City of Lemon Grove
City Council Regular Meeting Agenda
Tuesday, April 7, 2020, 6:00 p.m.

Virtual Meeting via Zoom platform
https://www.zoom.us/home?zcid=2478

Meeting Access ID # 619-825-3800
https://us04web.zoom.us/j/6198253800

City Council
Racquel Vasquez, Mayor
Jennifer Mendoza, Mayor Pro Tem
Jerry Jones, Councilmember
David Arambula, Councilmember
Yadira Altamirano, Councilmember

A public agenda packet is available for review on the City's website

Public Participation
In accordance with Executive Orders N-25-20, N-29-20 and N-35-20 paragraph 3, executed by the Governor of California on March 17, 2020, and as a response to mitigating the spread of Coronavirus known as COVID-19, the Regular Meeting of the City Council scheduled for Tuesday, April 3, 2020, at 6:00 p.m. will be a virtual meeting – audio only.

Below are the ways to participate. For any questions contact the City Clerk's Office at (619) 825-3800.

Members of the public are able to participate in the following ways:

1. Listen to audio live via zoom
2. Written Public Comment: Which will be accepted by email with the subject line PUBLIC COMMENT ITEM #___ . Email to the City Clerk schapel@lemongrove.ca.gov prior to the meeting. The deadline for the public comment to be submitted is **Monday, April 6, 2020 at 5:00 p.m.** Any comment received after the deadline will not be read at the meeting, but will be maintained in the record.

Join the Meeting
Before joining a Zoom meeting on a computer or mobile device, you can download the Zoom app from the Zoom Download Center. Otherwise, you will be prompted to download and install Zoom when you click a join link.

Prerequisites

- Each meeting has a Meeting Access ID that will be required to join a Zoom meeting. #619-825-3800. If you have eNotification set-up it will be included on your email notification. If you have not yet set-up notifications for City meetings and events please go to the City website and sign up.

- Meeting will be Audio only for all participants.

1. Open the Zoom desktop client
2. Join a meeting using one of these methods:
   * Click Join a Meeting if you want to join in without signing in.
   * Sign in to Zoom then click join.
3. Enter the Meeting ID number and your display name
4. If you're not signed in, enter a display name.

All audio will be muted upon entering.

The meeting audio will be available on the City website within 24 hours of the meeting.

Public Comment:
In accordance with Executive Orders N-25-20, N-29-20 and N-35-20 paragraph 3, executed by the Governor of California on March 17, 2020. Written Public Comment: Which will be accepted by email with the subject line PUBLIC COMMENT ITEM ___ . Email to the City Clerk schapel@lemongrove.ca.gov prior to the meeting. The deadline for the public comment to be submitted is Monday, April 6, 2020 at 5:00 p.m. Any comment received after the deadline will not be read but will be maintained in the record. **Monday, April 6 by 5:00 p.m**.

Process:
1. Email City Clerk your written comment. In the Subject Line of the email indicate whether comment is for Public Comment (item not on the agenda) or Agenda Item #.

Participants addressing the City Council by email are encouraged to provide the following information:

a) Full Name;
b) Contact Number;
c) Address;
d) Public Comment or Agenda Item No;
e) Subject;
f) Written Comments

2. Include Comment – Comment is limited up to three (3) minutes. Comment will be read by the City Clerk and timed and if comment extends longer than three (3) minutes it will be timed out.

If comment is received but there is no indication as to whether it is to be read under Public Comment or a specific agenda item, the comment will be retained in the record but not read at the meeting.

Currently public comment is only being accepted by email to be read by the City Clerk. City Clerk email address: schapel@lemongrove.ca.gov

City of Lemon Grove
City Council Regular Meeting Agenda

Tuesday, April 7, 2020, 6:00 p.m.
Virtual Meeting via Zoom platform

The City Council also sits as the Lemon Grove Housing Authority, Lemon Grove Sanitation District Board, Lemon Grove Roadway Lighting District Board, and Lemon Grove Successor Agency

Call to Order

Pledge of Allegiance:

Changes to the Agenda:

Public Comment:

(Note: In accordance with State Law, the general public may bring forward an item not scheduled on the agenda; however, the City Council may not take any action at this meeting. If appropriate, the item will be referred to staff or placed on a future agenda.)

Public comment will be read into the record by the City Clerk. Per Lemon Grove Municipal Code Section 2.14.150, each comment is allowed up to three (3) minutes.

City Council Oral Comments and Reports on Meetings Attended at the Expense of the City.
(GC 53232.3 (d)) *(53232.3.(d) states that members of a legislative body shall provide brief reports on meetings attended at the expense of the local agency at the next regular meeting of the legislative body.)*

City Manager Report:

1. Consent Calendar:

   (Note: The items listed on the Consent Calendar will be enacted in one motion unless removed from the Consent Calendar by Council, staff, or the public.)

   A. Waive Full Text Reading of All Ordinances on the Agenda

      Reference: Kristen Steinke, City Attorney
      Recommendation: Waive the full text reading of all ordinances included in this agenda; Ordinances shall be introduced and adopted by title only.

   B. City of Lemon Grove Payment Demands

      Reference: Molly Brennan, Finance Director
      Recommendation: Ratify Demands

   C. Approval of Meeting Minutes

      February 29, 2020 Special Workshop – Streets
      March 3, 2020 Regular Meeting

      Reference: Shelley Chapel, City Clerk
      Recommendation: Approve Minutes

D. Note and File Planning Commission Meeting Minutes for November 25, 2019

Reference: Shelley Chapel, City Clerk
Recommendation: Approve Minutes

Public Hearing:

2. Climate Action Plan

Reference: Noah Alvey, Community Development Manager
Recommendation: Conduct a Public Hearing, Receive Public Comment, and Adopt a Resolution entitled, "Resolution of the City Council of the City of Lemon Grove, California, Approving a Climate Action Plan."

Closed Session:

1. CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION
Government Code Section 54956.9b
Number of potential cases: 3

Adjournment

AFFIDAVIT OF NOTIFICATION AND POSTING
STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) SS
CITY OF LEMON GROVE)

I, Shelley Chapel, MMC, City Clerk of the City of Lemon Grove, hereby declare under penalty of perjury that a copy of the above Agenda of the Regular Meeting of the City Council of the City of Lemon Grove, California, was delivered and/or notice by email not less than 72 hours, before the hour of 6:00 p.m. on April 2, 2020, to the members of the governing agency, and caused the agenda to be posted on the City's website at www.lemongrove.ca.gov and at Lemon Grove City Hall, 3232 Main Street Lemon Grove, CA 91945.
/s/: Shelley Chapel
Shelley Chapel, MMC, City Clerk

In compliance with the Americans with Disabilities Act (ADA), the City of Lemon Grove will provide special accommodations for persons who require assistance to access, attend and/or participate in meetings of the City Council. If you require such assistance, please contact the City Clerk at (619) 825-3800 or email schapel@lemongrove.ca.gov. A full agenda packet is available for public review at City Hall

CITY OF LEMON GROVE

CITY COUNCIL
STAFF REPORT

Item No. 1.A

Meeting Date: April 7, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: City Manager's Office

Staff Contact: Kristen Steinke, City Attorney

Item Title: Waive the Full Text Reading of all Ordinances

Summary: Waive the full text reading of all ordinances included in this agenda. Ordinances shall be introduced and adopted by title only.

