ORANGE COUNTY BOARD OF SUPERVISORS

Agenda Revisions and Supplementals

Note: *This supplemental agenda is updated daily showing items that have been added, continued, deleted or modified. No new supplemental items will be added to the agenda following close of business on Friday immediately prior to a Board meeting*.

March 10, 2026

PRESENTATION (9:00 A.M.)

Chair Chaffee and Vice Chair Foley will be presenting a resolution recognizing March 2026 as "Women's History Month"

DISCUSSION

5. Deleted

13. Deleted

14. Revised Title to read:
County Executive Office - Approve grant applications/awards submitted *by County Executive Office, Health Care Agency, OC Community Resources, and Sheriff-Coroner* in 3/10/26 grant report and other actions as recommended - All Districts

CLOSED SESSION

CS-1. Deleted

THE FOLLOWING AGENDA ITEMS HAVE HAD CHANGES TO THEIR RECOMMENDED ACTIONS SINCE RELEASE OF THE AGENDA TO THE PUBLIC:

Item: 14

Supplemental Item(s)

S17A. **OC Waste & Recycling** - Continued consideration of Measure C-E1 of Climate Action Plan from 2/24/26, Agenda Item 21 (Continued from 1/27/26, Item 7; 2/10/26, Item 21, 2/24/26, Item 21) - All Districts

S17B. **Deleted**
Supervisor Sarmiento - Orange County Development Processing Review Committee - Appoint Todd Cottle, Santa Ana, for term concurrent with 2nd District Supervisor's term of office

S17C. **Supervisor Wagner** - Approve sponsorship of various nonprofit entities from Third District events funds; approve addition or revision of events to FY 2025-26 County Events Calendar; make related findings under Government Code Section 26227; and authorize Auditor-Controller to make related payments

Document last updated: 3/6/2026 3:20 PM

ORANGE COUNTY BOARD OF SUPERVISORS

Agenda Revisions and Supplementals

Note: *This supplemental agenda is updated daily showing items that have been added, continued, deleted or modified. No new supplemental items will be added to the agenda following close of business on Friday immediately prior to a Board meeting*.

S17D. **County Executive Office** - Reappoint Denah Hoard as Executive Director of Campaign Finance and Ethics Commission; approve amendment 5 to agreement for employment, 4/10/26 - 4/7/28 ($225,139 annual salary with estimated total compensation $357,517 including benefits) - All Districts

SCS2. **County Counsel** - CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION - Pursuant to Government Code Section 54956.9(d)(1):
Name of Case: Emily Moncur v. County of Orange, Orange County Superior Court Case No. 30-2025-01504358-CU-PO-CJC

SCS3. **County Counsel** - CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION - Pursuant to Government Code Section 54956.9(d)(1):
Name of Case: E.M. v. County of Orange, Orange County Superior Court Case No. 30-2022-01297785-CU-PO-CJC

SCS4. **County Counsel** - CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION - Pursuant to Government Code Section 54956.9(d)(1):
Name of Case: D.R. v. County of Orange, et al., Orange County Superior Court Case No. 30-2022-01263856-CU-PA-CJC

SCS5. **County Counsel** - CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION - Pursuant to Government Code Section 54956.9(d)(1):
Name of Case: Jennifer Kearns v. County of Orange, Orange County Superior Court Case No. 30-2021-01194060-CU-OE-NJC

SCS6. **County Counsel** - CONFERENCE WITH LEGAL COUNSEL - EXISTING LITIGATION - Pursuant to Government Code Section 54956.9(d)(1):
Name of Case: Brad Hunter v. County of Orange, WCAB CASE: ADJ17485330

Document last updated: 3/6/2026 3:20 PM

BOARD OF SUPERVISORS

MEMORANDUM

RECEIVED
2026 MAR -2 PM 2:41
CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

3/02/2026

Doug Chaffee
NA for KF

To: Robin Stieler, Clerk of the Board

From: Chair Doug Chaffee, Fourth District
Vice Chair Katrina Foley, Fifth District

Subject: Presentation Item for March 10, 2026, Board of Supervisors Meeting – Women's History Month

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Chair Doug Chaffee and Vice Chair Katrina Foley request a presentation be added to the agenda for the March 10, 2026, Board of Supervisors meeting. The title should read:

Chair Chaffee and Vice Chair Foley will be presenting a resolution recognizing March as Women's History Month

Women's History Month

WHEREAS, In 1987, Congress declared March as National Women's History Month, recognizing that women today constitute nearly half of the workforce, as well as stand at the forefront of social change, business, science, government, math, art, literature, music, film, athletics, and more; and

WHEREAS, The 2026 theme "Leading the Change: Women Shaping a Sustainable Future," celebrates the vital role women play in advancing environmental stewardship, economic resilience, climate innovation, and sustainable community development – ensuring future generations inherit a healthy, equitable, and thriving world; and

WHEREAS, Women's History Month traces back to March 8, 1857, when women from various New York City factories, undergoing poor working conditions, staged a protest which led to the first women's day celebration in 1909 in New York City; and

WHEREAS, From 1975 to 1991, the County of Orange maintained a Commission on the Status of Women, and in 2024 reestablished the Commission on the Status of Women and Girls to promote the well-being and equal status of women and girls in Orange County; and

WHEREAS, From classrooms to laboratories, from local enterprises to public institutions, women educators, scientists, policymakers, entrepreneurs, engineers and advocates in Orange County lead the change by promoting clean energy, water conservation, responsible development, environmental education, and long-term community resilience; and

WHEREAS, Community organizations such as the Women's Clubs, Women United, YWCA Orange County, DemocraSHE, Women in Leadership, the OC Women Lawyers Association, and National Association of Women Business Owners, among others – as well as small businesses like Smart Women Collective that prepare women job seekers to secure employment – connect Orange County women and promote social growth, education, leadership development, and community service; and

WHEREAS, Throughout history, women leaders and advocates continue shattering glass ceilings, dismantling systemic barriers, and expanding opportunities for those standing next to them as well as rising up behind them – advancing the well-being of groups, businesses, communities, and society as a whole in Orange County; and

WHEREAS, Women's History Month highlights the achievements of women, underscores the importance of women's empowerment, confronts gender inequality, and renews our commitment to progress, and

NOW, THEREFORE BE IT RESOLVED THAT THE ORANGE COUNTY BOARD OF SUPERVISORS designate the month of March 2026 as Women's History Month, recognizing women of all national, ethnic, linguistic, cultural, economic, and political backgrounds whose leadership shapes a sustainable future for all.

Continuation or Deletion Request

Date: **March 4, 2026**

To: Clerk of the Board of Supervisors

From: **Matthew Pettit, Director of Administration, OC District Attorney** MP

Re: ASR Control #: 26-000071, Meeting Date 3/10/26 Agenda Item No. # 5

Subject: **Appoint Extra Help Working Retirees**

☐ Request to continue Agenda Item No. # _____ to the _____ Board Meeting.

Comments:

☒ Request deletion of Agenda Item No. # 5

Comments: Please delete ASR 26-000071 to Appoint Extra Help Working Retirees

Docusign Envelope ID: 6CD29BD7-812B-4E7F-B262-BBE2ABC07F80

Continuation or Deletion Request

RECEIVED
2026 MAR -6 AM 10: 47
CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

Date: 03/06/2026

To: Clerk of the Board of Supervisors

From: **Michelle Aguirre, County Executive Officer**

Signed by: Michelle Aguirre 7C8F38F3345C4E4...

Re: ASR Control #: 25-000860, Meeting Date 3/10/26 Agenda Item No. # 13

Subject: **Legislative Issues**

☐ Request to continue Agenda Item No. # _____ to the _____ Board Meeting.

Comments:

☒ Request deletion of Agenda Item No. #13

Comments:

Agenda Item 14

AGENDA STAFF REPORT

ASR Control 25-000857

MEETING DATE:	03/10/26
LEGAL ENTITY TAKING ACTION:	Board of Supervisors
BOARD OF SUPERVISORS DISTRICT(S):	All Districts
SUBMITTING AGENCY/DEPARTMENT:	County Executive Office (Approved)
DEPARTMENT CONTACT PERSON(S):	Peter DeMarco (714) 834-5777 Andrea Foster (714) 834-2009

SUBJECT: Grant Applications/Awards Report

CEO CONCUR	COUNTY COUNSEL REVIEW	CLERK OF THE BOARD
Concur	No Legal Objection	Discussion 3 Votes Board Majority

Budgeted: N/A **Current Year Cost:** N/A **Annual Cost:** N/A

Staffing Impact: No **# of Positions:** **Sole Source:** N/A

Current Fiscal Year Revenue: N/A

Funding Source: N/A **County Audit in last 3 years:** No

Levine Act Review Completed: N/A

Prior Board Action: N/A

RECOMMENDED ACTION(S):

Approve grant applications/awards as proposed and other actions as recommended.

1. Receive and File Grants Report

2. Approve Grant Application – County Executive Office – Build OC Fund – $1,000,000

3. Approve Grant Award – Health Care Agency – Waste Tire Enforcement Cycle 33 –$325,000

4. Approve Grant Application – OC Community Resources – Senate Bill 1 Sea Level Rise Adaptation Planning Grant Program Track 2 - Capistrano Beach Nature-Based Shoreline Adaptation Project Planting and Fencing – $2,471,580

5. Approve Grant Award – OC Community Resources – Health Insurance Counseling and Advocacy Program (HICAP) – $657,605

6. Approve Grant Application – Sheriff-Coroner – FY 26/27 Alcohol Beverage Control (ABC) Grants for Local Law Enforcement – $75,000

SUMMARY:

See the attached Grants Report.

BACKGROUND INFORMATION:

See the attached Grants Report.

FINANCIAL IMPACT:

N/A

STAFFING IMPACT:

N/A

ATTACHMENT(S):

Attachment A - Grants Report

Grants Report

DRAFT

County Executive Office/Legislative Affairs

March 10, 2026
Item No: 14

County of Orange Report on Grant Applications/Awards

The Grants Report is a condensed list of grant requests by County Agencies/Departments that allows the Board of Supervisors to discuss and approve grant submittals in one motion at a Board meeting. County policy dictates that the Board of Supervisors must approve all grant applications prior to submittal to the grantor. This applies to grants of all amounts, as well as to new grants and those that have been received by the County for many years as part of an ongoing grant. Receipt of grants $50,000 or less is delegated to the County Executive Officer. Grant awards greater than $50,000 must be presented to the Board of Supervisors for receipt of funds. This report allows for better tracking of county grant requests, the success rate of our grants, and monitoring of County's grants activities. It also serves to inform Orange County's Sacramento and Washington, D.C. advocates of County grant activities involving the State or Federal Governments.

On March 10, 2026, the Board of Supervisors will consider the following actions:

RECOMMENDED ACTIONS

Approve grant applications/awards as proposed and other actions as recommended.

ACTION ITEMS:

1. Receive and File Grants Report

2. Approve Grant Application – County Executive Office – Build OC Fund – $1,000,000

3. Approve Grant Award – Health Care Agency – Waste Tire Enforcement Cycle 33 – $325,000

4. Approve Grant Application – OC Community Resources – Senate Bill 1 Sea Level Rise Adaptation Planning Grant Program Track 2 - Capistrano Beach Nature-Based Shoreline Adaptation Project Planting and Fencing – $2,471,580

5. Approve Grant Award – OC Community Resources – Health Insurance Counseling and Advocacy Program (HICAP) – $657,605

6. Approve Grant Application – Sheriff-Coroner – FY 26/27 Alcohol Beverage Control (ABC) Grants for Local Law Enforcement – $75,000

If you or your staff have any questions or require additional information on any of the items in this report, please contact Andrea Foster at (714) 834-2009.

CEO-Legislative Affairs Office Grant Authorization eForm

GRANT APPLICATION / GRANT AWARD

Today's Date:	February 26, 2026
Requesting Agency/Department:	County Executive Office
Grant Name and Project Title:	Build OC Fund
Sponsoring Organization/ Grant Source: (If the grant source is not a government entity, please provide a brief description of the organization/foundation)	Samueli Foundation
Application Amount Requested:	$1,000,000
Application Due Date:	April 10, 2026
Board Date when Board Approved this Application:	N/A
Awarded Funding Amount:	N/A
Notification Date of Funding Awarded:	N/A
Is this an Authorized Retroactive Grant Application/Award? No	
Recurrence of Grant:	No
If this is a recurring grant, please list the funding amount applied for and awarded in the past:	N/A
Does this grant require CEQA findings?	No
What Type of Grant is this?	**Application** - Competitive
County Match?	No
How will the County Match be fulfilled? (Please include the specific budget)	N/A
Will the grant/program create new part or full-time positions?	No
Will this grant support a new or existing program?	Existing
Purpose of Grant Funds:	Provide summary and brief background on why the Board of Supervisors should accept this grant application/award, and how the grant will be implemented.
If awarded, the $1,000,000 grant will support development costs necessary to complete construction activities for the Workforce Reentry Center project. The completed project will provide vocational training and transitional housing for adults involved in the criminal justice system or other County systems of care, ultimately reducing recidivism.	
Board Resolution Required?	No

Deputy County Counsel Name:	
Recommended Action(s) (Please specify below)	
Authorize the County Executive Officer or designee to submit a grant application to Samueli Foundation for the Build OC Fund grant in the amount of $1,000,000.	
Department Contact:	List the name and contact information (telephone, email) of the person to be contacted for further information.
Ryan Rigali 714-834-3763 ryan.rigali@ocgov.com	
Name of individual attending the Board Meeting:	List the name of the individual who will be attending the Board Meeting for this Grant item:
Thomas 'Mat' Miller	

CEO-Legislative Affairs Office
Grant Authorization eForm

GRANT APPLICATION / GRANT AWARD

Today's Date:	March 4, 2026
Requesting Agency/Department:	Health Care Agency
Grant Name and Project Title:	Waste Tire Enforcement Cycle 33
Sponsoring Organization/ Grant Source: (If the grant source is not a government entity, please provide a brief description of the organization/foundation)	California Department of Resources Recycling, and Recover (CalRecycle)
Application Amount Requested:	$325,000
Application Due Date:	N/A
Board Date when Board Approved this Application:	August 12, 2025
Awarded Funding Amount:	$325,000
Notification Date of Funding Awarded:	February 18, 2026
Is this an Authorized Retroactive Grant Application/Award? No	
Recurrence of Grant:	Yes
If this is a recurring grant, please list the funding amount applied for and awarded in the past:	TEA28 $430,500 $430,500 TEA29 $430,500 $430,500 TEA30 $430,500 $409,416 TEA31 $300,000 $300,000 TEA32 $355,000 $355,000
Does this grant require CEQA findings?	No
What Type of Grant is this?	**Award** - Non Competitive
County Match?	No
How will the County Match be fulfilled? (Please include the specific budget)	N/A
Will the grant/program create new part or full-time positions?	No
Will this grant support a new or existing program?	Existing
Purpose of Grant Funds:	Provide summary and brief background on why the Board of Supervisors should accept this grant application/award, and how the grant will be implemented.
Grant funds will be used to investigate illegal tire disposal activities and perform waste tire inspections to ensure compliance with all applicable laws and regulations. Funds will also be used for community and industry education, staff training and administration of the grant.	

Board Resolution Required? **Deputy County Counsel Name:**	No
Recommended Action(s) (Please specify below)	
The Health Care Agency requests that the Board of Supervisors: 1. Accept the grant funding award from the California Department of Resources Recycling and Recovery (CalRecycle) for the term of June 30, 2026, through June 29, 2027, in the amount of $325,000. 2. Authorize the Health Care Agency Director, or designee, to execute the Grant Award Agreement, upon review and approval by County Counsel, and delegate authority to the Health Care Agency Director, or designee, to sign and execute the Acceptance of Award, Agreement and/or any documents related to this award, and to make such future amendments thereto that do not change the Agreement amount by more than 10% of the original amount and/or make immaterial, ministerial changes to the Agreement.	
Department Contact:	List the name and contact information (telephone, email) of the person to be contacted for further information.
Jennifer Sarin 714-834-4099 jsarin@ochca.com	
Name of individual attending the Board Meeting:	List the name of the individual who will be attending the Board Meeting for this Grant item:
Jennifer Sarin	

CEO-Legislative Affairs Office Grant Authorization eForm

GRANT APPLICATION / GRANT AWARD

Today's Date:	March 4, 2026
Requesting Agency/Department:	OC Community Resources
Grant Name and Project Title:	Senate Bill 1 Sea Level Rise Adaptation Planning Grant Program Track 2 - Capistrano Beach Nature-Based Shoreline Adaptation Project Planting and Fencing
Sponsoring Organization/ Grant Source: (If the grant source is not a government entity, please provide a brief description of the organization/foundation)	California Natural Resources Agency Ocean Protection Council (OPC)
Application Amount Requested:	$2,471,580
Application Due Date:	June 5, 2026
Board Date when Board Approved this Application:	N/A
Awarded Funding Amount:	N/A
Notification Date of Funding Awarded:	N/A
Is this an Authorized Retroactive Grant Application/Award? No	
Recurrence of Grant:	No
If this is a recurring grant, please list the funding amount applied for and awarded in the past:	N/A
Does this grant require CEQA findings?	Yes
What Type of Grant is this?	**Application** - Competitive
County Match?	No
How will the County Match be fulfilled? (Please include the specific budget)	N/A
Will the grant/program create new part or full-time positions?	No
Will this grant support a new or existing program?	Existing
Purpose of Grant Funds:	Provide summary and brief background on why the Board of Supervisors should accept this grant application/award, and how the grant will be implemented.

The requested grant funding would support defined construction elements necessary to implement the project, including sand and cobble placement, dune planting and fencing to define coastal access areas, and a new maintenance path with base course, curb, and a seat wall to expand access to amenities adjacent to the existing recreational pedestrian and bicycle trail. These components represent a portion of the overall construction for the site's nature-based solution that will increase resiliency of public beach and infrastructure assets by reducing

beach erosion and creating dune ecosystems that act as a natural buffer against coastal flooding.

On June 4, 2024, the Board of Supervisors approved a Track 1 grant award of $220,000 from OPC to OC Community Resources/OC Parks (OCCR/OC Parks). The Track 1 grant award is supporting the non-federal share of a $422,400 Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC) grant awarded to OCCR/OC Parks in 2024 for Phase 1 Planning and Design for this project. The project is currently in the design phase to achieve shovel-ready status. While the Track 1 grant award also included Phase 2 construction funding, recent uncertainty in the BRIC program places that funding at risk. OCCR/OC Parks continues to evaluate and pursue alternative funding to complete the project.

As a pre-application requirement, a letter of intent was required and submitted by the February 20, 2026 deadline. If invited, the application will be submitted by the June 5, 2026 deadline.

Board Resolution Required? **Deputy County Counsel Name:**	No

Recommended Action(s)
(Please specify below)

1. Authorize the OC Community Resources Director or designee to complete and submit an application to California Natural Resources Association Ocean Protection Council (OPC) for grant funding for Capistrano Beach Nature-Based Shoreline Adaptation Project.

2. Authorize the OC Community Resources Director, OC Parks Director, or designee to sign and submit all documents required for participation in the program.

Department Contact:	List the name and contact information (telephone, email) of the person to be contacted for further information.

Dylan Wright 7144802788 dylan.wright@occr.ocgov.com
Pam Passow 714-973-6650 Pam.Passow@occr.ocgov.com

Name of individual attending the Board Meeting:	List the name of the individual who will be attending the Board Meeting for this Grant item:

Dylan Wright

CEO-Legislative Affairs Office
Grant Authorization eForm

GRANT APPLICATION / GRANT AWARD

Today's Date:	March 4, 2026
Requesting Agency/Department:	OC Community Resources
Grant Name and Project Title:	Health Insurance Counseling and Advocacy Program (HICAP)
Sponsoring Organization/ Grant Source: (If the grant source is not a government entity, please provide a brief description of the organization/foundation)	California Department of Aging (CDA)
Application Amount Requested:	N/A
Application Due Date:	N/A
Board Date when Board Approved this Application:	June 24, 2026
Awarded Funding Amount:	$657,605
Notification Date of Funding Awarded:	February 17, 2026
Is this an Authorized Retroactive Grant Application/Award? No	
Recurrence of Grant:	Yes
If this is a recurring grant, please list the funding amount applied for and awarded in the past:	FY 2025 – 26: $661,027 FY 2024 – 25: $666,178 FY 2023 – 24: $652,425 FY 2022 – 23: $514,159 FY 2021 – 22: $621,867
Does this grant require CEQA findings?	No
What Type of Grant is this?	**Award** - Non Competitive
County Match?	No
How will the County Match be fulfilled? (Please include the specific budget)	N/A
Will the grant/program create new part or full-time positions?	No
Will this grant support a new or existing program?	Existing
Purpose of Grant Funds:	Provide summary and brief background on why the Board of Supervisors should accept this grant application/award, and how the grant will be implemented.

This funding award is the annual HICAP allocation for the term April 1, 2026, through March 31, 2027. This funding will be used for standard program services, staff recruitment, training, and development, maximizing program awareness and reach, and operational efficiency through new tools and digital processes.

On June 4, 2024, the Board of Supervisors approved the Memorandum of Understanding AAA-2425-22 (MOU)

with the CDA and the Older Americans Act and Older Californians Act Program Guide (Program Guide), dated April 10, 2024, to allow for the CDA to directly allocate funding to the OC Community Resources/Office of Aging (OCCR/OoA) without the need to execute annual contracts or amendments. The MOU describes OCCR/OoA's obligations to perform work and services according to the requirements of the MOU and the Program Guide.	
Board Resolution Required? **Deputy County Counsel Name:**	No
Recommended Action(s) (Please specify below)	
Authorize the OC Community Resources Director or designee to accept the Health Insurance Counseling and Advocacy Program FY 2026-27 grant award funding of $657,605.	
Department Contact:	List the name and contact information (telephone, email) of the person to be contacted for further information.
Dylan Wright 7144802788 dylan.wright@occr.ocgov.com Renee Ramirez 714-480-6483 Renee.Ramirez@occr.ocgov.com	
Name of individual attending the Board Meeting:	List the name of the individual who will be attending the Board Meeting for this Grant item:
Dylan Wright	

CEO-Legislative Affairs Office
Grant Authorization eForm

GRANT APPLICATION / GRANT AWARD

Today's Date:	March 3, 2026
Requesting Agency/Department:	Sheriff-Coroner
Grant Name and Project Title:	FY 26/27 Alcohol Beverage Control (ABC) Grants for Local Law Enforcement
Sponsoring Organization/ Grant Source: (If the grant source is not a government entity, please provide a brief description of the organization/foundation)	State of California Department of Alcoholic Beverage Control
Application Amount Requested:	$75,000
Application Due Date:	March 30, 2026
Board Date when Board Approved this Application:	N/A
Awarded Funding Amount:	N/A
Notification Date of Funding Awarded:	N/A
Is this an Authorized Retroactive Grant Application/Award? No	
Recurrence of Grant:	Yes
If this is a recurring grant, please list the funding amount applied for and awarded in the past:	**Fiscal Year** / **Amount** / **Awarded** 2021 / $100,000 / No 2022 / N/A / N/A 2023 / $50,000 / No 2024 / $50,000 / No 2025 / $75,000 / Yes
Does this grant require CEQA findings?	No
What Type of Grant is this?	**Application** - Competitive
County Match?	No
How will the County Match be fulfilled? (Please include the specific budget)	N/A
Will the grant/program create new part or full-time positions?	No
Will this grant support a new or existing program?	Existing
Purpose of Grant Funds:	Provide summary and brief background on why the Board of Supervisors should accept this grant application/award, and how the grant will be implemented.

The Orange County Sheriff's Department (OCSD) closely monitors ABC-licensed establishments that are suspected of allowing overselling and overconsumption of alcohol, ultimately contributing to increased crime and community deterioration, including drug activity, underage drinking, assaults, and public disturbances. In an effort to combat these crimes, OCSD will implement Minor Decoy Programs and targeted enforcement operations to address unlawful alcohol sales and prevent alcohol-related harm. Funding from the grant will support proactive enforcement efforts, necessary follow-up investigations, and updated ABC training for deputies and professional staff. The goals of the OCSD are to strengthen compliance with ABC licensing laws and regulations and to enhance overall community safety.	
Board Resolution Required? **Deputy County Counsel Name:**	No
Recommended Action(s) (Please specify below)	
Authorize the Sheriff-Coroner, or designee, to sign all necessary documents required for submitting the Alcohol Policing Partnership (APP) Program application to the Alcoholic Beverage Control (ABC) of the State of California.	
Department Contact:	List the name and contact information (telephone, email) of the person to be contacted for further information.
Sergeant Victor Valdez valdezva@ocsheriff.gov (714) 647-7060 Brigitte Ludwig, Business Services Administrator bludwig@ocsheriff.gov (714) 647-1850	
Name of individual attending the Board Meeting:	List the name of the individual who will be attending the Board Meeting for this Grant item:
Commander Brett Darnell / Brigitte Ludwig, Business Services Administrator	

Docusign Envelope ID: 23D404B1-E707-4A3C-8316-F2B0929E1A07

Continuation or Deletion Request

Date: **March 6,, 2026**

To: Clerk of the Board of Supervisors

From: **Michelle Aguirre, County Executive Officer** Signed by: Michelle Aguirre 7C8F38F3345C4E4...

Re: ASR Control #: N/A, Meeting Date 3/10/2026 Agenda Item No. # CS-1

Subject: **Closed Session for March 10,2026**

☐ Request to continue Agenda Item No. # _____ to the _____ Board Meeting.

Comments:

☒ Request deletion of Agenda Item No. # CS-1

Comments:

RECEIVED
2026 MAR -6 PM 3:09
CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

Lopez, Maria [COB]

Correspondence
Bd. 2/24/26, Item 21

From: Karen Nguyen <karenptnx@gmail.com>
Sent: Tuesday, February 24, 2026 9:41 AM
To: COB_Response
Subject: Pass Climate Action Plan

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Hello OC Board of Supervisors,

Please vote yes on the Climate Action Plan. I am so proud of our county and how we have so many parks and trails dedicated to people who want to spend time with nature. We know that nature is healing. We know that we need to protect our planet so we can continue to live on this earth. Having a climate action plan empowers the county and its people to do more for the earth.

Please vote yes for a Climate Action Plan

Karen Nguyen (she/her)

Lopez, Maria [COB]

From: Ana Gromis <agromis@biasc.org>
Sent: Monday, February 23, 2026 9:52 AM
To: Jabbar, Al; Hahn, Charles; Goebel, Yasie; Campbell, Tara; Anas, Nick; Napuri, Alyssa; COB_Response
Cc: Tisopulos, Tara [OCWR]
Subject: BIAOC Follow-Up Comment Letter re: CAP
Attachments: BIAOC Comment Letter -Climate Action Plan.pdf

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Good Morning Chair Chaffee and Supervisors,

Please see the attached correspondence on behalf of BIAOC regarding the proposed County Climate Action Plan, which will be heard by the Board of Supervisors tomorrow, February 24th. We appreciate your consideration of this request, and look forward to collaborating with the County further.

Thank you,

Ana

Ana Gromis
Vice President of Government Affairs

Building Industry Association of Southern California, Inc.

Email: agromis@biasc.org

ph: (951) 756-5813 **w**: biasc.org

San Bernardino County • Los Angeles/Ventura County • Orange County • Riverside County • Coachella Valley

BUILDING INDUSTRY OF SOUTHERN CALIFORNIA, ORANGE COUNTY CHAPTER

February 23, 2026

Chair Doug Chaffee
Orange County Board of Supervisors
400 W Civic Center Dr,
Santa Ana, CA 92701

RE: BIAOC Comments on Draft Climate Action Plan -- Phase 2

Dear Chair Chaffee,

On behalf of the Building Industry Association of Southern California, Orange County Chapter we would like to express our concerns regarding the Phase 2 document of the Climate Action Plan, listed as Agenda Item 21, set to be reviewed by the Board of Supervisors on Tuesday, February 24, 2026.

As stated previously, BIAOC supports the work of the Task Force and its efforts to develop a Climate Action Plan that addresses greenhouse gas emissions and definitive strategies that will achieve said reductions, and appreciates the courtesy extended by the County of Orange in allowing BIAOC to participate in the County's Climate Action Plan Task Force and express our collective thoughts on the proposed plan.

In our letters dated October 24, 2025 and January 23, 2026, we highlighted our concerns with Chapter IV, "Community Climate Action", which we believe to be problematic and regrettably still included in the Phase 2 document. This section contains provisions that may be interpreted and implemented in the future that could complicate development activity.

An example can be seen in the introductory text for Measure C-M2, "Support the Reduction of Vehicle Miles Traveled (VMT) in Unincorporated Areas through Public Outreach and Incentives". As the County is aware, VMT is a particularly sensitive topic and has tremendous implications for development. State law (e.g., SB 743 and its implementing CEQA guidelines) already address how and when VMT is to be evaluated and mitigated. The above-identified Measure C-M2 text raises questions as to whether there could be "augmented" VMT measures.

Another example can be seen with Measure C-E1, "Promote Building Decarbonization Throughout the Community". This measure includes language to phase out gas in new construction. It is well known that the State is in the midst of a housing crisis and the State legislature and Governor approved AB130 to freeze building code updates in order to provide predictability and reduce the cost of construction.

BIAOC recognizes the value of looking holistically at GHG emissions within the County, and appreciates that the Phase 2 document considers all sources of GHG in the County and sets targets for reducing emissions. However, with respect to implementing GHG emission reduction strategies, BIAOC respectfully asserts that the Climate Action Plan should focus exclusively on those actions

that are currently and directly within the County's control (i.e., the municipal reduction strategies identified in Chapter III of the Phase 2 document).

In addition, with the January 2026 Draft Comprehensive General Plan Update that is currently out for public review, implementation of the CAP was listed as an action item under the Resource Management Element (Action Item RM-8J). The building industry is justifiably concerned that incorporating the Climate Action Plan (CAP) into the General Plan will unintentionally turn advisory climate objectives into binding land-use mandates. Notwithstanding the CAP Group's characterization of the CAP as a set of "aspirational goals," this description does not assuage the industry's legitimate concerns regarding how the CAP will be applied to individual development projects going forward.

When goals are elevated into the General Plan, they assume the same legal weight as other General Plan policies that the County must use when conditioning, approving or denying development applications. Hence, were the County to incorporate the CAP into the General Plan, a significant risk exists that CAP goals (focused upon long-range, community-scale GHG reduction targets) will be applied rigidly to individual projects and without concern for proportionality or feasibility.

Essentially, incorporation of CAP goals into the General Plan shifts the CAP from a planning tool into a binding standard of review. *To wit*, developers may be required to demonstrate project-level consistency with community-scale goals that were never intended to function as project-specific thresholds. This, in turn, creates entitlement risk for developers *vis-à-vis* potential CEQA disputes over whether a project has failed to meet what were originally meant to be non-mandatory targets.

The County's intent of the CAP from the beginning of the process was to not be applicable to private development within unincorporated areas. The CAP goals should remove reference to private development and not be incorporated into the General Plan, as doing so has the untenable risk and outcome of turning community-wide aspirations into inflexible and enforceable mandates on individual projects.

In conclusion, **BIAOC respectfully requests that the County (i) eliminate Chapter IV from the Phase 2 document and (ii) remove from the Phase 2 document all references to the community component.** Deletion of these provisions and references will not affect or otherwise prejudice the County's original goal of reducing GHG emissions associated with County-owned facilities and equipment. To the contrary, elimination of Chapter IV and other references to the community component will strengthen the County's pathway to success by eliminating ambiguity and confusion from the document.

Once again, thank you for the opportunity to participate in the Task Force and share our concerns regarding this proposed plan. Should you have any questions regarding the items addressed in this letter and/or the request of BIAOC, please contact me at agromis@biasc.org / 949-777-3856.

Sincerely,

Ana Gromis
Vice President of Government Affairs
BIASC

Lopez, Maria [COB]

From: Dr Norman R Byrd <webyrd@sbcglobal.net>
Sent: Monday, February 23, 2026 11:44 AM
To: COB_Response
Subject: Climate Action Plan

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Supervisors -- Please vote YES on our county Climate Action Plan! We need to move forward in so many ways that will create a better environment for our residents. Thank you for your consideration!

(Mrs.) Chris Byrd
14231 Clarissa Lane
Santa Ana 92705
webyrd@sbcglobal.net

Lopez, Maria [COB]

From: Judy Curry <fargojay@aol.com>
Sent: Monday, February 23, 2026 12:31 PM
To: COB_Response
Subject: OC Climate Action Plan

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

I'm contacting you to encourage you to vote yes on the OC Climate Action Plan.

Judy Curry
33 Calle Aragon. Unit B
Laguna Woods CA 93637
fargojay@aol.com

Sent from my iPhone

Lopez, Maria [COB]

From: June Yamada <june.yamada1@gmail.com>
Sent: Monday, February 23, 2026 2:45 PM
To: COB_Response
Cc: June Yamada
Subject: Orange County Clerk of the Board of Supervisors...Landfill Tipping Fees

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Please reconsider increasing landfill tipping fees which may increase trash disposal costs and customer rates. Look for opportunities to decrease costs within other parts of the operation like eliminating wasteful, non value add activities.

Lopez, Maria [COB]

From: Greta Meyerhof <gretameyerhof@gmail.com>
Sent: Monday, February 23, 2026 1:28 PM
To: COB_Response
Subject: Orange County Climate Action Plan

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Hello,
I am writing in support of the OC Climate Action Plan. It is imperative that Orange County take steps in the direction of tackling climate change in the interest of future generations. As you know we are experiencing the effects of this issue now.
Best regards,
Greta Meyerhof

Lopez, Maria [COB]

From: Christopher Hilger <antonchh@gmail.com>
Sent: Monday, February 23, 2026 12:32 PM
To: COB_Response
Subject: Please vote yes on the Climate Action Plan

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

TO: EACH MEMBER OF THE BOARD OF SUPERVISORS

RE: THE CLIMATE ACTION PLAN

I wish to thank the Board for creating a Climate Action Plan. This plan promises to become the first step towards reducing GHG emissions in the County. Just by being approved by the Board of Supervisors, it will also encourage all of the cities in the County to work towards climate action as well.

Much will still need to be done, but I respectfully request the Board to create the beginning of much needed progress towards the accomplishment of emission reductions in our county by passing the Climate Action Plan.

Respectfully,

Chris Hilger

10255 La Hacienda Ave. Apt. A

Fountain Valley, CA 92708

714-290-8165

Lopez, Maria [COB]

From: Tamara Colby <tamara.colby@gmail.com>
Sent: Monday, February 23, 2026 1:26 PM
To: COB_Response
Subject: vote Yes on the Climate Action Plan

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Dear Honorable Supervisors:

Please vote yes on the CAP. I believe that climate change is important issue.
Your leadership is needed in order to address the scope of issues and address inter-governmental coordination. County-wide coordination is needed for ongoing management, planning and financing for climate change solutions.

Thanks,

Tamara Colby
Huntington Beach

Lopez, Maria [COB]

From: Shani Murray <shani.b.murray@gmail.com>
Sent: Sunday, February 22, 2026 4:51 PM
To: COB_Response
Subject: Support for the Climate Action Plan (CAP)

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Dear Board of Supervisors,

Please vote yes to approve the Climate Action Plan (CAP). Protecting our environment is critical for the health and well-being of current and future generations. My kids deserve a plan to care for their future.

Thank you for your time.

All the best,
Shani Murray
Placentia, CA

Correspondence
Bd. 2/24/26, Item 21

Lopez, Maria [COB]

From: Kris Paquette <kris.paquette@gmail.com>
Sent: Saturday, February 21, 2026 1:29 PM
To: COB_Response
Subject: OC CAP

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Dear Members of the Board,

My name is Kris Paquette. I am a resident of Yorba Linda. I have different reasons that are very important for me to want to see the OC CAP approved. First and foremost is my concern for my grandchildren. I want them to have the healthiest environment possible to live in. I'm assuming this is a fervent wish of all grandparents. I am a retired schoolteacher and now teach environmental science at the Pacific Marine Mammal Center in Laguna Beach. I am very aware of many of the harmful effects that are already happening both in the ocean and on land due to climate change and excessive CO2 emissions.

I see so many reasons why having the OC CAP in place is important. The structured framework which will serve as a roadmap for reducing greenhouse gas emissions is the essential first step to move on to many important actions to ensure a healthy future. I understand that it is important in order to secure funding. It is also a tool to ensure cost efficiency and better sustainability practices.

Reducing air pollutants like diesel emissions is important for all of us. Enhancing green spaces, reducing heat islands, and updating infrastructure in underserved areas eventually benefit all.

This document is a very good first step and allows Orange County to catch up and have an avenue for future improvements.

I urge you all to stay forward thinking and proactive as you consider the near- and long-term future of our community. As a constituent, I'm hoping that you stay the course and pass the urgently needed OC CAP.

Sincerely,

Kris Paquette

22215 Mission Hills Ln

Yorba Linda, CA 91887

Correspondence
Bd: 2/24/26, Item 21

Guillen, Dora

From: Thomas Osborne <thomasjoeosborne@gmail.com>
Sent: Thursday, February 19, 2026 4:41 PM
To: COB_Response
Subject: Adopt the Climate Action Plan

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Dear Orange County Board of Supervisors, I urge you to adopt your Climate Action Plan. Given the federal government's opposition to climate action (withdrawal from the Paris accord of 2015, repeal of the endangerment finding of the EPA, discontinuance of EV purchasing incentives, etc.), local jurisdictions must step into the breach and slow Earth's warming if upcoming generations are to have a livable climate. A county as prominent as ours nationally will influence other counties to adopt similar climate action plans. I applaud your drafting of a Climate Action Plan; now let's adopt it.

Thank you for your public service.
Sincerely,
Tom Osborne
Laguna Beach resident
Retired history professor

Guillen, Dora

From: pnicely@aol.com
Sent: Wednesday, February 18, 2026 10:17 AM
To: COB_Response
Subject: Please vote Yes on CAP

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

The Climate Action Plan will help preserve the climate for our kids and grandkids--please vote YES.

Pamela Nicely, Ph.D.
24512 Moonfire Dr.
Dana Point, CA 92659
818.795.3676

Correspondence
Bd: 2/24/26, Item 21

From: **Ginger Osborne**
To: **COB_Response**
Subject: Please adopt the Climate Action Plan
Date: Tuesday, February 17, 2026 3:18:05 PM

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Dear Orange County Supervisors,

Thanks go to you and your staff for all the work that was entailed in writing the County's Climate Action Plan. You have already taken steps to make the County's actions more sustainable, such as elimination the use of styrofoam containers. Your adoption of the proposed Climate Action Plan will guide sustainable actions in years to come and will serve as a model for cities in Orange County who do not yet have a Climate Action Plan and will thus have multiplicative beneficial effects.

Thank you for your service on the OC Board of Supervisors,

Ginger Osborne
Laguna Beach

Lopez, Maria [COB]

From: michael strachan <michaelstrachan988@gmail.com>
Sent: Tuesday, February 10, 2026 8:50 AM
To: COB_Response
Subject: OCWR Expansion - February 10 Agenda item 21

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Please help to stop doubling the size of the landfill, importing waste from outside of Orange County, and exposing our families and environment to significant health concerns. The initial impact reports showed that there are 2-3x increase in cancer rates and those were reports from 20 years ago.

We have met with OCWR and felt like they brushed off all of our concerns and instead directed us to those reports from 20+ years ago. The point that they harped on was how they were using chemicals to eliminate the odor from the waste - when we looked into those, we saw that they cause spikes in cancer rates

What they have said is that there are higher standards that they can have for monitoring the pollution, impacts on our community, and the environment.

However, they will not perform regular monitoring or implement higher standards unless our elected officials tell them to do so. As our elected officials, we are asking you to please take notice and take immediate action.

It is already an embarrassment, it's already a health hazard, do not allow this to happen.

--
Michael Strachan
(714) 514-6453

Correspondence
Bd. 2/10/26, Item 21

Lopez, Maria [COB]

From: Jon Barilone <jon.barilone@gmail.com>
Sent: Monday, February 9, 2026 9:44 PM
To: COB_Response
Subject: 2/10/26 Meeting Public Comment re: Agenda Item #21

Attention: This email originated from outside the County of Orange. Use caution when opening attachments or links.

Dear County Board of Supervisors,

My name is Jonathan Barilone (*BEAR-UH-LOW-KNEE*) from the City of Aliso Viejo. Regarding agenda item #21, "Adopt County of Orange Climate Action Planning Document," I urge you to vote "Yes."

The County has made great strides with Phase 1 of the CAP, and I applaud the Board for its dedication to reducing harmful greenhouse gas (GHG) emissions, especially in our disadvantaged and unincorporated communities. Now is the time for to fulfill the "A" within that CAP acronym: "Action."

The Planning Document before you this evening reflects the real concerns of your constituents and provides a roadmap for how to address them. A "Yes" vote tonight means bringing green jobs and state/federal grant dollars to our county in the future. A "Yes" vote tonight means saving County budgets by expanding our capacity for clean energy fuel sources, technologies, and infrastructure. A "Yes" vote tonight further solidifies Orange County's status as a leader in the state's voluntary efforts to combat climate change.

Thank you all for your time and for your leadership.

Continuation or Deletion Request

Date: **1/26/2026**

To: Clerk of the Board of Supervisors

From: **Tom Koutroulis, Director, OC Waste & Recycling**

Re: ASR Control #: 26-000018, Meeting Date 1/27/2026 Agenda Item No. # 7

Subject: **Adopt the County of Orange Climate Action Planning Document**

☒ Request to continue Agenda Item No. # 7 to the 2/10/2026 Board Meeting.

Comments:

☐ Request deletion of Agenda Item No. # _____

Comments:

RECEIVED
2026 JAN 26 PM 1:23
CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

CLIMATE ACTION PLAN PHASE 2

COUNTY OF ORANGE 2026

County of Orange Board of Supervisors

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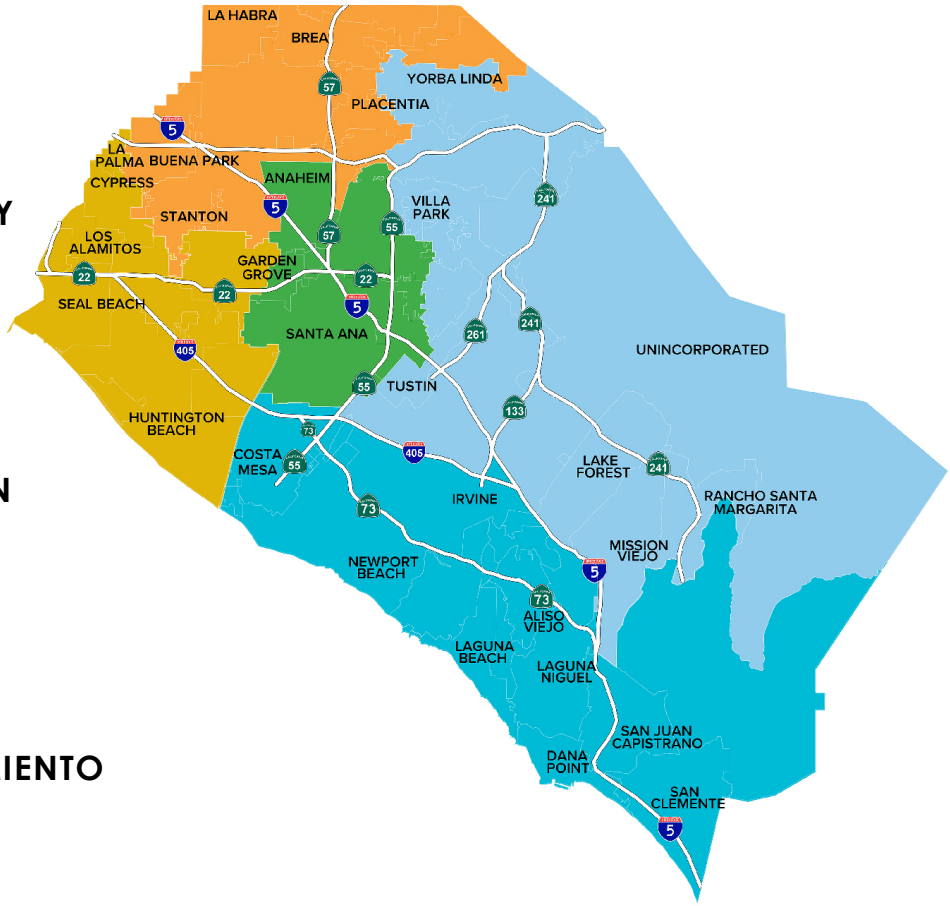

**REFLECTING 2025 POSITIONS*

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Acronyms

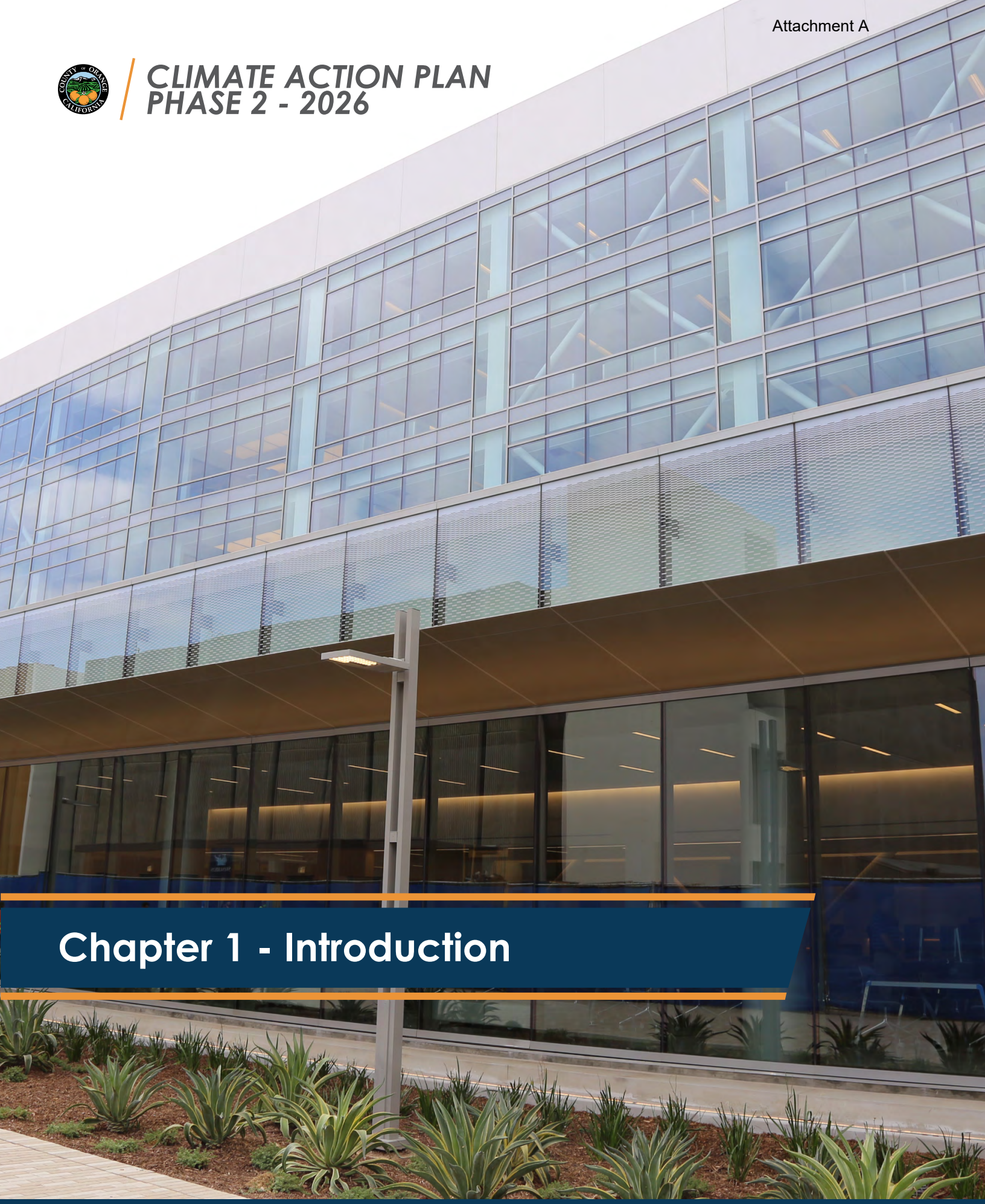
2022 Scoping Plan	Achieving Carbon Neutrality
2024-2029 CEDS Report	2024-2029 Comprehensive Economic Development Strategy Report
AB	Assembly Bill
ABAU	Adjusted Business-as-usual
ACCI & ACCII	Advanced Clean Cars I and II
ACF	Advanced Clean Fleets
AFOLU	Agriculture, Forestry, and Other Land Use
AJCC	American Job Center of California
AQMD	Air Quality Management District
AR5	Fifth Assessment Report
BAU	Business-as-usual
BIL	Bipartisan Infrastructure Law
BRACE	Building Resilience Against Climate Effects
C-E	Energy
C-E1	Outreach and Incentives
C-EJ	Environmental Justice
C-EJ3	Retrofits
C-EJ4	Underserved Communities
C-M	Mobility
C-M1, M-M1	EV Charging Infrastructure
C-M4	Unincorporated Areas
C-NR	Natural Resources
C-NR3	Integrated Flood and Water Management
C-NR4	Ecosystem Restoration
C-R	Resilience
C-RRW	Resource Recovery & Waste
CA DOF	California Department of Finance
CalEEMod	California Emission Estimator Model
CalEPA	California Environmental Protection Agency
CAP	Climate Action Plan
CARB	California Air Resources Board
CCS	Carbon Capture and Storage
CDC	Centers for Disease Control and Prevention

CDR	Carbon Dioxide Removal
CEC	California Energy Commission
CEDS	Comprehensive Economic Development Strategy
CEJST	Climate and Economic Justice Screening Tool
CEQ	White House Council on Environmental Quality
CEQA	California Environmental Quality Act
CH_4	Methane
CHIPS	Creating Helpful Incentives to Produce Semiconductors
CHP	Combined Heat and Power
CIP	Capital Improvement Program
CNG	Compressed Natural Gas
CNRA	California Natural Resources Agency
CO_2	Carbon Dioxide
County	County of Orange
CPRG	Climate Pollution Reduction Grant
CRSCI	Climate-Ready States and Cities Initiative
CVA	Climate Vulnerability Assessment
CWPP	Community Wildfire Protection Plan
DC	Direct Current
Diesel PM	Solid Particles
DOL	Department of Labor
eGRID	Emissions & Generation Resource Integrated Database
EJ IWG	Environmental Justice Interagency Working Group
EJ Screen	Environmental Justice Screening and Mapping Tool
EMFAC	Emissions Factor
EMFAC	Emissions Factor Model
EMFAC2021	Emission Factors 2021 model
EO S-01-07	California Low Carbon Fuel Standards
EPA	U.S. Environmental Protection Agency
EV	Electric Vehicle
F-gas	Fluorinated Gas
FEMA	Federal Emergency Management Agency
FHSZs	Fire Hazard Severity Zones
GHG	Greenhouse Gas
GHGRP	GHG Reporting Program
GPC	Global Protocol for Community-Scale Greenhouse Gas Inventories
GSE	Ground Support Equipment
GWP	Global Warming Potential

HCA	Health Care Agency
HFCs	Hydrofluorocarbons
high-GWP	High-Global-Warming-Potential
HVAC	Heating, Ventilation, and Air Conditioning
IIJA	Infrastructure Investment and Jobs Act
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
IRA	Inflation Reduction Act
JWA	John Wayne Airport
kWh	Kilowatt-hour
lbs CO,ÇÇe	Pounds of Carbon Dioxide Equivalent
LCFS	Low Carbon Fuel Standard
LEED	Leadership in Engineering and Environmental Design
LFG	Landfill Gas
LGO Protocol	Local Government Operations Protocol
LHMP	Local Hazard Mitigation Plan
LHMPs	Local Hazard Mitigation Plans
LIDAC	Low Income and Disadvantaged Communities
LOSSAN Corridor	Los Angeles-San Diego-San Luis Obispo Rail Corridor
M-E1	County-Owned Facilities
M-E1.2	Natural Gas Appliances
M-M2	County Workers
M-M3	Decarbonizing County Fleet
MDI	Metered-Dose Inhalers
Measure M-E4	LFG-to-RNG conversion
Measure M-M3	Fleet Electrification
Measure M-RRW2	Landfill Optimization
MMBtu	Million British Thermal Units
MSA	Metropolitan Statistical Area
$MTCO_2e$	Carbon Dioxide Equivalents
MTCO,ÇÇe	Metric Tons of Carbon Dioxide Equivalent
MWDOC2020	Municipal Water District of Orange County's 2020 Urban Water Management Plan
MWh	Megawatt-hour
N_20	Nitrous Oxide
NAHC	Native American Heritage Commission
NASS	National Agricultural Statistics Service
NEPA	National Environmental Policy Act
NLCD	National Land Cover Database

NWL	Natural and Working Lands
OC	Orange County
OCCS	Orange County Community Services
OCHA	Orange County Housing Authority
OCPW	Public Works
OCTA	Orange County Transportation Agency
OCWBD	Orange County Workforce Development Board
OCWR	Department of Waste and Recycling
PCAP	Priority Climate Action Plan
PM2.5	Particulate Matter
PV	Photovoltaic
RCP	Representative Concentration Pathway
referred to as municipal inventory	Municipal Operations
RNG	Renewable Natural Gas
RPS	Renewable Portfolio Standard
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCOUP	Sand Compatibility Opportunistic Use Program
SDG&E	San Diego Gas & Electric
SED	Socioeconomic Data
SLCP	Short-Lived Climate Pollutant
SLR	Sea Level Rise
TAZ	Traffic Analysis Zone
TOD	Transit Oriented Development
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VMT	Vehicle Miles traveled
WECC	Western Electricity Coordinating Council
WEDD	Workforce and Economic Development Division
WIOA	Workforce Innovation and Opportunity Act
WUI	Wildland Urban Interface
ZEVs	Zero-Emission Vehicles

CLIMATE ACTION PLAN
PHASE 2 - 2026



Chapter 1 - Introduction

Introduction

Phase 2 of the Climate Action Plan: Updates and Additions

The County of Orange Climate Action Plan (CAP) has progressed in two major phases. Phase 1 established the technical and analytical foundation of the CAP and identified priority target sectors to guide the CAP blueprint. Phase 1 (or Preliminary CAP) was brought to the Board of Supervisors as a Receive and File item in September 2024, while Phase 2 (this document) expands into a strategic plan for greenhouse gas (GHG) emission reductions in municipal operations and a broad strategy for emission reductions throughout the unincorporated areas of the county.

Phase 2 of the CAP presents inventories and forecasts, quantification of measures and measure performance goals, and future goals for emissions reductions. The community component of the CAP includes emission reductions for unincorporated community measures which are proposed as a set of voluntary goals and incentives intended to guide future outreach and planning efforts. The municipal component of the CAP includes planning-level targets for County operations and is being presented as a feasibility and planning study pursuant to the California Environmental Quality Act (CEQA) Guidelines §15262.

The Phase 2 CAP is not legally binding for implementation of any specific projects. Implementation of any future projects described in the CAP would be subject to future environmental review. However, the CAP may inform future CEQA analysis and could support streamlined environmental review for site-specific projects once a qualified CEQA document is prepared and certified. Phase 2 also includes four core municipal measures that account for 98 percent of total municipal emission reductions. For each of these measures, the CAP identifies potential implementation pathways, including lead agencies, partner organizations, and funding opportunities, subject to future feasibility assessment and environmental review.

A Climate Vulnerability Assessment (CVA) is another addition to the CAP in Phase 2. It builds on the existing hazard analysis and response strategies of the Local Hazard Mitigation Plan, the Excessive Temperature Emergency Annex, Caltrans District 12's Vulnerability Assessment and Adaptation Priorities Reports, and the South Orange County Coastal Resilience Strategic Plan, among other ongoing climate resilience planning documents in Orange County. The CVA focuses on local exposure and impacts of extreme heat; wildfires, smoke, and air pollution; and sea level rise and flooding, while also situating these risks within national trends. CAP measures were updated to better address the vulnerabilities identified in the CVA, in alignment with climate resilience strategies outlined in the County's other complementary climate resilience plans. The CVA is a required component of a General Plan or General Plan Amendment and incorporating it into this document is a more cost-effective way to achieve the General Plan mandate for the County.

This CAP is considered a planning document for the County to move forward with a CAP Implementation Plan and full analysis under CEQA. Of the 58 counties in California, Orange

County receives the least amount of funding to provide services. The CAP will also serve as a strategic document to compete for various funding sources for grant requirements supporting prudent financial management, risk reduction and protecting taxpayer-funded assets.

Orange County Setting

Established in 1889, Orange County spans 793 square miles and ranks as the third-most-populous county in California, the sixth-most-populous in the United States and the ninth largest economy in the nation.

The County of Orange (County), through its 22 departments and respective divisions, functions as a regional service provider and planning agency. Its core businesses include public safety, public health, waste management, regional planning, public assistance, social services and aviation.

Orange County boasts 42 miles of coastline, three harbors, the OC Zoo and 25 regional and wilderness parks, including 230 miles of riding and hiking trails. According to Visit California, over 44 million people visited Orange County in 2023 with 11.7 million passengers using the County's own John Wayne Airport (JWA).

Tourism revenue to the County in 2023 exceeded $15.8 billion, supporting over 83,000 tourism-related jobs and contributing $590 million annually in state and local taxes.[1] Orange County is a sought-after destination relying on its pristine beaches, clean air, and amenities to maintain its market share of the tourism industry.

As Orange County's popularity grows, developing strategies to address climate change and maintain the pristine natural resources that make the region unique has become more critical than ever. To that end, the County has taken this first step in combating climate change through this Climate Action Plan. The Plan not only serves to reduce GHGs and improve air quality but also to prepare residents and employees for natural disasters, protect our most vulnerable citizens and natural resources, and boost funding potential to the County to implement critical programs.

Vision

The County is a leader that embraces innovative solutions to mitigate climate change, protect the natural environment, and ensure the well-being and prosperity of all residents for generations to come. The CAP targets the County's greatest sources of GHGs while also preparing for natural disasters that are becoming more common and assisting our most vulnerable residents with outreach and access to critical information and resources. The CAP is designed to be a blueprint and toolkit to assist other Orange County cities and communities with preparing their own documents. Most importantly, the CAP strategically positions the County for funding opportunities that align with its vision.

1 Orange County Business Journal accessed at www.ocbc.com on October 8, 2025.

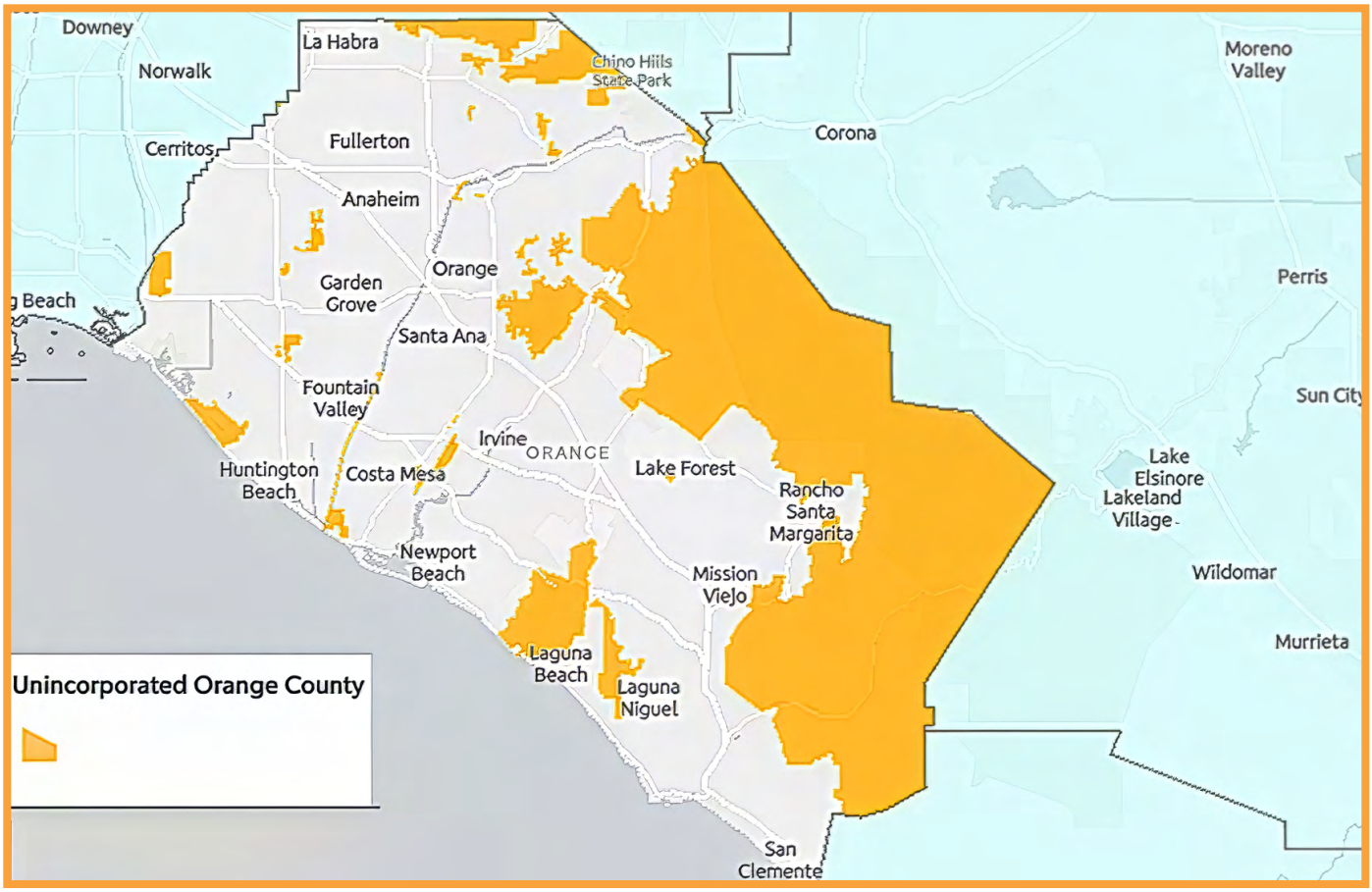
Scope

The scope of the CAP is twofold: municipal and unincorporated community measures. The County's municipal GHG inventory is vast and within the County's control to manage with reduction targets and measures. Conversely, the unincorporated county is predominately residential with larger GHG emitters already being accounted for under AB32 – Cap and Trade Program. As such, measures aimed at the community are framed as outreach and incentive-based concepts, some of which are already underway and will be referenced throughout this document for informational purposes only.

Approximately 130,000 residents in Orange County live in unincorporated areas that encompass 205 square miles (Figure 1-1). The CAP is intended to guide planning efforts across the County's 22 departments and respective buildings and activities, nearly 19,000 employees, and unincorporated communities so that all residents have access to carbon neutral benefits. The CAP outlines potential activities the County may consider to meet long-term climate goals, subject to future feasibility and environmental review. In this document, "County" denotes County of Orange government, "unincorporated Orange County" refers to unincorporated areas only in Orange County, and "Countywide" refers to Orange County in its entirety, inclusive of both unincorporated and all incorporated cities.

FIGURE 1-1

UNINCORPORATED REGIONS OF ORANGE COUNTY



The following list highlights the approach taken to finalize the CAP and the path forward as well.

1. Verify baseline emission inventory for accuracy.
2. Divide measures between those targeting the unincorporated County and those focused on municipal operations to reduce confusion and provide clarity for future CEQA review.
3. Establish GHG reduction targets.
4. Outline potential actions and planning-level timelines for achieving emissions reduction targets.
5. Identify implementation pathways for future consideration, subject to feasibility and environmental review.
6. Monitor and report on progress on a biannual basis.
7. Revise the CAP every five years including updating the emission inventory to identify new funding sources, shifts in priorities and demonstrate progress (i.e., 2030, 2035, 2040 and 2045).

The CAP includes a detailed quantification of GHG sources that establishes an accurate baseline for forecasting emissions both with and without CAP implementation, while also accounting for future growth. Emissions inventories are calculated for municipal operations (referred to as municipal inventory) and activities of residents in unincorporated areas (referred to as community inventory). The Preliminary CAP presented a draft of inventories and forecasts, while the Final CAP revises the inventories as needed and establishes the GHG reduction targets.

The CAP identifies potential policies, programs, and tools that the County may consider to support future emissions reduction activities. The measures are intended to balance competing priorities such as sustainability, reliability, and cost-effectiveness and be within the jurisdictional authority of the County. A comprehensive review of all County departments, with an emphasis on the industrial-serving departments (i.e., landfills, facilities operating 24 hours per day, etc.), was conducted to identify target measures and was the basis for determining the four core municipal measures. If approved by the Board of Supervisors, a full CEQA analysis of the municipal measures in the CAP would be initiated at that time before implementation of any proposed measures.

The CAP development process included a public outreach component, consisting of one full public forum in May 2025 as well as a stakeholder engagement process including environmental organizations, cities, the business community, and internal County departments.

The CAP summarizes stakeholder feedback and outlines planning-level proposed implementation timelines that align with the County's budget cycles, federal and state funding opportunities, and regulatory requirements. The County's Sustainability Team will oversee the implementation and monitoring of the CAP.

Recent Achievements

The County's departments have collectively advanced sustainability through energy efficiency upgrades, water conservation, waste reduction, and support for renewable energy. Many County facilities have transitioned to LED lighting, installed smart irrigation systems and water-efficient fixtures, and expanded recycling and electronic waste programs. County operations now include digital invoicing, centralized ordering to reduce shipments, and a strong shift toward paperless workflows. Departments are also pursuing LEED certification for new construction and energy audits to guide future efficiency investments.

John Wayne Airport

John Wayne Airport has been awarded Level 2 Carbon Accreditation from Airports Council International (ACI) this year. This milestone reflects the Airport's ongoing commitment to sustainability and environmental responsibility. Airport Carbon Accreditation is the only institutionally endorsed, global carbon management certification program specifically designed for airports. The program independently assesses and recognizes efforts to manage and reduce carbon emissions. The Level 2 accreditation signifies that JWA:

- Developed a Carbon Management Plan to achieve target carbon reductions for Scope 1 and 2 emissions.
- Conducts annual measurement of its organizational carbon footprint.
- Has demonstrated a consistent reduction trend over a three-year rolling average and has a plan for continued reductions.
- Submits data and reporting to independent third-party auditors for verification.

Projects and programs supporting future carbon reductions include:

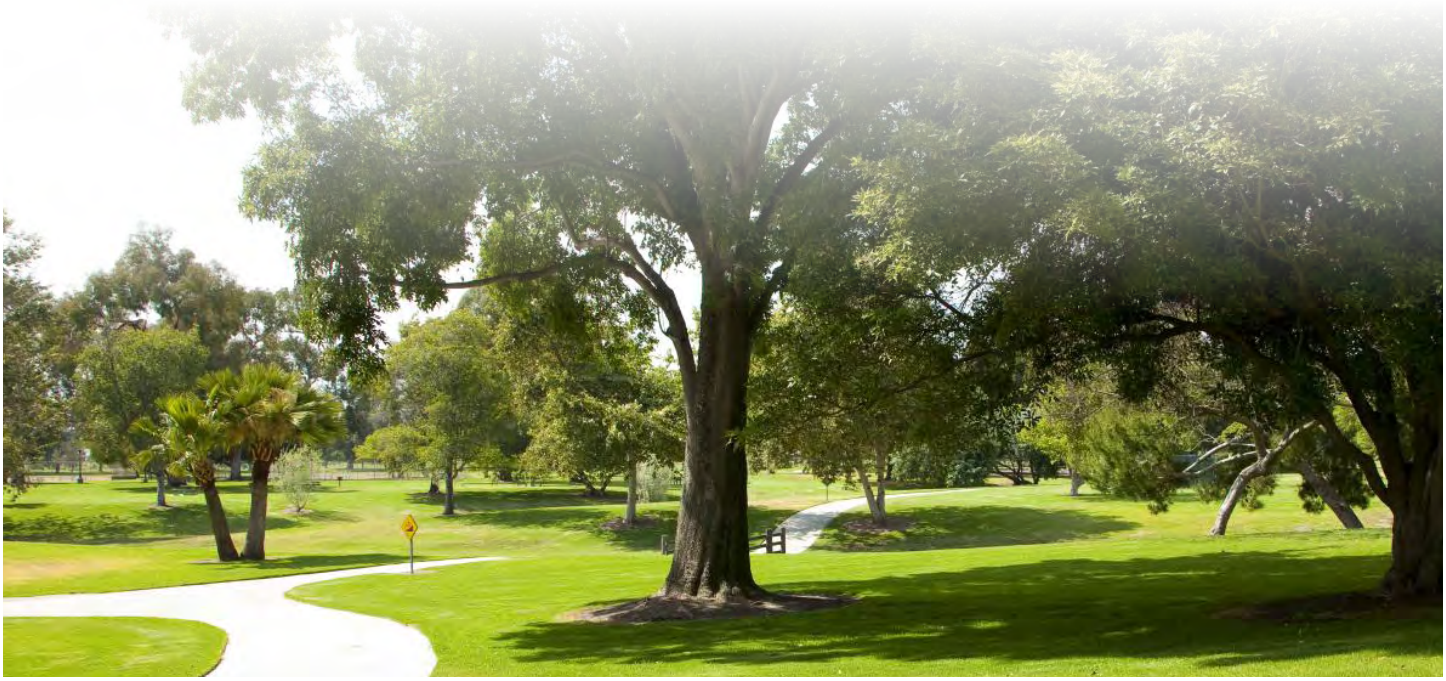
- Energy Supply & Management — JWA is implementing a multi-phase project to upgrade its electrical distribution and power generation infrastructure creating a more robust, reliable, and resilient electrical system for the airport terminal complex. The project will be completed in phases and include upgrades to the Central Utility Plant and electrical infrastructure, allowing for integration of micro-grid capabilities, battery energy storage, renewable energy sources, increased operational efficiency, and reduced water consumption. This power generation project along with the Airport's participation in renewable energy purchases will further decrease the Airports carbon emissions from energy use.
- Green Build Policies — JWA requires that renovations to campus buildings comply with California Green Building Code (CALGreen) Tier 1 Standards (equivalent to the LEED Gold County goal). This policy is being integrated into the ongoing refurbishment of 24 terminal concession spaces, the General Aviation improvement program involving the redevelopment the Fixed Based Operator leaseholds, and Airport improvement projects.

- Energy Efficiency Retrofit Program — Similar to OCPW, JWA is pursuing utility-bill public-purpose-fee-funded building energy audit and incentive programs administered by both SCE and SoCalGas. These programs aid in identifying opportunities for energy efficiency and carbon emission reductions, equipment replacements and provide incentive programs to offset costs. At JWA these programs aid the airport in identifying and implementing projects for lighting, boilers, chillers, and fan replacements; temperature setbacks; and building automation efficiencies.

- Green Fleet Policies and Low-Carbon Transportation Initiatives — These policies include replacing the Airport's fleet with electric vehicle (EV) or other low-carbon vehicles, as available, and supporting Airport partners and guests in vehicle related carbon reductions. Currently the Airport is operating a 50% EV shuttle bus fleet and building out permanent shuttle bus EV charging infrastructure as well as evaluating and implementing improvements to Employee and Guest EV charging. In addition, the Airport has been coordinating with Airlines in Ground Support Equipment (GSE) carbon emission reduction programs. Future improvements include electrical upgrades on the Commercial Airline ramp to support additional EV charging and improvements to the Smart parking system in terminal parking garages to reduce idling and congestion.

OC Parks

OC Parks has implemented an extensive suite of projects that protect natural resources, enhance water and energy efficiency, and improve community access to resilient open spaces. The Capistrano-Doheny Beach Nature-Based Shoreline Adaptation Project was designed to combat erosion and establish dune ecosystems that provide a natural buffer against coastal flooding and habitat loss. Complementary efforts, such as the Opportunistic Sand Nourishment Program and the Craig Regional Park Lake Restoration, have improved shoreline and bank stability and water quality. OC Parks has also invested in smart irrigation controllers, recycled water systems, and energy-efficient HVAC upgrades across multiple parks. Facility modernization includes LED site lighting and roof replacements to improve energy performance. In addition, the department has replaced all pre-2007 diesel equipment with cleaner alternatives, transitioned landscape contractors to battery-operated leaf-blowers, and expanded partnerships for community recycling and coastal cleanup events.



OC Housing and Community Development

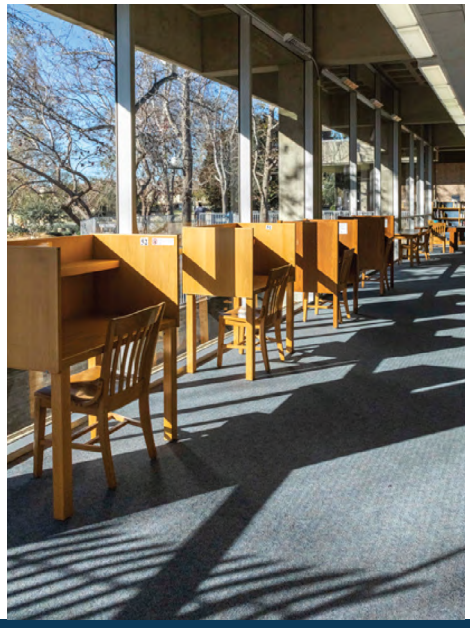
The Orange County Housing Authority (OCHA) has advanced sustainability through programs that reduce emissions and support energy-efficient housing. The department implemented a waiver process for the California Utility Allowance Calculator (CUAC), which removes a key barrier for affordable housing developers to install energy-saving features such as solar arrays and electric heat pumps. OCHA has also significantly reduced travel-related emissions by introducing Remote Video Inspections, cutting inspection miles by approximately 80 percent, and adopting telecommuting and digital document management to reduce paper use and emissions from commuting.

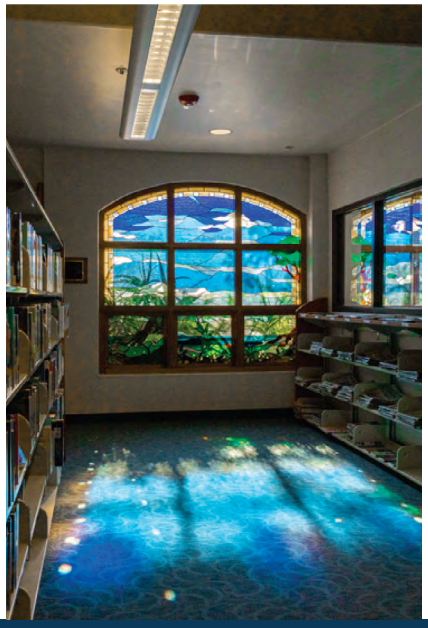
OC Community Services

OC Community Services has enhanced sustainability in its daily operations through the digitization of client resources and communications, expanded use of electronic signatures, and virtual service delivery. These efforts have reduced reliance on paper, improved operational efficiency, and lowered transportation-related emissions. The department has also prioritized the procurement of recycled materials and implemented strategies to minimize waste by repurposing surplus office items.

OC Public Libraries

OC Public Libraries has embraced sustainability both in its infrastructure and public engagement. The department has reduced waste by transitioning from printed to digital communication, implemented Title 24–compliant lighting upgrades, and modernized electrical and HVAC systems to improve building efficiency. Additional improvements include building automation systems, auto-shutoff water fixtures, and drought-tolerant landscaping. The libraries also promote sustainability education through workshops, curated reading materials, and the Library of Things, which encourages borrowing rather than purchasing household items, thereby reducing consumption and waste.





