2050 General Plan and Downtown Specific Plan
Final Environmental Impact Report

Prepared for:

City of Marysville

AECOM

February 2025

2050 General Plan and Downtown Specific Plan
Final Environmental Impact Report

Prepared for:

City of Marysville
526 C Street
Marysville, CA 95901

Contact:

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February 2025

1 INTRODUCTION

The City of Marysville (City) directed the preparation of a draft environmental impact report (Draft EIR) to evaluate the potential environmental effects of implementing the proposed City of Marysville 2050 General Plan (2050 General Plan); the Downtown Specific Plan; and an update to the City of Marysville Zoning Ordinance, Municipal Code Title 18 (Zoning Code Update). Together, these actions represent the "proposed project" that is the subject of analysis in the Draft EIR and this Final EIR.

If adopted, the 2050 General Plan would replace the current General Plan that was last comprehensively updated in 1985.[1] The proposed 2050 General Plan provides an overarching framework that would guide development and conservation throughout the city of Marysville and the City's Planning Area through 2050. The Downtown Specific Plan is intended to encourage investment and guide infill development and associated public infrastructure improvements and guide future development within seven Land Use Zones in the Downtown area.

The City of Marysville (City) is the California Environmental Quality Act (CEQA) Lead Agency for this EIR, which was prepared in compliance with the CEQA of 1970 (Public Resources Code Section 21000 *et seq*.) and the CEQA Guidelines (California Code of Regulations, Title 14, Section 15000 *et seq*.).

1.1 INPUT ON THE DRAFT EIR

To assist the City in determining the focus and scope of analysis for this EIR, pursuant to CEQA Guidelines Section 15082, the City filed a Notice of Preparation (NOP) on February 7, 2023 (State Clearinghouse Number 2023020168) and sent the NOP to each responsible and trustee agency, special service districts, organizations, and individuals with an interest in or jurisdiction over future projects implemented under the proposed 2050 General Plan, Downtown Specific Plan, or Zoning Code Update.

The NOP is sent by the lead agency to inform the public, interested parties, responsible agencies, trustee agencies, and potentially affected federal, state, and local agencies that the lead agency plans to prepare an EIR. The NOP also seeks comments regarding the scope and content of the EIR. The City held a public scoping meeting for the project on February 22, 2023. The City received NOP comment letters from agencies and individuals.

The NOP and responses to the NOP are Appendix A of the Draft EIR.

1.1.1 NATIVE AMERICAN TRIBAL CONSULTATION

There were no responses to the City's NOP that relate to cultural resources, apart from one response received from the Native American Heritage Commission (NAHC) summarizing the existing requirements contained in AB 52, Senate Bill (SB) 18, and suggestions for early tribal consultation.

The City of Marysville contacted the NAHC pursuant to SB 18 and AB 52 consultation requirements, requesting a Native American contact list of tribes with traditional lands or cultural places located within the City's Planning Area. In addition, the City requested a search of the Sacred Land Files for the Planning Area. The City received a

[1] The City of Marysville General Plan Housing Element and Safety Element, which were recently updated and adopted in 2021 and 2022, respectively, are not part of the 2050 General Plan Update.

response from the NAHC in May 2022 identifying potential contacts. The result of the Sacred Land Files search was negative.

AECOM, on behalf of the City, sent letters via email on July 20, 2022, to contacts provided by the NAHC serving as a formal notification of and invitation to consult regarding the proposed 2050 General, Downtown Specific Plan, and Zoning Code update for SB 18 and AB 52 to ensure consideration of Tribal Cultural Resources in the context of local land use policy.

United Auburn Indian Community requested consultation in an email message dated August 4, 2022. The United Auburn Indian Community reviewed draft analyses and agreed with the text. The United Auburn Indian Community noted in June of 2024, agreement with the proposed mitigation and closed consultation.

1.2 PUBLIC REVIEW OF THE DRAFT EIR

The Draft EIR (State Clearinghouse Number 2023020168) was received by the State Clearinghouse and circulated for a 45-day public review period from September 27th, 2024, through November 12th, 2024. In accordance with Section 15088 of the CEQA Guidelines, the City, as the lead agency, has reviewed the comments received on the Draft EIR and has prepared written responses to all comments received. The focus of the responses to comments is on the disposition of significant environmental issues that are raised in the comments, as specified by Section 15088(c) of the CEQA Guidelines. Detailed responses are not provided to comments that do not pertain to the adequacy of the Draft EIR in addressing adverse physical environmental impacts.

In response to comments from the public and public agencies on the Draft EIR, the City has incorporated very minor revisions to the text of the Draft EIR into the Final EIR, as shown in Chapter 3, "Errata". The revisions include reference to two additional mitigation measures that would help to reduce an environmental impact in the Executive Summary and a correction to a referenced mitigation measure in the Introduction. None of the revisions relate to the analysis of conclusions of the Draft EIR. None of the revisions or updates to the Draft EIR analyses represents "significant new information" as the term is defined by the CEQA Guidelines Section 15088.5. Thus, recirculation of the Draft EIR is not necessary.

1.3 ORGANIZATION OF FINAL EIR

The City prepared this Final EIR, which includes:

- The Draft EIR (State Clearinghouse Number 2023020168), which was received on September 27th, 2024, by the State Clearinghouse, and circulated for a 45-day public review period that ended on November 12th, 2024;
- A full list of agencies, organizations, and individuals that provided comments on the Draft EIR in Chapter 2 of this Final EIR;
- A summary of comments and detailed responses to all comments on the Draft EIR in Chapter 2 of this Final EIR; and

- Minor revisions to the Draft EIR detailed in Chapter 3, "Errata," of this Final EIR.[2]

Chapter 2, "Comments and Responses to Comments" of this Final EIR includes the written comments received on the Draft EIR and responses to these comments (as required by the CEQA Guidelines Section 15132). To assist the reader, each response includes a summary of the comment.

This document and the Draft EIR together constitute the Final EIR that the City Council will consider when it decides whether to approve the proposed project.

Appendix A to this Final EIR is an attachment provided at the end of the comment letter from the Feather River Air Quality Management District with guidance from the United States Environmental Protection Agency and the California Air Pollution Control Officers Association on land use and transportation strategies to reduce air pollutant emissions and greenhouse gas emissions, which have been incorporated into the City's 2050 General Plan and Downtown Specific Plan, as appropriate.

1.4 USE OF THE FINAL EIR

The Final EIR allows the public and the City decision makers an opportunity to review revisions to the Draft EIR and the Responses to Comments. The Final EIR serves as the environmental document to inform the City's consideration of the proposed project, as discussed in the Draft EIR.

As required by Section 15090(a)(1)-(3) of the CEQA Guidelines, a lead agency, in certifying a Final EIR, must make the following three determinations:

1. The Final EIR has been completed in compliance with CEQA.

2. The Final EIR was presented to the decision-making body of the lead agency, and the decision-making body reviewed and considered the information in the Final EIR prior to approving the project.

3. The Final EIR reflects the lead agency's independent judgment and analysis.

As required by Section 15091 of the CEQA Guidelines, no public agency shall approve or carry out a project for which an EIR has been certified that identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings (Findings of Fact) for each of those significant effects, accompanied by a brief explanation of the rationale for each finding supported by substantial evidence in the record. The possible findings are:

1. Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the Final EIR.

2. Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

2 Chapter 3, "Revisions to the Draft EIR," includes only pages of the Draft EIR where revisions have been made, not the entire Draft EIR.

3. Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the Final EIR.

In addition, as described in Section 15092 of the CEQA Guidelines, the City may not carry out a project for which an EIR was prepared unless the following additional Findings of Fact are made:

1. The project as approved will not have a significant effect on the environment, or

2. The agency has:

    a. Eliminated or substantially lessened all significant effects on the environment where feasible as shown in findings under Section 15091, and

    b. Determined that any remaining significant effects on the environment found to be unavoidable under Section 15091 are acceptable due to overriding concerns as described in Section 15093.

Finally, with regard to the overriding concerns described above for significant and unavoidable impacts, CEQA Guidelines Section 15093 requires lead agencies to balance environmental impacts with economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits of a proposed project. If the benefits outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered acceptable. If there are significant and unavoidable environmental impacts and the lead agency wishes to approve a project, the lead agency must state the reasons for approval in writing.

The City's statement on the reasons for approving the project notwithstanding significant and unavoidable effects can be found under separate cover – this document is known as, "*California Environmental Quality Act Findings of Fact and Statement of Overriding Considerations for the City of Marysville 2050 General Plan, Downtown Specific Plan, and Zoning Ordinance Update*."

2 COMMENTS AND RESPONSES TO COMMENTS ON THE DRAFT EIR

This section of the Final EIR contains comment letters received during the public review period for the Draft EIR. In conformance with CEQA Guidelines Section 15088(a), the City has prepared written responses to comments on environmental issues.

2.1 COMMENTS ON THE DRAFT EIR

Table 2-1 identifies a number for each comment letter received, the author of the comment letter, and the date of the comment letter. Each comment letter is included in its entirety for decision maker consideration before each response.

Table 2-1. Comments Received on the Draft EIR

Letter #	Commenter	Date
ALUC	Airport Land Use Commission	9-25-24
Caltrans	California Department of Transportation	10-29-24
SMGB	State Mining and Geology Board	11-08-24
FRAQMD	Feather River Air Quality Management District	11-12-24

2.2 RESPONSE TO COMMENTS

This section of the Final EIR contains comment letters received during the public review period for the Draft EIR and responses to these comments.

Consistent with CEQA Guidelines Section 15088(a), written responses to comments on environmental issues received from reviewers of the Draft EIR were prepared. The focus is on comments pertaining to the adequacy of the EIR for addressing potential adverse physical environmental impacts associated with implementation of the proposed project.

2.2.1 COMMENT LETTER ALUC

Letter ALUC

SACOG
Sacramento Area Council of Governments

1415 L Street, Suite 300
Sacramento, CA 95814

916.321.9000
sacog.org

Ms. Kathy Pease
City Planning Consultant
City of Marysville
526 C Street
Marysville, CA 95901

September 25, 2024

Dear Ms. Pease:

Thank you for your email of June 14, 2024, alerting the Airport Land Use Commission (ALUC) that "Working Drafts" of a proposed Marysville General Plan (excluding safety and housing elements which we understand were recently updated) and Downtown Specific Plan are now out for public review and are available on the city's website. In your email, you asked whether the city should schedule an ALUC review of these documents. The California Public Utilities Code requires that yes, in accordance with Section 21676(b), proposed general plans and specific plans must be referred to the appropriate ALUC if any of the territory addressed by such plans falls within an airport influence area established by that ALUC. This referral must be done prior to adoption by the local agency proposing those plans. Further details regarding this process are provided in the Caltrans *Airport Land Use Compatibility Planning Handbook* available on the Caltrans Aeronautics website. The ALUC notes as well that Section 3.4 of the draft General Plan acknowledges these requirements. ALUC-1

While your email does not request a formal review by the Airport Land Use Commission for Sacramento, Sutter, Yolo, and Yuba Counties currently. ALUC presumes that the draft plans which are publicly available on your website are in essentially final form at least with regard to topics of concern to the ALUC. The ALUC also presumes that the draft plans are subject only to changes that may be necessitated by comments received during the public hearings. On that basis, the ALUC offers the following preliminary review. The ALUC will update this review to the extent necessary and finalize it once you indicate that your drafts have reached the point of proceeding to adoption and that no further revisions are anticipated.

Geographic Relationship ALUC-2

Exhibit 3.6 in the draft General Plan depicts the geographic relationship between the current Marysville city limits and sphere of influence and the airport influence areas adopted by the ALUC for three airports:

(1) The Yuba County Airport (2011)

(2) Sutter County Airport (1994)
(3) Beale Air Force Base (2011)

ALUC-2 con'd

MAP #1 - Discrepancies: Map #1 attached is based on the one contained in the Beale Land Use Compatibility Plan. There is a discrepancy with Exhibit 3.6 of the draft General Plan. The GP map indicates that the current city limits extend into the influence areas of Yuba County and Sutter County airports but are outside of the Beale Air Force Base (AFB) influence area.

However, there is a discrepancy between the GP map and the attached **Map #1.** The depicted boundaries of the influence areas differ. The Beale Compatibility Plan shows that a small area along Highway 20 in the northeast part of the city limits extends into that airport's influence area. The boundaries of the Yuba County and Sutter County airport influence areas as shown in the respective compatibility plans for those airports also differ from the boundaries shown in Exhibit 3.6.

Findings: These discrepancies will need to be resolved before the draft General Plan is formally referred to and reviewed by ALUC. The remainder of this review relies upon maps contained in the three compatibility plans.

ALUC-3

Map #2 – Yuba County Airport and Beale AFB - Compatibility Plan Criteria: The compatibility plans for the Yuba County Airport and Beale AFB divide the respective airport influence areas into Review Areas 1 and 2, as shown in attached Map #2. Review Area 1 for each of these airports contains places where all four compatibility factors—noise, safety, airspace protection, and overflight—are potential concerns. In Review Area 2, only airspace protection and overflight are compatibility factors, not noise or safety. The existing Marysville city limits extend only into Review Area 2 for these two airports.

For both Yuba County Airport and Beale AFB compatibility plans as shown in Map #2, the airspace protection policies focus on potential physical obstructions and address other hazards to flight including sources of smoke, steam, glare, and distracting lights and land uses that could attract birds. The overflight policies do not restrict proposed land uses but serve to alert prospective buyers of property in the airport influence areas that those properties are subject to aircraft overflights that can be intrusive or annoying.

ALUC-4

Map #3 – Sutter County Airport: For Sutter County Airport, the 1994 *Comprehensive Land Use Plan* (CLUP) contains maps for noise and safety zones, shown in attached **Map #3**. The noise zones are outside of the Marysville city limits, but Safety Zone 3 – Overflight reaches the southwest edge of the city including lands within the Downtown Specific Plan Area. Airspace surfaces for the airport are not depicted in the CLUP, but the CLUP narrative indicates that surfaces defined in accordance with Federal Aviation Administration criteria are to be used. The Overflight Zone criteria allow all residential

ALUC-5

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and most other types of proposed land uses except ones involving high concentrations of people (e.g. stadiums, concert halls, regional shopping centers, colleges, and most schools) or could pose other hazards to flight (e.g., chemical plants, petroleum refining, and agricultural uses that attract birds). Most relevant to the city is that medical related uses such as laboratories and medical offices are allowed uses within the Overflight Zone; however, hospitals are incompatible uses according to the CLUP. Obviously, Rideout Hospital exists as a pre-existing use. The city's Medical Arts Districts are discussed at the end of this letter.

ALUC-5 cont' d

Analysis of Marysville Draft Plans

In addition to the discussion of airport land use compatibility in Section 3.4, the draft General Plan contains two important policies under land use and community development Goal LU+CD-9:

ALUC-6

- 9.1: *"Submit to the Airport Land Use Commission, and condition, as necessary, proposed land use actions within an Airport Influence Area or Airport Overflight Zone to ensure that the development is consistent with the applicable Airport Land Use Compatibility Plan."*
- 9.2: *"Maintain communication with representatives of Beal (sic) Air Force Base to ensure land use compatibility, present Marysville as a welcoming community, and identify local changes that can enhance the competitiveness of Marysville as a place of residence for Base personnel."*

Based on those two policies, here are the circumstances when the ALUC would need to be involved for the **Yuba County Airport and Beale Air Force Base**:

1) For areas within the Yuba County Airport and Beale Air Force Base influence areas shown in attached **Map 2**, the types of land use actions to be referred to the ALUC are detailed in the respective compatibility plans, such as the adoption or amendment of general plans and specific plans

2) The adoption or approval of a zoning ordinance or building regulation, including any proposed change or variance to any such ordinance or regulation, that affects land within either airport influence area must be referred to the ALUC for review.

3) Certain major land use actions also are to be referred to the ALUC for review on a mandatory basis prior to when the general plan has been reviewed and determined to be consistent with the compatibility plans and on a voluntary basis after that time.

4) For actions within the two Review Areas 2, the only areas affected by lands within the current city limits, the projects for which referral may be necessary

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are ones involving airspace protection factors.

5) Future specific land uses within the city are normally not identified in a General Plan, and the draft Marysville General Plan is no different. Specific land uses are normally identified when an applicant proposes and develops application. Only at that time can the ALUC to be certain whether airspace protection conflicts would occur.

6) It would be beneficial that the city to work with the ALUC ensure that airspace protection concerns are not overlooked when the city considers future development projects. This would most likely take place for very tall structures, particularly cell towers.

7) The city will want to consider land use compatibility in the portions of the city's existing sphere of influence south of the present city limits that extend into Review Area 1 of the Yuba County Airport. Noise and safety compatibility criteria, along with those for airspace protection, will need to be considered in planning for future development in this area. Although the draft general plan does not propose specific land use designations for this area, the requirement for consistency with the Yuba County Airport Land Use Compatibility Plan criteria should be mentioned among the policies in Section 10 and/or elsewhere that may be appropriate. Similarly, a large area north and northeast of the city is shown in Exhibit 3-7 of the draft general plan as a possible sphere of influence expansion. Some of the areas extend into Review Area 1 for Beale AFB and therefore the draft general plan should also make note of the land use development implications of this geographic relationship.

ALUC-6 con'd

For the **Sutter County Airport**, the CLUP does not contain details regarding the types of land use actions to be referred to the ALUC for review. Thus, at a minimum, the types of land use actions noted above for the other two airports and for which referral to the ALUC is mandatory should be submitted. Much of the land affected by the CLUP criteria lies within the area addressed by the draft Downtown Specific Plan. A potential conflict between these two plans is apparent. This is particularly the case about the southwestern portion of the specific plan area which is designated for "medical arts" uses. While this land use type already exists in this location and is therefore exempt from ALUC purview, future new development or expansion of these uses would be subject to ALUC policies. Please note that the CLUP deems hospitals an incompatible use within the Overflight Zone. A more detailed analysis of the draft Downtown Specific Plan will be needed to determine the extent of potential conflicts and what steps can be taken to minimize them. At present, the draft specific plan contains no mention of the area's proximity to the Sutter County Airport and partial location within that airport's Overflight Zone.

ALUC-7

SACOG

Please don't hesitate to contact me about any questions you may have with respect to this preliminary review of your draft plans.

