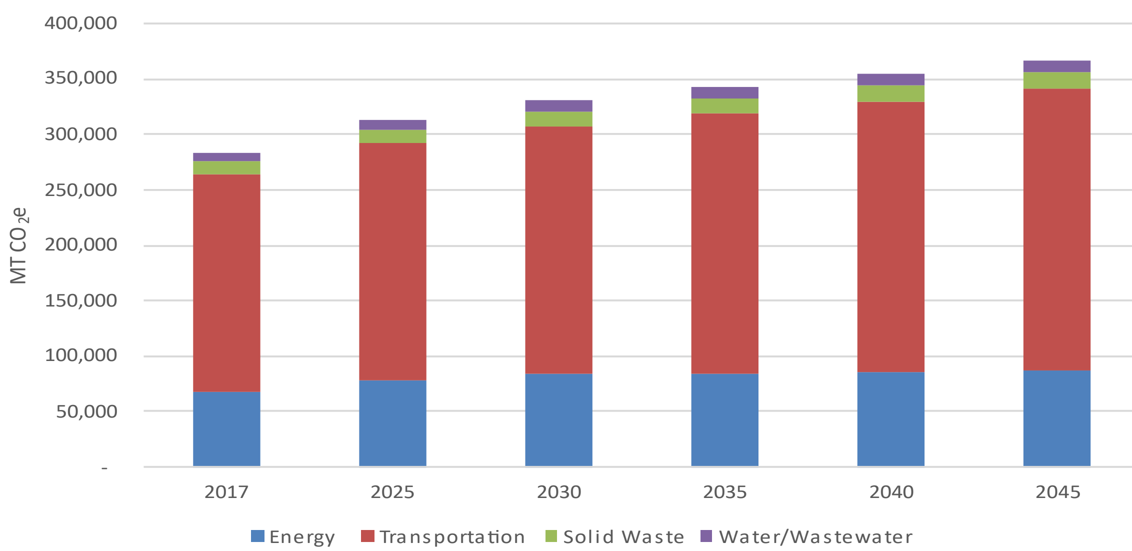
The following provides a summary of the results of the BAU GHG emissions forecast for each source in the City of Montclair. The results have been reported in MT $CO_2$e. Under the *BAU scenario* forecast, the City of Montclair 's GHG emissions are projected to continue increasing through 2045, as shown in Table 32 and Figure 3. Figure 3 provides a summary of the *BAU scenario* GHG emissions forecast categorized into the four primary emission sectors: energy, transportation, water and waste.

**Table 32 Business-as-usual Forecast by Sector**

| Sector | 2025 | 2030 | 2035 | 2040 | 2045 |
|---|---|---|---|---|---|
| Residential Electricity | 18,669 | 20,829 | 21,194 | 21,559 | 21,925 |
| Non-residential Electricity | 29,312 | 29,720 | 30,129 | 30,537 | 30,945 |
| Transmission and Distribution Losses | 2,039 | 2,149 | 2,182 | 2,215 | 2,248 |
| Residential Gas | 19,035 | 21,238 | 21,610 | 21,983 | 22,355 |
| Non-Residential Natural Gas | 9,461 | 9,593 | 9,725 | 9,857 | 9,989 |
| Passenger On-road Transportation | 165,192 | 173,129 | 181,067 | 189,005 | 196,942 |
| Commercial On-road Transportation | 33,247 | 34,598 | 35,950 | 37,301 | 38,652 |
| Inter-City Rail | 17 | 18 | 19 | 19 | 19 |
| Public Transit | 1,090 | 1,183 | 1,202 | 1,221 | 1,241 |
| Rail Freight | 3,287 | 3,564 | 3,622 | 3,681 | 3,740 |
| Off-Road Equipment | 10,698 | 11,007 | 11,818 | 12,686 | 13,509 |
| Waste | 12,903 | 13,991 | 14,221 | 14,451 | 14,682 |
| Water | 3,831 | 4,154 | 4,222 | 4,291 | 4,359 |
| Wastewater | 4,830 | 5,238 | 5,324 | 5,410 | 5,496 |
| **Total Emissions** | **313,611** | **330,412** | **342,286** | **354,216** | **366,102** |
| ***Emissions per Capita*** | ***7.0*** | ***6.7*** | ***6.8*** | ***6.9*** | ***7.0*** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = Metric Tons of Carbon Dioxide Equivalent;

**Figure 3 Emissions Forecast - Business-as-usual Scenario (MT $CO_2e$)**



# 4.3 Legislative Adjusted Scenario GHG Emissions Forecast

The *adjusted scenario* forecast is based on the same base data as the *BAU scenario* but includes an adjustment for the legislative actions and associated GHG emissions reductions occurring at the state and federal levels. The following section described the State legislation and regulations that are expected to reduce City of Montclair's future GHG emissions.

## 4.3.1 GHG Reduction Legislation Included in Adjusted Forecast

The 2017 Scoping Plan and 2022 Scoping Plant Updates identified several existing state programs and targets, or known commitments required by statute which can be assumed to achieve GHG reductions without City action, such as increased fuel efficiency standards of mobile vehicles. The following State legislation were applied to the *adjusted scenario* based on the unique sectors within the City of Montclair:

- 2019 Title 24 Building Energy Efficiency Standards
- Senate Bill (SB) 100 - California Renewables Portfolio Standard Program
- Assembly Bill 1493 (Pavley Standards) -
- Advanced Clean Cars Program
- Advanced Clean Trucks (ACT) Regulation
- Innovative Clean Transit (ICT)

The impact of these regulations was quantified and incorporated into the *adjusted scenario* to provide a more accurate depiction of future GHG emissions growth in the City.

### *4.3.1.1 GHG Reduction Legislation Calculations*

EMFAC2021 was used to model transportation-related GHG emissions for the City of Montclair forecasts, which considers implementation of state legislation related to transportation such as the fuel efficiency requirements (AB 1493), the Advanced Clean Cars Program, the Advanced Clean Trucks Regulation, Innovative Clean Transit, and anticipated EV penetration based on market trends. In addition, the following methodology was used to calculate energy-related GHG emissions reduction related to Title 24 and SB 100.

- **Title 24:** It is assumed that all growth in the residential sector is from new construction. Accordingly, Title 24 GHG emissions reduction for natural gas and electricity are calculated as a percentage of the projected increase in energy consumption beyond the baseline 2017 GHG emissions inventory, under the BAU forecast. Overall, the energy consumption reduction impact of Title 24 is:
  - 53 percent reduction beyond the 2017 baseline for residential electricity,
  - 30 percent reduction beyond the 2017 baseline for commercial electricity, and
  - 7 percent reduction beyond the 2017 baseline for residential natural gas.[44]

[44] California Energy Commission. 2018. 2019 Building Energy Efficiency Standards Frequently Asked Questions. Available: <https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf>. Accessed June 21, 2021.

- **SB 100:**[45] Southern California Edison (SCE) currently provides electricity to the City of Montclair and is subject to SB 100 requirements. GHG emissions from electricity consumption are largely determined by the emissions factor associated with the supplied electricity. Legislative GHG emissions reductions from SB 100 are calculated as the difference between GHG emissions under the BAU forecast electricity and GHG emissions calculated using a SB 100-adjusted GHG emissions factor for a given forecast year. Adjusted GHG emission factors are calculated by scaling the baseline electricity GHG emissions factor with the RPS percentage for eligible renewable electricity required for compliance with SB 100. Note that while both Title 24 and SB 100 influence GHG emissions reductions in the electricity sector, double counting of these reductions is avoided by accounting for Title 24 reductions first and then accounting for reductions from SB 100. The RPS percentages and associated GHG emissions factors used to determine the *adjusted scenario* electricity emissions are provided in Table 33.

**Table 33 Electricity Provider Forecasted RPS and Electricity GHG Emissions Factors**

| Energy Provider | 2025 | 2030 | 2035 | 2040 | 2045 |
|---|---|---|---|---|---|
| **Southern California Edison (SCE)[1]** | | | | | |
| Renewable Portfolio Standard Percentage | 50% | 60% | 73% | 87% | 100% |
| Adjusted Electricity Emission Factor (MT $CO_2$e/kWh) | 0.000217 | 0.000163 | 0.000108 | 0.000054 | 0 |

Notes: MT $CO_2$e = metric tons of carbon dioxide equivalent; kWh = kilowatt-hour

1. % RPS and 2020 emission factor obtained from recent power content labels and interpolated to 2030 and 2045 RPS goals.

## 4.3.2 Adjusted Scenario GHG Emissions Forecast Results

In the *adjusted scenario* emissions forecast, the electricity and water and wastewater sectors all experience a strong downward trend, approaching near-zero in 2045 due to stringent RPS requirements from SB 100. Natural gas emissions are expected to continue an upward trajectory through 2045 due to population and housing growth projections though this trend is partially offset due to the increasingly stringent efficiency requirements for new construction in the upcoming Title 24 code cycles. Transportation emissions are expected to decrease sharply in the next 10 to 15 years due to existing fuel efficiency requirements and the anticipated replacement of internal combustion engine vehicles with zero emission or electric vehicles. As most current regulations expire in 2025 or 2030, emissions standards will experience diminishing returns while VMT continues to increase, leading to lower rates of emissions reduction in the transportation sector. However, the RPS and SB 100 will reduce transportation GHG emissions from electricity used by light rail and the increased EV penetration rate. GHG emission sources that are not impacted by legislation included in the adjusted scenario forecast are waste, off-road equipment, rail freight, and natural gas usage in commercial buildings. These emissions sources are expected to continue to scale upwards with population and employment growth.

A detailed summary of Montclair ’s projected GHG emissions under the *adjusted scenario* forecast by sector and year through 2050 can be found Table 34 and Figure 4. Figure 4 provides a summary

[45] SB 1020 is not included in this analysis as it was codified after the completion of this study. Excluding SB 1020 provides a conservative forecast, as the bill establishes more aggressive RPS targets for California: 90% eligible renewable and carbon-free energy by 2035, 95% by 2040, and 100% by 2045. Including these targets would likely result in lower projected GHG emissions.

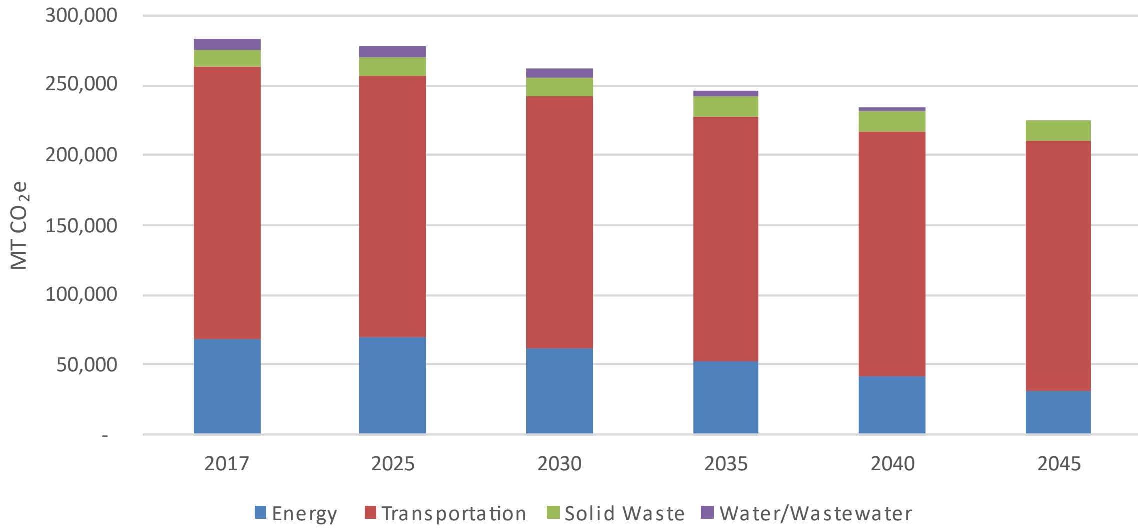
of the *adjusted scenario* GHG emissions forecast categorized into the four primary emission sectors: energy, transportation, water, and waste.

**Table 34 Adjusted Scenario Forecast by Sector**

| Sector | 2025 | 2030 | 2035 | 2040 | 2045 |
|---|---|---|---|---|---|
| Residential Electricity | 15,157 | 12,031 | 8,096 | 4,085 | - |
| Non-residential Electricity | 24,488 | 18,553 | 12,493 | 6,309 | - |
| Transmission and Distribution Losses | 1,685 | 1,300 | 875 | 442 | - |
| Residential Gas | 18,864 | 20,912 | 21,258 | 21,605 | 21,951 |
| Non-Residential Natural Gas | 9,461 | 9,593 | 9,725 | 9,857 | 9,989 |
| Passenger On-road Transportation | 141,277 | 134,270 | 131,603 | 131,575 | 134,067 |
| Commercial On-road Transportation | 31,719 | 30,039 | 28,055 | 26,919 | 26,828 |
| Inter-City Rail | 17 | 18 | 19 | 19 | 19 |
| Public Transit | 1,032 | 945 | 701 | 523 | 373 |
| Rail Freight | 3,287 | 3,564 | 3,622 | 3,681 | 3,740 |
| Off-Road Equipment | 10,698 | 11,007 | 11,818 | 12,686 | 13,509 |
| Waste | 12,903 | 13,991 | 14,221 | 14,451 | 14,682 |
| Water | 3,061 | 2,518 | 1,706 | 867 | - |
| Wastewater | 4,209 | 3,423 | 2,320 | 1,179 | - |
| **Total Emissions** | **277,855** | **262,166** | **246,512** | **234,197** | **225,157** |
| ***Emissions per capita*** | ***6.2*** | ***5.3*** | ***4.9*** | ***4.6*** | ***4.3*** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = Metric Tons of Carbon Dioxide Equivalent;

**Figure 4 Emissions Forecast – Adjusted Scenario (MT $CO_2e$)**




## 4.4 GHG Emissions Forecast Results Summary

The *BAU scenario* and *adjusted scenario* forecasts provide an assessment of how the City of Montclair's future GHG emissions will change based on current conditions (*BAU scenario*) and the impact that state legislation will have on these GHG emissions (*adjusted scenario*). The *adjusted scenario* provides a metric to compare future GHG emissions against state GHG emissions targets. The difference between the adjusted forecast and the state targets, or "the gap", represents the GHG emission reduction that Montclair will be responsible with the policies included in this Climate Action Plan.

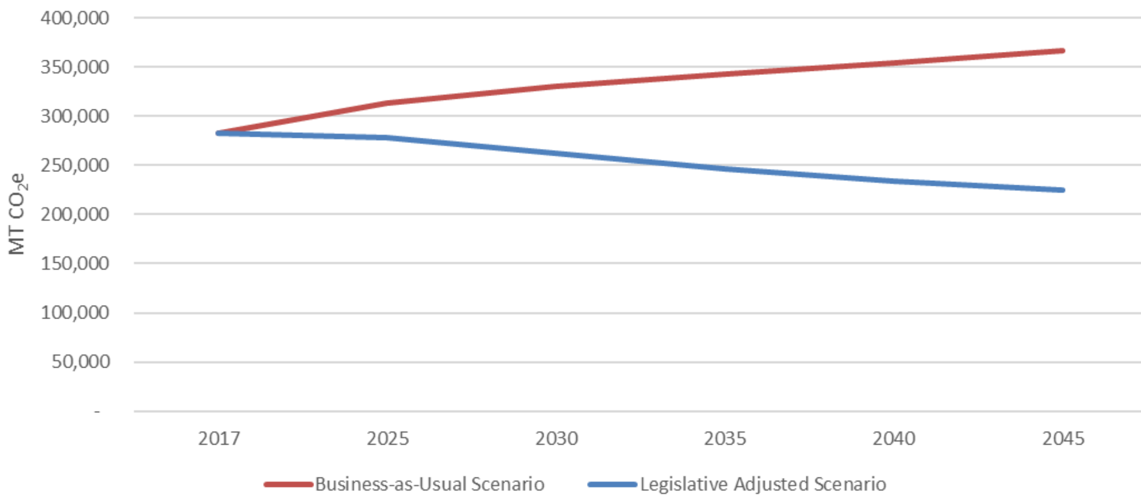
A summary of the GHG reductions resulting from State legislation and programs can be found in Table 35. As shown in Figure 5Figure 5, without legislative reductions at the State level, the City's emissions would increase through 2045, proportionally with population and economic growth.

**Table 35 Summary of Legislative Reductions**

| Legislation | 2025 | 2030 | 2035 | 2040 | 2045 |
|---|---|---|---|---|---|
| Senate Bill 100 and Renewable Portfolio Standards | -6,095 | -18,456 | -31,508 | -45,557 | -60,326 |
| Title 24 | -2,763 | -4,239 | -4,595 | -4,950 | -5,306 |
| Transportation (Pavley, Advanced Clean Truck, Innovative Clean Transit, etc.) | -26,897 | -45,552 | -59,671 | -69,511 | -75,313 |
| **Total** | **-35,755** | **-68,247** | **-95,773** | **-120,019** | **-140,944** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide equivalent

**Figure 5 Business-as-usual versus Adjusted Scenarios (MT $CO_2e$)**



# 5 GHG Emissions Reduction Target Setting

Setting GHG reduction targets for climate action planning that align with the State's goals will allow the City of Montclair to develop its own emission reduction trajectory in a cost-effective manner and on the City's own terms. Target setting is an iterative process that must be informed by the reductions that can realistically be achieved through the development of feasible GHG reduction measures. As such, the targets identified herein should be re-evaluated on a periodic basis (every five years is recommended) and adjusted as more data and information become available to the City.