OC Animal Care

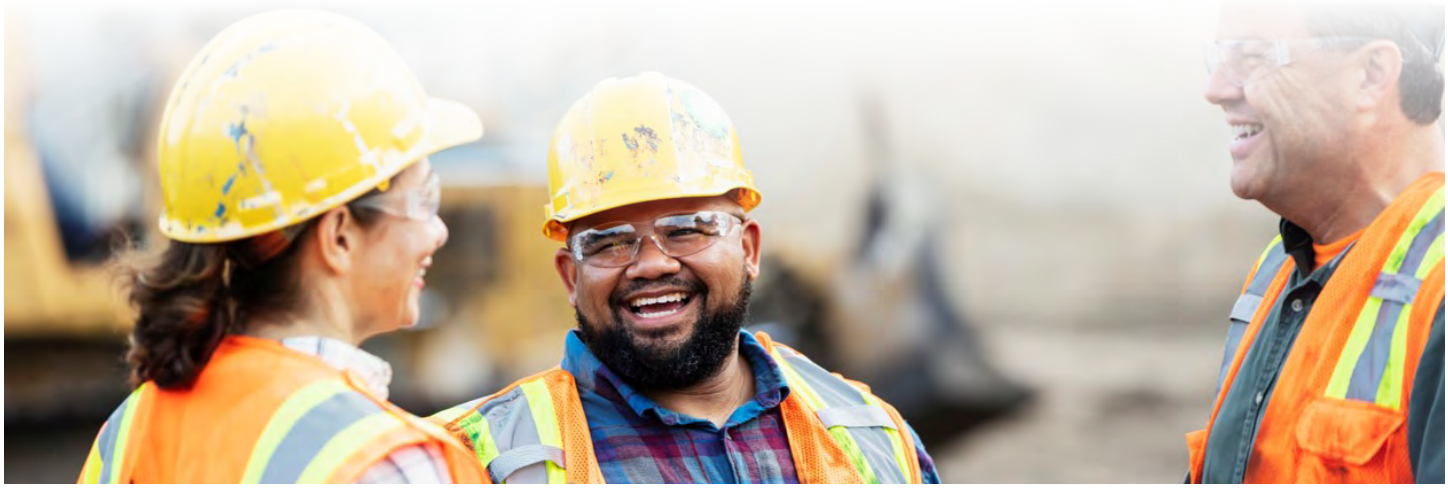
OC Animal Care has demonstrated innovative reuse practices through a partnership with OC Waste & Recycling, utilizing organic material from landfills as ground cover in animal play yards and landscaped areas. The department has also expanded on-site recycling programs and reduced paper use by replacing printed flyers with digital communications.

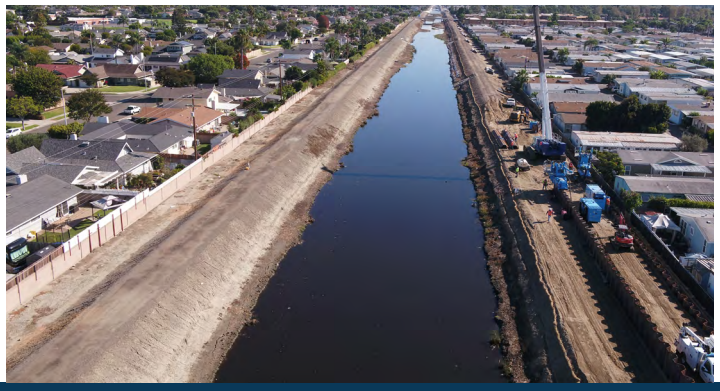
OC Public Works

OC Public Works (OCPW) has led technical and operational advancements in County energy management. The Central Utility Facility (CUF) Steam Condensate Heat Recovery Project is designed to capture waste heat, reducing boiler fuel and water consumption by at least $78,000 annually, and is eligible for SoCalGas incentives under the Large Public Sector Program. The department has also initiated a Fleet Electrification Program that identifies ten County sites for electric vehicle charging installations, with approximately 234 charging ports planned. Conceptual designs and cost estimates have been developed, and applications have been submitted to the Southern California Edison Charge Ready Transport Program to leverage incentive funding.

OCPW is further engaged in state-funded building energy audits through Southern California Edison and SoCalGas programs. These efforts include Strategic Energy Management (SEM) audits of 14 facilities totaling 1.25 million square feet, which identify cost-effective energy efficiency measures and qualify the County for verified-savings incentives. Additionally, the County is pursuing a LEED for Cities Feasibility Analysis to align County policies and carbon targets with the U.S. Green Building Council's sustainability framework.

The County is also advancing Building Energy Auditing and Carbon Intensity Reduction Planning as part of a strategic initiative to achieve long-term emissions reductions and align with California's net-zero objectives. This program will evaluate opportunities for deep energy retrofits and decarbonization across up to six million square feet of County facilities over the next five years.





OC Environmental Resources

Through OC Watersheds and the Flood Control District, the County continues to invest heavily in protecting surface water quality, restoring habitat, and capturing stormwater for beneficial reuse. Key initiatives include the South Orange County Water Quality Improvement Plan (WQIP) Implementation and the initial development of the Orange County Regional Stormwater Capital Improvement Program (OCRSCIP). These programs focus on reducing pollution, enhancing natural hydrology, and maintaining resilient ecosystems throughout the County.

OC Waste & Recycling (OCWR)

OCWR made a large fleet purchase in 2025, swapping out fossil-fueled Ford F150 trucks for its electric Ford Lightning counterpart. This purchase aligns with the Advanced Clean Fleet regulation from the California Air Resources Board while also furthering the CAP's goal of complete fleet conversion of county-owned vehicles. While the cost of an electric vehicle is higher than that of a traditional fossil-fuel vehicle, the County receives cost savings in the form of lower maintenance and eliminated fuel costs. The County further minimizes both its costs and environmental impact by charging these vehicles during off-peak hours.

OCWR and South Coast Water District entered into a Memorandum of Understanding in 4th quarter of 2025 to pursue a joint, environmentally beneficial project. The project would expand desalination efforts at South Coast Water District using renewable natural gas from Prima Deshecha Landfill. This not only lowers GHGs but converts landfill gas into a beneficial energy source while increasing the region's water supply. This measure aligns with both the Natural Resources and Resource Recovery and Waste sectors of the CAP. The County is excited to embark on this joint venture.

The County was honored with the U.S. Green Building Council of California award for Environmental Justice in 2025. The County's pilot program conducting energy audits of mobile home communities was selected. The award brings additional funding and expert assistance to allow the County to visit more mobile home parks and hopefully assist with appliance retrofits, solar installation, battery storage capabilities and other clean energy methods to assist residents with lowering their bills and improving indoor air quality.

California Environmental Quality Act (CEQA) Streamlining

Staying true to the County's vision of a meaningful document that demonstrates tangible results, the Municipal portion of the CAP will be further refined and undergo a full CEQA analysis. At the current stage, the CAP is exempt from CEQA as a planning study (Guidelines §15262); the forthcoming CEQA analysis in the Final CAP will evaluate potential impacts and mitigation measures. The CEQA analysis will begin upon approval of the CAP by the Board of Supervisors. At the current stage, the CAP is considered a planning document and more public outreach, and stakeholder engagement will occur during the Implementation Phase and CEQA analysis. The CEQA process will include completing an environmental checklist to determine the appropriate type of environmental analysis required and will ultimately include an additional series of public workshops to solicit further input from the community.

Once the CAP is approved and the County conducts CEQA review, the analysis will determine whether the Municipal CAP may be used to streamline the GHG analysis of future development projects undertaken by the County, by enabling such projects to demonstrate their consistency with the CAP's policies, programs, and requirements. Per CEQA Guidelines Section 15183.5, a "CEQA qualified" CAP must:

- Quantify existing and forecasted GHG emissions.
- Establish a GHG level where activities performed in conformance with the CAP would not be considerable from an emissions perspective.
- Identify the GHG emissions resulting from specific actions, or categories of actions anticipated within the geographic area.
- Specify measures or a group of measures, including performance standards, that, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
- Establish a method to monitor the plan's progress toward achieving that level and require amendments if the plan is not achieving specified levels.
- Be adopted in a public process following environmental review.

This preliminary, planning CAP meets all criteria except that environmental review will be conducted during the final phase to allow for the CAP to be considered "CEQA Qualified."

Is this CAP Mandatory or Voluntary?

This CAP is classified as voluntary, with no state or federal requirements obligating local jurisdictions to develop such a plan. While the State has established GHG reduction targets and implemented regulations concerning renewable energy, building efficiency, vehicle emissions, and landfill controls, these policies do not require municipalities to prepare a CAP or undertake GHG reduction initiatives, except where specific actions are mandated by certain regulations—such as enhanced building efficiency requirements for retrofits.

Several local jurisdictions in California have implemented CAPs either because their General Plan policies require GHG reductions or as part of CEQA reviews for local plans or specific projects. However, the County does not have any local mandate to prepare a CAP. Additionally, as discussed above, some cities and counties use "qualified" CAPs that simplify GHG analysis in

CEQA documents for new developments. However, the County is not seeking CEQA streamlining at this phase of the CAP. As noted above, This CAP is considered a planning document for the County to move forward with a CAP Implementation Plan and full analysis under CEQA. Any future development subject to CEQA will need a GHG analysis conducted for each individual project.

This CAP outlines potential voluntary and planning-level measures for reducing GHG emissions within the County's jurisdiction. The County retains full discretion regarding the adoption and implementation of any or all measures presented in this CAP, as there is no legal requirement to achieve the specified GHG reduction target. The voluntary nature of this CAP enables flexible decision-making as the County progresses. Nonetheless, given the County's commitment to municipal sustainability, further advancements in sustainability investments will continue.

Priority Sectors

The CAP organizes measures to reduce emissions into six priority sectors. [2] The County selected each sector based on the following: potential to reduce emissions, co-benefits, available grant opportunities or funding, alignment with the County's Capital Improvement Program (CIP), and jurisdictional authority.

1. Energy

The County owns more than 800 buildings and many other assets, including parks, an airport, a harbor and three active landfills. These assets produce GHG emissions through energy use. This sector offers opportunities for the County to explore energy efficiency improvements across its facilities. This sector offers the co-benefits of improved indoor air quality to its staff, utility cost savings, criteria pollutant reductions and outreach opportunities to assist our local community partners.

2. Mobility

The County's extensive fleet includes thousands of passenger vehicles, buses, vans, medium- and heavy-duty trucks, on-and off-road construction equipment, airport ground support equipment (GSE), and marine craft. This sector plans for fleet conversion through feasibility and planning studies and offers co-benefits such as reduced traffic congestion, improved health from decreased exposure to pollutants, and cost-savings from reduced fossil fuel dependence. The County has identified many projects that align within its CIP. In addition, fleet conversion to electric vehicles is a California Air Resources Board mandate.

3. Resource Recovery and Waste

The County operates three active landfills, three compost sites and maintains and monitors 20 closed facilities. In 2021, the U.S. Environmental Protection Agency projected that methane from landfills contributed almost 17% of the nation's emissions. The County is studying new landfill gas collection technology and may expand recycling and organic waste management strategies. Co-benefits of these measures include the reduction of criteria pollutants, revenue to the County from converting additional landfill gas to energy, and a reduction of bulk items to the landfills. The County has identified projects that align within its CIP. Three of the CAP's core measures are directly related to this sector.

2 These "sectors" are not traditional emission inventory sectors, but are instead categories of GHG reduction and sustainability measures as defined by the CAP.

4. Environmental Justice

> *CLIMATE CHANGE DISPROPORTIONATELY AFFECTS LOW-INCOME COMMUNITIES AND COMMUNITIES OF COLOR.*

Recognizing the need to prioritize vulnerable communities including California Native American Tribes, the County has made Environmental Justice its own sector. Climate change disproportionately affects communities of color in lower-income areas, causing poor air quality, extreme heat, and infrastructure degradation. Co-benefits also include reduction in health risks, reduced heat island effect, improved indoor air quality, jobs growth and other economic benefits. The objective of this sector is to provide as much outreach and education to low- or moderate-income residents about incentive programs, tax rebates, and opportunities to convert older appliances and HVAC units. The County already received an Environmental Justice Award and funding through U.S. Green Building Council of California to conduct energy audits of mobile home park communities throughout the county and make recommendations for lower-emitting, more efficient alternatives to clean and air and reduce utility costs simultaneously.

5. Natural Resources

Orange County aims to preserve its natural resources and ecosystems while promoting water conservation and best management practices. Goals include increasing access to alternative water sources, setting Countywide water conservation targets, habitat and coastal restoration and implementing stormwater retrofits. An example of one large project the County is exploring is a partnership with local water districts for desalination using the County's renewable natural gas (RNG) from landfill gas. Co-benefits include healthier ecosystems, public health improvements, and economic stability.

6. Resilience

The County is considering strategies to anticipate and respond to climate-related hazardous events, trends and disturbances. By reducing GHG emissions, the County may support broader climate efforts and planning for impacts such as severe wildfires, heatwaves, droughts, disease spread, and rising sea levels that threaten its coastal communities. Ongoing resilience efforts include incorporating climate adaptation into the Local Hazard Mitigation Plan as well as the preparation of the Climate Vulnerability Study (included herein). The CAP supports and builds upon these efforts to ensure public health, safety and well-being of our residents and their homes.

Greenhouse Gases and Climate Change

Global warming occurs when carbon dioxide (CO_2) and other air pollutants collect in the atmosphere and absorb sunlight and solar radiation that have bounced off the earth's surface. Normally this radiation would escape into space, but these pollutants, which can last for years to centuries in the atmosphere, trap the heat, leading to a rise in global temperature. These heat-trapping pollutants—specifically carbon dioxide, methane, nitrous oxide, water vapor, and synthetic fluorinated gases—collectively known as greenhouse gases (GHG), cause the greenhouse effect.[3]

Global warming affects the physical environment as well as all aspects of both natural and human systems – including social and economic conditions and the functioning of health systems. It is therefore a threat multiplier, undermining and potentially reversing decades of progress in public health. As climatic conditions change, more frequent and intensifying weather and climate events are observed, including storms, extreme heat, floods, droughts, and wildfires.[4]

Orange County is part of the South Coast Air Basin which, under the Clean Air Act, is in extreme non-attainment for ozone and serious non-attainment for particulate matter (PM 2.5). These pollutants, ozone and black carbon, a form of fine particulate matter, also contribute to the formation of GHG emissions. Consequently, Orange County residents are breathing some of the worst air quality in the nation, especially in low-income disadvantaged communities that are situated near industrial sources and in proximity to transportation and goods movement-related activity.[5] The detrimental effects of air pollution contribute to asthma and lung damage, respiratory and cardiac diseases, cancer, birth defects, premature death, and other health complications.

Basic human activities are the root cause of global warming. The largest sources of greenhouse gases come from burning fossil fuels for electricity, heat, and transportation. Specific to municipal Orange County, the biggest contributor is landfill gas emissions, 50% of which are methane. The ramifications of climate change have a disproportionate impact on the most vulnerable communities. Environmental change cannot occur without a corresponding shift in human behavior.

3 Natural Resources Defense Council, Global Warming 101, April 7, 2021, accessed on February 28, 2024.

4 World Health Organization, Key Facts of Climate Change, October 12, 2023, accessed via the world wide web on February 27, 2024.

5 Priority Climate Action Plan, Los Angeles County/Orange County Metropolitan Statistical Area, Submitted to US EPA, March 1, 2024.

Environmental Justice and Vulnerable Populations Co-Benefit

The impacts of climate change will never be distributed evenly; some communities will experience more harm from extreme-weather events and have fewer resources to recover and adapt. Often, these same communities are the least likely to benefit from policies and programs to reduce emissions, perpetuating the cycles of disinvestment that contribute to existing disparities. These communities can be described as vulnerable populations, which is an imperfect term attempting to describe a variety of complicated issues. It does not describe any intrinsic characteristic of a population group, but rather a failure of society which has rendered them vulnerable.

A mapping tool used to help identify vulnerable communities is CalEnviroScreen. California's Office of Environmental Health Hazard Assessment (OEHHA), on behalf of the California Environmental Protection Agency, developed CalEnviroScreen to help identify communities suffering from cumulative impacts of multiple pollutants and people who are vulnerable to the effects of pollution. The latest version, CalEnviroScreen 4.0, combines data from up to 21 indicators that reflect pollution levels and population sensitivity for each census tract. These indicators are organized into four components: exposures, which measure direct contact with pollutants; environmental effects, which capture the presence of hazardous facilities or contaminated sites near communities; sensitive populations, which reflect age- or health-related vulnerability to pollution; and socioeconomic factors, which represent social and economic conditions that can heighten susceptibility to environmental harm. Utilizing the indicator percentiles, component scores are produced, which are then used to calculate the pollution burden and population characteristic of each census tract, resulting in a final CalEnviroScreen score.

In **Figure 1-2**, census tracts receive a score ranging between 10 to 100 percent. Census tracts with lighter green colors have lower scores corresponding with lower pollution burdens and sensitives, and census tracts with darker red colors have the higher CalEnviroScreen scores and therefore, a relatively high pollution burden and population sensitivities.

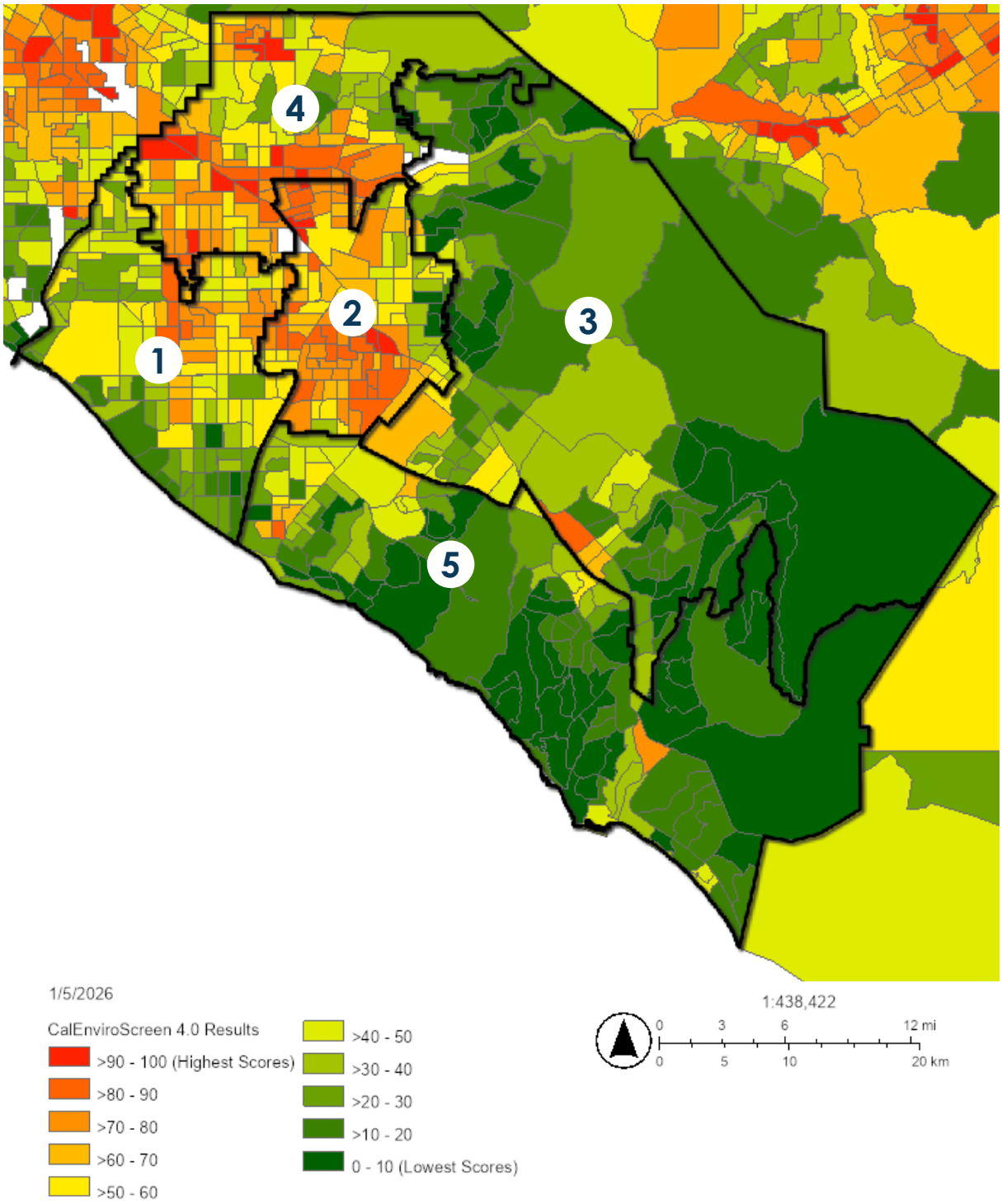


FIGURE 1-2

CALENVIROSCREEN 4.0 RESULTS BY OC SUPERVISORIAL DISTRICT

District 1

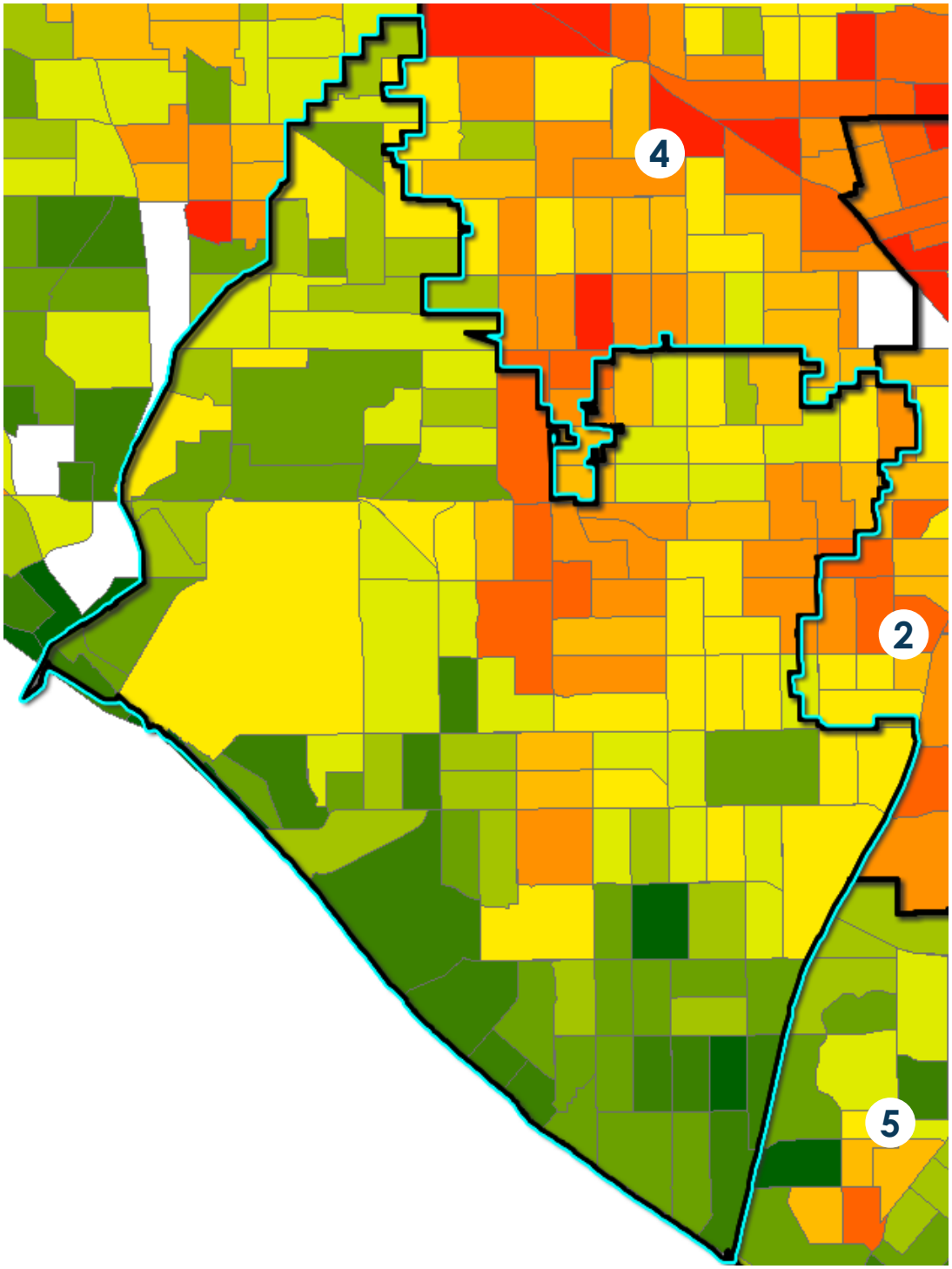


FIGURE 1-3

CALENVIROSCREEN 4.0 RESULTS - DISTRICT 1

District 2

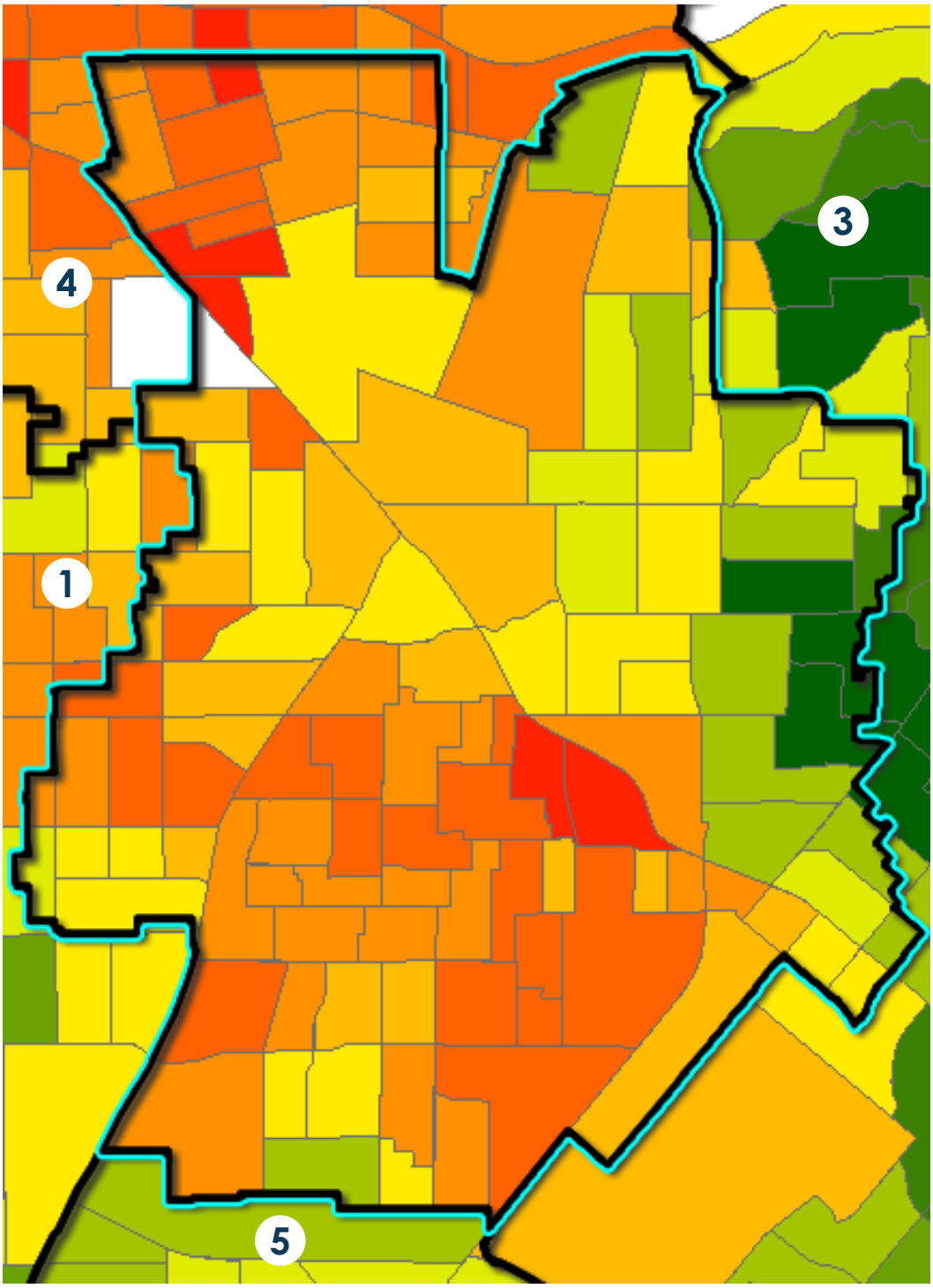


FIGURE 1-4

CALENVIROSCREEN 4.0 RESULTS - DISTRICT 2

District 3

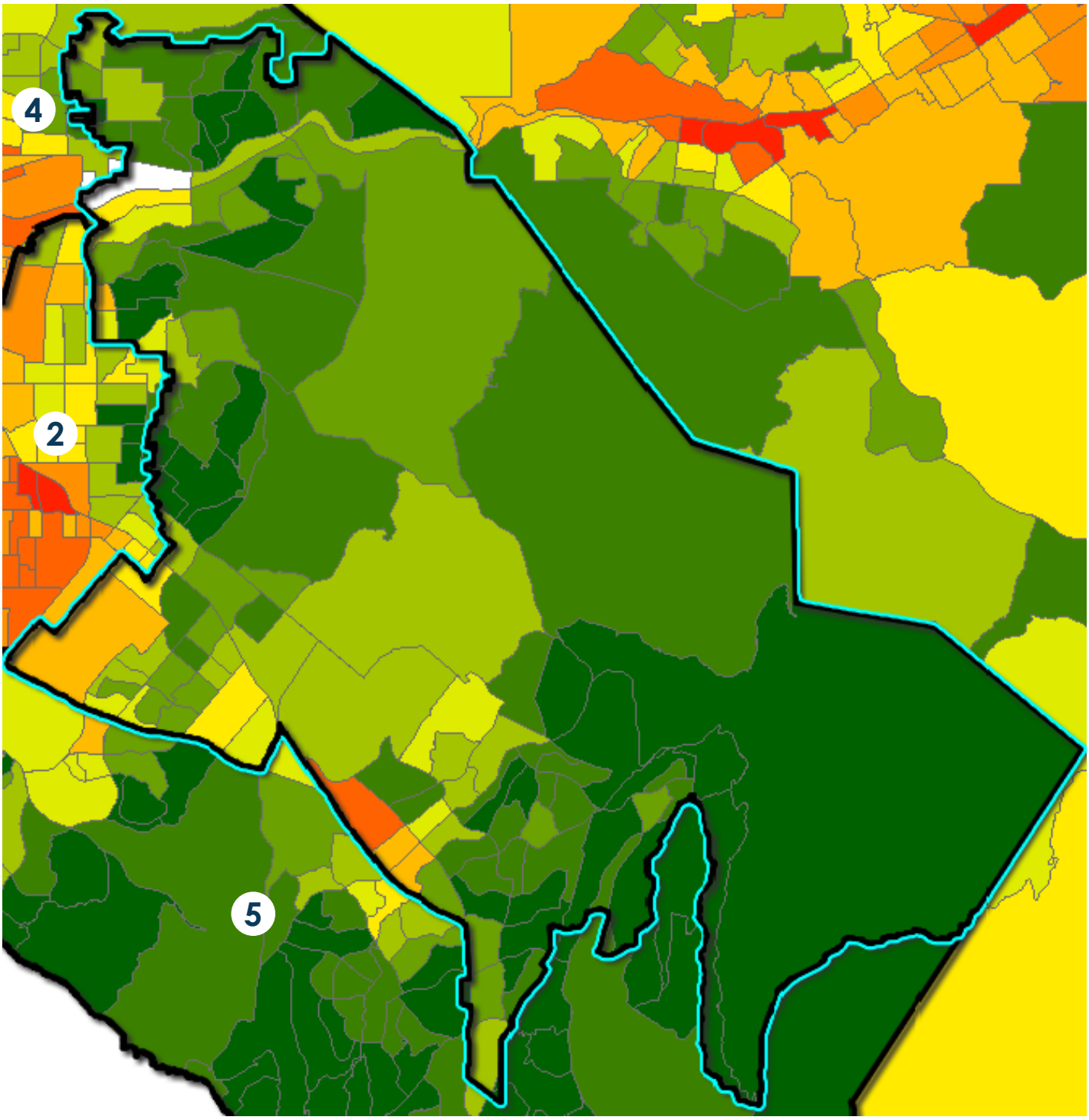


FIGURE 1-5

CALENVIROSCREEN 4.0 RESULTS - DISTRICT 3

District 4

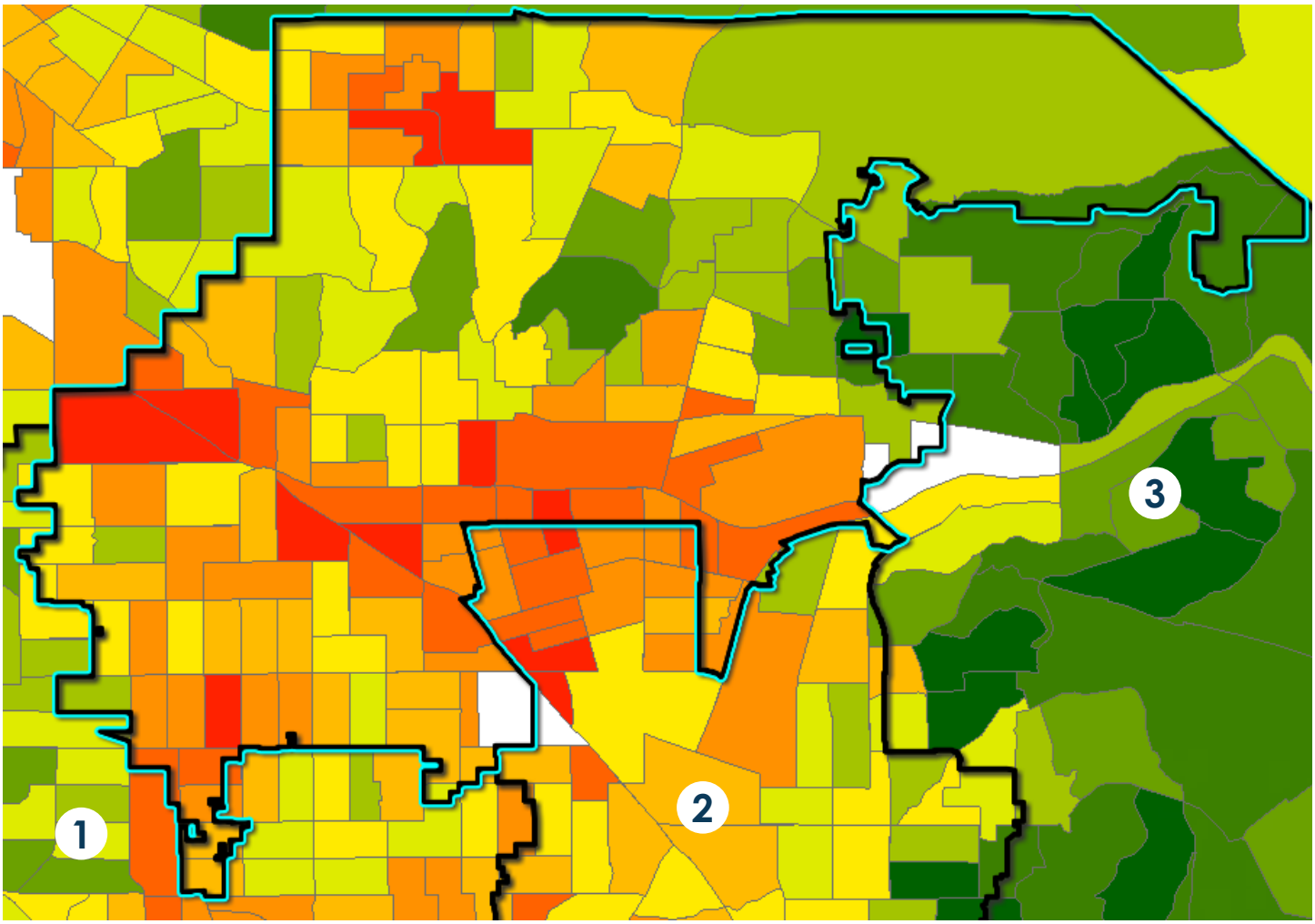


FIGURE 1-6

CALENVIROSCREEN 4.0 RESULTS - DISTRICT 4

District 5

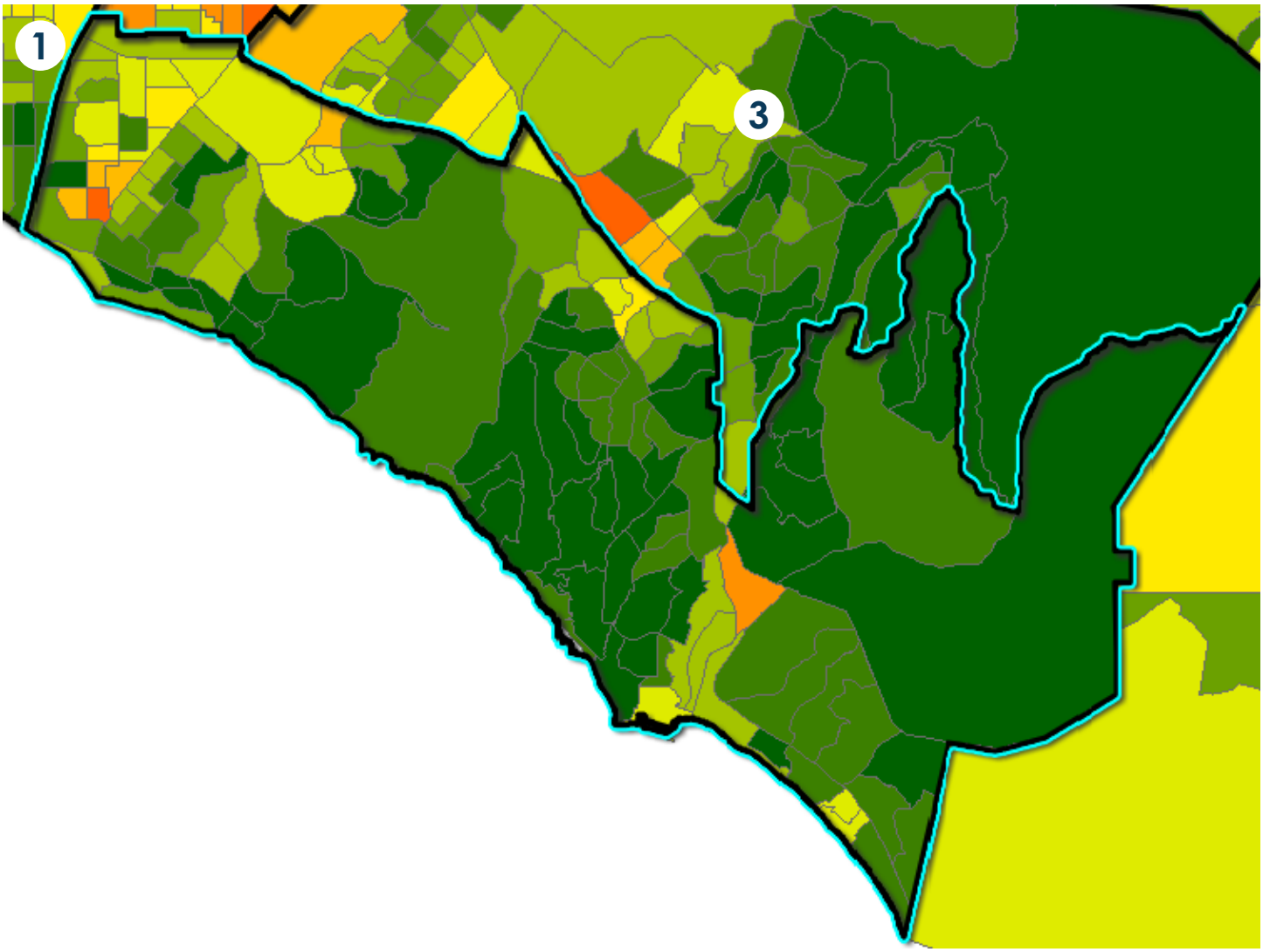
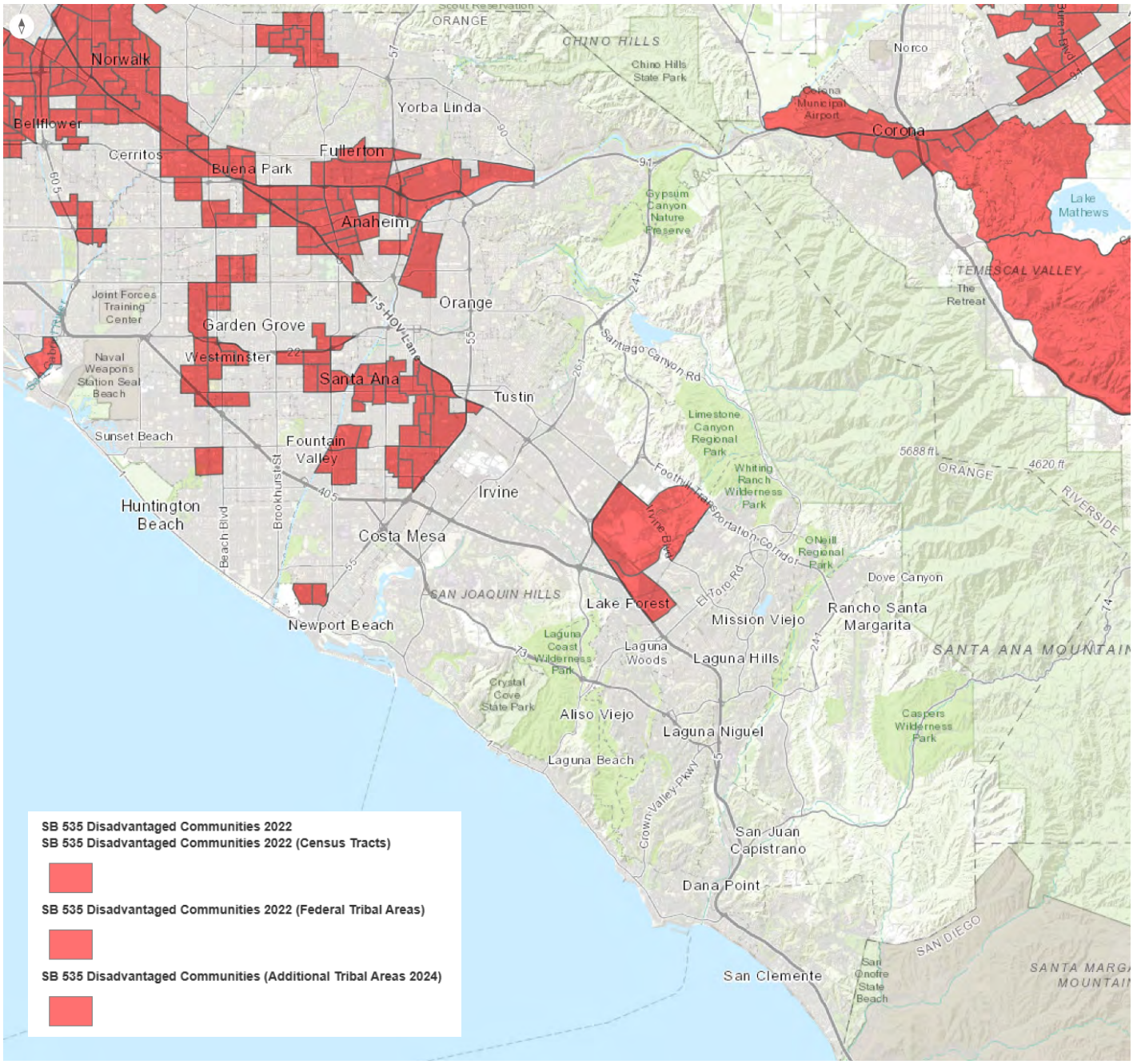


FIGURE 1-7

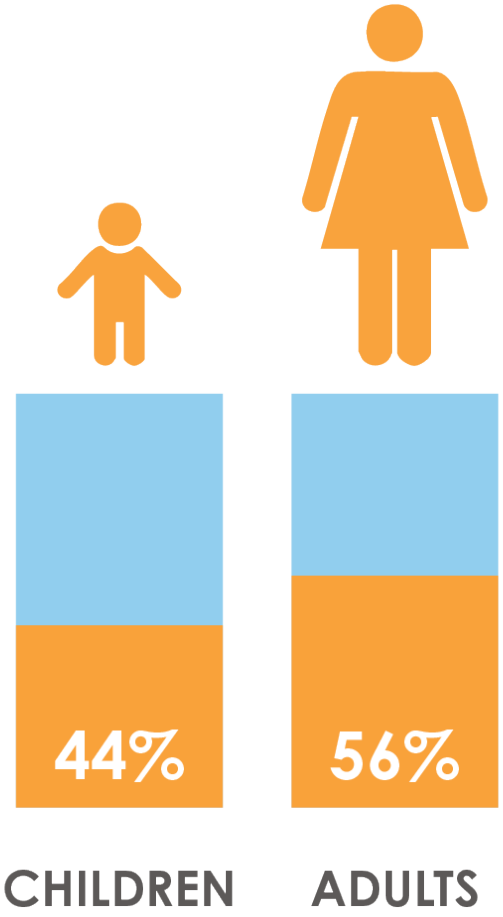
CALENVIROSCREEN 4.0 RESULTS - DISTRICT 5



City of Costa Mesa, City of Newport Beach, County of Los Angeles, Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

FIGURE 1-8

DISADVANTAGED COMMUNITIES MAP – SB 535, UTILIZING CALENVIROSCREEN 4.0



Though Orange County is often depicted as an affluent area known for its pristine beaches and high cost of living, low-income communities are numerous. For example, a significant portion of Countywide population relies on Medi-Cal. Specifically, in July 2024, there were 1,016,878 residents enrolled in Medi-Cal, which is 32 percent of the county's population. Of this number, 44 percent are children and teens. [6]

Moreover, economic disparities within Orange County are significant. Red Zones are defined as census tracts where unemployment rates are at least 2.0 percent higher than the national average and average per capita income is less than 80 percent of the national average. This translates to a census tract with an unemployment rate of 7.3 percent or higher and per capita incomes of $33,009 or lower. Orange County currently has 48 Red Zones; comprising 9 percent of the population Countywide or 289,752 residents [7] It is for these reasons among others that Environmental Justice has been identified as a critical target sector of this CAP.

6 UC Berkeley Labor Center, data obtained from the California Department of Health Care Services, accessed via www.laborcenter.berkeley.edu on October 8, 2025.

7 Draft Orange County Workforce and Economic Development Division Comprehensive Economic Development Strategy (2024-2029), May 2024.

TABLE 1-1

ORANGE COUNTY RED ZONES BY CITY[8]

	Total Population	Population Living In Red Zones	Percent Of Population Living In Red Zones	Number Of Red Zone Census Tracts
Anaheim	335,946	54,303	16%	8
Buena Park	83,359	5,627	7%	1
Fullerton	143,013	11,097	8%	2
Garden Grove	171,195	49,485	29%	9
Huntington Beach	196,469	7,808	4%	1
Irvine	305,688	23,065	8%	2
La Habra	62,037	12,245	20%	3
Orange	138,155	7,020	5%	1
Placentia	51,327	7,023	14%	1
Santa Ana	304,258	64,282	21%	11
Seal Beach	24,871	701	3%	1
Tustin	79,696	16,884	21%	3
Westminster	90,660	30,212	33%	5
Orange County	3,151,946	289,752	9.2%	48

8 Source: U.S. Census Bureau, American Community Survey; California Department of Finance, Demographic Research Unit.

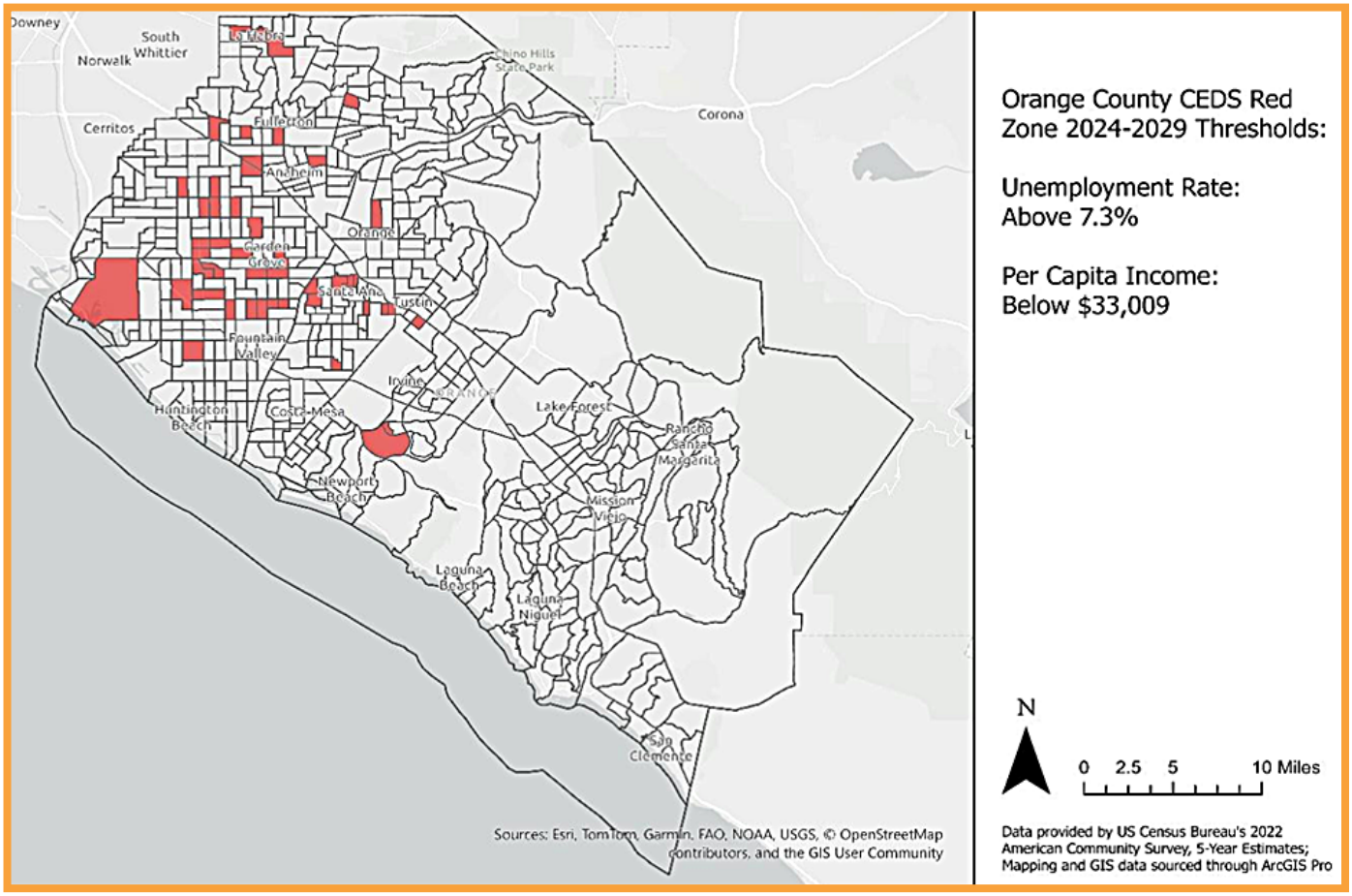


FIGURE 1-9

ORANGE COUNTY COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY RED ZONES

Public Health Co-Benefit of the Climate Action Plan

A CAP typically provides a wide range of co-benefits, which are additional positive outcomes beyond mitigating climate change. Public health is one of the more important co-benefits identified in the CAP. Climate change is one of the century's top public health priorities, affecting all aspects of life and the environment. It leads to long-term health impacts that cut across all ages and sectors. These negative human health impacts include increased injuries from natural disasters and extreme weather events, a rise in chronic conditions related to air, water, and environmental pollution, and more frequent outbreaks of infectious diseases. Climate change is expected to amplify these existing health threats. The California Department of Public Health provides a comprehensive overview of the wide range of health impacts resulting from climate change, as shown in **Figure 1-9** from the Department's website.

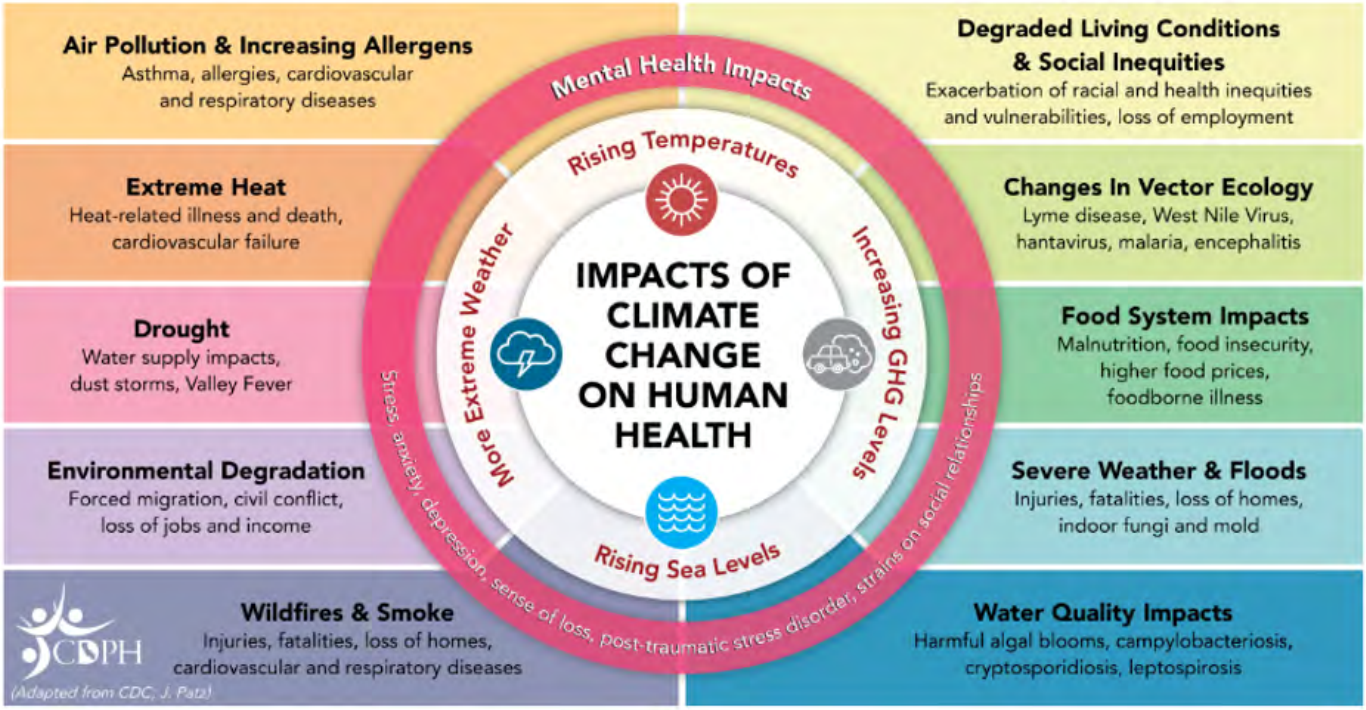


FIGURE 1-10

IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH (ADAPTED FROM THE CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC) AND J. PATZ)

Adapting to climate change and caring for the community is a shared responsibility. In 2009, the Center for Disease Control and Prevention established the Climate and Health Program which initiated the Climate-Ready States and Cities Initiative (CRSCI) and developed the Building Resilience Against Climate Effects (BRACE) framework. This five-step process identifies how climate change affects human health and outlines steps that can be taken to protect communities. [9] The framework is applicable not only to the health sector but also to government, energy, agriculture, and transportation sectors. Climate change strategies must focus on social determinants of health, as non-medical factors and social circumstances in which people are born, grow, live, work, and play significantly influence health outcomes.

9 https://www.cdc.gov/climate-health/php/climate_ready/?CDC_AAref_Val=https://www.cdc.gov/climateandhealth/climate_ready.htm

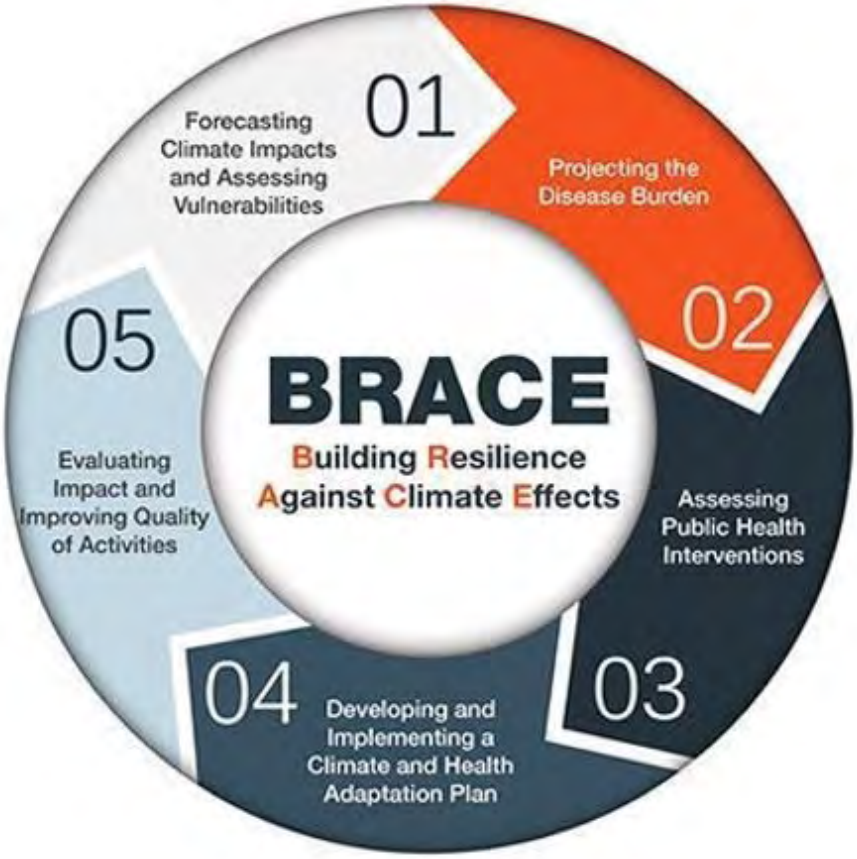


FIGURE 1-11

CDC BRACE FRAMEWORK

Locally, the OC Health Care Agency (HCA) provides a variety of preventative and regulatory services to protect and promote health. These services include mental health services, alcohol and drug use services, preventive health services for the aging, health care for incarcerated individuals, communicable disease control, immunizations, public health community nursing and clinics, food protection, hazardous waste regulation, water quality monitoring, and pollution prevention. The HCA collaborates with both public and private sectors to coordinate resources effectively.

Public Health Green Workforce Projection

Environmental Scientists, Health Safety Specialists, and Environmental Program Managers working to protect the environment and public health have a projected job growth resulting in approximately 6,900 annual job openings. According to the Bureau of Labor and Statistics, this field is expected to expand and grow by 6% in Orange County by 2032. Within the County, OC Health Care Agency has over 2,800 employees on their team dedicated to working in partnership with the community to deliver sustainable and responsive services that promote population health and equity. Job opportunities with OC Health Care Agency can be found on the County Careers website.

Economic Co-Benefit of the Climate Action Plan

Green Jobs Creation

The green economy encompasses a wide range of industries, and the jobs within it vary significantly.

Not all green jobs are identical; each has the potential to influence climate action uniquely, including but not limited to industries that promote green technologies, energy from renewable sources, energy efficiency, pollution reduction, greenhouse gas reduction, recycling and reuse, natural resources conservation, environmental compliance, and public awareness education/training.

The U.S. Bureau of Labor and Statistics has categorized green jobs based on their impact on sustainability objectives into a few categories:

- Output: Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources.
- Process: Jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or managing the use/conservation of natural resources.

Economic Development in Orange County

The 2024-2029 Comprehensive Economic Development Strategy Report (2024-2029 CEDS Report) was developed by the Orange County Community Resources, Orange County Community Services' Workforce and Economic Development Division (OCCS/WEDD), in partnership with the Orange County Workforce Development Board. This report identifies six key goals and strategies to maximize career placement and growth potential for Orange County residents in green jobs:

GOAL 1 - Provide World-Class Education, Career, and Workforce Opportunities to Address the Skills Gap

- Help industry sectors fill key occupations by identifying skill sets needed and providing access to training and education resources to build career pathways that are responsive to industry need.
- Access to skills training and job training programs leading to industry recognized credentials in high-skill and high demand industry sectors. Career Services | Workforce Solutions (ocworkforcesolutions.com)

GOAL 2 - Focus on Residents Living in Disinvested Communities

- Develop specific project proposals focused on Red Zones/Disinvested Communities to help spur economic and employment growth.
- Improve access to high-quality, high-paying employment opportunities with support services to help reduce any additional barriers Support Services | Workforce Solutions (ocworkforcesolutions.com)

GOAL 3 - Promote Key Industry Clusters Such As Green Energy

- Encourage the support, expansion, and retention of key industry clusters in the region through programs that build a talent pipeline.
- Apprenticeship programs, aiming to serve 500,000 apprentices by 2029. This initiative exists to boost workforce development and economic growth, and focuses on sectors such as healthcare, technology, and construction. Local Workforce Development Boards and educational institutions are working collectively to engage employers

GOAL 4 - Improve Orange County's Economic Competitiveness in a Global Economy

- Increase investment and support of small businesses and start-ups while promoting innovation and entrepreneurship.
- Leverage Workforce and Development program resources. For Businesses | Workforce Solutions (ocworkforcesolutions.com)

GOAL 5 - Plan And Develop State-Of-The-Art Infrastructure

- Expand and improve existing transportation infrastructure to help reduce congestion and travel times for commuters.
- Focus on expanding affordable housing options to help better attract and retain young families and professionals into the region.

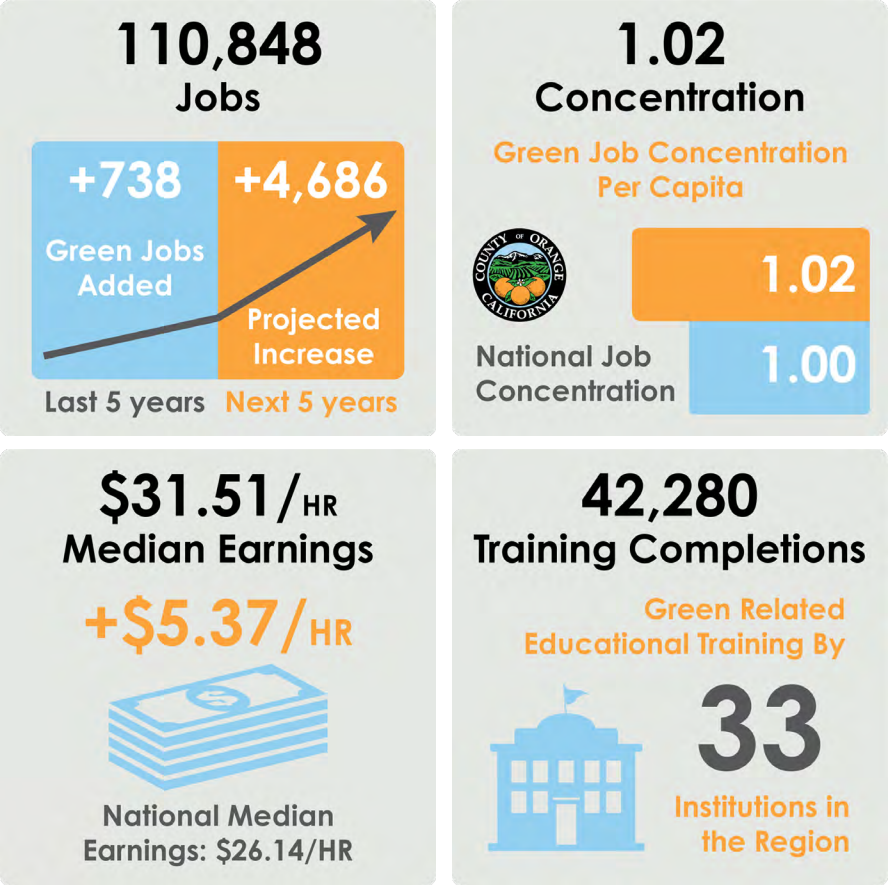
GOAL 6 - Foster a Greater Regional Collaboration by Increasing Economic and Workforce Development Partnerships

- Convene meetings and/or conferences that encourage cross-pollination between Orange County economic and workforce development organizations and professionals that takes all Orange County residents into account, including the county's Disinvested Communities. Orange Workforce Alliance

OCCR/OCCS/WEDD, in partnership with the Board of Supervisors-appointed Orange County Workforce Development Board (OCWDB) oversees Orange County's workforce development activities and establishes programs in response to meet the local workforce needs. These activities include providing labor market information, employment and training services, and business assistance.

Central to OCWDB's ability to provide services and respond to industry workforce needs is the network of Workforce Solutions Centers, satellite centers and youth employment and training programs located throughout the County form the backbone of these efforts. OC Workforce Solutions, an American Job Center of California (AJCC) that provides comprehensive no-cost employment and training services for job seekers, youth, dislocated workers, people with disabilities, veterans, and other community members facing barriers.

The OC Workforce Solutions Business Solutions team supports local businesses with hiring and staffing solutions, customized training programs, business resources, layoff aversion, and outplacement assistance, also at no-cost. Training for green jobs is offered to eligible individuals through training providers offering over 100 courses related to green job skill development. Industries range from construction trades (carpenters, welding, HVAC, electricians, solar panels), forestry, energy, logistics, environmental remediation, solid waste management, water treatment management, and advanced manufacturing. For more information about workforce programs and program eligibility visit: About WIOA | Workforce Solutions (ocworkforcesolutions.com).



Current data shows that Green Jobs increased by 738 additional unique positions from 2018-2023 (0.7%), less than the national growth rate of 10.4%. The occupations are projected to increase by 4,686 additional unique positions from 2023-2028 (4.2%), less than the national projected growth rate of 7.5%.

Regional job concentration per capita for Green Jobs is 1.02 times the national job concentration. In other words, there are 2% more Green Jobs in this region than the average region nationwide. Cost of labor in the region is above median. The median earnings for entry level Green Jobs in the region is $31.51/hr., which is $5.37/hr. above the national median of $26.14/hr.

5,127
Employers Competing
For Green Related Jobs In a Year

25,352
Unique Job Postings
For Green Related Jobs In a Year

Cost of Living
Living in Orange County Makes Talent
21% More Expensive

With the rise of "green collar" job development, green technology presents exciting opportunities. Orange County holds a unique position, boasting a 50% higher concentration in green technology employment compared to the state of California. According to the Orange County Workforce Development Board, Orange County is particularly strong in the green transportation cluster and more concentrated in employment in this industry sector relative to the state. The Orange County Transportation Authority (OCTA) is Orange County's primary transportation agency with a mission to develop and deliver transportation solutions to enhance the quality of life and keep the county moving. OCTA has a long-standing history of environmental stewardship and has been proactively laying the groundwork for a resilient transportation system. This includes several key efforts with OCTA's approximately 1400 employees, outlined in the 2024 OCTA Climate Adaptation and Resiliency Plan. Strategies in this plan include:

Climate Adaptation Strategies:

1. Air Quality & Emissions Management
2. Buidling & Infrastructure Development
3. Emergency Preparedness
4. Human Comfort& Health Enhancement
5. Greenery & Landscape Mangement
6. Energy Efficiency & Renewable Energy

Sustainability Strategies:

1. 100% Zero-Emission Bus Fleet
2. Cleaner Non-Revenue Fleet
3. Facility Energy Efficiency
4. Facility Electrification
5. Onsite Renewables
6. Purchase Renewable Energy
7. Purchase Renewable Energy Credits

OCTA is expected to experience growth in the coming years, but specific projections for the next five years are not readily available. However, it's worth noting that the total economy is projected to add about 4.7 million jobs during this decade, with employment reaching 169.1 million by 2032

Policies like AB 32 and investments from the American Recovery and Reinvestment Act signal future growth in the energy and environmental green technologies field. The U.S. Bureau of Labor Statistics projected growth for the below green occupations in Orange County by 2030 (Table1-2 & Table 1-3).

TABLE 1-2

SELECTED GREEN OCCUPATIONS PROJECTED EMPLOYMENT GROWTH COUNTYWIDE, 2020-30

Occupation	New Jobs, Projected 2020-2030
Environmental scientists and specialists, including health	7,300
Solar photovoltaic installers	6,100
Wind turbine service technicians	4,700
Environmental science and protection technicians, including health	3,600
Environmental engineers	1,900
Conservation scientists	1,500
Environmental engineering technologists and technicians	1,300

TABLE 1-3

SELECTED GREEN OCCUPATIONS PROJECTED EMPLOYMENT GROWTH COUNTYWIDE, 2020-30

Occupation	Median Annual Wage 2021	Employment 2020	Employment, Projected 2030	Typical Entry-Level Education
Environmental engineers	$96,820	52,300	54,300	Bachelor's degree
Environmental scientists and specialists, including health	$76,530	87,100	94,400	Bachelor's degree
Conservation scientists	$63,750	25,300	26,800	Bachelor's degree
Wind turbine service technicians	$56,260	6,900	11,700	Postsecondary nondegree award
Environmental engineering technologists and technicians	$48,390	17,300	18,600	Associate's degree
Solar photovoltaic installers	$47,670	11,800	17,900	High school diploma or equivalent
Environmental science and protection technicians, including health	$47,370	34,200	37,800	Associate's degree

Orange County must expand its workforce to meet the growing demand for green jobs. This demand is driven by emerging technologies, legislative mandates, green building commitments, grant opportunities, and significant infrastructure investments aimed at achieving carbon neutrality by 2045. Legislative mandates include Senate Bill (SB) 1383, affect the County's landfill operations and necessitates increased support staff at all three active landfills as well as its OCWR Headquarters in Civic Center Plaza in Santa Ana. Additional mandates such as zero-emission passenger cars and trucks by 2035, electrical grid infrastructure improvements, and drought-resistant landscaping requirements will all require workforce expansion. Grant opportunities would also result in the creation of green jobs. The County is prepared to provide the training needed to qualify individuals for these positions and any future roles, aiming to bridge the gap and reduce Red Zone communities located within the County.

Funding Opportunities and Grant Competitiveness

As of this publication, the federal government made cuts to many of its climate-related funding opportunities including Building Resilient Infrastructure and Communities (BRIC), parts of the Inflation Reduction Act (IRA), Hazard Mitigation Grant Program (HMGP) among others. These cuts will likely increase reliance on state or local grant funding. This makes an Implementation Plan and a CEQA qualified CAP even more essential to position the County to maintain a competitive edge for a variety of funding sources. Some of the more important programs currently available are described below.

While many of the grant opportunities within the IRA have been eliminated, the County has still been applying wherever feasible. One notable opportunity to come out of the IRA for the Southern California region is the Invest Clean Program through the South Coast Air Quality Management District (AQMD).

INVEST CLEAN

The region applied for funding through the U.S. Environmental Protection Agency under the Climate Pollution Reduction Grant Opportunity (CPRG) program. The program provided $5 billion in grants to states, local governments, tribes, and territories to develop and implement ambitious plans for reducing greenhouse gas emissions and other harmful air pollution. The program aims to transition America equitably to a low-carbon economy through the deployment of new technologies, operational efficiencies, and other GHG-reducing measures. The first phase of the CPRG program is the Priority Climate Action Plan (PCAP). The Los Angeles-Long Beach-Anaheim, CA metropolitan statistical area (MSA) PCAP covers Los Angeles and Orange Counties. The County of Orange, as part of the MSA, submitted its PCAP to the U.S. EPA on March 1, 2024. The document provides the roadmap of measures to a lower-carbon environment with less reliance on fossil fuels. The MSA was awarded $500 million in funding for the INVEST CLEAN initiative,

which was the largest award in the nation's history, and the only award given within the State of California. INVEST CLEAN projects will decrease regional GHG emissions by 12 million $MTCO_2e$ from 2020 to 2050.

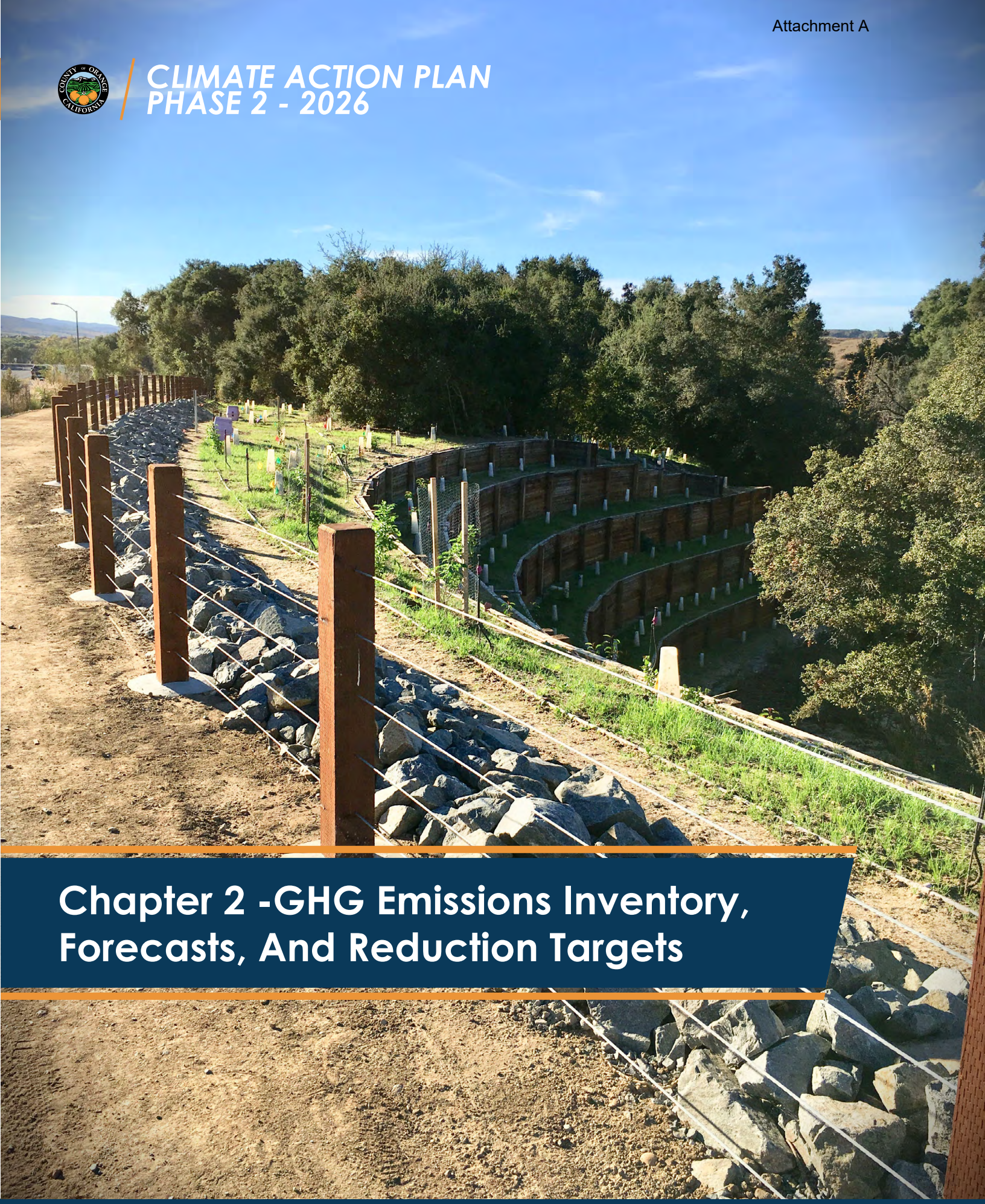
The AQMD is in the process of soliciting project proposals in the areas of charging infrastructure, locomotive pilot programs, and cargo-handling equipment replacements. The Southern California Association of Governments will also be releasing an additional bucket of funding for vehicle replacement incentives. The County is currently pursuing this funding for its extensive fleet to assist with the cost of fleet conversion.