Sincerely,

Gregory R. Chew, AICP
SACOG/ALUC Senior Planner

Enclosures: Maps #1, #2 and #3

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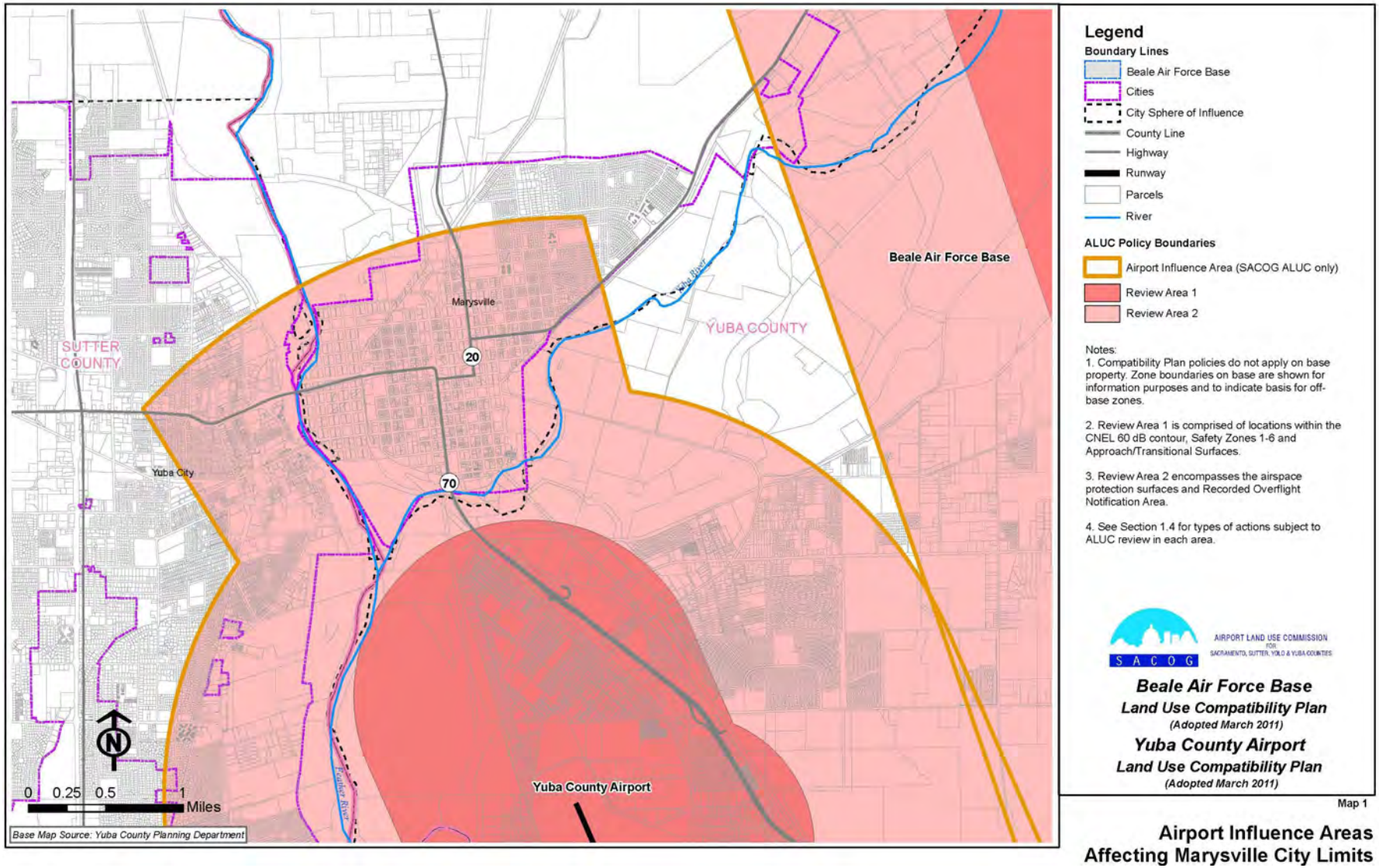
Legend
Boundary Lines
Beale Air Force Base
Cities
City Sphere of Influence
County Line
Highway
Runway
Parcels
River
ALUC Policy Boundaries
Airport Influence Area (SACOG ALUC only)
Review Area 1
Review Area 2
Notes:
1. Compatibility Plan policies do not apply on base property. Zone boundaries on base are shown for information purposes and to indicate basis for off-base zones.
2. Review Area 1 is comprised of locations within the CNEL 60 dB contour, Safety Zones 1-6 and Approach/Transitional Surfaces.
3. Review Area 2 encompasses the airspace protection surfaces and Recorded Overflight Notification Area.
4. See Section 1.4 for types of actions subject to ALUC review in each area.
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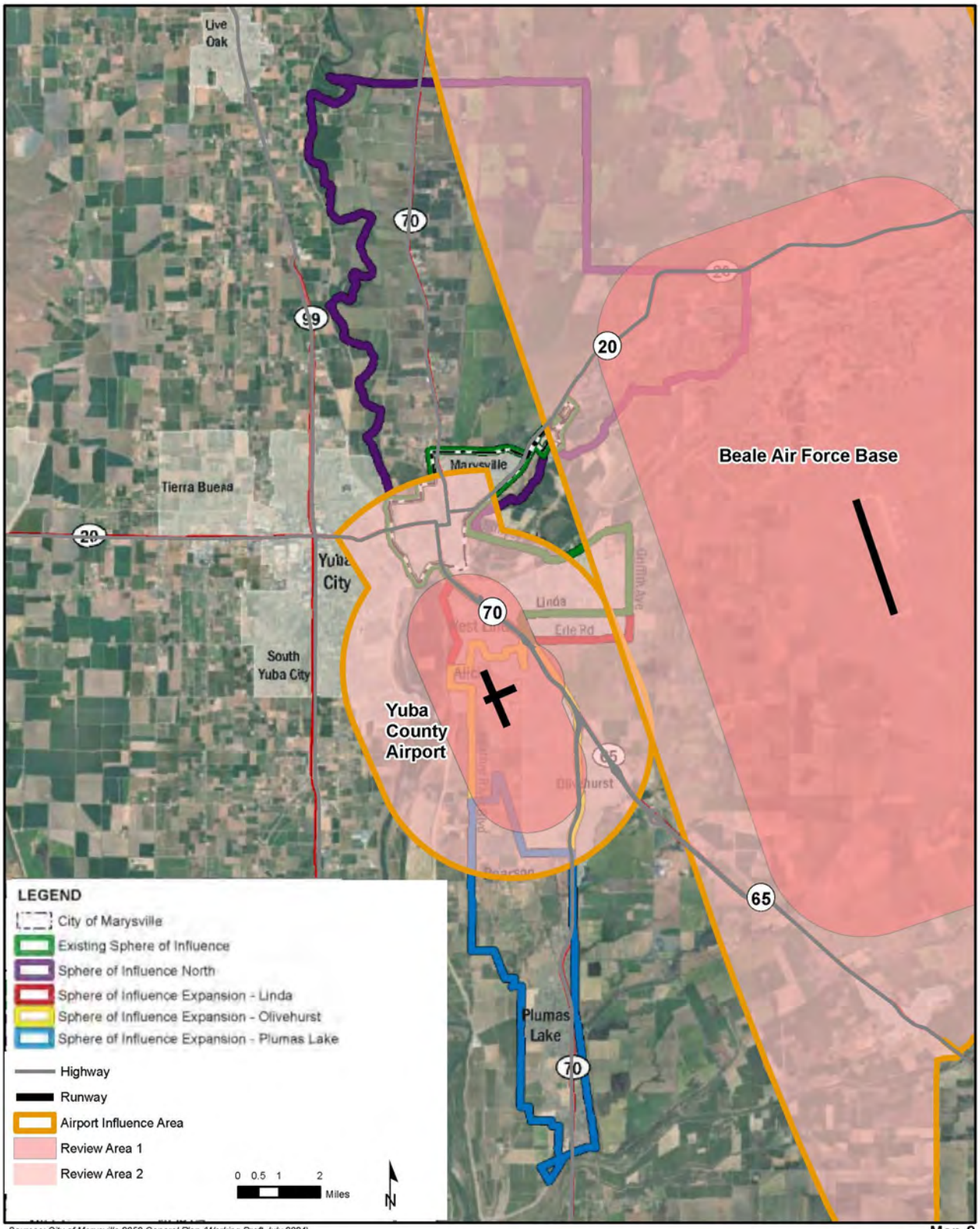
AIRPORT LAND USE COMMISSION FOR SACRAMENTO, SUTTER, YOLO & YUBA COUNTIES
Beale Air Force Base
Land Use Compatibility Plan
(Adopted March 2011)
Yuba County Airport
Land Use Compatibility Plan
(Adopted March 2011)
Map 1
Airport Influence Areas
Affecting Marysville City Limits
Beale Air Force Base
Marysville
YUBA COUNTY
SUTTER COUNTY
Yuba City
Yuba County Airport
20
70
0 0.25 0.5 1 Miles
Base Map Source: Yuba County Planning Department

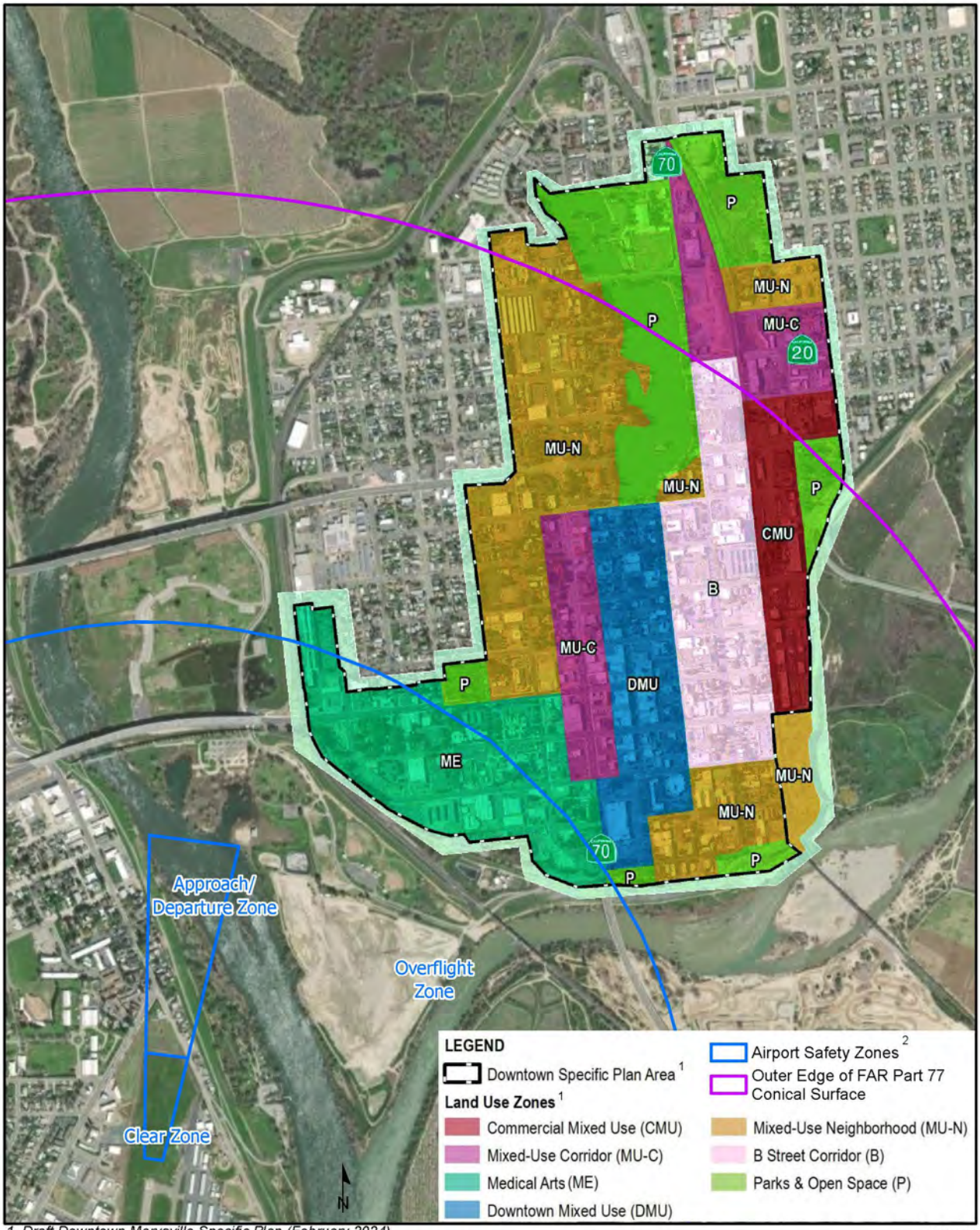


Sources: City of Marysville 2050 General Plan (Working Draft July 2024)
Beale Air Force Base Land Use Compatibility Plan (Adopted March 2011)
Yuba County Airport Land Use Compatibility Plan (Adopted March 2011)

Mead & Hunt

Map 2
Airport Influence Areas Affecting Current & Potential Marysville Sphere of Influence

July 2024



1. Draft Downtown Marysville Specific Plan (February 2024)
2. Sutter County Airport Comprehensive Land Use Plan (Adopted April 1994)
World Imagery: Maxar

Mead & Hunt

0 300 600 1,200 Feet

Map 3
Sutter County Airport Compatibility Zones Affecting Draft Downtown Marysville Specific Plan

July 2024

RESPONSE TO COMMENT LETTER ALUC

ALUC-1 *The comment provides a summary of California Public Utilities Code requirements for Airport Land Use Commission (ALUC) review of General Plan Updates, and notes that comments from the ALUC have been provided based on the City's Draft General Plan Update and Downtown Specific Plan.*

The City appreciates the ALUC's review. Responses to detailed comments are provided below in ALUC-2 through ALUC-7. The versions of the Draft Downtown Marysville Specific Plan and General Plan reviewed by the ALUC are the appropriate versions to support a comprehensive ALUC review. The General Plan and Downtown Specific Plan have been amended to address each item raised by the ALUC.

ALUC-2 *The comment references General Plan Update Exhibit 3.6, and indicates that the geographic relationship between the current Marysville city limits and sphere of influence, and the airport influence areas adopted by the ALUC for the Yuba County Airport, Sutter County Airport, and Beale Air Force Base, are incorrect. The ALUC has also attached exhibits showing the correct airport boundaries.*

The City has revised Exhibit 3.6 in the 2050 General Plan to more accurately depict the airport influence areas as reflected in the exhibits provided by the ALUC. Exhibit 3.6 from the Draft Land Use and Community Development Element (page 3-19) has been revised based on this comment and updated spatial information.

ALUC-3 *The comment states that the airport boundary discrepanies noted in Comment ALUC-2 must be resolved before the ALUC can complete its review.*

Please see reponse to comment ALUC-2.

ALUC-4 *The comment describes the Yuba County Airport and Beale Air Force Based airspace protection policies for each Review Area as designated in the adopted Airport Land Use Compatibility Plans.*

The City appreciates the explanation provided by the ALUC related to the airspace protection policies, including policies that focus on potential physical obstructions and address other hazards to flight including sources of smoke, steam, glare, and distracting lights and land uses that could attract birds. Draft EIR Section 4.8, "Hazards and Hazardous Materials," provides a discussion related to the adopted airspace protection policies along with exhibits that correctly show all three of the airport influence area boundaries in relationship to the City limits, the associated airport safety zone requirements, and an analysis of the project's potential impact related to consistency with the adopted Airport Land Use Compatibility Plans. This information is presented on Draft EIR pages 4.8-8 through 4.8-12, 4.8-14 and 4.8-15, 4.8-21, and 4.8-31 through 4.8-33. As described in Draft EIR Impact 4.8-4 (Draft EIR pages 4.8-31 through 4.8-33), the proposed 2050 General Plan and the Downtown Specific Plan do not include land use changes that would introduce tall buildings that would exceed Federal Aviation Administration (FAA) airspace requirements, or introduce new sources of flashing lights that could be mistaken for airport

lighting, attract large concentrations of birds within approach/climb out areas, reflect light or generate electronic interference, or use or store large quantities of flammable materials. Furthermore, 2050 General Plan Policy LU+CD-8.1 (subsequently renumbered to LU+CD-9.1) requires that proposed future land use actions within an Airport Influence Area or Airport Overflight Zone must be submitted to the ALUC, and be conditioned, as necessary, to ensure that the development is consistent with the applicable Airport Land Use Compatibility Plan.

Section 3.4 of the Land Use and Community Development Element of the General Plan under the heading, Airport Land Use Compatibility, has been amended to address this comment. This text has been added:

> Portions of the Sutter County Airport Overflight Zone and the Outer Edge of the FAR Part 77 Conical Surface extend into Marysville City limits. Future development in these areas should be designed to avoid potential conflicts with airport operations, which could include the introduction of tall structures, uses that may attract wildlife, or features that generate glare, smoke, or other hazards.
>
> The airport compatibility plans for Yuba County Airport and Beale Air Force Base divide their influence areas into two zones:
>
> - Review Area 1: This area addresses all four compatibility factors—noise, safety, airspace protection, and overflight.
> - Review Area 2: This area focuses on airspace protection and overflight only.
>
> Marysville's City limits currently fall entirely within *Review Area 2*, requiring consideration of airspace protection and overflight factors when evaluating development proposals. Airspace protection policies aim to prevent physical obstructions and hazards to flight, including sources of smoke, steam, glare, distracting lights, and bird-attracting land uses. Overflight policies do not restrict land uses but are intended to inform prospective property owners about aircraft overflights that may be intrusive or annoying.
>
> Marysville's City limits do does not include any areas within Review Area 1, but the City's Sphere of Influence does include areas that extend into *Review Area 1* for both the Yuba County Airport and Beale Air Force Base. No development by the City of Marysville is currently proposed within its sphere of influence. Should annexation be considered in the future; projects withing Review Area 1 would need review to ensure consistency with the respective Airport Land Use Compatibility Plans in relation to noise, safety, airspace protection, and overflight zones.

The City has also revised Policy LU+CD-9.1 as shown below and has added LU+CD Implementation Strategy 9.1:

> **Policy LU+CD-9.1:** Review and condition proposed land use actions within the Yuba County Airport, Beale Air Force Base, and Sutter County Airport Influence Areas or Airport Overflight Zones as necessary to ensure consistency with the applicable Airport Land Use Compatibility Plans.
>
> **LU+CD Implementation Strategy 9.1.** The City will refer proposed development projects and public infrastructure and public facility improvements within the Yuba County Airport, Beale Air Force Base, and Sutter County Airport Influence Areas or Airport Overflight Zones to the Airport Land Use Commission. The City will coordinate this review with the project applicant and Airport Land Use Commission and determine whether any revision to the proposed project or condition of approval is necessary in order to ensure consistency with the applicable airport land use compatibility plan.

In addition, the City has revised the Downtown Specific Plan standards for allowable land use. On Table 4-2, for the land use, "Medical services – Hospital," the table has been revised to require a Use Permit within the Medical Arts Zone that is in the Overflight Zone rather than being allowed by right. A footnote has been added to this table, as well to clarify the focus of Use

Permit review:

> ** Hospitals and colleges and universities are identified as a prohibited use within the Sutter County Airport Comprehensive Land Use Plan for locations within the Overflight Zone. The Overflight Zone includes a small portion of the Specific Plan Area within the Medical Arts Zone. These uses are permitted within the Medical Arts Zone in locations that are not within the Overflight Zone. The "Use Permit" designation for "Medical services – Hospital" and "School – College, university" is intended to require communication with the Airport Land Use Commission to ensure against combability issues related to hospitals within the Medical Arts Zone. The Use Permit designation on the above table applies only to proposed developments on properties that are within the Sutter County Airport Overflight Zone. The Sutter County Airport Comprehensive Land Use Plan is updated from time to time to reflect activity at the airport. While this prohibition may prevent the establishment of new hospitals based on communication with the Airport Land Use Commission, this does not prohibit the continued operation of the hospital. For more detail, please see: https://www.sacog.org/home/showpublisheddocument/1762/638376333665930000 and https://www.sacog.org/home/showpublisheddocument/1760/638376332797270000.

The City has added the land use category, "Communication tower, cell tower" and has identified that this use is not allowed within the Downtown Specific Plan within the exception of the Commercial Mixed Use Zone, and within that zone, a Minor Use Permit would be required that would require an applicant to demonstrate consistency with applicable provisions of the Airport Comprehensive Land Use Plan.

The City has added a subsection to Section 4.5 of the Downtown Specific Plan, "Objective Design Standards," to address airport compatibility:

> Portions of the Sutter County Airport Overflight Zone and the Outer Edge of the FAR Part 77 Conical Surface extend into the Medical Arts Zone of the Specific Plan Area. Most of the Specific Plan Area is within Review Area 2 of the Yuba County Airport. Future development in these areas should be designed to avoid potential conflicts with airport operations. Proposed structures within the Medical Arts Zone exceeding 200 feet above ground level will require additional review by the Federal Aviation Administration (FAA Form 7460-1). The City will coordinate Airport Land Use Commission review of projects, as appropriate. In general, the City will not allow features that wildlife, such as large new permanent water features or features that generate glare, smoke, or other hazards that would interfere with navigation.

ALUC-5 *The comment discusses Airport Safety Zone 3 for the Sutter County Airport, which overlaps with the Downtown Specific Plan Area, and expresses concern related to the potential for future tall buildings within the City's medical district, as well as future hospitals in this area, which would be incompatible uses.*

As noted by the commenter, the Rideout Hospital is a an existing use. Please see response to comment ALUC-4.

ALUC-6 *The comment restates the text of proposed General Plan Update Policies LU+CD-9.1 and LU+CD-9.2, and provides a listing of the specific circumstances under which proposed new or redevelopment in the City would need to be submitted to the ALUC for review. The comment also notes that land use consistency in the City's Sphere of Influence to the south with the policies in the Yuba County Airport Land Use Compatibility Plan will need to be considered in terms of future hazards from noise and safety hazards. Finally, the comment states that a large area north and northeast of the city is shown in Exhibit 3-7 of the draft general plan as a possible sphere of influence expansion, and that a portion of that area extends in Review Area 1 for Beale Air Force Base.*

The City has revised the General Plan and Specific Plan to add guidance and requirements related to airport land use compatibility, as detailed in the responses above.

The City appreciates the ALUC's listing of the specific circumstances under which proposed development in the City would need to be submitted to the ALUC for review.

Furthermore, as described in Draft EIR Chapter 5, "Sphere of Influence Impact Analysis," Section 5.1.8 "Hazards and Hazardous Materials," (Draft EIR page 5-7), the City agrees that future planning in the City's Sphere of Influence and Area of Referral (both of which are shown in Draft EIR Exhibit 5-1 on page 5-2) would be necessary to address compatibility with the Yuba County Airport Land Use Compatibility Plan, and to avoid adverse safety and noise hazards impacts.

The City notes that bullet point no. 7 raised by the ALUC in comment no. 6 refers to a new City Sphere of Influence area to the north/northeast. As explained on page 3-19 of the 2050 General Plan, the Sphere of Influence area to the north/northeast shown in Exhibit 3.7 was previously adopted by the City. However, in 2012, the Yuba County Local Agency Formation Commission adopted a change to the City's Sphere of Influence to remove the areas north and northeast of the city and add areas of unincorporated Yuba County south and southeast of the city. Therefore, the City's current Sphere of Influence no longer includes the areas north/northeast of the City limits (please see also Draft EIR Exhibit 5-1 on page 5-2).

The City looks forward to continued collaboration and consultation with the ALUC as the City implements the 2050 General Plan and Downtown Specific Plan.

ALUC-7 *The comment notes that the although the Sutter County Airport Land Use Compatibility Plan does not contain specific conditions for review, the ALUC considers that the same circumstances elaborated for the other two airports in Comment ALUC-6 should also apply to the Sutter County Airport airspace area. The comment also states that the Draft Downtown Specific Plan does not mention the Sutter County Airport and the Plan's partial inclusion within this airport's overflight zone. The comment also includes an exhibit attached to the comment letter showing the projected airport safety zone and projected outer edge of the FAR Part 77 height restrictions area associated with the Sutter County Airport, in relationship to the Downtown Specific Plan.*

The City has revised the General Plan and Specific Plan to add guidance and requirements related to airport land use compatibility, as detailed in the responses above. This includes a clarification with regard to the existing hospital use and the note that new hospital uses are prohibited within a portion of the proposed Medical Arts Zone in the southwestern portion of the Specific Plan Area, as noted by the ALUC. Please see responses to comments ALUC-4, ALUC-5, and ALUC-6.