Environmental Review:

☒ Not subject to review

☐ Categorical Exemption, Section

☐ Negative Declaration

☐ Mitigated Negative Declaration

Fiscal Impact: None.

Public Notification: None.

CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 1.B

Meeting Date: April 7, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: City Manager's Office

Staff Contact: Molly Brennan, Administrative Services Director

mailto:MBrennan@lemongrove.ca.govm

Item Title: **City of Lemon Grove Payment Demands**

Recommended Action: Ratify Demands.

Environmental Review:

☒ Not subject to review

☐ Categorical Exemption, Section

☐ Negative Declaration

☐ Mitigated Negative Declaration

Fiscal Impact: None.

Public Notification: None.

City of Lemon Grove Demands Summary
Approved as Submitted:
Molly Brennan, Administrative Services Director
For Council Meeting: 04/07/20

ACH/AP Checks 02/20/20-04/01/20	1,363,525.68
Payroll - 02/25/20	123,938.71
Payroll - 03/10/20	142,695.46
Payroll - 03/24/20	120,533.96
Total Demands	1,750,693.81

CHECK NO	INVOICE NO	VENDOR NAME	CHECK DATE	Description	INVOICE AMOUNT	CHECK AMOUNT
ACH	63762908	WEX Bank	02/20/2020	Fuel - Fire Dept - Jan'20	92.47	92.47
ACH	Feb25 20	Employment Development Department	02/26/2020	State Taxes 2/25/20	7,205.40	7,205.40
ACH	Feb12-Feb25 20	Calpers Supplemental Income 457 Plan	02/27/2020	457 Plan 2/12/20-2/25/20	8,655.63	8,655.63
ACH	Refill 2/26/20	Pitney Bowes Global Financial Services LLC	02/27/2020	Postage Usage 2/26/20	250.00	250.00
ACH	Feb25 20	US Treasury	02/28/2020	Federal Taxes 2/25/20	25,662.57	25,662.57
ACH	Feb20	Wage Works	02/28/2020	FSA Reimbursement - Feb'20	2,451.26	2,451.26
ACH	Feb20	Power Pay Biz/Evo	03/02/2020	Online Credit Card Processing - Feb'20	87.77	87.77
ACH	Mar 2020	Pers Health	03/03/2020	Pers Health Insurance - Mar20	48,069.76	48,069.76
ACH	030320	Pitney Bowes Global Financial Services LLC	03/03/2020	Postage Usage Annual Fee	50.00	50.00
ACH	Feb20	Authorize.Net	03/03/2020	Merchant Fees - Feb'20	27.55	27.55
ACH	Dec19	San Diego County Sheriff's Department	03/09/2020	Law Enforcement Services - Dec'19	483,743.91	483,743.91
ACH	3568860625/0120	SDG&E	03/10/2020	Electric Usage:St Light 1/31/20-2/29/20	1,315.96	3,238.88
	4154920380/0120			Electric Usage:St Light 1/31/20-2/29/20	1,922.92	
ACH	Jan29-Feb25 20	California Public Empl Retirement System	03/10/2020	Pers Retirement 1/29/20-2/25/20	64,985.94	64,985.94
ACH	10338388	LEAF	03/10/2020	Ricoh C3502 Copier System-PW Yard -Feb'20	160.51	160.51
ACH	Feb20	Wells Fargo	03/11/2020	Bank Service Charge - Feb'20	361.54	1,006.86
	Feb20-CC			Credit Card Processing-Mo.Svc - Feb'20	9.95	
	Feb20-CC			Credit Card Transaction Fees- Feb'20	635.37	
ACH	Feb20	Home Depot Credit Services	03/11/2020	Home Depot Charges - Feb'20	1,337.79	1,337.79
ACH	678204	Aflac	03/11/2020	AFLAC Insurance 3/11/20	1,684.42	1,684.42
ACH	Mar10 20	Employment Development Department	03/12/2020	State Taxes 3/10/20	9,153.42	9,153.42
ACH	Feb26-Mar10 20	Calpers Supplemental Income 457 Plan	03/12/2020	457 Plan 2/26/20-3/10/20	8,755.63	8,755.63
ACH	Refill 3/11/20	Pitney Bowes Global Financial Services LLC	03/12/2020	Postage Usage 3/11/20	250.00	250.00
ACH	Mar10 20	US Treasury	03/17/2020	Federal Taxes 3/10/20	30,413.06	30,413.06
ACH	64327063	WEX Bank	03/24/2020	Fuel - Fire Dept - Feb'20	180.22	180.22
ACH	Mar24 20	Employment Development Department	03/26/2020	State Taxes 3/24/20	7,311.85	7,311.85
ACH	Mar11-Mar24 20	Calpers Supplemental Income 457 Plan	03/27/2020	457 Plan 3/11/20-3/24/20	7,935.63	7,935.63
ACH	Mar24 20	US Treasury	03/31/2020	Federal Taxes 3/24/20	24,604.38	24,604.38
ACH	Mar20	Wage Works	03/31/2020	FSA Reimbursement - Mar'20	4,991.98	4,991.98
12614	13060	AdminSure	02/26/2020	Workers' Compensation Claims Administration - Mar'20	453.34	453.34
12615	L1072895UB	American Messaging	02/26/2020	Pager Replacement Program 2/1/20-2/29/20	130.66	130.66
12616	2/12/2020	AT&T	02/26/2020	Phone Service- 1/13/20-2/12/20	84.16	84.16
12617	974807-9Final	BJ's Rentals	02/26/2020	9 Light Tower Rental - Holiday Bonfire 12/6/19 - Final Payment	278.92	278.92
12618	2/25/20	California State Disbursement Unit	02/26/2020	Wage Withholding Pay Period Ending 2/25/20	161.53	161.53
12619	FRS0000193	City of El Cajon	02/26/2020	Overtime Reimbursement - Diaz 2/4/20	714.20	1,983.88
	FRS0000193			Overtime Reimbursement - Groller 1/25/20	1,269.68	
12620	21755	City of La Mesa	02/26/2020	Overtime Reimbursement - Lima 12/15/19	1,310.41	3,931.23
	21755			Overtime Reimbursement - Lima 1/4/20	1,310.41	
	21755			Overtime Reimbursement - Georgi 1/6/20	1,310.41	
12621	Davis	Davis, Jan	02/26/2020	Refund/Davis, Jan/Deposit - LBH- 2/15/20	200.00	200.00
12622	0218202305	Domestic Linen- California Inc.	02/26/2020	Shop Towels & Safety Mats 2/18/20	92.70	92.70