The State has codified a goal of reducing emissions to 40 percent below 1990 levels by 2030 (SB 32) and developed the 2017 Scoping Plan to demonstrate how the State will achieve the 2030 goal and has tracked progress towards this goal as part of the 2022 Scoping Plan Update. In 2018, a new goal of achieving carbon neutrality by 2045 (EO-B-55-18) was established and codified in 2022 by AB1279. AB 1279 mandates a State goal of carbon neutrality by 2045 through a reduction of anthropogenic GHG emissions by 85%, the pathway to which was developed as part of the 2022 Scoping Plan Update. AB 1279 sets a 15% target for GHG emissions reductions to be achieved through carbon capture and sequestration (CCS) methods, though does not provide a clear pathway as to how CCS technology is to be implemented to achieve said reductions. The purpose of target setting is to develop the trajectory toward achieving the State's 2030 goal (SB 32) and prepare for the deep decarbonization needed by 2045 in a cost-effective manner by setting an incremental path toward achieving AB 1279 targets. CARB guidance is for jurisdictions to first strive to exceed the SB 32 targets of reducing GHG emissions 40% below 1990 levels, while establishing a policy framework to achieve the long-term target of carbon neutrality by 2045.

In accordance with the 2017 Scoping Plan Update, target pathways can be set using either efficiency (MT $CO_2e$ per capita or per service population per year) or absolute (total community-wide MT $CO_2e$ per year) metrics. With CARB's publication in 2017 of the Scoping Plan Update, the state recommended using efficiency metrics for local targets to incentivize growth in a coordinated manner and not penalize cities which are growing at significant rates.[46] With Montclair projected to experience significant population growth in the coming years, an efficiency target was established to establish community GHG reduction goals. Table 36 outlines Monclair's forecasted emissions and the efficiency pathway to achieving the following targets:

- Reduce per capita GHG emissions by 40% below 1990 levels by 2030;
- Reduce per capita GHG emissions to achieve carbon neutrality by 2045.

In addition to the target years that align with the state (i.e., 2030, 2045), the years 2025 and 2035 are presented as interim targets, while the year 2040 corresponds with the City's General Plan Horizon year. Figure 6 shows the forecast and the efficiency target pathway that is used to achieve consistency with SB 32 (2030) and AB 1279 (2045) goals.

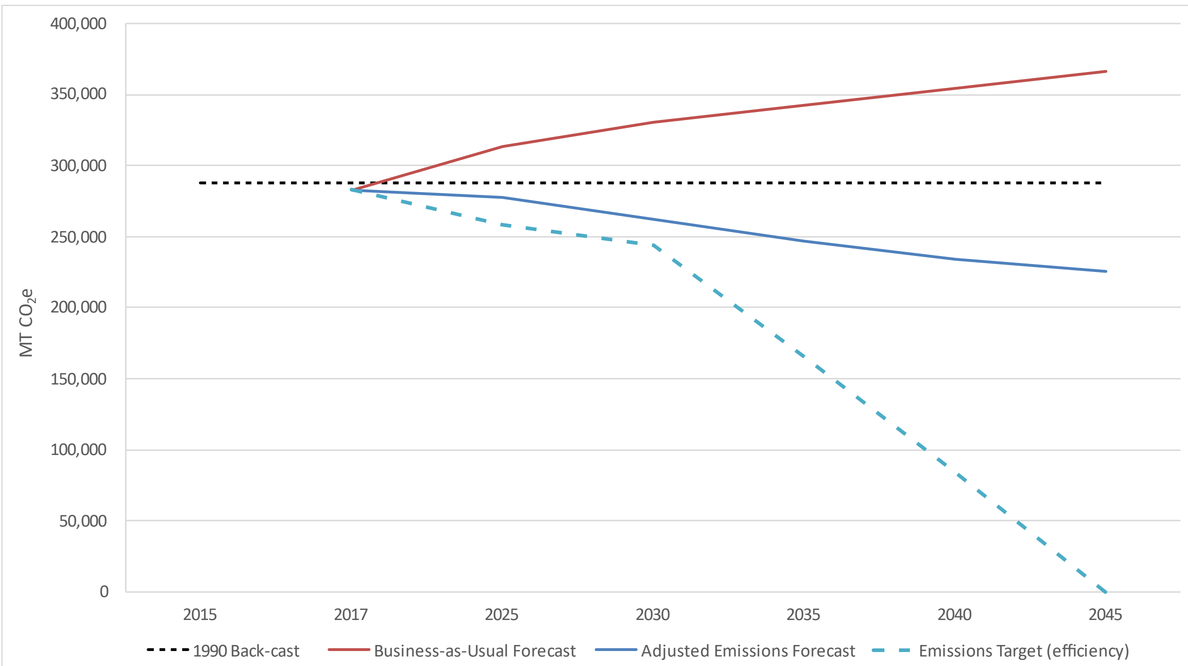
[46] California Air Resources Board. 2017. California's Climate Change Scoping Plan, p. 99-102.

### Table 36 Target Pathways[1]

| Year | Adjusted GHG forecast (MT $CO_2e$) | Efficiency Pathway (MT $CO_2e$) |
|---|---|---|
| 2025 | 277,855 (6.2) | 258,487 (5.8) |
| 2030 | 262,166 (5.3) | 243,582 (4.9) |
| 2035 | 246,512 (4.9) | 165,235 (3.3) |
| 2040 | 234,197(4.6) | 84,041 (1.6) |
| 2045 | 225,157(4.3) | 0 (0.0) |

Notes: MT $CO_2e$ = metric tons of carbon dioxide equivalent
1. Mass emissions (MT CO2e) with per capita emissions (MT CO2e per person) in parenthesis

### Figure 6 Forecast and Target Setting Pathways (MT $CO_2e$)




California achieved its 2020 goal of reaching the 1990 emissions level in 2016[47] and at the time of publication of this inventory, 2020 will be past, therefore the 2020 goal is not referenced. The absolute GHG emission gap in 2030, 2040, and 2045 between each target pathway and the forecast emissions can be found in Table 37. As shown, in Table 37, to achieve the minmum 2030 efficiency target, the City of Montclair will need to reduce emissions through local reduction meausures by 0.4 MT $CO_2e$ per capita or approximately 18,583 MT $CO_2e$.

The emission gap will be bridged by local actions developed in the City of Montclair CAP.

[47] CARB. July 11, 2018. Climate pollutants fall below 1990 levels for the first time. https://ww2.arb.ca.gov/news/climate-pollutants-fall-below-1990-levels-first-time

**Table 37 Emission Gap Analysis**

| Year | Efficiency Pathway ($MT\ CO_2e$) |
|---|---|
| 2030 | -18,583 (-0.4) |
| 2040 | - 150,156 (-2.9) |
| 2045 | - 225,157 (-4.3) |

Notes: $MT\ CO_2e$ = metric tons of carbon dioxide equivalent

1. Mass emissions (MT CO2e) with per capita emissions (MT CO2e per person) in parenthesis

The 2030, 2040, and 2045 efficiency targets identified above will be achieved through a combination of existing state measures and the implementation of local measures that are identified in the Montclair Climate Action Plan. Local measures were identified through a comprehensive assessment of existing local and regional policies, programs, and actions and by assessing any gaps and identifying additional opportunities. Additional measures were developed from best practices of other similar and neighboring jurisdictions, as well as those recommended by organizations and agencies, such as the California Air Pollution Control Officers Association (CAPCOA), the Office of Planning and Research, CARB's 2017 Scoping Plan, CARB's 2022 Scoping Plan, and Association of Environmental Professionals (AEP). Measures were vetted by City staff and were quantified to identify their overall contribution to meeting the City's 2030, 2040, and 2045 GHG reduction targets in the Climate Action Plan.

# Appendix D: Substantial Evidence for Measures and Actions

# City of Montclair Climate Action Plan

## GHG Emissions Reduction Technical Evidence and Reduction Quantification

*prepared for*

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## Tables

# 1 Introduction

This Technical Appendix presents the technical quantification and evidence supporting the greenhouse gas (GHG) emissions reduction potential of the City of Montclair Climate Action Plan (CAP). Section 15183.5(b)(1) of the California Environmental Quality Act (CEQA) guidelines establishes several criteria which a CAP must meet in order to be considered a "qualified GHG reduction plan" and allow for programmatic CEQA streamlining of project GHG emissions. This document provides the evidence substantiating the GHG emissions reductions associated with the CAP measures pursuant to Subsection (D) which states, "measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level." Based on the substantial evidence contained in this Technical Appendix, the GHG emissions reduction associated with the measures in the CAP are sufficient to achieve Montclair's fair share of GHG emissions consistent with the reduction target established by Senate Bill (SB) 32, meet the City's 2030 climate action target, and make substantial progress towards the City's 2045 target, which is in alignment with California's target established by Assembly Bill (AB) 1279.

The quantification in this Technical Appendix is specifically intended to illustrate a viable path to achieving the City of Montclair's 2030 climate action target. As required in CEQA Guidelines Section 15183.5(b)(e), mechanisms to monitor the CAP's progress toward achieving the GHG emissions reduction provided in this Technical Appendix have been established through the CAP development process. If, based on the tracking of community GHG emissions, the City is not on track to reach the 2030 GHG reduction specified here and exceed the target established by SB 32, the CAP as a whole or specific measures and actions will be amended and a CAP update will be prepared that includes altered or additional measures and actions, with evidence that their implementation can achieve the City's climate action targets.

## 1.1 Measures and Actions Organization

As part of the CAP process, the City of Montclair has developed a comprehensive set of measures reducing community wide GHG emissions in the five primary sectors that must be included in all ICLEI U.S. Community Protocol-compliant inventories to achieve the City's climate action targets. Each measure is supported by a set of actions that provide measurable GHG emissions reduction that is supported by substantial evidence. The City has also developed a set of measures and actions for offsetting GHG emissions through carbon sequestration, which are detailed in a standalone section. Measures and actions are organized according to the following hierarchy:

1. **Sectors** define the GHG emissions category in which the GHG reductions will take place and include the five basic emission generating activities including Building Energy, Transportation, Waste, Water and Wastewater. Additionally, carbon reductions through Carbon Sequestration are included.[1]

[1] Note that the City's municipal measures as established in the CAP Update are not discussed in this document. While the municipal measures are important for reducing the GHG emissions of City operations and establishing the City's operations as demonstrations of

2. **Measures** identify specific GHG reduction goals (i.e., activity data targets by 2030 and 2045) in each sector. A single measure generally addresses a subsector; for example, three measures may be established under the Transportation sector to address active transportation, shared/public transportation, and single-passenger vehicles subsectors.
3. **Actions** identify the programs, policies, funding pathways, and other specific commitments that the City of Montclair will implement. Each measure contains a suite of actions, which together have been designed to accomplish the measure.
   a. **Action Criteria.** The actions supporting each measure have been designed around a set of criteria. The criteria have been identified to play important roles in the implementation of the measures. Because community-focused climate action often requires community-level behavioral changes and buy-in to be implementable and successful, the City has designed a suite of actions associated with each measure that support these changes by emphasizing specific needs of the community. The action criteria are Equity, Funding and Financing, Education and Engagement, and Partnerships.[2] Identification of the action criteria and their inclusion into the CAP helps plan for implementation.

Measures and actions can be either quantitative or supportive, defined as follows:

- **Quantitative** measures and actions result in quantifiable GHG emissions reductions when implemented. GHG emissions reductions from these measures and actions are supported by case studies, scientific articles, calculations, or other third-party substantial evidence. Quantitative measures/actions can be summed to quantify how the City of Montclair will meet its 2030 climate action target and demonstrate progress towards the 2045 target. GHG emissions reductions were calculated using published evidence provided through adequately controlled investigations, studies, and articles carried out by qualified experts that establish the effectiveness for the reduction measures and actions. The estimates and underlying calculations provided in this Technical Appendix include substantial evidence and a transparent approach to achieving the City's GHG emissions reduction targets.
- **Supportive** measures and actions may also be quantifiable and have substantial evidence to support their overall contribution to GHG reduction. However, due to one of several factors – including a low GHG reduction benefit, indirect GHG reduction benefit, or potential for double-counting – they have not been quantified and do not contribute directly to the expected GHG reduction target and consistency with the state goals. Despite not being quantified, supportive measures/actions are nevertheless critical to the overall success of the CAP and provide support so that the quantitative measures and actions will be successfully implemented.

## 1.2 GHG Emissions Reductions

This Technical Appendix presents an analysis of the GHG reduction pathway to achieve the City's fair share of GHG emissions reductions necessary to support the state's achievement of the SB 32 GHG reduction goal and provide substantial progress to achieve the 2045 goal of carbon neutrality. The

climate action leadership, they contribute only minorly to community-level GHG emissions reductions and are a subset of the community GHG emissions. For this reason, the GHG emissions reductions expected from municipal measures were conservatively excluded from the analysis in this document and were not quantified as part of the CAP Update preparation process.

[2] The exception is for measures and actions in the municipal sector because the City has much more leverage to enact changes at a municipal level and may not need to consider each pillar to ensure success during implementation.

measures and associated actions reflect local policy and document industry best practices for achieving decarbonization. The GHG emissions reduction associated with the City of Montclair CAP's measures and actions have been calculated and presented in this Technical Appendix in terms of mass emissions (in units of MT $CO_2e$) and are compared to the emissions reduction targets on a per capita basis. A breakdown of the GHG emissions reduction calculated for each measure is included in Table 1.

### Table 1 Estimated GHG Emissions Reductions by Measure

| Measure # | Measure | Anticipated Reduction/Sequestration (MT $CO_2e$/person) | |
|---|---|---|---|
| | | 2030 | 2045 |
| **GHG Emissions Reduction Measures** | | | |
| BE.1 | Join the Clean Power Alliance at the 100% Green Power rate and strive for a less than 4% opt-out rate for residential and commercial customers by 2030 and maintain through 2045.[1] | 29,500 | 0 |
| BE.2 | Electrify 100% of newly constructed buildings by 2030. | 2,180 | 3,615 |
| BE.3 | Improve energy efficiency by 17% in existing residential buildings and 15% in existing commercial buildings by 2030, and 52% in existing residential and 41% in existing commercial buildings by 2045. | 4,579 | 13,741 |
| TR.1 | Develop and implement an Active Transportation Plan to shift 6% of passenger car vehicle miles traveled to active transportation, and 12% by 2045. | 569 | 1,321 |
| TR.2 | Implement a public and shared transit programs to achieve 10% of public transit mode share by 2030 and 30% by 2045. | 5,205 | 19,121 |
| TR.3 | Increase electric/alternative fuel vehicle adoption to 20% for passenger and 10% for commercial vehicles by 2030, and 65% passenger and 50% commercial by 2045. | 17,904 | 70,317 |
| TR.4 | Equitably increase use of electric vehicles, promote active transportation and public transit use by disadvantaged communities. | Supportive | |
| W.1 | Reduce per capita water consumption by 10% compared with 2017 levels by 2030 and 25% by 2045.[1] | 252 | 0 |
| SW.1 | Implement SB 1383 requirements and reduce community-wide landfilled organics by 75% by 2025 and inorganic waste by 35% by 2030 and reduce all landfilled waste by 100% by 2045. | 2,553 | 3,571 |
| **Carbon Sequestration Measures** | | | |
| CS.1 | Increase carbon sequestration and green space by planting 500 new trees through the community by 2030, and 1,000 by 2045. | 18 | 35 |
| CS.2 | Achieve and maintain compost procurement requirements of SB 1383 by 2030. | 914 | 962 |
| ***Total Reductions from Measure Implementation (MT $CO_2e$)*** | | ***63,675*** | ***112,683*** |
| ***Population Projections*** | | ***49,672*** | ***52,285*** |
| ***Reductions per capita (MT $CO_2e$ per capita)*** | | ***1.3*** | ***2.2*** |

| Measure # | Measure | Anticipated Reduction/Sequestration (MT $CO_2e$/person) | |
|---|---|---|---|
| | | 2030 | 2045 |

Notes: MT $CO_2e$ = metric tons carbon dioxide equivalents

1. Measure will continue to reduce GHG emissions associated with electricity until 2045 when retail electricity in California will be required to be 100% carbon free per SB 100 requirements.

To assess the magnitude of GHG emissions reduction needed to provide a fair share GHG emissions reduction and contribute to achieving the state's goal for 2030 (40% below 1990 levels) and making substantial progress towards the goal for 2045 (carbon neutrality), the City developed a *business-as-usual scenario* GHG emissions forecast which assessed the impact of growth on the City's GHG emissions. From the *business-as-usual scenario*, a *legislative adjusted scenario* was developed which accounts for the impacts of state and federal policies on GHG emissions. The combined annual reductions from existing state and federal law is expected to result in a reduction of 68,247 metric tons of carbon dioxide equivalent (MT $CO_2e$) by 2030 and 140,944 MT $CO_2e$ by 2045.[3] The difference between the *legislative adjusted scenario* and the targets, provides the GHG emissions reduction the City would be responsible for to meet its emission reduction targets[4].