Proposition 4 – California Climate Bond

California voters passed Proposition 4 in November 2024. Here's how the $10 billion from Proposition 4 is meant to be allocated throughout California:

- $3.8 billion for safe drinking water, drought, flood, and water resilience programs
- $1.5 billion for wildfire and forest resilience programs
- $1.2 billion for coastal resilience programs
- $1.2 billion for biodiversity protection and nature-based climate solution programs
- $850 million for clean air programs
- $700 million for park creation and outdoor access programs
- $450 million for extreme heat mitigation programs
- $300 million for climate-smart, sustainable, and resilient farms, ranches, and working lands programs

While the funds are being administered by the California Natural Resources Agency, they will be distributed by approximately 30 state agencies ranging from CalFire to the Wildlife Conservation Board. The County has already applied for funding under the Prop 4 opportunity for wildfire resilience and will be continuing these efforts in the coming fiscal years. The County will also be applying for its renewable energy plant for desalination as well as any other opportunities as they arise.



Chapter 2 -GHG Emissions Inventory, Forecasts, And Reduction Targets

GHG Emissions Inventory, Forecasts, & Reduction Targets

Municipal Greenhouse Gas Emissions Inventory

The 2018 GHG emissions inventory for County of Orange municipal operations forms the baseline of the CAP. The year 2018 was selected because it is the most recent year for which complete data is available. The GHG inventory is compliant with the Local Government Operations Protocol (LGO Protocol) [10] and accounts for emissions of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which is reported in metric tons of carbon dioxide equivalents ($MTCO_2e$).

The municipal emissions inventory represents GHG emissions that occur due to the County of Orange's operations. Municipal emissions are not separate and distinct from the community inventory but are instead a subset of the community inventory. [11] The municipal inventory includes emissions sources over which the County of Orange has direct operational control or influence. By measuring emissions from its own facilities and operations and taking actions to reduce them, the County of Orange is committed to taking a leadership role in reducing GHG emissions.

The municipal inventory captures emissions from the following sectors:

- **Electricity:** This sector accounts for indirect emissions associated with electricity use in County-owned buildings and operations.
- **Natural Gas:** This sector accounts for direct emissions associated with purchased natural gas for County-owned buildings and operations.
- **Fleet:** This sector accounts for emissions associated with fuel combusted by County-owned/operated on-road vehicles and off-road equipment.
- **Landfill:** This sector accounts for emissions from decomposing waste in County-owned/operated landfills. [12]
- **Water & Wastewater:** This sector accounts for indirect electricity emissions associated with water use at County-owned buildings and properties and water discharged from County-owned buildings and properties into a wastewater treatment system.
- **Employee Commute:** This sector accounts for emissions associated with fuel combustion by County employees' vehicles during their commute.

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10 California Air Resources Board, California Climate Action Registry, ICLEI, and The Climate Registry, 2010. Local Government Operations Protocol. Version 1.1 May 2010. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/protocols/lgo_protocol_v1_1_2010-05-03.pdf

11 This is true for each source except for emissions associated with landfill operations, which captures waste generated by jurisdictions outside of the unincorporated County boundary. Results of the community inventory can be found in Chapter 4.

12 Municipal landfill operation emissions differ from solid waste sector emissions reported in a community inventory. Landfill operation estimates account for methane generated by the ongoing decomposition of waste disposed over many years—often decades—prior to the reporting year, whereas community solid waste emissions typically account for methane generated by waste disposed of within the inventory year itself.

In 2018, emissions generated by County of Orange municipal operations amounted to 995,936 $MTCO_2e$. Landfill operations accounted for the largest source of municipal emissions, contributing 865,360 $MTCO_2e$ (87 percent). These emissions are associated with waste decomposition at five County of Orange-owned and -operated landfills: Olinda Alpha Landfill, Frank R. Bowerman Landfill, Prima Deshecha Landfill, Coyote Canyon Landfill, and Santiago Canyon Landfill. The three active landfills (Olinda Alpha, Frank R. Bowerman, and Prima Deshecha) accept waste from multiple cities and counties in the surrounding region, which are outside the jurisdiction of the County of Orange. [13] The remaining emission sources include natural gas (5 percent), electricity (4 percent), employee commute and fleet (2 percent each), and water and wastewater (0.3 percent). **Table 2-1** summarizes the results for the 2018 municipal operations inventory by sector. **Figure 2-1** illustrates each sector's proportion of total 2018 municipal emissions. **Figure 2-2** provides the sector breakdown of 2018 municipal emissions excluding landfill operations. The County of Orange has somewhat less control over landfill emissions than other emissions sources because the County does not have influence over the waste that is generated and disposed of at the landfills they operate (this is waste generated by the community, including from other counties). Analyzing the municipal inventory without landfill emissions can provide insight into the greatest opportunities for emissions reductions. When excluding landfill operations, natural gas emissions are the biggest contributor to the municipal inventory (40 percent) followed by electricity (28 percent). Employee commute and fleet each contribute 15 percent to the inventory, while water and wastewater emissions make up 2 percent.

TABLE 2-1

2018 COUNTY OF ORANGE MUNICIPAL GHG EMISSIONS BY SECTOR INCLUDING LANDFILL

Sector	Emissions ($MTCO_2e$)	Percent of Total
Landfill	865,360	87%
Natural Gas	52,498	5%
Electricity	36,784	4%
Employee Commute	19,498	2%
Fleet	19,274	2%
Water & Wastewater	2,523	0.3%
Total	**995,936**	**100%**

13 In 2018, County of Orange landfills had a combined service population of around 5 million, whereas the population of unincorporated Orange County was approximately 130,000

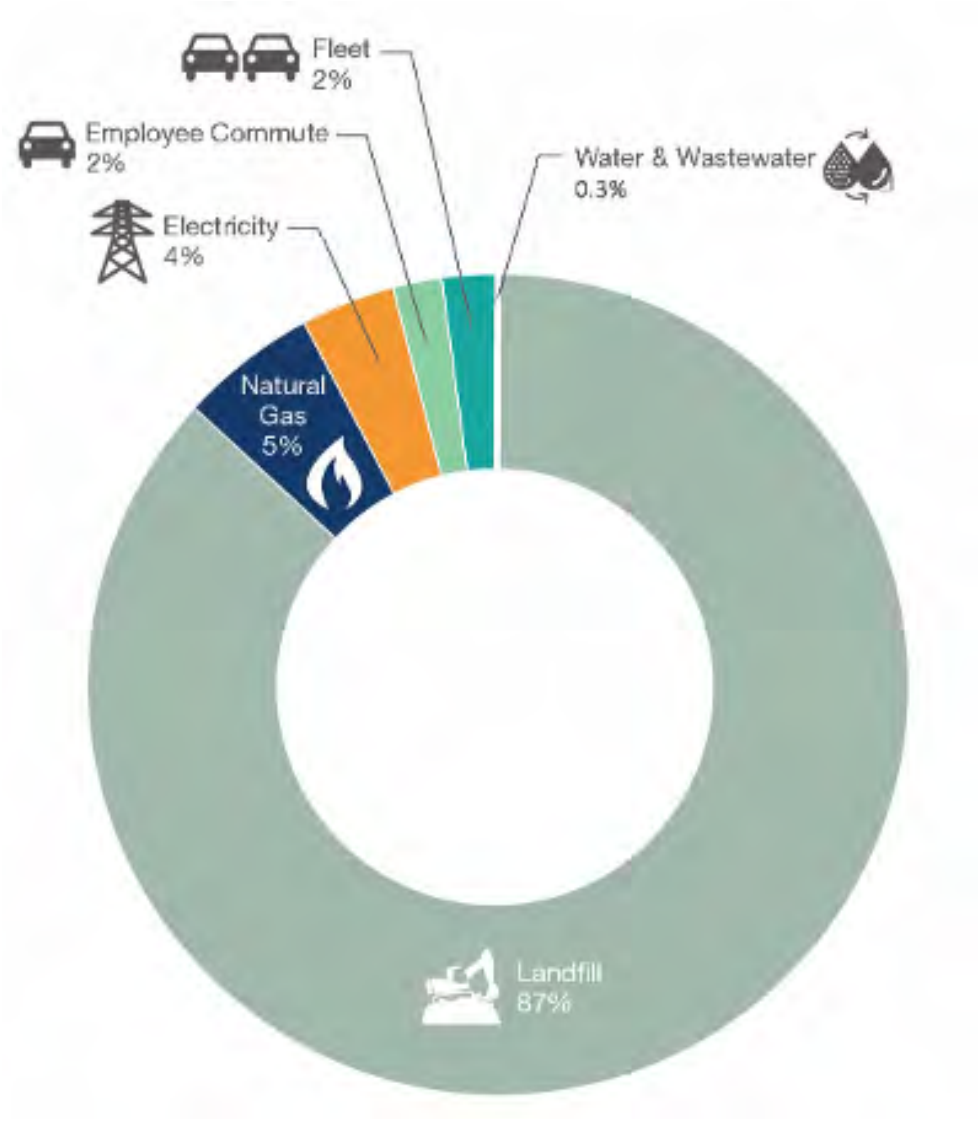


FIGURE 2-1

2018 COUNTY OF ORANGE MUNICIPAL GHG EMISSIONS BY SECTOR

Greenhouse Gas Emissions Forecasts

The emission forecasts used in the CAP account for socio-economic trends, population growth, historic emission patterns, and existing policies and legislation that affect GHG emissions. The 2018 municipal GHG emissions inventory serves as the baseline from which future emissions are forecasted

Business-as-Usual Forecasts

Business-as-usual (BAU) emissions forecasts were developed by sector for the years 2030 and 2045. The BAU forecasts assumes GHG emissions grow from 2018 levels at the same rates as housing, population, employment, and vehicle travel. The BAU forecast serves as a basis for understanding how emissions levels may change with growth, and how far GHG emissions will need to be reduced in future years to meet GHG reduction targets. They do not account for government policies and regulations that reduce GHG emissions. The BAU forecasts are based on the regional population, housing, and employment growth projections from the Southern California Association of Government's (SCAG) 2024 Regional Travel Demand Model, as shown in **Table 2-2**.

TABLE 2-2

UNINCORPORATED ORANGE COUNTY SOCIOECONOMIC DATA

Factor	2018	2030	2045
Population	128,781	146,567	168,799
Households	41,684	51,841	64,539
Employment	33,619	38,246	44,029

Table 2-3 shows the projected total municipal operations emissions by sector for each forecast year under the BAU scenario. Total municipal emissions are forecasted to increase from 995,936 $MTCO_2e$ in 2018 to 1,558,251 $MTCO_2e$ by 2045, a 56 percent increase. The figures below compare the municipal baseline inventory to the 2030 and 2045 BAU forecasts. Figure 2-3 includes landfill operation emissions and Figure 2-4 excludes them.

TABLE 2-3

COUNTY OF ORANGE MUNICIPAL BAU EMISSIONS FORECASTS ($MTCO_2E$)

Sector	Baseline 2018	BAU Forecast 2030	BAU Forecast 2045
Landfill	865,360	1,146,527	1,406,424
Natural Gas	52,498	56,287	61,019
Electricity	36,784	39,500	42,821
Employee Commute	19,498	20,904	22,661
Fleet	19,274	20,655	22,391
Water & Wastewater	2,523	2,706	2,933
Total	**995,936**	**1,286,578**	**1,558,251**

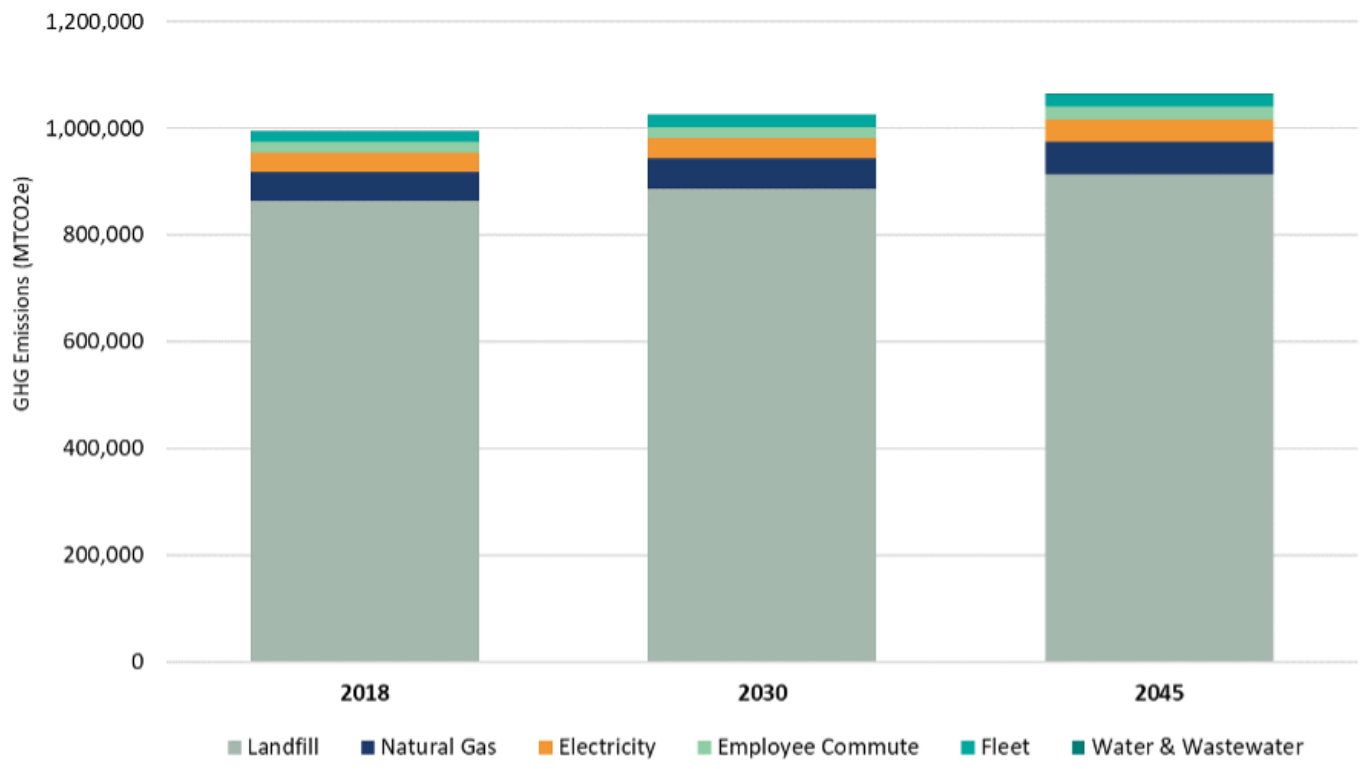


FIGURE 2-3

2030 AND 2045 COUNTY OF ORANGE MUNICIPAL BAU EMISSIONS FORECASTS

Adjusted Business-As-Usual Forecasts

The Adjusted BAU forecasts account for future growth under BAU conditions but adjust for federal, state, and County regulations that existed at the time the CAP was developed. These include the California Energy Commission (CEC) 2019 and 2022 Title 24 building energy efficiency requirements, California Renewables Portfolio Standards (SB 100), Pavley GHG emissions standards for passenger vehicles (AB 1493) and Advanced Clean Car Standards I & II, and California Low Carbon Fuel Standards (EO S-01-07).

Table 2-4 shows the projected municipal operations emissions by sector for each forecast year under the Adjusted BAU scenario. Total municipal emissions are forecasted to increase from 995,936 $MTCO_2e$ in 2018 to 1,490,195 $MTCO_2e$ by 2045, a 50 percent increase. When landfill operation emissions are excluded, the remaining sectors are anticipated to decrease 36 percent between 2018 and 2045. This is because the Adjusted BAU does not consider any regulations that impact landfill emissions; therefore, landfill emissions remain the same under the Adjusted BAU forecast as the BAU forecast. Because landfill emissions make up such a significant portion of the inventory, the Adjusted BAU forecast does not decline until the source is removed from the inventory. The figures below compare the municipal baseline inventory to the 2030 and 2045 Adjusted BAU forecasts. Figure 2-5 includes landfill operation emissions and Figure 2-6 excludes them.

TABLE 2-4

COUNTY OF ORANGE MUNICIPAL ADJUSTED BAU EMISSIONS FORECASTS (MTCO2E)

Sector	Baseline 2018	Adjusted BAU Forecast 2030	Adjusted BAU Forecast 2045
Landfill	865,360	1,146,527	1,406,424
Natural Gas	52,498	56,287	61,019
Electricity	36,784	24,888	0
Employee Commute	19,498	13,134	2,728
Fleet	19,274	18,651	19,107
Water & Wastewater	2,523	2,018	916
Total	**995,936**	**1,261,504**	**1,490,195**
Percent Change from Baseline	**N/A**	**27%**	**50%**
Total Excluding Landfill	**130,576**	**114,977**	**83,770**
Percent Change from Baseline	**N/A**	**-12%**	**-36%**

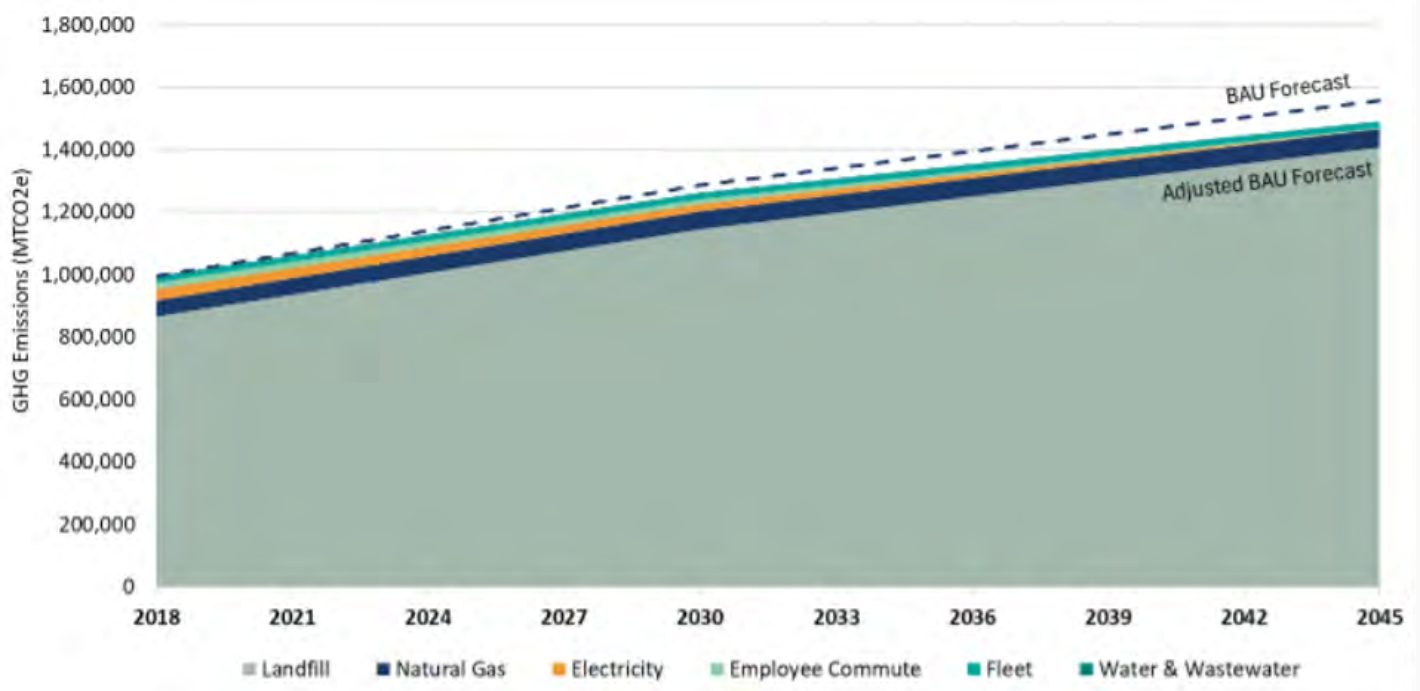


FIGURE 2-5

COUNTY OF ORANGE MUNICIPAL ADJUSTED BAU EMISSIONS FORECASTS

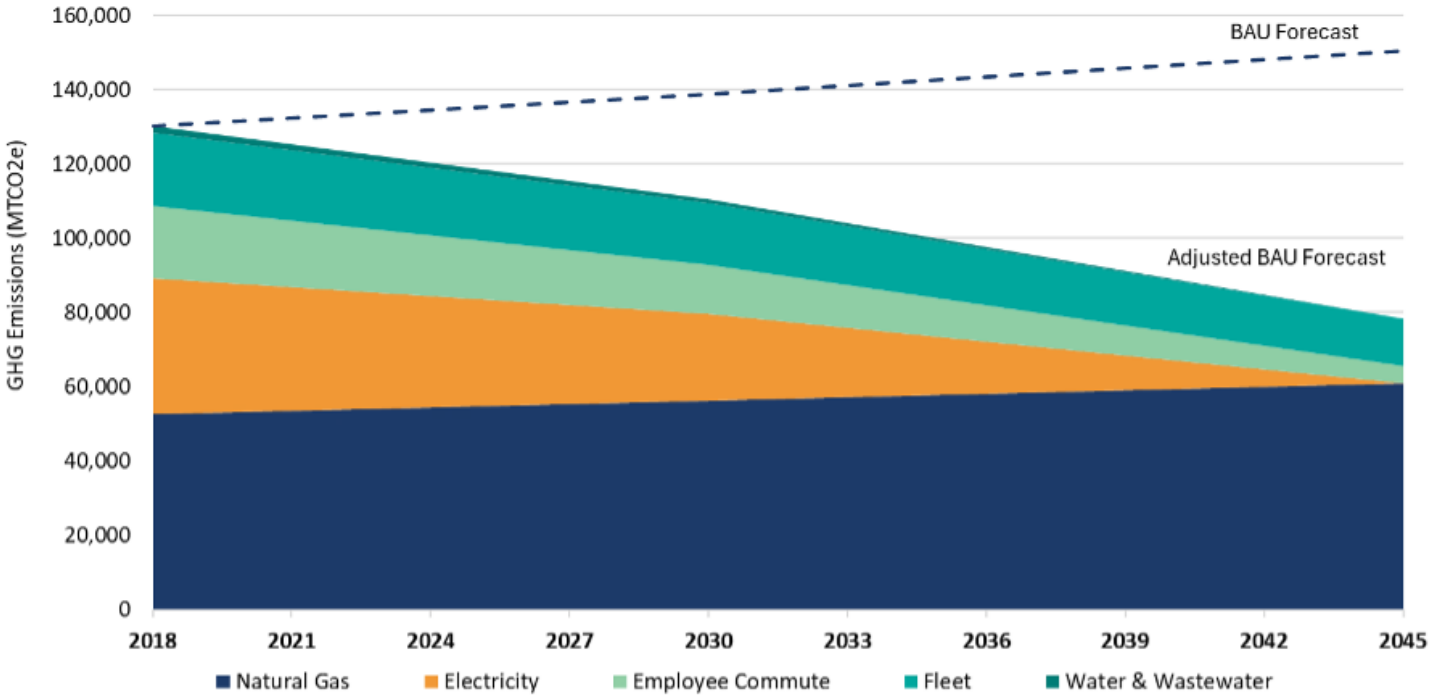


FIGURE 2-6

COUNTY OF ORANGE MUNICIPAL ADJUSTED BAU EMISSIONS FORECASTS, EXCLUDING LANDFILL EMISSIONS

Greenhouse Gas Emissions Reduction Targets

Regulatory Context

The State of California has established multiple GHG emissions reduction targets between 1990 and 2045 that are bound by state law. AB 32, the California Global Warming Solutions Act of 2006, mandates a statewide reduction of GHG emissions to 1990 levels by 2020. This legislation established a comprehensive, multi-year program involving a variety of measures, including a cap-and-trade system, renewable energy mandates, and energy efficiency standards. It also required major industrial sources to report and verify their emissions, aiming for significant reductions through both regulations and market-based mechanisms. SB 32, passed in 2016, builds upon AB 32 by requiring a statewide reduction of GHG emissions to 40 percent below 1990 levels by 2030. AB 1279, signed into law in 2022, goes even further by mandating statewide carbon neutrality by 2045 and net negative emissions thereafter, and requires an 85 percent reduction in anthropogenic GHG emissions from 1990 levels by the same date. A summary of California's climate goals is provided below.

AB 32 and SB 32

- By 2020, reduce GHG emissions to 1990 levels.
- By 2030, reduce GHG emissions to 40 percent below 1990 levels.

AB 1279

- By 2045, reduce statewide anthropogenic GHG emissions to at least 85 percent below 1990 levels.
- By 2045 or sooner, achieve net zero[14] GHG emissions and achieve and maintain net negative GHG emissions thereafter.

SB 100 and SB 1020

- By 2035, source 90 percent of retail sales of electricity to California end-use customers from eligible renewable energy resources and zero-carbon resources.
- By 2040, source 95 percent of electricity procured to serve all state agencies from eligible renewable energy resources and zero-carbon resources.
- By 2045, source 100 percent of retail sales of electricity to California end-use customers from eligible renewable energy resources and zero-carbon resources.

The 2017 Scoping Plan set forth a statewide plan to achieve the GHG reductions mandated by SB 32, while the 2022 Scoping Plan For Achieving Carbon Neutrality (2022 Scoping Plan), adopted by CARB in December 2022, provides a statewide plan for meeting the requirements of AB 1279. [15] The 2022 Scoping Plan outlines how the state can achieve

14 AB 1279 defines net zero GHG emissions as "emissions of GHGs, as defined in subdivision (g) of Section 38505, to the atmosphere are balanced by removals of GHG emissions over a period of time, as determined by CARB." California Health and Safety Code Section 38562.2.

15 California Air Resources Board. 2022. 2022 Scoping Plan For Achieving Carbon Neutrality. November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed in January 2023.

carbon neutrality by reducing anthropogenic GHG emissions while expanding actions to capture and store carbon through the state's natural and working lands and using a variety of mechanical sequestration approaches. This is known as the Scoping Plan Scenario.

The 2022 Scoping Plan concludes that deeper reductions than mandated by SB 32 are needed by 2030 to achieve the State's 2045 reduction targets. To achieve the target of 85 percent below 1990 emissions levels by 2045, the State must achieve a 48 percent reduction in GHG emissions below 1990 levels by 2030, surpassing the previous target of 40 percent as codified by SB 32.

SB 375/SCAG Regional Transportation Plan

By 2035, reduce GHG emissions from passenger vehicles by 19 percent per capita, below a 2005 baseline.

CAP Targets

The County has selected two sets of targets for reducing GHG emissions associated with municipal operations – one set for landfill emissions and another for all other sectors. The targets are emissions reductions levels that the County can achieve through the implementation of CAP measures and actions, based on quantitative emissions modeling. In other words, the CAP quantitatively demonstrates how the County of Orange can achieve these municipal targets.

GHG reduction targets were chosen for the years 2030 and 2045 to align with State climate legislation SB 32 and AB 1279. The County established its targets by determining its fair share towards helping the State achieve the Scoping Plan Scenario. Due to the outsized contribution of landfill emissions to the municipal inventory (87 percent of the 2018 inventory), this CAP includes landfill-specific targets separate from the targets for all other sectors. The landfill targets align with the landfill methane emissions pathway of the Scoping Plan Scenario, while the targets for all other sectors align with the emissions pathways of those sectors of the Scoping Plan Scenario.

Municipal CAP Targets

Landfill Emissions Targets

- By 2030, reduce County of Orange-owned and -operated landfill GHG emissions by 13 percent below 2018 levels.
- By 2045, reduce County of Orange-owned and -operated landfill GHG emissions by 25 percent below 2018 levels.

Non-Landfill Emissions Targets

- By 2030, reduce non-landfill GHG emissions from County of Orange operations by 47 percent below 2018 (equivalent to 48 percent below 1990 levels as stipulated by AB 1279).
- By 2045, reduce non-landfill GHG emissions from County of Orange operations by 92 percent below 2018 (equivalent to 85 percent below 1990 levels as stipulated by AB 1279).

Landfill Targets

The County used a sector-based approach to determine its fair share of emissions reductions and to set targets that align with the State's Scoping Plan Scenario. The Scoping Plan Scenario identifies a landfill methane emissions target pathway which includes the reduction categories Disposal Reduction and Increased Capture. [16] This target pathway anticipates Statewide landfill emissions decreasing from approximately 8.3 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2018 to approximately 7.2 $MMTCO_2e$ in 2030 and 6.2 $MMTCO_2e$ in 2045. This is equivalent to a 13 percent reduction below 2018 levels by 2030 and a 25 percent reduction below 2018 levels by 2045. The CAP uses these targets for the County's landfill emissions. By using this approach, the County's landfill emissions targets are consistent with the State's Scoping Plan Scenario.

Figure 2-7 shows emissions forecasts through 2045 for landfills owned and operated by the County of Orange. [17] It also includes 2030 and 2045 landfill emissions targets and associated trendline from 2018 through 2045.

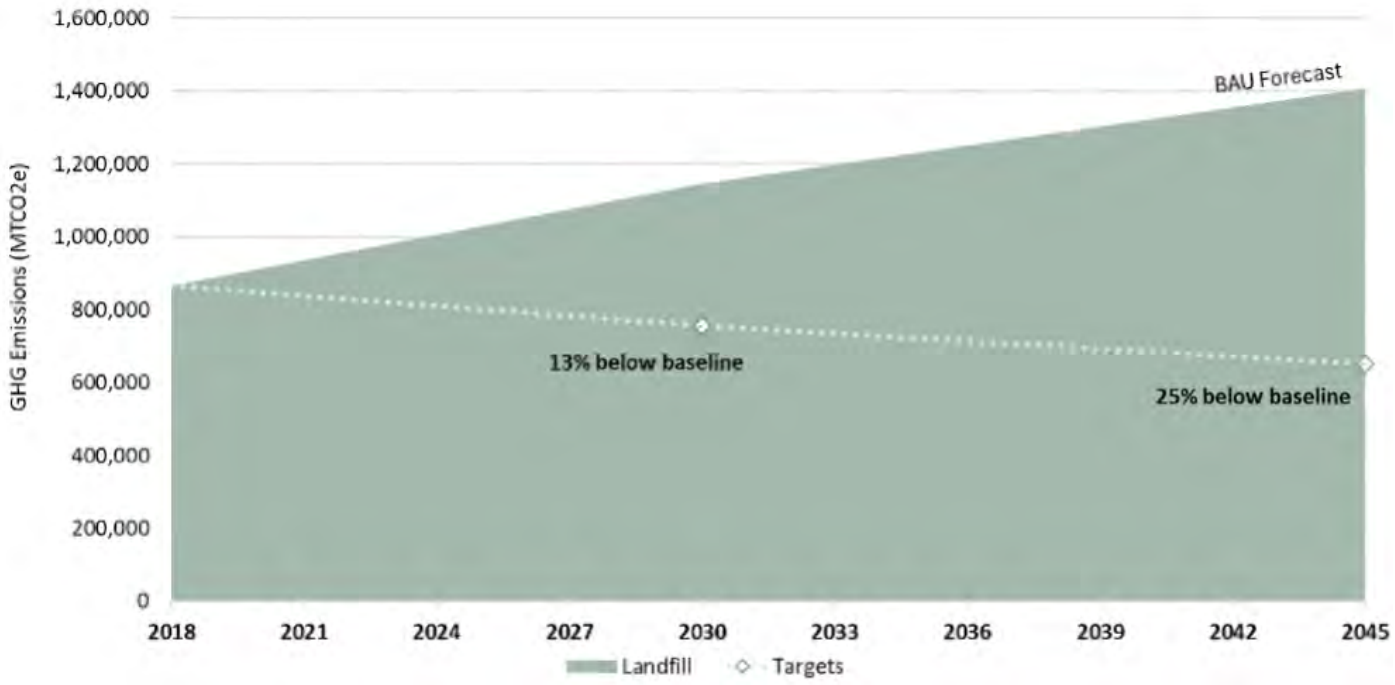


FIGURE 2-7

COUNTY OF ORANGE MUNICIPAL LANDFILL EMISSIONS FORECASTS AND GHG REDUCTION TARGETS

16 California Air Resources Board. 2022. 2022 Scoping Plan, Appendix H: AB 32 GHG Inventory Sector Modeling. Figure H-1: Projected Annual Landfill Methane Emissions (MMT CO2e). November 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp-appendix-h-ab-32-ghg-inventory-sector-modeling.pdf. Accessed in August 2025.

17 Landfill emissions are only forecasted under a BAU scenario; therefore, Figure 2-7 does not show an Adjusted BAU forecast.

Non-Landfill Targets

The County also used a sector-based approach to set targets for non-landfill emissions. When determining the County's fair share contribution towards achieving the State's Scoping Plan Scenario, only sectors included in the County's municipal emissions inventory were considered: Electricity, Natural Gas, Transportation, and Wastewater. The target pathway for these four sectors anticipates Statewide emissions decreasing from approximately 276 $MMTCO_2e$ in 2018 to approximately 148 $MMTCO_2e$ in 2030 and to 21 $MMTCO_2e$ in 2045. This is equivalent to a 47 percent reduction below 2018 levels by 2030 and a 92 percent reduction below 2018 levels by 2045. The CAP uses these targets for the County's landfill emissions. The 2030 non-landfill emissions target exceeds the SB 32 target of a 40 percent reduction below 1990 levels and is consistent with the Scoping Plan Scenario's goal of a 48 percent reduction below 1990 levels. The 2045 non-landfill emissions target achieves the AB 1279 target of 85 percent below 1990 levels. By using this approach, the County's non-landfill emissions targets are consistent with the State's Scoping Plan Scenario.

Figure 2-8 shows the BAU and Adjusted BAU forecasts through 2045 for County of Orange municipal operations for non-landfill sources, as well as the 2030 and 2045 targets.

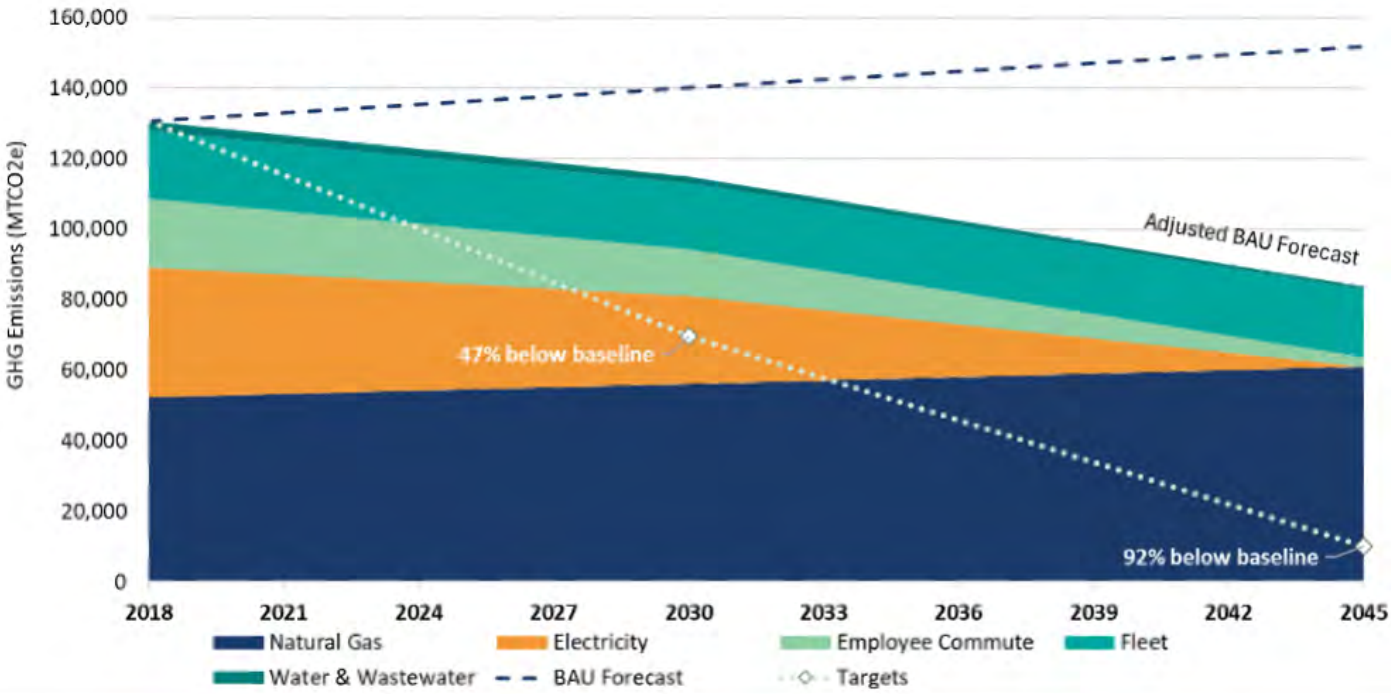


FIGURE 2-8

COUNTY OF ORANGE MUNICIPAL NON-LANDFILL EMISSIONS FORECASTS AND GHG REDUCTION TARGETS

Combined Target Pathway

Although the CAP includes two distinct sets of targets; one for landfill emissions and one for non-landfill emissions; viewing the combined target pathway simplifies the CAP's overall implementation, as discussed in Chapter 3. Figure 2-9 displays the BAU and ABAU emissions forecasts of all sources as well as the combined targets and emission reduction pathway. When the landfill and non-landfill targets are combined, the County must achieve an 18 percent reduction by 2030 and a 34 percent reduction by 2045 for all emissions sources.

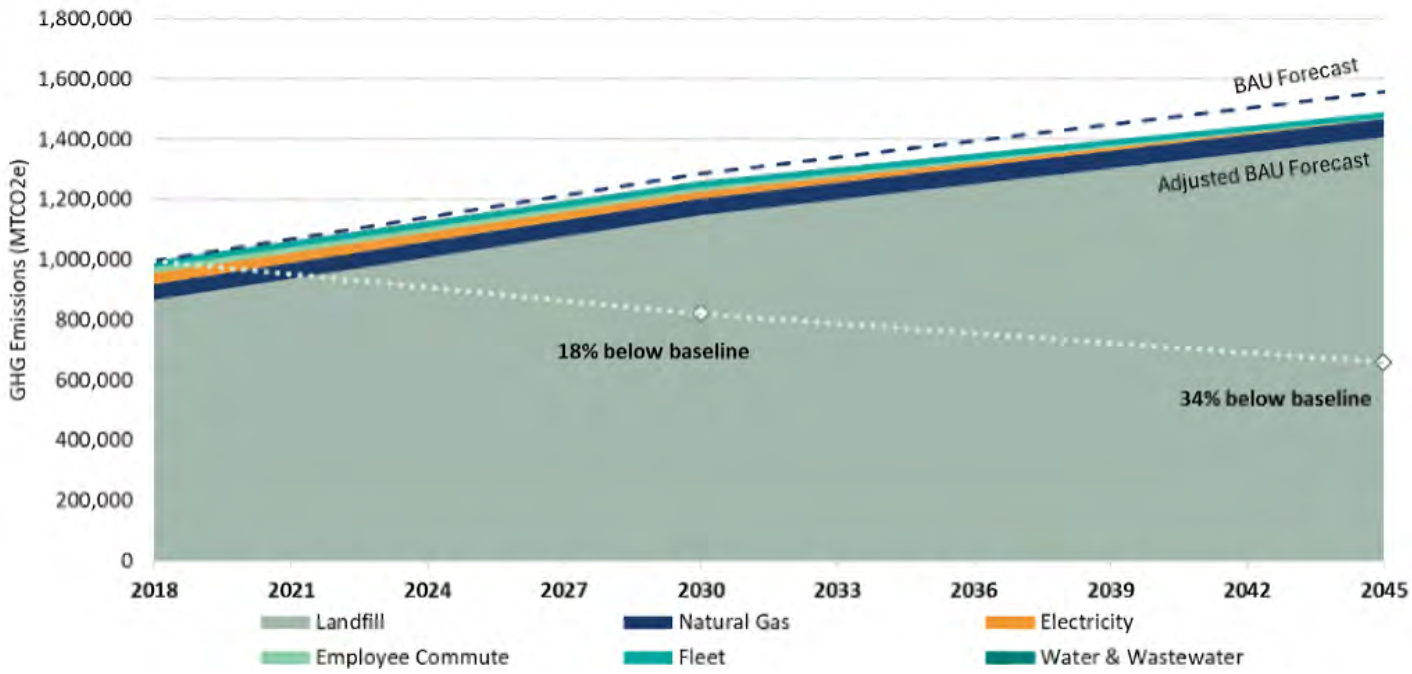
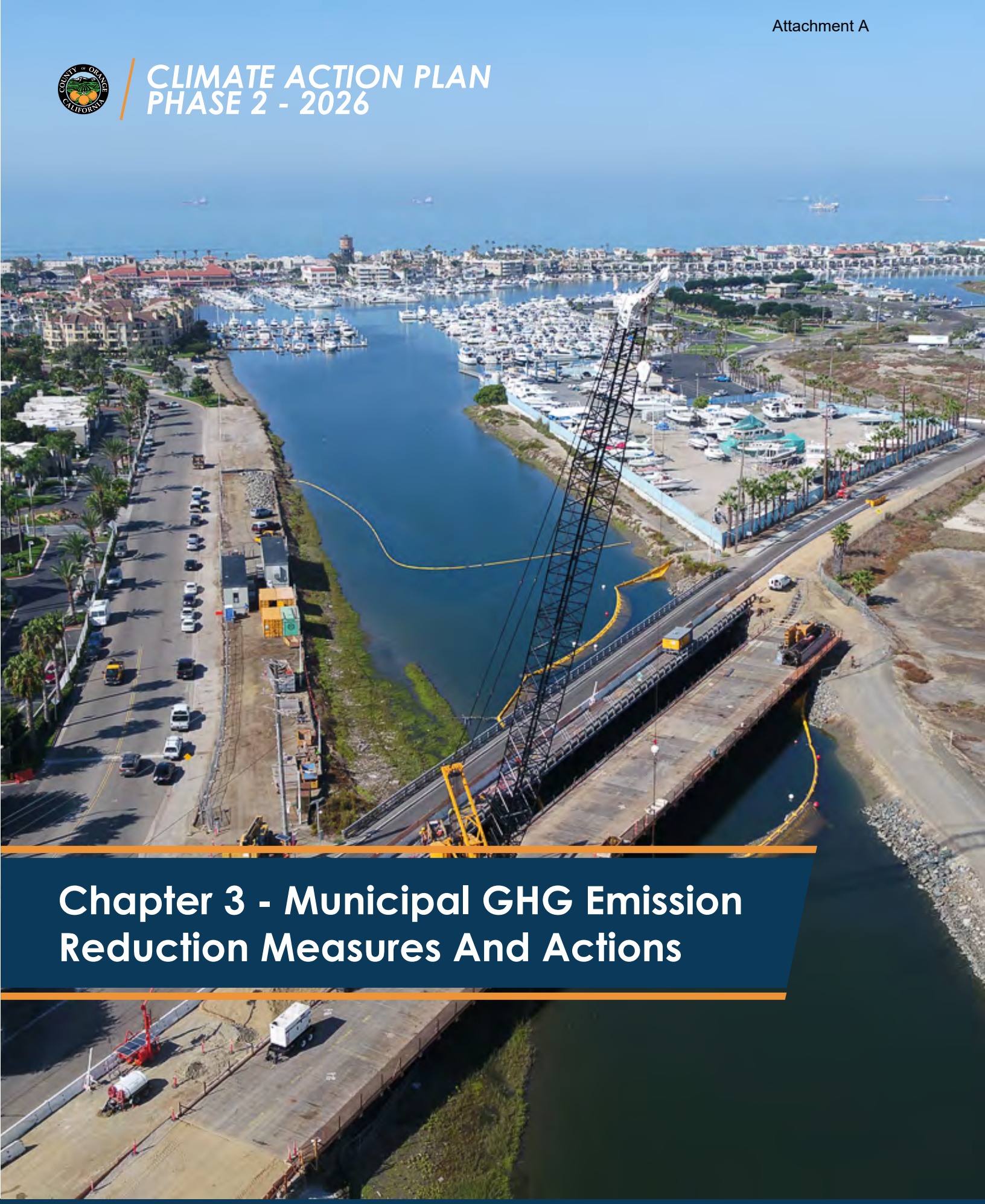


FIGURE 2-9

UNINCORPORATED ORANGE COUNTY COMMUNITY ADJUSTED BAU EMISSIONS FORECASTS

CLIMATE ACTION PLAN
PHASE 2 - 2026



Chapter 3 - Municipal GHG Emission Reduction Measures And Actions

III. GHG Emission Reduction Measures And Actions

Measure Structure

While State policies and regulations contribute greatly to reducing GHG emissions, local measures can help guide the County's future efforts to reduce emissions from its municipal operations. This chapter outlines measures the County may consider across a variety of strategies including energy, transportation, solid waste, environmental justice, natural resources, and resilience. These may involve exploratory efforts such as infrastructure planning, renewable energy opportunities, purchasing policy evaluation, employee incentive programs, and other potential actions which are organized using the structure below. Measures are labeled with an "M" to indicate municipal operations measures and a "C" to indicate unincorporated County measures (see Chapter 4). All measures are presented for planning purposes only and do not commit the County to any specific project or physical change. Any future projects or actions identified through each measure would be subject to separate discretionary approvals, funding decisions, and environmental review, as required by CEQA.

There are six sectors in the CAP:

- **Energy (C-E)**
- **Mobility (C-M)**
- **Resource Recovery & Waste (C-RRW)**
- **Environmental Justice (C-EJ)**
- **Natural Resources (C-NR)**
- **Resilience (C-R)**

This chapter focuses on the first four sectors and contains the municipal measures for County operations. At this preliminary adoption stage, these measures are advisory and will guide future decisions; they do not constitute a binding or CEQA-Qualified climate action plan. The following information is included for each measure.

- **Measures**: Planning-level strategies and sub-sector concepts that aim to reduce emissions and/or support CAP goals, delineated with "M" for municipal operations and "C" for unincorporated community activities. The sector's initials are listed as a second letter — "E" for Energy. Example Measure:
  M-E2 – Reduce Building Energy Use Throughout County-owned Facilities.

- **Actions:** Potential exploratory steps that may support future implementation of the Measure, including exploratory policies, programs, or tools that support implementation, subject to feasibility and environmental review. Example Action:
  M-E2.2 – Evaluate the feasibility of Leadership in Engineering and Environmental Design (LEED) Platinum certification for all new County buildings.

- **GHG Reduction Potential:** Estimated GHG emission reduction potential for the Measure, based on planning-level assumptions for 2030 and 2045.

- **Performance Goals:** Aspirational benchmarks that illustrate potential outcomes for 2030 and 2045, subject to refinement.

- **Co-Benefits:** Positive benefits of the Measure in areas beyond the previously discussed GHG emission reductions.

Environmental Justice

Economic

Public Health

Advocacy and Education

Municipal CAP Implementation Pathway

The Municipal CAP estimates GHG emissions reductions associated with the planning-level performance objectives of nine separate measures. Quantification methods incorporate State and County policies, resolutions, programs, and incentives. This analysis provides estimated annual emissions reductions from each of the nine measures in 2030 and 2045.

Through locally implemented measures and actions, described in more detail in the following sections, annual emissions reductions for the County's municipal operations are anticipated to be 505,888 $MTCO_2e$ by the year 2030 (**Table 3-1**). Combined with state and regional measures, local municipal measures will enable the County to reduce total GHG emissions to approximately 755,616 $MTCO_2e$ in the year 2030 (**Table 3-2**). This reduction of approximately 24 percent from 2018 baseline levels would enable the County to exceed its 2030 targets. Also shown in these tables, annual emissions reductions from local actions are anticipated to be 965,305 $MTCO_2e$ in the year 2045—47 percent below 2018 levels in 2045—exceeding the targets for both years. **Figure 3-1** depicts the County's municipal GHG emissions reduction pathway for meeting its targets through 2045.

FIGURE 3-1

COUNTY OF ORANGE MUNICIPAL EMISSIONS FORECAST, COMBINED TARGET, AND CAP IMPLEMENTATION PATHWAY

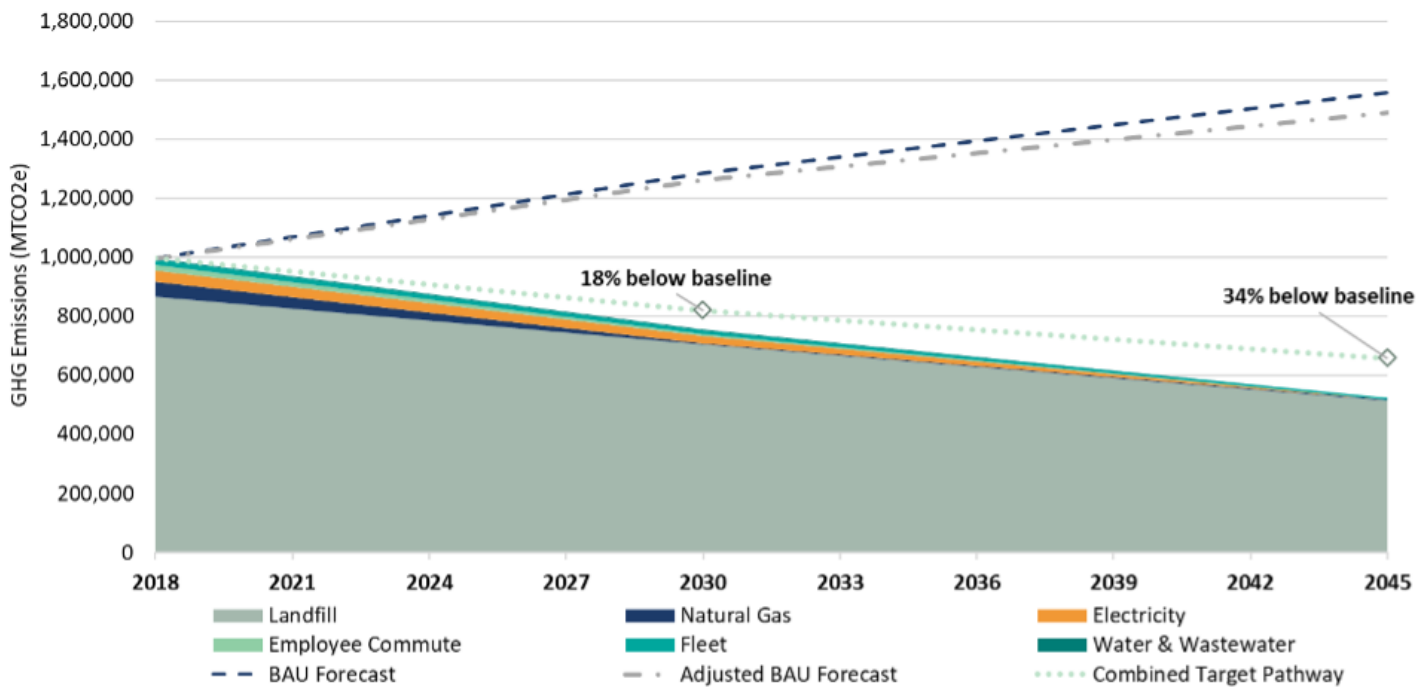


TABLE 3-1

COUNTY OF ORANGE MUNICIPAL ADJUSTED BAU EMISSIONS FORECASTS (MTCO2E)

Measure	Annual GHG Reductions (MTCO2e/ Year) 2030	Annual GHG Reductions (MTCO2e/ Year) 2045
Energy (M-E)		
M-E1: Pursue Building Electrification of County-Owned Facilities	386	3,675
M-E2: Reduce Building Energy Use Throughout County-Owned Facilities	4,059	3,051
M-E3: Install Solar at County-Owned Facilities	1,313	0[18]
M-E4: Reduce Carbon Intensity of County-Owned Cogeneration Facilities	49,223	53,362
Mobility (M-M)		
M-M1: Expand County-Owned EV Charging Infrastructure	NQ	NQ
M-M2: Reduce VMT for County Employees and County-Owned Fleet	5,784	1,906
M-M3: Decarbonize the County-Owned Fleet	4,076	12,065
Resource Recovery & Waste (M-RRW)		
M-RRW1: Improve Diversion of Waste at County-Owned Landfills	81,006	127,166
M-RRW2: Increase Waste-to-Energy Potential at County Landfills	360,004	764,030
Environmental Justice (M-EJ)		
M-EJ1: Increase Urban Greening on in County Parks	37	50
Total Reductions	**505,888**	**965,305**

NQ = not quantified; $MTCO_2e$ = metric tons of carbon dioxide equivalent

18 Under California's Renewable Portfolio Standard, all electricity sold by utilities must be carbon free by 2045; therefore, no further emissions reductions can be achieved through solar installation in 2045.

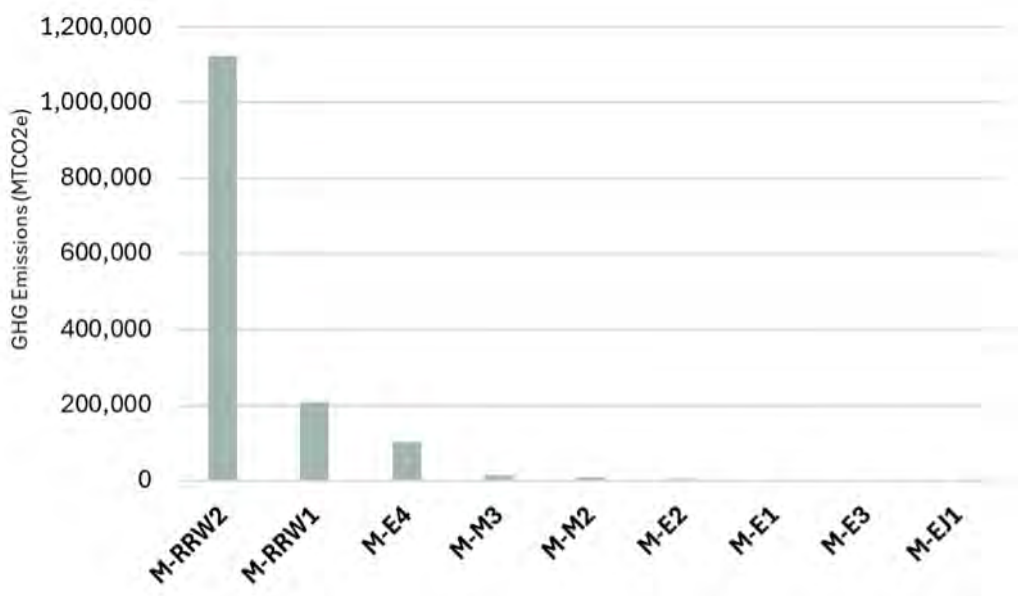
TABLE 3-2

COUNTY OF ORANGE MUNICIPAL ADJUSTED BAU EMISSIONS FORECASTS (MTCO2E)

Data / Metric	Annual GHG Reductions (MTCO2e/Year) 2030	Annual GHG Reductions (MTCO2e/Year) 2045
Business-as-Usual Forecast	1,286,578	1,558,251
Adjusted Business-as-Usual Forecast	1,261,504	1,490,195
Total Reductions from CAP Implementation	505,888	965,305
Remaining Municipal Emissions with CAP Implementation	755,616	524,890
Emissions Targets	**820,375**	**657,915**
Target Met?	**Yes**	**Yes**
$MTCO_2e$ = metric tons of carbon dioxide equivalent		

FIGURE 3-2

GHG EMISSION REDUCTION MEASURES, RANKED BY 2030 & 2045 REDUCTION



Core Measures

While the Municipal CAP includes 10 measures and more than 50 implementing actions, achieving the GHG emissions targets for 2030 and 2045 described below may be supported by progress toward the performance objectives of **four core measures** identified for planning purposes. These measures are estimated to achieve the maximum GHG reductions in the most cost-effective manner for the County, thereby making them the highest implementing priority for the CAP.

Figure 3-2 shows how four core measures out of the nine quantified measures are estimated to contribute the majority of emission reductions by 2030 and 2045. The core measures were identified based on the anticipated total GHG emission reductions for the years 2030 and 2045 for both landfill and non-landfill emissions.

For all inventory sectors including landfills, the core measures are estimated to account for 98 percent of the total reductions expected by 2030 and 99 percent of the total reductions expected by 2045. For non-landfill inventory sectors, the two core measures are estimated to account for 82 percent of the total reductions expected by 2030 and 88 percent of the total reductions expected by 2045. The County may be able to meet its targets for 2030 and 2045 by focusing on future planning efforts on these four core measures [19]

Landfill

- M-RRW1: Improve Diversion of Waste at County-Owned Landfills (green waste, mattresses, and metals diversion)
- M-RRW2: Support Increasing Waste-to-Energy Potential at County Landfills (Prima Deshecha Landfill)

Non-Landfill

- M-E4: Reduce Carbon Intensity of County-Owned Cogeneration Facilities (Using renewable natural gas from Prima Deshecha Landfill under M-RRW2)
- M-M3: Support Decarbonization of the County-Owned Fleet

Table 3-3 summarizes these four core measures including their performance objectives, implementing agencies, and potential funding sources.

19 Achieving the performance objectives for these four measures should cause the County to exceed the 2030 target by more than 69,000 $MTCO_2e$ and the 2045 target by more than 134,000 $MTCO_2e$.

TABLE 3-3

CORE MEASURES FOR ACHIEVING 2030 & 2045 MUNICIPAL TARGETS

Measure	Performance Goals	Tracking Metrics	Lead
M-RRW1: Improve Diversion of Waste at County-Owned Landfills	2030: Divert 5% of BAU landfilled waste through organics programs 2045: Divert 15% of BAU landfilled waste through organics programs	• Total tonnage of organic waste diverted from landfills annually • Amount of compost or mulch produced annually from diverted organics	OCWR
M-RRW2: Increase Waste-to-Energy Potential at County Landfills Non-Landfill	2030: Achieve 85% collection efficiency at county landfills 2045: Achieve 90% collection efficiency at county landfills	• Landfill gas collection efficiency percentage • Total volume or amount of landfill gas captured annually • Amount of renewable natural gas (RNG) produced from captured landfill gas each year • Percentage or amount of RNG used to fuel county operations or sold through power purchase agreements • Operational status and capacity of RNG facilities at county landfills	OCWR
M-E4: Reduce Carbon Intensity of County-Owned Cogeneration Facilities	2030 & 2045: Meet 100% of cogeneration facility natural gas power demand with landfill gas from county landfills	• Volume or energy content of landfill gas consumed at cogeneration facilities annually • Amount of conventional natural gas replaced by landfill gas at cogeneration facilities • Operational uptime and efficiency of cogeneration facilities using landfill gas	OCPW, OCWR

TABLE 3-3 - CONTINUED

CORE MEASURES FOR ACHIEVING 2030 & 2045 MUNICIPAL TARGETS

Measure	Performance Goals	Tracking Metrics	Lead
M-M3: Decarbonize the County-Owned Fleet	2030: Evaluate the feasibility of converting 15% of the OCWR heavy equipment fleet to electric equipment, subject to operational needs and funding availability 2045: Assess opportunities to convert 30% of the OCWR heavy equipment fleet to electric equipment, subject to operational needs and funding availability Plan for compliance with CARB's Advanced Clean Fleets Regulation by evaluating procurement strategies for EVs over 8,500 Gross Vehicle Weight Rating (GVWR) by 2027	• Number of County-owned ZEV fleet vehicles (GVWR>8,500) in operation • Total number of County-owned fleet vehicles (GVWR>8500) in operation • Off-road vehicle and equipment fleet count, type, and fuel type	OCPW, OCWR

Cost-Effectiveness

Local governments are uniquely positioned to lead by example in the transition to a low-carbon future. While climate action is often perceived as a financial burden, the County's CAP demonstrates that strategic GHG reduction measures can yield substantial cost savings, operational efficiencies, and long-term economic resilience. Across the full implementation period (2025–2050), the County's climate strategy would operate at a net savings. When all measures are evaluated together, the avoided costs and operational efficiencies could amount to approximately $11.15 saved per $MTCO_2e$ reduced. This section focuses on three of the core measures, fleet electrification (Measure M-M3), LFG-to-RNG conversion (Measure M-E4), and landfill optimization (Measure M-RRW2), which exemplify how climate-forward policies can also be fiscally prudent. [20]

Transitioning the County's gasoline-powered fleet to electric vehicles (EVs) offers long-term financial benefits. The County can save over $308,000 just by transitioning the on-road vehicles in the Orange County Waste and Recycling Department's fleet that are subject to the Advanced Clean Fleets (ACF) regulation [21] even when accounting for the higher upfront costs of electric vehicles compared to their gasoline equivalents. These savings stem primarily from reduced fuel and maintenance costs, which are consistently lower for electric vehicles due to their simpler mechanics and the lower cost of electricity compared to gasoline.

20 Cost data was not available for improved waste diversion (Measure M-RRW1) and therefore was not included in the cost effectiveness analysis.

21 ACF applies to vehicles with a gross vehicle weight rating (GVWR) of less than 8,500 pounds..

Converting landfill gas into RNG and utilizing it at the County's combined heat and power (CHP) facilities transforms a free waste byproduct into a valuable energy resource that would otherwise be wasted. This measure, if implemented, would achieve the level of emissions reductions that could only be achieved otherwise through powering the CUF and CUP by electricity. By producing RNG from County-owned landfills and supplying it directly to the CUF and CUP, the County could avoid electrification of their CHP facilities, which would cost anywhere from $100 million to $300 million. Compared to the electrification alternative, Measure M-E4 could save the County $30 million to $230 million in capital costs and offer the long-term financial benefits of energy price stability and energy independence. Moreover, the RNG facility would become a revenue source, as the County could sell excess supply back to the utility or to third parties. This approach not only reduces GHG emissions but also aligns with the County's broader goals of operational resilience and fiscal responsibility.

The Smart Landfill Program (SLP) could further enhance cost effectiveness by optimizing landfill gas collection systems. By increasing capture efficiency and integrating waste-to-energy technologies, the County could significantly boost energy recovery while reducing operational costs. Specifically, the Smart Landfill Program could reduce operational costs by integrating best available technology, resource recovery, and strategic infrastructure planning. Automation and best available technology improve landfill gas (LFG) collection efficiency, reduce manual labor, and minimize maintenance and compliance costs. Resource recovery efforts convert LFG into renewable natural gas and electricity, cutting utility expenses and creating potential revenue through renewable energy credits, Low Carbon Fuel Standard (LCFS) credits, and renewable natural gas sales to other facilities. By targeting 85 percent LFG control efficiency by 2030 and 90 percent by 2045, the program could also reduce regulatory risk from methane emissions, therefore minimizing the risk of fines. Further, the SLP demonstrates a highly cost-effective approach to reducing GHGs when compared to the widely accepted benchmark known as the Social Cost of Carbon (SCC). The SCC represents the estimated economic damages associated with emitting one additional metric ton of CO_2 into the atmosphere. The U.S. government estimates the SCC is approximately $46 per $MTCO_2e$ in 2017 dollars. [22] The SLP achieves GHG reductions at a cost of approximately $2 per $MTCO_2e$ between 2025 and 2050, making it significantly more efficient than the SCC threshold. [23] Note that operations and maintenance costs were not available for the SLP and therefore were not factored into the cost effectiveness analysis. This suggests that the environmental and economic benefits of the SLP far outweigh its implementation costs.

Together, these measures illustrate a paradigm shift: climate action is not just an environmental imperative, it is a strategic investment. By aligning sustainability goals with financial stewardship, the County could achieve meaningful emissions reductions while enhancing budgetary resilience and public service delivery. As noted above, the average cumulative cost per MTCO2e reduced across all measures would be negative, meaning the County would earn money for every ton of emissions avoided. Specifically, the County would make $11.15 for every MTCO2e reduced, underscoring the financial viability and long-term value of its climate strategy.

22 U.S. Energy Information Administration (EIA), 2025. EIA Expects Higher Wholesale U.S. Natural Gas Prices as Demand Increases. Available at: https://www.eia.gov/todayinenergy/detail.php?id=64344.

23 Institute for Energy Research, 2025. Natural Gas Prices Expected to Rise Amid Increasing LNG Exports and Data Center Demand. Available at: https://www.instituteforenergyresearch.org/fossil-fuels/natural-gas-prices-amid-increasing-lng-exports-and-data-center-demand/.

TABLE 3-4

COST-EFFECTIVENESS OF CORE MEASURES

Core Measure	Measure Focus	Capital Cost	Average Annual O&M Costs	Net Cost/ Revenue[24]
Measure MRRW2 – Increase Waste to Energy Potential at County Landfills	Three active landfills and two inactive landfills.	$24,432,000	NQ	($24,432,000)
Measure MM3 – Decarbonize County Fleet	All County vehicles located throughout the County.	$632,000[25]	$63,000	$308,000[26]
Measure M-E4 – Reduce Carbon Intensity of County-owned Facilities	Prima Deschecha Landfill – San Juan Capistrano[27]	$70,000,000	$6,000,000	$198,550,000[28]

24 There is revenue associated with increased production of landfill gas into electricity or renewable natural gas. To be conservative, this analysis does not quantify this revenue as it too speculative currently.

25 Represents the cost differential for all nine vehicles purchased between the ZEV version and the ICE version. ICE vehicles are being replaced after their natural life.

26 VVehicles with the gross vehicle weight rating under 8500 pounds are subject to the Advanced Clean Fleet Regulation. This analysis examined the OCWR ACF applicable vehicles for illustrative purposes using the nine Ford F150 Lightnings that were purchased this year. While the cost of the EV equivalent is higher than the fossil-fueled traditional vehicle cost, vehicle maintenance is significantly lower with the EV with no routine maintenance necessary and significantly longer brake wear. Assuming the vehicles maintained a life of 16 years (they traditionally have low mileage), this fleet transition results in the fiscal benefit to the County.

27 This is a high revenue generating measure not solely due to providing gas to the CUF/CUP but because this is a large volume commodity with several special districts interested in partnering with the County.

28 This revenue is a combined revenue/cost recovery to the County by supplying RNG to the CUF/CUP thereby reducing and/or eliminating the need for electricity/ natural gas at these facilities in addition to supplying the power generated from the plant to outside entities such as South Coast Water District as well. This number assumes gas capture and processing begins in 2030 and concludes at the completion of the CAP in 2045.

Civic Center Plaza - LEED Silver Building

MEASURES AND ACTIONS

SECTOR 1 – ENERGY (E)

SECTOR GOAL: All new buildings be operationally carbon neutral by 2030 and all buildings will be carbon neutral by 2045.

State and Federal Mandates: Senate Bill 100 (De Leon, 2018) sets a goal to power all retail electricity sold in California, as well as state agency electricity needs, with renewable and zero-carbon resources by 2045. These resources, such as solar and wind energy, do not emit climate-altering GHGs. Additionally, California's Green Plan, issued in accordance with the passage of AB 32 (Nunez, 2006), aims to reduce building-related emissions by 40% below 1990 levels by 2030 and carbon neutrality by 2045.

The Federal Office of Energy Efficiency and Renewable Energy has multiple mandates and programs related to energy efficiency, GHG reductions, sustainable buildings (such as Energy Star Ratings), hot water systems, and more. These mandates generally apply to federally owned or leased structures or entities. [29] Currently, there are approximately 250 federally owned or leased structures in Orange County.

California's 2022 Scoping Plan outlines a roadmap for the state to achieve carbon neutrality by 2045 or earlier. An assessment of the potential for buildings to meet this target is underway.

Assembly Bill 3232 (Friedman, 2018) requires the California Energy Commission, in consultation with the CARB and California Public Utilities Commission, to assess the potential for California to reduce building-related emissions by at least 40 percent below 1990 levels by 2030.

Foundation: For County of Orange operations, electricity represents 4% (36,784 $MTCO_2e$) of total emissions and natural gas 5% (52,498 $MTCO_2e$). If the County excludes landfill operations from the emissions inventory, electricity contributes 28% and natural gas 41%.

29 Energy.gov, Office of Energy Efficiency and Renewable Energy, Federal Energy Management Program, at https://www7.eere.energy.gov/femp/requirements/requirements_filtering/High%20Performance%20Sustainable%20Buildings accessed on May 15, 2024.

Energy Sector Workforce Analysis: Current data shows that Energy Sector Jobs increased by 738 additional unique positions from 2018-2023 (0.7%) in Orange County, less than the national growth rate of 10.4%. The occupations are projected to increase by 4,686 additional unique positions from 2023-2028 (4.2%), less than the national projected growth rate of 7.5%. Regional job concentration per capita for Energy Sector Jobs is 1.02 times the national job concentration. In other words, there are 2% more Energy Sector Jobs in this region than we would expect to find in the average region. Cost of labor in the region is above median. The median earnings for entry level Energy Sector Jobs in the region is $31.51/hr., which is $5.37/hr. above the national median of $26.14/hr.

M-E1 – Support Building Electrification of County-Owned Facilities

Measure M-E1 identifies a potential strategy to reduce greenhouse gas emissions from County buildings through electrification and clean energy technologies. The County may evaluate opportunities to integrate electrification into new construction, retrofits, and equipment replacements, drawing on renewable natural gas generated by the County's landfills, and available incentives to accelerate the transition. Future capital planning efforts may consider alignment with CAP goals to support long-term GHG reduction and operational sustainability, subject to feasibility and environmental review.

GHG Reduction Potential

2030: 386 $MTCO_2e$ **2045:** 3,675 $MTCO_2e$

Performance Goals

2030: Decarbonize 5% of baseline building natural gas use
2045: Decarbonize 7% of baseline building natural gas use

Action Items

M-E1.1 – Evaluate adopting a policy to avoid installing new natural gas infrastructure in future County buildings, except where required for specialized facility needs.

M-E1.2 – Phase out natural gas appliances by replacing with electric appliances at end of useful life.

M-E1.3 – During building upgrades and retrofits, utilize County-generated renewable natural gas (RNG), where feasible. Otherwise, retrofit appliances with electric alternatives.

M-E1.4 – Leverage existing regulated-utility ratepayer-financed incentive programs to support conversion of existing heating systems from gas to electric.

M-E1.5 – Review capital projects during the annual Strategic Financial Planning process for consistency with the CAP goals and prioritize CAP-related projects.

Co-Benefits

M-E2 – Reduce Building Energy Use Throughout County-owned Facilities

Measure M-E2 provides a planning-level framework to evaluate potential approaches for improving energy performance across County-owned facilities through conceptual efficiency upgrades, high-performance building design principles, and sustainable operational practices. The County may consider integrating energy audits at existing buildings, Leadership in Engineering and Environmental Design (LEED) certification pathways for new and existing buildings, and targeted planning-level evaluation of opportunities at cogeneration facilities to identify cost-effective measures that could lower energy demand, reduce GHG emissions, and enhance long-term building performance.

GHG Reduction Potential

2030: 4,059 $MTCO_2e$ **2045:** 3,051 $MTCO_2e$

Performance Goals

2030 & 2045: Reduce energy use 5% below ABAU levels

Action Items

M-E2.1 – Conduct energy audits of existing County-owned facilities to identify energy and sustainability measures to budget for building modification projects.

M-E2.2 – Evaluate the feasibility of Leadership in Engineering and Environmental Design (LEED) Platinum certification for all new County buildings.

M-E2.3 – Evaluate the feasibility of LEED Gold certification for retrofit projects in County buildings.

M-E2.4 – Evaluate the feasibility of LEED for Cities and Communities Platinum certification for the County as a whole.

M-E2.5 – Identify and evaluate energy and sustainability initiatives at County-owned CHP facilities. This includes conducting building and cogeneration facility energy audits to discover energy-saving opportunities. Implement energy efficiency retrofits based on these audits.

Co-Benefits

M-E3 – Support Installation of Solar at County-Owned Facilities

In Southern California, solar energy plays a crucial role in achieving a net-zero carbon footprint by 2045. As a renewable source of power that significantly reduces GHG emissions, solar energy provides a cost-effective means of mitigating climate change and protecting humans, wildlife, and the environment. Measure M-E3 identifies a potential strategy to expand renewable energy generation on County-owned properties through the exploration of solar photovoltaic (PV) systems and battery storage. Evaluating opportunities to integrate solar energy into new and existing facilities may support the County's long-term goals to reduce reliance on fossil fuels, lower greenhouse gas emissions, and increase energy resilience. Through strategic planning, partnerships, and incentive programs, the County may identify and assess solar opportunities across its portfolio where appropriate, helping to meet operational energy needs sustainably while contributing to broader climate goals.

GHG Reduction Potential

2030: 1,313 $MTCO_2e$ **2045:** 0 $MTCO_2e$

Performance Goals

2030: Install 5,000 kilowatts (kW) of solar PV
2045: Install 7,500 kW of solar PV

Action Items

M-E3.1 – Incorporate solar panel installations into the design of new County buildings and evaluate opportunities to retrofit existing County facilities with photovoltaic systems, where feasible.

M-E3.2 – Explore the potential of incorporating solar power and battery storage into the JWA Capital Improvement Project Plan where feasible, based on future planning studies, to support current and future airport energy needs.

M-E3.3 – Explore power purchase agreements or utilize lease-back systems for solar installation.

M-E3.4 – Develop a program through the County's Procurement Office that connects private businesses and individuals with County-approved vendors and resources to incentivize the private adoption of solar power and microgrid technology.

M-E3.5 – Conduct Countywide planning study of County properties for potential solar opportunities.

Co-Benefits

M-E4 – Reduce Carbon Intensity of County-owned Facilities

Measure M-E4 focuses on reducing the carbon footprint of County-owned facilities by supporting increased use of renewable energy sources and innovative technologies. The County operates two CHP cogeneration facilities, the CUF serving 20 Civic Center buildings and the John Wayne Airport CUP, both capable of functioning as microgrids independent from the electric utility. To enhance these assets, the County has identified funding of approximately $16 million to audit CHP-supplied facilities with the goal of reducing fuel consumption and evaluating the use of excess renewable natural gas generated from County landfills to power these plants. Additionally, the County will investigate opportunities to expand microgrid applications and advance grid resiliency through regional energy storage and modern grid technologies such as peak shaving, demand management, and net energy metering. By leveraging these strategies, the County seeks to reduce reliance on fossil fuels, decrease greenhouse gas emissions, and improve operational efficiency in alignment with California's clean energy goals.

GHG Reduction Potential

2030: 49,223 $MTCO_2e$ **2045:** 53,362 $MTCO_2e$

Performance Goals

2030 & 2045: Meet 100% of cogeneration facility natural gas power demand with landfill gas from County landfills

Action Items

M-E4.1 – Support the consideration of renewable energy sources through the local utility or by evaluating participation in power purchase agreements.

M-E4.2 – Evaluate opportunities to utilize County-generated Renewable Natural Gas (RNG) to fuel County-owned CHP facilities, reducing reliance on traditional fossil fuels.

M-E4.3 – Assess the feasibility of integrating onsite renewable energy sources at CHP facilities and examine corresponding operational impacts.

Co-Benefits

SECTOR 2 – MOBILITY (M)

SECTOR GOAL: Reduce GHGs from the County's fleet and employee commute by 25% from baseline levels by 2030 and 50% reduction from baseline levels by 2035 with net zero carbon emissions by 2045.

State and Federal Mandates: State mandates related to the transportation sector include only zero-emission passenger vehicles to be sold in California beginning in 2035 (Advanced Clean Cars); only zero-emission trucks and buses can be sold in California beginning in 2036 (Advanced Clean Fleets); and the phase out of medium and heavy-duty trucks from fleets between 2024 and 2035 (Advanced Clean Trucks).

The EPA regulates GHG emissions from mobile sources by setting fuel efficiency standards, most notably through the CAFÉ standards. These standards have become progressively more stringent since the mid-1970s. The EPA and CARB also regulate emissions standards for criteria air pollutants and toxic air contaminant emissions for nonroad engines and equipment, which often have the co-benefit of increasing fuel efficiency and reducing GHG emissions. These standards have become progressively more stringent since the early 1990s. Emissions standards limit the amount of pollution a vehicle or engine can emit.

Governor Newsom signed EO N-27-25 in June 2025. The Governor's EO reaffirms the state's commitment to ZEV deployment, initiates the development of Advanced Clean Cars III, updates the state purchasing requirements to align with manufactures that continue complying with clean car regulations, prioritizes funding for state incentive programs for clean manufacturers and fleets, continues Clean Truck Partnership work and requires reports on progress every six months, and more.