2.2.2 COMMENT LETTER CALTRANS

Letter Caltrans

CALIFORNIA STATE TRANSPORTATION AGENCY GAVIN NEWSOM, GOVERNOR

California Department of Transportation

DISTRICT 3
703 B STREET | MARYSVILLE, CA 95901-5556
(530) 821-8401
www.dot.ca.gov

October 29, 2024

GTS# 03-YUB-2024-00294
SCH# 2023020168

Ms. Kathy Pease
Planning Consultant
City of Marysville
526 C Street
Marysville, CA 95901

City of Marysville General Plan and Downtown Specific Plan Draft EIR

Dear Ms. Pease,

Thank you for including the California Department of Transportation (Caltrans) in the review process for the project referenced above. We reviewed this local development for impacts to the State Highway System (SHS) in keeping with our mission, vision, and goals, some of which includes addressing equity, climate change, and safety, as outlined in our statewide plans such as the California Transportation Plan, Caltrans Strategic Plan, and Climate Action Plan for Transportation Infrastructure. Caltrans-1

The Marysville is located in the Sacramento Valley and is the county seat of Yuba County. The city is situated just north of the confluence of the Feather River to the west and the Yuba River to the east. State Highways (SR) 20 and SR 70 bisect the city. Marysville outside its ring levee, is surrounded by agricultural and open space uses to the north, east, and south, and is located east of Yuba City. The 2050 General Plan provides the basis for the City's regulation of the overall amount, character, and location of development, as well as economic development, fiscal sustainability, preservation and natural resource conservation, transportation, safety, public facilities and services, and housing. The General Plan communicates the City's position on important community planning issues in the form of policy statements, and identifies actions required to implement General Plan policies. The General Plan: identifies reinvestment opportunity areas and guidance for development; promotes economic development and fiscal sustainability; identifies additional housing opportunities so that workers can live proximate to their employment; identifies transportation access improvements and improvements for bicycle and pedestrian safety; addresses how to protect, enhance, and maintain desired aspects of

"Provide a safe and reliable transportation network that serves all people and respects the environment"

community character and the local quality of life; serves as the basis for City regulatory actions and investments; and provides direction for the City and other service providers to plan for services, facilities, infrastructure, and environmental mitigation.

The City of Marysville received a grant through the Sacramento Area Council of Governments (SACOG) Regional Early Action Planning (REAP) Grant to prepare a specific plan in an area designated as "Green Means Go." A Specific Plan is a planning document that implements the goals and policies of the General Plan. Specific Plans contain detailed development standards and implementation measures to which future projects located within a certain geographic area must adhere. Specific plans identify the public investments required to serve future development and a financing strategy to implement such investments. The Downtown Specific Plan is intended to encourage reinvestment, economic development, and a more vibrant Downtown area. The Specific Plan anticipates a pedestrian- and bicycle-friendly environment with a mix of shops, restaurants, services, entertainment, cultural uses, and housing in well-maintained historic buildings and new, primarily multi-story buildings. The Specific Plan allows a wide range of uses, including "horizontal" (same site) and "vertical" (same building) mixed-use developments.

Caltrans-1 con'd

Based on the Draft Environmental Impact Report (DEIR) provided, Caltrans has the following requests and recommendations:

Caltrans-2

Highway Operations

- Exhibit 3-6 illustrates Class II bike lanes along B St, spanning from 9th St to 14th St. This segment faces Right of Way (ROW) constraints, with a lake to the west and existing development to the east. Given these limitations, the construction of a Class II bike lane between 9th St and 14th St does not seem feasible.
    - Caltrans project 03-0H160, proposes to construct Class II bike lanes between 14th St and 24th Street.
- For infill developments, the project driveways and access points to and from the SHS will require review. Each driveway will be reassessed according to Caltrans Standards to ensure it meets the demands of the redevelopment.

Caltrans-3

- Consider converting certain All-Way Stop controlled intersections to mini-roundabouts or traffic circles to promote traffic calming and reduce greenhouse gas emissions.

Caltrans-4

- Consider adding a 10th Street bridge over Ellis Lake to connect with B Street. This would help prevent vehicle congestion on 9th Street and connect the 10th Street corridor.

Caltrans-5

Right of Way

Planned improvements on state route will require an Encroachment permit and mapping identifying our Caltrans ROW. Caltrans ROW Record Maps mapping are available by contacting the District 3 ROW Map counter at: d3rwmaprequest@dot.ca.gov. Caltrans-6

Aeronautics

The California Department of Transportation, Caltrans Aeronautics has reviewed the DEIR for the City of Marysville General Plan and Downtown Specific Plan. One of the goals of the California Department of Transportation, Aeronautics Program, is to assist cities, counties, and Airport Land Use Commissions (ALUC) or their equivalent, to understand and comply with the State Aeronautics Act pursuant to the California Public Utilities Code (PUC), Section 21001 et seq. Caltrans encourages collaboration with our partners in the planning process and thanks you for including the Aeronautics Program in the review of the DEIR. Caltrans-7

Per the California Public Utilities Code Section 21001 et seq. relating to the State Aeronautics Act, Section 21676(b) prior to the amendment of a general plan…within the planning boundary established by the airport land use commission pursuant to Section 21675, the local agency shall first refer the proposed action to the commission. If the commission determines that the proposed action is inconsistent with the commission's plan, the referring agency shall be notified. Any proposed development in the defined safety zones, therefore, must adhere to the safety criteria and restrictions defined in the Airport Land Use Compatibility Plan(s) adopted by the ALUC pursuant to the PUC, Section 21674.

Encroachment Permit

Any project or work, including access modification and drainage work, that takes place along or within the State's ROW requires an encroachment permit issued by Caltrans. To apply, a completed encroachment permit application, environmental documentation, and five sets of plans clearly indicating State ROW must be submitted to Encroachment Permits Offices as indicated below: Caltrans-8

Hikmat Bsaibess
California Department of Transportation
District 3, Office of Permits
703 B Street
Marysville, CA 95901
D3encpermit@dot.ca.gov

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Please provide our office with copies of any further actions regarding this proposal. We would appreciate the opportunity to review and comment on any changes related to this development.

If you have any questions regarding these comments or require additional information please contact Satwinder Dhatt, Local Development Review Coordinator, by phone (530) 821-8261 or via email at satwinder.dhatt@dot.ca.gov.

Caltrans-9

Sincerely,

GARY ARNOLD, Branch Chief
Local Development Review and Complete Streets
Division of Planning, Local Assistance, and Sustainability
California Department of Transportation, District 3

"Provide a safe and reliable transportation network that serves all people and respects the environment"

RESPONSE TO COMMENT LETTER CALTRANS

Caltrans-1 *The comment provides a summary of the proposed General Plan Update. The comment also briefly summarizes the proposed Downtown Specific Plan, noting that the Specific Plan applies to the area designated as "Green Means Go," for which the City received a Regional Early Action Planning grant through the Sacramento Area Council of Governments (SACOG). The comment notes that specific Caltrans comments on the Draft EIR are provided in subsequent comments.*

Specific responses to Caltrans' comments on the Draft EIR are provided below in Caltrans-2 through Caltrans-9.

Caltrans-2 *The comment states that Draft EIR Exhibit 3-6 shows Class II bike lanes along B Street, spanning from 9th Street to 14th Street, and further indicating that since this segment faces right-of-way constraints, new Class II bike lanes do not appear to be feasible. The comment also notes that Caltrans is planning to install new Class II bike lanes between 14th Street and 24th Street.*

Draft EIR Exhibit 3-6 (page 3-16) shows the proposed 2050 General Plan bicycle network. The City appreciates and looks forward to Caltrans' construction of new Class II bike lanes between 14th Street and 24th Street. The additional construction of new bike lanes between 9th Street and 14th Street is proposed by the City to improve connectivity with Caltrans' proposed bike lane improvements to the north. If bicycle lanes are not currently feasible for particular segments, the City would support actions that would address feasibility issues and alternative means of providing bicycle access that is at least at the level of Class II, but preferably with physical separation – either through a barrier or through vertical separation – from the highway traffic. Improving opportunities for non-vehicular travel in the City is an important goal, which is embodied in a variety of policies contained in the 2050 General Plan. The City will continue to communicate with Caltrans regarding the need to identify pedestrian and bicycle access improvements, which will be focused on the areas near the state highway system, as identified in the 2050 General Plan and Downtown Specific Plan.

Caltrans-3 *The comment states that new project driveways and access points to and from the State Highway System for infill development envisioned under the General Plan would require Caltrans review.*

The City agrees that new points of connection with the state highway system would require Caltrans review.

Caltrans-4 *The comment suggests that the City should consider converting certain all-way stop-controlled intersections to mini-roundabouts or traffic circles to promote traffic calming and reduce greenhouse gas emissions.*

The 2050 General Plan contains policies related to the future addition of mini-roundabouts or traffic circles to promote traffic calming and reduce greenhouse gas emissions (see, for example, Policy C-1.3 and Implementation Strategy C1.5). See the discussion in Draft EIR Section 4.7, "Greenhouse Gases and Energy," and Section 4.14, "Transportation" on transportation improvements that promote traffic calming and reduce greenhouse gas emissions. As noted in particular in the Circulation Element of the 2050 General Plan, Marysville's overall development

pattern helps to keep vehicular travel demand relatively low, and since transportation is the top source of greenhouse gas emissions (both in California and in Marysville), the City's overall development pattern helps to keep greenhouse gas emissions relatively low.

As observed in the Circulation Element (pages 4-10 through 4-12), vehicle miles traveled (VMT) "per service population reflects the relative efficiency of development patterns and transportation facilities, as well as household and employment location decisions of residents, employees, and employers. Relatively low VMT per person or per employee can be an indication of a more resilient and economically successful community, where household transportation costs are minimized and where the cost of maintaining transportation facilities better matches the local fiscal base for supporting such costs. VMT rates reflect the land use mix and density, as well as bike, pedestrian, and transit infrastructure improvements, the urban design environment, the proximity of regional destinations, the relative connectivity of the transportation network, and other factors. Strategies aimed at reducing VMT enhance access to destinations for residents, employees, and visitors. Such strategies include adding housing near jobs, promoting housing and job development near transit stops, implementing transportation demand management techniques such as parking pricing, commuter trip reduction programs, improving transit systems, and providing infrastructure for alternative modes of transportation beyond single-occupant vehicles. Increasing the diversity of land uses in proximity (placing homes near schools, stores, services, and civic destinations) decreases VMT by providing residents with easier access to amenities and job opportunities, resulting in shorter trip distances. This includes access to entertainment, shopping, and other resources, which can be accomplished by mixing a variety of land uses in proximity to one another. Marysville is relatively VMT efficient. The Sacramento Area Council of Governments (SACOG) has prepared analysis and mapping showing that the entire city has per-capita VMT that is 50 to 85 percent of the regional average. The entire city has VMT per employee that is either 50 percent or less of the regional average or between 50 and 85 percent of the regional average…Similarly, SACOG examined relative VMT efficiency for 2040, including growth and development in the region. For 2040, all of Marysville will have per-capita VMT that is 50 to 85 percent of the regional average" (2050 General Plan Circulation Element, pages 4-11 and 4-12).

Part of the City's Vision for the implementation of this General Plan is to build on the walkability of the city and increase the extent to which "residents have elected to live just steps from retail and services," and "residents have opportunities for safe and affordable housing, access to parks and recreational spaces, convenient bicycle and pedestrian options to reach daily destinations, and a variety of local employment options." Though implementation of the General Plan, the City will provide more "[c]ompact housing options near services and entertainment [that are] especially popular among the younger households that have made Marysville their home. Rather than importing employees, recent housing construction has made it possible for many residents to avoid the commute into the city." As explained in Chapter 2 of the General Plan, the City intends to increase the degree to which "Maryville is known for its walkability and scenic levee trails. Residents and visitors enjoy safe, convenient, and pleasant options for reaching destinations on foot or on their bike. Tree-lined state and local transportation facilities operate in a way that balances the needs of regional transportation and goods movement with local access and quality of life." As described also in Chapter 2 of the General Plan, the Guiding Principles that were used

to develop the detailed policies and implementation strategies included in the Circulation Element and throughout the 2050 General Plan include the following critical point of direction for the General Plan authors related to transportation:

- Our commercial districts should be inviting, pedestrian friendly, and easily accessible to nearby neighborhoods.
- Our transportation facilities can be designed and operated in a way that serves regional and statewide transportation needs in balance with local needs.
- The entire community benefits from tree-lined, pedestrian-friendly streets and a strong sense of place.
- Though we value the convenience provided by our automobiles, our city should be designed to meet the needs of our people.
- It is critical to ensure that Marysville is a place where it is safe and convenient to walk, bike, and roll to reach daily destinations.

The City welcomes the commenter's suggestion that converting certain all-way stop-controlled intersections to mini-roundabouts or traffic circles would promote traffic calming and reduce greenhouse gas emissions. In addition, the City will be seeking to add substantial development to this context where VMT is already relatively low, and will be pursuing improvements, particularly along the state highway system, that would making walking and bicycling to destinations more welcoming, convenient, safe, and pleasant.

Caltrans-5 *The comments that the City consider adding a 10th Street bridge over Ellis Lake to connect with B Street to help prevent vehicle congestion on 9th Street and connect the 10th Street corridor.*

This comment does not pertain to the environmental analysis contained in the Draft EIR. The City appreciates suggestions such as this from Caltrans and other suggestions that would not only address peak-period congestion, but also would improve pedestrian and bicycle access and safety, and that would help to slow speeds, reduce noise and air pollution, add shade during the hot summer months, improve safety, and make more pleasant spaces along the state highways that attract new compact, mixed-use, infill development.

Caltrans-6 *The comment states that any planned future improvements to state highways within Caltrans' right-of-way will require an encroachment permit and mapping that identifies the Caltrans right-of-way.*

The City agrees that encroachment permits would be required for any future modifications to state highways within Caltrans' right-of-way.

Caltrans-7 *The comment states that Caltrans' Aeronautics Division appreciates the opportunity to review the Draft EIR; provides a brief summary of the California Public Utilities Code which requires ALUC review of General Plans; and notes that any proposed development in the airport safety*

zones must adhere to the safety criteria and restrictions defined in the Airport Land Use Compatibility Plan(s).

Please see responses to comments ALUC-1 through ALUC-7.

Caltrans-8 *The comment notes that encroachment permits are required for work within State Highway right-of-ways and provides information related to the permit process.*

Please see response to comment Caltrans-6.

Caltrans-9 *The comment requests that Caltrans be notified and provided with an opportunity to review any changes to the proposed project.*

The City has provided Caltrans with a copy of this Final EIR, which includes responses to comments. The City will continue to notice Caltrans of actions related to the proposed project.

2.2.3 COMMENT LETTER SMGB

California
Department of Conservation
State Mining and Geology Board

Gavin Newsom
Gabe Tiffany, Acting Director
Jeffrey Schmidt, Executive Officer

Letter SMGB

November 8, 2024

Kathy Pease, AICP
City of Marysville
Community Development Department
PO BOX 150
Marysville, California 95901

Sent Via Email to: kpease@mastirm.com

RE: Comment for Marysville General Plan and Downtown Specific Plan Draft EIR
State Clearing House #2023020168

Dear Ms. Pease,

The State Mining and Geology Board (Board) appreciates the opportunity to provide comments on the Draft Environmental Impact Statement (DEIR), dated September 2024, and the Proposed Marysville General Plan and Downtown Specific Plan (Plan). SMGB-1

Board staff reviewed the DEIR and noted that it includes Figure 4.6-5 State Designated Mineral Resource Zones and Figure 4.6-6 State Designated Mineral Resource Sectors.

Board staff also reviewed the proposed Marysville General Plan and Downtown Specific Plan and noticed that it does not include an overlay or planning map delineating mineral resources.

Under Public Resource Code (PRC) Section 2762 the Board is afforded authority to review local Mineral Resource Management Policies (MRMP). The required contents of MRMPs are specified in the California Code of Resources (CCR) Section 3676. One of the requirements of an MRMP is the *"use of overlay maps or inclusion of information on any appropriate planning maps to clearly delineate identified mineral deposits and those areas targeted by the lead agency for conservations and possible future extraction."*

Board staff suggest that maps like DEIR Figure 4.6-5 and Figure 4.6-6 be referenced in the General Plan's Section 5.1.8, "Mineral Resources", and included as an Exhibit.

The Board is available to provide any assistance the City of Maryville may need regarding the comment above. Please feel free to contact me with any questions.

Sincerely,

Jeffrey Schmidt
Executive Officer
State Mining and Geology Board

State of California Natural Resources Agency | Department of Conservation
715 P Street, MS 1909, Sacramento, CA 95814
conservation.ca.gov | T: (916) 322-1082

RESPONSE TO COMMENT LETTER SMGB

SMGB-1 *The comment states that the California Code of Resources Section 3676 sets forth the required contents of Mineral Resource Management Policies, which includes the "use of overlay maps or inclusion of information on any appropriate planning maps to clearly delineate identified mineral deposits and those areas targeted by the lead agency for conservations and possible future extraction." The comment therefore suggests that Draft EIR Figures 4.6-5 and 4.6-6 be referenced and included as exhibits in the 2050 General Plan itself, rather than just in the Draft EIR.*

Draft EIR Exhibits 4.6-5 and 4.6-6 have been added to the 2050 General Plan Open Space, Conservation + Recreation Element Section 5.1.8, "Mineral Resources" as new Exhibits 5-2 and 5-3. The following text has also been added to this same section of the 2050 General Plan:

> In addition to the MRZ-2 classification, mineral resource areas along the Yuba River have been further subdivided into resource sectors (Exhibit 5-3). Sectors are areas classified as MRZ-2 where current land uses have been deemed compatible with possible future mining by California Geological Survey. The southeastern City limits are within Sectors 10 and 11, and the northeastern City limits are within Sector 14. Within these sectors, regionally significant concrete aggregate resources are known to be present.

2.2.4 COMMENT LETTER FRAQMD

Letter FRAQMD

541 Washington Avenue
Yuba City, CA 95991
(530) 634-7659
FAX (530) 634-7660
www.fraqmd.org

Christopher D. Brown, AICP
Air Pollution Control Officer

Serving Sutter and Yuba Counties

November 12, 2024

Kathy Pease, AICP
City of Marysville
Community Development Department
P.O. Box 150
Marysville, CA 95901

Re: Marysville General Plan and Specific Plan 2050 DEIR

Dear Kathy Pease,

Thank for providing the Feather River Air Quality Management District (District) with the opportunity to review the Marysville General Plan and Specific Plan DEIR. The District supports the City's policy C-1.7, and the District would encourage mixed use-development and the requirement of multimodal transportation facilities. Also, the District would be supportive of in-fill development and community revitalization. FRAQMD-1

Air Quality Section

The District appreciates and recognize that the Draft Marysville General Plan policies and implementations strategies have identified actions to reduce emissions associated with land use development, primarily through vehicle miles traveled, and reduced energy use. The District supports measures such as encouraging development that is supportive of rail transit including higher density residential land uses and employment uses and the implementation of performance-based standards to address important aspects of land use compatibility. FRAQMD-2 Policy LU+CD-3.9 can be improved upon by outlining the specific performance standards in more detail and explanation on how these performance standards be evaluated. FRAQMD-3 Another example of measure that the District supports but would recommend strengthening is implementation strategy C1.1. The District would recommend requiring a traffic study when a proposed project is projected to generate or attract more than 550 vehicular trips per day. FRAQMD-4 The use of the word "may" or "shall consider" in the implementation strategy as written makes the strategy not enforceable. The District requests that the City set these implementations strategies with more firm requirements.

The District would like to recommend that implementation strategy OS 7.1-2 be modified to require the best available control technology (TBACT) if the project applicant's construction equipment would exceed the District thresholds of significance for toxic air contaminants. FRAQMD-5

ISR

Land Use and Planning Section

FRAQMD-6

The District recognizes and is in support of policies outlined in the Land use and Planning section of DEIR. The District recommends building upon the policies outlined in the land use and planning by utilizing and implementing Smart Growth principles that prioritize housing choice and walking, biking, and transit over automobile use. Additionally, the City of Marysville may consider a new urbanism approach to planning and development. New Urbanism is a planning and development approach based on the principles of how cities and towns had been built for the last several centuries: walkable blocks and streets, housing and shopping in proximity, and accessible public spaces. In other words: New Urbanism focuses on human-scaled urban design. These design and development principles can be applied to new development, urban infill and revitalization, and preservation. They can be applied to all scales of development in the full range of places including rural Main Streets, booming suburban areas, urban neighborhoods, dense city centers, and even entire regions. The District recommends setting measurable targets for implementation strategies related to the improvement of existing and expansion of multimodal transportation facilities. Please consider where and how a public transportation center or stop is situated relative to surrounding land uses. Understanding and accommodating the particular needs of all public transportation users, such as older adults, is also important in evaluating multimodal access to Public Transportation. In a recent AARP survey of persons older than 50 years, 48% of respondents said they lacked a comfortable place to wait for the bus and 47% said they cannot safely cross the main roads in their community (Koffman, 2010).