As discussed in Appendix C, the 2017 Community GHG Inventory was used to back-cast to 1990 GHG emission levels (i.e., 287,411 MT $CO_2e$) for Montclair assuming Montclair's GHG emission levels have tracked approximately with the state's GHG emissions. Using Montclair's 1990 population estimate of 35,166, it was estimated that 1990 GHG emissions level was approximately 8.2 MT $CO_2e$ per capita. The 1990 per capita GHG emission level was used to develop the 2030 and 2045 efficiency targets consistent with SB 32 and AB 1279. Accordingly, to be consistent with SB 32, a 40% reduction from 1990 per capita levels equates to a target of 4.9 MT $CO_2e$ per capita by 2030, while achieving carbon neutrality equates to a target of 0.0 MT $CO_2e$ per capita by 2045.

As shown in Table 1, the combined local reductions from the measures and actions, if implemented entirely, could result in a reduction of 63,675 MT $CO_2e$ by 2030 and 112,683 MT $CO_2e$ by 2045. Based on the population projections for Montclair, this correlates with a reduction of approximately 1.3 MT $CO_2e$ per capita by 2030 and 2.2 MT $CO_2e$ per capita by 2045. This results in approximately 4.0 MT $CO_2e$ per capita by 2030 and 2.2 MT $CO_2e$ per capita by 2045 after measure implementation. As such, with full CAP implementation the total GHG emissions reductions have the potential to exceed the state targets established by SB 32, of a 40% reduction in GHG emissions below 1990 per capita GHG emission levels, by 0.9 MT $CO_2e$ per capita. The remaining gap to reach the 2045 target remains at 2.2 MT $CO_2e$ per capita. While the measures and actions identified in this CAP will lead to a significant progress in reducing in GHG emissions and provide a foundation for achieving the 2045 goal; achieving the goal will require significant additional changes to technology and systems currently in place at both the state and local level and will require further policies and programs that

[3] See Appendix C for the methodology and details for establishing the forecast scenarios and the forecast results.

[4] The City has identified targets for 2030 (40% below 1990 levels) and 2045 (carbon neutrality) that are consistent with the state's goals and are intended to establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by this CAP would not be cumulatively considerable

build on this plan. Future CAP updates will outline new measures needed to reach the 2045 target.[5] Table 2 presents Montclair's forecasted emissions, targets, and emissions reduction on a per capita basis as well as the per capita emissions translated to mass emissions.

**Table 2 GHG Emissions Forecasts, Reduction Targets and Impact of Measures**

| GHG Emissions Scenario[1] | 2030 (MT $CO_2e$ per capita) | 2045 Emission (MT $CO_2e$ per capita) |
|---|---|---|
| Population Projection[2] | 49,672 | 52,285 |
| Business-as-Usual Scenario Forecast[3] | 6.7 (330,412) | 7.0 (366,102) |
| Legislative Adjusted Scenario Forecast[3] | 5.3 (262,166) | 4.3 (225,157) |
| Targets (SB 32 and AB 1279)[1,2] | 4.9 (243,582) | 0.0 (0) |
| Reductions from Measures | 1.3 (63,675) | 2.2 (112,683) |
| GHG Emissions after Reductions from Measures | 4.0 (198,491) | 2.2 (112,474) |
| **Remaining Gap to Meet Targets** | **-0.9 (-45,092)** | **2.2 (112,474)[4]** |
| **Percent Reduction Below 1990 Levels** | **51%** | **74%** |
| **Target Anticipated to be Met?** | **Yes** | **No; substantial progress demonstrated[4]** |

Notes: MT $CO_2e$ = metric tons of carbon dioxide equivalent

1. The efficiency targets and forecasts (i.e., MT $CO_2e$ per capita) were translated into mass emissions by multiplying by population projections and are presented in parenthesis in this table.

2. Population projections obtained from SCAG 2020 RTP/SCS and were adjusted to account for population growth associated with housing projections from the 6th Regional Housing Needs Allocation (RHNA) cycle. See Appendix C for additional details regarding population projections.

3. See Appendix C for the methodology and details for establishing the forecast scenarios and the reduction targets.

4. The emissions reductions required to meet the 2045 goal will be addressed in future iterations of the Climate Action Plan through new and potentially unknown technologies that allow furthering of the following efforts: full electrification of building and transportation systems, an increased shift to shared and active mobility, and increased waste reduction and diversion

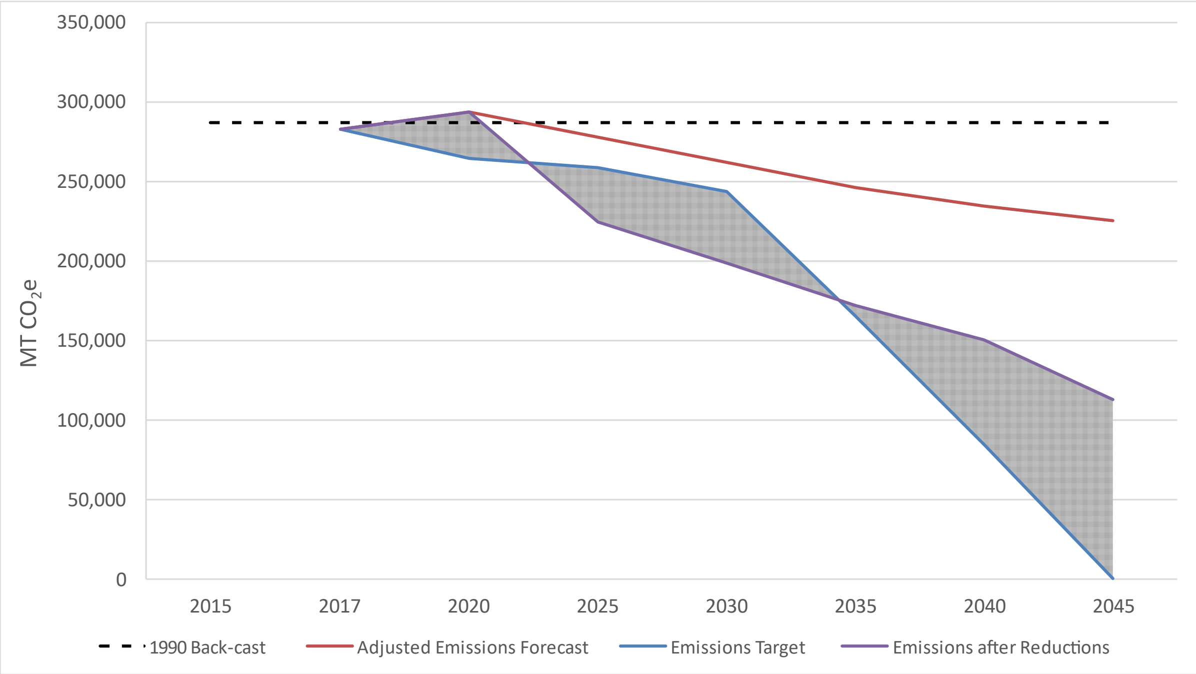
With implementation of the measures and actions in the CAP, the 2030 state goals can be reasonably achieved through local actions and substantial progress towards reaching the 2045 long-term goal can be demonstrated. While the CAP does not provide the GHG emissions reductions to achieve the 2045 goal, it provides evidence-based actions the City can take towards eventually attaining this target. It also illustrates the that reaching carbon neutrality will require significant additional effort and support from the state and federal governments.

Figure 1 shows the climate action targets in relation to the City's GHG emissions after measure implementation. GHG emissions are presented in terms of mass emissions (e.g., per capita emissions times the population projection) for better comparison to the 1990 back-cast, adjusted

55 Consistent with AEP Climate Change Committee recommendations, SB 32 is considered an interim target toward meeting the 2045 State goal. Consistency with SB 32 is considered to be contributing substantial progress toward meeting the State's long-term 2045 goals. Avoiding interference with, and making substantial progress toward, these long-term State targets is important as these targets have been set at levels that achieve California's fair share of international emissions reduction targets that will stabilize global climate change effects and avoid the adverse environmental consequences described under Section 3.1.3, *Potential Effects of Climate Change* (Executive Order B-55-18).

forecast, and targets. A complete description of each measure and its contributing actions is included in the remainder of the Tehcnical Appendix.

**Figure 1 Targets Versus GHG Emissions Reductions**




# 1.3 Greenhouse Gas Emission Reduction Calculation Methodology

The analysis and emission reduction calculations for each of the measures of the CAP outlined in the following pages includes:

- Description of background behind the Measure and the basis for GHG emissions reduction
- Description of the methodology and assumptions for calculating GHG emissions reductions for applicable measures and actions, including reference to data sources.
- A summary of the GHG reduction impact results of GHG emissions reduction calculations.
- Summary table of the impact that the specific Measure has on the overall GHG profile of the City in 2030 and 2045

GHG emissions reduction calculations use conservative values to avoid over-representing the GHG emission reduction potential for any individual measure or action. Special care has been taken to avoid double counting GHG emissions reduction for measures and actions and is detailed in the following sections. Additionally, to eliminate potential for double counting of emissions reduction from the Municipal Sector and the emissions reduction quantified for the community, reduction potential from the municipal measures are not quantified or included in the overall emissions reduction quantified for the CAP. Reduction potential estimated from municipal measures are provided for informational purposes only.

# 2 Greenhouse Gas Emissions reduction

As mentioned above, the measures and actions are summarized by Sector: energy, transportation, water, waste, carbon sequestration, and municipal operations. This document is summarized similarly, and the following section provides the substantial evidence and calculation details for measures and actions that are quantifiable.

## 2.1 Assumptions

Achievable GHG emissions reduction were quantified using a number of assumptions and developed emission factors. Emission factors, assumptions, and references used in the quantification of multiple measures are detailed here and referenced in each quantifiable measure as appropriate in the following sections.

### 2.1.1 Rounding of Values

As part of this document, activity data, emission factors and other calculation factors are shown within tables to provide transparency to the calculations used to quantify GHG reduction potential. Although such values are presented within this document as rounded values, the data is not rounded during the intermediary calculation steps. As such, replication of calculations presented using the rounded values may not exactly match the total GHG reduction potentials reported and some summed values in the tables may not add up exactly.

### 2.1.2 Electricity Emission Factors

The City of Montclair acquires electricity from Southern California Edison (SCE). SCE offers cleaner energy options, the Green Rate, where a higher percentage of the electricity sourced is renewable or carbon-free than the standard rate option. Additionally, there is the opportunity for Montclair to join the Clean Power Alliance (CPA), a southern California Community Choice Aggregation (CCA), to obtain electricity from more renewable sources. To calculate GHG emissions from electricity consumption, the sum total of kilowatt hours (kWh) derived from a specific source is totaled and multiplied by the corresponding annual GHG emissions factor. The current renewable source making up SCE and CPA electricity by rate product and the current emission factors were obtained from their 2020 power content labels.[6] SCE and CPA emission factors were assumed to achieve the Renewable Portfolio Standards (RPS) targets established by SB 100 such that in 2030, electricity will be at least 60 percent renewable and by 2045 electricity will be 100 percent carbon-free.[7] Table 3 presents the SCE and CPA emission factors and percent of renewable electricity for 2020, 2030 and 2045 that were used to interpolate annual electricity emission factor for the interim years.

[6] https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure/power-content-label

[7] SB 100 established a landmark policy requiring renewable energy and zero-carbon resources supply 100% of electric retail sales to end-use customers by 2045. SB 100 also sets in interim target of 60% renewable or carbon-free electricity by 2030.

**Table 3 Electricity Emission Factors**

| Electricity Source[1] | 2030 | 2045 |
|---|---|---|
| **SCE[2]** | | |
| Standard Percent Renewable Sources | 60% | 100% |
| Standard Emission Factor (MT $CO_2$e/kWh) | 0.000163 | 0.0 |
| 50% Green Rate Percent Renewable Sources | 79.2% | 100% |
| 50% Green Rate Emission Factor (MT $CO_2$e/kWh) | 0.000081 | 0.0 |
| 100% Green Rate Percent Renewable Sources | 100% | 100% |
| 100% Green Rate Emission Factor (MT $CO_2$e/kWh) | 0.0 | 0.0 |
| **CPA** | | |
| Lean Power Percent Renewable Sources | 64.4% | 100% |
| Lean Power Emission Factor (MT $CO_2$e/kWh) | 0.000245 | 0.0 |
| Clean Power Renewable Sources | 70.1% | 100% |
| Clean Power Emission Factor (MT $CO_2$e/kWh) | 0.000139 | 0.0 |
| 100% Green Power Renewable Sources | 100% | 100% |
| 100% Green Power Emission Factor (MT $CO_2$e/kWh) | 0.0 | 0.0 |

Notes: MT $CO_2$e = metric tons of carbon dioxide equivalent; MWh =-megawatt-hour; RPS = Renewable Portfolio Standard

1. Renewable sources are considered hydro, biomass, wind, solar and geo-thermal sources. Carbon-neutral includes the listed renewables as well as nuclear sources. Inclusion of carbon-neutral sources in the electricity mix beyond eligible renewable sources can further reduce the emission factor

2. 2020 emission factor for SCE were obtained from the 2020 Power Content label with all following years emission factors assumed to follow a linear decreasing trend to meet SB 100 requirements (i.e. 100% renewable by 2045).

3. 2020 emission factor for CPA were obtained from the 2020 Power Content label with all following years emission factors assumed to follow a linear decreasing trend to meet SB 100 requirements (i.e. 100% renewable by 2045).

For measures or actions that are associated with electrification, the level of GHG emissions savings that is achievable is dependent on the power mix of the provided electricity. Changes in assumptions regarding power mix of purchased electricity, such as upgrading to electricity that is 100 percent carbon-free, will significantly change the electricity emission factor. As such, GHG emissions reduction quantified in the following section are subject to change if the assumptions regarding electricity procurement change.

## 2.2 Energy Sector

The City of Montclair's building energy measures are primarily focused on increasing the renewable or carbon free electricity supplied to Montclair either through opting into a more renewable or "greener" electricity tier under the current electricity provider, SCE, or by joining the Clean Power Alliance (CPA) at a more renewable electricity tier than currently received. SCE's green rate program offers the 50% Green Rate or 100% Green Rate option. Based on the amount of eligible renewable electricity sources that make up the standard retail electricity versus the Green Rate option, by 2030, the emission factor for the SCE 50% Green Rate electricity is anticipated to be approximately 20 percent lower than SCE standard retail electricity while the 100% Green Rate Option would be made up of 100% renewable sources. However, decisions to opt into other SCE electricity tiers dependent on individual customer decisions and as such are not anticipated to result in a significant shift in the community to SCE Green Rate tiers.

The CPA is a Community Choice Aggregation (CCA). CCAs are public, non-profit agencies that procure electricity for a region or community in place of the incumbent utility provider, in this case

SCE. While the CPA determines how electricity will be procured to meet customer demand, SCE is still responsible for delivering that electricity to SCE customers via the existing electrical grid. The CPA offers two electricity options with lower GHG emissions rates than SCE's baseline rate: Clean Power, made up of 50% renewables, and 100% Green Power, made up of 100% renewable electricity from solar and wind.[8]

Under implementation of Measure BE.1 customers in Montclair would be automatically enrolled in CPA 100% Green Power, but have the option to opt-down to Clean Power, or to opt-out to receive electricity directly from SCE. Enrolling in CPA's 100% Green Energy Tier for residential and commerical customers, will drastically reduce the GHG emissions asscociated with building operations in Montclair. Coupling this with reductions in natural gas and propane to power buildings through energy efficiencies in exisitng buildings and electrifying new buildings will further reduce emissions from building operations. Based on this strategy, the CAP's energy measures consist of the following:

- Measure BE-1: Join the Clean Power Alliance at the 100% Green Power rate and strive for a less than 4% opt-out rate for residential and commercial customers by 2030 and maintain through 2045.
- Measure BE-2: Electrify 100% of newly constructed buildings by 2030.
- Measure BE-3: Improve energy efficiency by 17% in existing residential buildings and 15% in existing commercial buildings by 2030, and 52% in existing residential and 41% in existing commercial buildings by 2045.

Measure BE-1 directs the City to enroll in the 100% Green Power tier of the CPA, which drastically decreases GHG emissions assocaited with builing electricity use in the City. Montclair's building stock currently relies heavily on natural gas. While the City has already adopted a resolution for energy choice between natural gas and electricity, many private developers are moving towards electrification of new buildings due to cost effectiveness. Additionally, GHG emissions from Montclair's existing buildings must also be reduced to achieve the City's climate action targets. Measures BE-2 and BE-3 provide frameworks of updated regulations, programs, funding mechanisms, education, and advocacy to drive electrification of new buildings and increase energy efficiency in exisitng buildings.

[8] https://www.energy.ca.gov/filebrowser/download/3856

## Measure BE.1 Join the Clean Power Alliance at the 100% Green Power rate and strive for a less than 4% opt-out rate for residential and commercial customers by 2030 and maintain through 2045.