Foundation: For County of Orange operations, employee commutes represent 2% (19,498 $MTCO_2e$) of total emissions and fleet operations 2% (19,671 $MTCO_2e$). If the County excludes landfill operations from the emissions inventory, employee commutes contribute 15% and fleet 15%.

Mobility Sector Workforce Analysis: Mobility Sector jobs increased by 1,414 from 2018-2023 (1.4%) in Orange County, less than the national growth rate of 9.6%. The Mobility Sector occupations are projected to increase by 5,885 from 2023-2028 (5.9%), less than the national projected growth rate of 8.4%. Regional job concentration per capita for Mobility is 1.04 times the national job concentration. In other words, there are 4% more Mobility Sector jobs in this region than we would expect to find in the average region. Cost of labor in the region is above median. The median earnings for Mobility Sector jobs in the region is $34.69/hr., which is $4.36/hr. above the national median of $30.33/hr.

Fleet transition measures apply to County-owned fleets only.

M-M1 – Support Expansion of County-Owned EV Charging Infrastructure

Measure M-M1 identifies a potential strategy to support future fleet electrification by exploring expansion of EV charging infrastructure at County-owned facilities. This includes evaluating the feasibility of installing chargers. This includes installation of chargers for on-road and off-road equipment, with special focus on key locations like John Wayne Airport. Planning efforts may consider whether new infrastructure complies with CalGreen building standards and includes EV-ready design features to accommodate future charging needs. Additionally, the County may explore opportunities to integrate new charging infrastructure with onsite renewable energy systems such as solar and battery storage to offset electricity demand. By considering expansion of EV charging capacity, the County may facilitate and support fleet electrification, reduce transportation-related emissions, and support operational efficiency. This measure is not quantified because associated emissions reductions are captured under M-M3 below, which reflects the projected impacts of State regulations related to increasing EV infrastructure and EV adoption (including implementation of ACCII and ACF) and County action to transition its fleet to zero-emission technology.

GHG Reduction Potential

2030 & 2045: Not Quantified (included in M-M3)

Action Items

M-M1.1 – Assess the feasibility of installing EV charging stations and related infrastructure for the County fleet, including for off-road equipment, to support the rate of EV procurement.

M-M1.2 – Complete EV charging infrastructure plan at John Wayne Airport (JWA) which includes identifying opportunities to expand EV charging infrastructure available to the public, rental car providers, JWA staff, and County-owned fleet vehicles.

M-M1.3 – Where new utility services are required, consider designing infrastructure to allow interconnection of onsite solar PV or solar PV and battery storage to offset added electric loads.

M-M1.4 – Explore options to increase dedicated EV charging infrastructure, at County facilities to accommodate increase EV charging needs.

Co-Benefits

M-M2 – Reduce VMT for County Employees and County-owned Fleet

Measure M-M2 focuses on reducing transportation-related emissions associated with County operations by encouraging sustainable commuting options, optimizing fleet usage, and supporting reduced vehicle trips. By fostering alternative travel modes and enhancing support for employee trip reduction, the County aims to decrease VMT and associated GHG emissions. These efforts could contribute to improved air quality, reduced congestion, and healthier, more sustainable transportation choices for County employees.

GHG Reduction Potential

2030: 5,784 $MTCO_2e$ **2045:** 1,906 $MTCO_2e$

Performance Goals

2030: Reduce employee commute VMT 40% from 2018 baseline
2045: Reduce employee commute VMT 65% from 2018 baseline

Action Items

M-M2.1 – Evaluate opportunities to support and expand active transportation infrastructure along major commute routes for County employees.

M-M2.2 – Advance the County Active Transportation and Implementation Plan.

M-M2.3 – Explore commute trip reduction programs that incentivize rideshare or alternatives to vehicles for County employees.

M-M2.4 – Explore opportunities to purchase electric vans for carpooling to and from County facilities.

M-M2.5 – Evaluate the feasibility of a pilot program at the County Civic Center to install package pick-up and return lockers.

Co-Benefits

M-M3 – Support Decarbonization of the County-Owned Fleet

County of Orange owns thousands of vehicles that range from passenger vehicles, buses, sports utility vehicles, Class 6, 7 and 8 trucks, as well as on-road and off-road construction equipment fleets. Measure M-M3 identifies a potential strategy to reduce transportation-related emissions by exploring the phased transition of the County-owned fleet from fossil fuel-powered vehicles and equipment to zero-emission technologies. This measure is intended to support future compliance with State regulations and inform County planning efforts to reduce transportation-related GHG emissions. The CAP encourages consideration of strategies to support fleet turnover over time, while encouraging alternative forms of transportation such as carpooling, biking, walking and public transit.

Additionally, this measure proposes to evaluate the feasibility of transitioning the heavy-duty off-road equipment associated with the County's landfill operations from diesel to electric. Initially, the focus may be placed on evaluating the transition of smaller pieces of equipment such as loaders and skid steers. However, the County may continue to evaluate the feasibility of transitioning larger pieces of heavy-duty off-road construction equipment as it becomes available to determine if it meets their needs.

GHG Reduction Potential

2030: 4,076 $MTCO_2e$ **2045:** 12,065 $MTCO_2e$

Performance Goals

2030: Evaluate the feasibility of converting 15% of the OCWR heavy equipment fleet to electric equipment, subject to operational needs and funding availability
2045: Assess opportunities to convert 30% of the OCWR heavy equipment fleet to electric equipment, subject to operational needs and funding availability. Plan for compliance with CARB's Advanced Clean Fleets Regulation by evaluating procurement strategies for EVs over 8,500 Gross Vehicle Weight Rating (GVWR) by 2027

Action Items

M-M3.1 – Plan for the phased replacement of fossil fuel-powered vehicles (medium and heavy-duty) with zero-emission vehicles (ZEV), as mandated by CARB Advanced Clean Fleets Regulation.

M-M3.2 – Review and consider updates to the County's light-duty fleet acquisition policies to support future ZEV procurement, including alignment with Orange County Department of Public Works' fleet transition schedule. Update the County's light-duty (below 8,500 GVWR) fleet acquisition policies such that:

- Align EV replacement with Orange County Department of Public Works' schedule to meet Advanced Clean Fleets ZEV Targets.

M-M3.3 – Complete a master plan assessment of the technological feasibility of specialty heavy-duty ZEV equipment and infrastructure needs.

M-M3.4 – Plan for the phased replacement of remaining fossil fuel-powered goods movement equipment including, but not limited to, cargo-handling equipment, forklifts, and cranes, with zero-emission options.

M-M3.5 – Assess the feasibility of electrifying all aircraft ground support equipment at John Wayne Airport and replace airport primary shuttles with zero-emission shuttles.

Co-Benefits

SECTOR 3 – RESOURCE RECOVERY & WASTE (RRW)

SECTOR GOAL: Establish a Zero-Waste Policy[30] for County buildings by 2027 and achieve zero waste by 2032. This sector also targets a reduction in GHGs of 30% below the baseline by 2030 and 40% by 2035.

State and Federal Mandates: State mandates require the reduction of organic waste to landfills by 75% and improving edible food recovery by 20% by 2025.

While there are no federal laws specific to recycling targets, federal programs such as EPA's WasteWise and Sustainable Materials Management programs, federal grant and tax incentive programs, and federal procurement requirements are leveraged to encourage waste minimization, support recycling infrastructure investment, and increase demand for recycled materials. These types of programs extend into related industries such as clean energy initiatives and fuel standards.

In September 2016, Governor Edmund Brown Jr. set methane emissions reduction targets for California (SB 1383 Lara, Chapter 395, Statutes of 2016) in a statewide effort to reduce emissions of short-lived climate pollutants (SLCP). California's SB 1383 aims to reduce methane emissions from landfills to combat climate change by reducing organic waste to landfills by 75% and improving edible food recovery by 20% by 2025. This regulation includes requirements for organic waste collection processing, compliance & monitoring, outreach & education, edible food recovery, ordinances, procurement of recovered organic waste products, and record keeping.

Foundation: In unincorporated Orange County, fugitive methane emissions generated at landfills account for 37,035 $MTCO_2e$, which is 5% of total emissions in unincorporated Orange County. Waste decomposition at County-owned and -operated landfills accounts for 865,360 $MTCO_2e$ which is 87% of total municipal operations emissions.

30 As defined by CalRecycle, Zero waste is an overall approach to conserving and managing California's resources to protect the environment and health for all by: rethinking design to eliminate waste, reducing what we use, reusing and repurposing what we have, and responsibly recycling remaining materials.

Resource Recovery & Waste Sector Workforce Analysis: Resource Recovery and Waste Sector jobs increased by 13,054 from 2018-2023 (8.3%) in Orange County, less than the national growth rate of 16.9%. These occupations are projected to increase by 6,407 from 2023-2028 (3.8%), less than the national projected growth rate of 6.9%. Regional job concentration per capita for Resource Recovery and Waste Sector jobs is 0.84 times the national job concentration. In other words, there are 16% fewer Resource Recovery and Waste Sector jobs in this region than we would expect to find in the average region. Cost of labor in the region is above the median. The median earnings for Resource Recovery and Waste Sector jobs in the region is $29.70/hr., which is $3.41/hr. above the national median of $26.29/hr.

M-RRW1 – Improve Diversion of Waste at County-Owned Landfills

Measure M-RRW1 aims to enhance waste diversion at County-owned landfills by supporting comprehensive programs and innovative technologies to reduce landfill disposal. By improving recycling and organics collection, expanding food recovery efforts, and researching application of emerging technologies, the County seeks to lower GHG emissions associated with waste management. These efforts are intended to support the County's broader sustainability goals by increasing material recovery, reducing landfill methane emissions, and promoting a circular economy within municipal operations.

The County's waste diversion program consists of the green waste program and food waste program. The County's green waste and food waste programs are designed to reduce organic waste sent to landfills by diverting it to local processing facilities. Residential green waste, food scraps, and manure are directed to one of three composting facilities co-located with landfills to facilitate efficient composting. Meanwhile, commercial source-separated food waste is diverted from landfills and sent to nearby wastewater treatment plants for co-digestion, further minimizing landfill disposal and supporting sustainable organic waste management.

GHG Reduction Potential

2030: 81,006 $MTCO_2e$ **2045:** 127,166 $MTCO_2e$

Performance Goals

2030: Divert 5% of BAU landfilled waste through organics programs

2045: Divert 15% of BAU landfilled waste through organics programs

Action Items

M-RRW1.1 – Establish zero waste pilot program at County facilities.

M-RRW1.2 – Support the availability of public source selective organics and recycling bins at all County-owned facilities.

M-RRW1.3 – Improve signage on bins to clarify what is acceptable for disposal.

M-RRW1.4 – Explore implementing and expand edible food recovery programs to reduce donation dumping, increase efficiencies, reduce service duplications, and align with nutritional needs.

M-RRW1.5 – Continue expanding County procurement standards for recycling and composting.

M-RRW1.6 – Continue County partnerships with participating cities to promote and host used oil and used oil filters exchange events under the guidance of the Cal Recycle Program.

M-RRW1.7 – Continue conducting inspections and investigations of waste tire management at regulated businesses as part of the Cal Recycle Program.

M-RRW1.8 – Explore the feasibility for co-located organic and recyclable material recovery operations at landfills for recycling markets and on-site conversion.

M-RRW1.9 – Research application of emerging technologies to improve proper waste sorting and education.

M-RRW1.10 – Evaluate the use of technologies—such as the Covered Aerated Static Piles (CASP) System—to increase production of compost and mulch, thereby increasing diversion of organic waste from landfills.

M-RRW1.11 – Review the feasibility of a Carbon Sequestration Program through Carbon Farming Projects on Agricultural and open space properties inside and outside of the County and on County owned properties, using the County's already available compost and mulch. Consider creating a carbon farming plan by 2027 to determine its applicability and cost to County.

Co-Benefits

M-RRW2 – Support Increased Waste-to-Energy Potential at County Landfills

Measure M-RRW2 identifies a potential strategy to increase the County's waste-to-energy potential by exploring enhancements to landfill gas capture and evaluating the feasibility of utilizing renewable natural gas (RNG) produced onsite. Orange County Waste and Recycling (OCWR) manages essential services including landfilling, organics recycling, and resource recovery for over 3 million residents. OCWR operates five large landfill sites that generate significant methane emissions. To address this, OCWR exploring implementation of the Smart Landfill Program (SLP), which uses advanced technologies such as real-time sensors, automated wellhead controllers, drone methane detection, and a robust data network to continuously monitor and optimize landfill gas collection. This system may enable rapid detection and remediation of leaks, improving efficiency and reducing methane emissions far beyond traditional monitoring practices. The SLP is intended to support future compliance with California's stringent regulations and may enhance the capture of methane-rich gas for conversion into renewable energy for use in County facilities. In addition, the County may continue to explore regional anaerobic digestion and new recycling technologies to further reduce GHG emissions and support sustainable waste management.

GHG Reduction Potential

2030: 360,004 $MTCO_2e$ **2045:** 764,030 $MTCO_2e$

Performance Goals

2030: Achieve 85% landfill gas collection efficiency at County landfills

2045: Achieve 90% landfill gas collection efficiency at County landfills

Action Items

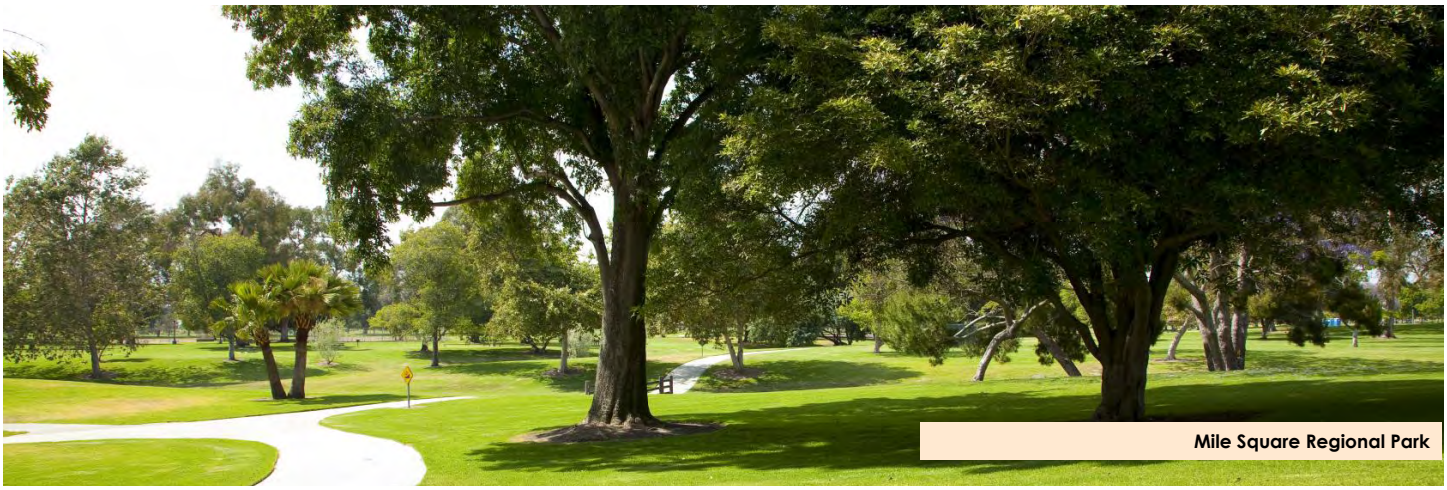
M-RRW2.1 – Continue pursuing the development of an operational RNG facility by 2030, including potential pipeline connections to serve County CHP and energy facilities.

M-RRW2.2 – Evaluate the potential for implementing the Smart Landfill Program (SLP) at all five major County landfills; Frank R. Bowerman, Prima Deshecha, Olinda Alpha, Coyote Canyon (closed site), and Santiago (closed site); to enhance landfill gas capture capability.

M-RRW2.3 – Explore the feasibility of regional anaerobic digestion and conversion technology facilities.

M-RRW2.4 – Explore the feasibility of new recycling technologies that create marketable beneficial products. Assess emerging recycling technologies that may offer, subject to future evaluation and pilot testing.

Co-Benefits


Mile Square Regional Park

SECTOR 4 – ENVIRONMENTAL JUSTICE (EJ)

SECTOR GOAL: Prioritize measures and funding opportunities in low-income, vulnerable, and tribal unincorporated County communities by providing additional resources, workforce development, upgraded infrastructure, open space and safe and reliable alternatives to single-occupant vehicles.

State and Federal Mandates: Include ensuring the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. More detail is provided in Chapter 4.

Foundation: Climate change poses an unequal risk to communities least able to anticipate, cope with, and recover from adverse impacts. [31] These risks include extreme heat affecting weather-exposed outdoor workers, new asthma diagnoses in children ages 0-17, coastal flooding and associated traffic, deaths due to extreme heat, and property damage. Orange County residents and communities are vulnerable to these climate change events, making a CAP more crucial than ever.

31 EPA. 2021. Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts. U.S. Environmental Protection Agency, EPA 430-R-21-003. www.epa.gov/cira/social-vulnerability-report

M-EJ1 – Increase Urban Greening on County Property

Measure M-EJ1 aims to enhance urban greening on County-owned properties by increasing tree canopy and access to recreational open spaces. Through a comprehensive inventory and the development of an Urban Forest Master Plan, the County seeks to address disparities in access to shade and green spaces that disproportionately impact low-income neighborhoods and communities of color. These efforts are intended to provide multiple environmental and social benefits, including GHG emissions reduction through carbon sequestration, improved air quality, enhanced community resilience to heat and climate impacts, and the promotion of health, equity, and quality of life for all residents.

GHG Reduction Potential

2030: 37 $MTCO_2e$ **2045:** 50 $MTCO_2e$

Performance Goals

2030: Plant 1,397 new trees on County property

2035: 20% increase in tree and brush planting beyond the OC Parks 5-year projection in its tree planting program currently set at 1,322 trees by FY 28/29

2045: Additional 20% increase in tree and brush planting based on the total 2035 plantings

Action Items

M-EJ1.1 – Survey and map all open space and parks in and adjacent to unincorporated areas of Orange County to identify communities lacking access to green spaces and tree coverage or opportunities for new planting consistent with the appropriate species and maintenance limitation for that area.

M-EJ1.2 – Develop an Urban Forest Master Plan through OCPW that sustainably increases shade canopies, prioritizing the needs of vulnerable communities on unincorporated County property and/or through collaboration with cities.

Co-Benefits

Proposed Implementation And Monitoring Strategy

Implementation Plan

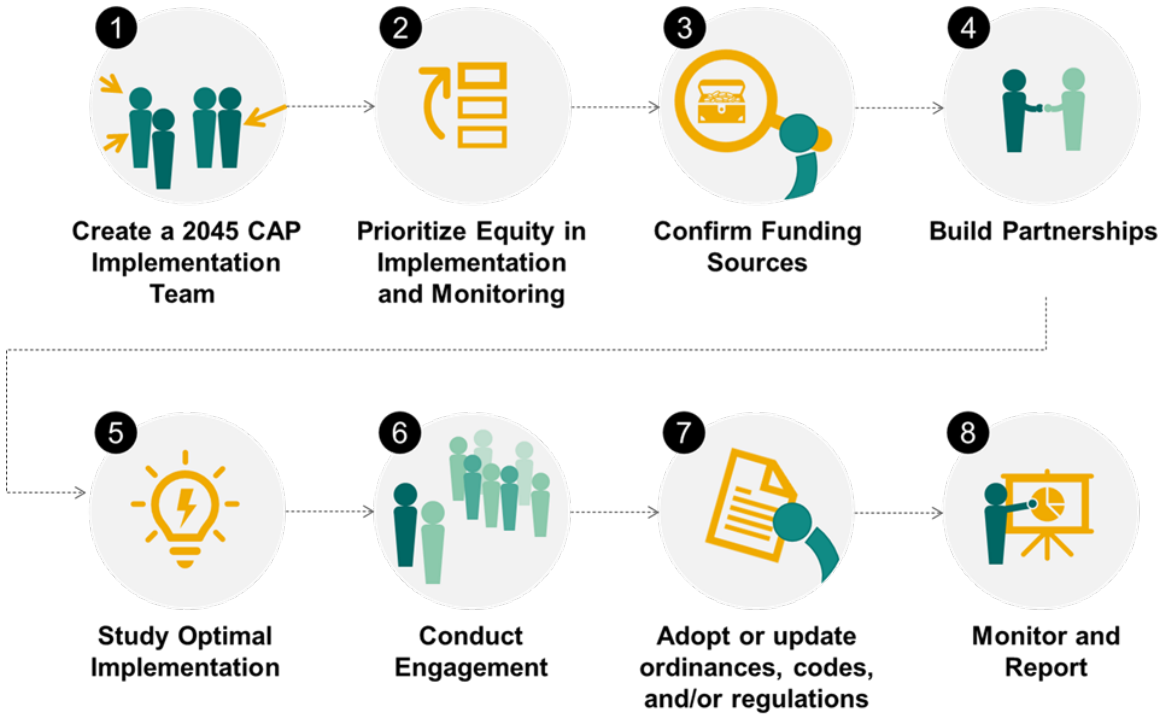
As discussed above, the Phase 2 CAP is not legally binding for implementation of any specific projects. Implementation of any future projects described in the CAP would be subject to future environmental review. This CAP is considered a planning document for the County to move forward with a CAP Implementation Plan and full analysis under CEQA.

Achieving and sustaining the CAP's aggressive long-term, GHG reduction goals would require a dedicated and collective effort. Building a healthy, sustainable, and climate-resilient future involves contributions from many different stakeholders. Successful implementation would depend on effective coordination among County departments, partnerships with community members, securing funding sources, and aligning proposed CAP measures with existing County planning and administrative frameworks.

To support potential future implementation of the Municipal CAP, the County may do the following, as depicted in **Figure 3-3**.

FIGURE 3-3

CAP IMPLEMENTATION WORKFLOW



Create a CAP Implementation Team

The OCWR-led Sustainability Working Group is a cross-departmental CAP planning coordination team with representatives from County departments designated as lead or partner agencies for the CAP measures and actions. As part of the future CAP Implementation Plan the team's goals will include actively supporting departments in carrying out actions, helping to secure funding, and monitoring progress annually.

Prioritize Environmental Justice in Implementation and Monitoring

The County plans to continue to prioritize environmental justice (EJ) in all implementation efforts. As detailed in Sector 4, priority may be given to advancing measures and securing funding that benefit low-income, vulnerable, and tribal communities within the unincorporated County. This includes potentially providing EJ communities with targeted investments, such as improved transportation infrastructure, expanded open space, and workforce development, to consider in future separate planning or project development processes.

To guide CAP implementation, the County will:

1. Foster meaningful, anti-racist, and inclusive public engagement.
2. Direct funding and actions toward low-income, vulnerable, and tribal communities within unincorporated communities.
3. Design emission reduction measures to eliminate disproportionate burdens on low-income, vulnerable, and tribal communities within the unincorporated County.
4. Collaborate with local and nonprofit partners to improve access to information and resources for under served populations within the unincorporated County.

Confirm Funding Sources

Successfully considering future measures and actions related to the CAP would require dedicated resources and securing additional funding sources. Funding efforts will focus on several key areas:

- **Grant Opportunities:** Federal, state, and regional agencies offer grants, loans, and planning assistance for climate-related projects. California's leadership in setting emissions reduction targets and its Cap-and-Trade Program provide numerous state-level funding opportunities. The County's Sustainability Working Group will continue monitoring and pursuing relevant grants to support CAP implementation.
- **County General Fund:** Annual budget allocations fund departmental staff and operations needed to run County programs. When programs require funding beyond staff resources, they are evaluated through the County's budgeting and prioritization process. Additional funds may be obtained via fee programs or discretionary budget allocations.
- **Federal, State, Regional, and Utility Programs and Incentives:** The County may, if appropriate, engage in programs and incentives that encourage energy efficiency, water conservation, renewable energy, EV infrastructure, battery storage, and EV fleet replacements.

Funding sources for the Municipal CAP's four core measures are described in Table 3-3

Build Partnerships

Partnerships play a vital role in advancing the climate-related planning concepts identified in this document. The County may work to identify partners, expand collaboration, and maintain ongoing engagement with stakeholders throughout the implementation process.

Study Optimal Implementation

To inform future decisions about whether and how to pursue the CAP's proposed measures, the County will assess and prioritize key factors such as emissions reduction potential, infrastructure needs, regulatory requirements, costs and savings, funding opportunities, barriers and obstacles, impacts on frontline communities, and necessary partnerships. Any studies initiated under a CAP measure would likely consider additional support needed for frontline communities. Engaging these communities early helps secure funding and tailor projects to local needs.

Findings from these studies may lead to adjustments in performance goals and implementation actions, which could differ from those initially outlined in the CAP. The CAP identifies a study of solar potential at County properties, and many more studies may likely be needed.

Monitor and Report

The CAP Implementation Team may prepare annual progress reports detailing the status of all measures and actions. Additional information about this process is provided below.

Monitoring and Reporting

GHG Inventory and CAP Updates

The CAP and the future CAP Planning Study are living documents that may be continuously monitored and evaluated to ensure their effectiveness. This ongoing oversight may help the County evaluate whether adjustments to planning concepts are appropriate in response to changes in technology, federal and state programs, and other evolving conditions. Flexibility is essential for the County to adapt its measures over time. Additionally, the County may update the GHG emissions inventory and the CAP as determined appropriate by the County and subject to available resources.

Monitoring

The County may, as resources allow, monitor each CAP measure and action using the metrics like the ones listed in Table 3-3, depending on data availability and funding. The County may also track and evaluate the performance of measures aimed at reducing emissions from County operations to inform future decision-making, without establishing any performance obligation. The County may periodically review the status of implementation, whether actions are initiated, ongoing, or completed, and assess their effectiveness against established performance objectives. Adjustments to tracking metrics may be made as necessary to ensure accurate monitoring. Periodic tracking of these metrics for each quantified GHG reduction measure would provide insight into the progress toward the proposed CAP targets and support informed decisions for reprioritizing actions in future updates.

Reporting

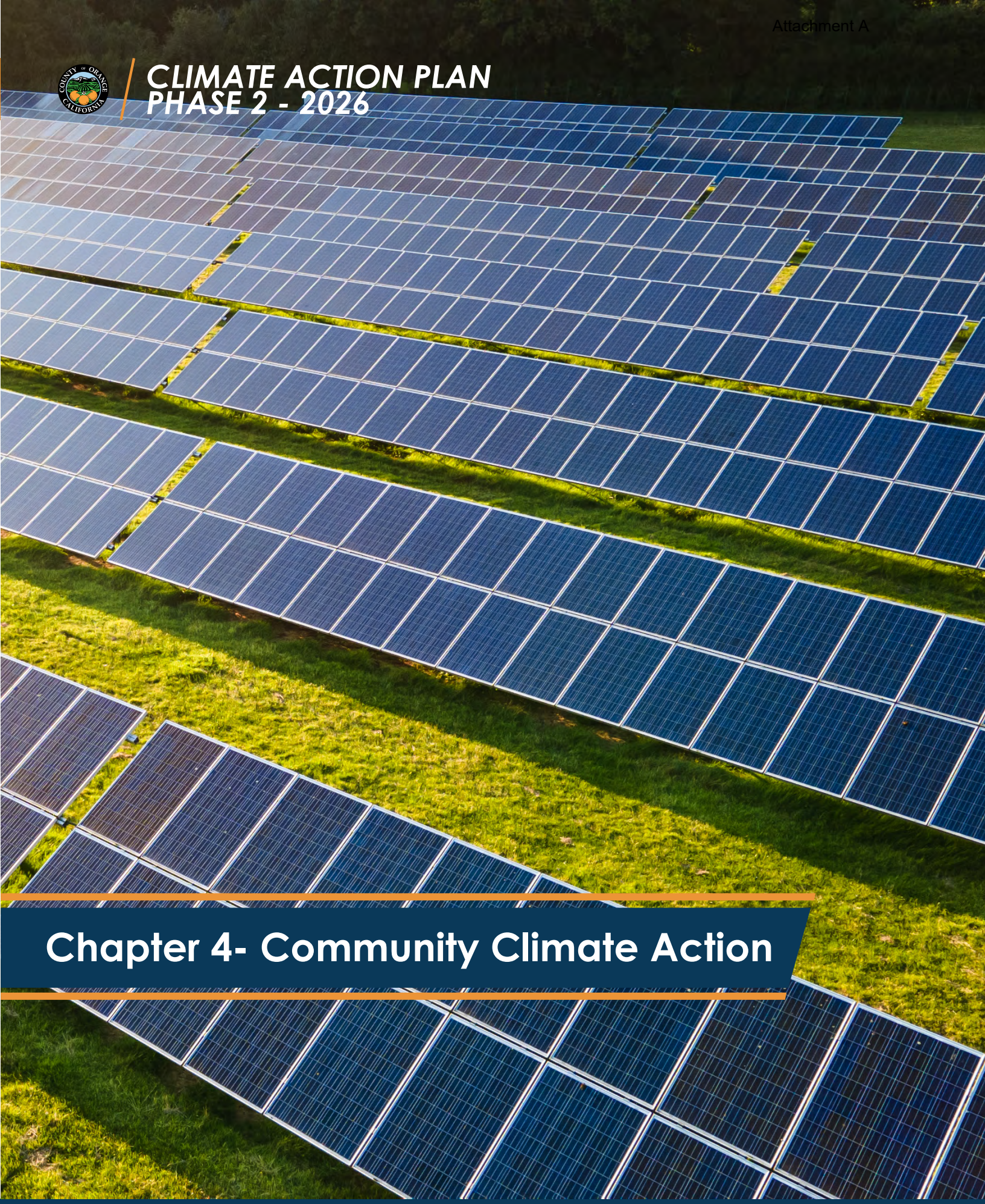
The County may report on the implementation progress of the CAP and the future CAP Implementation Plan other year, or more frequently as requested by the Board of Supervisors. Full CAP updates will take place periodically, which will likely include an updated GHG inventory. Reporting may use metrics like the ones identified in Table 3-3, pending data availability and funding. Through this reporting process, the County may refine the list of tracking metrics needed to monitor CAP implementation and to support future planning discussions.

CEQA

CEQA and the Climate Action Plan

CEQA and its implementing regulations (the CEQA Guidelines) require state and local government agencies to consider the environmental impacts of projects over which they have discretionary authority before acting on those projects.

The CAP is being adopted in compliance with CEQA as a planning-level document. It is not yet a CEQA /qualified GHG reduction plan for streamlining purposes under CEQA Guidelines §15183.5. The County's intent is to prepare, after conducting an Initial Study, a Program Environmental Impact Report (EIR) for the Final CAP in order to formally adopt the CAP, but until that occurs, this Preliminary CAP shall serve as a policy guide. Future projects can be evaluated for consistency with the CAP's goals, but project-level CEQA documents must include standalone GHG analyses unless and until the CAP is CEQA Qualified . In short, this CAP does not impose mandatory requirements on private development nor automatically streamline any CEQA review at this stage.



Chapter 4- Community Climate Action

Community Climate Action

Purpose

The community component of the CAP identifies and aims to reduce GHG emissions sources associated with activities occurring within the unincorporated areas of Orange County. At this Phase, the community component of the CAP does not include binding emissions reductions targets or required implementation measures. The Community component instead proposes measures that could reduce emissions if undertaken voluntarily. The County has limited jurisdiction over many community-level emissions sources such as private vehicle use, energy consumption in privately owned buildings, and land use decisions overseen by other agencies.

Instead, the community strategy emphasizes voluntary incentive-based, and partnership-driven actions that align with regional and State climate goals given that many of these sectors fall outside the scope of direct County authority. This approach allows the County to identify practical, locally appropriate measures and strategies that can deliver community benefits while contributing to broader environmental goals. The plan will lay the groundwork for future community climate action planning, providing baseline inventory data, context, and strategic direction to help the County identify priority areas, explore potential partnerships, and support long-term emission reduction planning efforts without imposing new regulations or mandates.

Greenhouse Gas Emissions Inventory

The County's community inventory quantifies the annual GHG emissions resulting from activities occurring within the unincorporated county involving residents, businesses, and the County government for the calendar year 2018. The community inventory comprises emissions from activities occurring within unincorporated Orange County, including emissions that occur outside of county boundaries because of those activities. A good example is electricity, which is consumed locally but emissions from electricity generation are often produced at power plants outside of the county.

The 2018 community GHG emissions inventory for unincorporated Orange County was developed using the ICLEI U.S. Community Protocol and accounts for CO_2, CH_4, N_2O, and hydrofluorocarbons (HFCs).[32],[33] The inventory is organized into the following sectors, based on the activity type or general source of emissions:

On-Road Transportation: The on-road transportation sector accounts for emissions from fuel combusted by on-road vehicles (passenger vehicles, trucks, and buses).[34]

32 ICLEI, U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, 2019. Available at: https://icleiusa.org/ghg-protocols/

33 Ibid.

34 Electricity consumption emissions associated with electric vehicles are captured in the energy sector.

- **Off-Road Equipment:** The off-road equipment sector accounts for emissions from fuel combusted by off-road equipment (e.g., cargo-handling, agricultural, construction, lawn, and garden, etc.).
- **Rail:** The rail sector accounts for emissions from fuel combusted by freight trains and passenger trains.
- **Energy:** The energy sector includes direct emissions from the consumption of natural gas and indirect emissions from grid-supplied electricity used in buildings and facilities.
- **Solid Waste:** The solid waste sector accounts for fugitive methane emissions generated at landfills by the decomposition of organic material (e.g., paper, food scraps, yard trimmings, etc.).
- **Refrigerants:** The refrigerant sector accounts for emissions associated with the use of high-global-warming-potential (high-GWP) refrigerants (such as HFCs) in on-road vehicles, off-road equipment, and buildings.
- **Water & Wastewater:** The water and wastewater sector accounts for emissions associated with the electricity used for water distribution, wastewater collection, and water/wastewater treatment.
- **Agriculture:** The agriculture sector accounts for emissions associated with manure management, enteric fermentation, and fertilizer application.
- **Large Stationary Source:** The large stationary sector accounts for emissions from fuel combustion, energy use, and product use in large industrial facilities. Large stationary sources are defined as facilities that are subject to CARB's Mandatory Reporting Regulation (MRR), which requires facilities emitting 10,000 $MTCO_2e$ or more per year to report annual GHG emissions and/or facilities emitting 25,000 $MTCO_2e$ or more per year that are subject to compliance obligations under the State's Cap-and-Trade Programs.

In 2018, total emissions generated by community activities occurring in unincorporated Orange County amounted to 768,570 $MTCO_2e$. When excluding large stationary sources covered under Cap-and-Trade, community emissions total 718,991 $MTCO_2e$.[35] The on-road transportation sector was the largest contributor to the inventory, accounting for approximately 337,781 $MTCO_2e$ (47 percent) [36] of total GHG emissions. The remaining sectors include natural gas (21 percent), electricity (20 percent), solid waste (5 percent), refrigerants (3 percent), off-road equipment (2 percent), water and wastewater (1 percent), rail (0.4 percent), and agriculture (0.1 percent).[37] **Table 4-1** presents the 2018 community GHG emissions breakdown by sector. **Figure 4-1** illustrates each major sector's proportion of total 2018 community emissions, excluding large stationary sources. See **Appendix A** for additional details on the methods and data sources used to develop the inventory.

35 The large stationary sector accounts for emissions in large industrial facilities. Local jurisdictions have little-to-no influence over these facilities; furthermore, the State's Cap-and-Trade Program is in place to monitor and reduce GHGs associated with these large emitters. Therefore, the large stationary sector is typically excluded from the forecasts, targets, and emission reduction planning of local jurisdictions' climate plans.

36 The percentages in this paragraph are calculated based on total emissions excluding the large stationary sector.

37 The rail and agriculture sectors are combined in Figure 4-1 as "Other."

TABLE 4-1

2018 UNINCORPORATED ORANGE COUNTY COMMUNITY GHG EMISSIONS

Sector	Emissions ($MTCO_2e$)	Percent of Total (Including Large Stationary)	Percent of Total (Excluding Large Stationary)
On-Road Transportation	337,781	44%	47%
Natural Gas	150,791	20%	21%
Electricity	141,411	19%	20%
Large Stationary	38,669	5%	n/a
Solid Waste	37,035	5%	5%
Refrigerants	24,095	3%	3%
Off-Road Equipment	16,007	2%	2%
Water & Wastewater	8,146	1%	1%
Rail	3,186	0.4%	0.4%
Agriculture	538	0.1%	0.1%
Total with Large Stationary	**757,660**	**100%**	**n/a**
Total without Large Stationary	**718,991**	**n/a**	**100%**

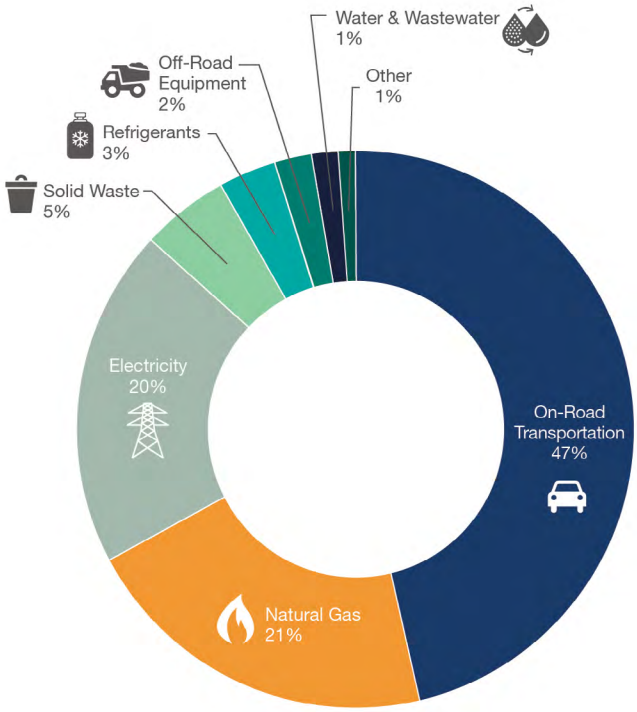


FIGURE 4-1

2018 UNINCORPORATED ORANGE COUNTY COMMUNITY GHG EMISSIONS BY SECTOR

Unlike the other sectors included in the community GHG inventory, the natural and working lands (NWL) inventory represents an estimate of carbon stock. The estimates account for carbon stored in vegetation and soils on natural (e.g., grasslands, forests) and working (i.e., agricultural) lands within the unincorporated county. Carbon can move between ecosystem components due to natural processes (growth, decay, and succession) and disturbances (e.g., wildfire) or anthropogenic forces such as land use change. The NWL inventory is advantageous for tracking these transfers of carbon and the causes of said changes. Table 4-2 shows the unincorporated county's carbon stock by land cover type.

TABLE 4-2

2018 UNINCORPORATED ORANGE COUNTY CARBON STOCK AND ACREAGE BY LAND COVER TYPE

Land Cover Type	Area (acres)[a]	Carbon Stock ($MTCO_2e$)[b]
Cropland	525	0
Developed Land	24,710	0
Forest	7,426	1,055,205
Grassland	16,567	87,193
Other Natural Land	1,366	1,936
Shrubland	122,549	2,728,817
Wetlands	3,413	204,475
Total	**176,555**	**4,077,626**

SOURCES:
a US Geological Survey, National Land Cover Database (NLCD). Available: https://www.usgs.gov/centers/eros/science/national-land-cover-database
b Carbon stock is calculated using carbon sequestration factors from CARB's An Inventory of Ecosystem Carbon in California's Natural & Working Lands. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/NWL%20Inventory%20Report%20Website.pdf

Greenhouse Gas Emissions Forecasts

The emission forecasts used in the CAP account for socio-economic trends, population growth, historic emission patterns, and existing policies and legislation that influence GHG emissions. The 2018 community GHG emission inventory serves as the baseline from which future emissions are forecasted.

Business-as-Usual Forecast

BAU emissions forecasts were developed by sector for the years 2030 and 2045, based on the regional population, housing, and employment growth projections from the SCAG 2024 Regional Travel Demand Model, as shown in Table 4-4. The BAU forecasts assume that GHG emissions will increase from 2018 levels at the same rates as housing, population, employment, and vehicle travel. It provides a baseline for understanding how emissions levels may change over time in the absence of new local, state, or federal actions to reduce them.

Importantly, the BAU forecast is not a policy or plan, but rather a planning tool that helps the County assess the potential scale of effort that could be needed to achieve long-term GHG reduction goals.

TABLE 4-4

UNINCORPORATED ORANGE COUNTY SOCIOECONOMIC DATA

Factor	2018	2030	2045
Population	128,781	146,567	168,799
Households	41,684	51,841	64,539
Employment	33,619	38,246	44,029

Table 4-5 shows the projected total community emissions by sector for each forecast year under the BAU scenario. If no emission reduction measures are taken, total emissions for unincorporated Orange County are forecasted to increase from 718,991 $MTCO_2e$ in 2018 to 1,012,383 $MTCO_2e$ by 2045, a 41 percent increase. Figure 4-4 compares the baseline community inventory to the 2030 and 2045 BAU forecasts.

TABLE 4-5

UNINCORPORATED ORANGE COUNTY COMMUNITY BAU EMISSIONS FORECASTS (MTCO2E)

Sector	Baseline 2018	BAU Forecast 2030	BAU Forecast 2045
On-Road Transportation	337,781	379,397	431,396
Natural Gas	150,791	179,706	215,942
Electricity	141,411	171,703	217,512
Solid Waste	37,035	42,146	48,534
Refrigerants	24,095	44,854	60,353
Off-Road Equipment	16,007	19,309	23,736
Water & Wastewater	8,146	8,949	9,952
Rail	3,186	3,631	4,419
Agriculture	538	538	538
Total	**718,991**	**850,234**	**1,012,383**
Percent Change from Baseline	**N/A**	**18%**	**41%**

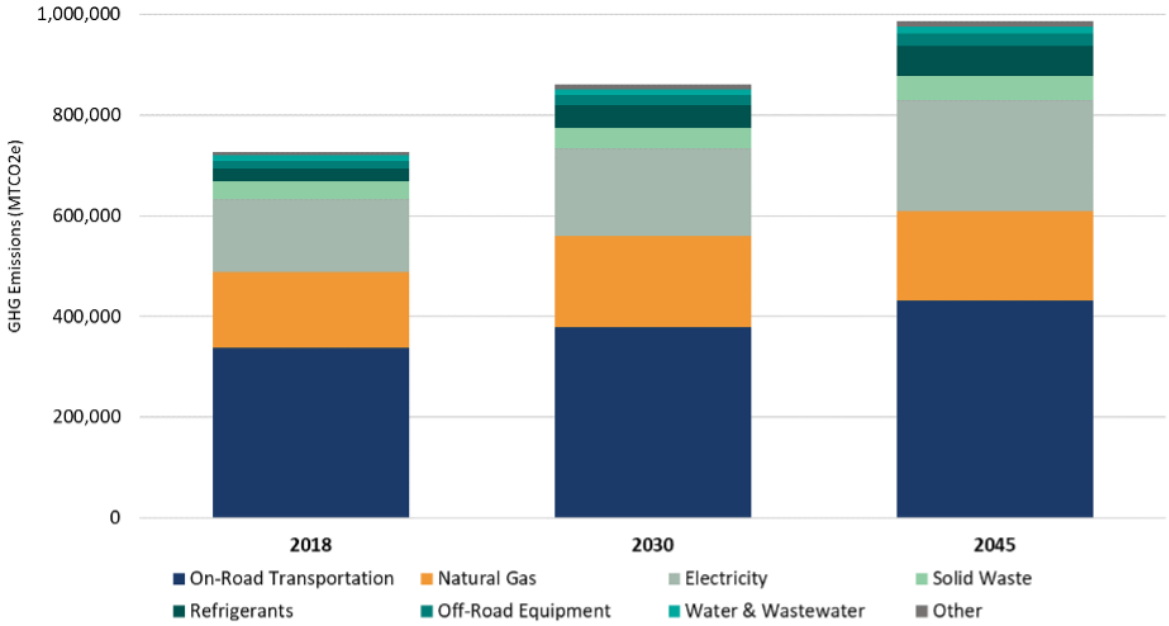


FIGURE 4-4

2030 AND 2045 UNINCORPORATED ORANGE COUNTY COMMUNITY BAU EMISSIONS FORECASTS

Adjusted Business-As-Usual Forecast

The Adjusted BAU forecasts account for future growth under BAU conditions but adjust for federal, State, and County regulations that existed at the time the CAP was developed. These include the CEC 2019 and 2022 Title 24 building energy efficiency requirements, California Renewables Portfolio Standards (SB 100), California's Short-Lived Climate Pollutant Reduction Strategy (SB 1383), Pavley GHG emissions standards for passenger vehicles (AB 1493) and Advanced Clean Car Standards I & II, Advanced Clean Trucks, and California Low Carbon Fuel Standards (EO S-01-07).

Table 4-7 shows the projected community emissions by sector for each forecast year under the Adjusted BAU scenario. Total emissions for unincorporated Orange County are forecasted to decline from 718,991 $MTCO_2e$ in 2018 to 395,294 $MTCO_2e$ by 2045, a 45 percent reduction. **Figure 4-7** compares the community Adjusted BAU forecast to the BAU forecast.

TABLE 4-7

UNINCORPORATED ORANGE COUNTY COMMUNITY ADJUSTED BAU EMISSIONS FORECASTS ($MTCO_2E$)

Sector	Baseline 2018	Adjusted BAU Forecast 2030	Adjusted BAU Forecast 2045
On-Road Transportation	337,781	258,861	73,970
Natural Gas	150,791	174,621	201,510
Electricity	141,411	95,057	0
Solid Waste	37,035	30,021	34,572
Refrigerants	24,095	40,302	52,274
Off-Road Equipment	16,007	19,309	23,736
Water & Wastewater	8,146	6,826	4,274
Rail	3,186	3,631	4,419
Agriculture	538	538	538
Total	**718,991**	**629,168**	**395,294**
Percent Change from Baseline	**N/A**	**-12%**	**-45%**

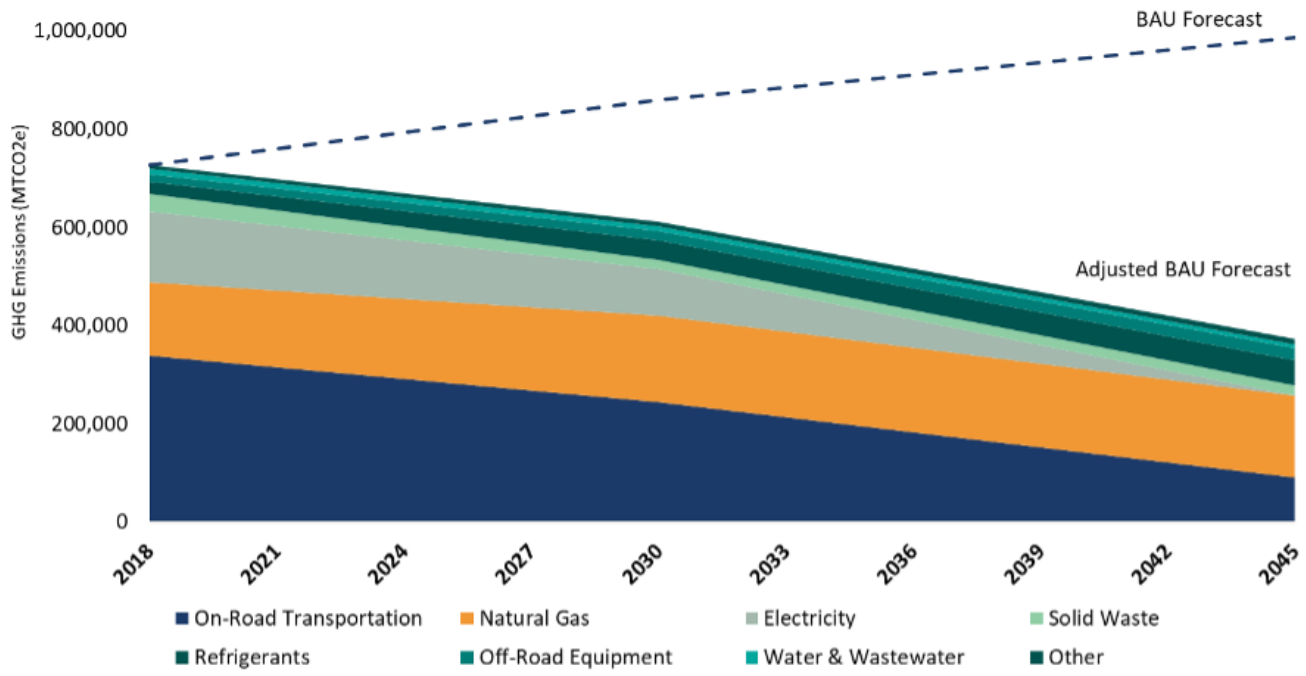


FIGURE 4-7

UNINCORPORATED ORANGE COUNTY COMMUNITY ADJUSTED BAU EMISSIONS FORECASTS

Community Measures and Actions

While State policies and regulations contribute greatly to reducing GHG emissions, local measures are critical to the community's ability to reduce its emissions. This chapter describes the actions the community can take across a variety of strategies related to energy, transportation, solid waste, environmental justice, natural resources, and resilience. These include partnerships, outreach campaigns, incentives, infrastructure investments, and other actions which are organized using the structure below. The C at the beginning of each strategy stands for "Community" and distinguishes it from municipal measures, which begin with an M for "Municipal" (see Chapter 3).

The CAP includes the following six sectors:

1. Energy (C-E)
2. Mobility (C-M)
3. Resource Recovery & Waste (C-RRW)
4. Environmental Justice (C-EJ)
5. Natural Resources (C-NR)
6. Resilience (C-R)

Through locally implemented actions and incentives, described in more detail in the following sections, countywide community emissions reductions amount to 53,632 $MTCO_2e$ by the year 2030 and 81,423 $MTCO_2e$ by the year 2045, as shown in **Table 4-8**. Combined with state measures, local measures would enable a reduction in communitywide GHG emissions to approximately 575,536 $MTCO_2e$ in the year 2030 and 313,872 $MTCO_2e$ in the year 2045, as indicated in **Table 4-9**. This reduction from local measures, when combined with State measures, would reduce emissions by approximately 20 percent from 2018 levels by 2030 and 56 percent from 2018 levels by 2045. The CAP includes five quantified community measures, as shown in **Table 4-8** below. The remaining community measures were either not quantifiable or have emission reductions which were accounted for in a quantified measure. For example, C-M1 is not quantified as a local measure because its reductions are included under the Adjusted BAU forecast as State EV infrastructure and adoption actions, specifically implementation of Advanced Clean Cars II (ACCII). Many of the C-EJ, C-NR, and C-R measures are not quantified due to a lack of data availability and specificity or because these measures would not result in a significant decrease in GHG emissions. Nonetheless, these measures provide meaningful co-benefits that support climate resilience, sustainability, and resource conservation.

TABLE 4-8

UNINCORPORATED ORANGE COUNTY COMMUNITY GHG REDUCTIONS ($MTCO_2E$)

Measure	2030 Annual Reductions	2045 Annual Reductions
Energy (C-E)		
C-E1: Promote Building Decarbonization Throughout the Community	1,976	44,026
C-E2: Reduce Building Energy Use Throughout the Community	3,730	12,361
C-E3: Promote Solar Installation Throughout the Community	7,547	0[a]
Mobility (C-M)		
C-M1: Support Expanding Publicly Accessible EV Charging Infrastructure	NQ	NQ
C-M2: Support the Reduction of Vehicle Miles Traveled (VMT) in Unincorporated Areas through outreach opportunities and potential incentives	37,096	10,992
C-M3: Support Decreasing Tourism-Related GHG Emissions in Orange County	NQ	NQ
C-M4: Support Optimization of Traffic Flow in Unincorporated Areas	NQ	NQ
Resource Recovery & Waste (C-RRW)		
C-RRW1: Provide outreach to increase Public Participation in County Waste Diversion Programs	3,283	14,043
Environmental Justice (C-EJ)		
C-EJ1: Support Expanding Access to Green and Open Space for Communities Lacking Access	NQ	NQ
C-EJ2: Promote and Expand Active Transportation Networks to Essential Destinations	NQ	NQ
C-EJ3: Promote Building Retrofits Located in Underserved Communities	NQ	NQ
C-EJ4: Work with Orange County Transportation Authority (OCTA) to incentivize Transit-Oriented Development (TOD) in Underserved Communities	NQ	NQ
C-EJ5: Promote and Expand Workforce Development in Green Industries	NQ	NQ

TABLE CONTINUES ON FOLLOWING PAGE (94)

TABLE 4-8- CONTINUED

Unincorporated Orange County Community GHG Reductions ($MTCO_2e$)

Measure	2030 Annual Reductions	2045 Annual Reductions
Natural Resources (C-NR)		
C-NR1: Improve Water Supply Reliability and Water Use Efficiency, including potential partnership with South Coast Water District on a desalination facility.	NQ	NQ
C-NR2: Protect and Enhance Surface and Beach Water Quality	NQ	NQ
C-NR3: Improve Flood Management Through Integration with Other Water Management Practices	NQ	NQ
C-NR4 – Restore and Protect Ecosystems, Native Habitat, and Natural Resources	NQ	NQ
Resilience (C-R)		
C-R1: Support the Development of Sea Level Rise Vulnerability Assessments, Adaptation Strategies, and other Coastal Resilience Efforts Across the Entire Coastline	NQ	NQ
C-R2: Improve Preparation for and Response to All Climate and Natural Hazard Events	NQ	NQ
C-R3: Improve Response to Disaster Health Orders	NQ	NQ
Total Reductions	**53,632**	**81,423**

NQ = NOT QUANTIFIED

[a] REDUCTIONS FOR C-E3 ARE ZERO IN 2045 BECAUSE CALIFORNIA'S RENEWABLE PORTFOLIO STANDARD (RPS) REQUIRES THAT ALL ELECTRICITY SOLD BY UTILITIES BE ZERO-CARBON BY 2045, MEANING THAT GRID ELECTRICITY WILL BE CARBON-FREE REGARDLESS OF WHETHER IT IS PRODUCED ONSITE USING SOLAR OR PURCHASED FROM A UTILITY. AS A RESULT, ADDITIONAL EMISSIONS REDUCTIONS FROM DISTRIBUTED SOLAR GENERATION ARE NOT ASSUMED TO OCCUR IN 2045.

TABLE 4-9

UNINCORPORATED ORANGE COUNTY COMMUNITY GHG REDUCTION SUMMARY ($MTCO_2E$)

Data/Metric	2030	2045
BAU Forecast	850,234	1,012,383
Total Reductions from State Measures	221,066	617,089
Total Reductions from Local Measures	53,632	81,423
Resulting Community Emissions with CAP Implementation	**575,536**	**313,872**
Percent Change from 2018	**-20%**	**-56%**

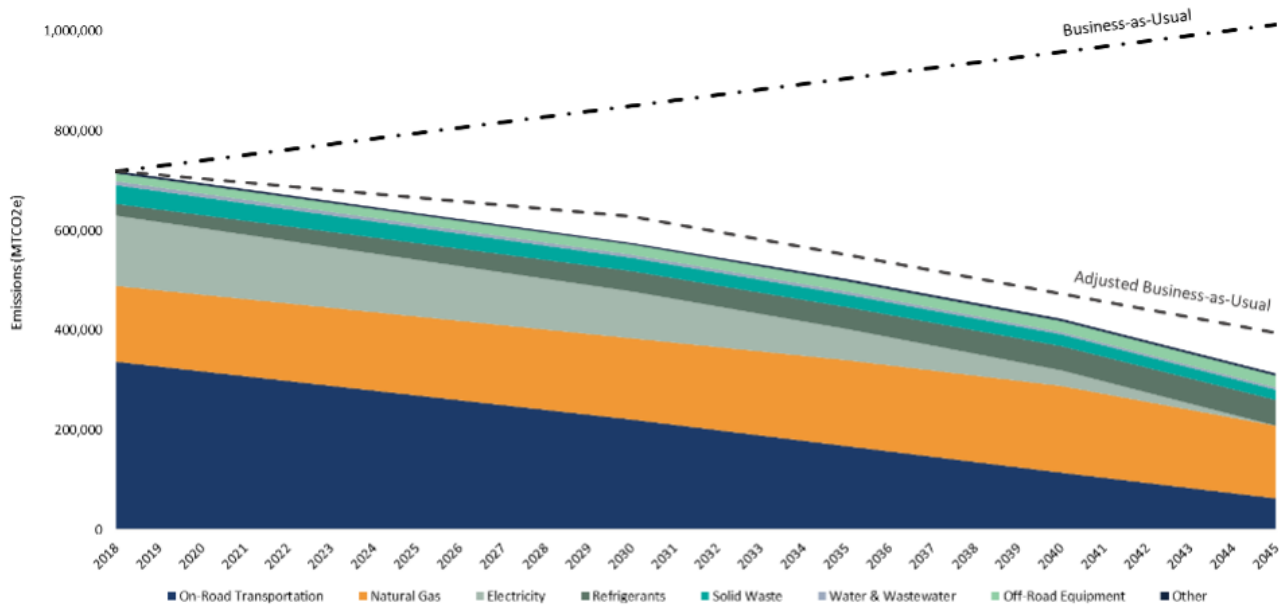


FIGURE 4-8

UNINCORPORATED ORANGE COUNTY'S GHG REDUCTIONS BY SECTOR IN COMPARISON TO THE BAU AND ABAU FORECASTS FOR 2030 AND 2045

SECTOR 1 – ENERGY (E)

Sector Goal: Support the transition to a clean, resilient, and equitable energy system in unincorporated Orange County by promoting building decarbonization, energy efficiency, and renewable energy adoption. Support community members and businesses with technical assistance, education, and incentives to reduce GHG emissions, improve indoor air quality, and lower energy costs, while fostering local workforce development in energy-efficient construction and retrofits.

State Mandates concerning this sector include SB 100 (De Leon, 2018), AB 32 (Nunez, 32), and AB 3232 (Friedman, 2018). More detail is provided in Chapter 3.

Foundation: : In unincorporated Orange County, electricity comprises 20% (141,411 $MTCO_2e$) of all emissions and natural gas comprises 21% (150,791 $MTCO_2e$).

Energy Sector Workforce is projected to grow by 4.2% during 2023-2028, which is below the national projected growth rate of 7.5%. Additional workforce analysis is included in Chapter 3.

Measure C-E1 – Promote Building Decarbonization Throughout the Community

Measure C-E1 advances the County's goal of reducing greenhouse gas emissions from the building sector by encouraging the transition to clean, all-electric buildings. This measure focuses on raising awareness about the environmental and economic benefits of building electrification, while supporting community members with the resources needed to make that transition. These resources include information regarding incentives, rebates and programs being offered by federal, state and/or regional entities to assist with the cost of appliance replacements or retrofits. By fostering partnerships with utilities and regional energy programs, the County aims to remove barriers to adopting electric technologies and build momentum for voluntary upgrades. In addition to reducing emissions, this shift can improve indoor air quality, lower energy costs over time, and support local workforce development in energy-efficient construction and retrofits.

While this measure does not impose mandates, it is designed to build momentum for voluntary decarbonization through a combination of technical support, community engagement, and financial incentives. Over time, these efforts can contribute to reduced building-related GHG emissions and improved indoor air quality, while aligning with statewide goals for carbon neutrality and clean energy.

GHG Reduction Potential

2030: 1,976 $MTCO_2e$ **2045:** 44,026 $MTCO_2e$

Performance Goals

2030: Decarbonize 5% of existing residential and commercial building stock

Decarbonize 15% of new residential and commercial building stock

2045: Decarbonize 20% of existing residential and commercial building stock

Decarbonize 30% of new residential and commercial building stock

Action Items

C-E1.1 – Provide technical assistance to private building owners and tenants regarding building decarbonization and explore opportunities to connect building owners with proficient contractors.

C-E1.2 – Work with local utilities and/or the Southern California Regional Energy Network (SoCalREN) to promote replacement of natural gas appliances through education and financial incentives.

C-E1.3 – Launch educational campaigns for residents, businesses, and building owners and managers on decarbonization and/or electrification programs and incentives offered by the local utilities and/or SoCalREN.

Co-Benefits

Measure C-E2 – Reduce Building Energy Use Throughout the Community

Measure C-E2 supports a long-term reduction in community energy use by advancing energy efficiency upgrades in existing buildings. Through a combination of outreach, financial support, and technical guidance, the County aims to make efficiency improvements more accessible and appealing to property owners and tenants. These efforts are intended to lower utility costs, reduce greenhouse gas emissions, and create healthier, more comfortable indoor environments. By engaging the community and leveraging external funding, the County will help drive widespread adoption of proven energy-saving strategies.

Measure C-E2 aims to lower energy use and decrease greenhouse gas emissions from the built environment. This measure would also help lower utility bills for the community. These efforts complement State goals for energy efficiency and contribute to long-term climate resilience at the community level.

GHG Reduction Potential

2030: 3,730 $MTCO_2e$ **2045:** 12,361 $MTCO_2e$

Performance Goals

2030: Retrofit existing residential and non-residential buildings to achieve a 10% reduction in community-wide energy use compared to 2025 levels

2045: Retrofit existing residential and non-residential buildings to achieve a 25% reduction in total energy use compared to 2025 levels

Action Items

C-E2.1 – Leverage funding to incentivize private building owners to retrofit buildings with energy efficiencies.

C-E2.2 – Provide technical assistance to private building owners and tenants regarding energy efficiency building improvements and practices and explore opportunities to connect building owners with proficient contractors.

Co-Benefits

Measure C-E3 – Promote Solar Installation Throughout the Community

Measure C-E3 encourages the widespread adoption of renewable energy systems in homes and businesses to reduce reliance on fossil fuels and cut greenhouse gas emissions. By making clean energy more accessible, the County seeks to empower residents and property owners to take part in the transition to a more sustainable and resilient energy future. This measure also supports grid reliability and energy independence by promoting battery storage alongside solar and other zero-emission systems. Simplified permitting and collaborative efforts with local jurisdictions aim to remove administrative hurdles and accelerate clean energy deployment across the region.

Although this measure helps support the near- and mid-term transition to clean energy, emissions reductions from onsite solar generation are zero for 2045. This is because California's Renewable Portfolio Standard (RPS) requires that all electricity sold by utilities be zero-carbon by 2045, meaning that grid electricity will be carbon-free regardless of whether it is produced onsite using solar or purchased from a utility. As a result, additional emissions reductions from distributed solar generation are not assumed to occur in 2045. Nonetheless, Measure C-E3 remains a valuable strategy for increasing energy resilience, reducing utility costs, and accelerating the decarbonization of the electricity system in the years leading up to 2045 and beyond.

GHG Reduction Potential

2030: 7,547 $MTCO_2e$ **2045:** 0 $MTCO_2e$

Performance Goals

2030: Encourage the installation of solar in 5% of existing residential buildings

Install 6,000 kilowatts (KW) of solar capacity in non-residential buildings (new and existing)

2045: Encourage the installation of solar in 20% of existing residential buildings

Install 25,000 KW of solar capacity in non-residential buildings (new and existing)

Action Items

C-E3.1 – Provide technical assistance to private building owners and tenants regarding solar installation and explore opportunities to connect building owners with proficient contractors.

C-E3.2 – Streamline County permitting processes of onsite zero-GHG and renewable energy generation systems to accelerate installation times through standardized checklists.

C-E3.3 – Establish incentives for cities to streamline permitting processes for installation of onsite zero-GHG and renewable energy generation systems, including battery storage, throughout the community.

Co-Benefits

SECTOR 2 – MOBILITY (M)

Sector Goal: Advance sustainable, low-emission mobility by expanding access to zero-emission transportation infrastructure, reducing VMT, and optimizing traffic flow. Prioritize equitable access to clean transportation options, active transportation networks, and transit-oriented development, with a focus on environmental justice communities. Collaborate with regional partners to support the transition to ZEVs, improve transit connectivity, and reduce transportation-related GHG emissions.

State Mandates concerning this sector include Advanced Clean Cars and Advanced Clean Fleets. More detail is provided in Chapter 3.

Foundation: In unincorporated Orange County, on-road transportation comprises 47% (337,781 $MTCO_2e$) of total emissions and rail comprises 0.4% (3,186 $MTCO_2e$).

Mobility Sector Workforce is projected to grow by 5.9% during 2023-2028, which is below the national projected growth rate of 8.4%. Additional workforce analysis is included in Chapter 3.

Measure C-M1 – Support Expanding Publicly Accessible EV Charging Infrastructure

Measure C-M1 aims to accelerate the transition to zero-emission transportation in unincorporated Orange County by expanding access to public EV charging infrastructure. The County seeks to increase the number of publicly accessible charging stations across the community, with a focus on high-demand locations and key destinations. Recognizing the importance of equitable access to clean transportation, the measure prioritizes installation of EV infrastructure in Environmental Justice communities that have historically faced greater exposure to air pollution and less access to EV infrastructure. The County will also support regional transit agencies in their efforts to transition from fossil fuel-powered rail and equipment to zero-emission alternatives. To enable the deployment of high-powered charging stations, such as Level 3 direct current (DC) fast chargers, the County will explore options to provide dedicated electric service for public charging infrastructure.

This measure is not quantified because associated emissions reductions are captured in the ABAU forecast, which reflects the projected impacts of State regulations related to increasing EV infrastructure and adoption, including implementation of ACCII. However, local action remains essential to realizing these reductions, as successful implementation of ACCII relies on widespread availability of EV charging infrastructure and removal of local barriers to EV adoption. Measure C-M1 demonstrates the County's role in enabling this transition and supporting equitable access to zero-emission transportation.

GHG Reduction Potential

2030 & 2045: Not quantified (included in ABAU)

Action Items

C-M1.1 – Increase the quantity of public-facing charging stations community-wide.

C-M1.2 – Prioritize EV charging in Environmental Justice communities.

C-M1.3 – Evaluate providing dedicated electric services to new public-primary EV charging infrastructure to facilitate Level 3 DC fast charging.

Co-Benefits

Measure C-M2 – Support the Reduction of Vehicle Miles Traveled (VMT) in Unincorporated Areas through Public Outreach and Incentives

Measure C-M2 focuses on supporting the reductioning of VMT throughout Orange County's unincorporated areas by promoting a shift in travel behavior toward more sustainable modes of transportation and supporting land use patterns that reduce the need for longer car trips. By conducting public outreach, connecting residents with incentives, exploring partnerships with transportation agencies and thoughtful land use planning, the County aims to support the creation of more connected, accessible communities where residents have viable alternatives to single-occupancy vehicle travel, where feasible. Implementation efforts will consider the County's limited land use authority in some areas and will be tailored to fit the unique needs and characteristics of unincorporated communities. This measure provides a foundation for long-term strategies to reduce transportation-related greenhouse gas emissions and support regional mobility and air quality goals.

GHG Reduction Potential

2030: 37,096 $MTCO_2e$

2045: 10,992 $MTCO_2e$

Performance Goals

2030: Reduce passenger VMT by 2% from 2018 levels

2045: Reduce passenger VMT by 5% from 2018 levels

C-M2.1 – Evaluate opportunities to support and expand active transportation infrastructure to major destinations within unincorporated areas.

C-M2.2 – Promote and/or incentivize transit-oriented, mixed-use, and compact development through permit streamlining and incentives.

Co-Benefits

Measure C-M3 – Support Decreasing Tourism-related GHG Emissions

Measure C-M3 addresses the climate impacts of tourism by focusing on strategies to lower transportation-related emissions from visitor travel. Given Orange County's status as a major tourist destination, this measure seeks to better understand and influence how visitors move throughout the region. By exploring cleaner vehicle options and strengthening connections between tourist destinations and transit systems, the County aims to make sustainable travel choices more convenient and visible to visitors. This measure also supports broader mobility goals by promoting collaboration between transportation agencies, the tourism sector, and local attractions to reduce congestion, improve air quality, and shift visitor travel toward low-emission alternatives.

The emissions reductions from this measure are not currently quantified because tourism-related GHG emissions are highly variable and depend on factors outside the County's direct control, including airline operations, visitor travel behavior, and seasonal fluctuations in tourism activity. However, this measure establishes a foundation for future tracking and engagement. By targeting high-traffic tourist corridors and promoting lower-emission travel alternatives, Measure C-M3 supports broader regional goals related to transportation, air quality, and climate resilience.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-M3.1 – Collaborate with John Wayne Airport (JWA) to quantify the annual number of tourism-specific passenger visits to Orange County via aircraft.

C-M3.2 – Pursue opportunities to increase the availability of and/or provide incentives for the use of zero-emission rental cars at JWA.

C-M3.3 – Coordinate with public transportation operators, chambers of commerce, the Travel Visitors Bureau, Disney, Orange County Fair and Event Center, JWA, and the Los Angeles-San Diego-San Luis Obispo Rail Corridor (LOSSAN Rail Corridor) to expand transit service areas at tourist destinations.

Co-Benefits

Measure C-M4 – Support Optimization of Traffic Flow in Unincorporated Areas

Measure C-M4 aims to cut transportation-related GHG emissions by reducing vehicle idling and improving overall traffic efficiency. By targeting congestion at busy corridors and high-traffic locations, this measure helps lower fuel use, enhance air quality, and reduce travel time for drivers. Infrastructure upgrades such as signal coordination, smarter circulation design, and digital parking tools can help streamline vehicle movement and limit unnecessary delays. In addition to local benefits, this measure supports broader regional mobility goals through coordination with adjacent jurisdictions, contributing to a more connected and efficient transportation network across Orange County.

While Measure C-M4 reduces GHG emissions, it is not quantified in the CAP because it is difficult to isolate and model GHG emissions reductions from localized traffic flow improvements. Measure C-M4 complements broader transportation and emissions reduction strategies, and provides community benefits, such as improved air quality, reduced congestion, and enhanced mobility.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-M4.1 – Support implementation of traffic signal synchronization on arterial roads within the County's jurisdiction.

C-M4.2 – Support improvements to circulation at the airport to decrease idling time through congestion relief projects and policies.

C-M4.3 – Evaluate investment in smart parking infrastructure where necessary to reduce congestion and idling at high density developments such as the airport.

C-M4.4 – Coordinate or partner with adjoining cities to synchronize traffic signals across jurisdictions to reduce idle time and improve traffic flow.

Co-Benefits

Compost Piles - OC Waste & Recycling

SECTOR 3 – RESOURCE RECOVERY & WASTE (RRW)

Sector Goal: Promote waste diversion, recycling, organics recovery, and innovative zero-waste strategies. Engage the community through education, outreach, and partnerships to reduce per capita waste disposal, support compliance with state mandates, and advance broader sustainability goals. Foster the development of circular economy practices that minimize landfill emissions, recover valuable resources, and enhance community resilience.

State Mandates concerning this sector include methane emissions reduction targets in SB 1383 (Lara, 2016). More detail is provided in Chapter 3.

Resource Recovery & Waste Sector Workforce is projected to grow by 3.8% during 2023-2028, which is below the national projected growth rate of 6.9%. Additional workforce analysis is included in Chapter 3.

Measure C-RRW1 – Provide Outreach to Public Participation in County Waste Diversion Programs

Measure C-RRW1 supports a comprehensive approach to reducing GHG emissions from solid waste by encouraging more effective waste diversion, reuse, and recovery practices across the community. The County seeks to pilot new programs to explore innovative zero-waste strategies while expanding access to recycling and organics collection at public facilities. Improved public education and clear signage will help residents and visitors better understand proper disposal practices. Additionally, the measure emphasizes enhancing food recovery systems to reduce edible waste and meet community needs, while continuing collaborative efforts with cities to promote the safe handling and reuse of materials such as used oil and household items.

Measure C-RRW1 is designed to build community awareness and engagement around waste diversion to support compliance with State mandates and advance broader sustainability goals.

GHG Reduction Potential

2030: 3,283 $MTCO_2e$ **2045:** 14,043 $MTCO_2e$

Performance Goals

2030: Reduce waste disposal per capita to 0.45 tons per year

2045: Reduce waste disposal per capita to 0.30 tons per year

Action Items

C-RRW1.1 – Research and evaluate emerging technologies to improve recycling awareness and reduce cross-contamination.

C-RRW1.2 – Support the availability of public source selective organics and recycling bins at all County-owned facilities.

C-RRW1.3 – Improve signage on bins to clarify what is acceptable for disposal.

C-RRW1.5 – Continue County partnerships with participating cities to promote and host used oil and used oil filters exchange events under the guidance of the Cal Recycle Program.

C-RRW1.6 – Continue County partnerships with participating cities to promote and host marine flare collection events.

C-RRW1.7 - Continue outreach to the community to distribute compost and mulch through County-sponsored events and activities.

C-RRW1.8 – Explore expanding opportunities for reuse and repurpose of large, discarded items, such as furniture.

Co-Benefits

Community Stakeholder Meeting

SECTOR 4 – ENVIRONMENTAL JUSTICE (EJ)

SECTOR GOAL: Prioritize measures and funding opportunities in low-income, vulnerable, and tribal communities, by providing additional resources, workforce development, upgraded infrastructure, open space and safe and reliable alternatives to single-occupant vehicles.

State and Federal Mandates: California state law defines Environmental Justice (EJ) as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. [38] Fairness in this context means that everyone should benefit from a healthy environment, and the burdens of pollution should not be borne by sensitive populations or communities experiencing its adverse effects.

Federal agencies must consider environmental justice in their activities under the National Environmental Policy Act (NEPA).

The principles of environmental justice call for fairness regardless of race, color, national origin or income, and for the meaningful involvement of communities in the development of laws and regulations that affect their natural surroundings, and the places people live, work, play and learn. California was one of the first states to codify environmental justice in statute. Community leaders in the environmental justice movement strive to meaningfully include communities disproportionately impacted by pollution in decision-making processes, aiming to lift the unfair burden of pollution from those most vulnerable to its effects [39]

38 Gov. Code, § 65040.12, subd. (e

39 California Environmental Protection Agency, Environmental Justice, accessed on May 15, 2024 at https://calepa.ca.gov/envjustice/

Foundation: Climate change poses an unequal risk to communities least able to anticipate, cope with, and recover from adverse impacts. These risks include extreme heat affecting weather-exposed outdoor workers, new asthma diagnoses in children ages 0-17, coastal flooding and associated traffic, deaths due to extreme heat, and property damage. Orange County residents and communities are vulnerable to these climate change events, making a CAP more crucial than ever. All improvements implemented through the CAP are intended to benefit EJ communities. In Orange County, disparities exist in access to nature and open space, clean air, sufficient transportation, and safe and healthy homes. Additionally, there are gaps in economic opportunity and a considerable number of residents rely on Medi-Cal Countywide.

In 2025, the County of Orange was selected as one of the 2025-26 Environmental Justice Project Awards by the U.S. Green Building Council (USGBC) California. The award funding, along with support from USGBC of California's extensive network of sustainability professionals, will allow the County to advance the OC Energy Audits and Outreach to Mobile Home Communities Project. The project, which focuses on providing energy audits, education, and resources to low- and moderate-income (LMI) households in Orange County, will help residents replace older appliances with new energy-efficient options and explore the possibility of deploying solar energy, microgrids, and other state-of-the-art technologies.

Measure C-EJ1 – Support Expanding Access to Green and Open Space for Communities Lacking Access

Measure C-EJ1 seeks to improve environmental equity by enhancing access to green spaces, shade, and recreational amenities in underserved communities within the community. By increasing urban tree canopy and green infrastructure, this measure contributes to GHG reductions primarily through carbon sequestration and by mitigating urban heat island effects, which can reduce energy demand for cooling. In addition to its climate benefits, Measure C-EJ1 offers significant co-benefits including improved public health, enhanced community resilience to heat and climate change, and strengthened social well-being. The measure also prioritizes collaboration with local tribes and community organizations to ensure culturally relevant and equitable implementation.