Greenhouse Gas Emissions

FRAQMD-7

The District recognizes and appreciates the discussion of the methodology that went into the development of the greenhouse gas and energy section for the DEIR. The District would like to pass along greenhouse gas reduction measures for different categories applicable to the general plan and future development. The City may consider implementing mitigation measures found in the Caleemod handbook when assessing the impact of a proposed project and requiring feasible mitigation measures. The District currently does not have an established threshold for greenhouse gas emissions, however, that may change in the future and having some language for consultation with the District may be beneficial for project proponents. Attached to this comment letter is a list of greenhouse gas emissions mitigation measures that are incorporated in the latest version of Caleemod.

If you need further information or assistance, please contact me at (530) 634-7659 x209. Air District staff will be available to assist the project proponent or Lead Agency as needed.

Sincerely,

Peter Angelonides
Air Quality Planner II

Enclosures: Smart Growth Principals, Multimodal Access to Public Transportation, Caleemod GHG mitigation measures

File: Chron

RESPONSE TO COMMENT LETTER FRAQMD

FRAQMD-1 *The comment states that the Feather River Air Quality Management District (FRAQMD) supports 2050 General Plan Policy C-1.7, and the FRAQMD encourages mixed use development and the requirement of multimodal transportation facilities. The comment also states that the FRAQMD would be supportive of infill development and community revitalization.*

The 2050 General Plan, Downtown Specific Plan, and Zoning Code Update all allow and encourage mixed-use infill development and community revitalization.

Proposed 2050 General Plan Policy C-1.7 documents the City's support for California State Transportation Plan commitments to reduce traffic volumes, particularly near disadvantaged communities, reduce emissions and noise affecting neighborhoods, reduce non-exhaust pollutants, improve the safety and attractiveness for active transportation modes, create more vibrant public spaces, slow traffic speeds, prioritize specific transportation investments needed to support mixed-use development, and require the addition of multimodal transportation facilities along the state highways. Mixed-use development, multimodal transportation facilities, in-fill development, and community revitalization are encouraged throughout the 2050 General Plan and will be included in the Downtown Specific Plan. As described on Draft EIR page 4.10-5, Downtown Marysville has been identified as a "Green Means Go Green Zone" as part of the SACOG Green Means Go pilot program, which aims to lower greenhouse gas emissions and reduce the need for vehicle trips in the Sacramento region by accelerating infill development in targeted areas. The SACOG "Green Means Go" zone helped to inform the Downtown Specific Plan Area boundary. Draft EIR pages 4.10-5 and 4.10-6 provide a list of benefits from infill and redevelopment in the Downtown Specific Plan's "Green Means Go" zone including reducing vehicle miles traveled (VMT) through the location of efficient housing and community revitalization.

FRAQMD-2 *The comment states that the FRAQMD appreciates and recognizes that the 2050 General Plan policies and implementations strategies have identified actions to reduce emissions associated with land use development, primarily through vehicle miles traveled, and reduced energy use. The comment also states that the FRAQMD supports measures such as encouraging development that is supportive of rail transit including higher density residential land uses and employment uses and the implementation of performance-based standards to address important aspects of land use compatibility.*

The City appreciates the support expressed by the FRAQMD for the 2050 General Plan policies and implementations strategies. The 2050 General Plan and Downtown Specific Plan increase allowable densities, including in areas that would be served by public transportation during implementation of the 2050 General Plan.

FRAQMD-3 *The comment states that FRAQMD believes proposed 2050 General Plan Policy LU+CD-3.9 could be improved by outlining the specific performance standards in more detail and explaining how these performance standards would be evaluated.*

Proposed 2050 General Plan Policy LU+CD-3.9 states that the City will "employ performance-based standards to address important aspects of land use compatibility (air, noise, vibration, truck traffic, light, odors, and glare) without impeding mixed-use infill development." These standards are addressed through policies and implementation strategies in the respective topic area sections of the 2050 General Plan (i.e., Land Use + Community Development, Open Space + Conservation + Recreation, Noise, Environmental Justice, and Housing). This policy means that the City will not primarily pursue land use compatibility by separating different uses from one another, since the City understands that placement of different land uses in proximity to one another (residential, jobs, parks, schools, services) is an important part of making it more practical to reach destinations without depending on private vehicles. Policy LU+CD-3.9 communicates that the City will promote compatibility with regard to air pollutant emissions, noise, vibration, truck traffic, light, odors, and glare by reducing potentially adverse impacts from these sources of incompatibility through uniformly applied policies and standards.

For example, as it relates to light and glare, the City will require consistency with Policy OS-2.10 and the following standards from the Downtown Specific Plan related to light:

- Policy OS-2.10: Require new developments to locate and design lighting to avoid light spillage, avoid flashing lights, and avoid reflective surfaces that could cast glare toward pedestrians, bicyclists, or motorists.

Downtown Specific Plan Standards:

Outdoor lighting on private lots must be designed and directed away from common boundaries and neighboring uses.

Outdoor lighting associated with outdoor dining opportunities must be provided to ensure a safe and welcoming atmosphere during evening hours, with an emphasis on using fixtures that enhance visibility without causing light pollution. Lighting must be pointed downwards and not cause direct glare or other visual obstruction to pedestrians, cyclists, or drivers.

Site lighting in public open space areas must create safe, welcoming, well-lit areas, including building entries, pedestrian pathways and vehicle maneuvering areas, while minimizing excessive illumination on adjoining properties. The Specific Plan contains the following specific standards related to lighting in public areas:

- Nuisance Prevention. All lights shall be directed, oriented, and shielded to prevent light trespass or glare onto adjacent properties. The light level at property lines shall not exceed 0.3 foot-candles.

- Maximum Height. Freestanding outdoor light fixtures shall not exceed 16 feet in height.

- Minimum Lighting Requirements:

    - Parking Areas. Lighting in parking, garage, and carport areas shall be maintained with a minimum of one foot-candle of illumination at the ground level during hours of darkness,

with a maximum of four foot-candles. All lighting shall be on a time clock or photo-sensor system. Lighting used to illuminate parking areas shall be designed and located to prevent light trespass or glare. Illumination shall not include low-pressure sodium or similar lighting technologies.

- Multi-Unit Residential Developments. Aisles, passageways, and entryways/recesses related to and within the building complex shall be illuminated with an intensity of at least one-quarter foot-candles at the ground level during the hours of darkness.

- Non-Residential Developments (or portions of a development). All exterior doors, during the hours of darkness, shall be illuminated with a minimum of one-quarter foot-candles of light.

As it relates to noise, the City will require consistency with the following policies and implementation strategies that would reduce short-term, construction-related and long-term noise exposure for noise-sensitive uses.

- Policy N-1.2: Locate noise-generating equipment away from outdoor activity areas of noise-sensitive land uses or use noise attenuation methods, such as enclosing substantial noise sources within buildings or structures, using muffling devices, or incorporating other technologies designed to reduce noise levels.

- Policy N-1.3: Limit demolition, construction, site preparation, and related activities that would generate noise perceptible at the property line to the hours between 7 a.m. to 7 p.m. on weekdays, 8 a.m. to 7 p.m. on Saturdays, and 9 a.m. to 5 p.m. on Sundays and holidays.

- Policy N-1.5: Avoid the use of pile drivers, vibratory compactors, and vibratory rollers within 40 feet of historical structures and within 20 feet of other structures. If the use of this equipment within these buffer areas is unavoidable, the project applicant shall inspect structures within these buffer areas and report on their structural condition and stop work if any cosmetic or structural damage occurs to adjacent structures. Work may not restart until the building is stabilized and/or preventive measures are implemented to relieve further damage to the structures and the project applicant shall repair any damage caused by the use of this equipment.

    - Noise Implementation Strategy 1.1: For projects that could exceed the maximum acceptable noise levels included in [Noise Element] Table 7-1, the City shall make it a condition of approval for development projects to incorporate feasible noise mitigation measures to reduce construction noise, including:

        – Ensure that construction equipment is properly maintained and equipped with noise control components, such as mufflers, in accordance with manufacturers' specifications;

        – Locate noisy construction equipment away from surrounding noise-sensitive uses;

  - If proposed construction activity is within 100 feet of an occupied noise-sensitive use, the City will condition the project to (a) use sound aprons or temporary noise enclosures around noise-generating equipment; and/or install temporary noise barriers between noise-generating activity and noise-sensitive uses.

- Policy N-1.1: Design and operate developments that generate stationary source noise below maximum allowable levels specified in Table 7-1, as measured at outdoor activity areas of noise-sensitive land uses. If existing noise levels already exceed the maximum allowable levels listed in Table 7-1, as measured at outdoor activity areas of noise-sensitive land uses, developments are required to incorporate design and/or operational strategies to limit stationary source noise increases to 5 dBA or less.

- Policy N-1.2: Locate noise-generating equipment away from outdoor activity areas of noise-sensitive land uses or use noise attenuation methods, such as enclosing substantial noise sources within buildings or structures, using muffling devices, or incorporating other technologies designed to reduce noise levels.

- Policy N-1.4: Locate and design proposed noise-sensitive land uses consistent with the maximum allowable levels specified in Table 7-2, as measured at outdoor activity areas of noise-sensitive land uses.

As it relates to odors, the City's Municipal Code has prohibitions on nuisances including odors and although the City does not anticipate uses that would generate substantial odors, the 2050 General Plan also includes a policy to address this compatibility issue:

- Policy OS-7.5: Install odor controls on new and existing sources, as feasible, to reduce exposure for existing and future residents.

Regarding compatibility on air quality-related issues, the City has included in the 2050 General Plan:

- Policy OS-7.2: Review projects that involve substantial stationary sources of emissions and condition such projects to avoid significant impacts to nearby sensitive receptor land uses, such as residences schools, and the hospital.

- Policy OS-7.3: Use the lowest commercially available volatile organic compound emitting architectural coatings (e.g., paints, stains, industrial maintenance coatings, traffic coatings, and many other products) for City buildings and structures.

- Policy OS-7.6: Coordinate during the application process with the Feather River Air Quality Management District to identify sources of toxic air contaminants and determine the need for health risk assessments for proposed development.

  - Implementation Strategy OS 7.1-2: Construction equipment over 50 brake horsepower (bhp) used in locations within 300 feet of an existing sensitive receptor shall meet Tier 4 or cleaner engine emission standards. Alternatively, a project applicant may prepare a

site-specific estimate of diesel PM emissions associated with total construction activities and evaluate for health risk impact on existing sensitive receptors in order to demonstrate that applicable Feather River Air Quality Management District-recommended thresholds for toxic air contaminants would not be exceeded or that applicable thresholds would not be exceeded with the application of alternative mitigation techniques approved by the Feather River Air Quality Management District.

See Draft EIR Sections 4.1, "Aesthetics," 4.3, "Air Quality," 4.7, "Greenhouse Gases and Energy," 4.11, "Noise and Vibration," and 4.14, "Transportation," which discuss uniformly applied development policies and standards that would apply to future development.

FRAQMD-4 *The comment states that FRAQMD would recommend strengthening Implementation Strategy C1.1 by definitively "requiring" a traffic study when a proposed project would generate or attract more than 550 vehicular trips per day, rather than using the words "may" or "shall consider."*

The reason for the specific language identified here – may instead of shall – is that, with regard to the City's level of service policy, some projects depending on their location would clearly have no effect or very little effect on peak period congestion for adjacent roadways. The full text of the referenced Implementation Strategy is provided below:

- Implementation Strategy C1.1: The City may require traffic studies for proposed projects that would generate or attract more than 550 vehicular trips per day. Where a proposed development would cause an exceedance of the City's level of service policy, applicants shall consider feasible revisions to the proposed development that would increase connectivity, enhance bicycle/pedestrian/transit access, manage travel demand, and/or provide other revisions that would reduce vehicular travel demand. Adding capacity will only be considered if this would not adversely affect pedestrian or bicycle access, convenience, or safety and where such a capacity increase is demonstrated to avoid inducing substantial additional vehicular travel.

The commenter is generally right that, if the City had identified a potentially significant environmental impact, and had identified mitigation required to reduce that impact to a less-than-significant level, that more enforceable language would be needed. Here, the reference is to an implementation strategy that is focused on the social inconvenience of peak-period traffic congestion, not an environmental impact. With regard to environmental impacts associated with vehicular trips – this is addressed by other policies and implementation strategies within the 2050 General Plan. For example, the City's Land Use Diagram and Bicycle Circulation Diagram are designed to promote relatively compact, mixed-use development served by a well-connected, safe, and convenient pedestrian and bicycle network. 2050 General Plan policies and implementation strategies would affect actions to reduce emissions associated with land use development, primarily through reduced vehicle miles traveled. Implementation strategies would serve as uniformly applied development standards that reduce criteria air pollutant and ozone precursor emissions associated with implementation of the proposed 2050 General Plan and the Downtown Specific Plan. Policies require pedestrian and bicycle friendly design:

- Policy LU+CD-4.1: Design new development to provide direct and convenient pedestrian and bicycle access to nearby parks, trails, commercial and public services, and transit stops.

Other policies and implementation strategies commit the City to pursuing improvements that would reduce barriers to pedestrian and bicycle travel created by the state highway system:

- Policy C-1.7: Support California State Transportation Plan commitments to reduce traffic volumes, particularly near disadvantaged communities, reduce emissions and noise affecting neighborhoods, reduce non-exhaust pollutants, improve the safety and attractiveness for active transportation modes, create more vibrant public spaces, slow traffic speeds, prioritize specific transportation investments needed to support mixed-use development, and require the addition of multimodal transportation facilities along the state highways. Consider installing criteria air pollutant emissions monitoring equipment to evaluate the effectiveness of emission reduction improvements.

    - Implementation Strategy C1.4: The City will actively collaborate with the California Department of Transportation (Caltrans) and the community to reduce impacts of state highway traffic on businesses and residents within Marysville. Measures should include improving connectivity and safety for walking, rolling, bicycling, and other non-vehicular transportation modes, reducing cut-through traffic, and increasing safety enforcement. Recommendations could include design changes, changes in routing, changes in management of passenger vehicle and truck traffic, landscaping and streetscape improvements, on-street parking, and other recommendations. Additionally, as described in the Caltrans 2022 State Highway 70 and 99 Comprehensive Multimodal Corridor Plan, recommendations could include an adaptive signal system throughout Marysville on SR 70 and installation of bicycle lanes through the city.

Other policies establish that the City will manage vehicular travel demand to maintain relatively low local rates of vehicular travel:

- Policy C-3.4: Manage travel demand so that the citywide per-capita and per-employee daily VMT rates do not exceed 85 percent of the Sacramento region rates.

Other strategies included in the 2050 General Plan address indirect sources of induced vehicular demand:

    - Implementation Strategy C4.2: The City will amend the Zoning Code provisions for minimum parking requirements based on the direction provided in this General Plan. This will include eliminating requirements to provide new off-street parking for projects that would generate 110 or fewer trips per day and residential, office, and local serving retail and commercial service projects located in areas where vehicular travel demand is 85 percent or less of the regional average on a per capita or per employee basis.

In summary, the City appreciates the suggestion by the commenter, but there is no significant adverse environmental impact that would be reduced by requiring a traffic study for every project

without exception that generates 550 trips on a daily basis and the City has not revised the 2050 General Plan in response to this comment.

FRAQMD-5 *The comment states that FRAQMD recommends that Implementation Strategy OS 7.1-2 be modified to require implementation of best available control technology (TBACT) if the project applicant's construction equipment would exceed the FRAQMD thresholds of significance for toxic air contaminants.*

Please see Draft EIR Impact 4.3-2 (Draft EIR pages 4.3-35 through 4.3-44), which includes mitigation measures that would be applied to all future site-specific development projects, including the requirement to implement FRAQMD measures such as implementation of best available control technology if the project applicant's construction equipment would exceed the FRAQMD thresholds of significance for toxic air contaminants. This reference has been added to Implementation Strategy OS 7.1-2, as shown below:

- Implementation Strategy OS 7.1-2: Construction equipment over 50 brake horsepower (bhp) used in locations within 300 feet of an existing sensitive receptor shall meet Tier 4 or cleaner engine emission standards. Alternatively, a project applicant may prepare a site-specific estimate of diesel PM emissions associated with total construction activities and evaluate for health risk impact on existing sensitive receptors in order to demonstrate that applicable Feather River Air Quality Management District-recommended thresholds for toxic air contaminants would not be exceeded or that applicable thresholds would not be exceeded with the application of alternative mitigation techniques approved by the Feather River Air Quality Management District<u>, including the incorporation of the best available control technology.</u>

Please see also response to comment FRAQMD-3.

FRAQMD-6 *The comment suggests that the City employ Smart Growth principles that prioritize housing choice and walking, biking, and transit over automobile use, along with implementing principles of New Urbanism (i.e., human-scaled urban design). The comment also requests that the City consider where and how a public transportation center or stop is situated relative to surrounding land uses.*

The proposed 2050 General Plan and the Downtown Specific Plan are based on the principles of Smart Growth and are designed to accomplish the goals suggested by the FRAQMD, including housing choices and alternative modes of transportation. The City also notes that as discussed in the proposed 2050 General Plan and the Draft EIR, the City of Marysville incorporated in 1851 and development is constrained by the presence of the Marysville Ring Levee, which encircles the City to provide flood protection. Most of the City is already built out; therefore, the 2050 General Plan and Downtown Specific Plan emphasize infill and redevelopment, and the City's development pattern in fact does represent the cited new urbanism principles, including walkable blocks and street, housing and service located in proximity to one another, accessible public spaces, and other features. The City agrees that consideration of where and how public transportation centers or stops are situated relative to surrounding land uses is important. The

exact locations of future transit stops would be determined during future site-specific planning when development proposals are brought forward. As suggested by the commenter, the City has identified a measurable target for transportation – please see Policy C-3.4 from the 2050 General Plan Circulation Element:

- Policy C-3.4: Manage travel demand so that the citywide per-capita and per-employee daily VMT rates do not exceed 85 percent of the Sacramento region rates.

As detailed on pages 4-11 and 4-12 of the 2050 General Plan Circulation Element and other public documents related to the proposed project, Marysville is relatively vehicle miles traveled (VMT) efficient. The Sacramento Area Council of Governments has prepared analysis and mapping showing that the entire city has per-capita VMT that is 50 to 85 percent of the regional average. The entire city has VMT per employee that is either 50 percent or less of the regional average or between 50 and 85 percent of the regional average. Similarly, SACOG examined relative VMT efficiency for 2040, including growth and development in the region. For 2040, all of Marysville will have per-capita VMT that is 50 to 85 percent of the regional average. This reflects the city's development pattern – the highly connected grid street system, the diverse land use mix, the availability of local employment, and other features. Other communities are faced with a different set of challenges – many cities were established and developed after World War II when it was more common to separate housing destinations and construct transportion networks with low connectivity – pushing traffic onto large, pedestrian-unfriendly arterial roads and incorporating cul-de-sacs and other features that make pedestrian and bicycle travel impractical.[1] In these suburban communities, it can be very expensive to change the built environment in a way that can realistically support transportation other than private automobile transportation.

Marysville's challenge is different – rather than identifying funding to fundamentally change the built environment and transportation system – the City's challenge is to take action that will attract more development. In order to promote VMT-efficient development, low greenhouse gas emissions development, and energy efficient development, the objective for Marysville is to encourage more construction, housing development, economic development, and investment in Marysville, where the important framework for VMT-efficient development already exists.

Regarding the commenter's note regarding the needs of all transportation users and the survey showing that 47 percent of people older than 50 years feel they cannot safety cross the main roads in their community – this is a distinct challenge for Marysville, as well. Please see the responses to comment Caltrans-4.

Though Marysville's development pattern is demonstrated to be relatively pedestrian and bicycle friendly, with a highly connected local transportation network, relatively compact development development, and a diverse mix of land uses, the major barriers to pedestrian and bicycle travel are the two state highways that cut through the community. As noted in the 2050 General Plan

1 United States Environmental Protection Agency. 1993. Transportation-Air Quality Planning: Current and Future Analysis Needs. An excellent synthesis of studies on travel behavior with different land use patterns and transportation system designs can be found in Reid Ewing and Robert Cervero, 2001, "Travel and the Built Environment" Transportation Research Record, 1780, Paper No. 01-3515.

Circulation Element (pages 4-6 through 4-8), at the center of Marysville is an intersection of two state highways: SR 70 and SR 20. As state routes make their way into Marysville, they lack the street trees, parallel parking, narrower lanes, and other physical features that have been demonstrated to slow down motorists, which creates challenges for pedestrian and cyclist safety and for the overall desirability of walking and bicycling to local desinations. During implemention of the 2050 General Plan, however, with design changes, these highways corridors can provide queues to drivers to be careful and slow down, and in other ways better function as "main streets." The presence of significant physical barriers, including SR 70 and SR 20, hinders access within the city. SR 70 and 20 physically divide the city, creating complex navigation and quality of life issues by obstructing pedestrian and vehicle travel. However, the 2050 General Plan and Downtown Specific Plan identify changes that would reduce the extent to which the state highway system creates barriers to pedestrian and bicycle travel and the City will support changes that promote both pedestrian and bicycle access, as well as infill development along these corridors. From the 2050 General Plan Circulation Element:

- Policy C-1.5: Advocate for changes to the state highways within Marysville that better distribute and manage traffic flow, reduce noise and air pollutant emissions exposure, encourage bicycle and pedestrian travel, improve aesthetics, and slow traffic.

- Policy C-1.7: Support California State Transportation Plan commitments to reduce traffic volumes, particularly near disadvantaged communities, reduce emissions and noise affecting neighborhoods, reduce non-exhaust pollutants, improve the safety and attractiveness for active transportation modes, create more vibrant public spaces, slow traffic speeds, prioritize specific transportation investments needed to support mixed-use development, and require the addition of multimodal transportation facilities along the state highways. Consider installing criteria air pollutant emissions monitoring equipment to evaluate the effectiveness of emission reduction improvements.