12623	INV1017225	George Hills Company	02/26/2020	TPA Claims- Adjusting/Other Services - Jan 20	1,546.90	1,546.90
12624	1000000011007876	Globalstar USA, Inc.	02/26/2020	Satellite Service 1/16/20-2/15/20	172.59	172.59
12625	AR010709	Grossmont Union High School District	02/26/2020	Business Cards	510.00	510.00
12626	00070848	Hudson Safe-T- Lite Rentals	02/26/2020	Plastic Barricade Rental - Holiday Bonfire 12/6/19	660.00	660.00
12627	Feb25 20	ICMA	02/26/2020	ICMA Deferred Compensation Pay Period Ending 2/25/20	780.77	780.77
12628	Labra	Labra, Aderly	02/26/2020	Refund/Labra, Aderly/Partial Deposit/Cancellation - LBH- 4/25/20	100.00	100.00
12629	07-2570	Lemon Grove School District	02/26/2020	Daycamp Supplies	334.68	334.68
12630	707	Local Government Consultants, LLC	02/26/2020	State Mandated Cost Svc-FY18-19 Claims Prep	1,500.00	1,500.00
12631	Jan 20	Lounsbery Ferguson Altona & Peak LLP	02/26/2020	General 03529-00001 Jan'20	3,780.20	16,924.27
	Jan 20			03529-00006 Jan'20	133.20	
	Jan 20			03529-00014 Jan'20	732.90	
	Jan 20			03529-00015 Jan'20	3,948.00	
	Jan 20			03529-00016 Jan'20	8,329.97	
12632	Parks	Parks, Alicia	02/26/2020	Refund/Parks, Alicia/Deposit - Comm Ctr- 2/15/20	200.00	200.00
12633	424707	Peterson Reporting Video & Litigation Svcs	02/26/2020	Legal Svcs: GHC0019886 8/26/19	803.90	2,665.15
	425242			Legal Svcs: GHC0019886 9/24/19	1,861.25	
12634	Feb2020	Preferred Benefit Insurance Administrators	02/26/2020	Dental Insurance- PPO -Feb'20	3,692.10	3,692.10
12635	2/19/2020	SDG&E	02/26/2020	3225 Olive- 1/20/20-2/19/20	133.22	355.72
	2/19/2020			3500 1/2 Main- 1/20/20-2/19/20	189.27	
	2/19/2020			3601 1/2 LGA-1/20/20-2/19/20	33.23	
12636	Feb 13	Southern CA Firefighters Benefit Trust	02/26/2020	LG Firefighters Benefit Trust 2/13/20	830.70	1,661.40
	Feb 27			LG Firefighters Benefit Trust 2/27/20	830.70	
12637	00093630	The East County Californian	02/26/2020	Notice of Public Hearing-2019 General Plan Annual Progress 2/20/20	182.00	182.00
12638	2/22/2020	Wells Fargo	02/26/2020	AT&T - Backup City Hall Internet- 1/23/20-2/22/20	85.60	10,746.24
	20857921			Canon Fncl Svcs - Canon Plotter Contract Charge 12/21/19-1/20/20	144.00	
	20971675			Canon Fncl Svcs - Canon Plotter Contract Charge 1/21/20-2/20/20	144.00	
	20977414			Canon Fncl Svcs - Canon Plotter 2 Yr Carepack 1/20/20-2/19/20	97.73	
	020D034340			Cintas #2 -Annual Fire Exit & Extinguisher Insp/CityHall 12/4/19	681.54	
	020D034341			Cintas #2 - Annual Fire Exit & Extinguisher Insp/Sheriff 12/4/19	531.78	
	020D034342			Cintas #2 - Annual Fire Exit & Extinguisher Insp/Sr Ctr 12/4/19	547.69	
	1900997631			Cintas - Janitorial Supplies - 12/24/19	904.88	
	4037944685			Cintas - Janitorial Supplies - 12/19/19	834.39	
	4040260187			Cintas - Janitorial Supplies - 1/16/20	916.63	
	82002139			Corelogic - Image Requests - Dec'19	5.50	
	82002334			Corelogic - RealQuest Graphics Package - Dec'19	300.00	
	1/1/20 Fire			Cox - Main Phone/Fire 1/1/20-1/31/20	440.40	
	1/11/2020			Cox - Calsense Modem Line:2259 Washington 1/11/20-2/10/20	22.99	
	1/1/2020			Cox - Calsense Modem Line: 7071 Mt Vernon 1/1/20-1/31/20	49.74	
	1/9/2020			Cox - Calsense Modem Line:8235 Mt Vernon 1/9/20-2/8/20	94.39	
	1/1/2020			Cox - Phone/City Hall 1/1/20-1/31/20	974.16	
	12/30/2019			Cox - Internet/Comm Ctr- 12/30/19-1/29/20	75.00	
	1/18/2020			Cox - City Manager Fax Line- 1/18/20-2/17/20	4.76	
	12/27/2019			Cox - City Hall Fire Alarm 12/27/19-1/26/20	45.63	
	12/30/2019			Cox - PEG Circuit Svc- 12/30/19-1/29/20	2,896.56	
	1/4/2020			Cox - Phone/Rec Ctr/3131 School Ln- 1/4/20-2/3/20	97.98	
	2.11.20 Svc Chr			Service Charge - Wells Fargo svc charge to be reversed next billing	39.00	
	9845542223			Verizon - Modems- Cardiac Monitors - 12/4/19-1/3/20	14.04	
	9846207955			Verizon - City Phone Charges- 12/13/19-1/12/20	122.18	
	9846208501			Verizon - Mobile Broadband Access- 12/13/19-1/12/20	76.02	
	9844624153			Verizon - Hayward 11/21/19-12/20/19	400.85	
	9846207956			Verizon - PW Tablets- 12/13/19-1/12/20	198.80	
12639	13557	AAA Imaging	03/04/2020	Entertainment/Manager Permits - Card stock	80.81	80.81
12640	24878	California Diesel Compliance, Inc.	03/04/2020	Smoke Opacity Test - LGPW #32 GapVax	95.00	665.00
	24878			Smoke Opacity Test - LGPW #24/LGPW #29/LGPW #35 '04 Expedition	285.00	
	24878			Smoke Opacity Test - E210/E310/00175	285.00	
12641	2619-5Retention	Charles King Company, Inc.	03/04/2020	2017-18 Sewer CIP Contract # 2019-11 - Retention	17,406.65	17,406.65
12642	20-Mar	Fidelity Security Life Insurance Company	03/04/2020	Vision Insurance -Mar20	309.51	309.51
12643	12/19/19-2/20/20	Helix Water District	03/04/2020	Water Services- 12/19/19-2/20/20	8,979.83	8,979.83
12644	LG LittleLeague	Lemon Grove Little League	03/04/2020	Census Outreach Booth Fee - Opening Day Event 3/7/20	50.00	50.00
12645	07-2571-Dec	Lemon Grove School District	03/04/2020	Fuel Services-PW: Dec'19 & Jan'20	4,916.45	4,916.45
12646	26	Maistrenko, Ekaterina	03/04/2020	Deposit - Facepainting - Eggstravaganza 4/11/20	40.00	40.00
12647	Reimb: 2/26/20	Malone, Audrey	03/04/2020	Reimb: Conversion of Film to Digital Content - Historical	109.66	109.66
12648	IN1429367	Municipal Emergency Services Inc.	03/04/2020	Stenciling - Fire	3,017.00	3,017.00
12649	INV00010927	RapidScale Inc.	03/04/2020	Virtual Hosting/Back Up Svc/Cloud Storage 2/29/20-3/30/20	3,675.78	3,675.78
12650	0072592	Rick Engineering Company	03/04/2020	Prof Svc: City Engineer 11/30/19-12/31/19	28,222.08	28,222.08