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | Conduct a feasibility study comparing enrollment in the Clean Power Alliance at the different rates versus rates through SCE, including the SCE Green Rate Program. | Supportive | |
| 2 | Join the CPA at the 100% Green Power rate and strive for a less than 4% opt-out rate by 2025. | 29,500 | 0 |
| 3 | Perform public outreach and education campaigns highlighting the benefits of using renewable energy and the CPA, including:<br>▪ Monitoring opt-out rates on an annual basis<br>▪ Tabling at community events<br>▪ Establishing an informational resource page on the City website<br>▪ Regular social media posts<br>▪ Energy bill inserts" | Supportive | |
| 4 | Develop a benchmarking system to track annual opt-out rates and ensure opt-out rate remains low. | Supportive | |
| 5 | Coordinate with CPA to identify rebates or cost incentives for low-income and disadvantaged families. | Supportive | |

Typically, California CCA opt-out rates are around 3 percent.[9] Because the CPA offers electricity at a competitive price to the utility, opt-out rates are generally low. A recent report found that 96 percent of customers in Los Angeles Counties remaining enrolled in whichever rate product their community was initially enrolled in.[10] Measure BE.1 and its actions include the joining of the CPA, but also aim to keep opt-out rates below 4% by 2030. The City will use a feasibility study and additional education and promotion of the CPA programs and benefits to discourage opting out. While the impacts associated with promotional and educational outreach around CCAs have not been well documented, some research has been conducted on the effects of promotion and education on energy. One study in New York showed that out of the 8,991 people who participated in informational programs, 69% implemented the recommended practices.[11] Another research meta-analysis reviewed dozens of papers covering various energy efficiency, water efficiency, and waste outreach and found that education-only campaigns could produce between 10-12% energy

[9] Julia Sweitzer. 2020. Georgetown Law. Power to the People: Community Choice Aggregation in California. Accessed at https://www.law.georgetown.edu/environmental-law-review/blog/power-to-the-people-community-choice-aggregation-in-california/

[10] Richard Haskell and Sorrel Stielstra. 2022. Claremont Courier. Demystifying Sustainability: Greening Claremont's electricity. Accessed at https://claremont-courier.com/opinion/demystifying-sustainability-greening-claremonts-electricity-from-50-to-100-renewable-56891/

[11] Joseph Laquatra. Journal of Extension. December 2009. The Consumer Education Program for Residential Energy Efficiency. Accessed at: https://archives.joe.org/joe/2009december/a6.php

savings.[12] The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in the Table 4 below.

### Table 4 Measure BE.1 GHG Emissions Reduction Calculations

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Forecasted SCE Power Purchased (kWh)[1] | 188,815,071 | 194,352,198 |
| Average SCE GHG Emission Factor (MT $CO_2e$/kWh)[2] | 0.000163 | 0.0 |
| GHG Emissions Generated using SCE Electricity (MT $CO_2e$) | 30,729 | 0.0 |
| Target Opt-out Power Purchased (kWh)[3] | 7,552,603 | 7,774,088 |
| GHG Emissions Generated from Opt-out Electricity (MT $CO_2e$)[4] | 1,229 | 0.0 |
| **Avoided GHG Emissions (MT $CO_2e$)[5]** | **29,500** | **0.0** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide equivalent; kWh =-kilowatt-hour; MWh = megawatt-hour; 1,000 kWh = 1 MWh

1. The amount of electricity consumed in 2030 and 2045 was forecasted based on the amount of electricity purchased in 2017 and forecasted based on increase in residential electricity usage based on household growth and increase in commercial electricity usage based on employment growth.

2. Due to RPS, retail electricity emission factors (i.e. SCE), will reduce over time. Per SB 100, retail electricity providers would be required to obtain 60% of electricity from renewable sources by 2030 and 100% by 2045. See *2.2.1 Electricity Emission Factors* for details on electricity emission calculations.

3. Assumes 4% opt-out rate, based on a recent study found that 96 percent of customers in Los Angeles Counties remaining enrolled in whichever rate product their community was initially enrolled in.

4. Only emissions associated with the electricity purchased from SCE after CPA opt-out are included as the emission actor for those remaining enrolled in the CPA 100% Green Power rate would be zero.

5. GHG emissions reduction are calculated as the difference between the emissions generated using the standard retail power package versus emissions generated from 96% of the community enrolled in the CPA 100% Green Power rate.

[12] John Green and Lisa A. Skumatz. Skumatz Economic Research Associates, Inc. 2000. Evaluating the Impacts of Education/Outreach Programs: Lessons on Impacts, Methods, and Optimal Education. Accessed at: https://aceee.org/files/proceedings/2000/data/papers/SS00_Panel8_Paper10.pdf

## Measure BE.2 Electrify 100% of newly constructed buildings by 2030.

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | In alignment with the California Energy Commission's efforts to advance clean energy in buildings, adopt an electrification reach code for all new buildings and major retrofits that requires new buildings or major retrofits to be all-electric unless cost prohibitive. Implement through the building permit process which limits expansion of natural gas infrastructure and requires HVAC systems, hot water heaters, and other appliances to be all-electric at time of installation, or in major renovations after 2025. The following steps will be used to develop the reach code:<br>▪ Develop idea for a reach code ordinance.<br>▪ Work with stakeholders.<br>▪ Obtain a cost-effectiveness study.<br>▪ Develop and draft an ordinance.<br>▪ Public process and revisions.<br>▪ Formal adoption process. | 2,180 | 3,615 |
| 2 | Engage with an organization such as Building Decarbonization Coalition to work with local building industry stakeholders in development of the electrification reach code. | Supportive | |
| 3 | Enforce ordinance compliance through a comprehensive permitting compliance program which includes routine training of staff, dedicating staff time to building inspections, charging fees for noncompliance, providing easy to understand compliance checklists online and with permit applications, and facilitating permitting online. | Supportive | |
| 4 | Develop a webpage and materials at City Hall containing benefits of electrification and resources that can assist in the process. Consider working with regional partners to maintain a database of qualified contractors and consultants for electrification retrofits. | Supportive | |
| 5 | Host outreach events to educate the community on use, versatility, and benefits on all-electric appliances. | Supportive | |

To meet the City's 2030 and 2045 goals, the majority of the buildings in the City, including those that have not yet been constructed, will need to be carbon neutral. By ensuring that new buildings are electric rather than natural gas, emissions associated with building energy can be reduced through SB 100 requirements for increased renewable electricity. Further, electrifying new buildings will capitalize on emissions reduction obtained from implementation of Measure BE.1, joining the CPA at 100% Green Power rate, such that new buildings would be carbon neutral. While Montclair has adopted a resolution for energy choice, private developers have moved towards electrifying new developments due to cost-effectiveness. Additionally, this measure would align with the California Energy Commissions (CEC)'s mission to lead the state to a 100 percent clean energy future. The CEC is the state's primary energy policy and planning agency, and is mandated to update and adopt building standards for increase energy efficiency and reduce GHG emissions. The CEC implements this mandate through Part 6 of Title 24, where every three years the Building Energy Efficiency Standards (Energy Code) are updated for new construction and renovation in existing buildings.[13] Under each cycle the Energy Code increases requirements and standards that effectively are leading to either electrification of buildings or installation of on-site renewable energy in addition to increased energy efficiency requirements to continue to reduce GHG emissions.

The adoption of an electrification reach code limiting the piping of natural gas in new buildings and accessory dwelling units unless cost prohibitive, would result in emissions reduction by transitioning the energy consumption of any new construction to primarily renewable electricity. Most natural gas appliances have an electric alternative available for residential and commercial uses. Since electric appliance alternatives are approximately three times more efficient over similar natural gas burning equipment,[14] the use of electric equipment instead of natural gas would result in improved energy efficiency and a reduction in overall energy consumption for replaced natural gas equipment. Additionally, the benefits in annual utility bill savings and decreased cost associated with piping of natural gas into new construction makes all-electric buildings more cost effective in some California Building Climate Zones; including, Zone 10, where Montclair is located.[15],[16] The reach code would limit natural gas line expansion and installation of natural gas heating, ventilation, and air conditioning (HVAC) systems, hot water heaters, and other appliances. HVAC system and hot water heaters are targeted in the reach code due to their large contribution to residential natural gas end-uses and the cost-effectiveness associated with electric alternatives.[17] According to the U.S. Energy Information Administration (EIA) *2020 Annual Energy Outlook,* electric heat pumps for commercial space heating and cooling are two to five times more efficient than natural gas fueled equipment.[18] Residential electric heat pumps for space heating and cooling are six to 20 times more efficient than natural gas equipment.[19] All other actions included would incrementally support and promote electrification of new buildings such as outreach and educational materials to educate the community on the benefits of electrification.

Emission reduction calculations assume the ordinance will be adopted by 2025; therefore, forecasted increased natural gas consumption from population and employment growth beyond 2025 would be replaced by electricity consumption. The electricity consumption would generate GHG emissions that would offset the reduction in natural gas emissions from electrification; however, these emissions would be negligible assuming full implementation of Measure E.1. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in the Table 5 below. Footnotes in the table detail the methodology and application of assumptions.

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[13] California Energy Commission. August 2021. 2022 Building Energy Efficiency Standards Summary. Accessed at: https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf

14 Dennis, Keith. 2015. Environmentally Beneficial Electrification: Electricity as the End-Use Option. The Electricity Journal. 28(9). pp. 100-112. https://doi.org/10.1016/j.tej.2015.09.019

[15] California Energy Codes and Standards. 2019. 2019 Cost Effectiveness Study: Low-Rise Residential New Construction. https://localenergycodes.com/content/2019-local-energy-ordinances/. Accessed May 25th, 2021.

[16] California Energy Codes and Standards. 2019. 2019 Nonresidential New Construction Reach Code Cost Effectiveness Study. https://localenergycodes.com/content/2019-local-energy-ordinances/. Accessed May 25th, 2021.

[17] Energy and Environmental Economics (E3). April 2019. Residential Building Electrification in California: Consumer economics, greenhouse gases and grid impacts. Accessed at: https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

[18] EIA. 2020. Annual Energy Outlook. Table 22. Commercial Sector Energy Consumption, Floorspace, Equipment Efficiency, and Distributed Generation. https://www.eia.gov/outlooks/aeo/data/browser/#/?id=32-AEO2020&cases=ref2020&sourcekey=0. Accessed May 25th, 2020.

[19] EIA. 2020. Annual Energy Outlook. Table 21. Residential Sector Equipment Stock and Efficiency, and Distributed Generation. https://www.eia.gov/outlooks/aeo/data/browser/#/?id=30-AEO2020&cases=ref2020&sourcekey=0. Accessed May 25th, 2020.

## Table 5 Measure BE.2 GHG Emission Reduction Calculations

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Natural Gas Consumption Growth Beyond 2025 (therms)[1] | 5,743,290 | 6,013,335 |
| Natural Gas Consumption in Implementation Year (therms)[2] | 5,332,789 | 5,332,789 |
| Resulting Natural Gas Consumption Avoided from Electrification[3] | 410,501 | 680,545 |
| Natural Gas Emission Factor (MT $CO_2e$/therm)[4] | 0.00531 | 0.00531 |
| Natural Gas GHG Emissions Avoided (MT $CO_2e$) | 2,180 | 3,615 |
| Resulting Increase in Electricity Consumption (kWh)[5,6] | 21,295 | 35,304 |
| Electricity Emission Factor Assuming Implementation of BE.1.(MT $CO_2e$/kWh)[7] | 0.0000065 | 0.0 |
| Additional GHG Emissions from Increased Electricity Consumption (MT $CO_2e$) | 0.14 | 0.0 |
| **Avoided GHG Emissions (MT $CO_2e$)[7]** | **2,180** | **3,615** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.

MT $CO_2e$ = metric tons of carbon dioxide; kWh = kilowatt hour

1. Natural gas consumption beyond 2025 is obtained from the *Legislative Adjusted* Forecast GHG Emissions to account for Title 24 reductions estimates provided in Appendix C.

2. Implementation year assumed to be 2025. Natural gas consumption is obtained from the *Legislative Adjusted* Forecast GHG Emissions provided in Appendix C.

3. Avoided natural gas consumption calculated as difference between forecasted natural gas consumption and natural gas consumption in the implementation year (2025).

4. Emission factors obtained from United States Environmental Protection Agency Emission Factors for Greenhouse Gas Inventories, Table 1. https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf

5. The resulting increase in electricity consumption estimates three times increase in efficiency due to the improved efficiency of electric heat pumps and other electrical equipment of natural gas. Dennis, Keith. 2015. Environmentally Beneficial Electrification: Electricity as the End-Use Option. The Electricity Journal. 28(9). pp. 100-112. https://doi.org/10.1016/j.tej.2015.09.019

6. Natural gas consumption converted to electricity using the conversion: 1 Therm = 29.3 kWh. https://dothemath.ucsd.edu/useful-energy-relations/

7. Electricity emission factor assumes implementation of BE.1, enrollment in CPA's 100% Green Power rate, with a 4% opt-out rate

8. Total GHG Emissions Reductions are calculated by subtracting the Additional GHG Emissions from Increased Electricity Consumption from the Natural Gas GHG Emissions Avoided.

## Measure BE.3 Improve energy efficiency by 17% in existing residential buildings and 15% in existing commercial buildings by 2030, and 52% in existing residential and 41% in existing commercial buildings by 2045.

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | In alignment with the California Energy Commission's efforts to advance clean energy in buildings, adopt a Local Building Energy Standard Ordinance by 2025 that requires retrofits or renovations in existing buildings that include natural gas to be more energy efficient than all-electric buildings. The ordinance may include the following type of amendments: a) Requires mixed-fuel single family and duplex residential buildings to exceed the 2019 Energy Code by 15 percent; b) Requires mixed-fuel office buildings to exceed the 2019 Energy Code by 10 percent; c) Requires prewiring for possible future electric appliances in mixed-fuel buildings; d) For new mixed-fuel construction, require CalGreen Tier 1 for residential buildings, require 5 percent reduced energy budget for hotel/motel and high-rise residential, require 10 percent reduced energy budget for non-residential. | 4,579 | 13,741 |
| 2 | Adopt and implement local amendments to the 2019 California Energy Code incentivizing all electric development (Clean Energy Choice Program). | Supportive | |
| 3 | Work with SoCal Gas to provide opportunities for funding energy efficiency projects and improved natural gas infrastructure to increase energy efficiency in existing building. | Supportive | |
| 4 | Create a rebate and incentive programs for appliance replacement, ENERGY STAR appliance program, and Energy Conservation Programs, with public outreach. Work with SCE and/or Clean Power Alliance to provide rebates for residential replacement of old appliances with electric-powered or more energy efficient appliances. | Supportive | |
| 5 | Provide information to staff and community regarding annual energy savings from energy conservation programs for CAP implementation tracking. | Supportive | |
| 6 | Work with and educate businesses on partnerships designed to maximize the use of renewable energy including solar/ storage, appropriate tariff changes and microgrid opportunities. | Supportive | |
| 7 | Identify funding for upgrading ventilation systems and natural gas appliances in disadvantaged community homes to improve air quality and increase energy efficiency. | Supportive | |
| 8 | Seek out funding partnerships with local financiers and work with partners such as the CPA to fund a program specifically for decarbonization retrofits, such as a local turnkey retrofit program that leverages existing funding, which offers low-cost financing of electrification and energy efficiency retrofits for residents and local businesses. | Supportive | |

With the full implementation of Measure BE.1, nearly all emissions associated with electricity usage in Montclair would be carbon neutral. As such, emissions associated with existing buildings would be associated with natural gas combustion. Natural gas combustion for heating and cooking in commercial and residential buildings currently[20] contributes nearly 9% of Montclair's total GHG emissions. Through increased energy efficiency and transition buildings from consumption of natural gas to electricity as equipment reaches end of life, emissions from this source can be reduced. Given that electric appliances are approximately three times more efficient over similar natural gas burning equipment and appliances[21] and the numerous incentives, rebates, and programs available for replacing old appliances with energy efficient electric alternatives, [22] it is anticipated that even with Montclair's resolution for energy choice, equipment upgrades, and replacements of natural gas equipment will primarily be an electric alternative. The adoption of a Local Building Energy Standard Ordinance that requires retrofits or renovations in existing buildings that include natural gas to be more energy efficient than all-electric buildings, will further ensure that upgrades and equipment replacement are as energy efficient as possible.

With implementation of Measures BE.1 at 100% Green Power, electric energy efficiency upgrades would have negligible impact on GHG emissions. Therefore, energy efficiency upgrades for this analysis focused on the upgrading natural gas equipment with the assumption that the majority of natural gas fueled equipment would be replaced with electric equipment at its operational end-of-life as electric alternatives are becoming more cost effective and are more energy-efficient than natural gas technology. The anticipated percent of existing residential and commercial buildings needing to replace the varying types of equipment by 2030 and 2045 are presented in the tables below. The calculations for replacement are based on the equipment's lifespan and the assumption that approximately 63% of appliances would be replaced at burnout with an energy efficient electric alternative.[23] The reduction in natural gas consumption was calculated based on the percentage of natural gas attributed to water heaters, HVAC systems, and stoves in residential and commercial buildings multiplied by the calculated percent of anticipated replacement of that type of equipment. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in Table 6 and Table 7 below. Footnotes in the table detail the methodology and application of assumptions.

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[20] Based on 2017 Community GHG Inventory. See Appendix C.