    - Implementation Strategy C1.4: The City will actively collaborate with the California Department of Transportation (Caltrans) and the community to reduce impacts of state highway traffic on businesses and residents within Marysville. Measures should include improving connectivity and safety for walking, rolling, bicycling, and other non-vehicular transportation modes, reducing cutthrough traffic, and increasing safety enforcement. Recommendations could include design changes, changes in routing, changes in management of passenger vehicle and truck traffic, landscaping and streetscape improvements, on-street parking, and other recommendations. Additionally, as described in the Caltrans 2022 State Highway 70 and 99 Comprehensive Multimodal Corridor Plan, recommendations could include an adaptive signal system throughout Marysville on SR 70 and installation of bicycle lanes through the city.

    - Implementation Strategy C1.5: The City will continue to explore grant opportunities that will fund the development and implementation of a traffic calming program. Locations in need of traffic-calming interventions can be identified by citizens, staff, or decision makers and requests to investigate the need should specifically describe the problem, time of day, affected area, and other relevant details with available supporting data.

Traffic calming measures could include traffic calming devices, which could include, but is not limited to visible and active police presence, roundabouts, speed feedback sign, lane narrowing, edge line, chicane/deviation, mid-block median, modified intersections, landscaping, neck down/choker, traffic circles, raised crosswalks, speed humps, and raised intersections. The City will prioritize implementation of recommend intersection countermeasures provided in the City's 2022 Local Roadway Safety Plan to minimize collisions at high incident intersections.

The City agrees with the commenter's suggestions, which were incorporated into the 2050 Genreal Plan and Downtown Specific Plan.

FRAQMD-7 *The comment states that FRAQMD appreciates the methodology used in the Draft EIR's evaluation of greenhouse gas emissions and energy, and suggests that the City may consider implementing mitigation measures found in the Caleemod handbook when assessing the impact of a proposed project and requiring feasible mitigation measures.*

Please see Draft EIR Section 4.3, "Air Quality" and Section 4.7, "Greenhouse Gases and Energy," which explain that the CalEEMod handbook was used for calculations related to air quality (which influences greenhouse gases), energy, and generation of greenhouse gas emission. The City considered the suggested mitigation measures from CalEEMod, as well as many sources. Please see pages 4.7-24 through 4.7-30 for a discussion of mitigating policies and implementation strategies and a discussion why a ban on natural gas is not feasible and would not be as effective as the land use, transportation, and design features of the proposed 2050 General Plan and Downtown Specific Plan in reducing emissions.

FRAQMD-Attachment

The commenter has provided an attachment with information from the United States Environmental Protection Agency related to Smart Growth, from the United States Department of Transportation related to the health benefits of active transportation (walking, bicycling, and transit use), and from the California Air Pollution Control Officers Association on strategies to reduce greenhouse gas emissions. The City has incorporated strategies such as these in the 2050 General Plan and Downtown Specific Plan, as appropriate. The commenter's attachment is provided as Appendix A to this Final EIR.

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3 REVISIONS TO THE DRAFT EIR

This section contains changes to the text of the Draft EIR. The changes are presented in the order in which they appear and are identified by page number. Text deletions are shown in strikeout (~~strikeout~~) and additions are shown in underline (<u>underline</u>).

3.1 EXECUTIVE SUMMARY

3.1.1 TABLE 1-1, PAGE 1-27 REVISION:

Under the summary of Impact 4.5-3 and the column "Mitigation Measures," the City has added reference to two additional mitigation measures that would also help to reduce this impact.

IMPACT 4.5-3. Disturb Any Human Remains, Including Those Interred Outside of Formal Cemeteries. It is possible that development and infrastructure improvement projects under the proposed 2050 General Plan and Downtown Specific Plan involving grading, trenching, excavation, soil stockpiling, and other earthmoving activities, could impact human remains. There are no known interment sites within the areas planned for development within the Planning Area; however, there is the potential to encounter previously unknown precontact indigenous, historic-era, or other human remains during ground-disturbing activities. This impact is considered significant.	S	**Mitigation Measure 4.5-3: Reduce or Avoid Impacts to Discovered Human Remains.** If human remains are discovered during construction, the project applicant shall comply with California Health and Safety Code Section 7050.5 and California Public Resources Code Section 7050.5. In the event of an inadvertent discovery of cultural during construction or decommissioning, all work must halt within a 100-foot radius of the discovery. The project applicant shall commission a qualified professional archaeologist to evaluate the significance of the find. Work cannot continue within the 100-foot radius of the discovery site until the archaeologist and/or tribal monitor conducts sufficient research and data collection to make a determination that the resource is either (1) not cultural in origin; or (2) not potentially eligible for listing on the National Register of Historic Resources or the California Register of Historic Resources. If a potentially eligible resource would be adversely affected by project construction, the qualified archaeologist and/or tribal monitor, City staff, and the project applicant shall arrange for either (1) total avoidance of the resource, if possible; or (2) test excavations or total data recovery as mitigation. **<u>See Mitigation Measure 4.5-2a: Gather Information Related to Archaeological Resources and Avoid or Reduce Impacts.</u>** **<u>See Mitigation Measure 4.5-2b: Reduce or Avoid Impacts to Discovered Cultural Resources.</u>**	SU

3.1.2 TABLE 1-1, PAGE 1-29 REVISION:

Under the summary of Impact 4.7-1 and the column "Mitigation Measures," the City has corrected the previous reference to Mitigation Measure 4.3-1a. As discussed on pages 4.7-29 through 4.7-31 of the Draft EIR, the reference should be to Mitigation Measure 4.7-1b.

6.7 GREENHOUSE GAS EMISSIONS AND ENERGY **IMPACT 4.7-1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment and conflict with an applicable plan, policy, or regulation adopted for the purposes of reduction GHG emissions.** Implementation of the proposed 2050 General Plan and Downtown Specific Plan would include buildout of planned land uses and infrastructure improvements that would generate GHG emissions associated with intermittent and temporary construction, along with long-term operations of future land uses. The impact is cumulatively considerable.	CC	**See Mitigation Measure <u>4.3-1b: Implement Operational Criteria Air Pollutant Reduction Strategies</u> ~~4.3-1a Implement Current Standard Construction Mitigation~~.**	CC & SU

3.1.3 SECTION 4.3, AIR QUALITY – CHANGE TO IMPLEMENTATION STRATEGY OS 7.1-2

On pages 4.3-24 and 4.3-38, the following minor change is made to the reference to Implementation Strategy OS 7.1-2:

- Implementation Strategy OS 7.1-2: Construction equipment over 50 brake horsepower (bhp) used in locations within 300 feet of an existing sensitive receptor shall meet Tier 4 or cleaner engine emission standards. Alternatively, a project applicant may prepare a site-specific estimate of diesel PM emissions associated with total construction activities and evaluate for health risk impact on existing sensitive receptors in order to demonstrate that applicable Feather River Air Quality Management District-recommended thresholds for toxic air contaminants would not be exceeded or that applicable thresholds would not be exceeded with the application of alternative mitigation techniques approved by the Feather River Air Quality Management District<u>, including the incorporation of the best available control technology</u>.

3.1.4 SECTION 4.11, NOISE AND VIBRATION – CHANGE TO POLICY N-1.8

On page 4.11-55, the following minor change is made to indicate that easements are not required, but are to be considered based on the context of the subject private proposal.

Noise Element

- Policy N-1.8: ~~Require~~ <u>Consider</u> avigation easements for any new private development within the approach and departure zone for the Sutter County Airport within the City limits.

Conclusion

Implementation of proposed 2050 General Plan Policies N-1.8 and N-1.9 would reduce potential impacts from airport noise by ~~requiring~~ <u>considering</u> avigation easements for any new private development within the approach and departure zone for the Sutter County Airport within the City limits and by requiring aircraft overflight notifications to be issued for all new residential development within the Sutter County Airport Overflight Zone and within Review Area 2 for the Yuba County Airport and Beale Air Force Base in compliance with Business and Professions Code Section 11010 and Civil Code Sections 1102.6, 1103.4, and 1353.

Appendix A - Feather River Air Quality Management District Attachment to Comment Letter

About Smart Growth

Development decisions affect many aspects of people's everyday lives - their homes, their health, the schools their children attend, the taxes they pay, their daily commute, the natural environmental around them, and economic opportunity in their community. **Smart growth** is an overall approach of development and conservation strategies that can help protect our health and natural environment and make our communities more attractive, economically stronger, socially diverse, and resilient to climate change.

Based on the experience of communities around the nation, the Smart Growth Network <https://epa.gov/smartgrowth/smart-growth-network> developed a set of ten (10) basic principles to guide smart growth strategies:

Market Common in Arlington, Virginia is a walkable, mixed-use development with access to public transit.

1. Mix land uses.
2. Take advantage of compact building design.
3. Create a range of housing opportunities and choices.
4. Create walkable neighborhoods.
5. Foster distinctive, attractive communities with a strong sense of place.
6. Preserve open space, farmland, natural beauty, and critical environmental areas.
7. Strengthen and direct development towards existing communities.
8. Provide a variety of transportation choices.
9. Make development decisions predictable, fair, and cost effective.
10. Encourage community and stakeholder collaboration in development decisions.

On this page

- EPA and Smart Growth
- Environmental Benefits of Smart Growth
  - Air Quality
  - Climate Change
  - Water Quality
  - Brownfields Redevelopment
  - Open Space Conservation

EPA and Smart Growth

How and where communities develop can have a major impact on human health and the environment. EPA works with local, state, and national agencies; nonprofits and community organizations; academia; and the development sector to encourage development strategies that support thriving local economies, provide attractive and affordable neighborhoods for people of all income levels, and mitigate and adapt to climate change. EPA's smart growth efforts help create healthier and more environmentally sustainable communities.

In the United States, development decisions are predominantly under state and local jurisdictions, and policies and regulations vary by community and state. The federal government generally does not directly regulate development, although many federal policies, particularly those related to the environment, transportation, and housing, do affect

Other Relevant EPA Offices

- Brownfields and Land Revitalization <https://epa.gov/brownfields>
- Protecting Children's Environmental Health <https://epa.gov/children>

how communities develop. The federal government can also help municipalities, states and the development sector better understand the impacts of development patterns.

EPA's Office of Community Revitalization supports communities, Tribes, states, and regions to encourage better growth and development by:

- Providing technical assistance <https://epa.gov/smartgrowth/smart-growth-technical-assistance-programs>;
- Conducting research and creating tools <https://epa.gov/smartgrowth/smart-growth-tools>, reports, and publications <https://epa.gov/smartgrowth/smart-growth-publications>; and
- Convening diverse interests and influencing networks.

- Office of Environmental Justice and External Civil Rights <https://epa.gov/aboutepa/about-office-environmental-justice-and-external-civil-rights>
- Office of Water <https://epa.gov/environmental-topics/water-topics>
- Transportation and Air Quality <https://epa.gov/transportation-air-pollution-and-climate-change>

Learn more about what smart growth strategies look like on the ground in This is Smart Growth <https://epa.gov/smartgrowth/smart-growth-publication>, or visit our Examples of Smart Growth Communities and Projects <https://epa.gov/smartgrowth/examples-smart-growth-communities-and-projects> page.

Environmental Benefits of Smart Growth

Development guided by smart growth principles can result in many direct and indirect environmental benefits, like minimizing air and water pollution, reducing greenhouse gas emissions, conserving resources, encouraging the cleanup and reuse of contaminated properties, and preserving natural and environmentally sensitive lands.

For more information on the environmental effects of development and the benefits of smart growth, see Our Built and Natural Environments: A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality (2nd edition) <https://epa.gov/smartgrowth/our-built-and-natural-environments>.

Specific benefits are described in more detail below.

Air Quality

Compact communities with a mix of uses and transportation options make it easy for people to choose to walk, bicycle, or take public transit instead of driving. People who choose to drive generally can drive shorter distances. Less travel by motor vehicles can reduce air pollution by smog-forming emissions and other harmful pollutants.

Tempe, Arizona's Transportation Center is light rail and bus hub with bicycle storage and repair facilities.

- Smart Growth and Transportation <https://epa.gov/smartgrowth/smart-growth-and-transportation>
- Transportation and Air Quality Publications <https://epa.gov/smartgrowth/smart-growth-publications#transportation>

Climate Change

Smart growth policies and strategies can also help communities prepare for and adapt to the impacts of climate change. Transportation options, such as walking, bicycling, public transit, micro-mobility, or electric vehicles, and compact land use patterns can reduce air pollution and decrease the emissions of greenhouse

gases that contribute to climate change. For homes and buildings, using energy-efficient, green building techniques can also reduce greenhouse gas emissions from construction and ongoing energy use.

Tupelo Alley is a mixed-use, LEED Gold certified building near public transit in Portland, Oregon.

- Smart Growth and Climate Change <https://epa.gov/smartgrowth/smart-growth-and-climate-change>
- Climate Change and Energy Publications <https://epa.gov/smartgrowth/smart-growth-publications#climate>

Water Quality

Compact development and open space preservation can help protect water quality by reducing paved surfaces and allowing natural lands to filter rainwater and runoff before it reaches drinking-water supplies. Green infrastructure techniques, which mimic natural processes to capture, hold, absorb, and filter stormwater, can also be incorporated into streets, sidewalks, parking lots, and buildings to improve water quality.

This rain garden in Washington, D.C., captures and reuses stormwater.

- Smart Growth and Water <https://epa.gov/smartgrowth/smart-growth-and-water>
- Water Publications <https://epa.gov/smartgrowth/smart-growth-publications#water>

Brownfields Redevelopment

Brownfields are abandoned, idled, or underused industrial and commercial properties where redevelopment is complicated by real or perceived environmental contamination. Cleaning up and redeveloping a brownfield can remove blight and

environmental contamination, catalyze neighborhood revitalization, lessen development pressure on undeveloped land, and use existing infrastructure.

- Smart Growth and Brownfields <https://epa.gov/smartgrowth/smart-growth-and-infill-brownfields-redevelopment>
- Brownfields and Infill Publications <https://epa.gov/smartgrowth/smart-growth-publications#brownfields>

Cleaning up contaminated sites helped revive Old Town Wichita, Kansas.

- EPA's Brownfields and Land Revitalization Program <https://epa.gov/brownfields>

Open Space Conservation

Preserving natural lands and waterways, and encouraging growth in existing communities protects farmland, wildlife habitat, outdoor recreation, and natural water filtration that ensures clean drinking water.

- Smart Growth and Open Space Conservation <https://epa.gov/smartgrowth/smart-growth-and-open-space-conservation>

This path through a wildlife refuge in Delaware is a recreational amenity and also provides habitat for animals and valuable ecological services.

Last updated on January 18, 2024

In This Section

Related Links

- Strategies

Multimodal Access to Public Transportation

Multimodal access to public transportation considers and accommodates the many ways public transportation users get to and from a public transportation stop or center to access a public transportation service. Those methods include walking, bicycling, riding feeder public transportation systems (e.g., taking the bus to connect to commuter rail at a station), and driving. The idea is that providing the infrastructure and support services for multiple modes to public transportation will increase use of the public transportation system and result in health benefits. Specifically, when effectively integrated, bicycling and walking to public transportation help advance various environmental, health, and congestion-mitigating benefits for communities. A successful integration between modes will likely increase the catchment area and subsequent use of public transportation, the efficiency of public transportation by reducing the necessity of feeder bus services, and the overall demand for bicycling (Mineta, 2011).

Understanding and accommodating the particular needs of all public transportation users, such as older adults, is also important. In a recent AARP survey of persons older than 50 years, 48% of respondents said they lacked a comfortable place to wait for the bus and 47% said they cannot safely cross the main roads in their community (Koffman, 2010).

Where and how a public transportation center or stop is situated relative to surrounding land uses is an important factor in multimodal access. Other considerations include

- Benches and shelters at public transportation stops
- Sidewalks, multi-use paths, and other pedestrian and bicycle infrastructure connections to public transportation
- Crosswalks, pedestrian signals, and sufficient crossing times
- Capacity to carry bikes on public transportation
- Parking and storage of bicycles at public transportation centers and stops
- Availability of shared bike services
- Amenities such as showers and changing areas
- Parking for vehicles
- Coordination of regional public transportation systems and services
- Informational and navigational support
- Transit-oriented development

Related Transportation and Heath Tool Indicators

- Commute Mode Share
- Complete Streets Policies
- Land Use Mix
- Miles Traveled by Mode
- Physical Activity from Transportation
- Public transportation Trips per Capita
- Use of Federal Funds for Bicycle and Pedestrian Efforts
- VMT per Capita

How can this strategy result in health benefits?

- Address chronic disease (e.g., asthma, diabetes, heart disease)

- Improve access to health-supportive resources
- Improve equity
- Increase physical activity

How has this worked in practice?

Portland's Health Equity and the Transportation System Plan

This report presents the results of a stakeholder involvement process designed to help the Portland, Oregon, Department of Transportation address health equity concerns as it reviews its transportation policies and programs. The process included the engagement of public health and equity stakeholders on a Health Equity in the Transportation System Plan team. This document summarizes the health impacts of transportation policy and recommends prioritizing walking, bicycling, and taking public transportation. Recommendations for the Modal Plans and Management Plans explicitly include

"Prioritizing bicycle and pedestrian infrastructure that provides access to public transportation service." The plan includes public transportation policy stating that a primary role of the city in public transportation is to make connections from public transportation to other modes of travel.

Tennessee Department of Transportation Multimodal Access Grant

The Tennessee Department of Transportation's Multimodal Access Grant is a state-funded program created to support the needs of public transportation users, pedestrians, and bicyclists for multimodal transportation projects along state routes. Projects are state-funded at 95%, with a 5% local match and a cap of $1 million. The first round of grant funding was made available in late 2013. Projects must be submitted by metropolitan planning organizations or rural planning organizations. Projects are evaluated on bicycle and pedestrian safety issues addressed, public transportation or park-and-ride connections, improvements to connections to community destinations for bicyclists and pedestrians, support in local plans, project readiness, and economic development potential. Although not limited to access to public transportation, one of the three options for qualifying is that a project provides direct access to a public transportation hub, and one of the four areas that the department states will be considered favorably is to "Provide last mile connectivity for users of public transportation."

Where can I learn more?

The Pedestrian and Bicycle Information Center: Linking to Transit site provides information about the importance of bicycle and pedestrian access to public transportation, ways to improve access to public transportation, and case studies.

In the report Bicycling Access and Egress to Transit: Informing the Possibilities, the Mineta Transportation Institute analyzes approaches for integrating bicycling and public transportation. The report evaluates a broad range of alternatives that consider the travel patterns and needs of individuals and accompanying urban form characteristics. It presents cost effective strategies likely to generate the largest number of cyclists accessing public transportation.

The American Public Transportation Association (APTA) provides information on meetings and conferences, government affairs and policy, a resource library, a weekly newsletter (e-newsletter), and media center to engage members on public transportation topics. Coverage includes bus, paratransit, light rail, commuter rail, trolleys, streetcars, subways, ferries, water taxis, and high speed rail transportation.

Evidence base

The Alliance for Biking and Walking. Bicycling and Walking in the United States: 2014 Benchmarking Report; 2014.

Freeland AL, Banerjee SN, Dannenberg AL, Wendel AM. Walking associated with public transit: moving toward increased physical activity in the United States. *American Journal of Public Health* 2013;103(3):536-542.

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Measures to Reduce GHG Emissions

CHAPTER 3

The California Air Pollution Control Officers Association (CAPCOA) has included a wide range of measures that are frequently used to reduce greenhouse gas (GHG) emissions and provide other benefits, like improved air quality, energy and fuel savings, and water conservation. This chapter provides methods and data to quantitively evaluate many of the measures. While there is no one-size-fits-all approach to GHG planning, the guidance presented in this chapter has been developed to broadly apply across project types, land use types, and California regions.

Categorizing Measures

When thinking about minimizing GHG emissions in a community or for a project, it is useful to organize GHG reduction measures into categories. The standard method of categorizing emissions is to group them by economic sector, such as transportation or energy. Consistent with this practice, the emission reduction measures presented in this chapter are categorized into the following nine sectors. Measures in each sector apply to a similar emissions source or process, as described below.

- Transportation: Measures that promote transit and alternative transportation, support use of alternatively fueled vehicles, or encourage land use planning practices that reduce vehicle trips and vehicle miles traveled (VMT). Measures within the transportation sector are separated into six subsectors: Land Use, Neighborhood Design, Parking or Road Pricing/Management, Transit, Trip Reduction Programs, and Clean Vehicles and Fuels.
- Energy: Measures that target energy efficiency improvements/reduced natural gas consumption, renewable energy generation, building electrification, or methane (CH_4) recovery at landfills and wastewater treatment plants.
- Water: Measures that reduce water demand and/or use a less energy-intensive water source.
- Lawn and Landscaping: Measures that promote zero-emission landscaping equipment over conventional fossil fuel-powered counterparts.
- Solid Waste: Measures that require alternative waste management pathways, such as recycling and composting, to increase landfill waste diversion.
- Natural and Working Lands: Measures that enhance the sequestration capacity of natural lands or reduce the intensity of emissions from working lands.
- Construction: Measures that promote efficient construction management practices or alternatively fueled construction equipment.
- Refrigerants: Measures to reduce or replace high global warming potential (GWP) refrigerants with lower impact compounds.
- Miscellaneous: General measures that will reduce GHG emissions through the implementation of novel or off-site projects defined by the user.