12651	SC-120564	State Water Resources Control Board	03/04/2020	Oversight Costs- LGA Realignment Site Cleanup 10/1/19-12/31/19	889.47	889.47
12652	00093639	The East County Californian	03/04/2020	Notice of Public Hearing - Climate Action Plan 2/27/20	182.00	182.00
12653	Villarreal	Villarreal, Acela	03/04/2020	Refund/Villarreal, Acela/Deposit - LBH- 3/27/21	400.00	400.00
12654	14363074	AT&T	03/11/2020	Fire Backup Phone Line- 1/22/20-2/21/20	40.43	40.43
12655	5656056748	AutoZone, Inc.	03/11/2020	Cleaner/Degreaser - LGPW#26 '14 Chevy	16.02	16.02
12656	4985240	Bearcom	03/11/2020	Portable Radios Monthly Contract 2/22/20-3/21/20	150.00	150.00
12657	022920	Berens-Tate Consulting Group	03/11/2020	Prof Svcs:Arbitrage Rebate Report/Tax Allocation Bonds-2007/2010	5,500.00	5,500.00
12658	1004124-9	BJ's Rentals	03/11/2020	Lift Scissor Rental - Paint Gym/Rec Ctr 2/11/20	821.50	832.81
	1008817-9			Propane	11.31	
12659	3/10/20	California State Disbursement Unit	03/11/2020	Wage Withholding Pay Period Ending 3/10/20	161.53	161.53
12660	4032035236	Canon Solutions America, Inc.	03/11/2020	Canon Maintenance-Copier Usage 11/27/19-2/26/20	1,050.21	1,050.21
12661	3	City of Chula Vista	03/11/2020	Animal Control Services- Dec '19	23,466.00	70,203.37
	2165-Nov			Animal Control Services- Nov '19	23,466.00	
	2165-Oct			Animal Control Services- Oct '19	23,466.00	
	ACSERV-Dec2019			After Hours Calls- Dec '19	195.82	
	ACSERV-Dec2019			Credits/Impound Fees/Animal Control Services- Dec '19	-500.00	
	ACSERV-Nov2019			After Hours Calls- Nov '19	318.73	
	ACSERV-Nov2019			Credits/Impound Fees/Animal Control Services- Nov '19	-115.00	
	ACSERV-Oct2019			After Hours Calls- Oct '19	195.82	
	ACSERV-Oct2019			Credits/Impound Fees/Animal Control Services- Oct '19	-290.00	
12662	FRS0000195	City of El Cajon	03/11/2020	Overtime Reimbursement - Aliano 2/15/20	1,443.73	6,696.50
	FRS0000195			Overtime Reimbursement - Diaz 2/20/20	1,269.68	
	FRS0000195			Overtime Reimbursement - Diaz 2/21/20	1,269.68	
	FRS0000195			Overtime Reimbursement - Dozier 2/15/20	1,443.73	
	FRS0000195			Overtime Reimbursement - Groller 2/20/20	1,269.68	
12663	21763	City of La Mesa	03/11/2020	FY19-20 Qtr 2-JPA Reconciliation- Oct-Dec 19	92,509.00	92,509.00
12664	Feb20	Colonial Life	03/11/2020	Colonial Optional Insurance -Feb20	515.56	515.56
12665	20CTOFLGN08	County of San Diego- RCS	03/11/2020	800 MHZ Network - Feb '20	2,878.50	2,878.50
12666	03042020560	DAR Contractors	03/11/2020	Animal Disposal- Feb'20	162.00	162.00
12667	dsb20190926	Dig Safe Board	03/11/2020	State Fee/Regulatory Monthly Costs/Dig Alert 2019	57.13	57.13
12668	27253	Excell Security, Inc.	03/11/2020	Senior Center Security Guard - 3/7/20	614.38	614.38
12669	Fitzgerald	Fitzgerald, Daniel	03/11/2020	Refund/Fitzgerald, Daniel/Deposit - Plan Review - 7919 LG Way	6,158.80	6,158.80
12670	1278	G & G Backflow Plumbing Service	03/11/2020	Repaired Leaking Backflow	131.50	131.50
12671	249815	GB Auto Service, Inc.	03/11/2020	Tires/Wheel Balance - LGPW#31 '14 Ford Escape	383.59	383.59
12672	INV1016591	George Hills Company	03/11/2020	30% Subro Recovery Fee/GHC0024627	67.11	67.11
12673	123745	Granicus	03/11/2020	Training - CLG Website Administration 1/30/20	1,000.00	1,000.00
12674	0033287-IN	Hinderliter De Llamas & Associates	03/11/2020	Sales Tax Audit Services - Qtr 3 2019	900.00	2,250.00
	0033287-IN			Contract Services - Sales Tax - Qtr 1	1,350.00	
12675	00072891	Hudson Safe-T- Lite Rentals	03/11/2020	2 5-Gallon Red Traffic Paint	214.34	214.34
12676	Mar10 20	ICMA	03/11/2020	ICMA Deferred Compensation Pay Period Ending 3/10/20	780.77	780.77
12677	J&J North LLC	J & J North LLC	03/11/2020	Refund/J & J North LLC/Overcharged Sewer Service Fee - 2019	3,912.71	3,912.71
12678	138082	Knott's Pest Control, Inc.	03/11/2020	Monthly Bait Stations- Civic Ctr - Feb20	60.00	105.00
	138082			Monthly Bait Stations- Sheriff - Feb20	45.00	
12679	07-2572Dec	Lemon Grove School District	03/11/2020	Fuel Services-Fire Stn- Dec'19	2,184.14	4,285.94
	07-2572Jan			Fuel Services-Fire Stn- Jan'20	2,101.80	
12680	4787468	Mallory Safety and Supply, LLC	03/11/2020	Hi-Visibility Vests	57.00	367.32
	4792785			Nitrile Gloves	25.86	
	4792785			Nitrile Gloves	25.86	
	4793132			Nitrile Gloves	258.60	
12681	54153	McNamara Pump and Electric Inc.	03/11/2020	Duplex Sewage Pump Station 6-Mo Maintenance Svc- 6794 Central	275.00	275.00
12682	0146095-IN	Municipal Maintenance Equipment Inc.	03/11/2020	Emulsion Pump Repair/Replace Rotary Union/LGPW#7 '14	469.48	469.48
12683	PD-44622	Plumbers Depot Inc.	03/11/2020	Sewer Camera - 3/4" Tool 8"-10" Pipe Standard Fins/Manhole Hook	550.93	550.93
12684	31941726	RCP Block & Brick, Inc.	03/11/2020	Bulk Concrete Sand - Storm	168.60	168.60
12685	32	RXR Plumbing, Inc.	03/11/2020	Plumbing Repair/Restroom - Community Ctr	350.00	350.00
12686	10641	T-Man Traffic Supply	03/11/2020	Paint/ADA Parking Signs - Streets	617.24	1,626.51
	10679			Stencil Guard/Paint/Pavement Markings - Streets	184.30	
	10691			Guidance Redimat/Striping Stick/Spray Tip/Pavement Markings	824.97	