21 Dennis, Keith. 2015. Environmentally Beneficial Electrification: Electricity as the End-Use Option. The Electricity Journal. 28(9). pp. 100-112. https://doi.org/10.1016/j.tej.2015.09.019

[22] In regions where natural gas and electric utilities are separate entities, electrification incentives are strongest. Deason, Jeff. et al. 2018. Electrification of buildings and Industry in the United States. pp. 39. https://pdfs.semanticscholar.org/27f0/d125d5316ee10565560545c0fc17d6c447a8.pdf?_ga=2.3238896.1101123906.1590438648-1004765093.1590438648

[23] Based on studies by the CPUC, permitted and non-permitted HVAC unit installations were 100% compliant with the mandatory minimum requirements and on average exceeded energy efficiency requirements ~63% of the time. CPUC. 2017. Final Report: 2014-2016 HVAC Permit and Code Compliance Market Assessment (Work Order 6) Volume I – Report. Page 4-5. (http://www.calmac.org/publications/HVAC_WO6_FINAL_REPORT_VolumeI_22Sept2017.pdf)

### Table 6 Measure BE.3 GHG Emission Reduction Calculations: Residential Buildings

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Average Percent of Installation Exceeding Energy Efficiency Requirements[1] | 63% | 63% |
| Average Residential Natural Gas Usage from Water Heating[2] | 38% | 38% |
| Average Residential Natural Gas Usage from Space Heating[2] | 39% | 39% |
| Average Residential Natural Gas Usage from Cooking[2] | 9% | 9% |
| Average Life-span of Residential Gas-fired Water Heater (years)[3] | 13 | 13 |
| Average Life-span of Residential Gas-fired HVAC (years)[3] | 21.5 | 21.5 |
| Average Life-span of Residential Gas-fired Stove top (years)[3] | 12 | 12 |
| **Residential Buildings** | | |
| Existing Natural Gas Usage after Implementation of Measure BE.2[4] | 3,551,484 | 3,551,484 |
| Percentage of Hot Water Heaters Replaced with Higher Efficiency Device[5] | 24% | 63% |
| Percent Natural Gas Reduction from Water Heater Replacement[6] | 9% | 24% |
| Percentage of HVAC Replaced with Higher Efficiency Device[5] | 15% | 59% |
| Percent Natural Gas Reduction from HVAC Replacement[6] | 6% | 23% |
| Percentage of Stovetops Replaced with Higher Efficiency Device[5] | 26% | 63% |
| Percent Natural Gas Reduction from Stovetops Replacement[6] | 2% | 6% |
| Total Percent Reduction of Natural Gas[7] | 17% | 52% |
| Reduction of Natural Gas (Therms) | 613,496 | 1,864,461 |
| Natural Gas Emission Factor (MT $CO_2e$/therm)[8] | 0.00531 | 0.00531 |
| Natural Gas GHG Emissions Avoided (MT CO2e) | 3,259 | 9,903 |
| Resulting Increase in Electricity Consumption (kWh)[9,10] | 5,991,833 | 18,209,628 |
| Electricity Emission Factor Assuming Implementation of BE.1.(MT $CO_2e$/kWh)[11] | 0.0000065 | 0.0 |
| Additional GHG Emissions from Increased Electricity Consumption (MT CO2e) | 39 | 0.0 |
| **Avoided GHG Emissions (MT $CO_2e$)[12]** | **3,220** | **9,903** |

| Calculation Factor | 2030 | 2045 |
|---|---|---|

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide; kWh = kilowatt hour

1. Based on studies by the CPUC, permitted and non-permitted HVAC unit installations were 100% compliant with the mandatory minimum requirements and on average exceeded energy efficiency requirements ~63% of the time. CPUC. 2017. Final Report: 2014-2016 HVAC Permit and Code Compliance Market Assessment (Work Order 6) Volume I – Report. Page 4-5. (http://www.calmac.org/publications/HVAC_WO6_FINAL_REPORT_VolumeI_22Sept2017.pdf)

2. Natural gas usage in residential and commercial buildings obtained from California Air Resources Board 2018 GHG Inventory; U.S. Energy Information Administration, 2009 Residential Energy Consumption Survey and 2012 Commercial Buildings Energy Consumption Survey

3. Residential gas fired furnaces, water heaters, and stoves/cook tops have an average lifespan of 21.5, 13, and 12 years, respectively; while commercial natural gas fired furnaces and water heaters have an average lifespan of 23 and 10 years, respectively. EIA. 2018. Updated Buildings Sector Appliance and Equipment Cost and Efficiencies. Appendix C. pp. 9, 51, 75, 90, 98, 120 https://www.eia.gov/analysis/studies/buildings/equipcosts/pdf/full.pdf. Accessed May 25, 2020.

4. To avoid double counting only natural gas consumption beyond 2025 obtained from the *Legislative Adjusted* Forecast GHG Emissions are evaluated. See Appendix C for forecast details.

5. Equipment estimated life-span were used to estimate the percent of equipment that would need replacing at each target year assuming implementation of Local Energy building Ordinance by 2025. Percent of assumed replacement was multiplied by the average percent of equipment found to be installed exceeding energy efficiency requirements, source in Note 1.

6. Natural gas replacement calculated as the percentage of device replace with a higher efficiency device multiplied by the percent that usage makes up of the overall natural gas usage in the building. (e.g., percent of replaced natural gas water heaters multiplied by percent of natural gas used for hot water heating in residential buildings).

7. Sum of total reductions anticipated from device replacement with energy efficient electric alternative.

8. Emission factors obtained from United States Environmental Protection Agency Emission Factors for Greenhouse Gas Inventories, Table 1. https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf

9. The resulting increase in electricity consumption estimates three times increase in efficiency due to the improved efficiency of electric heat pumps and other electrical equipment of natural gas. Dennis, Keith. 2015. Environmentally Beneficial Electrification: Electricity as the End-Use Option. The Electricity Journal. 28(9). pp. 100-112. https://doi.org/10.1016/j.tej.2015.09.019

10. Natural gas consumption converted to electricity using the conversion: 1 Therm = 29.3 kWh. https://dothemath.ucsd.edu/useful-energy-relations/

11. Electricity emission factor assumes implementation of BE.1, enrollment in CPA's 100% Green Power rate, with a 4% opt-out rate

12. Total GHG Emissions Reductions are calculated by subtracting the Additional GHG Emissions from Increased Electricity Consumption from the Natural Gas GHG Emissions Avoided.

## Table 7 Measure BE.3 GHG Emission Reduction Calculations: Commercial Buildings

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Average Percent of Installation Exceeding Energy Efficiency Requirements[1] | 63% | 63% |
| Average Commercial Natural Gas Usage from Water Heating[2] | 28% | 28% |
| Average Commercial Natural Gas Usage from Space Heating[2] | 42% | 42% |
| Average Life-span of Commercial Gas-fired Water Heater (years)[3] | 10 | 10 |
| Average Life-span of Commercial Gas-fired HVAC (years)[3] | 23 | 23 |
| **Commercial Buildings** | | |
| Existing Natural Gas Usage after Implementation of Measure BE.2[4] | 1,781,306 | 1,781,306 |
| Percentage of Hot Water Heaters Replaced with Higher Efficiency Device[5] | 32% | 63% |
| Percent Natural Gas Reduction from Water Heater Replacement[6] | 9% | 18% |
| Percentage of HVAC Replaced with Higher Efficiency Device[5] | 14% | 55% |
| Percent Natural Gas Reduction from HVAC Replacement[6] | 6% | 23% |
| Total Percent Reduction of Natural Gas[7] | 15% | 41% |
| Reduction of Natural Gas (Therms) | 259,048 | 722,607 |
| Natural Gas Emission Factor (MT $CO_2$e/therm)[8] | 0.00531 | 0.00531 |
| Natural Gas GHG Emissions Avoided (MT CO2e) | 1,376 | 3,838 |
| Resulting Increase in Electricity Consumption (kWh)[9,10] | 2,530,041 | 7,057,483.03 |
| Electricity Emission Factor Assuming Implementation of BE.1.(MT $CO_2$e/kWh)[11] | 0.0000065 | 0.0 |
| Additional GHG Emissions from Increased Electricity Consumption (MT $CO_2$e) | 16 | 0.0 |
| **Avoided GHG Emissions (MT $CO_2$e)[12]** | **1,359** | **3,838** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2$e = metric tons of carbon dioxide; kWh = kilowatt hour
1. Based on studies by the CPUC, permitted and non-permitted HVAC unit installations were 100% compliant with the mandatory minimum requirements and on average exceeded energy efficiency requirements ~63% of the time. CPUC. 2017. Final Report: 2014-2016 HVAC Permit and Code Compliance Market Assessment (Work Order 6) Volume I – Report. Page 4-5. (http://www.calmac.org/publications/HVAC_WO6_FINAL_REPORT_VolumeI_22Sept2017.pdf)
2. Natural gas usage in residential and commercial buildings obtained from California Air Resources Board 2018 GHG Inventory; U.S. Energy Information Administration, 2009 Residential Energy Consumption Survey and 2012 Commercial Buildings Energy Consumption Survey
3. Residential gas fired furnaces, water heaters, and stoves/cook tops have an average lifespan of 21.5, 13, and 12 years, respectively; while commercial natural gas fired furnaces and water heaters have an average lifespan of 23 and 10 years, respectively. EIA. 2018. Updated Buildings Sector Appliance and Equipment Cost and Efficiencies. Appendix C. pp. 9, 51, 75, 90, 98, 120 https://www.eia.gov/analysis/studies/buildings/equipcosts/pdf/full.pdf. Accessed May 25, 2020.
4. To avoid double counting only natural gas consumption beyond 2025 obtained from the *Legislative Adjusted* Forecast GHG Emissions are evaluated. See Appendix C for forecast details.
5. Equipment estimated life-span were used to estimate the percent of equipment that would need replacing at each target year assuming implementation of Local Energy building Ordinance by 2025. Percent of assumed replacement was multiplied by the average percent of equipment found to be installed exceeding energy efficiency requirements, source in Note 1.
6. Natural gas replacement calculated as the percentage of device replace with a higher efficiency device multiplied by the percent that usage makes up of the overall natural gas usage in the building. (e.g., percent of replaced natural gas water heaters multiplied by percent of natural gas used for hot water heating in commercial buildings).
7. Sum of total reductions anticipated from device replacement with energy efficient electric alternative.
8. Emission factors obtained from United States Environmental Protection Agency Emission Factors for Greenhouse Gas Inventories, Table 1. https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf
9. The resulting increase in electricity consumption estimates three times increase in efficiency due to the improved efficiency of electric heat pumps and other electrical equipment of natural gas. Dennis, Keith. 2015. Environmentally Beneficial Electrification: Electricity as the End-Use Option. The Electricity Journal. 28(9). pp. 100-112. https://doi.org/10.1016/j.tej.2015.09.019
10. Natural gas consumption converted to electricity using the conversion: 1 Therm = 29.3 kWh. https://dothemath.ucsd.edu/useful-energy-relations/
11. Electricity emission factor assumes implementation of BE.1, enrollment in CPA's 100% Green Power rate, with a 4% opt-out rate
12. Total GHG Emissions Reductions are calculated by subtracting the Additional GHG Emissions from Increased Electricity Consumption from the Natural Gas GHG Emissions Avoided.

# 2.3 Transportation Sector

Reducing transportation emissions means reducing the number of miles driven by fossil fuel-powered vehicles, particularly passenger and commercial vehicles, which account for 65% of GHG emissions in the City of Montclair. The City's transportation strategy consists of a multi-pronged approach for incentivizing alternatives to fossil fuel-powered vehicle trips, including shifting transportation mode share to active transportation and public transit options; electrifying passenger and commercial vehicle trips, and decarbonizing off-road equipment. This CAP prioritizes reducing vehicle miles travelled (VMT) first, by improving active and public transportation mode share, then shifting remaining VMT to electric vehicles. While in theory, 100% electrification of all vehicles in Montclair could achieve zero-emissions in the transportation sector without reducing VMT, the City recognizes that cars and roadways carry huge amounts of embodied emissions[24] not accounted for in the inventory, over which the City has little control.[25] Reducing VMT carries additional benefits outside of GHG emissions reductions as well, including reduced congestion, reduced space needed for roadways and parking, local economic revitalization, and lifestyle improvements.[26] Based on this strategy, the CAP's transportation measures consist of the following:

- Measure TR-1: Develop and implement an Active Transportation Plan to shift 6% of passenger car vehicle miles traveled to active transportation, and 12% by 2045.
- Measure TR-2: Implement a public and shared transit programs to achieve 10% of public transit mode share by 2030 and 30% by 2045.
- Measure TR-3: Increase electric/alternative fuel vehicle adoption to 20% for passenger and 10% for commercial vehicles by 2030, and 65% passenger and 50% commercial by 2045.
- Measures TR-4: Equitably increase use of electric vehicles, promote active transportation and public transit use by disadvantaged communities.

To achieve a greater than 6% mode shift to active transportation (Measure TR-1), the City plans to provide low stress and convenient infrastructure and prioritize mobility via active transportation. Infrastructure needs include bikeways, sidewalk improvements, and expansions of both kinds of infrastructure to all areas of the City. Once the infrastructure is available and stress/comfort is not an issue, comparison with other cities around the world suggest more people will choose active transportation.

To achieve a greater than 10% mode shift to public transit (Measure TR-2), the City plans to improve public and shared transit programs and infrastructure. Further, the Metro Gold Line Foothill Extension project currently underway will extend the existing Metro Gold line from the City of Pasadena to City of Montclair and will include the construction of six new stations including one in Montclair. The project will serve the cities and the communities within the Glendora to Montclair corridor area and will greatly improve City-to-City mobility. It's anticipated that with the extension in the Gold Line and infrastructure to support those services will increase ridership and reduce passenger VMT in the community. Therefore measure prioritizes public transit in the City, makes transit more convenient and accessible, and improves infrastructure to access transit stations –

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[24] Embodied emissions are associated with energy used in the extraction, processing, and transportation of materials.

[25] Mark Mills. August 2021. The tough calculus of emissions and the future of EVs. Accessed at: https://techcrunch.com/2021/08/22/the-tough-calculus-of-emissions-and-the-future-of-evs/

[26] Richard Campbell and Margaret Wittgens. March 2004. The Business Case for Active Transportation. Accessed at: http://thirdwavecycling.com/pdfs/at_business_case.pdf

important determining factors for public transit mode share.

While the City cannot require its residents or businesses to buy ZEVs, Measure TR-3 will ensure the infrastructure and incentives are present in the City to begin to remove present barriers to passenger and commercial zero emission vehicle (ZEV) adoption.

Measure TR-4 focuses on providing equitable opportunities for disadvantaged communities in the City to have access to electric vehicle (EV) car shares and transit available.

## Measure TR.1 Develop and implement an Active Transportation Plan to shift 6% of passenger car vehicle miles traveled to active transportation, and 12% by 2045.

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | Develop and adopt an Active Transportation Plan consistent with the City General Plan Policies that will identify funding strategies and policies for development of pedestrian, bicycle, and other alternative modes of transportation projects. Establish Citywide events, outreach, educational programs, or platforms to promote active transportation in the community. | 569 | 1,321 |
| 2 | Conduct a Complete Street Feasibility Study on street improvement options to identify streets and intersections that can be improved for pedestrians and bicyclists through traffic calming measures and/or where multi-use pathway opportunities exist to increase active transportation. | Supportive | |
| 3 | Obtain funding and implement "mobility hub" projects consistent with City General Plan. Work to identify grant funding opportunities to implement Complete Our Streets projects included in the Complete Our Streets Plan. | Supportive | |
| 4 | Install and upgrade end-of-trip facilities (lockers, bike racks, etc.) at transit center to encourage active transportation as part of commute for community members using public transit. Improve and ensure there are safe bicycle and pedestrian infrastructure to access transit center. | Supportive | |
| 5 | Engage the Bicycle Pedestrian Commission, Safe Routes to School network, and community groups to identify additional short-term and long-term bikeway and pedestrian infrastructure improvement projects to implement. | Supportive | |
| 6 | Ensure there is equitable access to safe bicycle and pedestrian infrastructure in all areas of the city. Facilitate transportation equity through targeted provision of programs that encourage minority, low-income, and senior populations to take transit, walk, bike, use rideshare or car share. | Supportive | |
| 7 | Evaluate and update the City's Zoning Code, Transportation Demand Management Ordinance, and California Green Building Code to ensure the City requires installation of accessible, shaded, and secure bicycle parking for new commercial development and retrofits and requires installation of bicycle parking areas in instances where off-street parking is required. | Supportive | |

Current bicycle and pedestrian mode share in Montclair (as of 2019) is low – 0.5% and 0.7%, respectively.[27] Increasing active transportation is an essential aspect of reducing the amount of VMT in Montclair. Walking, bikes, e-bikes, and other active transportation modes can have a strong impact on cities' GHG emissions, with the potential to cut urban transportation emissions up to 11% in cities that make a strong commitment to promoting bicycle travel.[28] An Active Transportation Plan, which provides an understanding of the current conditions of sidewalks and bike lanes, will provide a framework and timeline for making the most effective infrastructure improvements to increase trips by biking and walking and reduce trips by passenger car. A successful plan also includes identification of funding sources for which Montclair will pursue the establishment of developer fees. The SCAG 2020 RTP/SCS outlined specific measures, actions, and investments that are anticipated to effectively shift 12.5% of trips to active transportation by 2045 forecasted rates assuming business-as usual and current trends.[29] As part of this plan, local governments are expected to develop and implement active transportation plans that include the development of a comprehensive local bikeway and pedestrian network, using Complete Streets principles and investing in Safe Route to School strategies. Accordingly, with development and implementation of an Active Transportation Plan consistent with SCAG's 2020 RTP/SCS, Montclair is expected to attain a 12.5% decrease in passenger vehicle VMT by 2045 and about half that or about 6% by 2030. The calculations and assumptions used to estimate emissions reduction from Measure TR.1 are provided in Table 8. Footnotes in the table detail the methodology and application of assumptions.