EMISSIONS SECTORS

Categorizing emissions by sector is standard practice for GHG inventories and reduction plans, but users should note that there is often variation in the scope and nomenclature of sectors. For example, the sectors in this Handbook do not align exactly with the California Air Resources Board or U.S. Environmental Protection Agency inventories because of differences in scale and intended use. Users should take care when comparing sectors in this Handbook to other inventories or plans.

The nine emission sectors are illustrated in Figure 3-1. The figure shows all quantified GHG reduction measures included in this chapter. Users may click on an individual measure to navigate directly to the quantification method for that measure. Figure 3-1 does not include non-quantified measures. These measures are presented later in this chapter in *Supporting or Non-Quantified GHG Reduction Measures*.

Figure 3-1. Navigation Trees for Quantitative GHG Reduction Measures

Transportation

LAND USE

- T-1. Increase Residential Density
- T-2. Increase Job Density
- T-3. Provide Transit-Oriented Development
- T-4. Integrate Affordable and Below Market Rate Housing
- T-17. Improve Street Connectivity

TRIP REDUCTION PROGRAMS

- T-5. Implement Commute Trip Reduction Program (Voluntary)
- T-6. Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring)
- T-7. Implement Commute Trip Reduction Marketing
- T-8. Provide Ridesharing Program
- T-9. Implement Subsidized or Discounted Transit Program
- T-10. Provide End-of-Trip Bicycle Facilities
- T-11. Provide Employer-Sponsored Vanpool
- T-12. Price Workplace Parking
- T-13. Implement Employee Parking Cash-Out
- T-23. Provide Community-Based Travel Planning

PARKING OR ROAD PRICING/MANAGEMENT

- T-14. Provide Electric Vehicle Charging Infrastructure
- T-15. Limit Residential Parking Supply
- T-16. Unbundle Residential Parking Costs from Property Cost
- T-24. Implement Market Price Public Parking (On-Street)

NEIGHBORHOOD DESIGN

- T-18. Provide Pedestrian Network Improvement
- T-19-A. Construct or Improve Bike Facility
- T-19-B. Construct or Improve Bike Boulevard
- T-20. Expand Bikeway Network
- T-21-A. Implement Conventional Carshare Program
- T-21-B. Implement Electric Carshare Program
- T-22-A. Implement Pedal (Non-Electric) Bikeshare Program
- T-22-B. Implement Electric Bikeshare Program
- T-22-C. Implement Scootershare Program

TRANSIT

- T-25. Extend Transit Network Coverage or Hours
- T-26. Increase Transit Service Frequency
- T-27. Implement Transit-Supportive Roadway Treatments
- T-28. Provide Bus Rapid Transit
- T-29. Reduce Transit Fares

CLEAN VEHICLES AND FUELS

- T-30. Use Cleaner-Fuel Vehicles

Energy

ENERGY EFFICIENCY IMPROVEMENTS

- E-1. Buildings Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards
- E-2. Require Energy Efficient Appliances
- E-3-A. Require Energy Efficient Residential Boilers
- E-3-B. Require Energy Efficient Commercial Packaged Boilers
- E-4. Install Cool Roofs and/or Cool Walls in Residential Development
- E-5. Install Green Roofs in Place of Dark Roofs
- E-6. Encourage Residential Participation in Existing Demand Response Program(s)
- E-7. Require Higher Efficacy Public Street and Area Lighting
- E-8. Replace Incandescent Traffic Lights with LED Traffic Lights
- E-9. Utilize a Combined Heat and Power System

RENEWABLE ENERGY GENERATION

- E-10-A. Establish Onsite Renewable Energy Systems—Generic
- E-10-B. Establish Onsite Renewable Energy Systems—Solar Power
- E-10-C. Establish Onsite Renewable Energy Systems—Wind Power
- E-11. Procure Electricity from Lower Carbon Intensity Power Supply

BUILDING DECARBONIZATION

- E-12. Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences
- E-13. Install Electric Ranges in Place of Gas Ranges
- E-14. Limit Wood Burning Devices and Natural Gas/Propane Fireplaces in Residential Development
- E-15. Require All-Electric Development
- E-16. Require Zero Net Energy Buildings
- E-17. Require Renewable-Surplus Buildings

METHANE RECOVERY

- E-18. Establish Methane Recovery in Landfills
- E-19. Establish Methane Recovery in Wastewater Treatment Plants

Water

- W-1. Use Reclaimed Non-Potable Water
- W-2. Use Grey Water
- W-3. Use Locally Sourced Water Supply
- W-4. Require Low-Flow Water Fixtures
- W-5. Design Water-Efficient Landscapes
- W-6. Reduce Turf in Landscapes and Lawns
- W-7. Adopt a Water Conservation Strategy

Lawn and Landscaping

- LL-1. Replace Gas Powered Landscape Equipment with Zero-Emission Landscape Equipment

Solid Waste

- S-1. Institute or Extend Recycling Services
- S-2. Implement Organics Diversion Program

Natural and Working Lands

- N-1. Create New Vegetated Open Space
- N-2. Expand Urban Tree Planting
- N-3. Implement Management Practices to Improve the Health and Function of Natural and Working Lands
- N-4. Require Best Management Practices for Manure Management

Construction

- C-1-A. Use Electric or Hybrid Powered Equipment
- C-1-B. Use Cleaner-Fuel Equipment
- C-2. Limit Heavy-Duty Diesel Vehicle Idling
- C-3. Use Local Construction Contractors

Refrigerants

- R-1. Use Alternative Refrigerants Instead of High-GWP Refrigerants
- R-2. Install Secondary Loop and/or Cascade Supermarket Systems in Place of Direct Expansion Systems
- R-3. Install Transcritical CO_2 Supermarket Systems in Place of High-GWP Systems
- R-4. Install Microchannel Heat Exchangers in A/C Equipment in Place of Conventional Heat Exchanger
- R-5. Reduce Service Leak Emissions
- R-6. Reduce Operational Leak Emissions
- R-7. Reduce Disposal Emissions

Miscellaneous

- M-1. Establish a Carbon Sequestration Project
- M-2. Establish Offsite Mitigation
- M-3. Implement an Innovative Strategy for GHG Mitigation

Selecting Measures

The GHG reduction measures presented in this chapter are diverse. Users are encouraged to carefully review the measure factsheets to determine which measures are most applicable to their project and capable of achieving their GHG reduction goals. There are several reasons a user might implement measures to reduce GHG emissions. Some measures may be implemented voluntarily, simply because users are seeking to reduce their GHG footprint. Other users may be obligated under law or statute to mitigate current or future impacts of specific actions or activities. This can include project-level impacts, such as those evaluated under the California Environmental Quality Act (CEQA), or plan-level impacts, such those resulting from the implementation of a general plan or climate action plan.

When considering which measures are applicable from the Handbook, the underlying reasons and context for reducing GHG emissions should be incorporated into the decision-making process. For example, if a user is seeking to achieve substantial GHG reductions to comply with a CEQA requirement, measures that have the greatest potential to reduce emissions may be most applicable. Or, if a city is aiming to implement a climate action plan by engaging the community, measures that inspire community members and are easily accessible and affordable may be the most applicable.

Other factors for determining measure applicability include the project type, scale, and locational context. Some measures are broad and applicable to many types of projects (e.g., Measure E-2, *Require Energy Efficient Appliances*), while others have a narrower scope of application (e.g., Measure E-19, *Establish Methane Recovery in Wastewater Treatment Plants*). Additionally, certain measures are suitable for urban environments, while others are best implemented in rural contexts. The measure factsheets presented in *GHG Reduction Measure Factsheets and Quantification Methods* later in this chapter summarize these and other important considerations for measure selection to support informed decision making.

Consideration of Measure Co-Benefits

Co-benefits, or additional benefits that often are associated with emissions reduction measures, are valuable elements of climate action planning. Citing co-benefits has become increasingly prevalent in justifying funding, planning, and implementing of emission reduction measures. Like the quantification of GHG reductions, only those benefits with literature and methodologies to support their accurate and reliable quantification are presented in this chapter. Where quantification is not achievable, co-benefits are noted qualitatively for each measure.

The co-benefit categories considered in this Handbook include the following and are visually depicted in the measure factsheets by the corresponding icons.

Improved air quality. Criteria pollutant reductions.

Energy and fuel savings. Electricity, natural gas, refrigerant, propane, gasoline, or diesel reductions.

VMT reductions. Reductions in vehicle miles traveled.

Water conservation. Water use reductions.

Enhanced pedestrian or traffic safety. Reduced collisions; pedestrian/bicyclist safety.

Improved public health. Toxic air contaminant reductions (including exposure); increased physical activity; improved public safety.

Improved ecosystem health. Improved biological diversity and soil and water quality.

Enhanced energy security. Systemwide load reduction; local energy generation, levelling out peaks.

Enhanced food security. Stability of food systems; improved household access to food.

Social equity. Address existing social inequities (e.g., housing/anti-displacement, community engagement, availability of disposable income).

This Handbook assigns co-benefits to measures that are likely to result from measure implementation; however, it should be noted that the achievement of co-benefits is not guaranteed because many co-benefits are dependent on how the measure is implemented. Determining what co-benefits apply to an individual measure in a specific circumstance is not an exact science, and there is no single methodology that can be uniformly applied for

this purpose. When considering co-benefits that may be achieved, it is best to comprehensively think through the implications of implementing that measure. For example, Measure E-12, *Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences,* reduces GHG emissions because it eliminates the onsite combustion of natural gas. Because combusting natural gas also results in emissions of other air pollutants that can cause adverse health effects, this measure would also improve air quality and achieve public health benefits. These co-benefits would be achieved by the measure in all project applications. Depending on where and how the measure is implemented, it may also address disparities in social equity and protect a homeowner or renter from rapid changes in fossil fuel prices, especially if solar energy is produced locally or on site. Users are encouraged to use the co-benefit icons identified for each measure as a starting point for this type of thought exercise and expand or revise for their specific project or application.

Note that while all measures achieve at least one co-benefit, some measures may also yield a disbenefit. For example, measures that electrify a fossil-fuel source will lead to improved air quality and fuel savings but increased electricity consumption. Potential disbenefits are discussed, where appropriate, for individual measures.

Quantifying GHG Reductions

The emissions quantification methods in this chapter are designed to provide GHG estimates using readily available data and user-specified information. In general, emission reductions are quantified (1) as a percentage of emissions from a given source or activity, or (2) as absolute emissions reductions from a given source or activity implementation of the measure. Where appropriate, some measures refer readers to external tools to quantify GHG reductions.

Quantification methods that provide a percent reduction rely on the underlying assumption that GHG emissions are proportional to the emissions source. For example, emissions reductions achieved by transportation measures are estimated using the expected percent reduction in vehicle trips or VMT, with an associated adjustment to account for the relationship between VMT reduction and vehicle emissions, as described further in the *Transportation* section. For these measures, users will need to multiply the reduction percentage by the amount of emissions that would be generated by that source without implementation of the measure to calculate the absolute reductions.[2] This Handbook does not include methods for inventorying emissions from specific sources or under various scenarios, such as baseline or existing conditions. There are several tools and models available for inventorying project-level GHG emissions, including CAPCOA's California Emissions Estimator Model (CalEEMod).

Quantification methods that calculate absolute reductions estimate the amount of emissions that would be released as a result of the source or activity with implementation

[2] The reduction percentage is denoted as a positive value when specified in text or in tables as a "reduction," and is denoted as a negative value when calculated in equations.

of the measure (e.g., the reduction in water sector GHG emissions achieved from using reclaimed water). GHGs evaluated in this Handbook include carbon dioxide (CO_2), CH_4, nitrous oxide, and commonly used refrigerants. All GHG reductions are expressed in metric tons (MT) of carbon dioxide equivalents (CO_2e), where individual GHGs that would be reduced by a measure are converted to CO_2e by multiplying emissions by their GWP. GWP represent a ratio of the heat trapping characteristic of a gas compared to CO_2, which has a GWP of 1. This Handbook primarily uses GWPs from the Intergovernmental Panel on Climate Change's (IPCC) (2007) Fourth Assessment Report, consistent with statewide GHG emissions reporting protocol.[3] For commonly used refrigerants, GWPs were obtained from the IPCC's Fourth Assessment Report and databases from CARB and the World Meteorological Organization.

Measures presented in this chapter address those reductions over which a user can exercise direct control, as well as indirect emissions associated with electrical generation and the use of natural gas.

Quantification Accuracy and Reliability

IPCC (2006) defines *good practices* for GHG emissions quantification as those that "contain neither over- nor underestimates so far as can be judged, and in which uncertainties are reduced as far as practicable." Part of the challenge in developing methods that meet this standard of good practice is assuring the accuracy of the methods. This Handbook defines *accuracy* as the closeness of the agreement between the result of a measurement or calculation and the true value, or a generally accepted reference value. When a method is accurate, it will, for a particular case, produce a quantification of emissions that is as close to the actual emissions as can practicably be done with information that is reasonably available.

Quantification methods that meet the standard of good practice must also be *reliable*, which is different from being accurate. A reliable method will yield accurate results across a range of different cases, not only in one case. In some cases, the accuracy of quantification may be sacrificed to achieve reliability. This is because a method that can be applied across a range of scenarios must be generalized to some extent. For example, methods for transportation sector measures do not, for the most part, differentiate between peak and off-peak vehicle trips, even though off-peak trips will have a lower emission impact because of the effects of congestion on travel time and engine performance. To fully address all the factors that affect the emissions associated with vehicle trips for a specific project, a far more detailed analysis would be needed, and it would not be readily applied to other situations. The methods contained in this Handbook

[3] The Handbook uses the IPCC's (2007) Fourth Assessment Report because CARB currently (as of 2021) calculates CO_2e values for the statewide GHG inventory using GWPs from this report. GWPs are regularly reassessed by the IPCC, which published updated GWPs in their Fifth Assessment Report (IPCC 2014). Readers are encouraged to consult the latest IPCC assessment report and CARB statewide inventory guidance available at the time of their analysis to determine if alternative GWPs should be used.

have been developed to provide the best balance between accuracy and reliability, because accessibility and ease of use is an important consideration.

The quantification methods included in this Handbook will only be accurate to the degree that a project adheres to the assumptions, limitations, and other criteria specified for a given measure. Most of the quantification methods provide default assumptions for user consideration. The default values are based on the most up-to-date regional-, state-, or national-level data and may not be appropriate for all projects. Accordingly, it is recommended that defaults only be used if they adequately reflect analysis conditions, and no local or project-specific information is available. When a range of effectiveness may be quantified for a specific measure depending on defaults, this Handbook often presents those defaults that would yield the lower end of reductions to avoid overstating potential measure benefits. Where defaults are not available for a specific assumption, data must be provided by the user for the calculations to be valid. The quality of the data provided by the user will substantially affect the quality of the results achieved. Data supplied by the user could be a rough estimate, based on a small, onetime sample, or derived through a full project-specific study. Using a rough estimate for any of the data inputs will yield results that are less accurate than if higher quality data inputs are provided.

Users are encouraged to consider the intended use of the quantification, to make sure that the results achieved will be sufficiently rigorous to support the conclusions drawn from them. When quantification is performed for CEQA or other regulatory compliance, it is recommended that project-specific data be as robust as possible. Approximations and unsubstantiated numbers are discouraged. Moreover, it is strongly recommended that the source(s) and/or basis of all project-specific data supplied by the user be clearly identified in the analysis and the limitations of the data be discussed.

Measure Scales

GHG reduction measures can be applied at different scales or geographic levels. Some measures may only be applicable at the project-level, whereas others may be more appropriate within a broader planning context, such as for a general plan or climate action plan. Geographic levels considered in this Handbook include the Project/Site and Plan/Community. Project/Site refers to measures that reduce emissions at the scale of a parcel, employer, or development project. Plan/Community refers to measures that reduce emissions at the scale of a neighborhood (e.g., specific plan, general plan, climate action plan), corridor, or entire municipality (e.g., city- or county-level).

The transportation measures can be quantified at either the Project/Site scale or the Plan/Community scale, but never both. While some of the transportation measures could be implemented at both scales in practice, the quantification methods presented in this Handbook are limited to only the scale for which there is literature to defensibly support emissions quantification. For example, a bike-sharing program could be implemented at the Project/Site scale for employees to use at a business park, and it could be implemented at the Plan/Community scale by a municipality in their downtown district. However, there is limited defensible research on the GHG reductions associated with small scale, site-specific

bike-share programs. Therefore, only the Plan/Community scale version of this measure is quantified in this Handbook. The *Transportation* section notes each instance in which a transportation measure could be implemented at a scale for which this document does not provide a quantification method.

Some non-transportation measures can be quantified at both the Project/Site scale and the Plan/Community scale. For example, a multi-family development at the Project/Site scale may construct homes without wood-burning devices, while a specific plan for new single-family housing at the Plan/Community scale could require that all future homes prohibit wood-burning devices. The quantification method for this measure would be the same, regardless of the scale of application.

Combining Measure Reductions

When quantifying measures, it is important to be mindful of potential interactions among different measures. Often, combining measures can lead to better emission reductions than implementing a single measure by itself. For example, for Measure LL-1, *Replace Gas Powered Landscape Equipment with Zero-Emission Landscape Equipment*, to succeed, electrical outlets on the exterior of buildings should be accessible so that the electric landscaping equipment can be charged. Measure LL-3, *Electric Yard Equipment Compatibility,* should, therefore, be considered as a supporting action to equipment electrification. Where appropriate, these synergistic relationships are noted within the individual measure quantification methods. However, the compounding effect of combining these select measures is not quantified in this Handbook.

Unfortunately, the effects of combining some measures are not always beneficial, linear, complementary, or accurate. There are two primary reasons for this. The first reason is that there may be diminishing returns when certain measures are implemented together to reduce a particular source of emissions. For example, there may be six measures to increase ridership on a public transit line, any one of which might increase transit ridership by 20 percent. But implementing all these measures will not necessarily increase ridership by 120 percent. In fact, for each successive measure applied, it is likely that a lesser effect will be observed. The second reason is that there may be competition between measures. For example, a campaign to increase ridership on a commuter rail line may be implemented while a new public transit bus line is established with overlapping service areas. Although the ridership campaign might be expected to cause 5 percent of drivers to switch to rail, some of those potential new riders might use the new bus service instead, making the ridership campaign less effective. At the same time, the new bus line might also be expected to reduce vehicle trips by 5 percent, but the actual reduction may be lower if some of the ridership comes from rail passengers. Together, the ridership campaign for the rail line and the new bus line may only reduce vehicle trips by 7 percent, and not the 10 percent predicted from summing the estimates of their independent effectiveness.

Where appropriate, guidance for combining measure reductions is provided within the introductions to each sector. Likewise, the quantification methods for each measure identify any applicable calculation maximums.

Combining Sector Reductions

The following procedures must be followed when combining measures among the nine sectors where the GHG reduction achieved by individual measures is calculated as a percentage of emissions from a given source or activity. Specifically, the relative magnitude of emissions between sectors must be considered. Users should first determine the percent contribution made by each individual sector to the overall project GHG emissions. This percent contribution by a sector should then be multiplied by the reduction percentages from measures in that sector to determine the scaled GHG emission reductions. This should be done for each sector to be combined. The scaled GHG emissions for each sector can then be added together to give a total GHG reduction for the combined measures in all sectors.

For example, consider a project with total GHG emissions that come from the following sectors: transportation (50 percent), building energy use (40 percent), water (6 percent), and solid waste (4 percent). This project implements transportation measures that result in a 10 percent reduction in VMT. The project also implements measures that result in a combined 30 percent reduction in water usage. The overall reduction in GHG emissions is calculated in the below example.

$\%\ \text{Reduction}_{\text{Transport}} = 50\%\ \text{total emissions} \times 10\%\ \text{sector reduction} = 5\%\ \text{total reduction}$

$\%\ \text{Reduction}_{\text{Water}} = 6\%\ \text{total emissions} \times 30\%\ \text{sector reduction} = 1.8\%\ \text{total reduction}$

$\%\ \text{Reduction}_{\text{Total}} = 5\% + 1.8\% = 6.8\%\ \text{total reduction}$

As discussed above, GHG reductions for some measures in this Handbook are expressed in terms of the absolute MT CO_2e that would be reduced. Reductions from these measures should be combined following the same approach as shown above. However, rather than multiplying percentages, users can simply subtract the expected reductions from the sector emissions.

Users may need to combine sector reductions that are a product of measures where reductions are given as both percentages and absolute values. This can be achieved by modifying the above equations to include actual project emissions. The following equations extend the above project example to include a 10 MT CO_2e reduction achieved by waste sector measures. Uncontrolled project emissions are assumed to be 2,000 MT CO_2e.

$$\text{Absolute Reduction}_{\text{Transport}} = 2{,}000\ \text{MT } CO_2e \times 50\%\ \text{total emissions} \times 10\%\ \text{sector reduction}$$

$$= 100\ \text{MT } CO_2e\ \text{reduction}$$

$$\text{Absolute Reduction}_{\text{Water}} = 2{,}000\ \text{MT } CO_2e \times 6\%\ \text{total emissions} \times 30\%\ \text{sector reduction}$$

$$= 36\ \text{MT } CO_2e\ \text{reduction}$$

$$\text{Absolute Reduction}_{\text{Waste}} = 10\ \text{MT } CO_2e$$

$$\text{Absolute Reduction}_{\text{Total}} = 100\ \text{MT } CO_2e + 36\ \text{MT } CO_2e + 10\ \text{MT } CO_2e = 146\ \text{MT } CO_2e$$

Limitations and Uncertainty

There are uncertainties associated with any type of estimation method. It is important to understand the limitations to properly apply the quantification methods presented in this Handbook. The following briefly discusses key limitations for user awareness and consideration.