12687	220200393	Underground Service Alert of Southern Ca.	03/11/2020	37 New Ticket Charges - Feb'20	71.05	71.05
12688	3.4.2020	Uptown Jungle Fun Park	03/11/2020	Deposit - Daycamp Fieldtrip 6/24/20	700.00	700.00
12689	100665	Vinyard Doors, Inc.	03/11/2020	Repair Fire Bay Door # 3	2,845.00	2,845.00
12690	72494878	Vulcan Materials Company	03/11/2020	Asphalt	230.69	230.69
12691	6725	Aguirre & Associates	03/18/2020	Vista Azul Map Check - Feb'20	1,150.00	1,425.00
	6726			2456 Hardy Street Dedication - Feb'20	275.00	
12692	40102	Anita Fire Hose Company Etc.	03/18/2020	Fire Extinguisher - 10 lb - E210	103.39	103.39
12693	Apr 2020	California Dental Network Inc.	03/18/2020	California Dental Insurance -Apr'20	342.12	342.12
12694	4032035237	Canon Solutions America, Inc.	03/18/2020	Canon Maintenance-Copier Usage 11/27/19-2/26/20	19.10	19.10
12695	F0000014645	City of El Cajon	03/18/2020	HFR Patch Order - LG Share	105.98	3,853.52
	FRS0000197			Overtime Reimbursement - Abell 2/27/20	1,238.93	
	FRS0000197			Overtime Reimbursement - Cameron 3/1/20	1,238.93	
	FRS0000197			Overtime Reimbursement - Diaz 3/4/20	1,269.68	
12696	2355	Clark Telecom & Electric Inc.	03/18/2020	Street Light Dig-Alert Markouts - Feb'20	947.05	3,060.75
	2356			Street Light Repairs - Feb'20	2,113.70	
12697	SD10025FY20	County of SD- Vector Control Program	03/18/2020	Mosquito & Vector Disease Control Assessment-SD 10025 FY20	98.34	98.34
12698	5475	D- Max Engineering Inc.	03/18/2020	1993 Dain Dr Stormwater Inspection 1/1/20-1/31/20	446.06	1,954.18
	5476			6800 Mallard Ct Stormwater Inspection 1/1/20-1/31/20	614.56	
	5477			Golden Doors Stormwater Inspection 1/1/20-1/31/20	29.56	
	5490			LG Vista Azul Stormwater Inspection1/30-2/27/20	864.00	
12699	979436	Life-Assist, Inc.	03/18/2020	10 Conqueror Eyewear/Black/Anti Fog - Fire	51.40	51.40
12700	1713	Miller Spatial Services, LLC	03/18/2020	GIS Analyst/Consulting Support Services- thru 2/21/20	4,550.00	4,550.00
12701	Murrieta	Murrietta, Kassandra	03/18/2020	Refund/Murrieta, Kassandra/Deposit - LBH- 3/7/20	300.00	300.00
12702	6921	North County EVS, Inc.	03/18/2020	E210 - Reseal Exhaust Leak, Reseal Engine Leaks, Front Brakes	11,197.56	11,197.56
12703	Paun	Paun, Marlyn	03/18/2020	Refund/Paun, Marlyn/Deposit - Comm Ctr- 2/29/20	200.00	200.00
12704	Mar2020	Preferred Benefit Insurance Administrators	03/18/2020	Dental Insurance- PPO -Mar'20	3,886.60	3,886.60
12705	1134-01052020	Redman Disputes & Investigations Group	03/18/2020	Legal Svcs: GHC0019886 thru 1/4/20	13,098.75	13,098.75
12706	Feb20	SDG&E	03/18/2020	Gas & Electric 1/23/20-2/24/20	21,823.66	21,823.66
12707	80293	Southwest Signal Service	03/18/2020	Bi-Monthly Traffic Signal Maint/PM Inspections - Feb'20	845.00	1,187.92
	80294			Traffic Signal Service Calls - Feb'20	342.92	
12708	56875	Tyson & Mendes, LLP	03/18/2020	Legal Svcs: GHC0019886 thru 1/27/20	70,458.60	70,458.60
12709	STMT 2/24/2020	US Bank Corporate Payment Systems	03/18/2020	Fire Station Supplies - Door Handle/Lightbulbs	68.41	8,226.25
	STMT 2/24/2020			SD ITE Mtg/Regulations Luncheon/James 2/13/20	30.00	
	STMT 2/24/2020			Toner for Plotter	144.39	
	STMT 2/24/2020			Locks - Traffic Boxes/Facilities	152.78	
	STMT 2/24/2020			AutoCAD Annual Subscription	1,610.00	
	STMT 2/24/2020			Transp/PARMA Conference/James 2/24/20-2/28/20	105.00	
	STMT 2/24/2020			Repair & Maintenance - Diesel Exhaust Fluid - Fire	56.03	
	STMT 2/24/2020			Lodging & Parking/Sacramento/LCC/Romero 1/21/20-1/24/20	761.59	
	STMT 2/24/2020			Lodging/Sacramento/LCC/Altamirano 1/21/20-1/24/20	761.59	
	STMT 2/24/2020			LLC/Addressing Homelessness Webinar/Romero 1/28/20	25.00	
	STMT 2/24/2020			LLC/Addressing Homelessness Webinar/James 1/28/20	25.00	
	STMT 2/24/2020			Office Supplies/Water Filter	51.72	
	STMT 2/24/2020			Nameplate - Sheriff/Lt. Stranger	12.93	
	STMT 2/24/2020			CA & Federal Personnel Poster	56.80	
	STMT 2/24/2020			Job Posting/Mgmt Analyst	225.00	
	STMT 2/24/2020			Marios/Workshirts - PW	1,050.95	
	STMT 2/24/2020			Parts for Pressure Washer/Sewer Cleaning Nozzle	9.11	
	STMT 2/24/2020			Gas Detector Repair	1,723.31	
	STMT 2/24/2020			Plumbing Supplies/Water Filtration Cartridge	51.72	
	STMT 2/24/2020			Repair/Engine Oil Cooler Gasket/Oil/Filter LGPW# 19	396.72	
	STMT 2/24/2020			Paint Mixer Tools - PW Yard	6.45	
	STMT 2/24/2020			Supplies - File Folders/Pens/Sharpie Markers/Desk Organizer	123.84	
	STMT 2/24/2020			Daycamp Supplies	170.63	
	STMT 2/24/2020			Paint - Gym/Rec Ctr	352.49	
	STMT 2/24/2020			Daycamp/Fleet Science Museum/Fieldtrip Research/Gonzalez	35.12	
	STMT 2/24/2020			Eggstravaganza Supplies/Decorations 4/12/20	219.67	
12710	14455802	AT&T	03/25/2020	Phone Service- 2/13/20-3/12/20	84.16	84.16
12711	34726-IN	Aztec Landscaping Inc.	03/25/2020	Landscape Mgmt Svc - Jan'20	9,183.41	18,366.82
	34867-IN			Landscape Mgmt Svc - Feb'20	9,183.41	
12712	Bailey	Bailey, Chiya	03/25/2020	Refund/Bailey, Chiya/Deposit - Courtyard- 3/21/20 COVID-19	300.00	850.00
				Refund/Bailey, Chiya/Rental - Courtyard- 3/21/20 COVID-19	550.00	
12713	998870-9	BJ's Rentals	03/25/2020	Propane	16.44	16.44
12714	Boyle	Boyle, Kaila	03/25/2020	Refund/Boyle, Kaila/Rental - Gazebo BS#3- 4/4/20 COVID-19	80.00	80.00