This measure is not quantified because many of the green space expansion opportunities occur on land outside of the County's direct jurisdictional control. The quantified benefits of tree planting and urban greening efforts within the County's jurisdiction are reflected under municipal Measure M-EJ1. However, this measure plays an important role in supporting long-term climate adaptation and environmental justice goals.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-EJ1.1 – Conduct an inventory of land uses in and adjacent to unincorporated areas of Orange County to identify communities lacking access to recreational amenities, green and open spaces, and tree coverage.

C-EJ1.2 – Develop an Urban Forest Master Plan that sustainably increases shade canopies, prioritizing the needs of vulnerable communities.

C-EJ1.3 – Meet with representatives from California Native American Tribes with ancestral lands in Orange County to identify tribal priorities and access needs.

C-EJ1.4 – Collaborate with cities, public transportation agencies, and community-based organizations (CBOs) to plant trees for shade at bus stops in areas without shade to reduce heat exposure for public transportation riders.

C-EJ1.5 – Enhance partnerships with schools and cities to provide technical support and expertise for developing community gardens.

Co-Benefits

Measure C-EJ2 – Promote & Expand Active Transportation Networks to Essential Destinations

Measure C-EJ2 aims to improve access to safe and reliable active transportation options, such as walking and biking, in vulnerable communities within the community. By expanding and enhancing pedestrian and bicycle infrastructure to essential destinations like schools, transit stops, and commercial centers, this measure encourages mode shift away from single-occupancy vehicles, reducing VMT and associated greenhouse gas emissions. Beyond the GHG benefits, improved active transportation networks provide substantial co-benefits including increased physical activity, enhanced public health, safer streets, and greater social equity. This measure emphasizes community engagement to ensure that investments address local priorities and needs and foster inclusive and accessible transportation options.

This is a supporting measure and is not quantified because there is currently insufficient data on existing active transportation infrastructure, travel patterns, and potential mode shifts. However, the VMT reductions from implementation of measure C-EJ2 are captured under measure C-M2, above.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-EJ2.1 – Engage in community outreach to ascertain the highest priorities of EJ, Low Income Disadvantaged Communities (LIDAC), and other vulnerable communities.

C-EJ2.2 – Review access to and condition of sidewalks, crosswalks, and public transportation in vulnerable communities.

C-EJ2.3 – Identify necessary improvements to traffic signals and crosswalks to enhance pedestrian safety in vulnerable communities.

C-EJ2.4 – Support improving the connectivity of the bicycle network for all ages and abilities by expanding safe bicycle infrastructure.

C-EJ2.5 – Support enhancing pedestrian infrastructure in high-density areas by expanding protected multi-use trails and sidewalks.

C-EJ2.6 – Explore establishing Safe Routes to Schools programs to prioritize public health in collaboration with Health Care Agency (HCA), cities, school districts and public transportation agencies.

C-EJ2.7 – Provide technical assistance to schools and cities to support the initiation of Safe Routes to Schools efforts.

Co-Benefits

Measure C-EJ3 – Promote Building Retrofits Located in Underserved Communities

Measure C-EJ3 aims to support energy efficiency, decarbonization, and health improvements in buildings located within underserved and vulnerable communities. This measure focuses on facilitating building and appliance retrofits that reduce greenhouse gas emissions by improving energy performance and replacing fossil fuel appliances with cleaner alternatives. In addition to climate benefits, the measure addresses critical health-related building upgrades such as mold remediation and lead hazard reduction, recognizing the intersection of environmental quality and public health. Through partnerships with nonprofits and CBOs, outreach and education will be prioritized to raise awareness about retrofit opportunities and benefits. Streamlining permitting and approval processes will help remove barriers to timely implementation.

This is a supporting measure and is not quantified because it represents a subset of the energy efficiency benefits and GHG emissions reductions quantified under measure C-E2, above. Furthermore, it is challenging to identify the number, type, and scale of retrofits that will occur as a direct result of the measure at this time.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-EJ3.1 – Research public-private partnership opportunities available for building and appliance retrofits or replacements aimed to decarbonize, weatherize, or remove health risks from homes or businesses.

C-EJ3.2 – Identify vulnerable communities that qualify for building and appliance retrofits or replacements aimed to decarbonize, weatherize, or remove health risks from homes or businesses. Explore opportunities to address other critical building upgrades such as mold or lead remediation and pest management during decarbonization retrofits.

C-EJ3.3 – Partner with local nonprofits and CBOs to raise awareness and educate residents, business-owners, or landlords about the benefits of building and appliance retrofits.

C-EJ3.4 – Establish a streamlined process for County permitting and approval of retrofit projects to reduce barriers and expedite implementation in vulnerable communities.

C-EJ3.5 – Monitor data, provide care coordination and/or education and/or conduct investigation for reported elevated blood lead levels in children.

Co-Benefits

Measure C-EJ4 – Work with Orange County Transportation Authority (OCTA) to Support Incentivizing Transit Oriented Development (TOD) in Underserved Communities

Measure C-EJ4 seeks to promote sustainable, compact, and affordable housing developments near public transit in underserved communities. By prioritizing resources and incentives for projects that reduce VMT and support higher density near transit, this measure encourages a shift away from car-dependent development patterns, contributing to greenhouse gas emissions reductions. Streamlined permitting processes are intended to reduce barriers and accelerate the delivery of affordable housing, addressing both climate and housing equity goals. Partnerships with transit agencies will ensure that these developments are well integrated with existing transportation networks, enhancing accessibility and mobility for vulnerable populations.

This measure is not quantified because the specific location, scale, and timing of TOD projects in underserved communities are currently unknown. Without this information, it is not possible to estimate associated VMT or GHG reductions. The potential GHG benefits of TOD are reflected in Measure C-M2, which quantifies reductions from compact, mixed-use, transit-accessible development patterns on a more general scale as this measure is dependent upon interaction with cities, OCTA, funding opportunities, and strategic design initiaitives beyond the scope of this CAP.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-EJ4.1 – Consistent with SCAG's Regional Transportation Plan/Sustainable Communities Strategy, prioritize resources such as Orange County Housing Authority (OCHA) project-based vouchers, to fund Affordable Housing and Sustainable Communities Programs and incentivize developers to pursue projects that meet VMT reduction, density, and proximity to public transportation standards.

C-EJ4.2 – Establish a streamlined process for County permitting and approval of TOD developments to reduce barriers and expedite affordable housing in vulnerable communities.

C-EJ4.3 – Partner with public transportation agencies to support efforts to ensure TOD projects are well-connected to existing public transportation networks, enhancing accessibility for vulnerable communities.

Co-Benefits

Measure C-EJ5 – Expand and Promote Workforce Development in Green Industries

Measure C-EJ5 focuses on cultivating a skilled workforce to support Orange County's clean energy and sustainability goals, especially within underserved communities. The County will collaborate with schools, community organizations, labor groups, and local businesses to create educational and career-building opportunities in sectors like renewable energy, energy efficiency, and sustainable construction. These initiatives aim to provide hands-on experience and certification pathways that prepare residents for employment in growing green industries. Additionally, efforts will be made to raise awareness of these programs and connect employers with qualified workers. Training for contractors and tradespeople will also be emphasized to ensure the workforce is ready to meet the demands of building retrofits and other climate-related projects.

While this measure itself does not directly lead to quantifiable GHG reductions because its primary focus is on training and preparing workers for employment in green sectors, rather than directly implementing emission-reducing projects or policies, it is an essential component of the County's broader climate strategy by enabling equitable economic opportunities and supporting the successful adoption of climate actions.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-EJ5.1 – Partner with local educational institutions, vocational schools, community colleges, CBOs, and other nonprofits to develop and offer training and certification programs in green industries, such as renewable energy, energy efficiency, sustainable construction, and environmental conservation for vulnerable communities.

C-EJ5.2 – Create internship and apprenticeship programs in collaboration with local labor unions, businesses, nonprofits, CBOs, and within County departments to provide hands on experience and career pathways in green jobs for people with barriers to employment.

C-EJ5.3 – Partner with local nonprofits and CBOs to raise awareness about County workforce training programs and opportunities in green jobs, including hosting job fairs, informational workshops, and career counseling services, targeting vulnerable communities.

C-EJ5.4 – Provide training and certification programs for local contractors and construction workers to ensure they are equipped to perform retrofit work. Explore opportunities to improve building owners' awareness of contractors proficient in decarbonization, energy efficiency, renewable energy, and other green practices.

Co-Benefits

SECTOR 5 – NATURAL RESOURCES (NR)

SECTOR GOAL: Collaborate with Orange County cities and other partners to protect the County's 42 miles of coastline, restore natural habitats such as streams and coastal wetlands, ensure access to diverse water supplies, and support countywide water conservation targets. Where feasible, adapt stormwater and flood infrastructure to incorporate nature-based features and natural processes that enhance ecosystem health, provide flood protection, and meet regulatory requirements.

State and Federal Mandates: Numerous state mandates focus on the protection of California's natural resources. The Coastal Act guides land use and development decisions along the California coast, with a goal to maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and built resources. [40] CEQA, adopted in 1970, requires public agencies and local governments to evaluate and disclose the environmental impacts of development projects or other major land use decisions, and to limit or avoid those impacts to the extent feasible. [41] The Porter-Cologne Water Quality Control Act, enacted in 1969, established a comprehensive program to protect water quality and the beneficial uses of water in California. Other regulatory authorities include the California State Water Board, California Department of Forestry and Fire Protection, California Department of Fish and Wildlife and the California Natural Resources Agency.

The federal government also enforces several conservation measures to protect natural resources. These include the Clean Air Act of 1990, the Clean Water Act of 1977, the Endangered Species Act of 1973, and the Safe Drinking Water Act of 1974, administered by agencies such as the EPA, U.S. Department of the Interior and the U.S. Fish and Wildlife Service [42] The National Environmental Policy Act (NEPA) is another significant federal legislation aimed.

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40 California Coastal Commission, accessed on May 15, 2024, at https://www.coastal.ca.gov/laws/

41 California Environmental Quality Act, Cal. Pub. Res. Code §§ 21000–21189.57

42 Federal Emergency Management Agency, accessed on May 15, 2024, at https://www.fema.gov/emergency-managers/practitioners/environmental-historic/laws/descriptions.

Foundation: Promoting natural resource stewardship is essential to maintaining the health and resilience of natural ecosystems and communities. The natural areas within and bordering Orange County, including the ocean, mountains, and green spaces, benefit residents through clean water and access to nature for recreation, and health and leisure. Further, these same attractive qualities bring millions of visitors to Orange County every year in support of the region's economy. Orange County municipalities and agencies have a rich history of effectively managing natural resources as exemplified with its renowned beaches, marine protected areas, expansive and publicly accessible wildland open spaces, nationwide leadership in water recycling and reuse, and density of urban parks and green spaces. Compliance with state and federal mandates helps guide these initiatives, ensuring that the environmental impacts of human activities are minimized, and natural resources are preserved for future generations. By developing and implementing necessary infrastructure improvements, including, where possible, those with increased reliance on natural processes and nature-based features, the County can achieve its goal of enhancing natural resource stewardship and extend the benefits that these resources provide to residents and the economy.

Natural Resource Sector Workforce Analysis: Water Supply and Water Treatment Sector-related jobs decreased by 3,683 from 2018-2023 (-4.1%) in Orange County, less than the national growth rate of 4.4%. The Water Sector related occupations are projected to increase by 4,406 from 2023-2028 (5.1%), less than the national projected growth rate of 5.9%. Regional job concentration per capita for Water Sector related occupations is 0.95 times the national job concentration. In other words, there are 5% fewer Water Sector-related occupations in this region than we would expect to find in the average region. Cost of labor in the region is above median. The median earnings for Water Sector related occupations in the region is $27.05/hr., which is $1.54/hr. above the national median of $25.51/hr.

Measure C-NR1 – Improve Water Supply Reliability and Water Use Efficiency

Measure C-NR1 focuses on enhancing water conservation and management practices across the community to reduce energy use and support long-term water sustainability. The County seeks to promote efforts to decrease overall water consumption while working collaboratively with local water agencies to improve the efficiency and resiliency of drinking water treatment and distribution systems. Optimizing sanitary sewer operations could further reduce energy demands and increase opportunities for recycled water use. Protecting groundwater resources through sustainable management practices is a key component of this measure, ensuring resilience amid changing climate conditions and population growth.

This measure is not quantified because the GHG benefits from water efficiency are indirect, vary widely by water source and provider, and depend on factors outside the County's control. In addition, potential energy savings may already be captured under other CAP measures, such as C-E2. Although this measure is not quantified, improving water use efficiency and resource management contributes to broader environmental goals by reducing energy consumption associated with water services.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-NR1.1 – Support improving the resiliency and reliability of the potable water supply by integrating landfill gas-to-energy technology into the region's first desalinization plant.

C-NR1.2 – Advocate for reduced water consumption countywide.

C-NR1.3 – Support optimization of sanitary sewer systems to reduce energy use and increase the availability of recycled water.

C-NR1.4 – Support improvements to the efficiency of drinking water treatment and distribution systems by collaborating with local water districts.

C-NR1.5 – Promote the use of recycled water to add to local potable water supplies through collaboration with local water districts.

C-NR1.6 – Support protection and sustainable management of groundwater resources.

Co-Benefits

Measure C-NR2 – Protect and Enhance Surface and Beach Water Quality and Coastal Resiliency

Measure C-NR2 is designed to safeguard water quality and strengthen coastal resilience in the community by minimizing pollution from urban runoff and managing stormwater flows to meet regulatory standards. The County supports implementation of strategies that reduce contaminants entering surface waters and beaches, utilizing both engineered and natural treatment systems to improve water quality. Efforts also focus on preserving and enhancing natural flood management functions where possible. Additionally, the measure supports monitoring and adaptive management of coastal processes such as sand movement and erosion, promoting shoreline stabilization through programs like the Sand Compatibility Opportunistic Use Program (SCOUP) or other nature-based solutions to maintain beach health and protect against climate impacts.

This measure is not expected to result in any GHG emissions reductions because its primary focus is on protecting water quality and enhancing coastal resiliency, which are crucial for environmental health and community adaptation to climate change but do not directly reduce GHG emissions. However, its contribution to environmental protection and climate adaptation is vital for long-term community and ecosystem resilience.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-NR2.1 – Support control of human-derived pollutants from developed areas to minimize pollutants from entering stormwater and flood infrastructure to the maximum extent feasible.

C-NR2.2 – Support control of human-derived dry weather flows from developed areas to the maximum extent feasible.

C-NR2.3 – Support management of wet weather flows to meet applicable and/or Municipal National Pollutant Discharge Elimination System permit criteria from developed areas to the maximum extent feasible.

C-NR2.4 – Where feasible, support enhancement of natural processes and functions within flood facilities. To the greatest extent feasible, where flood conveyance and adjacent land-use allows, expand the use of natural treatment systems for improved water quality.

C-NR2.5 - Examine watershed solutions such as sediment bypassing to improve the natural flow of sediment to the ocean while preserving flood control priorities for public health and safety.

C-NR2.6 – Where jurisdictionally permissible and feasible, support monitoring of sand movements and coastal erosion, and consider interventions that promote beach nourishment, such as the Countywide Sand Compatibility Opportunistic Use Program (SCOUP) or similar, shoreline stabilization, or nature-based features to ensure the resiliency of coastlines.

C-NR2.7 - Seek dedicated funding sources to implement regional coastal sediment management.

Co-Benefits

Measure C-NR3 – Integrate Flood Management with Other Water Management Practices and Consider Multi-Benefit Projects

Measure C-NR3 focuses on enhancing flood management in Orange County by exploring the integration of flood control efforts with broader water resource management strategies. The County seeks to restore natural waterways and manage erosion. Improvements to flood infrastructure could protect properties within vulnerable flood zones, while efforts to identify and upgrade inadequate storm drain systems will enhance community resilience to flood risks. The measure also supports proactive flood risk mapping that accounts for climate change factors such as rising sea levels and increased storm intensity, guiding informed planning and adaptation.

This measure is a supporting measure that is not expected to result in GHG emissions reductions because it focuses on enhancing flood management and water infrastructure resilience rather than reducing GHG emissions. While these actions enhance community adaptation to climate impacts and can provide multiple environmental benefits, such as improved habitat and water quality, they do not directly reduce greenhouse gas emissions in a way that can be reliably measured or quantified within the CAP. However, Measure C-NR-3 would lead to greater environmental sustainability, community safety, and climate resilience in the community.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-NR3.1 – Promote channel restoration to support habitat and/or improved water quality.

C-NR3.2 – Support management of erosion on canyons, rivers, streams and channels while supporting natural processes, utilizing grey and green infrastructure.

C-NR3.3 - Investigate and seek mitigation for upstream sand mining.

C-NR3.4 - Support the development of a Countywide stockpile for beneficial re-use of sediment.

C-NR3.5 – Identify communities within inadequate storm drain systems and develop plans for improvements that include gray and green elements.

C-NR3.6 – Explore mapping flood risks under present and future conditions accounting for changing sea levels and precipitation intensity.

Co-Benefits

Measure C-NR4 – Restore and Protect Ecosystems, Native Habitat, and Natural Resources

Measure C-NR4 supports the long-term health and resilience of the community's natural environment by advancing the protection, restoration, and enhancement of native ecosystems. Through habitat restoration, invasive species management, and the integration of ecological features into water management systems, this measure helps preserve biodiversity and restore natural functions critical to ecosystem balance. By protecting open space and enhancing wetland and wildlife areas, the County contributes to climate adaptation, improved water quality, and potential carbon sequestration benefits.

This measure is a supporting measure that is not expected to result in GHG emissions reductions because its main emphasis is on ecosystem restoration, habitat protection, and natural resource preservation rather than on GHG emissions reductions. While these efforts support carbon sequestration and contribute to overall environmental health, the scale and timing of associated GHG benefits are currently difficult to measure. However, Measure C-NR-4 is expected to lead to increased biodiversity, resilience, and support the overall health of natural systems.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-NR4.1 – Support increasing the habitat for native terrestrial and aquatic species, prioritizing linkages that enhance ecological connectivity.

C-NR4.2 – Support removal of invasive species that are a danger to habitat, water supply, ecosystem function, or other economic or beneficial use.

C-NR4.3 – Support the use of water quality treatment systems that enhance wildlife habitat and wetlands by restoring a natural water balance.

C-NR4.4 – Support preservation and enhancement of open space that supports biodiversity and climate resilience.

C-NR4.5 – Support design of shoreline habitat restoration projects with terrestrial and aquatic species to adapt to sea level rise.

Co-Benefits

SECTOR 6 – RESILIENCE (R)

SECTOR GOAL: Develop a countywide Climate Vulnerability Assessment (CVA) that builds on existing County resilience initiatives to deepen understanding of the impacts of climate hazards and extreme weather events; further prioritize resilience measures in emergency preparedness and response planning, public health, and community investments. Develop a specific coastal resiliency plan for sea level rise, tsunamis, and extreme flooding.

State and Federal Mandates: Local Hazard Mitigation Plans (LHMPs) are required by FEMA under the Stafford Act, the federal law which authorizes most of the disaster response aid in the county. LHMPs identify hazards, such as earthquakes, fires, and floods, assess vulnerabilities to the hazards, and develop strategies to prepare for, respond to, and recover from hazards events. Cities and counties in California must address climate adaptation in their LHMP and General Plan Safety Elements, as per Senate Bill 379 (2015). Recent State legislation (Senate Bill 272, 2023) will require all local governments in the coastal zone to submit sea level adaptation plans by 2034.

Foundation: Current hazard and climate resilience planning efforts include the OC Transportation Authority's Climate Adaptation and Sustainability Plan, a Countywide vulnerability and opportunities assessment of tidal wetland habitat, a climate change vulnerability assessment of Caltrans District 12, and the County's LHMP—which has an update underway at the time of this publication. Hazard-specific work includes emergency response planning for excessive heat and cold through PrepareOC, a Drought Task Force led by OCPW, Integrated Regional Water Management Plans, and the South Orange County Regional Coastal Resilience Strategic Plan.

Measure C-R1 – Support the Development of Sea Level Rise Vulnerability Assessments, Adaptation Strategies, and other Coastal Resilience Efforts Across the Entire Coastline

Measure C-R1 reinforces the County's commitment to coastal resilience by strengthening and growing strategies that address coastal and climate-related hazards. This measure aims to deepen understanding of climate vulnerabilities and their impacts, through expanded research and community participation—enabling timely identification and resolution of problem areas. Through cross-agency collaboration, streamlined permitting, and strategic infrastructure planning, the County plans to help enable effective resilience projects.

This measure is a supporting measure that is not expected to result in GHG emissions reductions because its primary focus is on assessing sea level rise and developing adaptation and resilience strategies for coastal areas. While these efforts are critical for protecting communities and ecosystems from climate impacts, they do not involve activities that directly reduce GHG emissions. However, Measure C-R1 could lead to long-term climate resilience and preparedness.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-R1.1 – Refine and expand on countywide coastal hazard mapping, including flooding, heat, wildfire, mud, debris, beach loss, and coastal erosion.

C-R-1.2 – Comply with SB272 and apply best available science when developing sea level rise adaptation plans for County shorelines and County-managed tidelands.

C-R1.3 – Support initiatives that position agencies and partners to rapidly deploy coastal resilience projects as implementation opportunities emerge.

C-R1.4 – Support prioritization of flood channel improvements in consideration of the potential for risk reduction.

C-R1.5 – Create a County mechanism to facilitate reporting of incidents by residents and/or municipalities to help identify and address any chronic local flooding issues.

C-R1.6 – Support regional collaboration on coastal resiliency efforts including the implementation of South Orange County Regional Coastal Resilience Strategic Plan.

C-R1.7 – Support implementation of the 2013 Orange County Regional Sediment Management Plan and seek to update the plan on a 10–15-year cycle.

C-R1.8 – Support, prioritize, and condition beneficial sand re-use for construction, dredging, or maintenance projects that involve greater than 10,000 CY of compatible sediment export.

Co-Benefits

Measure C-R2 – Improve Preparation for and Response to Hazard Events

Measure C-R2 focuses on enhancing the County's ability to respond effectively to public health emergencies that arise from climate-related disasters. By expanding access to shelters and climate-controlled facilities, this measure aims to protect residents during extreme weather events such as wildfires, flooding, and heatwaves. It also supports the review and revision of emergency management plans to reflect evolving climate risk data, ensuring that health-related disaster responses are timely, coordinated, and equitable.

This measure is a supporting measure because it focuses on enhancing community preparedness and response to climate-related hazard events such as wildfires, floods, and extreme heat, which do not directly result in GHG emissions reductions. However, Measure C-R2 could strengthen the community's ability to withstand and recover from climate impacts.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

C-R2.1 – Support expanding access to shade and climate-controlled facilities.

C-R2.2 – Explore establishing and maintaining emergency shelters for climate- and disaster-displaced populations, including wildfires, floods and/or earthquakes.

C-R2.3 – Review and revise plans for emergency management based on changing climate extremes, in consideration of updated climate risk mapping.

C-R2.4 – Assess opportunities for multi-benefit wildfire prevention measures, such as invasive non-native vegetation removal, habitat restoration, and aligning strategic fire access roads with existing multi-use trails.

C-R2.5 – Secure funding for wildland fire management and fuel reduction projects, including onsite brush clearing equipment at landfills.

C-R2.6 – Expand targeted programming for older adults and children during extreme heat and poor air quality events.

C-R2.7 – Conduct a comprehensive resiliency assessment of airport facilities to withstand climate-related impacts and identify infrastructure improvements required for airport to operate safely.

Co-Benefits

Measure C-R3 – Improve Response to Disaster Health Orders

Measure C-R3 strengthens the County's capacity to manage and respond to public health risks that may arise during or after climate-related disasters. The measure supports efforts to monitor and address environmental health threats, such as water contamination, through investigations and protective actions like facility closures. It also enhances coordination of medical and health services during disaster events to ensure that critical resources are available where needed. Issuing Disaster Health Orders enables the County to mobilize lifesaving responses quickly, with a focus on protecting high-risk and vulnerable populations during emergencies.

This measure is a supporting measure that would not result in GHG emissions reductions because it centers on improving public health response and coordination during disaster events, such as issuing health orders and managing medical resources for vulnerable populations. However, Measure C-R3 would lead to improved disaster response preparedness.

GHG Reduction Potential

2030 & 2045: Not quantified

Action Items

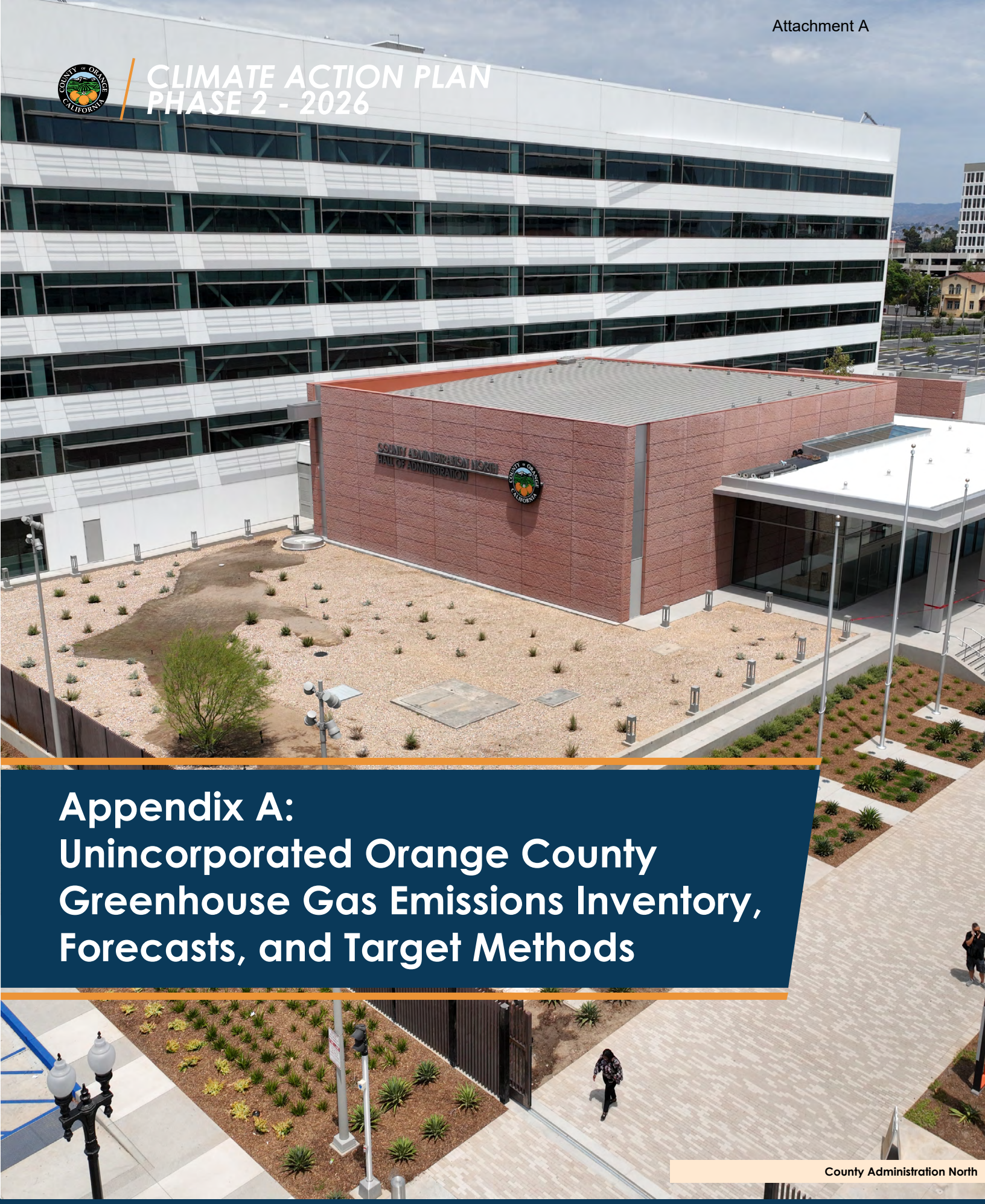
C-R3.1 – Conduct investigations of communicable disease reports or environmental factors affecting water safety, including but not limited to collecting water samples, analyzing test results, and issuing facility closure orders for affected bodies of water warranting closure.

C-R3.2 – Coordinate disaster medical and health resources.

C-R3.3 – Issue Disaster Health Orders to coordinate county lifesaving efforts for high-risk and/or vulnerable populations.

Co-Benefits

CLIMATE ACTION PLAN
PHASE 2 - 2026



Appendix A: Unincorporated Orange County Greenhouse Gas Emissions Inventory, Forecasts, and Target Methods

County Administration North

A.1: Purpose

This Appendix describes the greenhouse gas (GHG) accounting and projections methods for municipal and community activities in calendar year 2018 for Unincorporated Orange County (henceforth referred to as "the County" unless otherwise specified). The baseline year of 2018 was selected due to the availability of complete and accurate data. This year serves as the reference point for measuring progress in reducing GHG emissions over time. It also presents methods for the business-as-usual (BAU) forecasts, Adjusted BAU forecasts, and municipal GHG reduction targets for 2030 and 2045. The document is organized into five sections corresponding with the following objectives:

Section A.2: 2018 Municipal Operations Greenhouse Gas Emissions Inventory
This section describes the approach for estimating baseline GHG emissions from municipal operations and presents the emissions inventory for the year 2018. The municipal operations inventory includes emissions from electricity, natural gas, on-road vehicles, off-road equipment, landfills, water, wastewater, and employee commute.

Section A.3: 2018 Community Greenhouse Gas Emissions Inventory
This section describes the methods for estimating baseline GHG emissions from community activities and sources and presents the emissions inventory for the year 2018. The community inventory includes emissions from on-road transportation, electricity, natural gas, solid waste, refrigerants, off-road equipment, water, wastewater, rail, and agriculture emissions. The inventory also includes an estimation of the 2018 carbon stock from natural and working lands (NWL).

Section A.4: 2018 to 2045 BAU & Adjusted BAU Forecasts
This section describes the approach for modeling both community and municipal BAU and Adjusted BAU scenarios, which projects future emissions based on current population and regional growth trends, land use growth patterns, and regulations or policies. The BAU scenarios demonstrates the growth in GHG emissions that would occur if no further action were to be taken by the County or the State of California after 2018. Like the standard BAU forecast, the Adjusted BAU forecast provides an estimate of future emission levels based on the continuation of existing trends in demographic growth (such as population and housing), activity or resource consumption (such as electricity use), technology changes, and regulation. Unlike the BAU forecast, the Adjusted BAU forecast accounts for expected outcomes of federal and state regulatory actions.

Section A.5: 2030 and 2045 Municipal GHG Reduction Targets
This section outlines the GHG reduction targets for municipal operations in unincorporated Orange County for 2030 and 2045 and describes the approach to deriving these targets. Emission reduction targets and how they align with the 2022 State Scoping Plan are explained for both landfill and non-landfill emissions sources.

Introduction

This appendix provides a comprehensive GHG emissions inventory for the County, using 2018 as the baseline year and projecting emissions for 2030 and 2045. The inventory follows established protocols to ensure accurate and reliable data, including the Local Government Operations Protocol (LGOP) and the Global Protocol for Community-Scale Greenhouse Gas Inventories (GPC). The GHGs accounted for in this inventory include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and hydrofluorocarbons (HFCs). The two frameworks below are from the Greenhouse Gas Protocol:

Scopes Framework: This framework captures GHG emissions produced within a geographic boundary by categorizing emissions as scope 1, 2, or 3 in each Sector:

- Scope 1: Emissions produced from activities and sources within the entity's boundaries;
- Scope 2: Emissions generated from the use of grid-supplied electricity, heat, steam and/or cooling within the entity's boundaries; and
- Scope 3: Emissions occurring outside the entity's boundaries due to activities taking place within the entity's boundaries.

City-induced Framework: This framework measures GHG emissions attributable to activities and sources within a geographic boundary and covers selected scope 1, 2, and 3 emissions from each sector. This framework offers two reporting levels:

- **BASIC:** Includes emissions from in-boundary transportation, building energy, and in-boundary generated waste.
- **BASIC+:** Includes all BASIC requirements as well as emissions from transmission and distribution grid losses; transboundary transportation; in-boundary generated waste emission sources; industrial processes and product use (IPPU); and agriculture, forestry, and other land use (AFOLU).

The 2018 GHG emissions inventories for the County use the City-induced BASIC+ Framework with global warming potential (GWP) values from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5), [43] unless otherwise specified. The inventory is prepared using sector-specific generation and resource consumption data for relevant subsectors included in the BASIC+ protocol. The accounting methods, data sources, and emission factors used for accounting 2018 emissions are detailed in the subsequent sections.

43 PCC, Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. 2014. Available at: https://archive.ipcc.ch/report/ar5/syr/. Accessed August 2025.

A.2: Municipal Operations Greenhouse Gas Emissions Inventory: 2018

The County's municipal emissions inventory represents GHGs that occur due to County operations. Municipal emissions are not a separate inventory,[44] but a subset of the community emissions inventory; they represent sources over which the County has operational control. The sectors covered in municipal inventory are:

- Municipal Energy (Electricity and Natural Gas)
- Fleet (On-Road Vehicles and Off-Road Equipment)
- Landfill
- Water
- Wastewater
- Employee Commute

Energy

This sector includes emissions from energy use (electricity and natural gas) in municipal owned buildings and operations. These emissions are calculated using electricity and natural gas consumption data provided by the County and emission factors and power mixes from Southern California Edison (SCE), San Diego Gas & Electric (SDG&E), and The Climate Registry. Because the amount of municipal electricity provided by each utility was unknown, a weighted average emission factor for the County was calculated using SCE and SDG&E emission factors. Table A.2-1 breaks down 2018 municipal energy activity data and emissions. Table A.2-2 presents the emission factors used for 2018 municipal energy emission calculations.

TABLE A.2-1

2018 ENERGY USE AND EMISSIONS

Sector	Activity Data	Units	Emissions ($MTCO_2e$)
Electricity	149,873	MWh	36,784
Natural Gas	986,466	MMBtu	52,498
Total			**89,281**

44 This is true for each source except for emissions associated with landfill operations, which captures waste generated by jurisdictions outside of the unincorporated County boundary.

TABLE A-2-2

2018 EMISSION FACTORS

Utility / Fuel	Emission Factors	Unit
Unincorporated Orange County Electricity*	541.95	lbs CO_2e per MWh
Natural Gas	53.22	kg CO_2e per MMBtu
Weighted average for utilities covering Unincorporated Orange County		

Data Sources

- SCE Emission Factor. Link: https://download.edison.com/405/files/202210/eix-2019-sustainability-report.pdf?
- SDG&E Emission Factor. Link: https://csr.sempra.com/wp-content/uploads/sempra_csr_2022_rgb.pdf
- The Climate Registry, 2022 Default Emission Factors. Link: https://theclimateregistry.org/wp-content/uploads/2023/06/2023-Default-Emission-Factors-Final-1.pdf.

Fleet

The municipal fleet emissions sector includes on-road fleet and off-road equipment. Table A.2-3 presents emissions for the County's 2018 transportation sector.

TABLE A-2-3

2018 ON-ROAD AND OFF-ROAD FLEET EMISSIONS

Sector	Fuel Use (Gallons)	Emissions ($MTCO_2e$)
On-Road Fleet		
Compressed Natural Gas (CNG)	44,485	307
Diesel	83,109	849
Propane	731	4
Gasoline	1,091,743	9,586
Off-Road Fleet & Equipment		
Compressed Natural Gas (CNG)	68	<1
Diesel	30,337	318
Propane	590	3
Gasoline	257	2
OCWR Heavy Equipment (Diesel)	803,583	8,205
Total		**19,274**

Abbreviations: $MTCO_2e$ = metric tons of carbon dioxide equivalent; OCWR = Orange County Waste & Recycling

On-Road Fleet

The on-road fleets subsector includes emissions from fuel combustion from the County's approximately 2,000-vehicle fleet (as of 2018). **Table A.2-3** presents fuel usage and emissions for the on-road fleet subsector.

Emissions from on-road County vehicles were estimated based on annual fuel usage. Vehicle miles traveled (VMT) data was provided for the on-road fleet, but it was determined to be unreliable and, therefore, it was not incorporated into the baseline calculations. Annual fuel use by vehicle was provided by the County, which was then aggregated by fuel type. [45] GHG emissions were estimated using standard emission factors per gallon for diesel, propane, and gasoline and per gallon of gasoline equivalent for CNG.

Data Sources:

- The Climate Registry, 2024 Default Emission Factors. Link: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf.
- 2018 County Fleet and Fuel Data, provided by the County

Off-Road Fleet & Equipment

The off-road fleet subsector includes emissions from heavy equipment fuel combustion. **Table A.2-3** presents fuel usage and emissions for the off-road fleet subsector.

The County has two off-road equipment fleets: one associated with the Department of Public Works (OCPW) and one associated with the Department of Waste and Recycling (OCWR). Emissions from the County's off-road fleets were estimated based on fuel usage. Annual fuel use by piece of equipment was provided by the County for the OCPW fleet, which was then aggregated by fuel type. Fuel usage was unavailable for the OCWR fleet for 2018. Fuel use by equipment was available, however, for the 2021 OCWR fleet. The annual average fuel consumption per equipment was determined and applied to the 2018 equipment list in lieu of 2018 fuel consumption data. It was assumed that all equipment in the OCWR fleet uses diesel fuel.

GHG emissions were estimated by applying standard emission factors per gallon for diesel, propane, and gasoline and per gallon of gasoline equivalent for CNG to the fuel consumption data described above.

Data Sources

- The Climate Registry, 2022 Default Emission Factors. Link: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf.
- 2018 County Fleet and Fuel Data, provided by the County.

45 There is a subset of 2018 on-road fuel usage data that could not be procured and, therefore, is not included in this analysis. The dataset(s) includes offsite fuel purchases associated with County departments other than the Department of Public Works (OCPW). It is assumed that most fueling takes place at the County's on-site fueling station, which is included in this analysis.

Employee Commute

The municipal employee commute sector includes emissions from County employees traveling to and from their homes to their respective offices. The employee commute data was obtained from the County's 2018 Annual Employee Commute Reduction Program Report. The data was used to estimate the weekly number of vehicle trips (in passenger vehicles) and converted to an annual mileage estimated based on the California Emission Estimator Model's default home-to-work round trip length for a "General Office Building" located in Orange County and an assumed 47 work week schedule. The passenger vehicle emission factors derived from EMFAC2021 data, which can be found in **Table A.3-5** of the Community Inventory section, were then applied to the annual employee commute VMT. **Table A.2-4** presents VMT and emissions for the employee commute sector.

TABLE A-2-4

2018 EMPLOYEE COMMUTE ACTIVITY DATA AND EMISSIONS

	VMT	Emissions ($MTCO_2e$)
Passenger Vehicle	54,041,005	19,498
Abbreviations: MTCO2e = metric tons of carbon dioxide equivalent; VMT = vehicle miles traveled		

Data Sources:

- California Emission Estimator Model (CalEEMod), Version 2022.1.1. Link: https://www.caleemod.com/
- Emissions Factor (EMFAC) 2021 Model. Link: https://arb.ca.gov/emfac/emissions-inventory/d7afade1421837d89d5d605f678ed56458c2aa48
- 2018 Ride Share AQMD Approval Report, provided by the County.

Landfill

Landfill sector emissions differ from solid waste sector emissions reported in a community inventory. Landfill operation emissions account for methane generated by the ongoing decomposition of waste disposed over many years—often decades—prior to the reporting year, whereas community solid waste emissions typically account for methane generated by waste disposed of within the inventory year itself. Additionally, while the solid waste sector accounts only for emissions associated with waste disposed of by the unincorporated County's residents and businesses, the landfill sector accounts for waste emissions regardless of who disposed of it. County-owned landfills accept waste from incorporated Orange County as well as neighboring counties; therefore, emissions from decomposition of their waste are within the scope of the inventory.

This sector includes emissions for the County's five main landfills: Frank R. Bowerman, Olinda Alpha, Prima Deshecha, Coyote Canyon, and Santiago Canyon. Coyote Canyon and Santiago Canyon are inactive, meaning they no longer accept waste, but they still generate methane emissions from waste decomposition. Landfill emissions were estimated using OCWR's reports to the U.S.

Environmental Protection Agency's (EPA) GHG Reporting Program (GHGRP), which were provided by the County. Volume of landfill gas (LFG) collected at each landfill, fraction of methane in LFG, collection efficiency rate, and destruction efficiency rate were pulled from the GHGRP reports and used to calculate emissions. Table A.2-5 summarizes emissions by landfill location.

TABLE A-2-5

2018 LANDFILL EMISSIONS BY LOCATION

Sector	Emissions ($MTCO_2e$)
Prima Deshecha	97,928
Olinda Alpha	263,638
Frank R. Bowerman	361,875
Santiago Canyon*	32,873
Coyote Canyon*	109,046
Total	**865,360**
*** = inactive**	
Abbreviations: $MTCO_2e$ = metric tons of carbon dioxide equivalent;	

Data Sources

- CalRecycle Landfill Gas Master. Link: https://www2.calrecycle.ca.gov/PublicNotices/Documents/1642

Water & Wastewater

This sector includes emissions from electricity consumption associated with treatment and distribution of water and wastewater used for municipal operations. It also accounts for process and effluent discharge emissions that occur during the wastewater treatment process.

Water consumption data was provided by the County. The volume of wastewater associated with County operations was determined by subtracting the County's irrigation water use from their total water use. Energy-related water and wastewater emissions were estimated using respective consumption data, South Coast region water cycle stage electricity intensities from The Future of California's Water-Energy-Climate Nexus, and emission factors and power mix data from SCE and SDG&E. To obtain process and effluent discharge emissions associated with municipal operations, a ratio of municipal wastewater volume to total unincorporated County wastewater volume was applied to community emissions. Refer to the Wastewater portion of Section A.3 of this document for additional detail on the methods used to estimate community process and effluent discharge emissions.

Table A.2-6 provides 2018 municipal water and wastewater activity data and emissions for the County. Table A.2-7 details the water cycle stage electricity intensities and emission factors used in calculating municipal water and wastewater emissions.

TABLE A-2-6

2018 WATER AND WASTEWATER VOLUME AND EMISSIONS

Sector	Volume (Mgal)	Emissions ($MTCO_2e$)
Water	1,521	834
Wastewater	1,496	1,689
Total	**3,017**	**2,523**

TABLE A-2-7

2018 WATER INTENSITY FACTORS

	VMT	Units
Utility Emission Factors		
Unincorporated Orange County Electricity*	541.95	lbs CO2e per MWh
Energy Intensity Factors, South Coast Hydrological Region		
Conventional Drinking Water Treatment	0.0007	kWh per gallon
Urban Water Distribution	0.0015	kWh per gallon
Wastewater Collection	0.0003	kWh per gallon
Wastewater Treatment*	0.0021	kWh per gallon
***Weighted average for utilities covering Unincorporated County**		

Data Sources

- The Future of California's Water-Engery-Climate Nexus. Link: https://pacinst.org/wp-content/uploads/2021/09/Water-Energy-Report_Sept-2021.pdf (pg18 Table 4)
- SCE Emission Factor. Link: https://www.sce.com/sites/default/files/inline-files/2018SCEPCL.pdf
- SDG&E Emission Factor. Link: https://csr.sempra.com/wp-content/uploads/sempra_csr_2022_rgb.pdf
- The Climate Registry, 2022 Default Emission Factors. Link: https://theclimateregistry.org/wp-content/uploads/2023/06/2023-Default-Emission-Factors-Final-1.pdf.
- EPA eGRID. Link: https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid

A.3: 2018 Community Greenhouse Gas Emissions Inventory

The community GHG emissions inventory for the County quantifies annual emissions from various activities occurring within unincorporated Orange County, including emissions that occur indirectly because of those activities. The sectors included in the community inventory are:

- On-Road Transportation
- Off-Road Equipment
- Rail
- Energy (Electricity and Natural Gas)
- Solid Waste
- Water
- Wastewater
- Agriculture
- Large Stationary
- Refrigerants
- Natural & Working Lands

The sector-specific methods and emissions inventories are presented below.

Energy

This sector includes emissions from energy use (electricity and natural gas) in residential and non-residential (commercial/institutional/agricultural and manufacturing/industrial) buildings. Table A.3-1 breaks down the activity use of energy for each sector. Table A.3-2 presents the emission factors used for each utility.

TABLE A-3-1

2018 ENERGY USE AND EMISSIONS

Energy Sector	Activity Data	Activity Unit	Emissions ($MTCO_2e$)
Electricity*	571,464	MWh	141,411
Residential Electricity	401,979	MWh	101,973
Non-Residential Electricity	169,484	MWh	39,438
Natural Gas*	28,346,855	Therms	150,791
Residential Natural Gas	14,558,062	Therms	77,479
Non-Residential Natural Gas	13,788,793	Therms	73,312
Total			**292,202**

Categorical totals for residential and non-residential emissions and activity data

TABLE A-3-2

2018 ENERGY EMISSION FACTORS

Utility / Fuel	Emission Factor	Units
SCE	513.0	lbs CO_2e per MWh
SDG&E*	664.0	lbs CO_2e per MWh
Residential/Commercial Natural Gas	11.73	lbs CO_2eper therm
Industrial Natural Gas	11.71	lbs CO_2e per therm
***Only residential buildings used SDG&E as a utility provider**		

Residential Energy

This category includes direct emissions from the consumption of natural gas and indirect emissions from grid-supplied electricity consumed by residential buildings in the County. Direct GHG emissions from natural gas consumption in residential buildings are calculated using SoCalGas natural gas consumption data and emission factors from the Climate Registry. Indirect GHG emissions from electricity consumption in residential buildings are calculated using data provided by Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E), including electricity consumption, emission factors, and power mix. Emissions associated with transmission and distribution losses are accounted using a loss factor of 4.8 percent for California from the EPA's eGRID2018 Summary Table (WECC California subregion).

Data Sources

- Natural gas and electricity consumption data provided by SCE, SoCalGas, and SDG&E
- SCE Emission Factor. Link: https://www.sce.com/sites/default/files/inline-files/2018SCEPCL.pdf
- SDG&E Emission Factor. Link: https://csr.sempra.com/wp-content/uploads/sempra_csr_2022_rgb.pdf
- The Climate Registry, 2024 Default Emission Factors. Link: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf.
- EPA eGRID. Link: https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid

Non-Residential Energy

This category includes direct emissions from the consumption of natural gas and indirect emissions from grid-supplied electricity consumed by non-residential buildings including commercial, municipal, institutional (such as schools, hospitals, and other public facilities), agricultural, manufacturing and industrial buildings. Direct GHG emissions from natural gas consumption in non-residential buildings are calculated using SoCalGas natural gas consumption data and emission factors from The Climate Registry. Indirect GHG emissions from electricity consumption in non-residential buildings are calculated using data provided by Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E), including electricity consumption, emission factors, and power mix. Emissions associated with transmission and distribution losses are accounted for using a loss factor of 4.8 percent for California from the EPA's eGRID2018 Summary Table (WECC California subregion).

Data Sources

- Natural gas and electricity consumption data provided by SCE, SoCalGas, and SDG&E
- SCE Emission Factor. Link: https://www.sce.com/sites/default/files/inline-files/2018SCEPCL.pdf
- SDG&E Emission Factor. Link: https://csr.sempra.com/wp-content/uploads/sempra_csr_2022_rgb.pdf
- The Climate Registry, 2024 Default Emission Factors. Link: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf.
- EPA eGRID. Link: https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid

Transportation

This section includes the transportation emissions of on-road transportation (passenger vehicles, trucks, and buses), off-road equipment, freight rail, and passenger rail. **Table A.3-3** presents the emissions for the transportation sector.

TABLE A.3-3

2018 TRANSPORTATION EMISSIONS BY SUBSECTOR

Subsector	Emissions ($MTCO_2e$)
On-Road	337,781
Off-Road	16,007
Freight Rail	1,048
Passenger Rail	2,139
Total	**356,974**

Source: EMFAC2021; Fehr & Peers 2024

Abbreviations: $MTCO_2e$ = metric tons of carbon dioxide equivalent;

On-Road Transportation

The on-road transportation subsector includes GHG emissions from annual VMT of on-road passenger vehicles, trucks, and buses. Bus VMT was not available by jurisdiction and was instead apportioned to the unincorporated County based on population share relative to the entire County. Table A.3-4 presents vehicle category, annual VMT, and emissions for the on-road transportation sector.

VMT for the County is estimated using a trip-based travel forecasting model developed by SCAG. SCAG's 2024 Regional Travel Demand Model, the version for which a complete dataset was available at the time of modeling, was used by Fehr and Peers to analyze the transportation network and socioeconomic data such as population, household, and employment, to forecast daily vehicle trips and VMT for each traffic analysis zone (TAZ) within the County.[46] Emissions from passenger vehicles, trucks, and buses are estimated based on VMT by each vehicle type.

TABLE A.3-4

2018 TRANSPORTATION ACTIVITY DATA AND EMISSIONS BY VEHICLE TYPE

Vehicle Category	Annual VMT	Emissions ($MTCO_2e$)
Passenger	828,179,312	298,803
Truck	33,563,361	36,466
Bus	1,200,891	2,512
Total	**862,943,563**	**337,781**

Abbreviations: $MTCO_2e$ = metric tons of carbon dioxide equivalent; VMT = vehicle miles traveled

The 2024 SCAG Regional Travel Demand Model has a base year of 2019 and horizon year of 2050. VMT for the inventory year was linearly interpolated from the 2012 and 2040 model values. Daily VMT are estimated using the origin-destination analysis approach (Full Accounting Method) and Boundary Method.

The Full Accounting Method accounts for VMT depending on where the trip is starting and ending. This method tracks (and "fully accounts" for) all the vehicle trips being generated by a geographic area (i.e., a city) across the entire regional network, and allows for the isolation of different types of VMT as follows:

46 VMT estimates for large urban areas are commonly developed using regional travel demand models. These models are developed and periodically updated, calibrated, and validated for use in long range infrastructure planning, environmental impact assessments, and air quality conformity analyses by local and regional agencies. Trip-based travel forecasting models generate (output) daily vehicle trips for each TAZ across various trip purposes based on inputs such as the transportation network and socioeconomic data such as population, household, and employment. SCAG staff maintain a regional travel demand model that uses a four-step model process to arrive at a set of forecast vehicle trips based on the data described above.

- Internal-internal (II) VMT: Includes all trips that begin and end entirely within the geographic area of study.
- One-half of internal-external (IX) VMT: Includes one-half of trips with an origin within the geographic area of study and a destination outside of this area. This assumes that the geographic area under study shares half the responsibility for trips traveling to other areas.
- One-half of external-internal (XI) VMT: Includes one-half of trips with an origin outside of the geographic area of study and a destination within this area. Similar to the IX trips, the geographic area of study shares the responsibility of trips traveling from other areas.
- External-external (XX) VMT: Trips through the geographic area of study are not included. This approach is consistent with the concept used for the IX and XI trips. Therefore, the XX VMT would be assigned to other areas that are generating the trips.

The Full Accounting Method was utilized to develop the VMT estimates for the County because it more fully accounts for the length of regional travel generated in the County, not just the travel occurring on the County's roadways. VMT data was estimated for passenger/light-duty vehicles and trucks for the County.

The Boundary Method is another way to measure VMT that estimates all the travel that takes place within a specific geographic area (for example, within county boundaries) and truncates the mileage of each trip to only the distance traveled within that border. Under this method, the VMT is estimated for Orange County and captures all VMT occurring on their roadways, including all through trips that neither start nor end in the jurisdiction. This is done by selecting the roadway links within the SCAG model by county. VMT is then calculated based on the link volumes and link lengths within each area.

The Boundary Method was utilized to provide an estimate of all VMT occurring within Orange County. Since emissions vary by type of vehicle and by speed of travel, VMT was calculated separately for passenger/light duty vehicles, trucks, and transit (buses), and then categorized by speed bins (in 5 MPH increments) by time of day.

Emissions were calculated using the California Air Resources Board's (CARB) Emission Factors 2021 model (EMFAC2021). EMFAC2021 generates vehicle emission rates by area, year, vehicle type, fuel type, speed, and other parameters. EMFAC2021 was run for Orange County for 2018 in "emission rate" mode to generate vehicle travel emission factors for all vehicle types and fuel types for aggregated (average) speeds. The EMFAC vehicle type categories were aligned with the three categories of VMT provided by Fehr & Peers (passenger, truck, and bus). [47] The EMFAC emission factors by vehicle type and fuel assigned to passenger VMT and truck VMT were then weighted using County-wide VMT and trip generation profiles for each vehicle type modeled in EMFAC2021. **Table A.3-5** shows the emission factors used for each vehicle type.

47 The "passenger vehicle" category corresponds to EMFAC vehicle categories LDA, LDT1, LDT2, MCY, and MDV. The "trucks" category corresponds to EMFAC vehicle categories LHDT1, LHDT2, MHDT, HHDT

TABLE A-3-5

2018 TRANSPORTATION EMISSION FACTORS BY VEHICLE TYPE

Vehicle Category	Emission Factor (gCO_2e/mile)
Passenger	360.8
Truck	1,086.5
Bus	2,091.8
Source: EMFAC2021	
Abbreviations: g CO2e = grams of carbon dioxide equivalent	

Data Sources

- 2024 SCAG Regional Travel Demand Model, provided by SCAG
- Fehr & Peers Modeling Analysis (June 2024)
- EMFAC2021 Model. Link: https://arb.ca.gov/emfac/emissions-inventory/c3a757e884363e857de19a89c291e03223b875bc

Off-Road Equipment

The off-road equipment subsector includes emissions from heavy equipment fuel combustion (gasoline, diesel, and natural gas). **Table A.3-6** presents fuel usage and emissions for the off-road fleet and equipment subsector.

Off-road equipment emissions were calculated using CARB's OFFROAD2021 Emissions Inventory Tool. OFFROAD2021 includes many offroad equipment types by sector and subsector. All sectors were included in the emissions inventory. Total fuel consumption by sector was provided in the OFFROAD2021 output and used to calculate the GHG emissions using standard emission factors per gallon for diesel, gasoline, and natural gas.

TABLE A-3-6

2018 OFF-ROAD EQUIPMENT ACTIVITY DATA AND EMISSIONS BY FUEL TYPE

Source	Fuel Use (gallons)	Emissions ($MTCO_2e$)
Diesel	892,435	9,192
Gasoline	587,844	5,180
Natural Gas	282,948	1,635
Total	**1,763,226**	**16,007**
Abbreviations: $MTCO_2e$ = metric tons of carbon dioxide equivalent.		

Data Sources

- California Air Resources Board (CARB), OFFROAD2021 Emissions Inventory Tool. Link: https://arb.ca.gov/emfac/offroad/emissions-inventory
- The Climate Registry, 2022 Default Emission Factors. Link: https://theclimateregistry.org/wp-content/uploads/2023/06/2023-Default-Emission-Factors-Final-1.pdf.

Freight Rail

The freight rail subsector includes emissions resulting from CARB's line-haul emission inventory. The inventory was used to estimate fuel consumption and generated emissions from freight rail activity in the entire region of Orange County. Emissions were then apportioned to the unincorporated County based on its population. **Table A.3-3** includes emissions generated from the freight rail subsector.

Data Sources

- California Air Resources Board (CARB), 2021 Line-Haul Emissions Inventory Aggregated at County/Air Basin/Statewide. Link: https://ww2.arb.ca.gov/sites/default/files/2024-01/2021_line_haul_locomotive_emission_inventory_summaries%20web%20FINAL%202024V.xlsx.
- The Climate Registry, 2022 Default Emission Factors. Link: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf.

Passenger Rail

The passenger rail inventory includes emissions associated with Amtrak and Metrolink rail services. To calculate Metrolink emissions, locomotive fuel use was obtained from the National Transit Database and multiplied by a standard emission factor for diesel fuel. Metrolink emissions were separated by county based on operating route miles within each county.

Amtrak's total ridership, ridership by station, and total emissions were obtained from the agency's website. Amtrak emissions were calculated by apportioning Amtrak's total emissions of the County based on ridership share by station. **Table A.3-3** includes emissions generated from the passenger rail subsector.

Data Sources

- Amtrak, Amtrak Sustainability Report FY2019. Link: https://media.amtrak.com/wp-content/uploads/2019/11/FY19-Year-End-Ridership.pdf
- Amtrak, California Station Ridership – Fact Sheet FY2019. Link: https://media.amtrak.com/wp-content/uploads/2019/11/FY19-Year-End-Ridership.pdf.
- Amtrak, National Ridership FY2019. Link: https://media.amtrak.com/wp-content/uploads/2019/11/FY19-Year-End-Ridership.pdf.
- Federal Transit Administration, National Transit Database, Energy Consumption by Transportation Agency. Link: https://www.transit.dot.gov/ntd/ntd-data
- Metrolink, Route Miles – Southern California Regional Rail Authority, 2018-2019 Fact Sheet. Link: https://metrolinktrains.com/globalassets/about/agency/facts-and-numbers/fact-sheet-for-website-q1-fy-19.pdf

Solid Waste

Emissions generated at landfills by solid waste in the County are reported under the solid waste sector. GHGs from solid waste are comprised mainly of methane (CH_4) emissions with a small percentage being attributed to CO_2 as a result of methane oxidizing in the cover soil of a landfill.

Solid waste disposal tonnage for 2018 was provided by Orange County Waste and Recycling. The disposed waste tonnage for each year was characterized using data from CalRecycle. Emission factors for each waste category, in units of metric tons of CH_4 per ton of waste, were obtained from the ICLEI Community Protocol. These emission factors were then applied to the characterized solid waste data to estimate GHG emissions associated with disposal of waste in the landfill. Table A.3-7 illustrates waste volume and emissions generated by County waste.

TABLE A-3-7

2018 SOLID WASTE ACTIVITY DATA AND GHG EMISSIONS

Jurisdiction	Total Waste Disposal (tons)	Emissions ($MTCO_2e$)
Unincorporated Orange County	86,659	37,035
Abbreviations: $MTCO_2e$ = metric tons of carbon dioxide equivalent.		

Data Sources

- Calrecycle 2018 Disposal Facility Based Characterization of Solid Waste in California. Link: https://www2.calrecycle.ca.gov/Publications/Details/1666
- ICLEI, U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Appendix E: Solid Waste Emission Activities and Sources. Link: https://icleiusa.org/ghg-protocols

Water

This sector includes emissions from water treatment and distribution of Community water use within the County. Emissions in this section were calculated using the Municipal Water District of Orange County's 2020 Urban Water Management Plan (MWDOC 2020), population data for the County, South Coast region water cycle stage electricity intensities from California's Water-Energy-Climate Nexus report, and data provided by SCE, SDG&E, and the EPA, including emission factors, and power mix.

The local and imported water use within the County was calculated by back-casting MWDOC 2020 water use with Orange County and jurisdictional population data.

Table A.3-8 breaks down water use and associated emissions for the County. Table A.3-9 indicates the electricity intensity factors, emission factors, and populations that were used in the water use emission calculations.

TABLE A.3-8

2018 WATER USE, ENERGY DEMAND, AND EMISSIONS

Sector	Water Use (AF)	Electricity Use (MWh)	Emissions ($MTCO_2e$)
Local Water Use	10,521	7,659	1,942
Imported Water Use	5,648	4,112	1,043
Total	**16,169**	**11,771**	**2,985**

TABLE A-3-9

2018 WATER INTENSITY AND EMISSION FACTORS

	Factor	Unit
Emission Factors		
SCE	513.0	lbs CO_2e per MWh
SDG&E	664.0	lbs CO_2e per MWh
Unincorporated OC Average	558.9	lbs CO_2e per MWh
Electricity Intensity Factors		
Conventional Drinking Water Treatment*	227	kWh per AF
Urban Water Distribution*	501	kWh per AF
South Coast hydrological region		

Data Sources

- MWDOC 2020 Urban Water Management Plan https://www.mwdoc.com/wp-content/uploads/2021/04/2020-UWMP.pdf
- Population data provided by Connect SoCal 2024 https://scag.ca.gov/sites/main/files/file-attachments/23-2987-connect-socal-2024-final-complete-040424.pdf?1714175547
- The Future of California's Water-Energy-Climate Nexus https://pacinst.org/wp-content/uploads/2021/09/Water-Energy-Report_Sept-2021.pdf (pg18 Table 4)
- SCE Emission Factor. Link: https://download.edison.com/405/files/202210/eix-2019-sustainability-report.pdf?
- SDG&E Emission Factor. Link: https://csr.sempra.com/wp-content/uploads/sempra_csr_2022_rgb.pdf
- The Climate Registry, 2022 Default Emission Factors. Link: https://theclimateregistry.org/wp-content/uploads/2023/06/2023-Default-Emission-Factors-Final-1.pdf.
- EPA eGRID. Link: https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid

Wastewater

Wastewater emissions are calculated using population-based equations from the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions and SCAG population data. Table A.3-9 breaks down wastewater emissions for the County into the different stages of wastewater treatment and the emissions associated.

TABLE A.3-9

2018 WASTEWATER EMISSIONS

Vehicle Category	Emission Factor (gCO_2e/mile)
Process Emissions	104
Effluent Discharge Emissions	2,375
Septic Systems	782
Collection	308
Treatment	1,593
Total	**5,161**

Data Sources

- U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Appendix F: Wastewater and Water Emission Activities and Sources, Version 1.1. 2013 Link: https://icleiusa.org/us-community-protocol/

Agriculture

This section includes emissions from agricultural activities, including enteric fermentation, manure management, and fertilizer application. Enteric fermentation emissions were calculated using emission factors from ICLEI's Community Protocol and County livestock inventories from the United States Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS) Quick Stats tool. County-level emissions were apportioned to the unincorporated County based on share of cattle. Cattle was used as a proxy for all livestock because cattle produce the highest levels of methane from enteric fermentation. Manure management and fertilizer application emissions were calculated by apportioning total State emissions by the County's share of cattle and cropland, respectively. USDA's NASS Quick Stats tool was used to determine Statewide crop acreage and County-wide crop acreage was determined using GIS tools and the United States Geological Survey's (USGS) National Land Cover Database (NLCD). Table A.3-10 shows agricultural emissions by source.

TABLE A.3-10

2018 AGRICULTURE EMISSIONS

Sector	Emissions ($MTCO_2e$)
Enteric Fermentation	45
Manure Management	36
Fertilizer Application	457
Total	**538**

Data Sources

- Orange County Annual Crop Report 2018 Link: https://ocerac.ocpublicworks.com/sites/ocpwocerac/files/import/data/files/documents-2018CropReport96dpi.pdf
- California Air Resources Board, "GHG Emissions Inventory (GHG EI) 2000-2021," 2023. Link: https://ww2.arb.ca.gov/ghg-inventory-data
- USDA, NASS Quick Stats Tool, Link: https://quickstats.nass.usda.gov/#2ACCD721-30CD-3856-93B4-994E36C4B92D
- USGS, NLCD, 2019. Link: https://www.usgs.gov/centers/eros/science/national-land-cover-databaseLarge

Large Stationary Sources

This section includes emissions resulting from large facilities and industrial processes within the County. Emissions were estimated using CARB's Pollution Mapping Tool to identify facilities located within the County. The County includes three large stationary facilities. The total emissions are summarized in **Table A.3-11**.

TABLE A-3-11

2018 LARGE STATIONARY SOURCE EMISSIONS

Sector	Emissions ($MTCO_2e$)
Large Stationary Sources	49,579

Data Sources

- California Air Resources Board (CARB), Mandatory GHG Reporting. Link: https://ww2.arb.ca.gov/resources/carb-pollution-mapping-tool

Refrigerants

Short-lived climate pollutant (SLCP) emissions were estimated for two categories:

1. **Mobile Sources – Vehicle Air Conditioning:** includes fluorinated gas (F-gas) emissions from vehicle air conditioning (AC) operation.

1. **Residential AC, Refrigerators, Consumer Products, MDI, Foam, Medical, and Fire Suppression:** includes F-gas emissions from residential AC operation (refrigerants), residential refrigerator use (refrigerants), use of consumer products (aerosol propellants, such as in hairspray), Metered Dose Inhaler (MDI) aerosol propellants, insulating foams, medical sterilants, and fire suppression (e.g. fire extinguishers).

The refrigerant emissions by category are presented in Table A.3-12.

TABLE A.3-12

2018 REFRIGERANT EMISSIONS

Category	Emissions ($MTCO_2e$)
Mobile Sources	8,402
Residential AC, Refrigerators, Consumer Products, MDI, Foam, Medical, and Fire Suppression	15,693
Total	**24,095**

Mobile Sources – Vehicle Air Conditioning

Vehicle population data for Orange County were obtained from EMFAC2021. VMT data were obtained from the SCAG 2024 Regional Model. Emission rates for vehicle air conditioning (AC) were obtained from CARB's statewide inventory F-Gas model. [48] Off-road vehicle data was obtained from CARB's OFFROAD2021 model.

Average vehicle total refrigerant loss rates for light-duty autos (0.17 lbs/yr), heavy-duty vehicles (0.91 lbs/yr), [49] buses (2.95 lbs/yr), and off-road vehicles (0.91 lbs/yr) were multiplied by statewide speciation values for each relevant refrigerant type including HFC-125, HFC-134a, HFC-143a, and HFO-1234yf to determine average vehicle refrigerant loss rates by refrigerant types. CFC-12 and HCFC-22 were not included because these refrigerants are being phased out under the Montreal Protocol and were not included in the statewide GHG inventory.

For on-road vehicles, these loss rates were then multiplied by the total vehicle populations for each vehicle type category for Orange County (obtained from EMFAC2021) to determine county-wide refrigerant loss emissions. These emissions were multiplied by the GWP values from the IPCC AR4 report, consistent with the statewide GHG inventory. Emission factors were derived on a

48 Gallagher, Glenn, Air Pollution Specialist, California Air Resources Board Research Division, email communication, February 20, 2018

49 Gallagher 2015, ARB Methodology to Estimate GHG Emissions from ODS Substitutes

per-VMT basis (grams per mile) using countywide VMT from the EMFAC2021 model. These emission factors were then multiplied by County-specific VMT obtained from the SCAG 2024 Regional Model (see On-Road Transportation sector above).

For off-road vehicles, the average vehicle loss rate was multiplied by the total vehicle populations for each vehicle type category for Orange County (obtained from the OFFROAD2021 model) to determine county-wide refrigerant loss emissions. These emissions were multiplied by the GWP values from the IPCC AR4 report, consistent with the statewide GHG inventory. Countywide emissions were apportioned to the unincorporated County using employment data, following the same approach as was used to apportion gallons of fuel consumed as described in the Off-road Emission sector.

Residential AC, Refrigerators, Consumer Products, Metered-Dose Inhalers, Foam, Medical, and Fire Suppression

F-gas emissions were obtained from CARB's statewide inventory F-Gas model. [50] Statewide population and housing data were obtained from the California Department of Finance (CA DOF). [51] County population and housing data were obtained from the SCAG 2024 Regional Model.

Statewide refrigerant emissions for residential AC and refrigerators were scaled based on housing. This approach was recommended by CARB. [52] Statewide housing estimates were obtained from the California Department of Finance; [53] County-specific housing data were obtained from the SCAG 2024 Regional Model. Emissions of HFC-32, HFC-125, HFC-134a, and R-600a Isobutane were included. As discussed above, CFC-12 and HCFC-22 were not included.

Statewide refrigerant emissions for consumer products, metered-dose inhalers (MDI), foam, medical, and fire suppression were scaled based on population. This approach was recommended by CARB. [54] Statewide population estimates were obtained from the California Department of Finance; [55] County-specific population data were obtained from the SCAG 2024 Regional Model. Emissions of HFC-32, HFC-125, HFC-134a, and R-600a Isobutane were included. As discussed above, CFC-12 and HCFC-22 were not included.

50 Gallagher, Glenn, Air Pollution Specialist, California Air Resources Board Research Division, email communication, February 20, 2018

51 CA DOF, Population and Housing Estimates, 2018. https://dof.ca.gov/forecasting/demographics/estimates/

52 Gallagher, Glenn, Air Pollution Specialist, California Air Resources Board Research Division, email communication, February 20, 2018.

53 CA DOF, Population and Housing Estimates, 2018. https://dof.ca.gov/forecasting/demographics/estimates/

54 Gallagher, Glenn, Air Pollution Specialist, California Air Resources Board Research Division, email communication, February 20, 2018

55 CA DOF, Population and Housing Estimates, 2018. https://dof.ca.gov/forecasting/demographics/estimates/

Data Sources

- CA DOF, Population and Housing Estimates, 2018. Link: https://dof.ca.gov/forecasting/demographics/estimates/
- CARB, EMFAC2021 Model. Link: https://arb.ca.gov/emfac/emissions-inventory/c3a757e884363e857de19a89c291e03223b875bc
- CARB, OFFROAD2021 Emissions Inventory Tool. Link: https://arb.ca.gov/emfac/offroad/emissions-inventory
- Gallagher, Glenn, Air Pollution Specialist, California Air Resources Board Research Division, email communication, February 20, 2018.
- Gallagher 2015, ARB Methodology to Estimate GHG Emissions from ODS Substitutes.

Natural & Working Lands

Unlike the other sectors included in the Community GHG inventory, the Natural & Working Lands (NWL) inventory represents an estimate of carbon stock. The estimates account for carbon stored in vegetation and soils of natural (e.g., grasslands, forests) and working (i.e., agricultural) lands within the unincorporated County. Carbon can move between ecosystem components due to natural processes (growth, decay, and succession) and disturbances (e.g., wildfire) or anthropogenic forces such as land use change. The NWL inventory is advantageous for tracking these transfers of carbon and the causes of said changes. Jurisdictions can increase carbon stock by preventing land use changes (e.g. conserving forest lands that would otherwise be developed).

The NWL inventory was calculated by classifying the land area of Orange County into seven distinct land cover types (forests, shrublands, grasslands, other lands, wetlands, croplands, and developed lands). The land cover types correspond to land cover types as defined by CARB's Inventory of Ecosystem Carbon in California's Natural & Working Lands. [56] Land cover types for the County were determined using the USGS' NLCD. The NLCD categories vary from the land cover types used in CARB's NWL inventory, so NLCD categories were grouped into the most suitable land cover types for consistency with CARB's NWL inventory.

Once the acreage by land cover type was determined, the acreage was converted to hectares and an average biomass density factor was applied to each land cover type to determine the carbon stock by land cover type. Cropland and developed land are excluded from the NWL inventory due to unavailability of average biomass density factors and differences in methodology within the CARB NWL inventory. The NWL average biomass density, acreage, factors, and carbon stock by land cover type are presented in **Table A.3-13**.

56 CARB, An Inventory of Ecosystem Carbon in California's Natural & Working Lands, Table 4, 2018. https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/NWL%20Inventory%20Report%20Website.pdf.

TABLE A.3-13

2018 NATURAL AND WORKING LANDS CARBON STOCK

Land Cover Type	Average Biomass Density (MT/Acre)	Area (acres)	Carbon Stock
Forests	142.1	7,426	1,055,205
Grassland	5.3	16,567	87,193
Other Natural Land	1.4	1,366	1,936
Shrubland	22.3	122,549	2,728,817
Wetland	59.9	3,412	204,475
Cropland*	N/A	525	-
Developed Land*	N/A	24,710	-
Total	-	**176,555**	**4,077,626**

**** Cropland and developed land are excluded from the NWL inventory due to unavailability of average biomass density factors and differences in methodology within the CARB NWL inventory.***

Data Sources

- CARB, An Inventory of Ecosystem Carbon in California's Natural & Working Lands, 2018. https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/NWL%20Inventory%20Report%20Website.pdf.CARB, EMFAC2021 Model. Link: https://arb.ca.gov/emfac/emissions-inventory/c3a757e884363e857de19a89c291e03223b875bc
- USGS, NLCD, 2019. Link: https://www.usgs.gov/centers/eros/science/national-land-cover-database

A.4: Business-As-Usual and Adjusted Business-as-Usual 2018 to 2045 Forecasts

This section describes the approach for modeling business-as-usual (BAU) and Adjusted BAU emissions. The emissions forecasts are based on the 2018 baseline inventories along with socio-economic trends, population growth, historic emission patterns, and existing policies and legislation that affect GHG emissions.

Each sector of the inventory was forecasted to 2030 and 2045 using the socioeconomic data (SED) obtained from the 2024 SCAG Regional Travel Demand Model (2024 RTDM), which was used by Fehr & Peers to model future VMT. The 2024 RTDM is aligned with SCAG's 2024 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Connect SoCal. Population, housing, employment by sector, and VMT data were provided for 2030 and 2045 for the unincorporated County.

Business-As-Usual

The BAU forecast represents future emissions based on current population and regional growth trends, land use growth patterns, and regulations or policies which began implementation before the 2018 baseline year. The BAU scenario demonstrates the growth in GHG emissions that would occur if no further action were to be taken by the County, State, or Federal government after 2018. The BAU forecasts serve as a reference point for other forecasting scenarios, which include the Adjusted BAU that incorporates State regulations.

Adjusted Business-As-Usual

Like the standard BAU forecast, the Adjusted BAU forecast provides an estimate of future emission levels based on the continuation of existing trends in demographic growth (such as population and housing), activity or resource consumption (such as electricity use), technology changes, and regulation. Unlike the BAU forecast, the Adjusted BAU forecast accounts for expected outcomes of federal and state measures. Specifically, the Adjusted BAU forecast includes the following programs and policies:

- California's Renewable Portfolio Standard (RPS) program, Senate Bill 100 (SB 100), and Senate Bill 1020 targets for renewable energy;
- Advanced Clean Cars I and II (ACCI & ACCII) and Pavley;
- CALGreen Title 24 energy efficiency standards and;
- Senate Bill 1383 (SB 1383)

Each of these adjustments is explained in the following sections.

Regulatory Action

Renewables Portfolio Standard and SB 100

The Clean Energy and Pollution Reduction Act of 2015, or Senate Bill 350 (Chapter 547, Statutes of 2015) was approved by Governor Brown on October 7, 2015. SB 350 increased the standards

of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased from 33% to 50% by December 31, 2030. On September 10, 2018, Governor Brown signed SB 100, establishing that 100% of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both investor-owned utilities and publicly owned utilities from 50% to 60% by 2030. Incrementally, these energy providers must also have a renewable energy supply of 33% by 2020, 44% by 2024, and 52% by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350. The Adjusted BAU forecast accounts for these renewable energy targets, as discussed below.

To account for California's RPS targets under SB 100 in the Adjusted BAU forecast, the GHG emission factors for electricity consumption were adjusted. These emission factors represent indirect GHG emissions generated at power plants and are applied to electricity consumption in the County. The RPS has the effect of lowering indirect emissions associated with electricity consumption because it mandates increasing percentages of renewable sources of power supplied by electricity utilities in future years. The RPS requires 60% eligible renewables by 2030 and 100% carbon-free by 2045. [57]

To adjust for the RPS in future years, indirect electricity emission factors reported for each utility within the County, along with the energy power mix, were collected for the years 2018–2021. The CEC reports power mix data in Power Content Labels; these are available through 2021 for all utilities. [58] Based on data reported for 2018–2021, a composite "non-RPS" emission intensity factor was generated for each year. This factor is calculated based on the reported total emission factor and the non-RPS power mix. Then, for each forecast year (2030 and 2045), an emission factor for total delivered electricity was calculated based on these composite "non-RPS" emission intensity factors for each reported year and the projected RPS requirement for eligible renewables for each year.

Pavley Vehicle Standards and Advanced Clean Cars I

In 2002, Governor Gray Davis signed AB 1493. AB 1493 requires that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." To meet the requirements of AB 1493, in 2004 CARB approved amendments to the California Code of Regulations, adding GHG emissions standards to California's existing standards for motor vehicle emissions. All mobile sources are required to comply with these regulations as they are phased in from 2009 through 2016. These regulations are known as the Pavley standards (named for the bill's author, State Senator Fran Pavley).

57 RPS-eligible resources include solar, wind, geothermal, small hydroelectric, or biopower facilities that are located within the Western Electricity Coordinating Council (WECC) region, which encompasses fourteen western U.S. states and portions of Canada and Mexico. The majority of RPS-eligible electricity currently comes from solar and wind. Large hydroelectric dams and nuclear facilities, two major sources of carbon-free power, are not RPS-eligible.