Combination of Data Sources

Developing quantification methods for some of the measures required the use of multiple sources of data. Any time data are derived from different sources, there may be slight discrepancies in the underlying methodologies and data. When the information between two data sets is combined, the discrepancies may affect the ultimate quantification of emissions, either over- or underestimating them. It is not possible to determine the precise magnitude of error that combining data sets induces in the final quantification; however, every effort has been made to minimize potential errors through thorough review of available data and exclusion of incompatible data sets.

Level of Detail for Underlying Assumptions

Many of the calculations require users to input project-specific data or assumptions. Certain information about a project may not be known to the user and must be either estimated or assumed based on standard procedures. Likewise, users may rely on the available defaults provided in the Handbook to enable emissions quantification of applicable measures. While defaults provided in this Handbook are based on credible sources for use in emissions quantification, they are often based on historical regional, state, and national-level data and may produce an inaccurate representation of project-specific conditions or lead to an overestimate or underestimate of associated emissions. This limitation can be minimized to the extent the user can provide better quality data.

Use of Case Studies

Case studies generally have detailed information on reductions that may be achieved in practice by a measure. While these studies provide valuable insight that can support measure quantification, there may be features or characteristics in the case study that do not translate to a specific project and, therefore, may over- or underestimate the GHG emission reductions. Where case studies were used, they were carefully reviewed to ensure the study methods and data meet the quality requirements of this Handbook.

Prediction of Future Behavior

Some of these methods predict future behavior (e.g., water use and energy consumption) using historical data and trends. Although this is a commonly accepted practice, current behavior is not likely to remain constant over time due to technological improvements and increasing awareness of resource conservation. This limitation can be minimized to the extent the user can provide better quality data.

Combining Multiple Measures

Projects may involve the application of more than one measure. As discussed above, combining measures can have an additive effect on GHG reductions, or result in diminishing returns. This limitation is minimized through the establishment of sector and measure reduction caps, as described within the individual measure methods, as applicable. However, users should still exercise good judgement when selecting measures to ensure that the resulting quantification is appropriate and accurate.

Exclusion of Lifecycle and Biogenic CO_2 Emissions

Except for solid waste measures and certain measures in the refrigerants and transportation sectors, the quantification methods do not include analysis of full lifecycle emissions, which are those that are emitted from the energy and resources used throughout the lifecycle of a product or material. Lifecycle emissions include the extraction of raw resources, physical distribution, use of the product or material, and disposal at the end of a product's life. It is challenging to quantify these lifecycle emissions because identifying all the inputs that are necessary, especially for a generalized guidance document such as this Handbook, is infeasible. Because of these difficulties, lifecycle considerations are only included in the quantitative methods for those measures that cannot be quantified without a lifecycle analysis. The *Transportation*, *Solid Waste*, and *Refrigerants* sections discuss lifecycle considerations specific to those sectors. For all other measures, the quantification methods do not include analysis of full lifecycle emissions.

Except for Measure E-14, *Limit Wood Burning Devices and Natural Gas/Propane Fireplaces in Residential Development*, the methods do not address biogenic CO_2 emissions. Biogenic CO_2 emissions result from materials that are derived from living cells, as opposed to CO_2 emissions derived from fossil fuels, limestone, and other materials that have been transformed by geological processes. Biogenic CO_2 contains carbon that is present in organic materials, including wood, paper, vegetable oils, animal fat, and waste from food, animals, and vegetation (such as yard or forest waste). Biogenic CO_2 emissions are excluded from these GHG emissions quantification methods because they are the result of materials in the biological/physical carbon cycle, rather than the geological or anthropogenic carbon cycle.

Extent Reductions are Achieved in Practice

The reduction methods presented in this Handbook are based on specific underlying data and assumptions for how each measure should be implemented. The quantification methods will yield the most accurate and reliable results when the user adheres to all implementation requirements described in this Handbook. In practice, there is likely to be a wide range of how individual measures are implemented given project-specific considerations, such as cost to implement the measure, physical constraints, availability of technology, and regulatory restrictions.

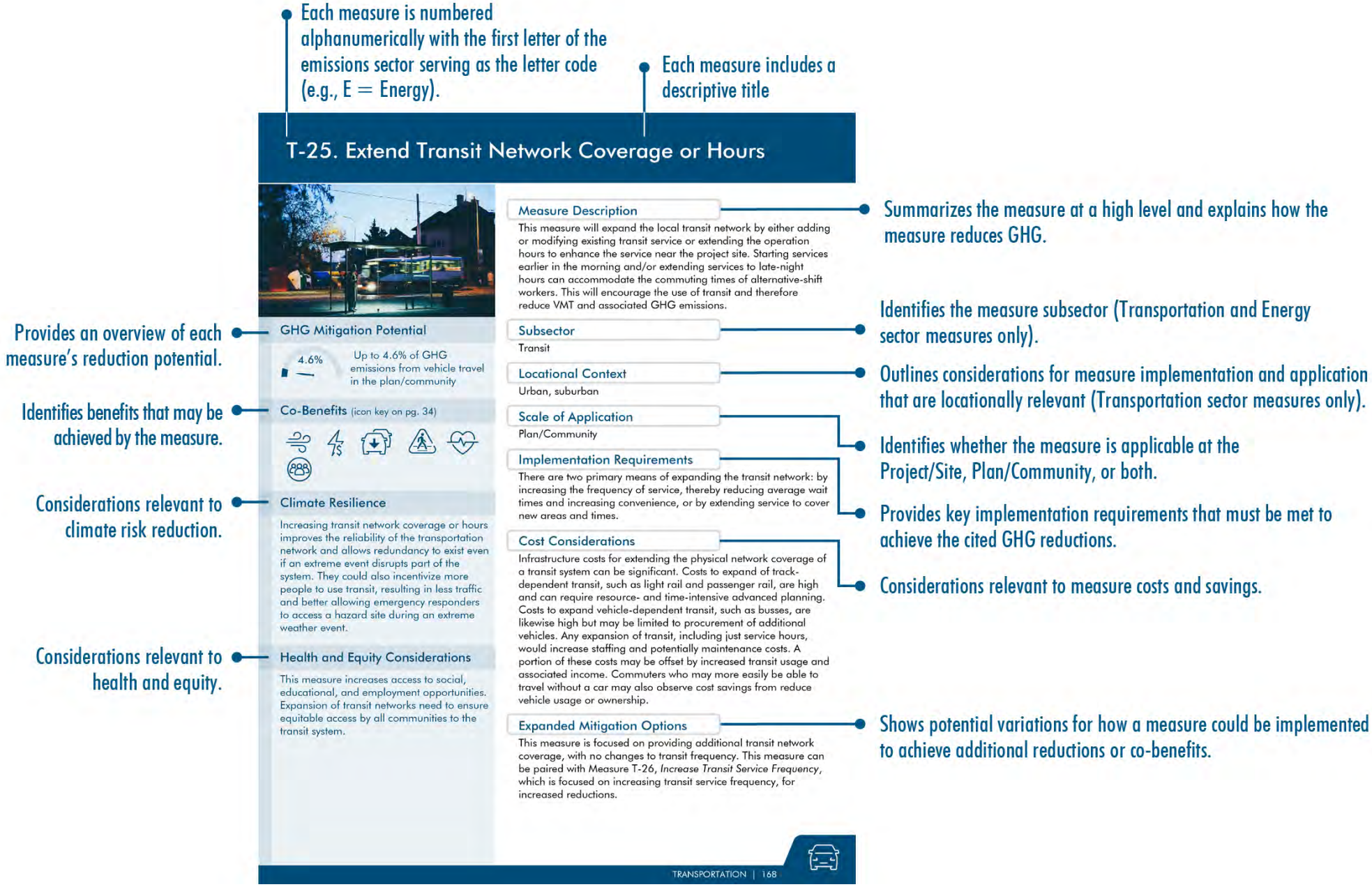
GHG Reduction Measure Factsheets and Quantification Methods

Anatomy of the Factsheets

All quantified GHG reduction measures in this Handbook include a one-page measure factsheet. The factsheet highlights important considerations for each measure. They describe the measure, locational context, scale of application, implementation requirements, cost considerations, and options to expand measure effectiveness. The factsheets also show key measure indicators, such as the GHG reduction potential, co-benefits, and considerations for climate resilience and health and equity. Where available, the GHG reduction potential is provided as the estimated maximum percent reduction in emissions. For those measures where GHG reductions are calculated as absolute emissions, the GHG reduction potential is identified as small, moderate, large, or varies. This qualitative ranking characterizes the estimated quantity of reductions relative to the magnitude of emissions generated by the source. For example, Measure E-15, *Require All-Electric Development*, has the potential for a large reduction in GHG emissions from building energy use if all end uses are electrified and the local utility provides zero-carbon electricity. It's important to note that, while this measure could achieve a "large" reduction in building energy emissions, the overall reduction in project emissions could be small if building energy emissions are only a fraction of the project total.

Figure 3-2 illustrates the factsheet layout and annotates key content.

Figure 3-2. Annotated Outline of the Measure Factsheet



Following each measure's factsheet is the measure's quantification method. Accurate and reliable quantification of GHG reduction measures depends on properly identifying and understanding the important variables that affect the emissions from a source or activity. A consistent framework and presentation are used for all measure quantification methods to provide a clear summary of quantification variables and usable instructions on appropriate application of the method.

The quantification methodology for each measure is comprised of the mathematical formula(s), summary of all variables used in the formula, explanation of any calculation caps or maximums, an example calculation, and information on quantified co-benefits. The variables in the GHG reduction formula(s) are shown as letters (e.g., A, B) and are defined in the table that immediately follows the equation. The table categorizes variables as outputs, user inputs, or constants, assumptions, and defaults. Bolded variables are required user inputs (i.e., variables for which no defaults are available).

Only those measures with literature to defensibly support emissions quantification are discussed in this Handbook. Examples of credible sources consulted for this Handbook include government agency-sponsored studies, peer-reviewed scientific literature, case studies, government-approved modeling software, and widely adopted protocols. Additional measures for user consideration are presented in *Supporting or Non-Quantified GHG Reduction Measures*. Methods for quantifying these measures have not yet been developed, are not fully supported by available research, or require specific details that are difficult to address under a methodology with general applicability. Users are encouraged to consider including these non-quantified measures into their projects, as described further below.

The measure factsheets and quantification methods follow *Supporting or Non-Quantified GHG Reduction Measures*. As discussed above, measures are grouped into nine emission sectors. Information relevant to the general quantification of all measures within a sector is presented at the introduction of each sector. Users may manually scroll through the factsheets in this chapter or use Figure 3-1 (above) to automatically navigate to a specific measure's factsheet.

Supporting or Non-Quantified GHG Reduction Measures

As a supplement to the GHG reduction measures shown in the factsheets, there are supporting or non-quantified measures that may be of interest to users. Although not quantitatively evaluated in the Handbook, supporting or non-quantified measures may achieve emissions reductions and co-benefits on their own or may enhance the ability of quantified measures to attain expanded reductions and co-benefits. These measures may, therefore, strengthen implementation of a project mitigation strategy or community plan.

Beyond their potential to expand the efficacy of a reduction plan, supporting or non-quantified measures provide users with more options to develop a comprehensive set of

mitigation strategies. For example, this section can be used as a resource for expanded CEQA mitigation to identify additional measures that may be feasible and applicable to a specific project. Local governments developing a climate action plan or update to their general plan may also find this section useful as inspiration for new or more comprehensive policies. Many of the measures will achieve co-benefits (e.g., water conservation), in addition to GHG reductions, and may therefore be impactful throughout several elements of a local general plan (e.g., air quality, conservation, environmental justice).

While benefits of supporting or non-quantified measures may not be quantitively captured (or fully captured), the measures can be implemented using many of the same mechanisms as for quantified measures. When identified in a CEQA document, measures can be incorporated into a project's mitigation monitoring and reporting program to ensure that they are implemented and enforced. Cities and counties can update their municipal codes to require measures or certain measure components, which would ensure that the measures are implemented through new development or renovations in existing development. Measures can also be included as a set of best management practices that a local government or project sponsor encourages or incentivizes.

Table 3-1 presents the list of supporting or non-quantified GHG reduction measures. Note that these measures are numbered sequentially to follow the quantified measures within each sector (refer to the measure factsheets at the conclusion of this section). The table defines the measure's sector, scale of application, locational context, and likely co-benefits. For simplicity, these measure "descriptors" have been abbreviated in Table 3-1 as follows.

- Shaded rows identify the sector and subsector (in parentheses, where applicable) for each group of measures. For example, "Transportation (Land Use)."
- The scale of application is abbreviated as one of the following:
  - P/S = Project/Site
  - P/C = Plan/Community
  - All = Project/Site and Plan/Community
- For transportation measures, abbreviations for locational context refer to the level of development at the census tract level. The three locational contexts identified in the Handbook are suburban (S), urban (U), and rural (R). Most transportation measures are applicable to development within at least one of these three locational context areas.

  The three locational contexts were developed from the eight neighborhood types described in *Quantifying the Effect of Local Government Actions on VMT* (Salon 2014), as summarized below.
  - S = suburb with multifamily housing; suburb with single-family homes

LOCATIONAL CONTEXT

The following neighborhoods are provided as representative examples for the three locational context areas.

Suburban — Malibu, Davis, Santee

Urban — Central Berkeley, Downtown Los Angeles, Downtown San Jose

Rural — Coronado, Mather, most of Alpine County

  - U = urban low transit; central city urban; urban high transit
  - R = rural; rural-in-urban
- Remaining columns identify co-benefits that may be achieved by the measure where:
  - ●= may be achieved by the measure
  - ⊙= may be achieved by the measure depending on local implementation specifics
  - ○= likely not achieved by the measure

Table 3-2 includes a more detailed description of each non-quantified measure, including equity considerations that lead agencies and project sponsors should review to ensure that measure implementation is as equitable as possible. Users should also refer to Chapter 4, *Assessing Climate Exposures and Measures to Reduce Vulnerabilities*, and Chapter 5, *Measures for Advancing Health and Equity*, for additional context on adaptation and equity that is also relevant to the supporting or non-quantified measures.

Finally, note that the inclusion of a measure in this section does not preclude it from quantification or indicate that it is impossible to quantify the benefits of the measure. If a user has access to specific data or methods, or if quantification guidance becomes available in the future, then users can quantitatively evaluate measures in those circumstances, if desired.

Table 3-1. Summary of Supporting or Non-Quantified GHG Reduction Measures and Descriptors

#	Measure Title	Scale of Application	Locational Context	Co-Benefits									
				Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Transportation (Land Use)													
T-31-A	Locate Project in Area with High Destination Accessibility	P/S	U, S	●	●	●	○	●	●	○	○	○	⊙
T-31-B	Improve Destination Accessibility in Underserved Areas	P/C	U, S	●	●	●	○	●	●	○	○	○	●
T-32	Orient Project Toward Transit, Bicycle, or Pedestrian Facility	P/S	U, S, R [a], R [b], R [c]	●	●	●	○	●	●	○	○	○	⊙
T-33	Locate Project near Bike Path/Bike Lane	P/S	U, S	●	●	●	○	●	●	○	○	○	⊙
Transportation (Neighborhood Design)													
T-34	Provide Bike Parking	All	All	●	●	●	○	●	●	○	○	○	⊙
T-35	Provide Traffic Calming Measures	P/C	All	●	●	●	○	●	●	○	○	○	⊙
T-36	Create Urban Non-Motorized Zones	P/C	U	●	●	●	○	●	●	○	○	○	⊙
T-37	Dedicate Land for Bike Trails	P/C	All	●	●	●	○	●	●	○	○	○	⊙
Transportation (Trip Reduction Programs)													
T-38	Provide First and Last Mile TNC Incentives	P/C	U, S, R [b]	●	●	●	○	●	●	○	○	○	⊙
T-39	Implement Preferential Parking Permit Program	P/S	U, S	●	●	●	○	●	●	○	○	○	○

#	Measure Title	Scale of Application	Locational Context	Co-Benefits									
				Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
T-40	Implement School Bus Program	P/S	All	●	●	●	○	●	●	○	○	○	⊙
T-41	Implement a School Pool Program	P/S	All	●	●	●	○	●	●	○	○	○	⊙
T-42	Implement Telecommute and/or Alternative Work Schedule Program	P/S	All	⊙	⊙	⊙	○	⊙	⊙	○	○	○	⊙
Transportation (Transit)													
T-43	Provide Real-Time Transit Information	P/C	All	●	●	●	○	●	●	○	○	○	⊙
T-44	Provide Shuttles (Gas or Electric)	P/S	U, S	●	●	●	○	●	●	○	○	○	⊙
T-45	Provide On-Demand Microtransit	All	U, S	●	●	●	○	●	●	○	○	○	⊙
T-46	Improve Transit Access, Safety, and Comfort	P/C	U, S, R [b], R [c]	●	●	●	○	●	●	○	○	○	⊙
T-47	Provide Bike Parking Near Transit	P/C	U, S	●	●	●	○	●	●	○	○	○	⊙
Transportation (Parking or Road Pricing/Management)													
T-48	Implement Area or Cordon Pricing	P/C	U	●	●	●	○	●	●	○	○	○	○
T-49	Replace Traffic Controls with Roundabout	P/C	All	●	●	●	○	●	●	○	○	○	○
T-50	Required Project Contributions to Transportation Infrastructure Improvement	P/C	All	●	●	●	○	●	●	○	○	○	○

#	Measure Title	Scale of Application	Locational Context	Co-Benefits									
				Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
T-51	Install Park-and-Ride Lots	P/C	S, R	●	●	●	○	●	●	○	○	○	⊙
T-52	Designate Zero Emissions Delivery Zones	P/C	U	●	●	●	○	●	●	○	○	○	⊙
Transportation (Clean Vehicles and Fuels)													
T-53	Electrify Loading Docks	P/S	All	●	●	●	○	○	○	○	●	○	⊙
T-54	Install Hydrogen Fueling Infrastructure	All	—	●	●	○	○	○	●	○	●	○	○
Energy (Energy Efficiency Improvements)													
E-20	Install Whole-House Fans	P/S	—	○	●	○	○	○	○	○	●	○	⊙
E-21	Install Cool Pavements	All	—	●	●	○	○	●	●	●	●	○	⊙
E-22	Obtain Third-party HVAC Commissioning and Verification of Energy Savings	P/S	—	○	●	○	○	○	○	○	●	○	⊙
Energy (Renewable Energy Generation)													
E-23	Use Microgrids and Energy Storage	All	—	⊙	●	○	○	○	●	○	●	○	⊙
E-24	Provide Battery Storage	All	—	⊙	●	○	○	○	●	○	●	○	⊙
Energy (Building Decarbonization)													
E-25	Install Electric Heat Pumps	All	—	●	●	○	○	○	●	○	⊙	○	⊙

#	Measure Title	Scale of Application	Locational Context	Co-Benefits: Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Lawn and Landscaping													
LL-2	Implement Yard Equipment Exchange Program	P/S	—	●	●	○	○	○	●	●	●	○	⊙
LL-3	Electric Yard Equipment Compatibility	P/S	—	○	○	○	○	○	●	○	○	○	○
Solid Waste													
S-3	Require Edible Food Recovery Program Partnerships with Food Generators	All	—	⊙	⊙	○	⊙	○	⊙	○	○	●	●
S-4	Recycle Demolished Construction Material	P/S	—	○	●	○	○	○	○	⊙	○	○	○
S-5	Source Wood Materials from Urban Wood Re-Use Program	All	—	○	●	●	●	○	○	●	○	○	○
Natural and Working Lands													
N-5	Establish a Local Farmer's Market	P/C	—	●	●	●	○	●	●	○	○	●	⊙
N-6	Establish Community Gardens	P/C	—	●	○	⊙	○	○	●	●	○	●	⊙
Construction													
C-4	Use Local and Sustainable Building Materials	All	—	○	●	●	○	○	○	⊙	○	○	○

#	Measure Title	Scale of Application	Locational Context	Co-Benefits									
				Improved Air Quality	Energy and Fuel Savings	VMT Reductions	Water Conservation	Enhanced Pedestrian or Traffic Safety	Improved Public Health	Improved Ecosystem Health	Enhanced Energy Security	Enhanced Food Security	Social Equity
Miscellaneous													
M-4	Require Environmentally Responsible Purchasing	P/S	—	⊙	⊙	○	⊙	○	○	⊙	○	○	○
M-5	Fund Incentives for Green Technologies	P/C	—	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙

Sector abbreviations: T = transportation; E = energy; W = water; LL = lawn and landscaping; S = solid waste; N = natural and working lands; C = construction; M = miscellaneous.

Scale of application column abbreviations: P/S = Project/Site; P/C = Plan/Community; All.

Locational context column abbreviations: — = non-applicable; R = rural; S = suburban; U = urban. Where applicable, the Handbook provides three land use distinctions within the R locational context category, where R [a] = rural only if the project is in master-planned community; R [b] = rural only if the project is adjacent to commuter a rail station with convenient rail service to a major employment center; R [c] = rural only if there is available transit and the project is close to jobs/services.