12715	Brock	Brock, Robert	03/25/2020	Refund/Brock, Robert/Overpaid Dog License Fee	20.00	20.00
12716	Brown	Brown,Rayshauna	03/25/2020	Refund/Brown,Rayshauna/Rental - Gazebo 4/5/20 COVID-19	100.00	100.00
12717	18-19 SewerRehab	California Department of Fish & Game	03/25/2020	Environmental Fees - 2018-19 Sewer Rehab Project (Design)	5,430.50	5,430.50
12718	3/24/20	California State Disbursement Unit	03/25/2020	Wage Withholding Pay Period Ending 3/24/20	161.53	161.53
12719	18-19 Sewer Reh	California State Water Board	03/25/2020	Environmental Fees - 2018-19 Sewer Rehab Project (Design)	1,949.00	1,949.00
12720	Corea	Corea,Amy	03/25/2020	Refund/Corea, Amy/Deposit - LBH- 5/30/20 COVID-19	200.00	200.00
12721	Damberger	Damberger,Angel	03/25/2020	Refund/Damberger, Angeline/Permit - Jumper/ 3/21/20 COVID-19	40.00	140.00
				Refund/Damberger,Angeline/Rental -Sunflower 3/21/20 COVID-19	100.00	
12722	0317202305	Domestic Linen- California Inc.	03/25/2020	Shop Towels & Safety Mats 3/17/20	92.70	92.70
12723	Eatmon	Eatmon, Rasheda	03/25/2020	Refund/Eatmon, Rasheda/Rental - Sunflower 4/4/20 COVID-19	80.00	80.00
12724	62463	EW Truck & Equipment Company, Inc.	03/25/2020	LGPW#29 Peterbilt- Replace Battery	376.86	376.86
12725	6-956-83124	Federal Express	03/25/2020	Shipping Charge - Sanitation/CUES West 2/21/20	65.76	65.76
12726	67137	Global Power Group, Inc.	03/25/2020	PM Service - Generator/Fire Station	367.00	367.00
12727	1000000011070736	Globalstar USA, Inc.	03/25/2020	Satellite Service 2/16/20-3/15/20	172.59	172.59
12728	Gomez	Gomez, Ariana	03/25/2020	Refund/Gomez, Ariana/Deposit - LBH- 9/19/20 COVID-19	300.00	1,450.00
				Refund/Gomez, Ariana/Rental - LBH- 9/19/20 COVID-19	1,150.00	
12729	63323	Hose Tech	03/25/2020	Repair - Replace Spray Hose Wand/Asphalt Truck - LGPW#07	233.94	233.94
12730	00073859	Hudson Safe-T- Lite Rentals	03/25/2020	Signs - Road Work Ahead/Reflective	454.65	529.34
	00073860			Concrete in a Can	74.69	
12731	Mar24 20	ICMA	03/25/2020	ICMA Deferred Compensation Pay Period Ending 3/24/20	780.77	780.77
12732	1603	Janazz, LLC SD	03/25/2020	IT Services- City Hall- Feb'20	2,500.00	2,500.00
12733	138561	Knott's Pest Control, Inc.	03/25/2020	Monthly Bait Stations- Civic Ctr - Mar20	60.00	105.00
	138562			Monthly Bait Stations- Sheriff - Mar20	45.00	
12734	1494340	Liebert Cassidy Whitmore	03/25/2020	Prof Svcs: LE050-00006 CalPERS Audit thru 2/29/20	1,750.45	1,750.45
12735	INV29942	Logicopy	03/25/2020	Ricoh C3502 Copier Contract Charge - PW Yard - 3/7/20-4/6/20	51.58	51.58
12736	Feb20	Lounsbery Ferguson Altona & Peak LLP	03/25/2020	General 03529-00001 Feb'20	11,084.60	19,393.83
	Feb20			Code Enforcemt 03529-00002 Feb'20	631.30	
	Feb20			Sani Dist 03529-00007 Feb'20	99.60	
	Feb20			03529-00006 Feb'20	581.00	
	Feb20			03529-00014 Feb'20	116.20	
	Feb20			03529-00015 Feb'20	2,911.47	
	Feb20			03529-00016 Feb'20	3,969.66	
12737	4806583	Mallory Safety and Supply, LLC	03/25/2020	Nitrile Gloves	257.40	257.40
12738	Martinez	Martinez,Michael	03/25/2020	Refund/Martinez,Michael/Deposit - LBH- 4/11/20 COVID-19	300.00	1,450.00
				Refund/Martinez,Michael/Rental - LBH- 4/11/20 COVID-19	1,150.00	
12739	67437979	Occupational Health Centers of CA	03/25/2020	Annual DMV Medical Exam - 3/16/20, 3/17/20	206.00	206.00
12740	151283	Pacific Sweeping	03/25/2020	Street Sweeping/Parking Lot - Jan'20	6,428.55	12,857.10
	151427			Street Sweeping/Parking Lot - Feb'20	6,428.55	
12741	PD-44705	Plumbers Depot Inc.	03/25/2020	Sewer Camera - Replace Power Board/Camera Module/Cable	1,253.51	1,253.51
12742	31952767	RCP Block & Brick, Inc.	03/25/2020	Bulk Concrete Sand - Fire Stn	140.50	140.50
12743	1115	SD Sports Medicine and Family Health Ctr	03/25/2020	Medical Fitness Evaluations	2,700.00	2,700.00
12744	CLG-19	Smith Air Conditioning	03/25/2020	Service Call- Central Furnace/Replace Bearings	433.00	433.00
12745	32895	Superior Smog and Tune Muffler & Brake	03/25/2020	Replaced Hydraulic Brake Booster Assembly - LGPW#01 Dump Truck	1,012.23	1,012.23
12746	10689	T-Man Traffic Supply	03/25/2020	Passenger Loading Zone - ADA Parking Signs	95.91	95.91
12747	Valdez	Valdez, Angela	03/25/2020	Refund/Valdez, Angela/Rental - Strawberry Gaz 3/28/20 COVID-19	100.00	100.00
12748	72528380	Vulcan Materials Company	03/25/2020	Asphalt	285.65	285.65
12749	Walker	Walker, Robyn C	03/25/2020	Refund/Walker, Robyn C/Rental - Gazebo BS#1- 3/21/20 COVID-19	80.00	80.00
12751	2.11.20 Svc Chr	Wells Fargo	03/25/2020	Refund - Service Charge 2/11/20	-39.00	8,393.35
	2/23/20-3/22/20			AT&T - Backup City Hall Internet- 2/23/20-3/22/20	85.60	
	4040872770			Cintas - Janitorial Supplies - 1/23/20	201.34	
	4041477681			Cintas - Janitorial Supplies - 1/30/20	442.56	
	4042085728			Cintas - Janitorial Supplies - 2/6/20	201.34	
	4042690738			Cintas - Fire - Janitorial Supplies - 2/13/20	334.89	
	4042690777			Cintas - Janitorial Services - 2/13/20	737.22	
	4043317328			Cintas - Janitorial Services - 2/20/20	201.57	
	4043958557			Cintas - Janitorial Services - 2/27/20	204.97	
	82006991			Corelogic - RealQuest Graphics Package - Jan'20	300.00	
	7071MTV- 2/1			Cox - Calsense Modem Line: 7071 Mt Vernon/Berry St Pk 2/1/20-2/2	23.00	