58 California Energy Commission (CEC), Power Content Labels, 2021. https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure-program/power-content-label/annual-power-1. Accessed January 2024.

In January 2012, pursuant to Recommended Measures T-1 and T-4 of the Original Scoping Plan, CARB approved the Advanced Clean Cars I Program, an emissions-control program for model year 2017 through 2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, the new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions. The program also requires car manufacturers to offer for sale an increasing number of zero-emission vehicles (ZEVs) each year, including battery electric, fuel cell, and plug-in hybrid electric vehicles. In December 2012, CARB adopted regulations allowing car manufacturers to comply with California's GHG emissions requirements for model years 2017–2025 through compliance with the EPA GHG requirements for those same model years. [59] The EMFAC2021 model incorporates Pavley and ACCI, therefore, the Adjusted BAU forecasts accounts for these vehicle fleet efficiency standards.

Advanced Clean Cars II

Governor Gavin Newsom signed an executive order (Executive Order No. N-79-20) on September 23, 2020, which would phase out sales of new gas-powered passenger cars by 2035 in California with an additional 10-year transition period for heavy vehicles. The State would not restrict used car sales, nor forbid residents from owning gas-powered vehicles. In accordance with the Executive Order, CARB is developing a 2020 Mobile Source Strategy, a comprehensive analysis that presents scenarios for possible strategies to reduce the carbon, toxic and unhealthy pollution from cars, trucks, equipment, and ships. The strategies will provide important information for numerous regulations and incentive programs going forward by conveying what is necessary to address the aggressive emission reduction requirements.

The primary mechanism for achieving the ZEV target for passenger cars and light trucks is CARB's ACC II Program. The ACC II regulations will focus on post-2025 model year light-duty vehicles, as requirements are already in place for new vehicles through the 2025 model year. A rulemaking package was presented to the Board in June 2022 and was adopted on November 30, 2022. The Adjusted BAU forecast accounts for these vehicle fleet efficiency standards by implementing ACCII adjustment factors to EMFAC2021 model outputs.

CAL Green (Title 24 Building Energy Efficiency Standards)

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods (CEC, 2016). The current Title 24, Part 6 standards (2019 standards) were made effective on January 1, 2020. The new Title 24, Part 6 standards (2022 standards) were adopted by the CEC in August 2021 and became effective on January 1, 2023. The Adjusted BAU forecasts accounts for these updates to Title 24, as discussed below.

59 Advanced Clean Car I program information available online at: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/about. Accessed January 2024.

Under the Adjusted BAU scenario, energy use was adjusted to reflect the effects of Title 24 standards. Title 24 Building Efficiency Standards are updated every three years by the California Energy Commission. Energy efficiency improvements were determined by estimating the increased energy efficiency percentages for the 2019 Title 24 standards [60] implemented in 2020, and the 2022 standards implemented in 2023. [61] The 2019 percentages are based on CEC estimates for residential and non-residential buildings and assume that the solar photovoltaic (PV) requirement is met. The 2022 percentages were calculated based on CEC's Draft Environmental Impact Report for the 2022 standards which outlines the changes in building energy use from the 2019 to 2022 standards on a project-by-project basis. [62] Weighted averages were taken to generate efficiency change values for single and multifamily residential buildings for both electricity and natural gas. Because energy efficiency increases are unknown after implementation of 2022 Title 24 Standards, the 2022 Title 24 efficiency increases are applied to future years.

SB 1383

California Senate Bill 1383 (SB 1383) aims to reduce short-lived climate pollutants by cutting organic waste disposal by 75 percent from 2014 levels by 2025. It mandates all jurisdictions to provide organic waste collection services for residents and businesses, including food, green material, and other organic waste. As of January 1, 2022, residents and businesses must separate organic waste into designated bins. The bill also requires the recovery of at least 20 percent of currently disposed edible food by 2025 to combat food waste. SB 1383 is part of California's broader strategy to address climate change and improve air quality by reducing methane emissions from landfills. The Adjusted BAU forecast of the community solid waste sector accounts for SB 1383 based on the goal of reducing organic waste disposal by 75 percent from 2014 levels by 2025.

Municipal BAU and Adjusted BAU Forecasts

Municipal emissions forecasts are based on the 2018 municipal GHG inventory along with socio-economic trends, population growth, and the following existing policies and legislation described earlier in this section: California's RPS, SB 100, SB 1020 targets, ACCI, ACCII, and Pavley. Title 24 standards are excluded from the municipal Adjusted BAU forecast to avoid double-counting emissions reductions associated from Measures M-E1 and M-E2. Similarly, SB 1383 is excluded from the municipal Adjusted BAU forecast to avoid double-counting emissions reductions from Measure M-RRW1.

Table A.4-1 presents the SED used for the BAU and Adjusted BAU forecast, while **Table A.4-2** indicates which sets of socioeconomic and activity data were used to forecast each sector. **Table A.4-3** details the municipal inventory along with 2030 and 2045 emissions forecast broken down by sector and subsector.

60 CEC, 2019 Building Energy Efficiency Standards FAQ, 2020. https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf. Accessed January 2022.

61 CEC, 2022 Building Energy Efficiency Standards Summary, 2021. https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf. Accessed January 2022.

62 CEC, Draft Environmental Impact Report: Amendments to the Building Energy Efficiency Standards (2022 Energy Code), May 19, 2021. https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency. Accessed January 2022.

TABLE A.4-1

MUNICIPAL SOCIOECONOMIC DATA

Metric	2018	2030	2045
Population	128,781	146,567	168,799
Public Administration Employment	134	144	156
Note: Service population is the sum of population and employment. Source: Fehr & Peers, 2024.			

TABLE A.4-2

MUNICIPAL FORECASTING METHODS BY SECTOR

Sector	Activity Data	Forecast Metric Used
Energy	Electricity consumption (MWh) and natural gas consumption (therms)	Public Administration Growth Rate
Fleet	Fuel use (gallons)	Public Administration Growth Rate
Solid Waste	Waste disposed (tons)	Public Administration Growth Rate
Water	Water use (AF)	Public Administration Growth Rate
Wastewater	Wastewater emissions ($MTCO_2e$)	Public Administration Growth Rate

TABLE A.4-3

MUNICIPAL INVENTORY, BAU, AND ADJUSTED BAU FORECASTS ($MTCO_2E$)

Sector	Baseline		BAU		Adjusted BAU
	2018	2030	2045	2030	2045
Electricity	36,784	39,500	42,821	24,888	0
Natural Gas	52,498	56,287	61,019	56,287	61,019
On-Road Fleet	10,745	11,520	12,488	9,516	9,204
Off-Road Fleet	8,529	9,135	9,903	9,135	9,903
Landfill	865,360	1,146,527	1,406,424	1,146,527	1,406,424
Water	834	896	971	564	0
Wastewater	1,689	1,810	1,963	1,453	916
Employee Commute	19,498	20,904	22,661	13,134	2,728
Total	**995,936**	**1,286,578**	**1,558,251**	**1,261,504**	**1,490,195**

Community BAU and Adjusted BAU Forecasts

Community emissions forecasts are based on the community GHG inventory along with socio-economic trends, population growth, historic emission patterns, and existing policies and legislation that affect GHG emissions.

Table A.4-4 presents the SED used for the BAU and Adjusted BAU forecast, while Table A.4-5 indicates which sets of socioeconomic and activity data were used to forecast each sector. Table A.4-6 details the community inventory along with 2030 and 2045 emissions forecast broken down by sector and subsector.

TABLE A.4-4

UNINCORPORATED ORANGE COUNTY SOCIOECONOMIC DATA

Metric	2018	2030	2045
Population	128,781	146,567	168,799
Households	41,684	51,841	64,539
Employment	33,619	38,246	44,029
Service Population	162,400	184,813	212,828
Note: Service population is the sum of population and employment. Source: Fehr & Peers, 2024.			

TABLE A.4-5

COMMUNITY FORECASTING METHODS BY SECTOR

Sector	Activity Data	Forecast Metric Used
Residential Energy	Electricity consumption (MWh) and natural gas consumption (therms)	Households
Non-Residential Energy	Electricity consumption (MWh) and natural gas consumption (therms)	Service Population
Transportation	Vehicle miles traveled (VMT)	Population, Households, Employment
Solid Waste	Waste disposed (tons)	Service Population
Water	Water use (AF)	Service Population
Wastewater	Wastewater emissions ($MTCO_2e$)	Service Population

TABLE A-4-6

COMMUNITY INVENTORY, BAU, AND ADJUSTED BAU FORECASTS BY SECTOR (MTCO2E)

Sector	Baseline		BAU		Adjusted BAU
	2018	2030	2045	2030	2045
Electricity	141,411	171,703	217,512	95,057	0
Residential Electricity	101,973	126,823	165,828	70,224	0
Non-Residential Electricity	39,439	44,881	51,684	24,833	0
Natural Gas	150,791	179,706	215,942	174,621	201,510
Residential Natural Gas	77,479	96,360	119,961	92,832	110,019
Non-Residential Natural Gas	73,312	83,346	95,980	81,790	91,492
Transportation	356,974	402,337	459,551	281,801	102,125
On-Road Transportation	337,781	379,397	431,396	258,861	73,970
Off-Road Equipment	16,007	19,309	23,736	19,309	23,736
Freight Rail	1,048	1,493	2,280	1,493	2,280
Passenger Rail	2,139	2,139	2,139	2,139	2,139
Solid Waste	37,035	42,146	48,534	30,021	34,572
Water	2,985	3,075	3,187	1,752	0
Wastewater	5,161	5,874	6,765	5,074	4,274
Refrigerants	24,095	44,854	60,353	40,302	52,274
Agriculture	538	538	538	538	538
Total	**718,991**	**850,234**	**1,012,383**	**629,168**	**395,294**
Large Stationary	49,579	49,579	49,579	49,579	49,579
Total w/ Large Stationary	**768,570**	**899,813**	**1,061,962**	**678,747**	**444,873**
Natural Working Lands	(4,077,626)	(4,077,626)	(4,077,626)	(4,077,626)	(4,077,626)

A.5: 2030 and 2045 Municipal GHG Reduction Targets

The CAP target-setting process involves reviewing state laws and plans using available data about the timing and levels of GHG emissions reductions needed to address climate change. The process includes calculating specific emissions levels and reduction percentages for the County that reflect its fair share in meeting state reduction targets. CAP GHG reduction targets should be set for the years 2030 and 2045 to comply with current state legislation and follow established methods outlined in the 2022 Scoping Plan.

AB 1279, enacted in 2022, directs the state to develop and implement a strategy for achieving a statewide GHG emissions reduction goal of 85 percent below 1990 levels for anthropogenic emissions, as well as net zero emissions by 2045 or earlier, with further reductions thereafter. The Municipal CAP establishes a long-term GHG reduction goal for 2045 consistent with AB 1279. For 2030, the Municipal CAP adopts the 2022 Scoping Plan's accelerated objective of reducing GHG emissions to 48 percent below 1990 levels.

CAP Targets

The County has separate municipal targets for landfill emissions and all other sectors. These GHG reduction targets were set for the years 2030 and 2045 to align with State climate legislation SB 32 and AB 1279. These targets represent the County's fair share contribution towards helping the State achieve the Scoping Plan Scenario outlined in the 2022 Scoping Plan.

Due to the outsized contribution of landfill emissions to the municipal inventory (87 percent of the 2018 inventory), the CAP includes landfill-specific targets for 2030 and 2045. The landfill targets align with the landfill methane emissions pathway of the Scoping Plan Scenario. The targets for all other sectors align with the emissions pathways of the relevant sectors of the Scoping Plan Scenario.

Landfill Emissions Targets

1. By 2030, reduce County of Orange-owned and -operated landfill GHG emissions by 13 percent below 2018 levels.
2. By 2045, reduce County of Orange-owned and -operated landfill GHG emissions by 25 percent below 2018 levels.

Non-Landfill Emissions Targets

1. By 2030, reduce non-landfill GHG emissions from County of Orange operations by 47 percent below 2018 (equivalent to 48 percent below 1990 levels).
2. By 2045, reduce non-landfill GHG emissions from County of Orange operations by 92 percent below 2018 (equivalent to 85 percent below 1990 levels).

2022 Scoping Plan

The 2022 Scoping Plan outlines how California will reach carbon neutrality [63] and cut GHG emissions by 85 percent below 1990 levels by 2045 through a cost-effective scenario called the Scoping Plan Scenario. Chosen as the most feasible option, this scenario keeps the state on course for its 2030 target—at least 40 percent below 1990 emissions—but further reductions to 48 percent are needed to stay on track for net zero by 2045. Notably, the 2022 Scoping Plan is the first Climate Change Scoping Plan to include natural and working lands (NWL) in its emissions reduction strategy.

Aligning with State Targets

The Municipal CAP's GHG reduction targets should be aligned with state legislation to reduce GHG emissions to the following levels:

1. 40 percent below 1990 levels by 2030 (SB 32).
2. 48 percent below 1990 levels by 2030 (2022 Scoping Plan).
3. 85 percent below 1990 levels by 2045 (AB 1279).

2030 Target

For 2030, the CAP's target should match the 2022 Scoping Plan, which calls for a 48 percent reduction in statewide GHG emissions from 1990 levels by 2030—more ambitious than SB 32's 40 percent cut—to keep California on track for net zero emissions by 2045, as required by AB 1279.

2045 Target

For 2045, the Municipal CAP's target aligns with the Scoping Plan Scenario's trend to achieve AB 1279, which mandates an 85 percent reduction in statewide anthropogenic emissions below 1990 levels and achievement of net zero emissions by 2045. While state plans incorporate carbon capture and storage (CCS) and mechanical carbon dioxide removal (CDR) technologies, local governments like Orange County currently lack roles or guidance for implementing CCS/CDR strategies. Therefore, these technologies are not included in the County's emission targets, and the CAP's 2045 goal matches AB 1279's focus on reducing anthropogenic emissions by 85 percent.

Orange County-Specific Targets

To develop Orange County-specific reduction targets for the CAP that align with statewide targets, the 2022 Scoping Plan was reviewed to identify the emissions sectors in this statewide plan that are relevant and applicable to Sacramento County (based on what emissions sectors were included in the County's GHG emissions inventory). The emissions reduction trajectory of each applicable sector in the 2022 Scoping Plan was then applied to the County's emissions levels to calculate reduction levels and target percentages for the CAP. The analysis performed to derive County-specific GHG reduction targets from state targets and applicable statewide sectors is provided in the following sections.

63 Carbon neutrality means "net zero" emissions of GHGs. In other words, it means that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of carbon dioxide that is stored, both in natural sinks and through mechanical sequestration.

Landfill Targets

The County applied a sector-based method to establish its share of emissions reductions and set targets that are consistent with the State's Scoping Plan Scenario. The Scoping Plan Scenario outlines a target pathway for landfill methane emissions that includes the categories Disposal Reduction and Increased Capture.[64] This pathway projects that statewide landfill emissions will decrease from roughly 8.3 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2018 to about 7.25 $MMTCO_2e$ in 2030 and 6.25 $MMTCO_2e$ by 2045. This corresponds to a 13 percent decrease below 2018 levels by 2030 and a 25 percent decrease below 2018 levels by 2045. The CAP adopts these targets for the County's landfill emissions. With this approach, the County's landfill emissions targets align with the State's Scoping Plan Scenario.

Figure A.5-1 shows emissions forecasts through 2045 for landfills owned and operated by the County of Orange.[65] It also includes 2030 and 2045 landfill emissions targets and associated trendline from 2018 through 2045.

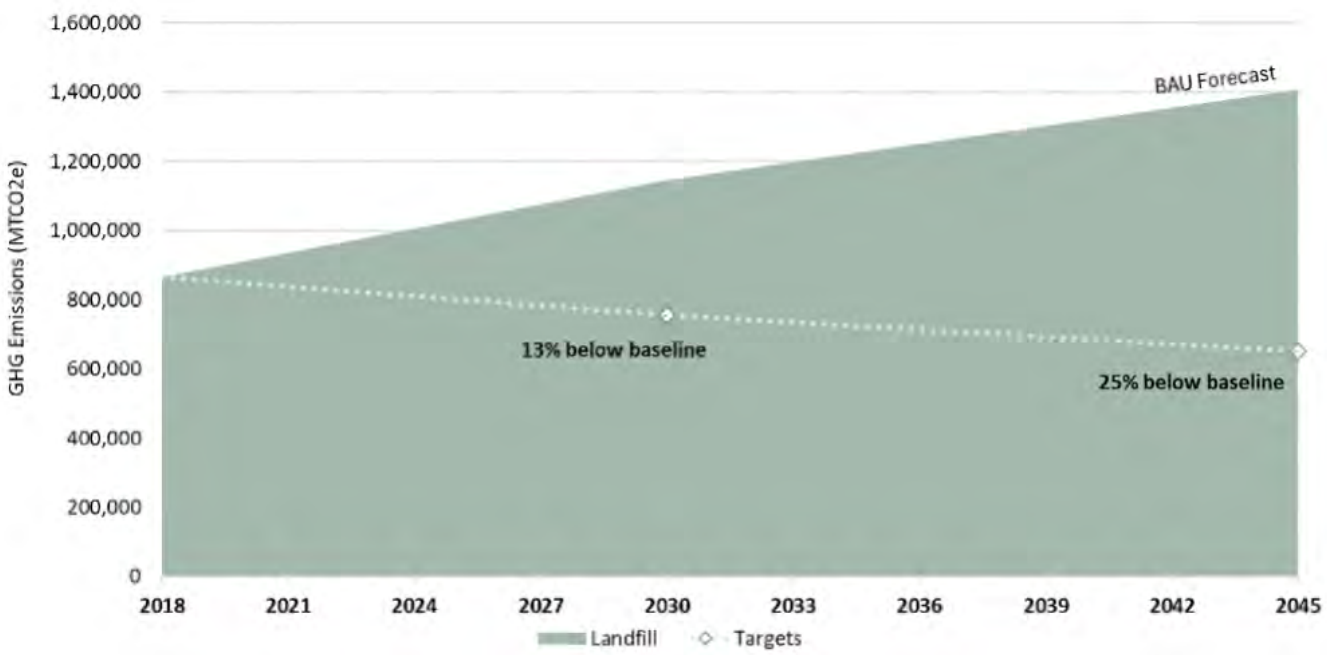


FIGURE A.5-1

COUNTY OF ORANGE MUNICIPAL LANDFILL EMISSIONS FORECASTS AND GHG REDUCTION TARGETS

64 California Air Resources Board. 2022. 2022 Scoping Plan, Appendix H: AB 32 GHG Inventory Sector Modeling. Figure H-1: Projected Annual Landfill Methane Emissions (MMT CO2e). November 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp-appendix-h-ab-32-ghg-inventory-sector-modeling.pdf. Accessed in August 2025.

65 Landfill emissions are only forecasted under a BAU scenario; therefore, Figure A.5-1 does not show an Adjusted BAU forecast.

Non-Landfill Targets

To establish Orange County-specific reduction targets for the CAP that are consistent with statewide goals, the 2022 Scoping Plan was reviewed to determine which non-landfill emissions sectors are relevant and applicable to Orange County, based on the County's GHG emissions inventory. The emissions reduction trajectory for each applicable sector in the 2022 Scoping Plan was applied to the County's emissions data to calculate corresponding reduction levels and target percentages for the CAP.

The sectors included in these targets are Electricity, Natural Gas, Transportation, and Wastewater. The projected pathway for these sectors indicates statewide emissions declining from approximately 276 $MMTCO_2e$ in 2018 to around 148 $MMTCO_2e$ in 2030, and further to about 21 $MMTCO_2e$ in 2045. This represents a 47 percent decrease from 2018 levels by 2030 and a 92 percent decrease from 2018 levels by 2045. The CAP applies these targets to landfill emissions within the County. The 2030 target for non-landfill emissions surpasses the SB 32 requirement of a 40 percent reduction below 1990 levels and aligns with the Scoping Plan Scenario's objective of a 48 percent reduction below 1990 levels. The 2045 target for non-landfill emissions meets the AB 1279 requirement of an 85 percent reduction below 1990 levels. By following this method, the County's non-landfill emissions targets are aligned with the State's Scoping Plan Scenario.

This approach allows County GHG reduction targets to align proportionally with statewide reductions for applicable sectors, based on available data. This method aligns with the California Supreme Court's decision in *Center for Biological Diversity v. California Department of Fish and Wildlife and Newhall Land and Farming (2015)*, which requires a "reasoned explanation based on substantial evidence" linking project emissions—here, community emissions under the CAP—to statewide GHG reduction goals.

To set the County's reduction targets, the State's 2018 GHG inventory was compared to the 2030 and 2045 Scoping Plan Scenario emissions forecasts for four relevant sectors. Table A.5-1 lists statewide sector emissions for each of those years.

TABLE A.5-1

2022 SCOPING PLAN CHANGE IN EMISSIONS FOR RELEVANT SECTORS (MMTCO2E)

Sector	2018	2030	2045
Transportation	173	81	8
Residential & Commercial	37	27	4
Electric Power	65	39	9
Wastewater	1.95	1.04	0.30
Total	**276**	**148**	**21**

The 2022 Scoping Plan requires that statewide emissions be reduced 48 percent below the 1990 Statewide emissions total of 438 $MMTCO_2e$ by 2030; this reduction pathway is equivalent to a 45 percent reduction below the 2018 Statewide emissions inventory of 413 $MMTCO_2e$. By 2045, the Scoping Plan requires an 85 percent reduction from 1990 emissions levels, equivalent to an 84 percent reduction from 2018. However, the Scoping Plan requires that statewide emissions from sectors relevant to the County's inventory be reduced to 148 $MMTCO_2e$ by 2030—a 47 percent decrease from 2018. By 2045, emissions for relevant sectors must drop to 21 $MMTCO_2e$, a 92 percent reduction from 2018 levels. Table A.5-2 summarizes this analysis.

TABLE A.5-2

APPLICATION OF STATEWIDE EMISSIONS REDUCTIONS BY SECTOR TO COUNTY SECTORS

YEAR	All Statewide Sectors Emissions ($MMTCO_2e$)	All Statewide Sectors Percent below 2018 Levels	Applicable Statewide Sectors Emissions ($MMTCO_2e$)	Applicable Statewide Sectors Percent below 2018 Levels
2018	413	N/A	276	N/A
2030	226	45%	148	47%
2045	65	84%	21	92%

Table A.5-3 presents GHG emissions reduction targets for government operations, including the percentage reduction from 2018 levels, target emissions levels, and required reductions. All targets are based on the 2018 baseline to ensure consistency with 1990 levels and to track future progress using the County's 2018 municipal GHG inventory.

TABLE A.5-3

TARGET EMISSIONS AND TARGET PERCENT REDUCTION FROM 2018 LEVELS

YEAR	GHG Reduction Target (relative to 2018 levels)	Target Emissions Levels ($MTCO_2e$/yr)	Reductions from ABAU Forecast Needed to Achieve Target ($MTCO_2e$/yr)
2018	N/A	130,576	N/A
2030	47%	69,823	45,154
2045	92%	10,081	73,690

Figure A.5-2 shows the BAU and Adjusted BAU forecasts through 2045 for County of Orange municipal operations for non-landfill sources, as well as the 2030 and 2045 targets.

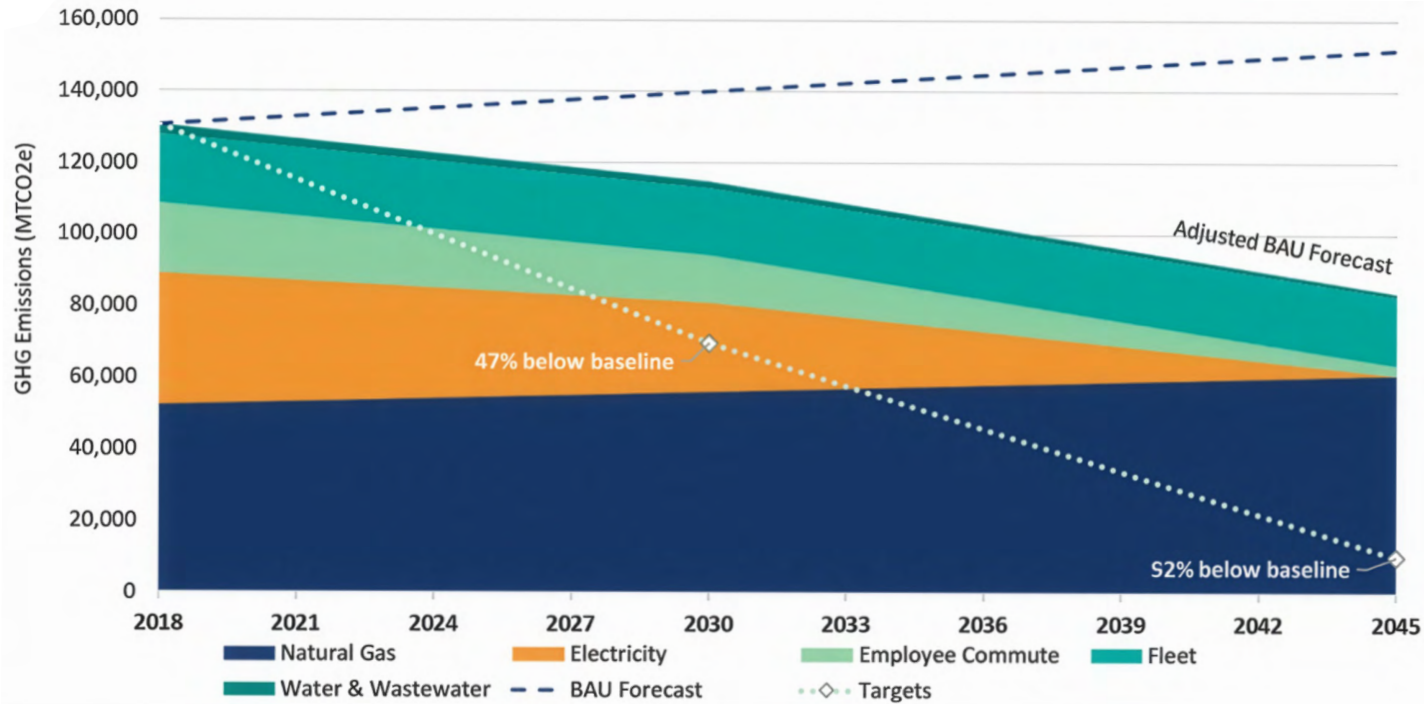


FIGURE A.5-2

COUNTY OF ORANGE MUNICIPAL NON-LANDFILL EMISSIONS FORECASTS AND GHG REDUCTION TARGETS

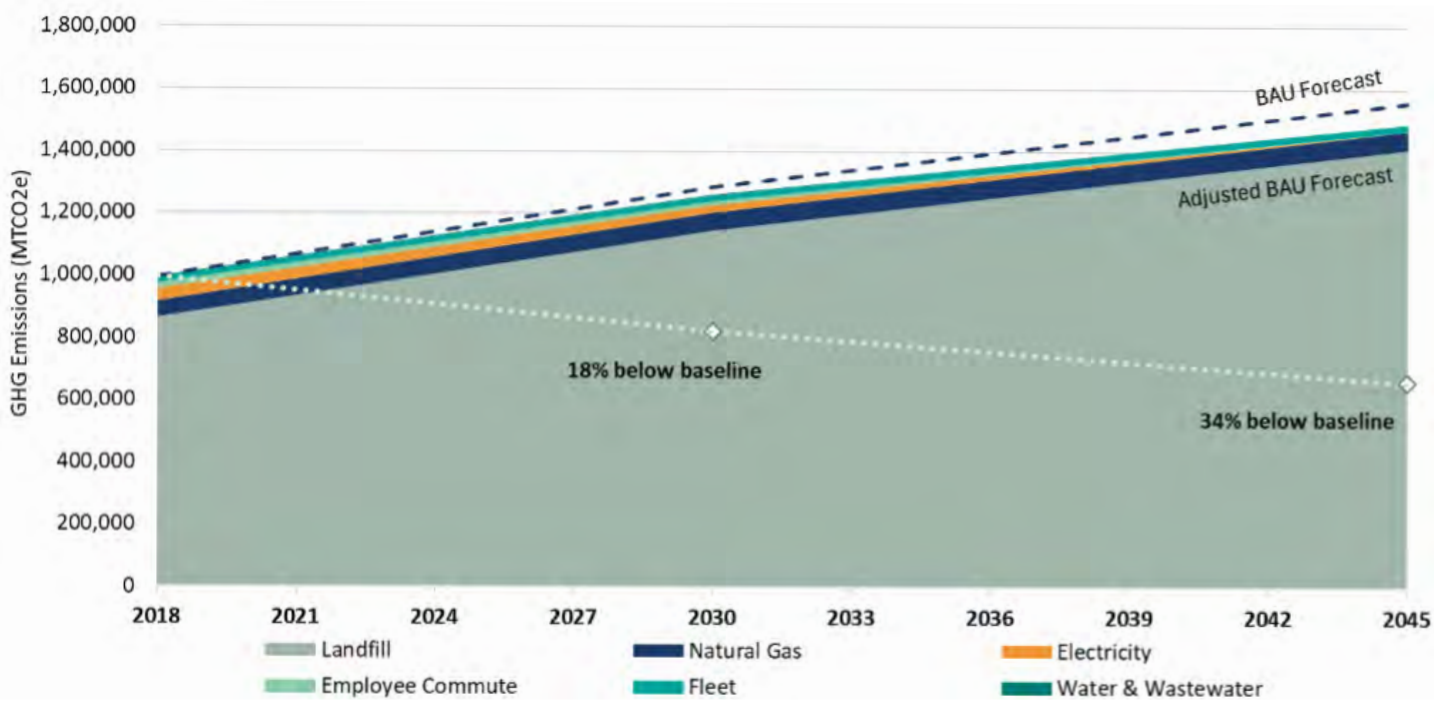


FIGURE A.5-3

COUNTY OF ORANGE MUNICIPAL EMISSIONS FORECASTS AND COMBINED GHG EMISSION REDUCTION TARGET PATHWAY

Combined Target Pathway

The CAP sets separate targets for landfill and non-landfill emissions but combining these provides a simpler overview of implementation (see Chapter 3). **Figure A.5-3** shows the BAU and ABAU emissions forecasts and combined reduction targets. To meet these goals, the County must reduce all emission sources by 18 percent by 2030 and 34 percent by 2045.

Potential Future CEQA Streamlining

CEQA Guidelines Section 15183.5(b) stipulates that project-specific environmental documents can find that project-level GHG emissions would not be cumulatively considerable if the project complies with the requirements of a qualified GHG emissions reduction plan. The project-specific environmental document must identify those requirements in the GHG emissions reduction plan that applies to the project, and if they are not otherwise enforceable, must incorporate those requirements as project-specific mitigation measures. To meet the requirements of CEQA Guidelines Section 15183.5(b), a qualified GHG emissions reduction plan must do the following:

1. Quantify existing and projected GHG emissions resulting from activities within a defined geographic area.
2. Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
3. Identify and analyze sector-specific GHG emissions within the plan's geographic area.
4. Specify measures or a group of measures, including performance standards, that if implemented at the project-by-project basis, would collectively achieve the specified emissions level.
5. Establish a mechanism to monitor the plan's progress toward achieving the GHG emissions level and to require amendment if the plan is not achieving specified levels.
6. Be adopted in a public process following environmental review.

At the current stage, the CAP is exempt from CEQA as a planning study (Guidelines §15262). The forthcoming CEQA analysis in the Final CAP will evaluate potential impacts and mitigation measures. The CEQA analysis will begin upon approval of the CAP by the Board of Supervisors. The CAP is considered a planning document and more public outreach, and stakeholder engagement will occur during the Implementation Phase and CEQA analysis. The CEQA process will include completing an environmental checklist to determine the appropriate type of environmental analysis required and will ultimately include an additional series of public workshops to solicit further input from the community.

Once the CAP is approved and the County conducts CEQA review, the analysis will determine whether the Municipal CAP may be used to streamline the GHG analysis of future development projects undertaken by the County by enabling such projects to demonstrate their consistency with the CAP's policies, programs, and requirements.

However, to inform decision makers, the following is a preliminary discussion about the CAP's consistency with item #2 (CEQA Guidelines Section 15183.5(b)(1)(B)) above. This item stipulates that a CAP's target must represent a level of significance for GHG emissions associated with activities covered by the CAP. For the Municipal CAP, the targets are: 1) reducing landfill emissions by 13 percent below 2018 levels by 2030 and 25 percent by 2045; and 2) reducing non-landfill emissions by 47 percent below 2018 levels by 2030 and 92 percent by 2045; as discussed above.

These targets align with the 2022 Scoping Plan's trajectory to achieve the SB 32 target of 40 percent below 1990 baseline levels by 2030 and the AB 1279 target of 85 percent below 1990 levels by 2045 based on the relevant sectors included in the municipal GHG inventory and CAP.

For landfill emissions, the Scoping Plan Scenario shows a decrease in statewide landfill emissions from 8.3 $MMTCO_2e$ in 2018 to 7.25 $MMTCO_2e$ in 2030, which corresponds to a 13 percent decrease below 2018 levels by 2030. The CAP's targets for landfill emissions directly align with this trajectory. For non-landfill emissions (electricity, natural gas, transportation, and wastewater), the Scoping Plan Scenario shows a decrease in statewide emissions from 276 $MMTCO_2e$ in 2018 to 148 $MMTCO_2e$ in 2030, which corresponds to a 47 percent decrease below 2018 levels by 2030. The CAP's targets for landfill emissions directly align with this trajectory.

Consistency with the 2022 Scoping Plan and SB 32 is an appropriate metric by which to determine the significance of the CAP's GHG emissions through 2030. As stipulated by CEQA Guidelines Section 15064.4(b)(3), a lead agency "may consider a project's consistency with the state's long-term climate goals or strategies" when determining the significance of a project's cumulative GHG emissions impacts. Therefore, the CAP's 2030 target represents the level below which GHG emissions would not be cumulatively considerable in the year 2030.

For landfill emissions, the Scoping Plan Scenario shows a decrease in statewide landfill emissions from 8.3 $MMTCO_2e$ in 2018 to 6.25 $MMTCO_2e$ by 2045, which corresponds to a 25 percent decrease below 2018 levels by 2045. The CAP's targets for landfill emissions directly align with this trajectory. For non-landfill emissions (electricity, natural gas, transportation, and wastewater), the Scoping Plan Scenario shows a decrease in statewide emissions from 276 $MMTCO_2e$ in 2018 to 21 $MMTCO_2e$ by 2045, which corresponds to a 92 percent decrease below 2018 levels by 2045. The CAP's targets for landfill emissions directly align with this trajectory.

Consistency with the 2022 Scoping Plan and AB 1279 is an appropriate method of determining that the CAPs 2045 GHG emissions are not cumulatively considerable. Consequently, pursuant to CEQA Guidelines Section 15064.4(b)(3), the CAP's 2045 target represents the level below which GHG emissions would not be cumulatively considerable through the year 2045.

CLIMATE ACTION PLAN
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Appendix B: Unincorporated Orange County Greenhouse Gas Reduction Measures Methods

B.1: Purpose

This Appendix describes the methods for quantifying greenhouse gas (GHG) emissions reductions for the measures listed in the County of Orange Climate Action Plan (CAP) for municipal and community activities in Unincorporated Orange County (henceforth referred to as "the County" unless otherwise specified).

All measures are presented for planning purposes only and do not commit the County to any specific project or physical change. Any future projects or actions identified through each measure would be subject to separate discretionary approvals, funding decisions, and environmental review, as required by CEQA.

Introduction

This Appendix describes the calculation methods for estimating local GHG emissions reductions for the CAP measures for both the municipal and community activities. These emissions reductions occur beyond federal and state regulations and policies accounted for in the Adjusted BAU forecast. Reduction measures are organized into municipal (M-) and community (C-) measures and subdivided into four sectors: Energy (E), Mobility (M), Resource Recovery & Waste (RRW), and Environmental Justice (EJ). The quantified measures and actions include:

Municipal Measures:

- M-E1: Support Building Electrification of County-Owned Facilities
- M-E2: Reduce Building Energy Use Throughout County-owned Facilities
- M-E3: Support Installation of Solar at County-Owned Facilities
- M-E4: Reduce Carbon Intensity of County-owned Facilities
- M-M2: Reduce VMT for County Employees and County-Owned Fleet
- M-M3: Support Decarbonization of the County-owned Fleet
- M-RRW1: Improve Diversion of Waste at County-Owned Landfills
- M-RRW2: Support Increased Waste-to-Energy Potential at County Landfills
- M-EJ1: Increase Urban Greening on County Property

Community Measures:

- C-E1: Promote Building Decarbonization Throughout the Community
- C-E2: Reduce Building Energy Use Throughout the Community
- C-E3: Promote Solar Installation Throughout the Community
- C-M2: Reduce Vehicle Miles Traveled (VMT) in Unincorporated Areas
- C-RRW1: Increase Public Participation in County Waste Diversion Programs

B.2: Municipal Greenhouse Gas Reduction Measures

Energy (M-E)

Measure Order of Implementation

To avoid double counting GHG emissions reductions between measures that cover the same emissions source, it is important to account for overlapping effects. For example, the starting activity data upon which each measure is applied is affected by measure order. If Measure M-E1 reduces natural gas use to a certain level, then Measure M-E2 will have a different starting point from which to reduce.

The municipal energy measures were calculated in the following order:

1. Measure M-E1: Pursue Building Electrification of County-Owned Facilities
2. Measure M-E2: Reduce Building Energy Use Throughout County-Owned Facilities
3. Measure M-E3: Install Solar at County-Owned Facilities
4. Measure M-E4: Reduce Carbon Intensity of County-Owned Cogeneration Facilities

M-E1: Support Building Electrification of County-Owned Facilities

TABLE B.2-1

MEASURE M-E1 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	**386**
Electricity	-2,239
Natural Gas	2,625
2045	**3,675**
Electricity	0[a]
Natural Gas	3,675

Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.
[a] Reductions are zero in 2045 because California's Renewable Portfolio Standard (RPS) requires that all electricity sold by utilities be zero-carbon by 2045, meaning that grid electricity will be carbon-free regardless of local or regional efforts. Therefore, all 2045 electricity emissions reductions are captured in the Adjusted BAU forecast as opposed to any single CAP measure.
Note: a negative reduction denotes an increase in emissions.

Description

Measure M-E1 identifies a potential strategy to reduce greenhouse gas emissions from County buildings through electrification and clean energy technologies. The County may evaluate opportunities to integrate electrification into new construction, retrofits, and equipment replacements, drawing on renewable natural gas generated by the County's landfills, and available incentives to accelerate the transition.

Performance Goals

- **2030:** Decarbonize 5% of baseline building natural gas use
- **2045:** Decarbonize 7% of baseline building natural gas use

Modeling Approach

Measure M-E1 estimates emissions reductions from the conversion of natural gas use in County-owned facilities to electricity use. Both the reduction in natural gas use and the increase in electricity use under Measure M-E1 were accounted for. To estimate the natural gas reduction, baseline natural gas use was multiplied by the performance goal for each target year. To estimate the increase in electricity use, each performance goal was applied to baseline natural gas use; the resulting displaced natural gas use was then converted to electricity use using a conversion factor of 3,412 British thermal units (Btu) per kilowatt-hour (kWh). Natural gas and electricity use were converted to emissions using the same emission factors that were utilized for the GHG forecasts (see Section A.4 of Appendix A for additional detail). The electricity emissions increase was then added to the natural gas emissions reduction to obtain the net GHG reductions for the measure.

Assumptions

- Emission factors for electricity are a weighted average of utility providers for the County, which include SCE and SDG&E.
- There is no efficiency loss when converting natural gas to electricity.
- Reductions associated with this measure will not come from the County's cogeneration facilities.

Data Sources

- SCE Emission Factors Link: https://www.edison.com/sustainability/sustainability-report
- SDG&E Emission Factors Link: https://www.sempra.com/performance/sustainability
- The Climate Registry, 2024 Default Emission Factors Link: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf
- U.S. Energy Information Administration, Energy Conversion Link: https://www.eia.gov/energyexplained/units-and-calculators/energy-conversion-calculators.php

M-E2: Reduce Building Energy Use Throughout County-Owned Facilities

TABLE B.2-2

MEASURE M-E2 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	**4,059**
Electricity	1,244
Natural Gas	2,814
2045	**3,051**
Electricity	0[a]
Natural Gas	3,051

Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.
[a] Reductions are zero in 2045 because California's Renewable Portfolio Standard (RPS) requires that all electricity sold by utilities be zero-carbon by 2045, meaning that grid electricity will be carbon-free regardless of local or regional efforts. Therefore, all 2045 electricity emissions reductions are captured in the Adjusted BAU forecast as opposed to any single CAP measure.
Note: a negative reduction denotes an increase in emissions.

Description

Measure M-E2 provides a planning-level framework to evaluate potential approaches for improving energy performance across County-owned facilities through conceptual efficiency upgrades, high-performance building design principles, and sustainable operational practices. The County may consider integrating energy audits at existing buildings, Leadership in Engineering and Environmental Design (LEED) certification pathways for new and existing buildings, and targeted planning-level evaluation of opportunities at cogeneration facilities to identify cost-effective measures that could lower energy demand, reduce GHG emissions, and enhance long-term building performance

Performance Goals

- **2030 & 2045:** Reduce energy use 5% below ABAU levels

Modeling Approach

Measure M-E2 estimates emissions reductions from the reduction of natural gas and electricity use in County-owned facilities through energy efficiency improvements. For each target year, the performance goal was applied to the Adjusted BAU electricity and natural gas use to determine the amount of energy that would be reduced through implementation of this measure. The natural gas and electricity use reductions were converted to emissions using the same emission factors that were utilized for the GHG forecasts (see Section A.4 of Appendix A for additional detail). Electricity and natural gas emissions reductions were summed to determine the total reductions associated with Measure M-E2.

Assumptions

- Emission factors for electricity are a weighted average of utility providers for the County, which include SCE and SDG&E.
- Reductions associated with this measure will not come from the County's cogeneration facilities.

Data Sources

- SCE Emission Factors Link: https://www.edison.com/sustainability/sustainability-report
- SDG&E Emission Factors Link: https://www.sempra.com/performance/sustainability
- The Climate Registry, 2024 Default Emission Factors Link: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf

M-E3: Support Installation of Solar at County-Owned Facilities

TABLE B.2-3

MEASURE M-E3 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	1,313
2045	0[a]

Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.
[a] Reductions are zero in 2045 because California's Renewable Portfolio Standard (RPS) requires that all electricity sold by utilities be zero-carbon by 2045, meaning that grid electricity will be carbon-free regardless of local or regional efforts. Therefore, all 2045 electricity emissions reductions are captured in the Adjusted BAU forecast as opposed to any single CAP measure.
Note: a negative reduction denotes an increase in emissions.

Description

Measure M-E3 identifies a potential strategy to expand renewable energy generation on County-owned properties through the exploration of solar photovoltaic (PV) systems and battery storage. Evaluating opportunities to integrate solar energy into new and existing facilities may support the County's long-term goals to reduce reliance on fossil fuels, lower greenhouse gas emissions, and increase energy resilience. Through strategic planning, partnerships, and incentive programs, the County may identify and assess solar opportunities across its portfolio where appropriate, helping to meet operational energy needs sustainably while contributing to broader climate goals.

Performance Goals

- **2030:** Install 5,000 kilowatts (kW) of solar PV
- **2045:** Install 7,500 kW of solar PV

Modeling Approach

Measure M-E3 estimates emissions reductions from the use of solar PV-supplied electricity in place of grid-supplied electricity. The performance goal (system size in kilowatts [kW]) for each target year was entered into the National Renewable Energy Laboratory (NREL) PVWatts calculator for a project located in Orange County to determine the average annual system electricity production (or system output) in kWh. [66] GHG emissions reductions were calculated by multiplying the total solar production by the weighted County-specific electricity emission factors.

Assumptions

- Emission factors for electricity are a weighted average of utility providers for the County, which include SCE and SDG&E.
- The GHG emissions intensity of electricity supplied by a solar PV system is 0 pounds per MWh.

Data Sources

- SCE Emission Factors Link: https://www.edison.com/sustainability/sustainability-report
- SDG&E Emission Factors Link: https://www.sempra.com/performance/sustainability

66 National Renewable Energy Laboratory. 2021. PVWatts Calculator. Available: https://pvwatts.nrel.gov/. Accessed February 2025.

M-E4: Reduce Carbon Intensity of County-Owned Cogeneration Facilities

TABLE B.2-4

MEASURE M-E4 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	**49,223**
2045	**53,362**
Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.	

Description

Measure M-E4 focuses on lowering the carbon footprint of County-owned facilities by prioritizing the use of renewable energy sources and innovative technologies. The County operates two combined heat and power (CHP) cogeneration facilities, the Central Utility Facility (CUF) serving 20 Civic Center buildings and the John Wayne Airport Central Utility Plant (CUP), both capable of functioning as microgrids independent from the electric utility. To enhance these assets, the County is investing $16 million to audit CHP-supplied facilities with the goal of reducing fuel consumption and exploring the use of excess renewable natural gas generated from County landfills to power these plants.

Performance Goals

- **2030 & 2045:** Meet 100% of cogeneration facility natural gas power demand with landfill gas from County landfills

Modeling Approach

Measure M-E4 estimates emissions reductions from the use of renewable natural gas (RNG), also known as biogas, sourced from the County's landfills at the County's cogeneration facilities in place of utility-supplied natural gas. The performance goal for each target year is 100 percent; therefore, 100 percent of the cogeneration facilities' forecasted natural gas used was assumed to be replaced with RNG. GHG emissions reductions were calculated by multiplying the total displaced natural gas usage by the same emission factor that was utilized for the GHG forecasts (see Section A.4 of Appendix A for additional detail).

Assumptions

- The GHG emissions intensity of RNG supplied by County landfills is 0 metric tons per MMBtu.
- The combined RNG generation capacity for two of the three landfills eligible for RNG facilities is over 2,000,000 MMBtu by 2030.

Data Sources

- The Climate Registry, 2024 Default Emission Factors Link: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf

M-M2: Reduce VMT for County Employees and County-Owned Fleet

TABLE B.2-5

MEASURE M-M2 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	**5,784**
2045	**1,906**
Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.	

Description

Measure M-M2 focuses on reducing transportation-related emissions associated with County operations by encouraging sustainable commuting options, optimizing fleet usage, and supporting reduced vehicle trips. By fostering alternative travel modes and enhancing support for employee trip reduction, the County aims to decrease VMT and associated GHG emissions.

Performance Goals

- **2030:** Reduce employee commute VMT 40% from 2018 baseline
- **2045:** Reduce employee commute VMT 65% from 2018 baseline

Modeling Approach

Measure M-M2 estimates emissions reductions from the decrease in VMT associated with County employees commuting to work. The VMT reduced under Measure M-M2 for each target year was calculated by multiplying the baseline VMT by each performance goal. The results were converted to GHG emissions by multiplying by a weighted average emission factor (in grams per mile) for passenger vehicles derived from the California Air Resources Board's (CARB) Emission Factors 2021 model (EMFAC2021) for each year (see Section A.3 of Appendix A for additional detail on the derivation of emission factors).

Assumptions

- All employees commute using single-occupancy, gasoline-powered passenger vehicles.
- Passenger vehicle category corresponds to the EMFAC vehicle categories LDA, LDT1, LDT2, MCY, and MDV.
- Reduced passenger vehicle VMT is replaced with telecommuting or alternative modes of transportation which produce zero GHG emissions per mile traveled.

Data Sources

- CARB, EMFAC2021.Link: https://arb.ca.gov/emfac/

M-M3: Support Decarbonization of the County-Owned Fleet

TABLE B.2-6

MEASURE M-M3 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	**4,076**
On-Road	3,518
Off-Road	559
2045	**12,065**
On-Road	9,204
Off-Road	2,861

Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.

Description

This measure is intended to support future compliance with State regulations and inform County planning efforts to reduce transportation-related GHG emissions. The CAP encourages consideration of strategies to support fleet turnover over time, while encouraging alternative forms of transportation such as carpooling, biking, walking and public transit.

Additionally, this measure proposes to evaluate the feasibility of transitioning the heavy-duty off-road equipment associated with the County's landfill operations from diesel to electric. Initially, the focus may be placed on evaluating the transition of smaller pieces of equipment such as loaders and skid steers. However, the County may continue to evaluate the feasibility of transitioning larger pieces of heavy-duty off-road construction equipment as it becomes available to determine if it meets their needs.

Performance Goals

- **2030:** Convert 15% of the OCWR heavy equipment fleet to electric equipment
- **2045:** Convert 30% of the OCWR heavy equipment fleet to electric equipment
  - Purchase 100% EVs over 8,500 Gross Vehicle Weight Rating (GVWR) by 2027 as mandated by the CARB Advanced Clean Fleets Regulation

Modeling Approach

Measure M-M3 estimates emissions reductions from replacing fossil-fuel-powered on-road vehicles and off-road equipment with electric-powered vehicles and equipment.

On-Road Fleet

The County's forecasted on-road vehicle fleet count[67] was categorized by fuel type and the performance goals were applied to each target year to determine how many vehicles by fuel type there would be under the Measure M-M3 scenario. Average fuel intensity per vehicle by fuel type was determined by dividing the Adjusted BAU fuel use by the forecasted vehicle counts by fuel type, which was then multiplied by Measure M-M3 scenario vehicle counts to estimate fuel use associated with implementation of the measure. To estimate the amount of electricity use associated with fleet EVs, the amount of fuel replaced was determined and converted to mileage and then megawatt-hours (MWh) using weighted average fuel efficiency factors (in miles per gallon) and energy intensity factors (in MWh per mile) derived using data from EMFAC2021. Conventional fuel and electricity use were then converted to emissions and the electricity emissions increase was added to the conventional fuel emissions reduction to obtain the net GHG reductions for the measure.

Off-Road Fleet

67 Note that the BAU and Adjusted BAU forecasted vehicle counts are the same.

The performance goals for each target year were applied to the off-road equipment count of the OCWR heavy equipment fleet to determine how many pieces of diesel versus electric equipment there would be in the Measure M-M3 scenario. Average fuel intensity per piece of equipment (gallons per equipment per year) was determined by dividing BAU fuel use [68] for each year by the forecasted equipment count, which was assumed to remain constant from 2025 to 2045 and was provided by the County. Average fuel intensity was multiplied by the Measure M-M3 scenario equipment counts to estimate fuel use associated with implementation of the measure. To estimate the amount of electricity use associated with the electric equipment, the amount of diesel fuel use was converted to gasoline gallon equivalents (GGE) using a factor of 1.14, which was then converted to kWh using a factor of 0.03. [69] Diesel fuel and electricity use were then converted to emissions and the electricity emissions increase was added to the diesel emissions reduction to obtain the net GHG reductions for the measure.

Assumptions

- The County's on-road fleet will achieve 50% EV penetration by 2030 and 100% EV penetration by 2045.
- Through 2030, all on-road EVs will replace gasoline vehicles, as there are currently obstacles to replacing CNG and diesel vehicles.
- Fleet penetration goals for on-road vehicles and off-road equipment are by vehicle/equipment count.
- The County's on-road fleet consists of the following EMFAC vehicle categories: LDA, LDT1, LDT2, MDV, and MHDT.
- For the on-road vehicle fleet, fuel use intensity is consistent by fuel type, e.g., all diesel vehicles use the same amount of fuel each year.
- All pieces of equipment in OCWR's off-road fleet have the same fuel use intensity.
- The OCWR off-road fleet will not grow between 2025 and 2030.

Data Sources

- CARB, EMFAC2021 Link: https://arb.ca.gov/emfac/
- SCE Emission Factors Link: https://www.edison.com/sustainability/sustainability-report
- SDG&E Emission Factors Link: https://www.sempra.com/performance/sustainability
- The Climate Registry, 2024 Default Emission Factors Link: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf
- Alternative Fuel Conversion Factors Link: https://epact.energy.gov/fuel-conversion-factors

68 Note that there is no Adjusted BAU for off-road equipment.

69 U.S. Department of Energy. Energy Efficiency & Renewable Energy. State & Alternative Fuel Provider Fleets: Fuel Conversion Factors to Gasoline Gallon Equivalents. Available: https://epact.energy.gov/fuel-conversion-factors. Accessed August 2025.

M-RRW1: Improve Diversion of Waste at County-Owned Landfills

TABLE B.2-7

MEASURE M-RRW1 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	81,006
2045	127,166
Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.	

Description

Measure M-RRW1 aims to enhance waste diversion at County-owned landfills by supporting comprehensive programs and innovative technologies to reduce landfill disposal. By improving recycling and organics collection, expanding food recovery efforts, and researching application of emerging technologies, the County seeks to lower GHG emissions associated with waste management. These efforts are intended to support the County's broader sustainability goals by increasing material recovery, reducing landfill methane emissions, and promoting a circular economy within municipal operations.

Performance Goals

- **2030:** Divert 5% of BAU landfilled waste through organics programs
- **2045:** Divert 15% of BAU landfilled waste through organics programs

Modeling Approach

Measure M-RRW1 estimates emissions reductions from diversion of organics (green waste, food waste, and manure) from the County's active landfills. The performance goals for each target year (portion of waste diverted through organics management programs) were applied to the BAU landfilled waste tonnage to determine how many tons of organics would be diverted under the Measure M-RRW1 scenario. Emissions reductions were then calculated using a weighted average organics emission factor of 0.082 MT CH4 per short ton and other standard factors from ICLEI's Local Government Operations Protocol (LGOP).[70] Instead of using the default LFG collection efficiency factor of 0.75 however, the performance goal collection efficiencies of Measure M-RRW2 were used for the respective target years so as not to double count emissions reductions.

Assumptions

- 307 working days per year.
- Organics diversion will occur equally across all three active landfills.

Data Sources

- ICLEI, LGOP Link: https://icleiusa.org/resources/local-government-operations-lgo-protocol/

70 ICLEI, 2010. Local Government Operations Protocol, Version 1.1. Available: https://icleiusa.org/resources/local-government-operations-lgo-protocol/. Accessed August 2025.

M-RRW2: Increase Waste-to-Energy Potential at County Landfills

TABLE B.2-8

MEASURE M-RRW2 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	360,004
2045	764,030
Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.	

Description

Measure M-RRW2 identifies a potential strategy to increase the County's waste-to-energy potential by exploring enhancements to landfill gas capture and evaluating the feasibility of utilizing renewable natural gas (RNG) produced onsite. Orange County Waste and Recycling (OCWR) manages essential services including landfilling, organics recycling, and resource recovery for over 3 million residents. OCWR operates five large landfill sites that generate significant methane emissions. To address this, OCWR exploring implementation of the Smart Landfill Program (SLP), which uses advanced technologies such as real-time sensors, automated wellhead controllers, drone methane detection, and a robust data network to continuously monitor and optimize landfill gas collection. This system may enable rapid detection and remediation of leaks, improving efficiency and reducing methane emissions far beyond traditional monitoring practices.

Performance Goals

- **2030:** Achieve 85% landfill gas collection efficiency at County landfills
- **2045:** Achieve 90% landfill gas collection efficiency at County landfills

Modeling Approach

Measure M-RRW2 estimates emissions reductions from an improvement in landfill gas capture rates at County landfills. The U.S. Environmental Protection Agency's (EPA) Landfill Gas Emissions Model (LandGEM) was used to model emissions for each landfill under both the BAU scenario and the Measure M-RRW2 scenario. For each landfill and each scenario, the following inputs were entered into the LandGEM model: landfill open year, landfill closure year, and annual waste input from landfill opening to closure. The following data was extracted from the LandGEM model for each landfill and each scenario: annual methane emissions from and total annual LFG, each from the year of opening to the year of closure. Based on these outputs and the following metrics, GHG emissions were estimated for both the BAU scenario and the Measure M-RRW2 scenario: annual LFG collected, LFG collection efficiency, destruction efficiency, and methane concentration. After all modeling was conducted, the measure scenario was then subtracted from the BAU scenario to determine the emissions reductions associated with implementation of the measure.

Assumptions

- Peak methane concentration is 55%.

Data Sources

- EPA LandGEM Link: https://www.epa.gov/land-research/landfill-gas-emissions-model-landgem
- Peak Methane Concentration Link: https://www.atsdr.cdc.gov/hac/landfill/html/ch2.html

M-EJ1: Increase Urban Greening on County Property

TABLE B.2-9

MEASURE M-EJ1 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	37
2045	50
Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.	

Description

Measure M-EJ1 aims to enhance urban greening on County-owned properties by increasing tree canopy and access to recreational open spaces. Through a comprehensive inventory and the development of an Urban Forest Master Plan, the County will address disparities in access to shade and green spaces that disproportionately impact low-income neighborhoods and communities of color. These efforts provide multiple environmental and social benefits, including GHG emissions reduction through carbon sequestration, improved air quality, enhanced community resilience to heat and climate impacts, and the promotion of health, equity, and quality of life for all residents.

Performance Goals

- **2030:** 20% increase in tree and brush planting beyond the OC Parks 5-year projection in its comprehensive tree planning program currently set at 1,322 trees by FY 28/29
- **2045:** Additional 20% increase in tree and brush planting based on the total 2035 plantings

Modeling Approach

Measure M-EJ1 estimates emissions reductions from the carbon sequestration associated with planting trees. The GHG emission reduction potential was found by multiplying the performance goal of each target year (new trees planted) by a sequestration factor of 26.2 kg CO2e per tree planted. [71]

Assumptions

- Trees have reached full sequestration capacity at the time of planting.

Data Sources

- Tree Sequestration Capacity Link: https://research.fs.usda.gov/treesearch/48092

71 McPherson, E.G.; Kendall, A.; Albers, S. 2015. Million Trees Los Angeles: Carbon dioxide sink or source? In M. Johnston; G. Perceival, eds. Proceedings of the Urban Trees Research Conference "Trees, People and the Built Environment II." Edgbaston, UK: University of Birmingham: 7-19.

B.3: Community Greenhouse Gas Reduction Measures

Energy (C-E)

Energy Measure Order of Implementation

To avoid double counting GHG emissions reductions for measures that reduce emissions in building energy, the methods used to quantify these measures account for overlapping effects. For example, each measure's baseline activity data (i.e., electricity and natural gas consumption) are affected by the ordering of the measures. For example, grid electricity savings from solar production under Measure C-E3 (Promote Solar Installation throughout the Community) are subtracted from the adjusted BAU electricity activity data for the relevant building sector and the resulting electricity usage is used as the new "baseline" activity data for the next measure, Measure C-E2 (Reduce Building Energy Use throughout the Community). For calculation purposes, measures were assumed to be implemented in the following order:

1. Measure C-E3: Promote Solar Installation throughout the Community
2. Measure C-E2: Reduce Building Energy Use throughout the Community

Note that Measure C-E1 (Promote Building Decarbonization Throughout the Community) is independent of the other measures because it uses a different baseline than the other energy measures. Measure C-E1 assumes a baseline year of 2025 whereas the other energy measures use a baseline year of 2018.

C-E1: Promote Building Decarbonization Throughout the Community

TABLE B.3-1

MEASURE M-E3 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	1,976
2045	44,026
Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.	

Description

This measure supports the transition of existing and new buildings in the community from natural gas and other fossil fuel use to all-electric systems. Strategies could include promoting heat pump adoption for space and water heating, encouraging electric cooking appliances, and supporting building code updates that phase out gas in new construction.

Performance Goals

- **2030:** Decarbonize 5% of existing residential and commercial building stock; decarbonize 15% of new residential and commercial building stock.
- **2045:** Decarbonize 20% of existing residential and commercial building stock; decarbonize 30% of new residential and commercial building stock.

Modeling Approach

The Measure C-E1 calculations use the activity data (electricity and natural gas) and GHG emissions for existing residential and nonresidential land uses in 2025 as a baseline for existing development because this is the earliest date that the CAP could be adopted and go into effect. Activity data and emissions were interpolated for 2025 using the 2018 baseline activity data and emissions and the adjusted BAU forecast activity data and emissions for 2030. New development is assumed to be any new growth in electricity or natural gas use between 2025 and 2030 or 2025 and 2045, respectively. Electricity use was used as a proxy for building decarbonization (i.e., it was assumed that decarbonization means switching from fossil natural gas to electricity). To calculate the reduction in natural gas use and increase in electricity use under Measure C-E1, natural gas use in applicable buildings was converted to electricity use by multiplying the number of therms consumed by the electrification percentage for each building type (residential and nonresidential) for each target year, and then converting the displaced natural gas to electricity using a standard conversion factor of 29.3 kWh per therm. [72] The resultant increase in GHG emissions as a result of increased electrification after implementation of Measure C-E1 were then calculated using weighted emission factors specific to the County. The electricity emissions were then subtracted from the natural gas GHG emissions reductions to calculate the net GHG reductions for the measure.

Assumptions

- Emission factors for electricity are a weighted average of utility providers for the County, which include SCE and SDG&E.
- Electricity use was used as a proxy for building decarbonization (i.e., decarbonization means switching from fossil natural gas to zero-carbon electricity).
- There is no efficiency loss when converting natural gas to electricity.
- Existing development represents emissions and activity data in 2025.

Data Sources

- SCE Emission Factors Link: https://www.edison.com/sustainability/sustainability-report

72 UC Irvine Physics and Astronomy. 2021. Energy Units and Conversions. Available: https://www.physics.uci.edu/~silverma/units.html. Accessed August 2025.

C-E2: Reduce Building Energy Use Throughout the Community

TABLE B.3-2

MEASURE C-E2 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	3,730
2045	12,361

Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.

Description

This measure focuses on reducing energy consumption in residential, commercial, and industrial buildings through efficiency upgrades, operational improvements, and behavioral change. The County will partner with utilities, energy service companies, and community-based organizations to deliver incentives, rebates, and technical assistance.

Performance Goals

- **2030:** Retrofit existing residential and non-residential buildings to achieve a 10% reduction in community-wide energy use compared to 2025 levels.
- **2045:** Retrofit existing residential and non-residential buildings to achieve a 25% reduction in total energy use compared to 2025 levels.

Modeling Approach

The Measure C-E2 calculations use the activity data (electricity and natural gas) and GHG emissions for existing residential and nonresidential land uses after implementation of Measure C-E3 (Promote Solar Installation Throughout the Community) as a baseline. The baseline year for existing development is assumed to be 2025 because that is the earliest date that the CAP could be adopted and go into effect. In other words, Measure C-E2 would apply to the built environment through the end of 2024. This new "baseline" energy use was then multiplied by an assumed eligibility rate (i.e., the portion of buildings eligible for retrofits) and then by the measure goal (i.e., the energy savings associated with eligible residential and nonresidential buildings performing a retrofit) to determine the total building energy usage subject to energy retrofits under Measure C-E2. GHG emissions after implementation of Measure C-E2 were then calculated using weighted emission factors specific to the County. GHG emissions for natural gas savings were calculated using the emission factors of 0.00531 $MTCO_2e$ per therm for residential and commercial buildings and 0.00532 $MTCO_2e$ per therm for industrial buildings.

Assumptions

- Emission factors for electricity are a weighted average of utility providers for the County, which include SCE and SDG&E.
- Existing building stock represents the built environment through the year 2025.
- The participation rate is 10 percent for both residential and nonresidential buildings in 2030 and 30 percent for both residential and nonresidential buildings in 2045.
- The measure goal for eligible buildings is 15 percent in 2030 and 30 percent in 2045.

Data Sources

- SCE Emission Factors Link: https://www.edison.com/sustainability/sustainability-report
- SDG&E Emission factors Link: https://www.sempra.com/performance/sustainability
- UC Irvine Physics and Astronomy, Energy Units and Conversions Link: https://www.physics.uci.edu/~silverma/units.html

C-E3: Promote Solar Installation Throughout the Community

TABLE B.3-3

MEASURE C-E3 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	7,547
2045	0[a]

Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.
a Reductions for C-E3 are zero in 2045 because California's Renewable Portfolio Standard (RPS) requires that all electricity sold by utilities be zero-carbon by 2045, meaning that grid electricity will be carbon-free regardless of whether it is produced onsite using solar or purchased from a utility. As a result, additional emissions reductions from distributed solar generation are not assumed to occur in 2045.

Description

This measure supports widespread adoption of solar photovoltaic (PV) systems across residential and commercial sectors to reduce reliance on fossil fuel-based electricity.

Performance Goals

- **2030:** Install solar in 5% of existing residential buildings
  Install 6,000 kilowatts (KW) of solar capacity in non-residential buildings (new and existing)
- **2045:** Install solar in 20% of existing residential buildings
  Install 25,000 KW of solar capacity in non-residential buildings (new and existing)

Modeling Approach

Residential

The baseline year for existing residential buildings is assumed to be 2025 because this is the earliest date that the CAP could be adopted and go into effect. Installation of rooftop solar PV on existing multifamily and single-family residential buildings therefore assumes a baseline year of 2025, and installation of rooftop solar PV on new multifamily residential buildings in 2030 and 2045 is based on the cumulative number of new multifamily households constructed from 2025 through each target years (e.g., the number of new multifamily residential buildings in 2030 is equal to the sum of all new multifamily housing built between 2025 and 2030).

The total number of existing households for each target year was then multiplied by the solar PV installation rate for each target year to obtain the number of households participating in rooftop solar PV through implementation of Measure C-E3. The average multifamily solar system size of 45.2 kW was calculated using data from Center for Sustainable Energy's Fostering a Future for Multifamily Solar study for the City of Santa Monica. [73] The average annual system electricity production (or system output) in kWh was then determined by inputting the 45.2 kW average system size into the National Renewable Energy Laboratory (NREL) PVWatts calculator for a project located in Orange County. [74] The average system output was then multiplied by the number of participating households for existing multifamily development to determine the total solar production (in kWh) for each target year. GHG emissions reductions were calculated by multiplying the total solar production by the weighted County-specific electricity emission factors.

For existing single-family residential buildings, the total number of households was multiplied by the solar PV installation rate for each target year to obtain the number of participating households installing rooftop solar PV through implementation of Measure C-E3. The average single-family solar system size of 6.6 kW was calculated using data from using statewide data from Berkeley Laboratory's *Tracking*

73 Center for Sustainable Energy. 2018. Fostering a Future for Multifamily Solar in Santa Monica, CA. February 2018. Available: https://energycenter.org/sites/default/files/docs/nav/programs/smp/SantaMonicaMarketProfile.pdf. Accessed August 2025.

74 National Renewable Energy Laboratory. 2021. PVWatts Calculator. Available: https://pvwatts.nrel.gov/. Accessed February 2025

the Sun database. [75] The average annual system electricity production (or system output) in kWh was then determined by inputting the 6.6 kW average system size into the NREL PVWatts calculator for a project located in Orange County. [76] The average system output was then multiplied by the number of participating households for existing single-family development to determine the total solar production (in kWh) for each target year. GHG emissions reductions were calculated by multiplying the total solar production by the weighted County-specific electricity emission factors.

Measure C-E3 does not include rooftop solar PV installations on new single-family or multi-family residential buildings because this is already required through the current 2022 Title 24 standards and is therefore accounted for in the Adjusted BAU forecast.

Commercial

Unlike residential solar, commercial solar is based on total system capacity performance goals. The 6,000 KW and 25,000 KW performance goals represent reasonable goals for commercial solar installations after consultation with the County.

The performance goals were divided by the average system size of 56.7 KW [77] for commercial buildings to determine the total number of solar PV systems for each target year. The average annual system output in kWh was then determined by inputting the 56.7 kW average system size into the NREL PVWatts calculator for a project located in Orange County. [78] The average system output was then multiplied by the number of commercial solar systems for both existing and new development to determine the total solar production (in kWh) for each target year. GHG emissions reductions were calculated by multiplying the total solar production by the weighted County-specific electricity emission factors.

Assumptions

- Emission factors for electricity are a weighted average of utility providers for the County, which include SCE and SDG&E.
- Existing building stock represents the built environment through the year 2025.
- New building stock represents new development starting in 2025.
- The average multifamily solar PV system size is 45.2 kW; each system produces 76,663 kWh per year.
- The average single-family solar PV system size is 6.6 kW; each system produces 11,196 kWh per year.
- The average commercial building solar PV system size is 56.7 kW; each system produces 96,167 kWh per year.
- Annual GHG emissions reductions for each target year (2030 and 2045) reflect all buildings electrified in all previous years (e.g., all buildings electrified from 2025–2030 contribute to annual emissions reductions in 2030).
- All new single-family and most multi-family residential buildings are required to install solar PV pursuant to the 2022 Title 24 standards.

Data Sources

- SCE Emission Factors Link: https://www.edison.com/sustainability/sustainability-report
- SDG&E Emission factors Link: https://www.sempra.com/performance/sustainability
- Center for Sustainable Energy, Fostering a Future for Multifamily Solar in Santa Monica, CA. Link: https://energycenter.org/sites/default/files/docs/nav/programs/smp/SantaMonicaMarketProfile.pdf
- Berkeley Laboratory, Tracking the Sun Link: https://emp.lbl.gov/tracking-the-sun
- NREL, PVWatts Calculator Link: https://pvwatts.nrel.gov/

75 Berkeley Laboratory. 2021. Tracking the Sun. September 2021. Available: https://emp.lbl.gov/tracking-the-sun. Accessed February 2025.

76 National Renewable Energy Laboratory. 2021. PVWatts Calculator. Available: https://pvwatts.nrel.gov/. Accessed February 2025.

77 Berkeley Laboratory. 2021. Tracking the Sun. September 2021. Available: https://emp.lbl.gov/tracking-the-sun. Accessed February 2025.

78 National Renewable Energy Laboratory. 2021. PVWatts Calculator. Available: https://pvwatts.nrel.gov/. Accessed February 2025.

C-M2: Support the Reduction of Vehicle Miles Traveled (VMT) in Unincorporated Areas Through Public Outreach and Incentives

TABLE B.3-4

MEASURE C-M2 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	**37,096**
2045	**10,992**
Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.	

Description

This measure aims to support the reduction ofVMT within unincorporated areas through public outreach efforts and incentives.

Performance Goals

- 2030: Reduce passenger VMT by 2% from 2018 levels
- 2045: Reduce passenger VMT by 5% from 2018 levels

Modeling Approach

Daily VMT for the unincorporated County for 2018, 2030, and 2045 was provided by Fehr & Peers. The VMT was annualized using a factor of 347 days, consistent with the GHG Inventory and Adjusted BAU forecast (see Appendix A). The VMT reduced under C-M2 was calculated by multiplying the 2018 annual VMT by the performance goals for 2030 and 2045. To estimate the GHG reductions associated with C-M2, the resultant VMT reduction was multiplied by a weighted average emission factor (in grams per mile) for passenger vehicles derived from EMFAC2021 for each year, respectively.

Assumptions

- Daily VMT reductions are annualized by multiplying by 347 days.
- Passenger vehicle category corresponds to the EMFAC vehicle categories LDA, LDT1, LDT2, MCY, and MDV.
- Reduced passenger vehicle VMT is replaced with more efficient, alternative modes of transportation which produce zero GHG emissions per mile traveled

Data Sources

- CARB, EMFAC2021. Link: https://arb.ca.gov/emfac/
- Fehr & Peers, 2023. VMT by County and Socioeconomic Data.

C-RRW1: Increase Public Participation in County Waste Diversion Programs

TABLE B.3-5

MEASURE C-RRW1 GHG REDUCTIONS

Year	GHG Reductions ($MTCO_2e$)
2030	3,283
2045	1,443

Abbreviations: GHG = greenhouse gas; MTCO2e = metric tons of carbon dioxide equivalent.

Description

This measure will help the County meet state waste diversion mandates and reduce landfill-bound waste, lowering methane emissions from decomposing organic material.

Performance Goals

- 2030: reduce waste disposal per capita to 0.45 tons per year
- 2045: reduce waste disposal per capita to 0.30 tons per year

Modeling Approach

The waste disposal rate in units of tons per capita per year were estimated for 2018, 2030, and 2045 using population data and the forecasted disposal tonnage. The waste disposal rate under the Adjusted BAU forecast was 0.51 tons per capita per year for 2030 and 2045. To estimate reductions under C-RRW1, a target waste disposal rate was chosen for each forecasted year (0.45 tons per capita per year for 2030; 0.30 tons per capita per year for 2045). The target waste disposal rates were then multiplied by the forecasted population in each year to estimate the new disposal tonnage with implementation of C-RRW1. The GHG emissions resulting from C-RRW1 implementation were then calculated using the same methodology as described in Appendix A and subtracted from the Adjusted BAU emissions to estimate the total reductions from C-RRW1.

Assumptions

- Adjusted BAU accounts for reductions from SB 1383.
- All solid waste emissions are from organic waste disposal in landfills

Data Sources

- CalRecycle, SB 1383. Link: https://calrecycle.ca.gov/organics/slcp/

CLIMATE ACTION PLAN
PHASE 2 - 2026

Appendix C:
Climate Vulnerability Assessment

Section 1 - Introduction

Orange County's Climate Action Plan (CAP) describes the measures needed to reduce municipal greenhouse gas emissions (GHGs), which are essential to meeting state climate targets. And while this local action is important, climate change is ultimately driven by worldwide emissions. Adaptation is essential for the safety and vitality of Orange County's future, such as preparing for rising seas, worsening wildfire risk, and heat extremes that are already inevitable, regardless of future GHG reduction progress.

Nationwide, 2023 was the second-costliest year on record for climate-related disasters, with dozens of disasters causing over $92 billion in damages, ranging from floods to wildfires (NOAA, 2025). In California, climate impacts are intensifying across all regions: between 1980 and 2022, the state experienced a six-fold increase in large wildfires, driven in part by higher temperatures, prolonged droughts, and earlier snowmelt (Westerling, 2016; Cal Fire, 2024). Sea level along California's coast has already risen 8 inches in the last century, with projections of an additional 3.5 to 6.5 feet by 2100 for high- and medium-emissions scenarios, respectively (OPC, 2024). These climate impacts pose severe risks to housing, transportation, water systems, energy infrastructure, public health, and economic productivity. Climate change is also imposing growing economic costs through climate-driven health impacts and associated workforce disruptions. Rising temperatures, worsening air quality, and extreme weather events contribute to increased rates of heat-related illness, respiratory distress, and cardiovascular complications—leading to significant losses in labor productivity and rising healthcare expenditures. In the United States, climate-sensitive health conditions have been found to result in over 1.1 billion hours of lost labor annually, especially in sectors like construction, agriculture, and manufacturing, with projected increases under warming scenarios (Rao et al., 2022). Assuming Orange County mirrors national patterns, even a modest fraction—such as, 0.5% of national labor losses—would equate to over 5 million lost work hours annually, with economic value in the tens of millions of dollars depending on industry wage levels.

California Senate Bill 379, adopted in 2015, requires California cities and counties to incorporate climate adaptation and resilience strategies into their long-range planning efforts. Specifically, jurisdictions must conduct a vulnerability assessment identifying local climate risks and at-risk geographic areas. The Orange County and Orange County Fire Authority Local Hazard Mitigation Plan (LHMP) follows a 5-year planning period; the last LHMP update was in 2021. This vulnerability assessment is designed to be incorporated into the LHMP as well as the Safety Element of the County's General Plan, and to complement existing climate and hazard vulnerability assessments that the County has completed to date. The 2021 LHMP includes a high-level climate change section broadly discussing climate impacts. This vulnerability assessment supplements the LHMP with deeper dives into extreme heat; wildfires, smoke, and air pollution; and sea level rise and flooding.