[27] https://data.census.gov/cedsci/table?g=1600000US0648788&tid=ACSST5Y2019.S0801

[28] Jacob Mason et al. Institute for Transportation & Development Policy and the University of California, Davis. November 2015. A Global High Shift Cycling Scenario. Accessed at: https://itdpdotorg.wpengine.com/wp-content/uploads/2015/11/A-Global-High-Shift-Cycling-Scenario_Nov-2015.pdf

[29] Southern California Association of Governments (SCAG). 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Active Transportation Appendix. https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_active-transportation.pdf?1606001530

## Table 8 Measure TR.1 GHG Emission Reduction Calculations

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Bicycle share mode target[1] | 2.5% | 5.0% |
| Pedestrian share mode target[2] | 3.5% | 7.0% |
| Total Forecasted Passenger ICE VMT (miles)[3] | 426,033,000 | 471,214,854 |
| Passenger trips/mile[4] | 0.112 | 0.1140 |
| Total Forecasted Passenger Trips | 47,711,490 | 53,721,032 |
| Targeted Substitution of Bike Trips for Passenger Vehicle Trips[5] | 954,230 | 2,417,446 |
| Targeted Substitution of Pedestrian Trips for Passenger Vehicle Trips[5] | 1,335,922 | 3,384,425 |
| Passenger VMT Reduced with Bike Trips[6] | 1,431,345 | 3,626,170 |
| Passenger VMT Reduced with Bike Trips[7] | 400,777 | 1,015,328 |
| Total Reduction in Passenger ICE VMT | 1,832,121 | 4,641,497 |
| Passenger Vehicle ICE Emission Factor (MT $CO_2e$/VMT)[8] | 0.000311 | 0.000285 |
| Avoided GHG Emissions (MT $CO_2e$) | 569 | 1,321 |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide; VMT = vehicle miles traveled; ICE = internal combustion engine
1. Increase by 2% compared with 2019 baseline of 0.5% (https://data.census.gov/cedsci/table?g=1600000US0648788&tid=ACSST5Y2019.S0801)
2. Increase by 2.8% compared with 2019 baseline of 0.7% (https://data.census.gov/cedsci/table?g=1600000US0648788&tid=ACSST5Y2019.S0801)
3. Total Forecasted Passenger VMT are projections provided by Fehr & Peers for forecasting GHG emissions, provided in Appendix C. To avoid double counting of reductions associated with electric vehicle VMT, only VMT from combustion vehicles considered here.
4. Passenger trips per mile calculated using EMFAC2021. Calculated for combustion vehicles only
5. Calculated as number of passenger vehicle trips multiplied by the targeted mode share percentage.
6. Calculated by multiplying the estimated new bike trips by the average distanced biked per trip (1.5 miles) as reported by CARB (https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/bicycle_facilities_technical_041519.pdf)
7. Calculated by multiplying the estimated new pedestrian trips by the average distanced walked per trip (0.3 miles) as reported by CARB (https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/pedestrian_facilities_technical_041519.pdf)
8. Forecasted passenger ICE emission factor calculated using EMFAC2021. See Appendix C for details on EMFAC analysis.

## Measure TR.2 Implement a public and shared transit programs to achieve 10% of public transit mode share by 2030 and 30% by 2045.

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | Conduct local transportation surveys to better understand the community's needs and motivation for traveling by car versus other alternatives such as bus or Metro Gold Line light rail. Use survey results to inform transit expansion and improvement projects. | Supportive | |
| 2 | Adopt policy to encourage new development of public space to be transit accessible and multi-functional by co-locating public facilities. | Supportive | |
| 3 | Adopt a Transportation Demand Management (TDM) Plan for the City that includes a transit system focus. Provide incentives for implementation of TDM measures at local businesses and for new developments. Incentives and incentives to encourage use of transit instead of driving alone may include:<br>▪ Offer monetary incentives for employees to use car share, carpool, take the bus, bike, or walk<br>▪ Require large employers (more than 25 employees) to offer subsidies to employees for the transit system<br>▪ Offer car/vanpool matching<br>▪ Offer emergency ride homes for employees utilizing transit<br>▪ Market-rate parking fee charged directly to employees or patrons at businesses or new developments<br>▪ Offer priority/discounted HOV parking at businesses or new developments<br>▪ Daily parking charge available for occasional drivers instead of monthly parking pass | 5,205 | 19,121 |
| 4 | Continue to work with federal legislative advocate and congress member to secure funds for Metro's Gold Line plan and supporting infrastructure. | Supportive | |
| 5 | Obtain funding and grants to upgrade City-owned or operated facilities and infrastructure, such as parking, transit stops, and community hubs (e.g., the library, City recreational center), that promote use of public transit. | Supportive | |

In general, increases and improvements to public transportation systems reduce a city's dependence on fossil fuels and reduce VMT.[30] The City of Montclair is anticipated to experience an increase in transit ridership in part due to the Metro Gold Line Foothill Extension.[31] According to the SCAG 2020 RTP/SCS, an increased mode shift away from passenger vehicles will require improved operational and accessibility strategies for public transit. [32]The best ways to improve a transit system and reduce driving is to expand its geographical reach and increase the frequency and

[30] California Air Resources Board (CARB). August 2017. Methods to Assess Co-Benefits of California Climate Investments: Vehicle Miles Travelled. Accessed at: http://ww2.arb.ca.gov/sites/default/files/auction-proceeds/carb_vehicle_miles_traveled.pdf

[31] https://foothillgoldline.org/environmental-reviews/

[32] Southern California Association of Governments (SCAG). 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Transit Appendix. https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_transit.pdf?1606002122

reliability of transit service. The majority of these improvements will need to come from the transit agencies themselves. However, through understanding the needs of the community, Montclair can increase public transit accessible for all social and demographic needs of their community. Success in other cities suggests that significant investment in public transit can increase public transit mode share on par with those cities. The City of San Francisco leads the state with 26% transit mode share in 2017 (pre-COVID),[33,34] while the City of Seattle has documented significant increases in public transit mode share to 48% in 2017 (pre-COVID).[35]

Through the proposed strategies for improved operations and accessibility and significant investment in transit and passenger coupled with development of sustainable communities, the travel demand model used for SCAG 2020 RTP/SCS indicates a 144% increase in transit and rail boardings. On a per capita level, this translates to a doubling in transit ridership that will outpace the region's growth in population and employee of approximately 19.5% from 2016 and 2045.[36] Each new mile of transit usage replaces VMT on much more than a 1:1 basis, with approximately 1% increase in transit frequency saving 0.5% in VMT.[37] The Metro Gold Line Foot line Extension will add approximately 12 miles of route and one new station to Montclair to begin operation in 2025. For this analysis it was assumed that with the addition of the Metro Gold Line Extension and implementation of strategies included in the SCAG 2020 RTP/SCS that by 2030 mode shift from passenger VMT to public transit would increase to 10% and to 30% by 2045. This is approximately 8% and 28%, respectively, greater than Montclair's existing transit mode share of 2.2%.[38] With the Innovative Clean Transit regulation requiring the transition of fleet to zero-emission vehicles, emissions associated with mode shift from passenger vehicles to public transit are anticipated to result in further reduction. Foothill Transit has already transitioned a majority of their fleet to electric buses while Metro aims to transition to a 100% electric bus fleet by 2030.[39,40] As such, it is assumed in this analysis that increased ridership of transit would be on zero-emission vehicles. The calculations and assumptions used to estimate emissions reduction from Measure TR.2 are provided in Table 9. Footnotes in the table detail the methodology and application of assumptions.

[33] San Francisco Municipal Transportation Agency (SFMTA). December 2021. Sustainable Transportation Mode Share. Accessed at: https://www.sfmta.com/reports/sustainable-transportation-mode-share

[34] Pre-COVID numbers are referenced here with the understanding that public transit usage during the COVID pandemic were lower than normal and are likely to increase again assuming a return to pre-COVID conditions.

[35] Commute Seattle. December 2021. 2019 Mode Split Study Report. Accessed at: https://www.commuteseattle.com/resource/2019-mode-split-study/

[36] Southern California Association of Governments (SCAG). 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Transit Appendix. https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_transit.pdf?1606002122

[37] Todd Litman. Victoria Transport Policy Institute. August 2021. Evaluating Public Transit Benefits and Costs Best Practices Guidebook. Accessed at: https://www.vtpi.org/tranben.pdf

[38] https://data.census.gov/cedsci/table?g=1600000US0648788&tid=ACSST5Y2017.S0801

[39] http://foothilltransit.org/news/sustainability/

[40] https://www.dropbox.com/s/wdlpmph9x2gbm2h/Moving-Beyond-Sustainability-Strategic-Plan-2020.pdf?dl=0

## Table 9 Measure TR.2 GHG Emission Reduction Calculations

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Transit share mode target [1] | 10.0% | 30.0% |
| Total Forecasted Passenger ICE VMT (miles)[2] | 426,033,000 | 471,214,854 |
| Passenger trips/mile[3] | 0.112 | 0.114 |
| Total Forecasted Passenger Trips | 47,711,490 | 53,721,032 |
| Targeted Substitution of Transit Trips for Passenger Vehicle Trips[4] | 3,721,496 | 14,934,447 |
| Passenger VMT Reduced with Transit Trips[5] | 16,746,733 | 67,205,011 |
| Passenger Vehicle ICE Emission Factor (MT $CO_2e$/VMT)[6] | 0.000311 | 0.000285 |
| Avoided GHG Emissions (MT $CO_2e$)[7] | 5,205 | 19,121 |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.

MT $CO_2e$ = metric tons of carbon dioxide; VMT = vehicle miles traveled; ICE = internal combustion engine

1. Increase by 7.8% compared with 2019 baseline of 2.2% (https://data.census.gov/cedsci/table?g=1600000US0648788&tid=ACSST5Y2019.S0801)
2. Total Forecasted Passenger VMT are projections provided by Fehr & Peers for forecasting GHG emissions, provided in Appendix C. To avoid double counting of reductions associated with electric vehicle VMT, only VMT from combustion vehicles considered here.
3. Passenger trips per mile calculated using EMFAC2021. Calculated for combustion vehicles only
4. Calculated as number of passenger vehicle trips multiplied by the targeted mode share percentage.
5. Calculated by multiplying the estimated new transit trips by the average distance traveled per transit trip (4.5 miles) as reported by American Public Transportation Association (APTA). Public transit in Montclair consists primarily of buses and light-rail, therefore the average distance traveled per transit trip is the average distance traveled by bus and light-rail. (https://www.apta.com/wp-content/uploads/Resources/resources/statistics/Documents/FactBook/2018-APTA-Fact-Book.pdf )
6. Forecasted passenger ICE emission factor calculated using EMFAC2021. See Appendix C for details on EMFAC analysis.
7. Avoided emissions is calculated as the reduced passenger ICE VMT multiplied by the passenger ICE emission factor. Based on the transit agencies that operate in Montclair, the current public transit fleets are primarily electric or zero emissions and are continuing to transition to 100% zero emissions. Therefore, it is assumed that mode shift to transit in Montclair would be to zero emission transit fleets and emissions with those fleets are considered carbon neutral.

### Measure TR.3 Increase electric/alternative fuel vehicle adoption to 20% for passenger and 10% for commercial vehicles by 2030, and 65% passenger and 50% commercial by 2045 .

| Action # | Action | Anticipated Reduction (MT $CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | Adopt an EV Readiness Reach Code by 2026 requiring new commercial and multifamily construction to install the minimum number of EV chargers based on Tier 2 CalGreen requirements (20% of total). | 17,904 | 70,317 |
| 2 | Adopt an EV Charging Retrofits in existing Commercial and Multifamily Buildings Reach Code by 2026 requiring major retrofits, with either a building permit with square footage larger than 10,000 square feet or including modification of electric service panels, to meet CalGreen requirements for "EV Ready" charging spaces and infrastructure. | Supportive | |
| 3 | Conduct a survey of existing publicly accessible electric vehicle chargers and their locations and identify a prioritized list of locations for new electric vehicle charging stations with particular consideration for equitable distribution of chargers to residents of multi-family homes, low-income people, people on a fixed income, and communities of color. | Supportive | |
| 4 | Add 240 new publicly accessible Level 2 and 3 electric vehicle charging stations to the City by 2030.[41] | Supportive | |
| 5 | Promote public and private conversion to zero-emission vehicles; including use of City events, social media, and the City website to educate on benefits of zero-emission vehicles and available incentives. | Supportive | |
| 6 | Investigate commercial vehicle fleets in Montclair and identify businesses/employers to target for accelerating zero emission vehicle (ZEV) adoption. Identify and implement incentives for commercial fleet electrification, such as tax breaks or use of Low Carbon Fuel Standard credits. | Supportive | |
| 7 | Collaborate with local businesses/employers to develop and implement a plan for City-supported accelerated fleet electrification. As part of the plan, identify opportunities for accelerated fleet electrification and promote zero-emission vehicle (ZEV) adoption within major private and employee fleets in the city. | Supportive | |
| 8 | Work with SCE to incentivize electric vehicle charger installations through on-bill financing. | Supportive | |

A transition to zero-emission vehicles (ZEV) will play an essential role in the reduction of fossil fuel consumption needed for Montclair, and California as a whole, to reach GHG reduction targets. he state has established a goal of putting 5 million ZEVs on the road by 2030.[42] Additionally, the recent

[41] Goal is based on providing one public electric vehicle charger for every 20 electric vehicles and the goal of EVs to be registered by 2030.

[42] Executive Order B-48-18 provides a target of 5 million ZEVs to be in California's vehicle fleet in 2030. While this target does not provide what amount are to be passenger and light-duty vehicles, as compared to medium- and heavy- duty vehicles, it is assumed that 80% of ZEVs will be light-duty passenger vehicles, which is consistent with the previous target of 1.5 million ZEVs by 2030 (1.2 million of which are expected to be light-duty passenger vehicles, as shown in Figure 15 of the CARB 2016 *Mobile Sources Strategy*). Under these assumptions,

passing of executive order N-79-20 calls for 100% of passenger vehicle sales to be all-electric by 2035.[43] This new executive order puts the total number of ZEVs on the road by 2035 at approximately 15 million. Based on the current number of vehicles registered in California and a 2% growth rate per year, 15 million ZEV's accounts for 35% of total passenger vehicles in 2035. The City has established its own goal in line with this and aims to reach 20% ZEV adoption by 2030 and 65% by 2045 for passenger vehicles. As of 2020, 3% of passenger vehicles in Montclair were ZEVs.[44] While the state and Montclair cannot require the purchase of ZEVs, they can work to provide sufficient electric vehicle (EV) charging infrastructure that would be required to support ZEV adoption and incentivize the behavior change. As market trends continue to shift towards more ZEVs being purchased, Montclair can facilitate this transition by:

- Developing, implementing, and funding a plan for providing, and assessing the challenges associated with, adequate EV infrastructure
- Ensuring adequate charging is available at commercial land uses and workplaces
- Promoting the benefits of ZEVs and available rebates and incentives for ZEVs and fueling infrastructure
- Streamlining the permitting process for ZEV infrastructure

The actual number and ideal locations for these EV charging stations would need to be further investigated through a Feasibility Study. In addition to well-planned public charging stations, workplace and residential EV charging infrastructure would further support ZEV adoption. A 2015 report by Idaho National Laboratory, *Plugged In: How Americans Charge Their Electric Vehicles*, found that nearly 98% of all EV charging events occurred at home or work. In support of these findings, and to address the challenges faced by those who may not be able to install their own home chargers, adoption of an EV Readiness Reach Code would support increased infrastructure at new and existing commercial and multi-family residential developments. Electric vehicle-ready reach codes are one of the most effective and low-cost strategies for states and local governments to encourage consumers to buy or lease electric vehicles and can save consumers thousands of dollars in installation costs.[45]

Commercial electric vehicle adoption is projected to occur at a slower rate than passenger vehicle adoption, with the greatest electrification success projected in light-duty commercial vehicles.[46] However, through identification and engagement with businesses/employers with vehicle fleets Montclair can help to accelerate ZEV adoption of commercial vehicles in the City. CARB is currently developing the Advanced Clean Fleet regulation that with adoption will further accelerate commercial ZEV adoption. The Regulation Commercial ZEV adoption is anticipated to increase with the Advanced Clean Fleet rule would require 50% of public fleets replacement to be ZEV beginning in 2024 and 100% ZEV by 2027. To support this transition there are several funding programs to

of the 30 million expected passenger vehicles in California in 2030 (CARB 2016 *Mobile Sources Strategy*, page 67), 13% would be ZEVs. Assuming the same increase of ZEV adoption between 2030 and 2045, as occurred before 2030, there would be an approximate doubling of ZEVs by 2045.

[43] EO N-79-20 directs CARB to develop regulations to achieve 100% electric vehicle car sales in CA by 2035 & 100% ZEV medium/heavy-duty vehicles by 2045.