Co-benefits columns symbols: ● = may be achieved by the measure; ⊙ = may be achieved by the measure depending on local implementation specifics; ○ = likely not achieved by the measure.

Table 3-2. Description of Supporting or Non-Quantified GHG Reduction Measures

Transportation (Land Use)

T-31-A. Locate Project in Area with High Destination Accessibility

The measure requires development in an area with high accessibility to destinations. Destination accessibility is measured in terms of the number of jobs or other attractions (e.g., schools, supermarkets, and health care services) that are reachable within a given travel time or travel distance, and tends to be highest at central locations and lowest at peripheral ones. When destinations are nearby, the travel time between them is less, thus increasing the potential for people to walk and bike to those destinations and, therefore, reducing the vehicle miles traveled (VMT) and associated greenhouse gas (GHG) emissions. As an implementation consideration, projects should consider accessibility by people of all functional abilities and incorporate design principles such as Universal Design.[4] See Measure T-31-B for a variation of this measure.

T-31-B. Improve Destination Accessibility in Underserved Areas

This measure accounts for the VMT reduction that would be achieved by constructing job centers or other attractions (e.g., schools, supermarkets, and health care services) for residents in underserved areas (e.g., food deserts). When destinations are nearby, the travel time between them is less, thus increasing the potential for people to walk and bike to those destinations, reducing VMT and associated GHG emissions. As an implementation consideration, projects should consider accessibility by people of all functional abilities and incorporate design principles such as Universal Design. See Measure T-31-A for a variation of this measure.

T-32. Orient Project Toward Transit, Bicycle, or Pedestrian Facility

This measure requires projects to minimize setback distance between the project and planned or existing transit, bicycle, or pedestrian corridors. A project that is designed around an existing or planned transit, bicycle, or pedestrian corridor encourages sustainable mode use. As an implementation consideration, projects should consider accessibility by people of all functional abilities and incorporate design principles such as Universal Design.

T-33. Locate Project near Bike Path/Bike Lane

This measure requires projects to be located within 0.5-mile bicycling distance to an existing Class I or IV path or Class II bike lane. A project that is designed around an existing or planned bicycle facility encourages sustainable mode use. The project design should include a comparable network that connects the project uses to the existing off-site facilities that connect to work/retail destinations. As an implementation consideration, projects should provide sufficient and convenient bicycle parking and long-term storage, ideally near the bike lane itself, for residents, employees, and visitors, and a bicycle repair station with tools and equipment. This measure can be implemented with Measure T-9.

Transportation (Neighborhood Design)

T-34. Provide Bike Parking

This measure requires projects provide short-term and long-term bicycle parking facilities to meet peak season maximum demand. Parking can be provided in designated areas or added within rights-of-way, including by replacing parking spaces with bike parking corrals. Ensure that bike parking can be accessed by all, not just project employees or residents.

[4] Universal Design is a concept that is comprised of seven principles that seek to make buildings and infrastructure accessible to all people. Accessibility is achieved by considering and implementing each principle during the design process. A project designed by Universal Design standards would ensure that adjacent transit facilities are accessible to people with diverse abilities, preferences, and language skills.

T-35. Provide Traffic Calming Measures

This measure requires projects to include pedestrian/bicycle safety and traffic calming measures above jurisdictional requirements. Roadways should also be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others. Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift will result in a decrease in vehicle miles traveled. In 2017, 3,904 people were killed and 277,160 injured by vehicle collisions in California; traffic calming can reduce injuries and death, which improves health (State of California et al., 2018). Traffic calming also promotes active transportation, which improves physical health.

T-36. Create Urban Non-Motorized Zones

The measure requires projects to convert a percentage of its roadway miles to transit malls, linear parks, or other non-motorized zones. These features encourage non-motorized travel and thus a reduction in vehicle miles traveled. This measure is only applicable to projects located in urban environments. Consider access issues for paratransit users and those with mobility impairments.

T-37. Dedicate Land for Bike Trails

This measure requires projects to provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countywide bikeway plan. Existing desire paths can make good locations, as it represents a community-identified transportation need.

Transportation (Trip Reduction Programs)

T-38. Provide First and Last Mile TNC Incentives

This measure requires a first-last mile partnership between a municipality/transit agency and a transportation network company (TNC) for subsidized, shared TNC rides to or from the local transit station within a specific geographic area. This measure encourages a shift to transit mode for longer trips. Consider providing inclusive mechanisms so people without bank accounts, credit cards, or smart phones can access the incentives.

T-39. Implement Preferential Parking Permit Program

This measure requires projects provide preferential parking in terms of free or reduced parking fees, priority parking, or reserved parking in convenient locations (such as near public transportation or building entrances) for commuters who carpool, vanpool, ride-share or use sustainably fueled vehicles. Projects should also provide wide parking spaces to accommodate vanpool vehicles. Commercial preferential parking can accommodate workers who work non-standard hours by providing opportunities to participate. Residential preferential parking can consider an equitable distribution of permits, giving priority to owners of sustainably fueled vehicles.

T-40. Implement School Bus Program

This measure will provide school bus service transporting students to a school project. A school bus service can reduce the number of private vehicle trips to drop-off or pick-up students, thereby reducing VMT and associated GHG emissions, as well as onsite air pollution emissions, especially if the bus is zero emissions. Best practices include concentrating service for students who live further away from schools, providing service both before and after school, and encouraging parents to utilize the service. This measure is more effective at schools that draw students from a larger enrollment area, such as high schools or private schools.

T-41. Implement a School Pool Program

This measure requires projects create a ridesharing program for school children. Most school districts provide bussing services to public schools only. School pool helps match parents to transport students to private schools, or to schools where students cannot walk or bike but do not meet the requirements for bussing. A school pool program can help reduce onsite air pollutant emissions at the school by reducing private vehicle trips, especially if the pool vehicle is zero emissions.

T-42. Implement Telecommute and/or Alternative Work Schedule Program

This measure requires projects to permit employee telecommuting and/or alternative work schedules and monitor employee involvement to ensure forecasted participation matches observed participation. While this measure certainly reduces commute-related VMT, recent research has shown that total VMT from telecommuters can exceed VMT from non-telecommuters (Goulias et al. 2020). In addition, telecommuting affects commercial and residential electricity use, complicating the calculation of the net effect and attribution of emissions. More specifically, an office with fewer employees could result in a decrease in the project's energy used to operate equipment and provide space heating and air conditioning. Conversely, an increase in telecommuters using their private homes as workspaces could result in a residential increase in energy for those same end uses and appliances. While this measure is currently not quantified and, according to some studies, could result in total VMT increases and other disbenefits, it is recommended that users review the most recent literature at the time of their project initiation to see if new findings more conclusively support a quantifiable emissions reduction.

Transportation (Transit)

T-43. Provide Real-Time Transit Information

This measure requires projects provide real-time bus/train/ferry arrival time, travel time, alternative routings, or other transit information via electronic message signs, dedicated monitor or interactive electronic displays, websites, or mobile apps. This makes transit service more convenient and may result in a mode shift from auto to transit, which reduces VMT.

T-44. Provide Shuttles (Gas or Electric)

This measure will provide local shuttle service through coordination with the local transit operator or private contractor. The shuttles will provide service to and from commercial centers to nearby transit centers to help with first and last mile connectivity, thereby incentivizing a shift from private vehicles to transit, reducing associated GHG emissions. Electric shuttle vehicles provide a marginally more effective reduction to GHG emissions compared to gas- or diesel-fueled shuttles due to their use of less emissions-intensive electric power. Shuttles that serve only the project residents and/or employees may be seen as increasing gentrification and exclusionary. Consider allowing all people to use the shuttle, regardless of status. Note that this measure can also be implemented at the Project/Site scale by a large employer as part of a Trip Reduction Program.

T-45. Provide On-Demand Microtransit

This measure will provide small-scale, on-demand public transit services that can offer fixed routes and schedules or flexible routes and on-demand scheduling (e.g., Metro Micro) through coordination with the local transit operator or private contractor. Microtransit aims to offer shorter wait times and improved reliability compared to the bus and rail system to further incentivize alternative transportation modes that are less emissions-intensive than private vehicle trips. On-demand rides can be booked using smartphone applications or call centers. Note that this measure may also be applicable at the Project/Site scale for a large employer (e.g., Google's Via2G pilot) as part of a Trip Reduction Program.

T-46. Improve Transit Access, Safety, and Comfort

This measure requires projects improve transit access and safety through sidewalk/crosswalk safety enhancements, bus shelter improvements, improved lighting, and other features. Work with the community to determine barriers to use, most desired improvements, and other access challenges.

T-47. Provide Bike Parking Near Transit

This measure requires the project to provide short-term and long-term bicycle parking near rail stations, transit stops, and freeway access points where there are commuter or rapid bus lines. Include locations for shared micromobility devices as well as higher-security parking for personal bicycles.

Transportation (Parking or Road Pricing/Management)

T-48. Implement Area or Cordon Pricing

This measure requires projects implement a cordon pricing scheme. The pricing scheme will set a cordon (boundary) around a specified area to charge a toll to enter the area by vehicle. The cordon location is usually the boundary of a central business district or urban center but could also apply to substantial development projects with limited points of access. The toll price can be based on a fixed schedule or be dynamic, responding to real-time congestion levels. It is critical to have an existing, high quality transit infrastructure for the implementation of this strategy to reach a significant level of effectiveness. The pricing signals will only cause mode shifts if alternative modes of travel are available and reliable. This measure should provide an exception for low-income residents or workers within the pricing zone.

T-49. Replace Traffic Controls with Roundabout

This measure requires projects install a roundabout as a traffic control device to smooth traffic flow, reduce idling, eliminate bottlenecks, and manage speed. In some cases, roundabouts can improve traffic flow and reduce emissions. The emission reduction depends heavily on what the roundabout is compared to (e.g., uncontrolled intersection, stop sign, traffic signal). Design roundabout so cyclists have the option to join traffic or bypass the roundabout with an adjacent path.

T-50. Required Project Contributions to Transportation Infrastructure Improvement

This measure requires projects contribute to traffic-flow improvements or other multi-modal infrastructure projects that reduce emissions and are not considered as substantially growth inducing. The local transportation agency should be consulted for specific needs. Larger projects may be required to contribute a proportionate share to the development and/or continuation of a regional transit system. Contributions may consist of dedicated right-of-way, capital improvements, or easements. Ensure the jurisdictional fee system does not disadvantage infill projects over greenfield projects.

T-51. Install Park-and-Ride Lots

This measure requires projects install park-and-ride lots near transit stops and high occupancy vehicle lanes. Park-and-ride lots also facilitate car- and vanpooling. Parking lots can also incorporate cool pavements, tree canopy, or solar photovoltaic shade canopies to reduce the urban heat island effect as well as evaporative emissions from parked vehicles and dedicated electric vehicle parking spots and/or charging infrastructure.

T-52. Designate Zero Emissions Delivery Zones

This measure requires the municipality to designate certain curbside locations as commercial loading zones exclusively available for zero-emission commercial delivery vehicles. Doing so replaces tailpipe diesel emissions from last-mile delivery vehicles as well as heavy duty drayage trucks moving goods with less emissions-intensive electric vehicles and potentially micromobility for food and parcel delivery. Locations should be prioritized based on land use density and existing exposure from air pollution.

Transportation (Clean Vehicles and Fuels)

T-53. Electrify Loading Docks

This measure will require that Transport Refrigeration Units and auxiliary power units (APUs) be plugged into the electric grid at the loading dock instead of running on diesel. The indirect GHG emission from electricity generation can partially offset the emissions reduction from fuel reductions. Electrifying loading docks can reduce exposure to air pollutants for workers and drivers.

T-54. Install Hydrogen Fueling Infrastructure

The measure requires projects to implement accessible hydrogen fuel cell fueling infrastructure. Drivers of fuel cell electric vehicles (FCEV), from individual passenger vehicles to haul truck fleets, will be able to refuel using this infrastructure. The expansion of hydrogen fueling locations indirectly supports the uptake of FCEV in place of the typical internal combustion engine vehicle fueled by carbon-emitting gasoline and diesel.

Energy (Energy Efficiency)

E-20. Install Whole-House Fans

This measure requires installation of whole-house fans. Whole-house fans draw cooler outdoor air through open windows, exhaust the warmer air into the attic, and then expel the air outside through attic vents. Whole-house cooling using a whole house fan can substitute for an air conditioner most of the year in most climates, resulting in a reduction in emissions associated with building energy use. Whole-house fans may be inappropriate in locations near sources that generate air pollutants during the evening hours, such as major roads and freeways.

E-21. Install Cool Pavements

This measure will install cool pavements in place of dark pavements. Cool pavements help to lower ambient outdoor air temperatures when compared to dark-colored, heat-absorbent pavements such as asphalt. This reduces the electricity needed to provide cooling, but in some climates, can also increase the energy emissions to provide heating, thereby reducing associated GHG emissions depending on the project parameters (e.g., climate, carbon intensity of local utility). Prioritize cool pavement installation in neighborhoods with high urban heat island effects, large amounts of paved areas, low tree canopy, or high vulnerability due to age, employment, income, linguistic isolation, and other indicators.

E-22. Obtain Third-party HVAC Commissioning and Verification of Energy Savings

This measure requires third-party review of heating ventilation and air conditioning (HVAC) systems to ensure proper installation and construction of energy reduction features. A user can obtain HVAC commissioning and third-party verification of energy savings in thermal efficiency components including HVAC systems, insulation, windows, and water heating. Note that the 2019 Title 24 Standards requires Home Energy Rating System (HERS) verification for all new low-rise residential building (3 stories or less). Taller residential buildings and non-residential buildings may or may or not require a HERS verification depending on other buildings elements.

Energy (Renewable Energy Generation)

E-23. Use Microgrids and Energy Storage

This measure requires management of a microgrid. Microgrids offer the opportunity to deploy more zero-emission electricity sources, thereby reducing GHG emissions. The microgrid manager (e.g., local energy management system) can balance generation from non-controllable renewable power sources, such as solar, with distributed, controllable generation, such as natural gas-fueled combustion turbines. They can also use energy storage and the batteries in electric vehicles to balance energy distribution and usage within the microgrid. Reliable electricity is vital for public health, especially vulnerable populations and people dependent on medical equipment.

E-24. Provide Battery Storage

This measure requires strategically deployed battery storage. Energy storage has no direct emissions effect. When deployed strategically, energy storage can make the grid more flexible, unlocking renewable energy and reducing GHG emissions. When deployed non-strategically, owners of energy storage assets are more likely to charge their facilities during off-peak periods when power prices are lower, in order to supply power during more expensive peak hours. Off-peak generation times such as nighttime hours are more likely to be dominated by conventional power sources, which, with the exception of nuclear and hydropower, are likely to be more emissions-intensive (Bistline and Young 2020). In California, the value of energy storage stems primarily from its ability to reduce renewable curtailment, thereby displacing fossil-fueled generation (Arbabzadeh et al. 2019). While this measure is currently not quantified and, according to some studies, could result in regional GHG and criteria pollutant emissions increases, it is recommended that users (1) review the most recent literature at the time of their project initiation and (2) evaluate any changes in policy or market for renewable energy to see if new findings more conclusively support a quantifiable emissions reduction.

Energy (Building Decarbonization)

E-25. Install Electric Heat Pumps

This measure requires installation of electric heat pumps as alternatives to conventional furnaces or air conditioners. Electric heat pumps use electricity to transfer heat between cool and warm spaces to either provide cooling or heating. When cooling is needed during the summer months, the pumps move warmer inside air to outside. The pumps operate in reverse during the winter, moving warmer outdoor air into the building to provide heat. Because heat pumps move warm air instead of generating heat, they are more efficient than conventional heating and cooling systems. When electric heat pumps replace fossil-fuel heating or cooling sources, they achieve a dual efficiency and decarbonization benefit. The most common types of heat pumps collect heat from the air (are air-to-air), water (water-to-air), or ground (geothermal-to-air). The performance and emissions reductions achieved by electric heat pumps depend heavily on the system type, cooling and heating loads, climate zone, season, and other project-specific variables.

Lawn and Landscaping

LL-2. Implement Yard Equipment Exchange Program

This measure requires the project to participate in an established yard equipment exchange program, supplement an established program, or implement a new program. When conventional gasoline-powered yard equipment (e.g., lawn mowers, leaf blowers and vacuums, shredders, trimmers, and chain saw) are exchanged for electric and rechargeable battery-powered yard equipment, direct GHG emissions from fossil-fuel combustion are displaced by indirect GHG emissions associated with the generation of electricity used to power the equipment. Commercial users of yard equipment should be targeted for this measure given their comparatively low adoption rate of electric yard equipment relative to residential users. If the specific equipment being replaced through the program is known, reductions may be quantified using the method described under Measure LL-1.

LL-3. Electric Yard Equipment Compatibility

This measure requires projects provide electrical outlets on the exterior of buildings as necessary for sufficient powering of electric lawnmowers and other landscaping equipment. For Measures LL-1 and LL-2 to be successfully implemented, electrical outlets on the exterior of buildings must be accessible so that the electric landscaping equipment can be charged.

Solid Waste

S-3. Require Edible Food Recovery Program Partnerships with Food Generators

This measure requires food service, wholesale, and retail sources of edible food partner with food recovery programs. Food recovery programs collect edible foods from commercial production and distribution channels that would otherwise be transported to a landfill and redistribute them for consumption. This measure would avoid emissions from the decomposition of non-diverted organic material in landfills.

S-4. Recycle Demolished Construction Material

This measure requires recycling of construction waste. Recycling demolished construction material reduces GHGs by displacing new construction materials, thereby reducing the need for new raw material acquisition and manufacturing. If the process of recycling construction materials is less carbon-intensive than the processes required to harvest and produce new construction materials, recycling results in a net reduction in GHG emissions. Using local recycled construction material would also reduce emissions associated with the transportation of new construction materials, which are typically manufactured farther away from a project site. Finally, recycling avoids sending materials to landfills. Wood-based materials decompose in landfills and contribute to methane (CH_4) emissions. Ensure onsite processing does not create nuisance issues for nearby residents.

S-5. Source Wood Materials from Urban Wood Re-Use Program

This measure requires projects to source wood materials from urban wood re-use programs. In areas where removed trees are sent to landfills, they decompose and contribute to CH_4 emissions. Wood re-use programs extend a tree's lifetime by converting it into a range of products and prolonging the sequestration benefit. Re-uses range from logs, lumber, woodchips, mulch, compost, biochar, animal fuel, paper products, engineered wood, furniture, and cellulosic ethanol.

Natural and Working Lands

N-5. Establish a Local Farmer's Market

This measure would establish a local farmer's market to provide project residents with a more local source of food, potentially reducing the number of trips and VMT by both consumers and food distribution to grocery stores and supermarkets. If the food sold at the local farmer's market is produced organically, it can also contribute to GHG reductions by displacing carbon-intensive food production practices. Work with local non-profits or foundations to provide Electronic Benefit Transfer (EBT) acceptance at the market, which facilitates access for lower-income populations. The USDA offers resource and guidance for farmer's markets accepting EBT, while some foundations offer multiplier programs, in which $1 of EBT funds becomes a greater value if spent at a farmer's market.

N-6. Establish Community Gardens

This measure would establish a community garden to provide project residents with locally sourced food, potentially reducing the number of trips and VMT by both consumers and food distribution to grocery stores and supermarkets. Community gardens can also contribute to GHG reductions by displacing carbon-intensive food production practices. Work with community residents and community-based organizations to make sure the gardens are designed inclusively and are open to all residents.

Construction

C-4. Use Local and Sustainable Building Materials

This measure requires using building materials that are locally sourced and processed (i.e., close to the project site, as opposed to in another state or country). This reduces VMT and therefore GHG emissions from fuel combustion. Using sustainable building materials, such as recycled concrete or sustainably harvested wood, also reduces GHG emissions due to the less carbon-intensive production process. Unlike measures that reduce GHG emissions during the operational lifetime of a project, using local and sustainable building materials mitigates emissions prior to the actual operational lifetime of a project.

Miscellaneous

M-4. Require Environmentally Responsible Purchasing

This measure requires projects to implement an environmentally responsible purchasing plan. Examples of environmentally responsible purchases include but are not limited to: purchasing products made from recycled materials or with sustainable packaging; purchasing post-consumer recycled paper, paper towels, and stationery; purchasing and stocking communal kitchens with reusable dishes and utensils; choosing sustainable cleaning supplies; purchasing products from restaurants, farms, or ranches that source materials or goods from locations that use soil conservation practices; and leasing equipment from manufacturers who will recycle the components at their end of life. Choosing locally made and distributed products reduces the distance required to transport the products from the distribution or manufacturing center to the project, thus reducing GHG emissions associated with transportation.

M-5. Fund Incentives for Green Technologies

This measure would fund incentives for green technologies. Examples of green technologies include energy-efficient and zero-emission vehicle fleets and off-road equipment, building electrification upgrades, low-flow fixtures in buildings, or energy-efficient stationary sources. The user may choose to contribute to an existing municipal energy fund or establish a new energy fund for the project. Recipients of energy fund grants could include neighborhood developers, home and commercial space builders, homeowners, and utilities. Energy funds allow recipients flexibility in choosing efficiency strategies while still achieving the desired effects of reduced energy use and associated GHG emissions. If coupled with local apprenticeship and job training, this measure can help provide workforce development in green jobs for the local community.

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