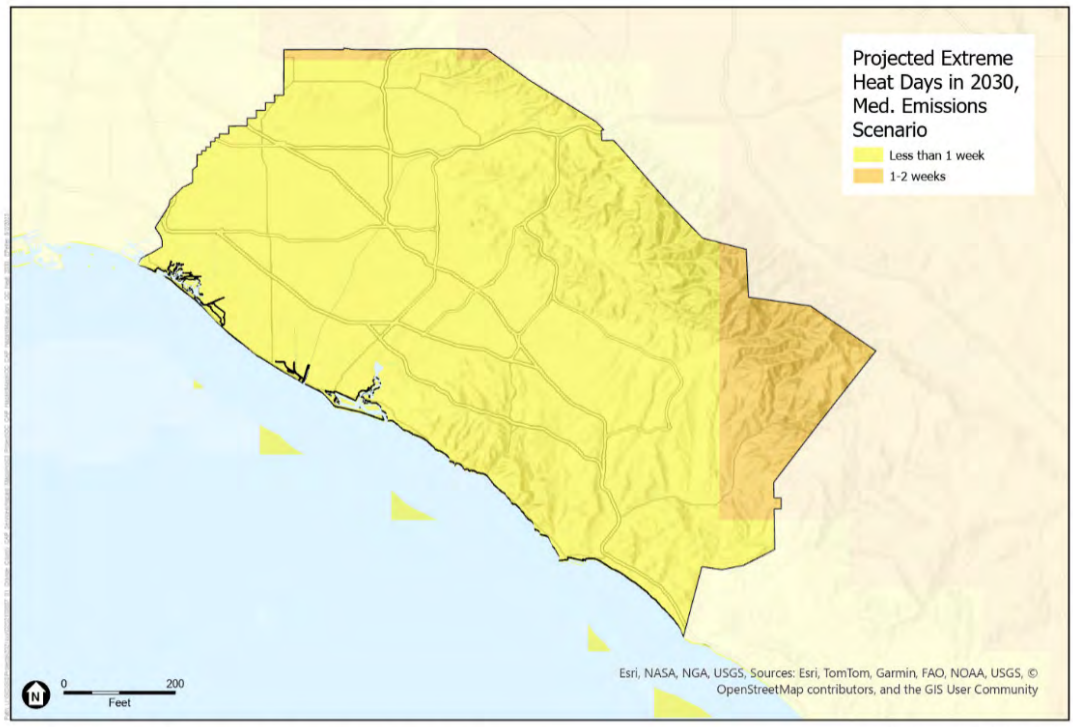
The data used in the assessment are primarily from Cal-Adapt—the state's climate change science program which downscales global and national climate models, updating their methods and science around every 5 years. Cal-Adapt provides data for future climate impacts for two greenhouse gas emissions scenarios: Representative Concentration Pathway (RCP) 4.5 and RCP 8.5. RCPs describe the extra energy trapped in the Earth's atmosphere due to GHG emissions in the year 2100 (i.e. +4.5 watts per square meter). This assessment uses RCP 4.5, which is a stabilization scenario. It assumes that global greenhouse gas emissions will peak around 2040 and then decline through the end of the century, resulting in moderate warming. RCP 8.5 is a business-as-usual scenario, where higher greenhouse gas emissions drive more severe climate impacts.

Section 2 - Extreme Heat

2.1 Forecast and Exposure

Extreme heat is one of the most immediate and intensifying climate threats facing Orange County, with significant implications for public health, infrastructure, and equity. Annual average temperatures in Southern California have already increased by approximately 2°F since the early 20th century (California Natural Resources Agency (CNRA, 2021), and climate models project a continued rise in the frequency, duration, and intensity of extreme heat events. Extreme heat days are defined by Cal-Adapt as days when the daily maximum temperature exceeds the 98th percentile of historical temperatures recorded between 1961 and 1990, specifically during the months of April through October. In Orange County, this threshold is 93.4°F, which historically occurred an average of just three times per year. However, under a medium emissions scenario (RCP 4.5), the countywide average is projected to increase to six extreme heat days annually by 2030, and to 11 days per year by 2045. These projections vary across the region, with inland communities expected to experience more frequent and intense extreme heat days compared to coastal areas (Cal-Adapt, 2024). Variability across the county in number of extreme heat days is displayed for 2030 in **Figure 1**, and 2045 in **Figure 2**.

In addition to extreme heat days, Orange County is projected to experience a growing number of unsafe heat days—defined as days when temperatures exceed 88°F, a threshold at which prolonged outdoor exposure can pose health risks, especially for vulnerable populations such as older adults, children, and outdoor workers. While these days may not meet the formal criteria for extreme heat, they still require caution and adaptive measures. Countywide, the number of 88°F days is projected to rise to 32 days per year by 2030 and 37 days per year by 2045 under a medium emissions scenario (RCP 4.5), from a baseline average of 14 days per year. This far exceeds the projected frequency of formal extreme heat days, highlighting the broader scale of public health risks associated with warming temperatures.

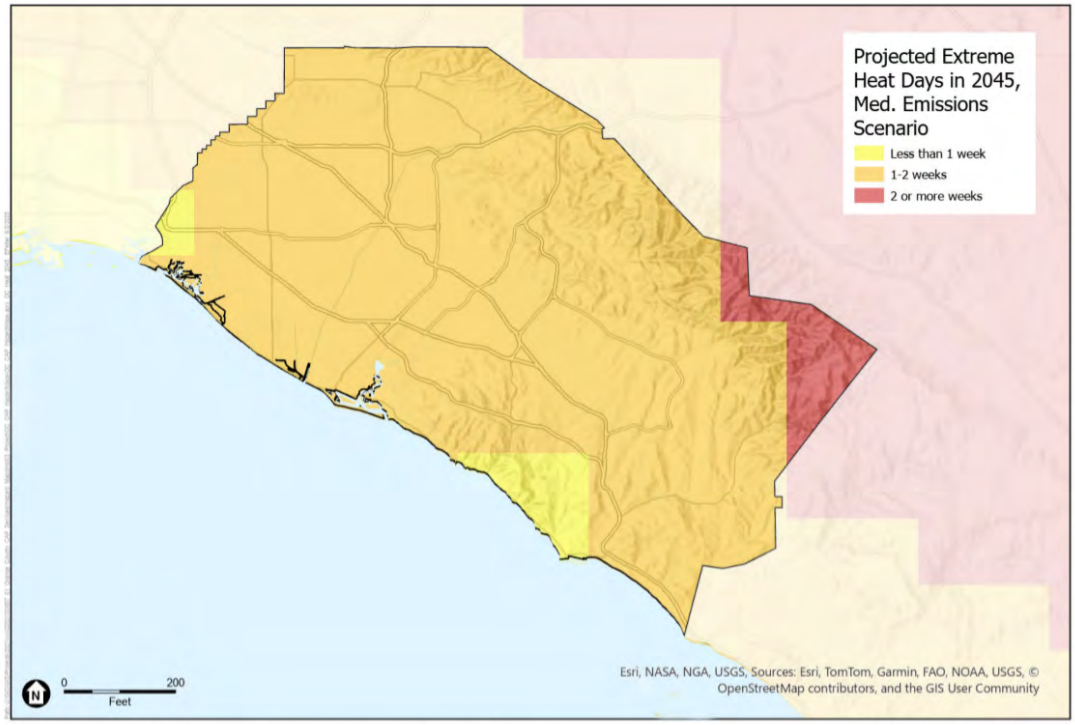


SOURCE: Cal-Adapt. DATA: LOCA Downscaled CMIP5 Climate Projections (Scripps Institution of Oceanography), Gridded Observed Meteorological Data (University of Colorado Boulder), LOCA Derived Products (Geospatial Innovation Facility).

County of Orange Climate Action Plan

FIGURE 1

EXTREME HEAT DAYS IN 2030, RCP4.5



SOURCE: Cal-Adapt. DATA: LOCA Downscaled CMIP5 Climate Projections (Scripps Institution of Oceanography), Gridded Observed Meteorological Data (University of Colorado Boulder), LOCA Derived Products (Geospatial Innovation Facility).

County of Orange Climate Action Plan

FIGURE 2

EXTREME HEAT DAYS IN 2045, RCP4.5

2.2 Anticipated Impacts

Rising temperatures strain emergency services and increase the risk of heat-related illnesses such as heat exhaustion, heat stroke, and exacerbations of chronic respiratory and cardiovascular conditions. Vulnerable populations—including older adults, children, low-income households, outdoor workers, and unhoused residents—face disproportionately higher health risks due to reduced access to cooling, air conditioning, and healthcare (Rastogi et al., 2022; EPA, 2021). Mental health impacts—including increased stress, aggression, fatigue, and reduced cognitive performance—are also associated with prolonged exposure to extreme heat (EPA, 2021). Vulnerable populations, including outdoor workers and unhoused individuals, face disproportionately higher exposure due to limited access to cooling, healthcare, and safe shelter.

In addition to health risks, extreme heat has wide-ranging economic and infrastructural consequences. High temperatures contribute to missed work and school days, particularly for families without access to reliable cooling or transportation. Households also face higher energy costs as air conditioning use increases, creating financial stress for low-income residents. From an infrastructure standpoint, heat-induced stress on the electrical grid increases the likelihood of rolling blackouts and power outages—potentially disabling cooling systems and placing medically vulnerable populations at risk (CEC, 2020). Heat can also soften or melt asphalt, leading to road buckling and surface degradation, which in turn affects traffic safety and emergency response (CNRA, 2021). These impacts are most severe in historically underserved neighborhoods, where housing stock may lack adequate insulation, tree canopy is sparse, and urban heat island effects intensify daily peak temperatures.

2.3 Adaptation Strategies

Ongoing Heat Resilience Activities

The County's 2021 Excessive Temperature Emergency Annex, a component of the County's Emergency Operations Plan, outlines strategies to protect public health during extreme heat events, particularly those lasting three or more days. When local temperature thresholds are exceeded, the Joint Information Center disseminates heat health advisories, hydration guidance, and cooling center information through media, social platforms, and partner organizations, with an emphasis on reaching vulnerable populations. When necessary, cooling centers—such as libraries, community centers, and shelters—are opened to provide climate-controlled relief for those without air conditioning, including unhoused individuals, older adults, and residents in high-risk areas.

The Annex also emphasizes coordination with emergency medical services and healthcare providers to manage increased demand during heatwaves, ensuring continuity of care and surge capacity. In anticipation of heat emergencies, the County mobilizes resources such as water stations, portable fans, and backup power to support both facilities and community needs, especially in the event of concurrent power outages. Targeted outreach is a core strategy: local agencies and nonprofits work together to identify and support communities with high social vulnerability and limited access to cooling infrastructure. The County conducts post-event evaluations to identify gaps in response—such as access barriers to cooling centers or shortcomings in outreach—and uses these findings to strengthen future heat resilience strategies.

CAP Measures Improving Resilience to Extreme Heat

Preparedness and Emergency Cooling Access

Improving public preparedness and access to emergency resources is a foundational strategy for building resilience to extreme heat. Measure C-R2, which focuses on improving preparation for and response to all climate and natural hazard events, directly supports the expansion of heat-specific public information campaigns and the deployment of cooling centers during dangerous heat events. By enhancing outreach and response protocols, the County can ensure that vulnerable populations—including older adults, unhoused residents, and households without air conditioning—are better informed and have safe, climate-controlled spaces to retreat to during periods of excessive heat.

Urban Greening

Increasing vegetation and shaded areas is one of the most effective strategies to reduce urban heat island effects. Measures M-EJ1 and C-EJ1 promote urban greening on County-owned land and expanded access to parks and open space in underserved communities. These efforts help lower ambient and surface temperatures, improve thermal comfort, and reduce exposure to extreme heat in neighborhoods that often lack tree canopy and green infrastructure. In addition to cooling, green space offers co-benefits such as better air quality, improved mental health, and opportunities for community gathering and recreation. Measure C-EJ2 supports the expansion of walkways, bikeways, and transit stops, especially along routes to essential services. Increasing tree cover and installing shade structures at bus stops and active transportation pathways improves comfort, safety, and usability of active transportation networks during hot days. This is especially important for low-income populations who rely on walking or public transit and are disproportionately exposed to outdoor heat during daily routines.

Energy Resilience and Grid Stability

Extreme heat strains the energy grid due to increased demand for cooling. Measures M-E3 and C-E3 support the installation of solar energy systems on County facilities and throughout the community, helping to offset peak electricity demand and increase resilience to power disruptions. Distributed solar—especially when paired with battery storage—can help keep critical buildings operational during Public Safety Power Shutoffs or outages. These measures not only lower emissions but also support long-term energy affordability and reliability during climate-related emergencies.

Reducing Heat Stress in the Built Environment

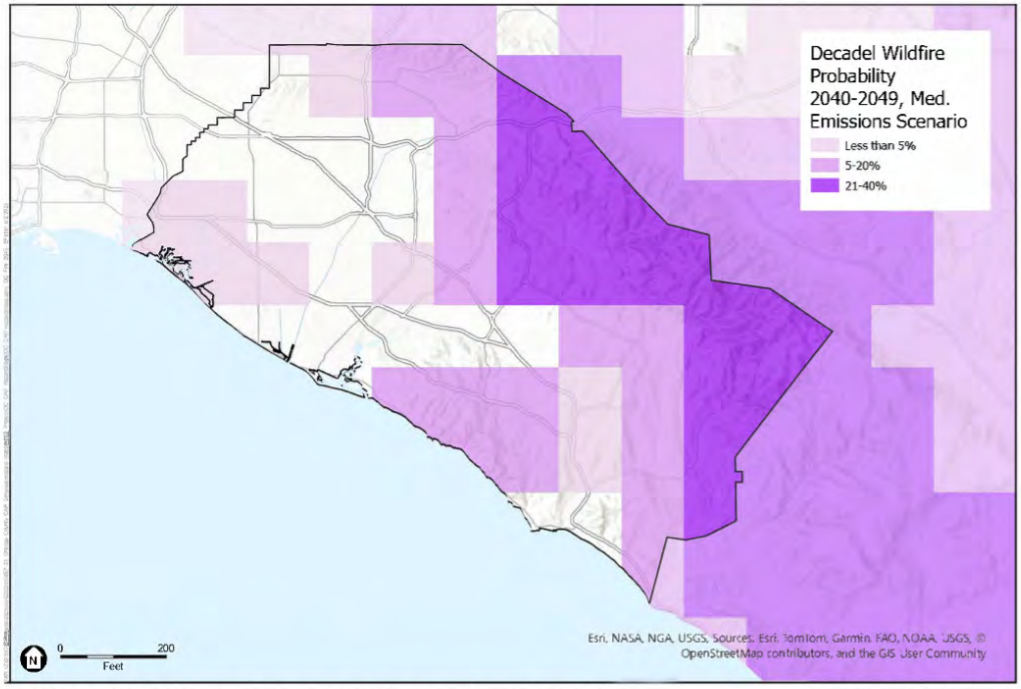
The built environment significantly influences exposure to extreme heat. C-M4, which focuses on optimizing traffic flow in unincorporated areas, can reduce idling and localized heat buildup on asphalt—minimizing contributions to urban heat while improving air quality. Measures M-E2, C-E2, and C-EJ3 target energy efficiency improvements through energy audits, building weatherization, insulation upgrades, and replacement of older air conditioning systems, particularly in County facilities and housing in historically underserved communities. These interventions enhance indoor thermal comfort, reduce energy costs, and extend the use of buildings as potential cooling centers during emergencies.

Section 3 - Wildfires, Smoke & Air Pollution

3.1 Forecast and Exposure

Wildfires are projected to increase in severity and frequency (CNRA 2018), driven by hotter temperatures, drier landscapes, and shifting wind and precipitation patterns. Cal Fire classifies current fire hazards through mapping Fire Hazard Severity Zones (FHSZs), which are included in the County's LHMP. Most inland areas are in high- or very-high FHSZs, as well as some coastal areas surrounding Crystal Cove State Park. Future wildfire exposure follows a similar trend. **Figure 3** displays the probability of a large wildfire during 2040-2049, including potential wildfire exposure which extends inland beyond the County boundary. Wildfire smoke can travel hundreds of miles, and modeling of future smoke events was not available at the time of this plan's publication.

Air Pollution will also be impacted by climate change, as it is expected to increase particulate matter (CNRA 2018; Park et al. 2020). Particulate matter (PM2.5) is a criteria pollutant where particles are less than 2.5 micrometers. PM2.5 emissions can come from cars and trucks, factories, and other uses. The northern portion of the county, where there are more industrial uses, is in the top 25th percentile for PM2.5 pollution, relative to the state (**Figure 4**). Exhaust from trucks, buses, trains, ships and other equipment with diesel engines contains gases and solid particles (diesel PM). There are high concentrations of diesel PM surrounding Highway 5, as displayed in **Figure 5**. In the State of California diesel exhaust particulates are considered a toxic air contaminant.

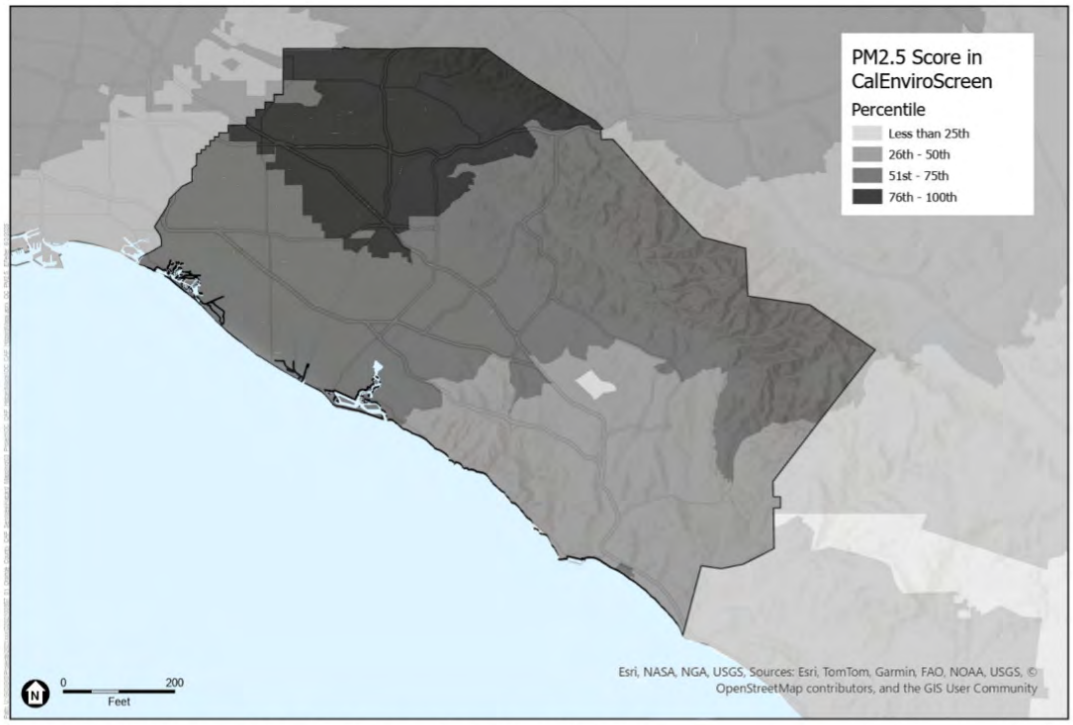


SOURCE: Cal-Adapt. DATA: Wildfire Simulations for California's Fourth Climate Change Assessment (University of California Merced), Wildfire Simulations Derived Products (Geospatial Innovation Facility).

County of Orange Climate Action Plan

FIGURE 3

FUTURE WILDFIRE EXPOSURE

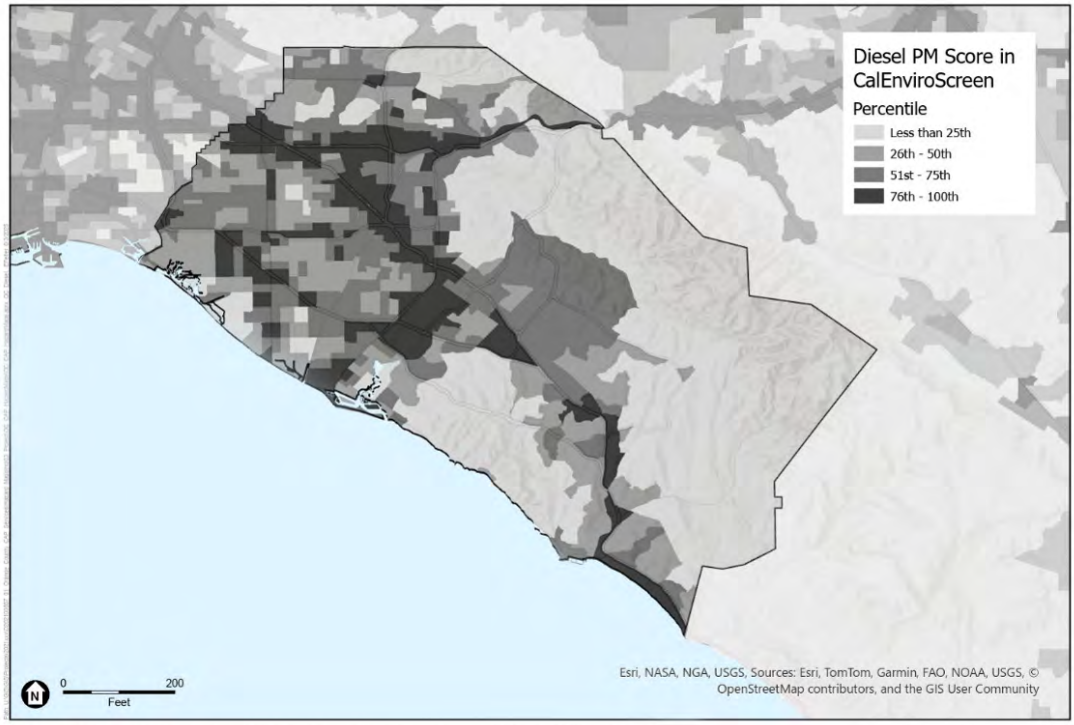


SOURCE: Cal-Adapt. DATA: Wildfire Simulations for California's Fourth Climate Change Assessment (University of California Merced), Wildfire Simulations Derived Products (Geospatial Innovation Facility).

County of Orange Climate Action Plan

FIGURE 4

RELATIVE PARTICULATE MATTER POLLUTION



SOURCE: Cal-Adapt. DATA: Wildfire Simulations for California's Fourth Climate Change Assessment (University of California Merced), Wildfire Simulations Derived Products (Geospatial Innovation Facility).

County of Orange Climate Action Plan

FIGURE 5

RELATIVE DIESEL PARTICULATE MATTER POLLUTION

3.2 Anticipated Impacts

The compounding nature of wildfire, smoke, and chronic air pollution presents broad challenges across sectors. Health care systems must manage increased emergency calls and hospitalizations while also protecting their own staff and facilities. Utilities may enact preemptive power shutoffs to prevent ignition, affecting telecommunications, filtration systems, and medical equipment for vulnerable populations. Transportation systems can be disrupted by evacuation traffic, road closures, and poor visibility, leading to hazardous driving conditions and even flight delays.

The impacts of worsening air pollution on health are significant. Wildfire smoke and other forms of air pollution can result in immediate illnesses and can also contribute to long-term health problems such as asthma, cardiovascular disease, and cancer. The small particles in PM2.5 and diesel PM can penetrate the lungs and cause various health problems, including heart and lung disease. Exposure to fine particulate matter from wildfire smoke is linked to spikes in asthma, heart attacks, emergency room visits, and premature mortality (Liu et al., 2017; Wettstein et al., 2018). Between 2006 and 2020, wildfire smoke was estimated to have caused 15,000 premature deaths nationally and contributed to over $160 billion in health-related economic losses, much of which occurred in California (Fann et al., 2021). Outdoor workers, particularly in construction, agriculture, and landscaping, are at higher risk of exposure and heat illness, contributing to lost wages and decreased productivity during high smoke and ozone days.

3.3 Adaptation Strategies

Ongoing Wildfire Mitigation Activities

The County's LHMP and Community Wildfire Protection Plan (CWPP) outline a comprehensive set of wildfire mitigation activities aimed at reducing risk and enhancing community resilience. A major focus is on vegetation management, including fuel reduction projects such as mechanical thinning, grazing, and prescribed burns, particularly in high-risk Wildland Urban Interface (WUI) zones. These efforts are complemented by enforcement of defensible space regulations under California Public Resources Code §4291, which mandates 100 feet of clearance around structures; the Orange County Fire Authority (OCFA) conducts inspections and outreach to ensure compliance. Outreach and engagement resources such as Firewise Communities and Ready, Set, Go! Programs provide residents with resources on evacuation readiness, home hardening techniques, and fire-resistant landscaping guidance. The County is pursuing grant funding to write four new Wildland Fire Management Plans for three reginal parks and the El Modeno Open Space Area.

CAP Measures Improving Resilience to Wildfires, Smoke, and Air Pollution

Outdoor air quality improvements

A coordinated transition to reduce reliance on combustion engines, including expanding EV charging infrastructure (C-M1, M-M1) and decarbonizing County fleet (M-M3), not only reduces GHG emissions, but also lowers local emissions of nitrogen oxides and particulate matter—pollutants that exacerbate respiratory issues during wildfire smoke events and other poor air quality conditions. Land use and mobility policies, such as promoting transit-oriented development (TOD) in underserved communities (C-EJ4), expanding active transportation (C-EJ2), optimizing traffic flow in unincorporated areas (C-M4), and reducing vehicle miles traveled (VMT) for County workers (M-M2) further reduces tailpipe emissions. Together, these strategies enhance community resilience by improving air quality, and reducing cumulative exposure to smoke and smog, particularly important during poor air quality days. Expanding green space in communities lacking access (C-EJ1) and increasing urban greening on County property (M-EJ1) enhances natural filtration to improve air quality. Vegetation helps capture PM2.5 from wildfire smoke, lowers ground-level ozone, and reduces urban heat, which can worsen air quality during fire season. Wildfire resilience can also be supported through landscape design and plant choices.

Indoor air quality improvements

Phasing out natural gas appliances (M-E1.2), electrifying County-owned facilities (M-E1), and promoting appliance replacement through outreach and incentives (C-E1) collectively improve indoor air quality by eliminating a major source of indoor air pollution: gas combustion. Gas appliances emit pollutants like nitrogen dioxide (NO_2), carbon monoxide (CO), and particulate matter, which can accumulate indoors and negatively affect health. Electrifying County-owned facilities ensures that public buildings maintain healthier indoor environments free from combustion-related pollutants. This is particularly important during wildfire smoke events, when residents may seek respite for cleaner air in public facilities. During retrofits (C-EJ3), there are opportunities to make building improvements to more effectively seal out smoky air and improve filtration, as well as to use building hardening techniques for fire resilience.

Section 4 - Sea Level Rise and Flooding

4.1 Forecast and Exposure

The California Ocean Protection Council (OPC) provides localized sea level rise (SLR) projections using tide gauge data from various points along the coast, including a location in Newport Beach. The amount of projected sea level rise depends on global greenhouse gas emissions scenarios, with higher emissions leading to greater and faster increases in sea level. Early century sea level rise is primarily driven by the thermal expansion of warming oceans, but projections for mid- to late-century increasingly incorporate contributions from land-based ice melt. This ice melt introduces greater variability and uncertainty in the projections, especially after 2050, underscoring the importance of adaptive planning that accounts for a range of possible future conditions.

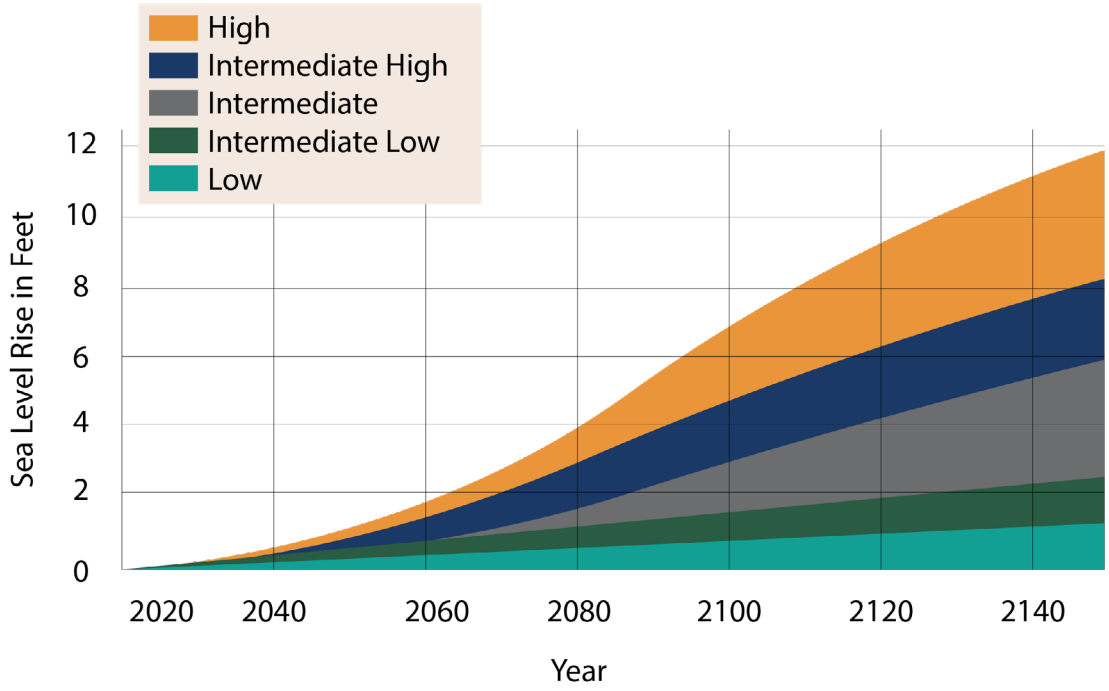


FIGURE 6

A LEVEL RISE PROJECTIONS AT NEWPORT BEACH TIDE GAUGE

4.2 Anticipated Impacts

As sea levels rise, the risk of frequent and severe coastal flooding increases, threatening to overtop protective barriers in areas such as Huntington Beach as early as 2040. Amplified storm surges will compound these risks, particularly during king tides and extreme precipitation events, accelerating the pace of damage to both public and private infrastructure.

The consequences of SLR are extensive and multifaceted. Natural erosion processes may not keep pace with rising seas, resulting in accelerated beach loss. This has serious implications not only for recreation but for tourism revenue, coastal property values, and cultural identity. The economic burden of repairing damaged infrastructure, responding to disasters, and maintaining flood protection systems will grow substantially, placing increasing pressure on local governments and communities. Low-lying neighborhoods, public facilities, roadways, and critical infrastructure such as pump stations are at heightened risk of inundation. Ecosystem disruption is also severe: coastal wetlands, estuaries, and marine habitats are highly sensitive to salinity changes and submergence, leading to habitat loss, reduced biodiversity, and declining fishery productivity (CNRA & OPC, 2018). Public health impacts are emerging concerns, with standing floodwater potentially breeding waterborne diseases or mosquito-borne illnesses, and mold exposure in buildings from repeated inundation posing respiratory risks—especially in substandard housing. Caltrans' District 12 Climate Change Vulnerability Assessment highlights that SLR and amplified storm surge events pose escalating risks to coastal transportation infrastructure along the Orange County coast. Using USGS CoSMoS[79] projections, Caltrans estimates up to 5.5 feet of SLR by 2100, which would impact approximately 130 miles of state highways, including coastal embankments and roads vulnerable to erosion and. Surge-driven flooding is expected to extend farther inland as water levels rise, increasing the frequency and severity of coastal inundation, accelerating bluff retreat, and exacerbating roadbed instability—threats that are projected to intensify under higher emissions scenarios.

OC Parks' South Orange County Regional Coastal Resilience Strategic Plan documents severe erosion and shoreline retreat along seven miles of coastline—from Dana Point to San Clemente—driven by SLR, El Niño events, and land subsidence. The plan underscores that natural erosion processes cannot keep pace with accelerated SLR, leading to shrinking beaches and destabilized bluffs. Oceanside assets including trail networks, recreational beaches, coastal habitats, and lifeguard facilities are at increasing risk of storm damage, bluff collapse, and permanent land loss without proactive shoreline management.

79 The Coastal Storm Modeling System (CoSMoS) is a modeling tool developed by the U.S. Geological Survey (USGS) to project coastal flooding, erosion, and shoreline change under various climate change scenarios. CoSMoS integrates hydrodynamic models of tides, waves, storm surge, river flow, and sea-level rise to provide localized, high-resolution hazard maps.

4.3 Adaptation Strategies

Ongoing Sea Level Rise Adaptation Activities

Caltrans District 12's Vulnerability Assessment and Adaptation Priorities Reports identify numerous highway segments and coastal embankments in Orange County at risk from sea level rise, storm surge, and bluff erosion. Key adaptation measures include:

- Asset elevation or realignment, especially near Pacific Coast Highway and LOSSAN rail corridor sections, to reduce inundation risk and support drainage resilience.
- Hybrid strategies combining structural measures (i.e. seawalls, berms, and raised roadbeds) with nature-based solutions like restored dunes or setback alignments to allow managed retreat.
- Prioritizing vulnerable assets using criteria such as timing of exposure, sensitivity, redundancy, and user dependency for phased implementation and early interventions.

The **OCTA Climate Adaptation and Resiliency Plan** identifies SLR, coastal flooding, and erosion as major risks to rail and bus infrastructure in coastal areas like Dana Point and Laguna Beach. Adaptation strategies include:

- Engineering solutions such as tide gates, flood barriers, and raised rail sections to protect the LOSSAN rail corridor and adjacent transit infrastructure.
- Relocation feasibility studies for at-risk rail corridor segments; seeking state and federal funding and permitting guidance to support adaptation projects.
- Monitoring and mapping of coastal hazard zones, aligned with long-range transportation planning to integrate SLR into transit operations and capital investments.

The **OC Parks South Orange County Coastal Resilience Strategic Plan** emphasizes both ecosystem-based and infrastructure-based interventions to address sea level rise and flooding, such as:

- Beach nourishment and sediment placement projects to offset shoreline retreat and maintain public access and recreational value.
- Managed realignment or retreat, especially around bluff-prone parklands where coastal infrastructure (i.e. trails, parking lots) is threatened.
- Coordination across municipalities and agencies on permitting, planning, funding pursuits, and maintenance of resilience projects.
- Habitat-based actions, such as restoring coastal wetlands, dunes, and bluff vegetation to enhance natural buffers, preserve biodiversity, and support ecosystem adaptation.

CAP Measures Improving Resilience to Sea Level Rise and Flooding

Orange County's resilience to sea level rise and flooding depends on a layered strategy that includes both human-engineered and nature-based solutions. Measures that strengthen infrastructure—such as floodproofing buildings, upgrading drainage systems, and planning for flood-prone corridors—work in tandem with ecological strategies like wetland restoration and dune stabilization to reduce exposure, absorb stormwater, and slow coastal erosion. Measures such as C-NR3 (integrated flood and water management) and C-NR4 (ecosystem restoration) can help manage runoff, enhance groundwater recharge, and buffer communities from tidal and storm-driven flooding. These efforts also support biodiversity and improve water quality.

Flood response and preparedness measures both through emergency planning (C-R2) and upgrades to buildings (C-EJ3) protect Orange County from existing flood risks. Strategic planning efforts under C-R1 support sea level rise adaptation and overall coastal resilience, including implementing existing efforts, such as the South Orange County Regional Coastal Resilience Strategic Plan, and preparing for future sea level rise planning requirements. Senate Bill 272, authored by Senator John Laird and chaptered in October 2023, creates a statewide mandate requiring all local governments within California's coastal zone to formally implement SLR planning and adaptation by January 1, 2034. Local governments satisfying the requirements by January 1, 2029, are eligible for priority funding to implement their adaptation plans once state appropriations are made (California Legislature, 2023).

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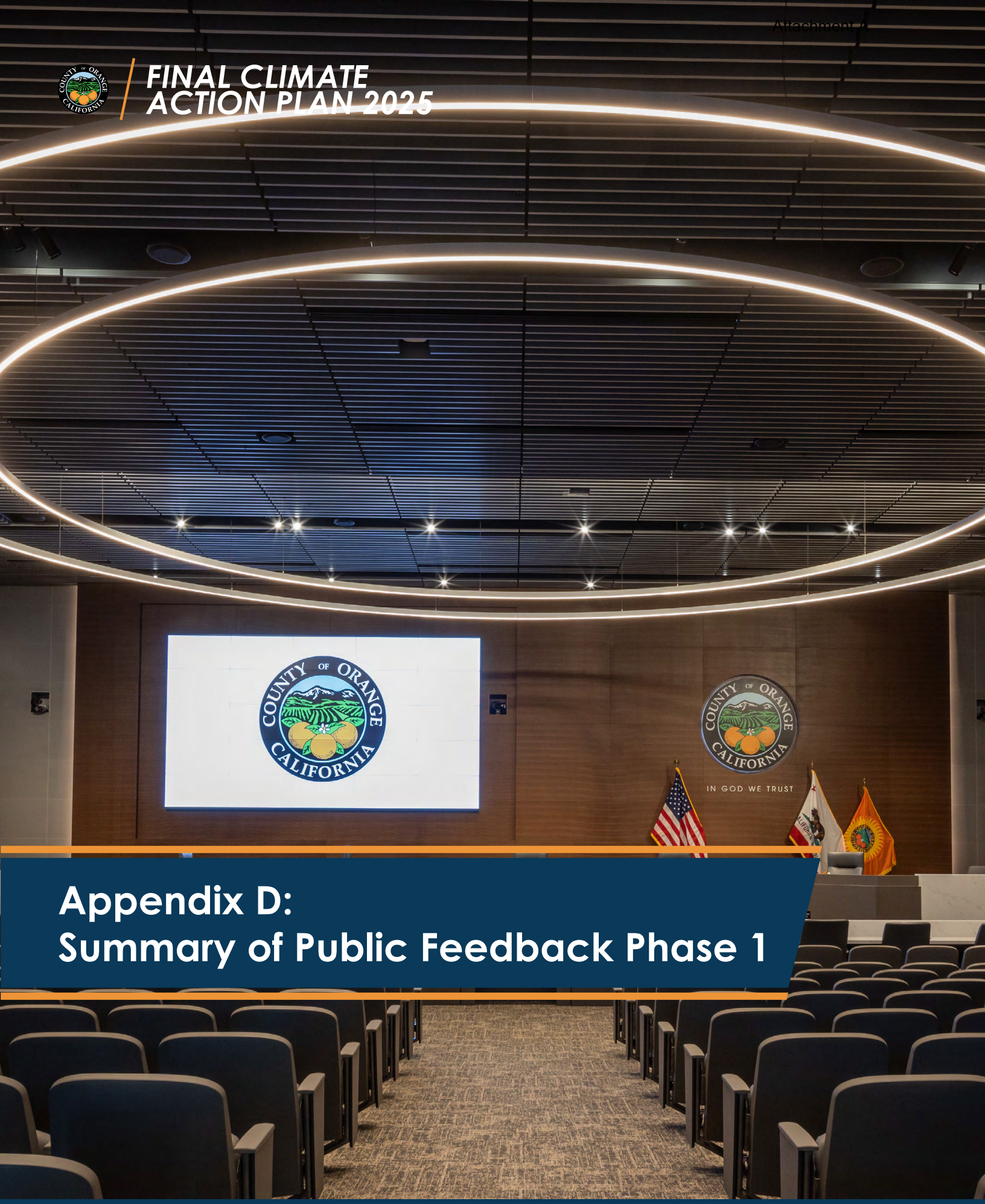

Appendix D: Summary of Public Feedback Phase 1

D-1: Public Comments on Draft Plan

The draft Preliminary Climate Action Plan was posted for public comment from August 1-22, 2024. Feedback was gathered through written comments and comments during a public meeting on August 6th. Approximately 22 comments letters/emails were received on the Draft CAP from private residents, non-governmental organizations, and public agencies. An additional 12 forum attendees spoke at the August 6th event. The County's initial response from 2024 and final response for inclusion in the 2025 Phase 2 CAP are summarized in the table below.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
1	In Introduction section, acknowledge that Orange County is within the ancestral homelands of the Gabrielino Tongva and Juaneno Acjachemen Nations.	Comment incorporated.	Addressed in Initial Response.	Written Comment.
2	In Introduction section, add text in bold to: "Further and more extensive engagement with California Native American Tribes on the NAHC contact list for Orange County, stakeholders and the public will be included in the production of the Final CAP;	Comment incorporated.	Addressed in Initial Response.	Written Comment.
3	In Introduction section, add text in bold to: "Recognizing the need to prioritize California Native American Tribes, and vulnerable communities, the County has made Environmental Justice its own sector. Climate change disproportionately affects California Native American Tribes and communities of color in lower-income areas, causing poor air quality, extreme heat, and infrastructure degradation.	Comment incorporated.	Addressed in Initial Response.	Written Comment.
4	Figure 1-2 should be supplemented by a map of tribal territories for the same counties covered by the EJ Screen.	Comment will be incorporated into future version of Plan.		Written Comment.
5	In Environment Justice Sector Goal, add text in bold to: "Prioritize measures and funding opportunities in tribal and low-income and vulnerable communities by providing additional resources, workforce development, upgraded infrastructure, open space and safe and reliable alternatives to single-occupant vehicles."	Comment incorporated.	Addressed in Initial Response.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
6	Add bold text to Measure EJ1: Expand Access to Open Space for California Native American Tribes in Orange County and Communities Lacking Recreational Amenities or Tree Coverage	Comment incorporated.	Addressed in Initial Response.	Written Comment.
7	Add new potential action item to Measure EJ1: Meet with representatives from California Native American Tribes with ancestral lands in Orange County to identify tribal priorities and access needs.	Comment incorporated.	Addressed in Initial Response.	Written Comment.
8	Add bold text to Measure NR4: Restore and Protect Ecosystems, Native Habitat and Natural Resources in Collaboration with California Native American Tribes with ancestral lands in Orange County.	Comment incorporated.	Addressed in Initial Response.	Written Comment.
9	Add new potential action item to Measure NR4: Work with California Native American Tribes in Orange County and tribal land conservancies to facilitate land rematriation as a climate action measure.	Comment will be evaluated in future version of Plan.	Tribal engagement will be included in the outreach for the CEQA analysis.	Written Comment.
10	The commenter supports and uplifts these comments listed in Appendix B: Re-naturalization of the Santa Ana River in collaboration with the Indigenous people; multiple comments to fund Indigenous people to restore their land and conserve natural resources.	Comment noted.	Addressed in Initial Response.	Written Comment.
11	We want a wider expansion of public transportation networks so that the bus system and trains are fast, frequent, reliable, and available at common destinations throughout Orange County. Bus rapid transit and light rail must be part of the solution and should be addressed in the next draft. We request the availability of year-long discounted membership for the OCTA and other transportation networks.	Comments will be evaluated in next version of the CAP.	The County will work with OCTA to support expansion of transit, included in C-M2.2.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
12	Priority must be given to public transportation over EV infrastructure. The humanitarian violations and environmental impact of mining minerals in the global south to produce batteries for EVs should be considered. Public transportation is much more efficient at moving people and therefore will reduce traffic congestion, reduce air pollution, and improve the quality of life for residents of OC. In places where rail transit is not feasible, bus lanes should be created in both freeways and local roads. Bus lanes not only increase reliability for bus service, but also allow emergency vehicles to bypass traffic. OCTA completed its final report on a freeway bus rapid transit system in 2021; however, no public updates have been given since this final report. Metrolink is expected to increase its frequency for the Inland Empire and Orange County lines in its SCORE plan. We request OCTA to increase bus frequencies system wide and connect more bus routes to existing train stations.	Comments will be evaluated in next version of Plan.	The County will work with OCTA to support expansion of transit, included in C-M2.2.	Written Comment.
13	We want mixed-use development and public transit-oriented, walkable spaces. At least 30% affordable housing should be required. New development must implement climate resilience solutions such as using heat reflecting pigments, public cooling stations, and urban gardens. Native plant gardens can serve as natural drainage systems and help recharge groundwater aquifers, while also alleviating flood management infrastructure.	Comments will be evaluated in next version of Plan.	The County agrees, see flood management measure in Natural Resources sector and heat measure in Resilience sector.	Written Comment.
14	We want to have a stronger environmental justice section with acknowledgement and collaboration with indigenous groups of Orange County, including the Tongva and Acjachemen tribes.	Comment incorporated.	Addressed in Initial Response.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
15	We want expansion of the OCPA, of its membership, and in the implementation of community choice energy. More incentives for implementing solar on household and commercial rooftops should be available. We request OCPA to be more transparent and create more opportunities to gain feedback from the public.	Comment noted.	County is not pursuing OCPA at this time.	Written Comment.
16	We want to see regulations that would limit the production and consumption of single use plastics.	District 5's legislative platform is working to broaden content on forever chemicals; EJ section of the CAP includes toxics and plastics; expansion on topic will be evaluated in next version of Plan.	This feedback will be used in implementation of the CAP.	Written Comment.
17	Environmental and climate curriculum should be implemented in schools to keep the community informed and start a culture shift towards decreasing carbon emissions and being better stewards of the land.	Comment will be evaluated in next version of Plan.	This feedback will be used in implementation of the CAP.	Written Comment.
18	The OC Climate Action Plan should be legally binding, so that citizens can build trust in the Office of Sustainability and keep the department accountable with their carbon emission reduction targets.	Comment will be evaluated in next version of Plan.	The Final CAP will meet all State and Federal mandates through the regulation of GHG emissions; the Final CAP will include Targets for 2030, 2035, 2040, and 2045.	Written Comment.
19	The Draft PCAP is missing its most fundamental piece - a quantifiable target year with a % reduction in emissions. CAC recommends a 40% reduction by 2030.	Targets are currently under development and will be included in the next version of the CAP.	The Final CAP includes Targets for 2030, 2035, 2040, and 2045.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
20	The PCAP is missing a projection graph showing how much emissions will be reduced over a given period.	Quantification of emission reduction measures will be included in Final CAP	Addressed in Initial Response.	Written Comment.
21	Thank you for mentioning a Building Performance Standard in the Energy Sector. This policy will be key to building electrification in light of the recent Berkeley ruling.	Comment noted.	Addressed in Initial Response.	Written Comment.
22	Great mention of Transit-Oriented Development - mixed use development with housing and jobs near public transit will reduce transportation emissions.	Comment noted.	Addressed in Initial Response.	Written Comment.
23	Increase consultation with indigenous communities: We have been in touch with members of the Acjachemen Tribe who say that the county did not consult with them on the plan at all.	Expanded tribal engagement will be included in the next version of the Plan.	Tribal engagement will be included in the outreach for the CEQA analysis.	Written Comment.
24	Action Item E4: Develop Building Performance Standards that strongly encourage electrification in unincorporated areas under County jurisdiction, is critically important for achieving the county's climate goals as well as lowering energy prices for consumers.	Comment noted.	Addressed in Initial Response.	Written Comment.
25	The County should establish targets for EV charging capacity, density, and availability to ensure that members of the public are able to reach them when needed.	Performance goals for emission reduction measures are being developed for the Final CAP.	The County will work to develop emission reduction targets communitywide in future versions of the CAP. For more information, see Chapter 4.	Written Comment.
26	Suggest an action to ensure that new buildings in unincorporated Orange County must be EV-ready to avoid future retrofit costs.	Comment will be evaluated in next version of Plan, potentially included through expansion of Measure E4.	This feedback will be used in implementation of the CAP.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
27	Much of unincorporated Orange County has significant wildfire risk that will be amplified under a changing climate. The county has jurisdiction over local responsibility areas, which determine where wildfire mitigation practices must be enforced. Ensuring these maps are kept up to date and determined based on objective criteria is important for future development. Taking actions to reduce fuels using prescribed fire, brush clearing, or ecological solutions would further mitigate this risk.	Comment will be evaluated in next version of Plan, potentially included through expansion of Measure R1.	Current wildfire risk maps are included in the County's Local Hazard Mitigation Plan. Future wildfire risk is described in the vulnerability assessment appendix.	Written Comment.
28	The County should focus on areas with long term climate impacts, especially those that are difficult to change in the future (e.g., development patterns, building code changes, infrastructure, etc.).	The County agrees and will be incorporating these concepts into the next phase of the CAP.	The County will work to develop emission reduction targets communitywide in future versions of the CAP. For more information, see Chapter 4.	Written Comment.
29	The County should focus on regulating emissions rather the prescribing technologies, to allow for technology flexibility in future research and development.	Comment will be evaluated in the next phase of the CAP.	The Final CAP will meet all State and Federal mandates through the regulation of GHG emissions No technologies are prescribed or mandated in the Final CAP	Written Comment.
30	Action Item E4, "Develop Building Performance Standards that strongly encourage electrification in unincorporated areas under County jurisdiction," is critically important for achieving the county's climate goals as well as lowering energy prices for consumers.	The County agrees and will be incorporating this measure into the next phase of the CAP.	Comment noted.	Written Comment.
31	Finally, electrical appliances tend to be more efficient than gas and benefit from the learning curves of renewable electricity technologies, notably solar, leading to long term cost improvements for homeowners. By implementing a strong building performance standard, the county can greatly limit greenhouse gas emissions while improving building quality for homeowners.	The County agrees and will be incorporating this measure into the next phase of the CAP.	Building electrification is included in the Phase 2 CAP as measures C-E1, "Promote Building Decarbonization throughout the Community" and M-E1, "Building Electrification of County-Owned Facilities".	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
32	Expand County-owned and publicly accessible EV Charging Infrastructure," I believe the county should establish targets for EV charging capacity, density, and availability to ensure that members of the public are able to reach them when needed.	This will be evaluated in the next phase of the CAP.	The County will work to develop emission reduction targets communitywide in future versions of the CAP. For more information, see Chapter 4.	Written Comment.
33	Much of unincorporated Orange County has significant wildfire risk that will be amplified under a changing climate. The county has jurisdiction over local responsibility areas, which determine where wildfire mitigation practices must be enforced. Ensuring these maps are kept up to date and determined based on objective criteria is important for future development. Furthermore, taking actions to reduce fuels using prescribed fire, brush clearing, or ecological solutions would further mitigate this risk.	The County agrees and this will be included in the next phase of the CAP.	Current wildfire risk maps are included in the County's Local Hazard Mitigation Plan. Future wildfire risk is included in the vulnerability assessment appendix.	Written Comment.
34	Commenter supports the replacement of natural gas appliances via retrofitting and/or as an incentive or requirement as new buildings (all types) are constructed.	The County will evaluate this in the next phase of the CAP.	Building electrification is included in the Phase 2 CAP as measures C-E1, "Promote Building Decarbonization throughout the Community" and M-E1, "Building Electrification of County-Owned Facilities".	Written Comment.
35	Suggested language to read "M4.5 - Offer ride share, vanpooling or carpooling programs and incentives for County employees that reside in similar geographic areas."	The County agrees and this will be included in the next phase of the CAP	Add language to action that County will facilitate new rideshare matching programs, and well as other incentives to County staff	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
36	Suggested language to read "M5.3 – Incorporate CEQA project tiering for new developments in County unincorporated areas that are fully consistent with the County's CAP.". "M5.4 – Reduce urban sprawl and development in the County unincorporated areas." "M5.5 – Require projects in County unincorporated areas to meet complete street standards and invest in retrofitting existing areas."	The County will evaluate this in the next phase of the CAP.	Only the Municipal Measures will undergo CEQA in this CAP. Suggestions noted. Phase 2 CAP includes measures C-M5.1 through C-M5.3 which aim to reduce VMT through alternative means of transportation and land use density. These measures accomplish the same thing as the suggested M5.4 and M5.5 action items.M-M2 aims to reduce County operational VMT.	Written Comment.
37	Suggested language to read "M6.4 – Coordinate or partner with adjoining cities to synchronize traffic signals across jurisdictions to reduce idle time and improve traffic flow."	The County will evaluate this in the next phase of the CAP.	To be added to Phase 2 CAP as C-M4.4.	Written Comment.
38	Suggested revised language to read "SECTOR GOAL: Enhance natural resource stewardship by protecting the 42 miles of coastline, acquiring and restoring natural habitats, building ecological resilience, ensuring accessibility to alternative water sources, developing Countywide water conservation targets, and implementing stormwater retrofits where feasible."	The County will evaluate this in the next phase of the CAP.	Comment incorporated.	Written Comment.
39	Please include other state and federal mandates into the Natural Resources Section.	This will be included into the next phase of the CAP.	Comment incorporated.	Written Comment.
40	Suggested language to read "Promoting natural resource stewardship is essential to maintaining the health and resilience of our environment. Efforts include protecting natural lands and coastal areas, restoring habitats and ensuring sustainable water management practices.	The County will evaluate this in the next phase of the CAP.	Comment incorporated.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
41	The Natural Resources Action Items should be re-prioritized.	This County will evaluate this in the next phase of the CAP.	The Measures and Actions in the CAP in the Natural Resources section are not ranked.	Written Comment.
42	Suggested additions to read as follows:. "NR2.5 – Delist Orange County Waterways from the State Water Resources Control Board's 303d list.". "NR2.6 – Incorporate the creation of bioswales, rainwater capture, and onsite. water filtration for all new projects.". "NR2.7 – Prohibit the use of pesticides containing glyphosate and promoting. organics first to help maintain and improve water quality.	This County will evaluate this in the next phase of the CAP.	Comment incorporated.	Written Comment.
43	Suggested additions to read as follows:. "NR4.5 – Adopt a Native Tree Preservation Policy.". "NR4.6 – Convert all County facility landscaping to a 100% drought tolerant. California native Orange County Fire Authority approved plant palette.". "NR4.7 – Support wildlife corridors to connect landscapes together that benefit habitats and build ecological resilience.". "NR4.8 – Respond quickly to invasive pests that can damage or destroy tree. populations in County unincorporated areas."	This County will evaluate this in the next phase of the CAP.	Comment incorporated.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
44	Suggested additions to read as follows:. "R4 – Mitigate the Impacts to Climate Events Through Partnerships & Outreach.". "R4.1 – Support creation of a county-wide Fire Safe Council in partnership with the Orange County Fire Authority to educate the community about wildfire impacts.". "R4.2 – Support programs that train volunteers to serve on community volunteer fire watch programs to reduce wildfire ignitions.". "R4.3 – Ensure large animal transport and stabling remains a viable option for. County unincorporated areas.". "R4.4 – Reduce wildfire ignitions along roadways through creative mitigation. measures, such as the incorporation of weed mats.". "R4.5 – Encourage community gardens and partnerships that allow food to be. grown locally to reduce carbon emissions in food transport."	This County will evaluate this in the next phase of the CAP.	Multi-hazard community education included in the Resilience measures in the final CAP. Wildfire risk reduction measures along roadways is included in the County's Local Hazard Mitigation Plan—see project number OCFA5. Community gardens included in final CAP, please see C-EJ1.5	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
45	Other suggestions for inclusion from the San Luis Obispo Climate Action Plan:. Leadership 1.1 – Adopt a municipal carbon neutrality plan.. • Leadership 3.1 – Create a formal approach to support and empower community. collaboration for climate action.. • Green Buildings 2.1 – Conduct comprehensive retrofit program study and. develop and implement a strategic and equity-focused building retrofit. program.. • Green Buildings 2.1C – Establish "Green and Healthy Buildings" permit. streamlining program.. • Green Buildings 2.1D – Facilitate access to low interest financing for retrofit. projects.. • Connected 1.2 – Research and develop an approach to a "Mobility as a. Service" platform for people to easily use all modes of low carbon mobility.. • Connected 2.2 – Launch a micro mobility program.. • Connected 6.1 – Develop and begin to implement an electric mobility plan to. achieve a goal of 40 percent electric vehicle miles traveled by 2035.. • Natural Solutions 2.1 – Prepare the City's first Urban Forest Master Plan and plant and maintain 10,000 new trees by 2035.. • Natural Solutions 2.1A – Make process on protecting land within the City's. Greenbelt through direct purchases and conservation easements.	The County will evaluate these suggestions in the next phase of the CAP.	County is adopting a Climate Action Plan, similar to San Luis Obispo	Written Comment.
46	Housing goals should be considered with jobs goals.	The County agrees and will incorporate this suggestion into the CAP.	Comment incorporated.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
47	2018 Data will be out of date for Rancho Mission Viejo.	Unincorporated communities represent a very small fraction of the County's GHG inventory. Measures and incentives developed for the unincorporated communities will apply throughout.	Addressed in Initial Response.	Written Comment.
48	Did the state reach the AB32 goal of 20% GHG reduction of 1990 levels by 2020?	Yes it did.	Addressed in Initial Response.	Written Comment
49	Add more DC Fast Chargers, particularly at Parks and Libraries.	See M2.3.	The measures have been reorganized in the final version of the plan, please see C-M1.	Written Comment.
50	Include safety and enforcement measures to encourage E-bikes.	The County will evaluate this in the next phase of the CAP.	Suggestions noted. Phase 2 CAP includes action item C-M2.1, Evaluate opportunities to support and expand active transportation infrastructure to major destinations within unincorporated areas. Implementation of this action would include ensuring safety of bicyclists.	Written Comment.
51	Unincorporated Orange County has many areas within the floodplain.	Thank you for your comment.	Addressed in Initial Response.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
52	Fire mapping should be updated as new developments are built.	The County agrees and this will be included in the next phase of the CAP.	Future wildfire risk is included in the vulnerability assessment appendix. Current wildfire risk maps are included in the County's Local Hazard Mitigation Plan. Development is one input to the models which produce Fire Hazard Severity Zones Maps, which are produced by Cal Fire	Written Comment.
53	We need to educate the public, at all levels, as to why these measures are important and how they will help make all our lives better.	The County agrees and this will be included in the next phase of the CAP	This feedback will be used in implementation of the CAP.	Written Comment.
54	Another important thing is to point out the CAP has solutions to mitigate heat and other increasingly frequent adverse weather events and dangerous air pollution. Focusing on solutions I feel will reduce anxiety for some and bring others onboard who didn't see a good way forward.	The County agrees and this will be included in the next phase of the CAP	Comments added to Resilience measures and vulnerability assessment (see appendix).	Written Comment.
55	This commenter requests multiple language changes throughout the document.	The County will evaluate these changes in the next phase of the CAP.	Comment noted.	Written Comment.
56	I would like to have the baseline readings for municipal and unincorporated areas as well as the 34 County cities made public. Preferably, by city, as this will aid the cities and their residents when it comes time for them to create their own CAPs.	The County should be able to recreate this data from the Priority Climate Action Plan created under the Climate Pollution Reduction Grant program.	Community emissions data will be publicly available through the Comprehensive Climate Action Plan created under the Climate Pollution Reduction Grant program	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
57	For the extra county EVs, make sure that not only are there enough chargers, but also continuous maintenance support. Local job creation too. We also must make sure there is more than sufficient grid power.	The County agrees and this will be included in the next phase of the CAP.	EV infrastructure will be installed as necessary to support rate of EV procurement (M-M3.1).	Written Comment.
58	Should extra wording be added about the additional damaging health effects from ground level ozone (smog and hot sunlight making air pollution even more dangerous)? This will be a more serious threat going forward.	The County agrees and this will be included in the next phase of the CAP.	Worsening air quality due to climate change, and the associated health impacts, added to the vulnerability assessment, see appendix.	Written Comment.
59	Can you add any mention of economic impact as to days of work lost due to poor health from air pollution, heat, and extreme weather? These health issues cause an actual negative impact to GDP. Pointing out both where we lose money and can earn/save money will certainly bring onboard some people who don't really get/care about the climate realities. Additionally, it might be worth mentioning somewhere the cost of inaction will greatly increase the cost (to health, the environment and financially) over time across sectors of employment, mitigation, rebuilding etc?	The County will evaluate this in the next phase of the CAP.	Analysis specific to Orange County about the economic impacts of climate-driven work absences and health issues has not been completed, however, these issues are discussed generally in the vulnerability assessment appendix. Costs of inaction are also included in a similar manner.	Written Comment.
60	The CAP timelines are 2030 and 2045. It would be good to have more check points as we move along so we can assess progress and review changes needed if we fall behind. Of course, these will need to stay consistent throughout, be it under Goals or elsewhere in the CAP.	The County will evaluate this in the next phase of the CAP.	Final CAP includes Performance Goals for Measures and Targets for 2030, 2035, 2040, and 2045	Written Comment.
61	Apprenticeship programs should be added, particularly for electricians.	The County agrees and workforce development included in the CAP.	Addressed in Initial Response.	Written Comment.

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62	Rebates are coming soon as part of the IRA rollout, as CA waits for approval then the DOE will tell us how those are to be procured.	The County agrees and will be looking to take advantage of those rebates.	Addressed in Initial Response.	Written Comment.
63	Will Co-benefits be measured from any baseline measurement? Is there a way to track these as well as GHG reductions? It would be encouraging to report, for example, that after 5 years of cleaner air asthma and heart disease were reduced by say 20% in the County!	The County agrees. This will be examined and evaluated in the next phase of the CAP.	The County agrees and an action has been added to the Resilience measures to explore tracking health data alongside poor air quality and extreme heat events.	Written Comment.
64	State Water Resources Control Board MCCWL regulations set new conservation objectives that must be met by urban retail water suppliers, which will come into effect 1/1/25. Given that these water conservation targets have been adopted, we ask that the County's Sector Goal to develop Countywide water conservation targets be revised to focus on collaborating and supporting local water suppliers in their efforts to educate the community about appropriate water use and to comply with these new statewide targets.	Comment will be evaluated in next version of Plan.	Water conservation goals may be considered in future iterations of the CAP.	Written Comment.
65	Clarification is needed about how the County will effectuate NR1.3, since it is not an operator of a sewer system, recycled water system or wastewater treatment plant. Suggest that the objective be modified to reflect the role of the County's water and wastewater providers and focus on the County support the efforts of these providers to increase energy efficiency and expand recycled water availability, where cost-effective and feasible.	Comment will be evaluated in next version of Plan.	Comment incorporated.	Written Comment.
66	In NR1.4, clarification is needed about how the County intends to collaborate with water districts and which mechanisms it will use to achieve this action.	Comment will be evaluated in next version of Plan.	Comment incorporated.	Written Comment.

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67	Amend NR1.5 with language to support non-potable recycled water where its use is appropriate while encouraging the potable reuse where non-potable use is not cost effective to strengthen Orange County's water resilience.	Comment will be evaluated in next version of Plan.	Comment incorporated.	Written Comment.
68	Recommend rewording NR1.6 in recognition of Orange County's leadership around groundwater management to read "Support continued protection and sustainable management of Orange County's groundwater resources."	Comment will be evaluated in next version of Plan.	Comment incorporated.	Written Comment.
69	The City supports the County's efforts to reduce GHG emissions to counter the negative effects of climate change through adoption of a CAP. However, it is imperative that the County's implementation measures for a CAP be fully analyzed under the California Environmental Quality Act ("CEQA") and that potentially significant impacts be mitigated.	Comment noted.	Addressed in Initial Response.	Written Comment.
70	The City has a special interest in potential action item RRW2.2 (Explore the feasibility of regional anaerobic digestion and conversion technology facilities) and the landfill methane reduction approach described in Appendix A, which includes "constructing regional anaerobic digesters" at unspecified locations	Comment noted.	Addressed in Initial Response.	Written Comment.
71	In collaboration with the County, the City has been a partner in supporting the operation of the Olinda Alpha Landfill through a Cooperative Agreement. The City intends to participate in the CEQA process conducted for the CAP, particularly with respect to potential action item RRW2.2. Additionally, assuming a new Agreement is executed, and an anaerobic digestion facility is proposed for the OA Landfill in the future, the City will engage in good faith negotiations with the County as required by the contract.	Comment noted.	Addressed in Initial Response.	Written Comment.

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72	The term "strongly encourage" in Measure E4.7 about building decarbonization throughout the community leaves much open to interpretation. When areas of uncertainty exist, litigation threats emerge, and BIA/ OC is committed to developing a CAP that does not increase litigation exposure for the private sector.	This Action Item has been Removed Pending Further Evaluation in the next Phase of the CAP.	Action item removed and building decarbonization language is being changed to promote and/or incentivize (CE-1).	Written Comment.
73	In M4.4 the language about promoting VMT reduction measures in unincorporated areas could be interpreted by the court or special interest groups in several ways, would appreciate if this measure only applied to county operations, and not general development interests.	This Action Item has been Modified to Clarify that VMT Reduction Incentives in Unincorporate County Areas would be Elective.	Addressed in Initial Response.	Written Comment.
74	In M5.3, "Encourage transit-oriented, mixed use, and compact development," BIA/OC appreciates clarifications that this will not apply to any private sector development, project or parcel, especially those that have already received entitlements.	Please see revised wording.	Addressed in Initial Response.	Written Comment.
75	In EJ1.1, clarity on "open spaces" to mean areas zoned for open space / recreation as opposed to a more colloquial definition would serve to prevent misunderstandings down the road.	Comment will be evaluated in next version of Plan.	EJ1.1 (measures and actions renumbered in final CAP) rewritten to clarify that the action pertains to land uses.	Written Comment.
76	In EJ4.1, it would be helpful to clarify or link to the referenced state "Affordable Housing and Sustainable Communities Program" to ensure clarity on how resources would be prioritized in this section. Much conversation has occurred on the issue of local control under the RTP/SCS process and understanding how any policy of the County may interact with that SCAG mandate would be helpful.	Comment will be evaluated in next version of Plan.	Comment incorporated.	Written Comment.
77	Clarification is needed to understand how reducing water consumption throughout the County in section NR1.2 would interact with state building code.	Comment will be evaluated in next version of Plan.	Comment incorporated.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
78	In NR2.1 and NR2.2, language could use additional expert review to avoid future misinterpretations of "maximum extent" requirements for the control of man-made pollutants. The development community has had many issues with storm water management policies from the state that were incapable of ever being implemented.	Comment will be evaluated in next version of Plan.	Comment incorporated.	Written Comment.
79	OCBC and our local chamber partners believe it is crucial that climate policies, including those outlined in the CAP, are implemented in a cost-effective manner that considers the economic realities currently facing businesses. The business community is already grappling with numerous challenges, including high interest rates, rising operational costs, and ongoing economic uncertainty. Climate regulations must be developed with stakeholder input, particularly from the business community, to ensure that they do not inadvertently drive businesses out of the region.	The County agrees. Expanded engagement with the business community will be included in the next version of the Plan.	Comment incorporated.	Written Comment.
80	We urge the County to focus on implementing CAP measures that prioritize public-sector action in the initial stages. This includes modernizing County facilities, transitioning the County's vehicle fleet to cleaner alternatives, and upgrading infrastructure. These actions will allow the County to take advantage of available state and federal funding while leading by example. By setting a strong precedent with public-sector initiatives, the County can encourage voluntary participation from local businesses and residents, without imposing additional regulatory burdens. We urge the County to first follow through with the implementation of CAP measures for its own operations, all while seeking available funding to support these efforts.	The County agrees. Comment noted.	County's CAP is focused on its own public sector actions and activities.	Written Comment.

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81	We advocate for a non-regulatory approach to CAP implementation, treating it as a strategic policy framework rather than a set of mandates that would negatively limit business' options or ability to compete. Given that many of the most significant GHG reductions will come from state-level mandates—such as the transition to renewable energy and the electrification of vehicles—OCBC believes the County should focus on facilitating these state-driven transitions rather than adding new layers of local regulation.	The County agrees. Comment noted.	County's CAP is focused on its own public sector actions and activities.	Written Comment.
82	Is the County considering replacing all or part of its electrical generation projects with a pipeline direct injection project?	Comment will be evaluated in next version of the Plan.	Comment incorporated, see Resource Recovery and Waste Measures for more information.	Written Comment.
83	With passage of SB 1383, there is an opportunity to make a big difference in managing food waste	Comment currently included in Plan in Potential Action RRW1.4	The measures have been reorganized in the final version of the plan, please see C-RRW1.4.	Public Meeting.
84	Compostable products should be used including plates, cups, paper bags, etc., with no Styrofoam.	Comment currently included in Plan in Potential Action RRW1.1	The measures have been reorganized in the final version of the plan, please see C-RRW1.1.	Written Comment.
85	Provide education resources for people to quit smoking	Comment will be evaluated in next version of the Plan.	While the County values this cause, it is outside the scope of a Climate Action Plan.	Written Comment.
86	Commenter provided multiple site links and resources to review.	Thank you for providing this input.	Addressed in Initial Response.	Written Comment.
87	Could not attend the forums but want to express my support for preparing our community for climate change.	Thank you for your email.	Addressed in Initial Response.	Written Comment.
88	Are telecommute options being considered to reduce GHG emissions under the mobility criteria?	Not at this time.	Addressed in Initial Response.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
89	Are improvements for connections between major transportation hubs being considered, such as public transit connections between JWA and train stations?	Comment will be evaluated in the next version of the Plan.	Not included at this time, but County will work with OCTA to explore cost-effective transportation connection opportunities.	Written Comment.
90	The CAP goals must be enforceable.	The County agrees with the commenter.	Addressed in Initial Response.	Written Comment.
91	Will future county politicians be able to alter or overturn these planned outcomes to the detriment of the environment and our quality of life?	The CAP and any future revisions are approved at the discretion of the Board of Supervisors.	Addressed in Initial Response.	Written Comment.
92	Public transit including non-polluting trains, airplanes and watercraft, buses, e-bikes, EVs, etc., needs to be implemented.	Comment (within jurisdictional authority) are contained in the Mobility Sector of the document.	Please see details about EVs in C-M1, and details about active transportation in C-M2.1. The County will work with OCTA to support expansion of transit, included in C-M2.2.	Written Comment.
93	A sample written outline was provided for the Comprehensive CAP that is forthcoming.	Thank you for your assistance and comment.	Addressed in Initial Response.	Written Comment.
94	The regulatory background of California's 2022 Scoping Plan needs to be included.	Thank you for your comment. This will be incorporated into the next round of the CAP.	The 2022 Scoping Plan is discussed on page 34 of the CAP.	Written Comment.
95	The regulatory and emission reduction mandates from the 2022 Scoping Plan were also included.	Thank you for your comment. This will be incorporated into the next round of the CAP.	The 2022 Scoping Plan is discussed on page 34 of the CAP. The Phase 2 CAP will also include a similar discussion of the 2022 Scoping Plan and its background/objectives. The 2022 Scoping Plan does not mandate any emission reductions, rather it sets forth Statewide climate objectives and targets.	Written Comment.

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96	The Preliminary CAP contains many non-quantifiable words such as expand, identify, develop, collaborate, enhance, engage, review, research, identify, partner, advocate, expand, increase, and improve. It has surprisingly few definitive words like shall, must, and will.	This comment will be evaluated in the next round of the CAP.	The County is directing emissions reduction where feasible at this time.	Written Comment.
97	The choice to not include quantification in the Preliminary CAP significantly reduces its usefulness, since no considerations of reductions, and schedule are possible without quantification.	This will be evaluated and incorporated into the next round of the CAP.	Quantification is included in the Final CAP.	Written Comment.
98	The commenter requests revising terminology such as "pristine" natural resources to restoring and maintaining natural resources.	This will be incorporated into the next round of the CAP.	Comment noted.	Written Comment.
99	The natural resources section is highly water-focused. Suggestion is to broaden scope to incorporate natural lands acquisition and restoration.	This will be evaluated in the next round of the CAP.	Comment noted.	Written Comment.
100	Infrastructure, like roads, highways, and utilities, should be included in the list of things to be protected in the resilience sector.	This will be evaluated in the next round of the CAP.	The impacts of climate change on critical infrastructure are described in the vulnerability assessment appendix. Strategies to protect infrastructure are included throughout the measures chapter of this plan, as well as in the County's Local Hazard Mitigation Plan.	Written Comment.
101	Since many individuals are living at or below the level of poverty, most of these. factors aren't something that can change quickly or at all. We have suggestions in the strategies section to address where people are at— in other words, bringing the programming to them.	The County agrees with the commenter and will be looking to incorporate these types of strategies into the next phase of the CAP.	Comment incorporated, see the Environmental Justice section for more information.	Written Comment.

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102	We suggest that the CAP, this goal, and the strategies below this goal align with the California Jobs Forward goals.	The County agrees with the commenter and will be looking to incorporate these types of strategies into the next phase of the CAP.	Comment incorporated.	Written Comment.
103	We noticed the lack of inclusion of active transportation or mobility as a service options. We think the CAP could benefit from these action items in M5.	This will be evaluated in the next round of the CAP.	Active transportation is included in action C-M2.1.	Written Comment.
104	Commenter supports the Environmental Justice Sector and recommends the following additions: . EJ1.4 – Add community-based organizations to the list of partners.. EJ1.5 – Create pocket parks in vulnerable communities by utilizing parking spaces or other small areas.. EJ 1.6 – Develop park programming in neighborhoods to increase access to outdoor activities by creatively utilizing space.. EJ1.7 – Partner with the Orange County Department of Education and non-profits to provide nature-based experiences close to home, such as Travelling Scientist programs.. EJ2.8 – Partner with cities to invest in complete streets programs in disinvested neighborhoods	These will be evaluated in the next round of the CAP.	CBOs added to action C-EJ1.4. Inventory and expansion of parks included in C-EJ1.1. Complete street design is included in active transportation infrastructure expansion in C-M2.1. Note that measures and actions have been renumbered in the final version of plan.	Written Comment.
105	Public-private partnerships are great, but nonprofits have a lot to offer as well. We propose adding "nonprofits and community-based organizations" to EJ5.1 and EJ5.2.	This will be evaluated in the next round of the CAP.	Nonprofits and CBOs added to actions C-EJ5.1 and C-EJ5.2. Note that measures and actions have been renumbered in the final version of plan.	Written Comment.
106	Commenter recommends the following addition to Natural Resources: NR2.5 – Support community efforts to do beach and waterway clean ups through small grant programs.	This will be incorporated into the next round of the CAP.	Comment incorporated.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
107	We support ensuring flood management is a priority, however there are opportunities to create more resilient ecosystems through nature-based solutions. We propose adding the following to NR3 – Integrate Flood Management with Other Water Management Practices:. NR3.5 – Support research, projects, and requests to protect the coastline from sea level rise and coastal flooding.	This will be evaluated for inclusion into the next round of the CAP.	Comment incorporated.	Written Comment.
108	We support restoring and protecting ecosystems, see NR4 – Restore and Protect Ecosystems,. Native Habitat and Natural Resources, but the potential action items here completely miss opportunities to improve carbon sequestration, including:. NR4.5 – Restore degraded habitats to improve carbon sequestration.. NR4.6 – Add trees and shrubs along roadways and highways to reduce noise, capture carbon, and create better buffers for neighborhoods.	This will be evaluated for inclusion into the next round of the CAP.	Comment incorporated.	Written Comment.
109	Commenter noted that South Orange County should not have its own dedicated section for Resilience when it should apply to the region. Suggests language change to R3.5 – Ensure all of Orange County's coasts have Sea Level Rise Vulnerability Analyses, Coastal Resilience Strategies or other coastal plans to improve climate resilience.	This will be evaluated for inclusion into the next round of the CAP.	The County agrees and has rewritten the coastal resilience measure to encompass all geographies, moving the South Orange County-specific plan to a supporting action.	Written Comment.
110	Food waste is so prevalent that we need to nudge restaurants to healthy-sized servings to prevent waste and single use containers.	This will be evaluated for inclusion into the next round of the CAP.	The County does not have license to dictate portion sizes, however they are working to limit food waste and converting food waste into renewable natural gas and energy.	Written Comment.
111	We need annual reporting at a minimum, would like to see a regularly updated webpage dashboard like the San Diego County CAP website has: https://www.sandiegocounty.gov/content/sdc/sustainability/dashboard.html	This will be evaluated for inclusion into the next round of the CAP.	Comment incorporated.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
112	For the County CAP webpage consider a layout like City of San Diego with a dropdown menu for each Category plus "Get Involved" links on ways citizens can help the County goals (https://www.sandiego. gov/sustainability-mobility/climate-action/cap)	Thank you for this suggestion. We will work on updating the webpage.	Addressed in Initial Response.	Written Comment.
113	15 years is too long of a gap without a strict target, we should have 4 target dates to measure against (2030, 2035, 2040, 2045). This will help keep the county accountable and on track.	This will be evaluated for inclusion into the next round of the CAP.	Final CAP includes Targets for 2030, 2035, 2040, and 2045	Written Comment.
114	The commenter is concerned with methane emissions from landfills and thinks more should be done although they are a get source of revenue.	Regardless of any revenue source, landfill gas will always be the biggest source of emissions at the County. There are many strategies being considered and studied to capture these emissions and convert them to energy.	County agrees and comments are addressed in M-RRW2.	Written Comment.
115	If the County provided resources for completing the community encouragement goals (electrify, building retrofits, etc), organizations would be happy to support by taking these resources to the people in our community.	The County appreciates this suggestion and offer of support. This will be incorporated into the next phase of the CAP.	Comment incorporated.	Written Comment.
116	E 1.1 - Would like to see the exact number of county buildings that have had the audit and the buildings that are planned for the next quarter/year broken out in reports.	The County will evaluate this comment in the next phase of the CAP.	County will provide details about audits in CAP updates and progress reports.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
117	E 1.2 - Change Pursue to Acquire. Too much leeway to back out.	The County will evaluate this comment in the next phase of the CAP.	County intends for new building to be LEED Platinum but needs flexibility in the event that it is cost prohibitive	Written Comment.
118	E 1.7 - Should be stronger intent to not just pursue incentive programs for gas to electric in county buildings but strive to electrify all or most buildings in coordination with solar installation for maximum cost savings. Solar install plans should consider needs for fully electrified buildings as well to ensure big enough arrays at time of installation.	The County will evaluate this comment in the next phase of the CAP.	County is decarbonizing buildings as quickly as is financially feasible, and will be pursing solar installation throughout its jurisdiction.	Written Comment.
119	E 1.7 puts the goal as electrification, not RNG (which burns just as dirty as regular NG). At best RNG can be a bridge but should be phased out by 2045 at the latest.	The County will evaluate this comment in the next phase of the CAP.	This Measure has been modified to no longer include RNG.	Written Comment.
120	E 3 – Please add language about encouraging CCA use around the county. OCPA is the only one I know of, but they offer a fully renewable power generation option for residents. OC is one of the few areas in the state not completely covered by a CCA.	The County will evaluate this comment in the next phase of the CAP.	County is not pursuing OCPA at this time.	Written Comment.
121	The CARB website shows landscaping equipment as a major source of GHG emissions and so it should be included. I would love to see the county doing some sort of incentive to switch for business owner/operators or put together a webpage of local/state/ federal incentives that could be used by the community.	The County appreciates this suggestion, and it will be incorporated into the next phase of the CAP.	Comment incorporated.	Written Comment.
122	Explore a more expedited timeline on replacing the light-duty fleet.	The County will evaluate this comment in the next phase of the CAP.	County had prioritized fleet replacement based on GHG emission reduction potential and feasibility.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
123	Please add a number or percentage for how much the county plans to increase staff.	The County will evaluate this comment in the next phase of the CAP.	County staffing is not expected to significantly increase.	Written Comment.
124	I would encourage the County to select charger providers with 'tap to pay' options. Many options out there today require an app download and account creation, for first timers, EV renters, or people with a language barrier this makes it difficult.	Comment noted. The County will go through the RFP process in any additional public charging providers and try to incorporate this.	Addressed in Initial Response.	Written Comment.
125	If the County plans to provide any free chargers, please ensure they charge an idle fee to prevent one vehicle taking up a free spot all day without penalty when others are waiting.	The County cannot provide free electricity.	Addressed in Initial Response.	Written Comment.
126	Add 3.4 to build on 3.3 to say: County will explore/ study wider regional transit options. Think bigger than LOSSAN and include regional and state rail planning.	The County will evaluate this comment in the next phase of the CAP. Please remember that this is a County CAP and state rail planning is not within its jurisdiction.	Not included at this time, but County will work with Amtrak and OCTA to explore cost-effective transportation connection opportunities.	Written Comment.
127	The County should be pressuring LOSSAN to electrify Surfliner. It is the 2nd busiest rail line in the country and Orange County deserves an electrified rail corridor along our most precious protected coastline.	The County will evaluate this comment in the next phase of the CAP.	While this is outside the County of Orange's jurisdiction, the County will explore opportunities to support Amtrak in future electrification efforts.	Written Comment.