[44] https://www.dmv.ca.gov/portal/uploads/2020/09/MotorVehicleFuelTypes_City_01012020.pdf

[45] Southeast Energy Efficiency Project (SWEEP). December 2018. Cracking the Code on EV-Rady Building Codes. Accessed at: https://www.swenergy.org/cracking-the-code-on-ev-ready-building-codes

[46] Erica Schueller. Fleet Owner. July 2021. What it will take to accelerate electric truck adoption. Accessed at: https://www.fleetowner.com/drivers-seat/article/21167635/what-it-will-take-to-accelerate-electric-truck-adoption

advance the adoption of ZEVs by fleets.[47]

GHG emissions reduction from the adoption of ZEVs assumes that the collective impact of each of the actions under Measure TR.3 will incentivize and provide the infrastructure needed for Montclair to meet the ZEV adoption targets that align with state targets. The calculations assume that the adoption rates will result in an equivalent reduction in VMT powered by fossil fuels, and emissions associated with these miles traveled would instead be accounted for in additional electricity use. The GHG emissions reduction of Measure TR.3 are applied after the VMT reductions attained by Measure TR.1 and TR.2 through increased active transportation and public transit. This GHG reduction would be offset by electricity consumption which would generate a small amount of GHG emissions. The calculations and assumptions used to estimate emissions reduction from Measure TR.3 are provided in Table 10. Footnotes in the table detail the methodology and application of assumptions.

[47] CARB. 2022. Advanced Clean Fleets: Accelerating Zero-Emission Truck Markets. Accessed at: https://ww2.arb.ca.gov/sites/default/files/2022-03/ACF%20Fact%20Sheet_ADA.pdf

## Table 10 Measure TR.3 GHG Emission Reduction Calculations

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| **Passenger Vehicles** | | |
| Passenger ZEV adoption target[1] | 20% | 65% |
| Legislative Adjusted GHG Forecast Projected EV adoption[2] | 7% | 9% |
| Effective Increase in EV Adoption Above Legislative Adjusted GHG Forecast[3] | 13.2% | 55.6% |
| Forecasted Passenger Vehicle ICE VMT(VMT)[4] | 407,454,146 | 399,368,346 |
| Passenger Vehicle ICE Emission Factor (MT $CO_2e$/VMT)[5] | 0.000311 | 0.000285 |
| Emissions reduction from EV Adoption Increase (MT $CO_2e$)[6] | 16,734 | 63,214 |
| EV Electricity Usage (kWh/mile)[5] | 0.367 | 0.368 |
| Electricity Usage Increase from Increased EVs (kWh) | 19,735,800 | 81,819,739 |
| Electricity EF with Implementation of BE.1 (MT $CO_2e$/kWh)[7] | 0.0000065 | 0.0 |
| Emissions from Electricity Usage for EVs (MT $CO_2e$) | 128 | 0.0 |
| ***Avoided Emissions from Passenger EV Adoption (MT $CO_2e$)*** | ***16,606*** | ***63,214*** |
| **Commercial Vehicles** | | |
| Commercial ZEV adoption target[1] | 10% | 50% |
| Legislative Adjusted GHG Forecast Projected EV adoption[2] | 6% | 24% |
| Effective Increase in EV Adoption Above Legislative Adjusted GHG Forecast[3] | 4.4% | 26.5% |
| Forecasted Commercial Vehicle ICE VMT(VMT)[8] | 24,171,858 | 21,879,501 |
| Commercial Vehicle ICE Emission Factor (MT $CO_2e$/VMT)[5] | 0.00123 | 0.00123 |
| Emissions reduction from EV Adoption Increase (MT $CO_2e$)[6] | 1,307 | 7,103 |
| EV Electricity Usage (kWh/mile)[5] | 1.155 | 1.131 |
| Electricity Usage Increase from Increased EVs (kWh) | 1,225,297 | 6,551,929 |
| Electricity EF with Implementation of BE.1 (MT $CO_2e$/kWh)[7] | 0.0000065 | 0.0 |
| Emissions from Electricity Usage for EVs (MT $CO_2e$) | 8 | 0.0 |
| ***Avoided Emissions from Commercial EV Adoption (MT $CO_2e$)*** | ***1,299*** | ***7,103*** |
| **Total Avoided Emissions (MT $CO_2e$)** | **17,904** | **70,317** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.
MT $CO_2e$ = metric tons of carbon dioxide; VMT = vehicle miles traveled; ICE = internal combustion engine; EV = electric vehicle; kWh = kilowatt hour
1. Targets developed in line with state goals based on EO B-48-18 and EO N-79-20.
2. Estimated EV penetration rates obtained from EMFAC2021 for San Bernardino County. EMFAC2021 considers current legislation and market trends determined via vehicle registration obtained from the DMV.
3. The effective increase in EV adoption above *Legislative Adjusted* EV adoption projections represents the gap in EV adoption in the San Bernardino County vehicle fleet that will allow Montclair to reach its EV adoption target. The *Legislative Adjusted* GHG Forecast obtained EV adoption rates from the California Air Resources Board (CARB) EMFAC2021 vehicle emissions model. The model was run for 2030 and 2045 for San Bernardino County.
4. Total Forecasted Passenger VMT are projections provided by Fehr & Peers for forecasting GHG emissions, provided in Appendix C. To avoid double counting of reductions, only VMT from combustion vehicles considered here after the reduction in VMT assumed from implementation of Measure TR.1 and Measure TR.2 due to increased active transportation and public transit use.
5. Forecasted ICE emission factors and electricity usage for passenger and commercial vehicles calculated using EMFAC2021. See Appendix C for details on EMFAC analysis.
6.It is assumed that the percent of EV adoption is equivalent to the percent reduction in ICE VMT. GHG emissions reduction calculated as the forecasted ICE VMT multiplied by the percent of EV adoption to give the estimated replaced VMT, multiplied by the forecast ICE emission factor.
7. Electricity emission factor assumes implementation of BE.1, enrollment in CPA's 100% Green Power rate, with a 4% opt-out rate
8. Total Forecasted Commercial VMT are projections provided by Fehr & Peers for forecasting GHG emissions, provided in Appendix C. To avoid double counting of reductions with already accounted for Legislative Reductions, only VMT from combustion vehicles considered here.

### Measure TR.4 Equitably increase use of Electric vehicles, promote active transportation and public transit use by disadvantaged communities in improve.

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | Conduct a feasibility study identifying barriers for disadvantaged and low-income families related to mobility for active transportation, use of public transit, and access to zero-emissions or EV vehicles. Identify funding or grant opportunities to address identified barriers. | Supportive | |
| 2 | As part of Complete Streets Feasibility Study, evaluate streets within disadvantage communities and identify streets for improvements that would increase mobility within the neighborhood. | Supportive | |
| 3 | Pilot a transit shuttle program for disadvantaged communities to increase access to the transit center. | Supportive | |
| 4 | Investigate and pursue funding opportunities for EV car share for low-income neighborhoods, such as the Zero Emissions Mobility and Community pilot Project Fund. Partner with local community group to identify funding opportunities for purchasing EVs or other pilot projects for deployment in disadvantaged communities. | Supportive | |
| 5 | Work with Metro and Foothill Transit to expand use of LIFE low-income EZ Pass transit subsidy by Montclair low-income households who ride Metro and Foothill Transit buses and commuter inter-city rails. | Supportive | |

To effectively reduce GHG emissions from the transportation sector, it is important to enact changes and measures equitably. For disadvantages communities, numerous barriers exist such as limited access to funds for EV vehicles or charging stations, unsafe or incomplete streets limiting mobility by active transportation, and limited access to transit stations. However, there are numerous funding and partnership opportunities focused on deploying projects in disadvantages communities to increase access to EVs or improving street safety to encourage active transportation. Targeted feasibility studies and programs can help identify the barriers and funding opportunities to reduce GHG emissions in an equitable way that benefit all community members.

## 2.4 Water and Wastewater Sector

Water and wastewater generally account only for a small portion of a community's GHG emissions. Water use and wastewater collection and treatment resulted in approximately 3% of total community emissions in the City of Montclair in 2017. Although this is a small amount of overall emissions, a holistic approach to climate change allows for GHG emissions reduction and the co-benefits of protecting one of California's scarcest resources. A majority of emissions associated with water use and wastewater generation is associated with the electricity use for the pumping and treatment of potable water and the collection and conveyance of generated wastewater. Therefore, strategies related to this sector include promoting water conservation by reducing per capita potable water consumption and increasing access to and use of recycled water. To this end, the

CAP' water and wastewater measures consist of the following measures:

- Measure W-1: Reduce per capita water consumption by 10% compared with 2017 levels by 2030 and 25% by 2045.

## Measure W.1 Reduce per capita water consumption by 10% compared with 2017 levels by 2030 and 25% by 2045.

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) 2030 | Anticipated Reduction ($MT\ CO_2e$) 2045 |
|---|---|---|---|
| 1 | Adopt ordinance by 2026 requiring non-residential buildings over 20,000 square feet (including municipal buildings over 7,500 square feet) to disclosure water use annually for benchmarking purposes and then take action to reduce their consumption. | Supportive | |
| 2 | Adopt a cool pavement ordinance by 2026 to reduce heat island effect improving water quality. | Supportive | |
| 3 | Continue to enforce Model Water Efficient Landscapes Ordinance. | Supportive | |
| 4 | Adopt an ordinance by 2026 restricting the use of potable water for non-potable uses and requiring greywater capture for land uses that are excess water users (e.g. car washes, large fields, etc.). | 252 | 0 |
| 5 | Develop a Recycled Water Use and Implementation Strategy that identifies new and existing access to recycled water and quantity of recycled water available to the City for use from MVWD's. The strategy shall identify land use types (i.e., landscaping and golf courses) and specific projects that will switch from potable to recycled water use allowing for a goal of 20% of City's potable water use to be replaced with recycled water provided by MVWD by 2030. | Supportive | |
| 6 | Conduct a citywide study identifying impermeable surfaces that can be targeted for a transition to increase infiltration. | Supportive | |
| 7 | Promote alternative driveways/sidewalk materials and greenscaping through educational pamphlets and programs; incentivize residents to transition from impervious to pervious hardscapes. | Supportive | |
| 8 | Provide rebates or other funding to low- and medium-incomes homes for installing greywater, rainwater catchment system, EnergyStar appliances, and low-flow fixtures and fittings (e.g., faucets, sprinkler heads). | Supportive | |
| 9 | Work with schools to educate youth about water conversation. | Supportive | |
| 10 | Establish a system to track implementation progress of low-flow devices and to track use of rebates offered through the City. | Supportive | |

A majority of emissions associated with the water sector are associated with energy usage for water pumping, treatment, conveyance, and wastewater collection and treatment. Therefore, emissions reduction achieved through Measure W.1 are based on the energy savings associated with the reduction in water consumption per service population. Montclair does not have operational control of the water purveyor, and therefore electricity usage for water supply, conveyance, and distribution the water supply and conveyance is not included within Montclair's electricity usage sector. As such, reduction in emissions quantified herein do not pose a risk to double counting within the electricity sector measures.

Because the City of Montclair is primarily made up of low and medium-density residential development, it was assumed that 30-70% of community water use is associated with outdoor usage as found in a 2006 analysis of California water demand trends.[48] As such, a majority of the actions supporting Measure W.1 focus on the regulation of landscaping and the switch from use of potable water to recycled water for purposes such as irrigation that do not require potable water.

The 10% target for reduction in per capita water consumption by 2030 is based on the continued support and implementation water conservation strategies by Montclair's water purveyor and water conservation programs incorporated into the Draft City General Plan. The 2045 target of reduction in per capita water use by 25% assumes the adoption of ordinances restricting the use of potable water for non-potable uses and increased usage of greywater and recycled water over potable water for specific land-uses and support management strategies as it relates to infrastructure needs. These reduction potential assumptions are based on studies that have shown that the use of devices such as smart controllers can reduce residential outdoor water use by approximately 20-30% while transitioning to water-wise landscape options can reduce outdoor water use up to 70%.[49] The calculations and assumptions used to estimate emissions reduction from Measure W.1 are provided in Table 11. Footnotes in the table detail the methodology and application of assumptions.

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[48] Hanak, Ellen, and Davis, Matthew. "Lawns and Water Demand in California," *California Economic Policy*, Vol. 2, No 2, July 2006.

[49] ibid

### Table 11 Measure W.1 GHG Emission Reduction Calculations

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Forecasted Service Population[1] | 69,745 | 73,185 |
| 2017 Baseline per capita water consumption (MG/SP)[2] | 0.0477 | 0.0477 |
| Target Reduction in per capita water consumption from 2017 baseline | 10% | 25% |
| Targeted Water Consumption per capita | 0.0429 | 0.0358 |
| Targeted Water Consumption Use (MG)[3] | 2,993 | 2,617 |
| Forecasted Water Consumption (MG)[4] | 3,325 | 3,489 |
| Reduced Water Consumption with Measure W.1 Implementation (MG) | 333 | 872 |
| Legislative Adjusted Forecasted Emissions (MT $CO_2e$)[5] | 2,518 | 0.0 |
| Legislative Adjusted Emission Factor (MT $CO_2e$/ MG)[6] | 0.76 | 0.0 |
| **Avoided GHG Emissions (MT $CO_2e$)[7]** | **252** | **0.0** |

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly.

MT $CO_2e$ = metric tons of carbon dioxide; MG = million gallons; SP = service population

1. Service population is the population in addition to the employed population. See Appendix C for details on population projections.
2. The 2017 baseline per capita water consumption was calculated as Montclair's water consumption in the 2017 inventory baseline year divided by the 2017 service population. See Appendix C for details on the community inventory.
3. The targeted water consumption was calculated by multiplying the targeted per capita water consumption by the forecasted service population.
4. Forecasted water consumption based on forecasted population and water consumption per service population (i.e., population + employees) determined from the 2017 baseline inventory. See Appendix C for details on forecast calculation.
5. The Legislative Adjusted Forecasted Emissions associated with water consumption were obtained from the forecast in Appendix C to avoid double counting of emissions reduction that are anticipated to be achieved through SB 100.
6. An emission factor that incorporates reductions anticipated from SB 100 was calculated by dividing the Legislative Adjusted Forecasted Emissions by the forecasted water consumption. Due to SB 100, all retail electricity in California will have an emission actor of zero by 2045 and therefore emission factors post 2045 are 0.
7. Avoided emissions are calculated by multiplying the reduced water consumption by the emissions factor.

## 2.5 Waste Sector

The City of Montclair's waste measures focus on reducing solid waste generation and increasing diversion from the landfill. Particular emphasis is placed on reduction of organic waste sent to landfills, as landfilled organic waste is the major source of waste-related greenhouse gas emissions. This Measure also supports the City working toward zero waste of resources by 2045. The CAP's waste measure consist of the following:

- SW-1: Implement SB 1383 requirements and reduce community-wide landfilled organics 75% by 2025 and inorganic waste by 35% by 2030 and reduce all landfilled waste by 100% by 2045.

Working toward zero waste of resources requires that the city address two factors: 1) waste generation, reducing the amount of waste generated regardless of its destination (e.g., landfilling, recycling, composting); and 2) waste diversion, recycling the waste that is generated through available facilities. Measure SW-1 primarily focuses on waste diversion and reduction of organic waste generation. Actions supporting the implementation of SB 1383 will also support the diversion of inorganic waste though is not as significant for reducing emissions.

Actions for reducing organic waste are underpinned by SB 1383 requirements, which lay out specific programs, policies, and objectives for the city to support the state's goal of a 75% reduction in organics waste by 2025. While not explicitly modeled, many of these actions support achievement of SB 1383 goals. Actions that address inorganic waste are not quantified in this analysis due to their very minimal impact on communitywide greenhouse gas emission reduction gals.

## Measure SW.1 Implement SB 1383 requirements and reduce community-wide landfilled organics 75% by 2025 and inorganic waste by 35% by 2030 and reduce all landfilled waste by 100% by 2045.

| Action # | Action | Anticipated Reduction (MT $CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | Enforce adopted ordinance 22-1001 requiring compliance with SB 1383. Ensure ordinances established are consistent with SB 1383 requirements: revise if necessary. | 2,553 | 3,571 |
| 2 | Engage with waste hauler operating within the City to discuss SB 1383 requirements for waste haulers (i.e., organics receptacles and labeling requirements). | Supportive | |
| 3 | Adopt procurement policies to comply with SB 1383 requirements for jurisdictions to purchase recovered organic waste products. | Supportive | |
| 4 | Adopt an Edible Food Recovery Ordinance for edible food generators, food recovery services, or organization that are required to comply with SB 1383. | Supportive | |
| 5 | Partner with City waste hauler, to provide organic waste collection and recycling services to all commercial and residential generators of organic waste. | Supportive | |
| 6 | Enforce Ordinance 22-1001 requiring all residential and commercial customers to subscribe to an organic waste collection program and/or report self-hauling or backhauling of organics. | Supportive | |
| 7 | Conduct a Feasibility Study and prepare an action plan to ensure edible food reuse infrastructure is sufficient to accept capacity needed to recover 20% of edible food disposed or identify proposed new or expanded food recovery capacity. | Supportive | |
| 8 | Establish an education and outreach program for school children and adults around food waste prevention, nutrition education, and the importance of edible food recovery. | Supportive | |
| 9 | Establish an edible food recovery program to minimize food waste. Leverage CalRecycle support for projects that prevent food waste or rescue edible food. | Supportive | |
| 10 | Adopt an ordinance or enforceable mechanism to regulate haulers collecting organic waste, including collection program requirements and identification of organic waste receiving facilities. | Supportive | |

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 11 | Partner with waste hauler within the City to:<br>▪ Ensure organic waste collection from mixed waste containers are transported to a high diversion organic waste processing facility<br>▪ Provide quarterly route reviews to identify prohibited contaminants potentially found in containers that are collected along route. | Supportive | |

The requirements and actions associated with SB 1383 have been developed to produce a 75% reduction in organics by the State of California.[50] The State's efforts towards such goals have been ongoing with previously enacted laws such as AB 341 and AB 1826 establishing commercial recycling requirements. The State recognizes that individual jurisdictions cannot achieve the goals of SB 1383 alone and therefore SB 1383 stipulates how waste generators and local governments must operate to achieve SB 1383 goals. Therefore, by taking the actions required, City of Montclair can expect to achieve an equivalent reduction level. The emissions reductions associated with a 75% reduction in organics was calculated using the 2018 Waste Characterization Study for California pursuant to the SB 1383 guidelines.[51] The City of Montclair did not have City-specific waste characterization data; therefore, it was assumed that 54% of the waste landfilled from the City was proportional to the percentage of organics as reported in the CalRecycle Waste Characterization Study for the state. As of June 2022, the City adopted ordinance 22-1001 that made changes to the Montclair Municipal Code in compliance with SB 1383.[52] This included establishment of a mandatory Organic Waste Disposal Reduction Program, which provides organic waste recycling requirements for single-family generators and commercial businesses, recovery requirements for commercial edible food generators and food recovery organizations, service requirements for waste haulers, waivers for organic waste generators, and authority for inspections, investigations, and enforcement by City officials and the City's franchise waste hauler. A 75% reduction to the City's organic waste stream was applied in 2025 and continued through 2030. Calculations assumed that emissions reduction would come from diverting that waste to compost or hunger relief, decreasing the methane generation potential of this waste to zero. The calculations and assumptions used to estimate emissions reduction from Measure SW.1 are provided in Table 12. Footnotes in the table detail the methodology and application of assumptions.

### Table 12 Measure SW.1 GHG Emission Reduction Calculations

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Target Reduction in Landfilled Organics[1] | 75% | 100% |
| Forecasted Waste Generation (tons)[2] | 40,062 | 42,038 |
| Forecasted Organic Waste Generation (tons)[3] | 21,433 | 22,490 |
| Diverted Organic Waste (tons)[4] | 16,075 | 22,490 |
| Organics Waste Emission Factor ($MT\ CO_2e$/ton)[5] | 0.159 | 0.159 |
| **Avoided GHG Emissions ($MT\ CO_2e$)** | **2,553** | **3,571** |

[50] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383
[51] https://www2.calrecycle.ca.gov/Publications/Download/1458
[52] https://www.cityofmontclair.org/documents/ordinance-no-22-1001

| Calculation Factor | 2030 | 2045 |
|---|---|---|

Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly

MT $CO_2e$ = metric tons of carbon dioxide; kWh =-kilowatt-hour

1. Implementation of the programs and policies as described in SB 1383 are anticipated to result in a 75% reduction in landfilled organics by 2025.

2. Forecasted waste generation is estimated as the forecasted service population multiplied by the per capita waste generation factor obtained from the 2017 inventory (0.574 tons/service population). See Appendix C for inventory details.

3. Data on the composition of the waste stream by waste type was not available for the City of Montclair, therefore the Cal Recycle statewide average composition was used where ~54% of the waste stream is organics.

4. Diverted organics is based on the total forecasted organics generation multiplied by the targeted reduction.

5. The emission factor for organics waste is the weighted average of emission factors for organic materials listed in CARB's *Method for Estimating GHG Emissions reduction from Diversion of Organic Waste from Landfills to Compost Facilities* (https://nrcne.org/wp-content/uploads/2019/12/Method-estimating-GHG-emissions-reductions.pdf) and using the Cal Recycle 2018 Waste Characterization study prepared for California Regions (https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=443&cy=19) for tonnage by waste type.

## 2.6 Carbon Sequestration Sector

The City of Montclair is generally considered a built-out city where a majority of new development or growth will involve the redevelopment of underutilized parcels or renovation of existing structures. However, to achieve deep decarbonization by 2045, the City will need to include carbon sequestration[53] mechanisms, which take carbon out of the atmosphere, to offset GHG emissions. Although built-out, the City has the opportunity to engage in carbon sequestration activities through enhancing open space, managing greenspace effectively, protecting and increasing the City's urban forest or tree stock, and composting. Over time as emissions are removed from more and more sectors, carbon sequestration will play an increasingly important role in California's ability to achieve carbon neutrality. The CAP's carbon sequestration measures align with these strategies[54] and consist of the following:

- Measure CS.1: Increase carbon sequestration and green space by planting 500 new trees through the community by 2030 and 1,000 new trees by 2045.
- Measure CS.2: Achieve and maintain compost procurement requirements of SB 1383 by 2030.

### Measure CS.1 Increase carbon sequestration and green space by planting 500 new trees through the community by 2030, and 1,000 by 2045.

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | Adopt Greenscaping Ordinance that has a street tree requirement for all zoning districts, has a shade tree requirement for new development, requires greening of parking lots, and increases permeable surfaces in new development. | 18 | 35 |
| 2 | Adopt a standard policy in alignment with City's General Plan and set of practices for expanding urban tree canopy and placing vegetative barriers between busy roadways and developments to reduce exposure to air pollutants from traffic. | Supportive | |
| 3 | Prepare and adopt an Urban Forest Management Plan for the City that includes an inventory of existing trees, identifies future tree planting opportunities and a climate-ready tree palette, as well as ongoing operations and maintenance needs. | Supportive | |
| 4 | Identify and participate in partnership opportunities necessary to plant and maintain an increase in the City's tree inventory by 500 trees by 2030 and convert priority public space into green space. | Supportive | |
| 5 | Promote incentives to property owners and developers for greenspace inclusion through educational pamphlets, programs, and webpages and track the use of incentives. | Supportive | |

[53] Carbon sequestration refers to the physical removal of $CO_2$ from the atmosphere, either through natural processes such as photosynthesis and weatherization, or industrial chemical processes that transform atmospheric $CO_2$ to a solid state.

[54] Note that measures regarding composting are included in the CAP Update's waste measures rather than the carbon sequestration measures.

As stated in the City's General Plan, a majority of the city's land use is occupied by the street network with limited trees or greenery. Montclair recognizes that "greening" of Montclair's streets would enhance the neighborhood character, cool the urban area, and provide incentives for walking or biking. The City is committed to increasing the green infrastructure in the city. The goal of Measure CS.1 is to maintain the amount and health of the current tree stock and then add trees to increase the carbon storage capacity of the urban forest. Assuming that the urban forest is not 100% stocked, which is typical even of communities that have well-managed forests, there is the ability to increase the size of the urban forest by 15% - 25% as summarized by American Forests, the oldest national nonprofit conservation organization in the United States, in a 2017 article titled *Why We No Longer Recommend a 40 Percent Urban Tree Canopy Goal*.[55,56] It is assumed that the City has the capacity to increase the City's tree inventory by 500 trees by 2030 and 1,000 trees by 2045. Annual $CO_2e$ emissions reductions were estimated based on the number of trees to be added to the inventory and the average $CO_2e$ accumulation factor per tree (0.0354 MT $CO_2e$/tree/year).[57] The calculations and assumptions used to estimate emissions reduction from Measure CS.1 are provided in Table 13. Footnotes in the table detail the methodology and application of assumptions.

Although not quantified herein, urban greening can further reduce building carbon emissions by reducing the heat island effect in cities which reduces the need to rely on air conditioning in homes.[58] Additionally, the application of suitable composted organic material to existing opens spaces can be used to enhance the sequestration of $CO_2e$. The application of compost allows for carbon to be stored in the soil and, over time, to be captured in the stems, leaves, and roots of grasses, woody plants, and trees. The calculations and assumptions used to estimate emissions reduction from Measure SW.1 are provided in Table 13. Footnotes in the table detail the methodology and application of assumptions.

### Table 13 Measure CS.1 GHG Emission Reduction Calculations

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Target Increase in Newly Planted Trees1 | 500 | 1,000 |
| Tree Sequestration Factor (MT $CO_2e$/tree/year)[2] | 0.0354 | 0.0354 |
| **Sequestered GHG Emissions (MT $CO_2e$/year)** | **18** | **35** |

Notes: Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly

MT $CO_2e$ = metric tons of carbon dioxide

1. Default annual $CO_2e$ sequestration per tree per year with a maximum lifespan of 20 years per tree is 0.0354 MT $CO_2e$/tree/year was obtained from CAPCOA. 2010. Quantifying Greenhouse Gas Mitigation Measures.

[55] https://www.americanforests.org/blog/no-longer-recommend-40-percent-urban-tree-canopy-goal/

[56] https://sfgov.org/sfplanningarchive/urban-forest-plan

[57] CAPCOA. 2011. Quantifying Greenhouse Gas Mitigation Measures. http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

[58] The Trust for Public Land (TPL). Quantifying the greenhouse gas benefits of urban parks. August 2008.

## Measure CS.2 Achieve and maintain compost procurement requirements of SB 1383 by 2030.[59]

| Action # | Action | Anticipated Reduction ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | Implement all required activities under SB 1383 including achieving compost procurement requirements effective. Effective January 2022, CalRecycle's regulations require cities to purchase a minimum of 0.08 tons per resident of recovered organic composts. | 914 | 962 |

SB 1383 requires each jurisdiction in California to procure recovered organic waste products to meet organic waste product procurement targets, as notified by CalRecycle by 2022. Through implementation of Measure SW.1 the City commits to implementing all requirements of SB 1383, including organic waste procurement requirements. Procuring and applying compost to meet these requirements will result in carbon sequestration benefits for Montclair. Guidance from CalRecycle has set the procurement target for Montclair in 2022 at 3,168 tons of recovered organic product (i.e., compost, mulch, etc.) based on Montclair's population.[60] Based on this procurement target, Montclair's population, and the carbon sequestration potential per ton of mixed organics compost, the carbon sequestration potential for Montclair's compost procurement through 2045 was calculated. The methods and assumptions used to calculate the GHG emissions reductions associated with carbon sequestration from Measure are shown in the Table 14 below. Footnotes in the table detail the methodology and application of assumptions.

**Table 14 Measure CS.2 GHG Emission Reduction Calculations**

| Calculation Factor | 2030 | 2045 |
|---|---|---|
| Forecasted population[1] | 49,672 | 52,285 |
| Estimated Procurement Requirements[2] | 3,974 | 4,183 |
| Emission Sequestration Factor ($MT\ CO_2e$/ton)[3] | 0.23 | 0.23 |
| **Sequestered GHG Emissions ($MT\ CO_2e$/year)** | **914** | **962** |

Notes: Notes: Emissions have been rounded to the nearest whole number and therefore may not add up exactly
$MT\ CO_2e$ = metric tons of carbon dioxide
1. Forecasted population obtained from forecast analysis detailed in Appendix C.
2. Calculated by multiplying forecasted population by procurement requirement of 0.08 tons per person per 14 CCR Section 18993.1.
3. Default annual $CO_2e$ sequestration per ton of mixed organic compost applied obtained from CARB's *Method for Estimating GHG Emissions reduction from Diversion of Organic Waste from Landfills to Compost Facilities* (https://nrcne.org/wp-content/uploads/2019/12/Method-estimating-GHG-emissions-reductions.pdf).

# 2.7 Municipal Operations Sector

In the baseline year of 2017, City of Montclair operations generated approximately 2,594 MT $CO_2e$. Approximately 44% of these emissions were a result of natural gas and electricity consumption, and

[59] Measure SW.1 is associated with more actions than listed in the table. However, only Action 1 is associated with carbon sequestration benefits. For a full list of actions associated with Measure SW.1.
[60] CalRecycle. December 2021. Jurisdiction Procurement Targets Based on January 1, 2021, Population Estimates.

49% of these emissions were a results of vehicle fleet and employee commute. The CAP includes the following municipal measures:

- Measure M.1: Electrify the municipal vehicle fleet and mobile equipment by 50% by 2030 and 100% by 2045.
- Measure M.2: Reduce carbon intensity of City operations.

As GHG emissions associated with municipal operations are fully under Montclair's operational control, it is assumed that full implementation of municipal Measures M.1 and M.2 are achievable. Further, under the state's Advanced Clean Fleet Rule 50% of vehicles added to fleets subject to the regulation (i.e., local government fleets such as the City's) from 2024-2026 must be zero-emission vehicles (ZEVs) with 100% of vehicles added to the fleet 2027 and after must be ZEV. Alternatively, fleets may opt-in to the Milestones Option. If the Milestone Option is selected, fleet owners must continuously meet or exceed the ZEV Fleet Milestone percentage as defined by the regulation. Compliance reporting would be required annually and within 30 days of adding vehicles to the fleet. In 2022, CARB also approved amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation that incorporates new requirements to use renewable diesel. Beginning January 1, 2024, all California fleets subject to this regulation are required to procure and only use R99 or R100 renewable diesel fuel in all vehicles subject to the Off-Road Regulation, with some limited exceptions. This regulation applies to all self-propelled off-road diesel vehicles 25 horsepower or greater used in California and applies to vehicles that are rented or leased. Exceptions to the regulation include locomotives, commercial marine vessels, marine engines, recreational off-highway vehicles, combat and tactical support equipment, stationary equipment, portable engines, equipment used exclusively for agricultural operations, implements husbandry, and off-road diesel vehicles owned and operated by an individual for personal, non-commercial and non-governmental purposes.[61] Emissions associated with municipal operations is a subset of overall community emissions and therefore emissions reduction that could be achieved through Measures M.1 and M.2 are not explicitly quantified herein as that would double count emissions reduction achieved through community GHG reduction measures discussed above. As such, the following tables presents for information purposes only, the potential emissions reduction compared with the baseline that would result from full implementation of Measures M.1 and M.2.[62]

## Measure M.1 Electrify the municipal vehicle fleet and mobile equipment by 50% by 2030 and 100% by 2045.

| Action # | Action | Reduction Potential (MT $CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 1 | Develop and adopt a policy to apply lifecycle assessment to all new vehicle and equipment purchases. | Supportive | |

[61] California Air Resources Board (CARB). (2022). Final Regulation Order Amendments to Sections 2449, 2449.1, and 2449.2 Title 12, California Code of Regulations. Accessed at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/off-roaddiesel/froa-1.pdf

[62] Presented emissions reduction are for information purposes only and assume full implementation of Measures M.1 and M.2 such that 100% reduction of emissions from the indicated source would be achieved by 2045. Emission reduction potential obtained from the municipal inventory results for the specific source provided in Appendix C.

| Action # | Action | Reduction Potential ($MT\ CO_2e$) | |
|---|---|---|---|
| | | 2030 | 2045 |
| 2 | Implement the City Fleet Alternative Fuel Conversion Policy such that as municipal vehicles turn over, they are replaced with alternative-fuel vehicles in alignment with the state's Advanced Clean Fleet Rule. | 368 | 736 |
| 3 | Install EV charging stations at municipal buildings. | Supportive | |

In 2017, Montclair operated a vehicle fleet that operated primarily on gasoline and compressed natural gas (CNG), with one diesel powered vehicle. Off-road equipment used by the City was powered by diesel and liquid propane gas (LPG). With full implementation of Measure M.1. by 2030, based on the City's vehicle replacement schedule or as needed based on the condition of the vehicles, these vehicles would be transitioned to either alternative fuel or electric vehicles. For this estimation is assumed that vehicles and equipment would be replaced with an electric alternative. Any replacement of fossil-fueled vehicles with electric would also generate no additional emissions with the full implementation of Measure M.2, where all municipal accounts would be enrolled in 100% renewable electricity rate structures.

## Measure M.2 Reduce carbon intensity of City operations.

| Action # | Action | Reduction Potential (MT $CO_2e$) 2030 | 2045 |
|---|---|---|---|
| 1 | Adopt retrofitting policy for City owned buildings such that energy efficient and electrification retrofits are incorporated into City buildings as they become available. | Supportive | |
| 2 | Complete energy audits for all City facilities and implement all feasible recommendations for fuel switching and efficiency upgrades. | Supportive | |
| 3 | Establish a replacement plan for replacing natural gas fueled equipment with electric where practical and technologically feasible in City-buildings. | Supportive | |
| 4 | Switch City electricity accounts to SCE 100% Green Rate until joining CPA at 100% Green Power rate by 2025. | 1,008 | 1,008 |
| 5 | Investigate funding and grant opportunities and partnerships to install photovoltaic systems at all City buildings as feasible. | Supportive | |

Enrollment of all municipal electricity accounts in either SCE's 100% Green Rate product or the CPA's 100% Green Power program would immediately eliminate emissions associated with electricity usage for municipal operations. The installation of solar PV and increased efficiency at City facilities would further reduce building emissions as energy purchased by the City would already be 100% renewable. Developing a flexible schedule policy for employees and encouraging the use of zero emission or EV vehicles through installation of EV chargers would further reduce emissions associated with the City's operation.

Actions taken by the City to reduce GHG emissions from municipal operation provide an example to the community and demonstrate the City's commitment to reducing emissions and implementing the measures laid out in the CAP.