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128	Please add protected active transportation infrastructure for public safety.	The County received many similar comments during the public forums and will be evaluating this in the next phase of the CAP.	Active transportation expansion included in C-M5.1.	Written Comment.
129	Consider including QR code printed on bins that forwards to detailed lists of items, or an item lookup page.	Please see RRW1.3.	The measures have been reorganized in the final version of the plan, please see C-RRW1.	Written Comment.
130	NR 1.5 - Explore a project of the size/ scope of Pure Water in San Diego	The County will review this project and evaluate incorporating it into the next phase of the CAP.	Comment noted.	Written Comment.
131	NR 2 – Commit to not expanding roadways/ parking lots directly along the coast.	The County will evaluate this in the next phase of the CAP.	Comment noted.	Written Comment.
132	NR General – Study the feasibility of developing 'sponge zones' where permeable surfaces take the place of pavement to capture rainwater and transfer it to underground aquafers.	The County will evaluate this in the next phase of the CAP.	Comment noted.	Written Comment.
133	General – Enroll County in reverse 911 program (like AlertOC, but for everyone, not just people who create an account and register).	The County will evaluate this in the next phase of the CAP.	Improved and expanded emergency communication is included in the hazard response measure in the Resilience sector.	Written Comment.
134	Runoff from pesticides, herbicides and fertilizers are dangerous and are poisoning our green waste collection. It's the main reason I don't come to Bee Canyon to take free compost! It's essential we prioritize stopping the use of toxic chemicals (many linked to cancer) across our county and ensure people living near our industrial areas are not in danger.	The County will evaluate this in the next phase of the CAP.	While the County values this cause, it is outside the scope of a Climate Action Plan.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
135	Plastic. The targeted reduction of single use plastics, as well as the lack of transparency on plastic recycling, is a critical issue missing from our plan.	Comment currently included in Plan in Draft Measure RRW1.1.	The measures have been reorganized in the final version of the plan, please see C-RRW1.1.	Written Comment.
136	Numerous requests for more information about disposal, including which plastics are recyclable, bioplastic composting, e-waste education, and general recycling guides of what goes where and what cannot be recycled at all" were received. This needs to be prioritized.	Comment currently included in Plan in Draft Measure RRW1.3.	The measures have been reorganized in the final version of the plan, please see C-RRW1 –Increase Public Participation in County Waste Diversion Programs.	Written Comment.
137	Much of our plastic waste is landfilled or incinerated and CalRecycle exports the rest to Mexico and other non-OPEC counties. This practice has to stop and the one way to do that is to set reduction goals to track and measure plastic in our CAP.	This will be investigated during the next phase of the CAP.	C-RRW1: Increase Public Participation in County Waste Diversion Programs	Written Comment.
138	Create more walkable areas (or handicap help too) within County jurisdictions.	Please see EJ2.2 and 2.5.	The measures have been reorganized in the final version of the plan, please see .	Written Comment.
139	The County needs to use fugitive methane for energy.	Please see RRW2.1.	The measures have been reorganized in the final version of the plan, please see M-RRW2.	Written Comment.
140	In conjunction with RRW1.2, educate the public on how to use (with pictures to avoid language barriers). Again, got to make it easy so compliance is high.	The County agrees and will be incorporating this into the next phase of the CAP.	Education is a component of C-RRW1: Increase Public Participation in County Waste Diversion Programs.	Written Comment.
141	Will need to ensure proper on-going care of all the shade trees, pocket parks etc., so they continue to thrive. Local job creation too	The County agrees and will be incorporating this into the next phase of the CAP.	Maintenance will be included in Urban Forest Master Plan (C-EJ1.2)	Written Comment.
142	Are all County streetlights LED bulbs? Are they aimed down to reduce light pollution?	This is a good question. It will be incorporated into the next phase of the CAP.	Comment incorporated.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
143	Reflective paints should be added as means to reduce heat in urban heat islands.	The County agrees and will be incorporating this into the next phase of the CAP.	Reflective paints and other cooling strategies are included in the heat adaptation measure in the Resilience sector.	Written Comment.
144	LOVE NR3 and NR4 section inclusion! YES to the restoration of river channels and native plants!	Thank you for your comment.	Addressed in Initial Response.	Written Comment.
145	It's good that you are planning for excessive heat …there should be multiple care sites in County as this will problem will grow.	Thank you for your comment.	Addressed in Initial Response.	Written Comment.
146	Issues related to vector control should be included.	This comment will be evaluated in the next phase of the CAP.	Vector-born disease is included in the County's Local Hazard Mitigation Plan and in the vulnerability assessment appendix for this plan. It has also been added to the health order response measure in the Resilience sector.	Written Comment.
147	R3 section, add to alert systems an excess heat warning to go out (over AlertOC and maybe city systems too?)	The County agrees and will be incorporating this into the next phase of the CAP.	Improved and expanded emergency communication is included in the hazard response measure in the Resilience sector.	Written Comment.
148	Use green concrete made from green cement (maybe even recycled or made locally).	This comment will be evaluated in the next phase of the CAP.	Comment incorporated.	Written Comment.
149	Create an online (clean economy) library website for OC residents including all kinds of information (easily indexed and very user friendly).	This comment will be evaluated in the next phase of the CAP.	Comment incorporated.	Written Comment.
150	Consider implementing the Prima Deshescha Landfill Biofuel Farm	This comment will be evaluated in the next phase of the CAP.	Comment incorporated.	Written and Public Meeting
151	The details supplied in "EMISSION REDUCTION ACTION PLAN" for the 6 sectors serve as a great foundation for the final CAP.	Thank you for your comment.	Addressed in Initial Response.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
152	The success of the CAP depends upon meeting the goals set in the 2022 Scoping Plan.	The County agrees this is one success barometer of the CAP.	Addressed in Initial Response.	Written Comment.
153	The choice to not include quantification in the Preliminary CAP significantly reduces its usefulness, since no considerations of reductions, and schedule are possible without quantification.	This comment will be evaluated and included in the next phase of the CAP.	The Final CAP includes quantification of Measures and Targets for 2030, 2035, 2040, and 2045.	Written Comment.
154	The Preliminary CAP contains many non-quantifiable words such as expand, identify, develop, collaborate, enhance, engage, review, research, identify, partner, advocate, expand, increase, and improve. It has surprisingly few definitive words like shall, must, and will.	This comment will be evaluated in the next phase of the CAP.	The County's CAP is focused on its own public sector actions and activities; it is directing countywide emissions reduction where feasible at this time.	Written Comment.
155	A suggested Draft outline of the CAP was submitted.	This outline will be evaluated and considered for the next phase of the CAP.	Comment noted.	Written Comment.
156	Suggested Language Submitted: "5. Natural Resources: Orange County aims to preserve its natural resources and ecosystems while promoting ecological resilience, through activities such as land acquisition, building climate resilience, water conservation and best management practices. Goals include increasing access to alternative water sources, setting Countywide water conservation targets, habitat acquisition and coastal restoration, and implementing stormwater retrofits. Co-benefits include healthier ecosystems, additional permanent sequestration potential, public health improvements, and economic stability."	This comment will be evaluated in the next phase of the CAP.	Comment noted.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
157	Suggested Language Submitted: "6. Resilience: The County must anticipate, prepare for, and respond to climate related hazardous events, trends and disturbances. By reducing and sequestering GHG emissions, the County contributes to global climate efforts and prepares for impacts Countywide such as severe wildfires, heatwaves, droughts, disease spread, and rising sea levels that threaten its coastal communities. Ongoing resilience efforts include incorporating climate adaptation into the Local Hazard Mitigation Plan. The CAP will support and build upon these efforts to ensure public health, safety, mobility, recreation, and wellbeing of our residents and their homes."	This comment will be evaluated in the next phase of the CAP.	Details about the impacts of climate change are described in the vulnerability assessment appendix. Strategies to prepare for these impacts are included throughout the measures chapter of this plan, as well as in the County's Local Hazard Mitigation Plan. Carbon stock represents a snapshot of the carbon stored in natural and working lands. In subsequent updates to the County's inventory, carbon stock may be recalculated for the new inventory year to compare carbon sequestration elease over time.	Written Comment.
158	Table 2-1 indicates Transportation, Natural Gas, and Electricity are the biggest emitting sectors. Our first comment is that the context should be identified in this sentence: is it globally or locally the largest sources of GHGs?	Globally	Addressed in Initial Response.	Written Comment.
159	Substantive changes are lacking and could be improved to decrease GHG emissions across the County. The document is deficient in this area.	The document is a Draft that will undergo further analysis in the coming months.	The County's CAP is focused on its own public sector actions and activities; it is directing countywide emissions reduction where feasible at this time.	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
160	Language addition suggestion: "OCTA has a long-standing history of environmental stewardship and has been proactively laying the groundwork for a resilient transportation system. This includes several key efforts with OCTA's approximately 1400 employees, outlined in the 2024 OCTA Climate Adaptation and Resiliency Plan. Further, OCTA has created an award-winning Environmental Mitigation Program that thoughtfully offsets the impacts of its freeway program through acquisition, restoration, and management of natural lands throughout the County."	This addition will be considered for inclusion in the next phase of the CAP. Please note the County of Orange and OCTA are two separate entities.	Comment incorporated.	Written Comment.
161	We believe this conversion of natural lands to urban uses in County unincorporated areas should be quantified as it goes from a net negative (sequestration) to a net positive (release)—meaning it reverses the benefit of the County's carbon numbers to a detriment.	This comment will be evaluated in the next phase of the CAP.	Carbon stock represents a snapshot of the carbon stored in natural and working lands. In subsequent updates to the County's inventory, carbon stock may be recalculated for the new inventory year to compare carbon sequestration elease over time.	Written Comment.
162	Further, it would be beneficial for the County to adopt as an action item: priority development zones, like what the Southern California Association of Governments (SCAG) does in Connect SoCal. But first, the County must quantify the potential loss and the adjusted loss after action measures are implemented.	This comment will be evaluated in the next phase of the CAP.	The County's CAP is focused on its own public sector actions and activities. It is supporting countywide emissions reduction where feasible at this time, including encouraging transit-oriented and compact development (C-M2.3).	Written Comment.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
163	It is not clear why Senate Bill (SB) 375 the Sustainable Communities and. Climate Protection Act of 2008 or SB 743, which updated the California Environmental Quality Act (CEQA) Guidelines to analyze transportation impacts through Level of Service and not vehicle miles traveled (VMT) beginning July 1, 2020, were not mentioned. We believe both should be included in the regulatory context.	This comment will be incorporated into the next phase of the CAP.	Comment incorporated.	Written Comment.
164	Is it possible for households to access energy from the County's co-gen facility? Especially in anticipation of future shutoffs from Edison.	Not currently. Comment noted.	Addressed in Initial Response.	Public Meeting.
165	There are many closed landfills that continue to produce methane, how can these landfills be turned into energy supply sources?	Comment currently included in Plan in Draft Measure RRW2.	The measures have been reorganized in the final version of the plan, please see M-RRW2.	Public Meeting.
166	Are there possibilities for the County to inspire and work with cities to help them develop their own climate action plans?	The intention is for the County's Final CAP to be designed as a guidance document for cities, including model measures.	Addressed in Initial Response.	Public Meeting.
167	Social equity is not sufficiently addressed in the document.	Comment will be incorporated into next version of the Plan.	Comment incorporated, please see Environmental Justice measures.	Public Meeting.
168	It is our ethical obligation to consult with Native tribes, recommend working with the Sacred Places Institute.	District 5 has been engaging with Native nations on this and other related projects, expanded tribal engagement will be included in the next version of Plan.	Tribal engagement will be included in the outreach for the CEQA analysis.	Public Meeting.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
169	Important to focus on biggest polluters, such as hotels and other places that are over-air conditioned	Will consider issue in next version of Plan; note more sustainable tourism example of zero waste Chumash Casino Resort in Santa Barabara.	This feedback will be used in implementation of the CAP.	Public Meeting.
170	Reliance on plastic is not in this plan, and it is killing us and it is everywhere. Understand that the focus is on reducing emissions, but can plastics be included in a more meaningful way?	The County is working to broaden content on forever chemicals; EJ section of the CAP includes toxics and plastics; expansion on topic will be evaluated in next version of Plan.	This feedback will be used in implementation of the CAP.	Public Meeting.
171	Can the County provide support to cities who are struggling to create their own emissions reductions policies and plans?	Data included in the PCAP can be used by cities, it is downscaled from regional data and is approximate.	Addressed in Initial Response.	Public Meeting.
172	There are no specific target years in the plan, need to have interim targets not only 2030 and 2045 goals. Climate activists urge the County to hit targets sooner than the state minimums	Targets are currently under development and will be included in the Final CAP.	The Final CAP includes Targets for 2030, 2035, 2040, and 2045.	Public Meeting.
173	Consider rejoining the OCPA	Comment noted.	County is not pursuing OCPA at this time.	Public Meeting.
174	Cool pavements are a cost-effective solution to decrease urban heat islands	Comment will be evaluated in next version of Plan, potentially included through expansion of Measure R2.	Cool pavements and other cooling strategies are included in the heat adaptation measure in Resilience sector.	Public Meeting.

#	Feedback	Initial Response	Final Response upon County Consideration	Source
175	There needs to be a shift in attitude that climate change is not a hoax, can the Board of Supervisors be a leader in this?	The Board of Supervisors is the governing body directing the creation of the Climate Action Plan.	Comment addressed in initial response.	Public Meeting.

D-2: Feedback Received in Public Forums

Six public forums were held in June 2024, where participants provided feedback on the Preliminary CAP's. Public feedback was also gathered through email. Comments are summarized below by Preliminary Plan Sector; the "Source" column refers to where the comment was heard, using the following abbreviations:

- F1: Forum 1, June 17, 2024 – Los Olivos Community Center – Irvine; District 5
- F2: Forum 2, June 18, 2024 – OC Sailing & Event Center – Dana Point; District 5
- F3: Forum 3, June 24, 2024 – Brea Community Center – District 4
- F4: Forum 4, June 25, 2024 – County Administration Building – District 2
- F5: Forum 5, June 25, 2024 – Heritage Park Library, Irvine – District 3
- F6: Forum 6, June 27, 2024 – Freedom Hall at Mile Square Park – District 1

ENERGY SECTOR				
#	Feedback	Response	Final Response upon County Consideration	Source
1	**Finding local and reputable contractors is a barrier to solar installation**	Comment will be incorporated into next version of the Plan in Draft Measure 4 and/ or Draft Measure EJ5	Opportunities to improve building owners' awareness of contractors added to C-EJ5.	F2
2	**Contradictory opinions about buying solar panels vs. leasing**	Comment will be incorporated into next version of the Plan in Draft Measure 4	The County will be compiling resources related to tax incentives, grants, and any funding opportunities available to public and private entities. Please see measure C-E3 for more information about solar. Note that measures have been renumbered in the final version of this Plan.	F2
3	**Cost a barrier for household solar and battery storage**	Comment will be incorporated into next version of the Plan in Draft Measure 4	The County will be compiling resources related to tax incentives, grants, and any funding opportunities available to public and private entities. Please see measure C-E3 for more information about solar. Note that measures have been renumbered in the final version of this Plan.	F4, F5, F6
4	**Costs of housing maintenance (i.e. asbestos removal, roof replacement) preventing energy upgrades**	Comment will be incorporated into next version of the Plan in Draft Measure E4	The County will be compiling resources related to tax incentives, grants, and any funding opportunities available to public and private entities. Please see measure C-E1 for more information about building retrofits. Note that measures have been renumbered in the final version of this Plan.	F3, F4, F5
5	**Explore other renewables such as geothermal.**	This concept is not being considered currently	Addressed in Initial Response.	F1

ENERGY SECTOR				
#	**Feedback**	**Response**	**Final Response upon County Consideration**	**Source**
6	**Ways to have a Greener OC include joining/ rejoining Orange County Power Authority (OCPA)**	Comment noted	Addressed in Initial Response.	F3, F4, F5, F6
7	**Includes hydrogen blending**	Comment will be evaluated in next version of Plan	Hydrogen blending is not included in the current version of the CAP.	F6
8	**Consider incentivizing electrification through OCHA**	Comment will be incorporated into next version of Plan	The County is not planning on joining OCPA at this time.	F3
9	**The community needs access to microgrid storage.**	Comment will be evaluated in next version of Plan	County agrees, measure CE-3 includes battery storage aimed improving grid resilience.	F1

MOBILITY SECTOR				
#	Feedback	Response	Final Response upon County Consideration	Source
10	**Up-front costs were identified as barriers to EV ownership at all forums**	Comment will be incorporated in future versions of Plan	The County will be compiling resources related to tax incentives, grants, and any funding opportunities available to public and private entities. Please see measure C-M1 for more information about EVs. Note that measures have been renumbered in the final version of this Plan.	F1, F2, F6
11	**Lack of access to charging was identified as a barrier to EV use in all forums**	Comment currently included in Plan, see Draft Measure M2	The County will continue to explore the implementation of publicly available EV charging, however, performance goals will not be set at this time.	
12	**Lack of access to charging infrastructure for renters specifically was highlighted as a gap**	Comment will be incorporated into future version of Plan in Draft Measure M2	The County will continue to explore the implementation of publicly available EV charging, however, performance goals will not be set at this time.	F1, F2, F6
13	**Charging at work should also be an option since it's during hours when renewables can be maximized; workplace identified with an EV charger from funds from the Inflation Reduction Act**	Comment will be incorporated into future version of Plan in Draft Measure M2	See Measure C-M1, Expand publicly-accessible EV Charging Infrastructure	F1, F6
14	**Need more EV chargers in public places**	Comment currently included in Plan, see Draft Measure M2	See Measure C-M1 Expand publicly-accessible EV Charging Infrastructure	F3, F6

MOBILITY SECTOR				
#	**Feedback**	**Response**	**Final Response upon County Consideration**	**Source**
15	**Many respondents stated safety concerns as a barrier to biking, need for better protected bike lanes, vegetative buffers**	Comment will be incorporated into future version of Plan in Potential Action M5.1	Phase 2 CAP includes action item C-M2.1, Evaluate opportunities to support and expand active transportation infrastructure to major destinations within unincorporated areas. Implementation of this action would include ensuring safety of bicyclists.	F1, F2, F6
16	**Safety concerns also expressed as a barrier to walking, requesting more vegetative buffers and improved connectivity across open spaces**	Comment will be incorporated into future version of Plan in Potential Action M5.1	Phase 2 CAP includes action item C-M2.1, Evaluate opportunities to support and expand active transportation infrastructure to major destinations within unincorporated areas. Implementation of this action would include ensuring safety of pedestrians.	F2
17	**Need expanded bike lanes, some specific locations identified such as lane around Mile Square Park**	Comment currently included in Plan, see Potential Action M5.1. Specific locations will be discussed when developing an implementation plan for the final Action.	Phase 2 CAP includes action item C-M2.1, Evaluate opportunities to support and expand active transportation infrastructure to major destinations within unincorporated areas. Implementation of this action would include expansion of bike lanes.	F4, F6

MOBILITY SECTOR				
#	**Feedback**	**Response**	**Final Response upon County Consideration**	**Source**
18	**Need safe bike storage at end destinations**	Comment will be incorporated into future version of Plan in Potential Action M5.1	Phase 2 CAP includes action item C-M2.1, Evaluate opportunities to support and expand active transportation infrastructure to major destinations within unincorporated areas. Implementation of this action may include installation of bike lockers acks.	F6
19	**One suggested strong quantifiable VMT targets to hit, especially in low-income communities.**	Comment currently included in Plan, see Draft Measure M4, M5, and EJ4	Suggestions noted. Phase 2 CAP includes measures C-M2.1 through C-M2.3 which aim to reduce VMT through alternative means of transportation and land use density, including within low-income communities. M-M2 aims to reduce County operational VMT.	F1
20	**Need more rail to connect to LA Metro, suggested building rail rather than expanding freeways.**	Comment will be considered for future version of Plan	Suggestion noted. Phase 2 CAP includes measures C-M2.1 through C-M2.3 which aim to reduce VMT through alternative means of transportation, expanded transit service, and land use density. The County does not have jurisdiction over the expansion of rail systems.	F1, F2
21	**Request for expanded bus service.**	Comment currently included in Plan, see Potential Action M5.2	Suggestion noted. Phase 2 CAP includes measure C-M2.2 which aims to coordinate with public transportation agencies to expand transit service and frequency.	F1, F6

MOBILITY SECTOR				
#	Feedback	Response	Final Response upon County Consideration	Source
22	**Change the perception that public transit is not safe.**	Comment will be incorporated into future version of Plan in Potential Action M5.2	Suggestion noted and the County agrees. Phase 2 CAP includes measure C-M2.2 which aims to coordinate with public transportation agencies to expand transit service and frequency. Increasing transit service is crucial to expose a larger number of people to public transportation and influence public perception on the safety of transit.	F1
23	**Change the perception that public transit is not safe.**	Comment will be incorporated into future version of Plan in Potential Action M5.2	Suggestion noted and the County agrees. Phase 2 CAP includes measure C-M2.2 which aims to coordinate with public transportation agencies to expand transit service and frequency. Increasing transit service is crucial to expose a larger number of people to public transportation and influence public perception on the safety of transit.	F1
24	**Look at the Laguna Beach van service.**	Comment will be considered for future version of Plan	Suggestion noted. Phase 2 CAP includes measure C-M2.2 which aims to coordinate with public transportation agencies to expand transit service and frequency.	F1
25	**High-density housing should be near amenities and public transit.**	Comment currently included in Plan, see Potential Action M5.4 and Draft Measure EJ4	Suggestion noted. Phase 2 CAP includes measure C-M2.3 which aims to increase high-density, transit-oriented development.	F1
26	**Build Regional Housing Needs Allocation up, not out.**	Comment currently included in Plan, see Potential Action M5.4	Suggestion noted. Phase 2 CAP includes measure C-M2.3 which aims to increase high-density, transit-oriented development.	F1

MOBILITY SECTOR				
#	**Feedback**	**Response**	**Final Response upon County Consideration**	**Source**
27	**Request for free bus passes.**	Comment will be considered for future version of Plan	While there may be programs that already exist, the County does not have the jurisdictional authority in this area.	F2
28	**Better information on bus routes, more frequent bus routes and some type of link to Union Station and the IE is needed.**	County will work with OCTA to investigate including in next version of Plan	Suggestion noted. Phase 2 CAP includes measure C-M2.2 which aims to coordinate with public transportation agencies to expand transit service and frequency. OCTA bus services currently connect to a number of AMTRAK and Metrolink rail stations that provide connections to Union Station and the Inland Empire.	F2
29	**Two respondents adamantly said they would not recommend an EV.**	Comment noted	Addressed in Initial Response.	F2
30	**One respondent said nothing would convince them to carpool.**	Comment noted	Addressed in Initial Response.	F2
31	**Environmental concerns with creating (and then ultimately disposing) of large batteries, need better disposal options.**	Comment noted and County agrees, will support future efforts to improve production and disposal of batteries	Addressed in Initial Response.	F2, F5

RESOURCE RECOVERY AND WASTE				
#	**Feedback**	**Response**	**Final Response upon County Consideration**	**Source**
32	**Green bins are a waste of resources and money in Irvine. The green waste creates odor. May be more useful if it can be picked up every 2-3 days.**	Comment noted	Addressed in Initial Response.	F1
33	**Many questions about whether recycled materials are being recycled.**	Comment will be incorporated into future version of Plan in Draft Measure RRW1	Materials are being recycled pursuant to California State mandates. For information about the County's Waste Diversion Operations, please see M-RRW1. Note that measures have been renumbered in the final version of this Plan.	F1
34	**Multiple comments (including unincorporated residents) requesting more information about curbside composting operations.**	Comment will be incorporated into future version of Plan in Draft Measure RRW1	Suggestion noted. Phase 2 CAP includes measure C-RRW1 which aims to improve diversion through various methods, including education and awareness of existing programs.	F1
35	**Confusion expressed about difference between organic and recyclable in F1. In F2, respondents said they were aware of recycling goals and indicated that they knew they were required to put food in the green waste.**	Comment currently in Plan, see Potential Action RRW1.3	Suggestion noted. Phase 2 CAP includes measure C-RRW1 which aims to improve diversion through various methods, including education on proper disposal sorting.	F1, F2

RESOURCE RECOVERY AND WASTE				
#	Feedback	Response	Final Response upon County Consideration	Source
36	**Question about whether Cal Recycle has a dashboard to see how cities are doing with 1383 compliance?**	Comment will be considered for future versions of Plan	A SB 1383 compliance dashboard is not available; however, CalRecycle has a publicly available list of jurisdictions with approved Notifications of Intent to Comply and Corrective Action Plans. https://calrecycle.ca.gov/organics/slcp/enforcement/noic/	F1
37	**Inconsistencies noted in which communities have or have not received separate bins for green waste (Tustin has not)**	Comment will be incorporated into future version of Plan in Draft Measure RRW1	Green waste bins are provided by cities and are not under the jurisdictional authority of the County. For information about the County's Waste Diversion Programs, please see C-RRW1. Note that measures have been renumbered in the final version of this Plan.	F1
38	**Numerous requests for more information about disposal, including which plastics are recyclable, bioplastic composting, e-waste education, and general recycling guides of what goes where and what cannot be recycled at all**	Comments will be considered in developing the implementation for Potential Action RRW1.3	Suggestion noted. Phase 2 CAP includes measure C-RRW1 which aims to improve diversion through various methods, including education and awareness of existing programs.	F1, F3, F6
39	**Mixed responses in awareness that the County gives away free mulch and compost.**	Comment will be incorporated into future version of Plan in Draft Measure RRW1	Phase 2 CAP includes measure C-RRW1 which aims to improve diversion through various methods, including education and awareness of existing programs.	F1, F2, F6

RESOURCE RECOVERY AND WASTE				
#	**Feedback**	**Response**	**Final Response upon County Consideration**	**Source**
40	**Need education (start with young people) on the importance of sorting trash and a penalty system for not complying.**	Comment will be incorporated into future version of Plan in Draft Measure RRW1	Suggestion noted. Phase 2 CAP includes measure C-RRW1 which aims to improve diversion through various methods, including education on proper disposal sorting.	F2
41	**Building complexes were identified that have no recycling or green waste programs.**	Comment will be incorporated into future version of Plan in Draft Measure RRW1	Green waste bins are provided by cities and are not under the jurisdictional authority of the County. For information about the County's Waste Diversion Programs, please see C-RRW1. Note that measures have been renumbered in the final version of this Plan.	F6
42	**Outreach requested at mobile home parks.**	Comment will be incorporated into future version of Plan in Draft Measure RRW1	OCWR has a robust education and outreach program within the community. Information is also available on the OCWR website. For information about the County's Waste Diversion Programs, please see C-RRW1. Note that measures have been renumbered in the final version of this Plan.	F6

ENVIRONMENTAL JUSTICE				
#	**Feedback**	**Response**	**Final Response upon County Consideration**	**Source**
43	**Incorporate the job training into high school certificate programs to lead to OC jobs straight out of HS.**	Will consider comment in future versions of Plan in Draft Measure EJ5	Partnerships with schools is included in Action C-EJ5.1.	F1
44	**More cities need programs like Costa Mesa Bridge Program.**	Will consider comment in future versions of Plan in Draft Measure EJ5	Noted as a model program to reference in implementation of C-EJ5 – Expand and Promote Workforce Development in Green Industries.	F1
45	**Unfamiliarity with energy efficiency rebate programs, need expanded outreach and education.**	Will incorporate comment into future version of Plan in Draft Measure EJ3	Question for Tara: is the County planning to compile resources on financial assistance for different stakeholders?	F1
46	**Creation of community gardens.**	Will incorporate feedback into future version of Plan in Draft Measure EJ1	Development of community gardens included in Action C-EJ1.5.	F1, F6
47	**Creation of youth advisory groups similar to LA County.**	Will consider comment in future version of Plan	The County will be pursuing this upon the adoption of the CAP and the certification of the CEQA document.	F1
48	**Community pools should be opened.**	Will consider comment in future version of Plan	Pools included as cooling resources in heat resilience measure.	F2
49	**Trash and debris along the street make it hard to walk and exercise.**	Will incorporate feedback into future version of Plan in Draft Measure EJ2	Condition review of sidewalks added to C-EJ2.2.	F2
50	**Plant more trees/tree canopies was suggested several times.**	Comment currently in Plan, see Draft Measure EJ1	The measures have been reorganized in the final version of the plan, please see M-EJ1 and C-EJ1.	F2, F4, F6
51	**Add more parks and outdoor events.**	Comment currently in Plan, see Draft Measure EJ1	The measures have been reorganized in the final version of the plan, please see C-EJ1.	F2

ENVIRONMENTAL JUSTICE				
#	**Feedback**	**Response**	**Final Response upon County Consideration**	**Source**
52	**Assistance needed for low-income residents make energy efficient purchases, including appliances; need expanded outreach and education.**	Will incorporate comment into future version of Plan in Draft Measure EJ3	Comment included in final plan in C-EJ3 – Promote Building Retrofits Located in Underserved Communities. The County will be compiling resources related to tax incentives, grants, and any funding opportunities available to public and private entities.	F4, F6
53	**Mixed familiarity with County's workforce training programs.**	Outreach and education will be included in implementation planning for Draft Measure EJ5	Comment added to C-EJ5.3	F6
54	**Suggested multi-lingual training programs.**	Comment will be included in future version of Plan in Draft Measure EJ5	Spanish curriculum to be added and expanded as feasible to C-EJ5.1.	F6
55	**Mixed awareness of assistance through OCPA and SCE.**		The County will be compiling resources related to tax incentives, grants, and any funding opportunities available to public and private entities.	F6
56	**Help incentivize community buildings.**		The County will be compiling resources related to tax incentives, grants, and any funding opportunities available to public and private entities.	F5
57	**Moving oil drilling away from homes, assist communities remove lead from soil**		The County has limited jurisdiction in this area. The CAP will address the public health risks due to the presence of lead within buildings, which pose the largest risk.	F6

ENVIRONMENTAL JUSTICE				
#	Feedback	Response	Final Response upon County Consideration	Source
58	**F1: Emotional anxiety, indoor air pollution, asthma (caused by methane gas-powered buildings), and chronic cough. F2: Heat and asthma and allergies were the health problems encountered. F6: Health problems include heat stroke, poor air quality, and health impacts from pesticide use.**	Comments will be considered in future iteration of Plan 92	Comments added to vulnerability assessment, see appendix.	F1, F2, F6

NATURAL RESOURCES				
#	Feedback	Response	Final Response upon County Consideration	Source
59	**Use drought-friendly plants**	Comment will be considered in future version of Plan in Draft Measure NR4	Comment noted.	F1
60	**More green spaces in low-income areas**	Comment currently in Plan, see Draft Measure EJ1	The measures have been reorganized in the final version of the plan, please see C-EJ1.	F1
61	**Challenges include greenwashing and invasive species**	Comment noted	Addressed in Initial Response.	F1
62	**Challenges identified of pollution, pesticides, run- off, and harmful chemicals, need for regulation**	Comment noted	Addressed in Initial Response.	F1, F6
63	**Terraces over garages can creates gardens, shading and allow for charging.**	Comment will be considered in future version of Plan	Comment noted.	F1
64	**Mustard removal will allow for more native plants and animals to move in.**	Currently included in Plan, see Potential Action NR4.2	The measures have been reorganized in the final version of the plan, please see C-NR4.2.	F1
65	**Create Miyawaki urban forests to assist with biodiversity.**	Comment will be considered in future version of Plan	As part of the CAP, the County is developing an Urban Forest Master Plan.	F1

NATURAL RESOURCES				
#	Feedback	Response	Final Response upon County Consideration	Source
66	**F1: The most important ecosystems are the watersheds, oceans, beaches, OC Parks, state parks, wetlands and chaparral. F2: The most important natural resources are the beach, mature trees, flowing water in the Trabuco watershed, poppies in open spaces, chaparral shrubland, riparian corridors, Laguna Canyon and greenbelt, Laguna Beach and Marine Protected Areas.**	Comment noted	Addressed in Initial Response.	F1, F2
67	**F2: The biggest threats facing our natural resources were coastal erosion, tree removal, invasive plants, and geothermal solar radiation management.**	Comment noted	Addressed in Initial Response.	F2
68	**Policies or initiatives you would like to see implemented include more laws and protections of shared space, more protected green space, more enforcement and awareness about regulations pertaining to natural resources and outreach to get citizens involved in environmental stewardship**	Will be considered in next iteration of Plan	Comment noted.	F5

NATURAL RESOURCES				
#	**Feedback**	**Response**	**Final Response upon County Consideration**	**Source**
69	**The most important natural resources are Mile Square Park, Santa Ana River, Chino Hills State Park and Coyote Creek.**	Comment noted	Addressed in Initial Response.	F6
70	**Ideas to promote environmental stewardship include getting children involved**	Will consider comment in future version of Plan	The County agrees and will be pursuing establishing a youth advisory group.	F6
71	**Mixed responses in attendees who have implemented water conservation practices**	Comment noted	Addressed in Initial Response.	F6
72	**Challenges facing our natural resources include citizens not clearing their brush or being responsible with their trash, over building our region, and bark beetles.**	Comment will be considered in future version of Plan	Agree, the County is faced with diverse resource challenges.	F6
73	**Replace concrete with green space**	Reference with measure in EJ	C-EJ1 expanded to include green space in addition to open space. Heat resilience measure includes exploring opportunities for pavement removal and re-vegetation.	F5
74	**Expand OC groundwater replenishment system to all of OC**	Comment noted, and will be investigated in future version of Plan	While the County values this cause, it is outside the scope of a Climate Action Plan.	F5
75	**Re-naturalization of the Santa Ana River in collaboration with the Indigenous people**	Comment noted and will be considered in future version of Plan	Comment noted.	F5"
76	**Multiple comments to fund Indigenous people to restore their land and conserve natural resources**	Comment will be incorporated into future version of Plan	Comment noted.	F5, F6

RESILIENCE				
#	Feedback	Response	Final Response upon County Consideration	Source
89	**Water reduction ideas shared, including changing systems to drip irrigation, removing grass, water-conservation appliances, more information on local ecology**	Comment will be considered in future version of Plan in Draft Measure NR4	Addressed in C-NR1 and C-NR4.	F2
90	**Update County's emergency plan**	Currently included in Plan, see Draft Measures R2 and R3	The measures have been reorganized in the final version of the plan, please see C-R2 and C-R3.	F2
91	**Respondents stated that the go to the library or the beach during extreme heat**	Comment will be incorporated into future version of Plan in Potential Action R2.1	Heat resilience measure includes details about cooling centers and areas of respite.	F6
92	**Educating community about the County's resiliency plans**	Comment will be incorporated into future version of Plan	Community engagement is a component of all plans included in the resilience measures.	F6
93	**Gets information from Alert OC, one through phone alerts, others through the news and social media**	Comment will be considered in future version of Plan in Draft Measure R2 and R3	Comment incorporated into to emergency response action.	F6

RESILIENCE				
#	Feedback	Response	Final Response upon County Consideration	Source
94	**F1: The County is most vulnerable to fire and drought. F2: Community is most vulnerable to climate change from coastal erosion at San Clemente and Laguna Beach blufftop erosion, flooding, fires, air pollution contributing to chronic cough, biodiversity and habitat loss, increase of predators and invasive plants. F6: Respondents felt most vulnerable to flooding, extreme heat, fires, and poor air quality.**	Comments noted	Addressed in Initial Response.	F1, F2, F6

CLIMATE ACTION PLAN
PHASE 2 - 2026

Appendix E: References

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Agenda Item

AGENDA STAFF REPORT

ASR Control 26-000018

MEETING DATE:	01/27/26
LEGAL ENTITY TAKING ACTION:	Board of Supervisors
BOARD OF SUPERVISORS DISTRICT(S):	All Districts
SUBMITTING AGENCY/DEPARTMENT:	OC Waste & Recycling (Approved)
DEPARTMENT CONTACT PERSON(S):	Tom Koutroulis (714) 834-4122 Tara Tisopulos (714) 290-0446

SUBJECT: Adopt the County of Orange Climate Action Planning Document

CEO CONCUR	COUNTY COUNSEL REVIEW	CLERK OF THE BOARD
Concur	No Legal Objection	Discussion 3 Votes Board Majority

Budgeted: N/A **Current Year Cost:** N/A **Annual Cost:** N/A

Staffing Impact: No **# of Positions:** **Sole Source:** N/A

Current Fiscal Year Revenue: N/A

Funding Source: N/A **County Audit in last 3 years:** No

Levine Act Review Completed: N/A

Prior Board Action: 9/24/2024 #26

RECOMMENDED ACTION(S):

1. Find that the proposed project is Statutorily Exempt from CEQA pursuant to Sections 21083 and 21150 of the Public Resources Code and Section 15262 of the CEQA guidelines.

2. Adopt the County of Orange Climate Action Planning Document. Direct staff to begin the Implementation Phase and analysis under the California Environmental Quality Act.

SUMMARY:

The Climate Action Plan at the County level is a proposed structured approach to reducing greenhouse gas emissions, preparing for climate impacts and promoting sustainability across the County.

BACKGROUND INFORMATION:

The County of Orange (County) Climate Action Plan (CAP) has progressed through two primary phases. Phase 1, referred to as the Preliminary CAP, was presented to the Board of Supervisors on September 24, 2024, as a Receive and File item. This initial phase established the technical and analytical foundation of

the plan, including the identification of key sectors and emission sources to guide future climate actions. Phase 2, the current and more comprehensive phase, builds upon this foundation by outlining a detailed, actionable framework for reducing Greenhouse Gas (GHG) emissions. It incorporates emissions inventories and forecasts, quantifies possible reduction measures, sets performance goals, identifies four key municipal measures and presents potential targeted strategies for both County municipal operations and unincorporated areas of the County. The baseline for the plan is the 2018 GHG emissions inventory, developed in accordance with the Local Government Operations Protocol (LGO Protocol), which accounts for carbon dioxide, methane and nitrous oxide, reported in metric tons of carbon dioxide equivalents.

In addition to emissions reductions strategies, a key addition in Phase 2 is the Climate Vulnerability Assessment (CVA), which builds on the County's existing hazard planning frameworks, including the Local Hazard Mitigation Plan, the Excessive Temperature Emergency Annex, Caltrans District 12's Vulnerability and Adaptation Reports and the South Orange County Coastal Resilience Strategic Plan. The CVA evaluates local climate risks such as extreme heat, wildfires and smoke, air pollution, sea level rise and flooding within the broader context of national trends. Based on the findings of the CVA, several CAP measures have been updated to better align with identified vulnerabilities and support the County's overall climate resilience objectives.

The municipal component of the CAP describes proposed target emissions from County operations and County-owned facilities. Once approved by the Board, the plan will move toward implementation and following review under the California Environmental Quality Act (CEQA), can serve as a qualified GHG reduction plan enabling more efficient environmental review for future site-specific projects. The municipal section identifies four core municipal measures for future implementation after full CEQA review, which together account for almost 98% of projected municipal emissions reductions. Each proposed municipal measure is supported by detailed future implementation pathways, including assigned lead agencies, potential partner organizations and funding sources. These strategies span multiple operational areas, including energy efficiency, transportation, solid waste management, environmental justice, natural resource conservation and climate resilience.

The community component of the CAP addresses GHG emissions within the unincorporated areas of the County. Unlike the municipal section, it does not include proposed targets and will not be implemented as a CEQA qualified portion of the plan due to the County's limited jurisdiction over certain emission sources such as private vehicle use, energy consumption in privately owned buildings and land use decisions managed by other entities. Instead, this component proposes that the County pursue a voluntary, incentive-based and partnership-driven approach that aligns with state and regional climate goals. This strategy will allow the County to implement locally appropriate measures, provide co-benefits to the community and build the foundation for future climate planning without imposing new mandates or regulations. It also offers baseline data, context and strategic direction for identifying priority areas and engaging in long-term planning efforts.

The County, through its 22 departments and respective divisions, functions as a regional service provider and planning agency, delivering essential services including public safety, health, social services, waste management and aviation. The CAP demonstrates the County's commitment to reducing GHG emissions, improving air quality, protecting vulnerable populations and natural resources and preparing for the growing risks associated with climate change. It also strengthens the County's ability to pursue state and federal funding for climate initiatives while reinforcing its leadership role in addressing environmental challenges. Orange County currently receives one of the lowest contributions of tax dollars coming into the state at only $0.05 per dollar whereas other counties receive $0.14 per dollar. This CAP serves as the

County's strategic approach to reducing costs, implementing innovative concepts and competing for public dollars. It seeks to improve the County's fiscal future, while improving the lives of its residents .

The County ensured a transparent and inclusive climate planning process by presenting the Preliminary CAP through public forums in each Supervisorial District and a countywide forum in 2024, followed by additional community and stakeholder engagement in 2025. Feedback gathered during these events was incorporated into the evolving plan to reflect local priorities and concerns. These efforts demonstrate the County's commitment to a collaborative, inclusive and transparent climate planning process.

The Implementation Phase of the CAP will finalize emission targets and implementation plans alongside appropriate CEQA review. The final CAP and CEQA documents will be presented to the Board in the future. Following Board approval, the CAP will be CEQA Qualified, which will set target levels of GHG emissions below which a project's contribution is considered not cumulatively considerable. This will allow agencies to rely on the CAP and CEQA document for implementation projects included in the CAP, as well as for other applicable projects.

Compliance with CEQA: The Board of Supervisors' approval of this plan is not committed to any course of action until the CEQA analysis is complete. As a planning document it is intended to guide future implementation actions yet to be taken. The proposed project is Statutorily Exempt from CEQA pursuant to State CEQA Guidelines Section 15262 as a feasibility and planning study. Following Board approval of the planning document, the municipal components of the adopted CAP will undergo a full evaluation under CEQA The CAP as approved will not be legally binding on later activities. It is anticipated that a final CAP and appropriate CEQA document will be brought to the Board for final approval in the future.

FINANCIAL IMPACT:

N/A

STAFFING IMPACT:

N/A

ATTACHMENT(S):

Attachment A - Climate Action Plan

Continuation or Deletion Request

Date: **3/4/2026**

To: Clerk of the Board of Supervisors

From: **Supervisor Vicente Sarmiento, Second District**

Re: ASR Control #: N/A, Meeting Date 3/10/2026 Agenda Item No. # S17B

Subject: **Appoint Todd Cottle to the Orange County Development Processing Review Committe**

☐ Request to continue Agenda Item No. # _____ to the _____ Board Meeting.

Comments:

☒ Request deletion of Agenda Item No. # S17B

Comments:

RECEIVED
2026 MAR -4 PM 12:57
CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

RECEIVED
2026 FEB 25 PM 3:51
CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

Board of Supervisors

Memorandum

To: Robin Stieler, Clerk of the Board

From: Supervisor Vicente Sarmiento, 2nd District

Date: March 10, 2026

S17B

RE: **Add Supplemental Item to March 10, 2026, Board Meeting Agenda – Appoint Todd Cottle to the Orange County Development Processing Review Committee.**

Supervisor Sarmiento requests a supplemental item be placed on the March 10, 2026, Board of Supervisors agenda to appoint Todd Cottle to the Orange County Development Processing Review Committee for a term concurrent with Supervisors term of office. Todd Cottle will be appointed to a vacant position last filled by Nathan Searles. Concurrence from Supervisor Wagner as Todd Cottle is a resident of Orange County's Third District.

cc: Yasie Goebel, Chief of Staff, BOS-2
Valerie Sanchez, Chief Deputy Clerk, COB

Written Concurrence for Out-of-District Appointment to Board, Commission, or Committee

Supervisor Proposing Appointment: Vicente Sarmiento Date: 3/10/2026

Board, Commission, or Committee: Development Process Review Committee

Proposed Appointee's Name: Todd Cottle

Proposed Appointee's City of Residence: Santa Ana

Concurring Supervisor's Signature:

Concurring Supervisor:

APPLICATION FOR COUNTY OF ORANGE BOARD, COMMISSION OR COMMITTEE

(FOR COUNTY USE ONLY)

Return to: Clerk of the Board of Supervisors
400 W. Civic Center Dr., 6th Floor
Santa Ana, California 92701
Email: response@cob.oc.gov
Website: https://cob.oc.gov/

Instructions: Please complete each section below. Be sure to enter the title of the Board, Commission or Committee for which you desire consideration and attach a resume. For information or assistance, please contact the Clerk of the Board of Supervisor's Office at (714) 834-2206. Please print in ink or type.

NAME OF BOARD, COMMISSION, OR COMMITTEE TO WHICH YOU ARE APPLYING FOR MEMBERSHIP. SEE LIST AT https://cob.oc.gov/boards-commissions-committees/bcc-name-list-and-contact-information

Development Process Review Committee

SUPERVISORIAL DISTRICT IN WHICH YOU RESIDE: ☐ First ☐ Second ☒ Third ☐ Fourth ☐ Fifth

APPLICANT NAME AND RESIDENCE ADDRESS:

Todd Cottle
First Name Middle Name Last Name

Santa Ana CA
Street Address City State Zip Code

Home Phone Number Cell Phone Number

Email Address

CURRENT EMPLOYER: _____

OCCUPATION/JOB TITLE: _____

BUSINESS ADDRESS: _____

BUSINESS PHONE NUMBER: _____

☑ **EMPLOYMENT HISTORY:** Please attach a resume to this application and provide any information that would be helpful in evaluating your application. **A RESUME MUST BE ATTACHED TO YOUR APPLICATION.**

ARE YOU A CITIZEN OF THE UNITED STATES: ■ YES ☐ NO

IF NO, NAME OF COUNTRY OF CITIZENSHIP: _____

ARE YOU A REGISTERED VOTER? ■ YES ☐ NO

IF YES, NAME COUNTY YOU ARE REGISTERED IN: Orange County, CA

LIST ALL CURRENT PROFESSIONAL OR COMMUNITY ORGANIZATIONS AND SOCIETIES OF WHICH YOU ARE A MEMBER.

ORGANIZATION/SOCIETY	FROM (MO./YR.)	TO (MO./YR.)
Orange County Building Industry Association	2020	Current
HomeAid Orange County	3/2025	Current

WITHIN THE LAST FIVE YEARS, HAVE YOU BEEN AFFILIATED WITH ANY BUSINESS OR NONPROFIT AGENCY(IES)? ■ **YES** □ **NO**

DO YOU OWN REAL OR PERSONAL PROPERTY OR HAVE FINANCIAL HOLDING WHICH MIGHT PRESENT A POTENTIAL CONFLICT OF INTEREST? ■ **YES** □ **NO**

HAVE YOU BEEN CONVICTED OF A FELONY OR MISDEMEANOR CRIME SINCE YOUR 18TH BIRTHDAY? YOU ARE NOT REQUIRED TO DISCLOSE ANY OF THE FOLLOWING: ARRESTS OR DETENTIONS THAT DID NOT RESULT IN A CONVICTION; CONVICTIONS THAT HAVE BEEN JUDICIALLY DISMISSED, EXPUNGED OR ORDERED SEALED; INFORMATION CONCERNING REFERRAL TO AND PARTICIPATION IN ANY PRETRIAL OR POSTRIAL DIVERSION PROGRAM; AND CERTAIN DRUG RELATED CONVICTIONS THAT ARE OLDER THAN TWO YEARS, AS LISTED IN CALIFORNIA LABOR CODE § 432.8 (INCLUDING VIOLATIONS OF CALIFORNIA HEALTH AND SAFETY CODE SECTIONS 11357(B) AND (C), 11360(C) 11364, 11365 AND 11550 – AS THEY RELATE TO MARIJUANA)?

□ **YES** ■ **NO**

IF YES, PLEASE EXPLAIN AND ATTACH ADDITIONAL SHEETS, IF NECESSARY.

I am interested in serving on the DPRC because I want to assist the County in its continued improvement efforts.

PLEASE BRIEFLY EXPLAIN WHY YOU WISH TO SERVE ON THIS BOARD, COMMITTEE, OR COMMISSION. ATTACH ADDITIONAL SHEETS, IF NECESSARY.

See attached.

DATE: 2/23/26 **APPLICANTS SIGNATURE:** _____

CLERK OF THE BOARD OF SUPERVISORS USE ONLY – DO NOT WRITE BELOW THIS LINE

Date Received: _____ Received by: _____
Deputy Clerk of the Board of Supervisors

Date referred: _____

To: □ BOS District 1 □ BOS District 2 □ BOS District 3 □ BOS District 4 □ BOS District 5

□ All BOS □ BCC Contact Person Name _____

Todd R. Cottle

EXPERIENCE

C & C Development- Tustin, California- Principal 2001-Current
C&C Construction Services, Inc.- Tustin, California- President

- Real estate development firm focused on the development of affordable multi-family properties.
- Experienced in using federal low income tax credits, tax exempt bond financing, HOME and CDBG funds, local agencies loans or grants and conventional financing to acquire, construct or renovate its affordable residential communities.
- Oversees acquisitions, entitlement, financial feasibility, financing applications, project estimating and construction.

Advanced Property Services, LLC- Orange, California 1994 - 1998
Asset Manager, Construction/Maintenance Director

- Full service property management firm responsible for all aspects of property management and accounting services, for over 900 residential apartments and commercial properties, including low-income/rent restricted apartments owned by Orange Housing Development Corporation, a 501(c)3 non-profit housing corporation.
- Worked in the accounting department charting rent rolls, collections, delinquents and preparation of the monthly operation packages for owners of the properties.
- Worked in construction rehab of multifamily apartment units, working closely with sub-contractors and unit residents. Extensively involved with the rehabilitation of Courtyard Apartments, a 256 unit complex in the City of Orange and the Cornerstone Village project in Santa Ana.

Orange Housing Development Corporation- Orange, California 1998 - 1999
Assistant to Chief Executive Officer

- Worked as staff assistant to Chief Executive Officer in operations of the company.
- A 501(c)3 Non-Profit Housing Corporation with over 2,700 apartments in the State of California.
- Prepared initial rehab budgets, assisted in gap analysis and participated in property acquisition and initial unit inspections.

EDUCATION

University of Southern California, Los Angeles, CA
Master of Real Estate Development, Graduation May 2003

California Polytechnic State University, San Luis Obispo, CA
Bachelor of Science: Business Administration, Fall 2001
Major: **Finance and Accounting** Minor: **Economics**

PROFESSIONAL AFFILIATIONS

Real Estate Brokers License
Southern California Association of Non-Profit Housing
Building Industry Association
HomeAid Orange County
Licensed General Contractor

AFFORDABLE MULTIFAMILY TRANSACTIONS

- Santiago Villas Senior Apartments, Santa Ana, CA- 89 unit affordable senior apartment community.
- Hoover Apartments, Orange, CA- 40 unit affordable family apartment community.
- Ross & Durant Apartments, Santa Ana, CA- 49 unit affordable family apartment community.
- Wilshire & Minnie Apartments, Santa Ana, CA- 144 unit affordable family apartment community.
- Townsend & Raitt Apartments, Santa Ana, CA- 51 unit affordable family apartment community,
- Standard & Borchard Apartments, Santa Ana, CA- 20 unit family apartment community.
- Pacific Court Apartments, Huntington Beach, CA- 48 unit family apartment community.
- 1414 Minnie Apartments, Santa Ana, CA- 20 unit family apartment community.
- Lacy & Raitt Apartments, Santa Ana- 35 unit affordable family apartment community.
- 1410 Durant, Santa Ana – 14 unit affordable family apartment community.

- Citrus Grove, Orange – 57 unit affordable family apartment community.
- Richman Court, Fullerton- 16 unit affordable family apartment community.
- Buena Vista, Orange- 17 unit affordable family apartment community.
- Roberta, Fullerton- 16 unit affordable family apartment community.
- Serrano Woods, Orange- 63 unit affordable family apartment community.
- Santa Ana Infill, Santa Ana- 51 unit affordable family apartment community.
- Garnsey, Santa Ana- 26 unit affordable family apartment community.
- Parkview, San Marcos- 84 unit affordable family apartment community.
- Carol/Harding Apartments, Carlsbad- 50 unit affordable family apartment community.
- Yorba Linda Condominiums- 57 affordable condominium units.
- Citrus Circle, Corona- 61 unit affordable family apartment community.
- Springville, Camarillo- 60 unit affordable family apartment community.
- Andalucia, Santa Ana- 70 unit affordable family apartment community.
- Lemon Grove, Orange- 82 unit affordable family apartment community.
- Depot at Santiago, Santa Ana- 70 unit affordable family apartment community.
- Derian, Irvine- 80 unit affordable family apartment community.
- Villa Pacifica II, Rancho Cucamonga- 60 unit affordable senior community.
- Meridian, Corona-85 unit affordable family apartment community.
- Mission Trail, Lake Elsinore-81 unit affordable family apartment community.
- El Dorado II, San Marcos-84 unit affordable family apartment community.
- Altrudy Lane Seniors, Yorba Linda-48 unit affordable senior apartment community.
- The Groves Senior Apartments, San Juan Capistrano-75 unit affordable senior apartment community.
- Valencia Garden, Orange-62 unit affordable family apartment community.
- Pacific Wind, Carlsbad-89 unit affordable family apartment community.
- Meadows Seniors Apartments, Lake Forest-65 unit affordable senior apartment community.
- Cartwright Family Apartments, Irvine-60 unit affordable family apartment community.

PLEASE BRIEFLY EXPLAIN WHY YOU WISH TO SERVE ON THIS BOARD, COMMITTEE, OR COMMISSION. ATTACH ADDITIONAL SHEETS, IF NECESSARY.

I am interested in serving on the Development Process Review Committee as a way to support the County's ongoing efforts to improve its development review process. Through my experience working within the entitlement and development process, I have seen the value of clear communication, consistency, and collaboration. I would like to contribute practical, constructive input that helps the County continue refining its procedures in a way that benefits staff, applicants, and the broader community.

RECEIVED

2026 MAR -5 AM 9:43

CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

S17C

MEMORANDUM

To: Clerk of the Board

From: Supervisor Donald P. Wagner, Third District

Jim Cornell for DW

Date: March 5, 2026

Doug Chaffee

RE: Supplemental Item on the March 10, 2026 Board of Supervisors Meeting

Please add this as a supplemental item for the March 10, 2026, Board of Supervisors meeting:

Approve the sponsorship of the following nonprofits from the Third District event funds:

- The Beacon Church Inc. DBA Love Orange - $500
- California-Nevada District Exchange Clubs Charitable Foundation, Inc. (Exchange Club of Irvine) - $500
- Girl Scouts of Orange County - $650
- Greater Irvine Chamber of Commerce - $3,000
- Mission Viejo Nadadores Foundation - $1,000
- Orange Plaza Traditions (Orange International Street Fair) - $5,000
- Pet Adoption Center of Orange County - $1,000
- Rancho Santa Margarita Chamber of Commerce - $2,000
- Trellis International DBA Love Lake Forest - $500
- Trellis International DBA Love Mission Viejo - $500
- Yorba Linda Sunrise Rotary Foundation - $1,750

Recommended Actions:

1. Approve the addition or revisions of events to the FY 2025-26 County Events Calendar, as set forth in Attachment A, and per Government Code Section 26227, find that the events therein will serve a public purpose of the County of Orange and will meet the social needs of the population of the County, including but not limited to, the areas of health, law enforcement, public safety, rehabilitation, welfare, education, and legal services, and the needs of physically, mentally and financially handicapped persons and aged persons; that County staff and resources may be used in furtherance of such events; and that County staff may solicit donations of funds and services for such events.

2. Authorize Auditor-Controller to make related payments.

Date	Department	Event	Awards to Nonprofits and Community Organizations	Not to Exceed Amount	Location	Organizer	Other County Participants
2026	BOS-3	Love Orange	The Beacon Church Inc. DBA Love Orange	$500	Orange, CA	The Beacon Church Inc. DBA Love Orange	N/A
Mar-26	BOS-3	Exchange Club of Irvine's Irvine Police Department Awards Ceremony	California-Nevada District Exchange Clubs Charitable Foundation, Inc.	$500	Irvine, CA	California-Nevada District Exchange Clubs Charitable Foundation, Inc.	N/A
Mar-26	BOS-3	Orange County's Inaugural National Girl Scout Day Luncheon	Girl Scouts of Orange County	$650	Costa Mesa, CA	Girl Scouts of Orange County	N/A
2026	BOS-3	Greater Irvine Chamber of Commerce	Greater Irvine Chamber of Commerce	$3,000	Irvine, CA	Greater Irvine Chamber of Commerce	N/A
2026	BOS-3	Mission Viejo Nadadores Foundation	Mission Viejo Nadadores Foundation	$1,000	Mission Viejo, CA	Mission Viejo Nadadores Foundation	N/A
2026	BOS-3	Orange International Street Fair	Orange Plaza Traditions	$5,000	Orange, CA	Orange Plaza Traditions	N/A
2026	BOS-3	South County Pet Expo	Pet Adoption Center of Orange County	$1,000	Lake Forest, CA	Pet Adoption Center of Orange County	N/A
2026	BOS-3	Rancho Santa Margarita Chamber of Commerce	Rancho Santa Margarita Chamber of Commerce	$2,000	Rancho Santa Margarita, CA	Rancho Santa Margarita Chamber of Commerce	N/A
2026	BOS-3	Love Lake Forest	Trellis International DBA Love Lake Forest	$500	Lake Forest, CA	Trellis International DBA Love Lake Forest	N/A
2026	BOS-3	Love Mission Viejo	Trellis International DBA Love Mission Viejo	$500	Mission Viejo, CA	Trellis International DBA Love Mission Viejo	N/A
May-26	BOS-3	Yorba Linda Sunrise Rotary Lobsterfest	Yorba Linda Sunrise Rotary Foundation	$1,750	Yorba Linda, CA	Yorba Linda Sunrise Rotary Foundation	N/A

Glossary of Acronyms

BOS-1	Board of Supervisors District 1
BOS-2	Board of Supervisors District 2
BOS-3	Board of Supervisors District 3
BOS-4	Board of Supervisors District 4
BOS-5	Board of Supervisors District 5
TBA	To Be Announced
TBD	To Be Determined
N/A	Not Applicable

Docusign Envelope ID: F52C9DE1-E022-4DDF-A0DB-1B3C524B180C

County Executive Office

Memorandum

RECEIVED
2026 MAR -5 AM 10: 15
CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

March 2, 2026

To: Clerk of the Board of Supervisors

From: Michelle Aguirre, County Executive Officer

Signed by:
Michelle Aguirre
7C8F38F3345C4E4...

Subject: Supplemental Request According to Board Rule 21

S17D

The County Executive Office is requesting a Supplemental Agenda Staff Report for the March 10, 2026, Board Hearing.

Agency: County Executive Office
Subject: Fifth Amendment to Agreement for Employment to Reappoint the Executive Director of OC Ethics
Districts: All Districts

Reason Item is Supplemental: This Agenda Staff Report and attachments were finalized after the filing deadline to the Clerk of the Board.

Justification: Upon direction from the Board of Supervisors, this Agenda Staff Report was finalized after the filing deadline of the Clerk of the Board.

Concur:

Doug Chaffee

Doug Chaffee, Chair of the Board of Supervisors

cc: Board of Supervisors
County Executive Office
County Counsel

Docusign Envelope ID: F52C9DE1-E022-4DDF-A0DB-1B3C524B180C

Agenda Item S17D
Clerk's Use Only

SUPPLEMENTAL AGENDA ITEM
AGENDA STAFF REPORT

MEETING DATE:	03/10/2026
LEGAL ENTITY TAKING ACTION:	Board of Supervisors
BOARD OF SUPERVISORS DISTRICT(S):	All Districts
SUBMITTING AGENCY/DEPARTMENT:	County Executive Office
DEPARTMENT HEAD REVIEW:	Signed by: Michelle Aguirre 7C8F38F3345C4E4... *Department Head Signature*
DEPARTMENT CONTACT PERSON(S):	Jamie Newton (714) 834-2836 Susie Baker (714) 834-2832

RECEIVED
2026 MAR -5 AM 10:15
CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

SUBJECT: Fifth Amendment to Agreement for Employment to Reappoint the Executive Director of OC Ethics

CEO CONCUR	COUNTY COUNSEL REVIEW	CLERK OF THE BOARD
Signed by: Michelle Aguirre 7C8F38F3345C4E4... *CEO Signature*	Approved as to Form DocuSigned by: 570D5... *Action* *County Counsel Signature*	Discussion 3 Votes Board Majority

Budgeted: Yes
Current Year Cost: See Financial Impact Section
Annual Cost: See Financial Impact Section
Staffing Impact: No
# of Positions: N/A
Sole Source: N/A
Current Fiscal Year Revenue: N/A
Funding Source: GF: 100%
County Audit in last 3 years: No
Levine Act Review Completed: N/A
Prior Board Action: 3/28/2023 #43, 3/23/2021 #S44D, 4/28/2020 #48, 9/11/2018 #S28D

RECOMMENDED ACTION(S)

1. Reappoint Denah Hoard as the Executive Director of the Campaign Finance and Ethics Commission effective April 10, 2026.

2. Approve the fifth Amendment to the Agreement for the Employment of the Executive Director of the Campaign Finance and Ethics Commission effective April 10, 2026, extending the terms of the contract until April 7, 2028. Current salary, benefit, and retirement contract provisions will remain unchanged. Ms. Hoard's current negotiated salary is approximately $225,139. The total estimated fiscal year 2025-26 salary and employee benefit cost to the County is $357,517.

SUMMARY:

Approval of the amended agreement with Denah Hoard as the Executive Director of the Campaign Finance and Ethics Commission, at a current annual total compensation of $357,517 including benefits, will

continue to provide for, among other matters, the effective enforcement of the County Campaign Reform Ordinance, the Lobbyist Registration and Reporting Ordinance, the Gift Ban Ordinance and Sections 6 and 9 of the Code of Ethics.

BACKGROUND INFORMATION:

A two-year employment agreement with Denah Hoard for employment as the Director of the Campaign Finance and Ethics Commission was approved on March 14, 2017, executed on April 10, 2017 and expired on April 9, 2021.

A first amendment to modify compensation, benefits and annual leave under the original agreement for Denah Hoard was executed on September 11, 2018.

A second amendment to modify benefits and retirement contributions under the original agreement was approved and executed on April 28, 2020, which allowed for Ms. Hoard to receive the same benefits generally provided to Executive Management (Group II) employees.

A third amendment to modify compensation by including future salary increases as generally provided to Executive Management (Group II) employees and extend the contract term through April 7, 2023, was approved on March 23, 2021, and executed on March 29, 2021.

A fourth amendment to extend the contract term through April 10, 2026, was approved and executed on March 28, 2023.

FINANCIAL IMPACT:

Salary and Benefit appropriations are included in the FY 2025-26 Budget for Budget Control 052, OC Campaign Finance and Ethics Commission, and will be included in the budgeting process for future years.

STAFFING IMPACT:

N/A

ATTACHMENT(S):

Attachment A - Fifth Amended Agreement for Employment of the Director of the Campaign Finance and Ethics Commission.

Docusign Envelope ID: 773151CA-775A-4968-A0D2-E497CD7C8FCA

FIFTH AMENDMENT TO EMPLOYMENT AGREEMENT FOR EXECUTIVE DIRECTOR OF THE CAMPAIGN FINANCE AND ETHICS COMMISSION

This FIFTH Amendment ("FIFTH AMENDMENT") to the Employment Agreement ("AGREEMENT") for the Executive Director of the Campaign Finance and Ethics Commission is made by and between the County of Orange ("COUNTY") and Denah Hoard (hereinafter "Hoard"). The COUNTY and HOARD shall collectively be referred to herein as the "Parties."

ARTICLE I. RECITALS

1.1 **WHEREAS**, by minute order dated March 14, 2017 the, Orange County Board of Supervisors ("BOARD") approved the Employment Agreement for Executive Director of the Campaign Finance and Ethics Commission ("AGREEMENT");

1.2 **WHEREAS,** by minute order dated September 11, 2018, the BOARD approved the First Amendment to the AGREEMENT to modify the compensation, benefits, and annual leave under the AGREEMENT;

1.3 **WHEREAS**, by minute order dated April 28, 2020, the BOARD approved the Second Amendment to the AGREEMENT to modify the benefits under the AGREEMENT;

1.4 **WHEREAS**, by minute order dated March 23, 2021, the Board approved the Third Amendment to the AGREEMENT to modify the compensation and extend the term of the AGREEMENT;

1.5 **WHEREAS,** by minute order dated March 28, 2023, the BOARD approved the Fourth Amendment to the AGREEMENT to extend the term of the AGREEMENT.

1.6 **WHEREAS**, the BOARD has determined that effective March 10, 2026, the terms of the AGREEMENT should be modified as follows:

ARTICLE II. TERMS

NOW THEREFORE, in consideration of the mutual covenants, representations, and promises set forth herein, the parties agree as follows:

2.1 Except as modified in this FIFTH AMENDMENT, all terms of the AGREEMENT shall remain in full force and effect;

2.2 With respect to Section 2 of the AGREEMENT the term is extended to April 7, 2028.

///

//

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ARTICLE III. ACKNOWLEDGEMENT AND CONSENT

By signing below, HOARD and Supervisor Doug Chaffee, Chairman of the Board of Supervisors, acting on behalf of the COUNTY, acknowledge that they each have read and fully understand the terms and conditions of this FIFTH AMENDMENT, and that they consent and agree to each and every term and condition contained herein.

FOR THE COUNTY OF ORANGE:

_____ _____

Chairman Doug Chaffee Date
Supervisor, 4th District
Orange County Board of Supervisors
County of Orange

_____ _____

Denah Hoard Date

Signed and certified that copy of this document
Has been delivered to the Chair of the Board per
G.C. Sec. 25103, Reso 79-1535

Attest:

_____

Robin Stieler
Clerk of the Board of Supervisors
Orange County California

APPROVED AS TO FORM:
Office of the County Counsel
Orange County, California

By DocuSigned by: Leon Page 28B898BECAFE46F...

Leon J. Page
County Counsel

OFFICE OF THE COUNTY COUNSEL
COUNTY OF ORANGE
400 West Civic Center Drive, Suite 202
Santa Ana, California 92701
Direct No.: (714) 834-3303
E-Mail: leon.page@coco.oc.gov

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2026 MAR -5 AM 10: 29
CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

LEON J. PAGE
COUNTY COUNSEL

Agenda Item No. SCS- 2
March 10, 2026

MEMORANDUM

March 5, 2026

TO: Robin Stieler, Clerk of the Board of Supervisors

FROM: Leon J. Page, County Counsel

SUBJECT: Request for Supplemental Closed Session

I am requesting a supplemental closed session on Tuesday, March 10, 2026, to discuss with the Board the status of existing litigation, pursuant to Government Code section 54956.9(d)(1).

Accordingly, please prepare the Agenda Item to read:

> "CONFERENCE WITH LEGAL COUNSEL --
> EXISTING LITIGATION Pursuant to Government Code Section 54956.9(d)(1).
> Name of Case: *Emily Moncur v. County of Orange,* Orange County Superior Court Case No. 30-2025-01504358-CU-PO-CJC.
>
> RECOMMENDED ACTION: Conduct Closed Session."

Thank you.

Leon Page

LJP:vl

cc: Members of the Board of Supervisors
Michelle Aguirre, CEO

OFFICE OF THE COUNTY COUNSEL
COUNTY OF ORANGE
400 West Civic Center Drive, Suite 202
Santa Ana, California 92701
Direct No.: (714) 834-3303
E-Mail: leon.page@coco.oc.gov

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COUNTY OF ORANGE
BOARD OF SUPERVISORS

LEON J. PAGE
COUNTY COUNSEL

Agenda Item No. SCS- 3
March 10, 2026

MEMORANDUM

March 5, 2026

TO: Robin Stieler, Clerk of the Board of Supervisors

FROM: Leon J. Page, County Counsel

SUBJECT: Request for Supplemental Closed Session

I am requesting a supplemental closed session on Tuesday, March 10, 2026, to discuss with the Board the status of existing litigation, pursuant to Government Code section 54956.9(d)(1).

Accordingly, please prepare the Agenda Item to read:

> "CONFERENCE WITH LEGAL COUNSEL --
> EXISTING LITIGATION Pursuant to Government Code Section 54956.9(d)(1).
> Name of Case: *E.M. v. County of Orange,* Orange County Superior Court Case No. 30-2022-01297785-CU-PO-CJC.
>
> RECOMMENDED ACTION: Conduct Closed Session."

Thank you.

Leon Page

LJP:vl

cc: Members of the Board of Supervisors
Michelle Aguirre, CEO

OFFICE OF THE COUNTY COUNSEL
COUNTY OF ORANGE
400 West Civic Center Drive, Suite 202
Santa Ana, California 92701
Direct No.: (714) 834-3303
E-Mail: leon.page@coco.oc.gov

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BOARD OF SUPERVISORS

LEON J. PAGE
COUNTY COUNSEL

Agenda Item No. SCS- 4
March 10, 2026

MEMORANDUM

March 5, 2026

TO: Robin Stieler, Clerk of the Board of Supervisors

FROM: Leon J. Page, County Counsel

SUBJECT: Request for Supplemental Closed Session

I am requesting a supplemental closed session on Tuesday, March 10, 2026, to discuss with the Board the status of existing litigation, pursuant to Government Code section 54956.9(d)(1).

Accordingly, please prepare the Agenda Item to read:

> "CONFERENCE WITH LEGAL COUNSEL --
> EXISTING LITIGATION Pursuant to Government Code Section 54956.9(d)(1).
> Name of Case: *D.R. v. County of Orange, et al.,* Orange County Superior Court Case No. 30-2022-01263856-CU-PA-CJC.
>
> RECOMMENDED ACTION: Conduct Closed Session."

Thank you.

Leon Page

LJP:vl

cc: Members of the Board of Supervisors
Michelle Aguirre, CEO

OFFICE OF THE COUNTY COUNSEL
COUNTY OF ORANGE
400 West Civic Center Drive, Suite 202
Santa Ana, California 92701
Direct No.: (714) 834-3303
E-Mail: leon.page@coco.oc.gov

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CLERK OF THE BOARD
COUNTY OF ORANGE
BOARD OF SUPERVISORS

LEON J. PAGE
COUNTY COUNSEL

Agenda Item No. SCS- 5
March 10, 2026

MEMORANDUM

March 5, 2026

TO: Robin Stieler, Clerk of the Board of Supervisors

FROM: Leon J. Page, County Counsel

SUBJECT: Request for Supplemental Closed Session

I am requesting a supplemental closed session on Tuesday, March 10, 2026, to discuss with the Board the status of existing litigation, pursuant to Government Code section 54956.9(d)(1).

Accordingly, please prepare the Agenda Item to read:

> "CONFERENCE WITH LEGAL COUNSEL --
> EXISTING LITIGATION Pursuant to Government Code Section 54956.9(d)(1).
> Name of Case: *Jennifer Kearns v. County of Orange,* Orange County Superior Court Case No. 30-2021-01194060-CU-OE-NJC.
>
> RECOMMENDED ACTION: Conduct Closed Session."

Thank you.

Leon Page

LJP:vl

cc: Members of the Board of Supervisors
Michelle Aguirre, CEO

OFFICE OF THE COUNTY COUNSEL
COUNTY OF ORANGE
400 West Civic Center Drive, Suite 202
Santa Ana, California 92701
Direct No.: (714) 834-3303
E-Mail: leon.page@coco.oc.gov

LEON J. PAGE
COUNTY COUNSEL

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COUNTY OF ORANGE
BOARD OF SUPERVISORS

Agenda Item No. SCS-6
March 10, 2026

MEMORANDUM

March 5, 2026

TO: Robin Stieler, Clerk of the Board of Supervisors

FROM: Leon J. Page, County Counsel

SUBJECT: Request for Supplemental Closed Session

I am requesting a supplemental closed session on Tuesday, March 10, 2026, to discuss with the Board the status of existing litigation, pursuant to Government Code section 54956.9(d)(1).

Accordingly, please prepare the Agenda Item to read:

> "CONFERENCE WITH LEGAL COUNSEL –
> EXISTING LITIGATION Pursuant to Government Code Section 54956.9(d)(1).
> Name of Case: *Brad Hunter v. County of Orange*,
> WCAB Case: ADJ17485330.
>
> RECOMMENDED ACTION: Conduct Closed Session."

Thank you.

Leon Page

LJP:vl

cc: Members of the Board of Supervisors
Michelle Aguirre, CEO