	2/1/20 Fire			Cox - Main Phone/Fire 2/1/20-2/29/20	443.23	
	2259Wash- 2/13			Cox - Calsense Modem Line:2259 Washington 2/11/20-3/10/20	23.00	
	2873Skyline 2/1			Cox - Phone/PW Yard/2873 Skyline- 2/19/20-3/18/20	213.81	
	2873Skyline-1/1			Cox - Phone/PW Yard/2873 Skyline- 1/19/19-2/18/20	213.76	
	8235MTV- 2/11			Cox - Calsense Modem Line:8235 Washington 2/9/20-3/8/20	94.39	
	City Hall- 2/1			Cox - Phone/City Hall 2/1/20-2/29/20	974.23	
	CommCtrInt-1/30			Cox - Internet/Comm Ctr- 1/30/20-2/29/20	75.00	
	Fax-CH- 2/18/20			Cox - City Manager Fax Line- 2/18/20-3/17/20	4.06	
	Fire Alarm-1/28			Cox - City Hall Fire Alarm 1/27/20-2/26/20	45.24	
	Peg-1/30/20			Cox - PEG Circuit Svc- 1/30/20-2/29/20	2,896.56	
	Rec-2/4			Cox - Phone/Rec Ctr/3131 School Ln- 2/4/20-3/3/20	97.99	
	76924			House of Automation - Svc Call 1/27 - Fire Stn	246.09	
	9847611558			Verizon - Modems- Cardiac Monitors - 1/4/20-2/3/20	14.04	
	9848278681			Verizon - City Phone Charges- 1/13/20-2/12/20	131.57	
	9848279234			Verizon - Mobile Broadband Access- 1/13/20-2/12/20	76.02	
	9846697985			Verizon - Fire Prev Phone Line- 12/21/19-1/20/20	373.02	
	9848278682			Verizon - PW Tablets- 1/13/20-2/12/20	198.80	
	CB 031320			WellsFargo - Cash Back Award Stmt 031320	-420.95	
12752	BranchFellowshp	Branch Fellowship	04/01/2020	Refund/Branch Fellwshp/Permit-Jumper LGP#2- 4/11/20 COVID-19	40.00	120.00
				Refund/Branch Fellwshp/Rental-Gazebo LGP#2- 4/11/20 COVID-19	80.00	
12753	Briseno	Briseno, Jose	04/01/2020	Refund/Briseno, Jose/Rental - Gazebo BS#1- 3/28/20 COVID-19	100.00	100.00
12754	4032022901	Canon Solutions America, Inc.	04/01/2020	Canon Maintenance-Copier Usage 11/26/19-2/25/20	75.29	75.29
12755	Celsius LG2 LLC	Celsius Lemon Grove 2, LLC	04/01/2020	Refund/CelsiusLG2 LLC/CD1-800-0028/Diversion Deposit 8/13/18	4,846.83	4,846.83
12756	FRS0000199	City of El Cajon	04/01/2020	Overtime Reimbursement - Dozier 3/10/20	1,443.73	1,443.73
12757	5395	D- Max Engineering Inc.	04/01/2020	7150 Central Stormwater Inspection 1/8/20-1/27/20	536.00	11,163.31
	5421			3205-3275 LGA Stormwater Inspection 1/13/20-2/6/20	132.50	
	5459			7946 Broadway Stormwater Inspection 2/4/20-2/18/20	864.00	
	5492			7508 Church St Stormwater Inspection 11/7/19-3/3/20	1,366.50	
	5494			Popeyes Stormwater Inspection 2/10/20-3/12/20	201.00	
	5502			D-Max Stormwater Prof Svcs 2/1/20-2/29/20	8,063.31	
12758	LG Fire 3/25/20	Dixieline Lumber & Home Centers	04/01/2020	Dewalt FlexVolt 60V Max Cordless Brushless 9" Saw Kit - Fire	899.47	899.47
12759	1/13-16/20	Esgil Corporation	04/01/2020	75% Building Fees- 1/13/20-1/16/20	4,531.14	37,640.29
	1/2/20			75% Building Fees- 1/2/20	1,689.48	
	1/21-23/20			75% Building Fees- 1/21/20-1/23/20	2,862.59	
	1/27-30/20			75% Building Fees- 1/27/20-1/30/20	3,873.47	
	1/6-9/20			75% Building Fees- 1/6/20-1/9/20	4,718.10	
	2/10-13/20			75% Building Fees- 2/10/20-2/13/20	1,153.70	
	2/18-20/20			75% Building Fees- 2/18/20-2/20/20	3,824.00	
	2/24-27/20			75% Building Fees- 2/24/20-2/27/20	4,614.41	
	2/3-6/20			75% Building Fees- 2/3/20-2/6/20	6,720.02	
	3/2-5/20			75% Building Fees- 3/2/20-3/5/20	3,653.38	
12760	Apr-20	Fidelity Security Life Insurance Company	04/01/2020	Vision Insurance -Apr20	274.23	274.23
12761	Gibilisco	Gibilisco, Joann	04/01/2020	Refund/Gibilisco,Joann/Duplicate Permit Fee Pd 2/27/20/B20-0067	143.33	143.33
12762	Johnson	Johnson, Shawnelle	04/01/2020	Refund/Johnson,Shawnelle/Rntl-Gazebo LGP#1 4/19/20 COVID-19	100.00	100.00
12763	Lee	Lee, James	04/01/2020	Refund/Lee, James/Deposit - LBH 4/26/20 COVID-19	200.00	200.00
12764	983641	Life-Assist, Inc.	04/01/2020	Nitrile Exam Gloves	948.95	1,051.31
	983955			Nitrile Exam Gloves	102.36	
12765	Medina	Medina, Monica	04/01/2020	Refund/Medina, Monica/Deposit - LBH- 4/4/20 COVID-19	300.00	1,450.00
				Refund/Medina, Monica/Rental - LBH- 4/4/20 COVID-19	1,150.00	
12766	Montano	Montano, Juana	04/01/2020	Refund/Montano, Juana/Deposit-LeeHouse 4/25/20 COVID-19	200.00	200.00
12767	Parris	Parris, Kenneth	04/01/2020	Refund/Parris, Kenneth/Rental - Gazebo BS#1- 4/11/20 COVID-19	100.00	100.00
12768	Ramos	Ramos, Eden	04/01/2020	Refund/Ramos, Eden/Rental - Gazebo BS#2- 4/4/20 COVID-19	100.00	100.00
12769	3/19/2020	SDG&E	04/01/2020	3225 Olive- 2/19/20-3/19/20	123.83	330.28
	3/23/2020			3500 1/2 Main- 2/19/20-3/19/20	174.00	
	3/23/2020			3601 1/2 LGA-2/19/20-3/19/20	32.45	
12770	Mar 12	Southern CA Firefighters Benefit Trust	04/01/2020	LG Firefighters Benefit Trust 3/12/20	830.70	1,661.40
	Mar 26			LG Firefighters Benefit Trust 3/26/20	830.70	
12771	10165222	Stryker Medical	04/01/2020	3 LP15 Defibrillators/2 LUCAS Automated CPR/Protection Plans	1,695.00	1,695.00
12772	Wilson	Wilson,Margaret	04/01/2020	Refund/Wilson, Margaret/Deposit - LBH- 4/4/20 COVID-19	200.00	550.00
				Refund/Wilson, Margaret/Rental - LBH- 4/4/20 COVID-19	350.00	
					1,363,525.68	1,363,525.68

CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 1.C

Meeting Date: April 7, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: City Manager's Office

Staff Contact: Shelley Chapel, City Clerk
Schapel@lemongrove.ca.gov

Item Title: **Approval of City Council Meeting Minutes**

Recommended Action: Approval of City Council Meeting Minutes.

Environmental Review:

☒ Not subject to review Negative Declaration

☐ Categorical Exemption, Section

☐ Mitigated Negative Declaration

Fiscal Impact: None.

Public Notification: None.

MINUTES OF A SPECIAL MEETING – STUDY SESSION WORKSHOP
OF THE LEMON GROVE CITY COUNCIL
SATURDAY, FEBRUARY 29, 2020

The City Council also sits as the Lemon Grove Housing Authority,
Lemon Grove Sanitation District Board, Lemon Grove Roadway Lighting District Board,
and Lemon Grove Successor Agency.

Call To Order:
Mayor Vasquez called the Regular Meeting to order at 9:14 a.m.

Present: Mayor Racquel Vasquez, Mayor Pro Tem Jennifer Mendoza, Councilmember Yadira Altamirano (arrived at 9:16 a.m.), Councilmember David Arambula, and Councilmember Jerry Jones.
Absent: None.

Staff Members Present:
Lydia Romero, City Manager, City Attorney, Mike James, Assistant City Manager/Public Works Director, and Shelley Chapel, City Clerk.

Study Session:

Community Workshop Discussion Item – How to Fix the Worst City Streets

Council discussion facilitated by Mike James, Assistant City Manager / Public Works Director and Thomas Bell, Public Works Operations and Administrative Manager, providing an overall assessment of the City Streets regarding Pavement Condition Index (PCI) and options to manage the worst streets in the City.

Appeared to comment were: Nadia Morrison, Mike Perkins, Erik Hallenstein, Melanie Lucero, and Liana LeBaron.

Adjournment:
There being no further business to come before the Council, the meeting was adjourned at 11:17 a.m. to a meeting to be held Tuesday, March 3, 2020, in the Lemon Grove Community Center located at 3146 School Lane, for a Regular meeting.

_____
Shelley Chapel, MMC
City Clerk

MINUTES OF A MEETING OF
THE LEMON GROVE CITY COUNCIL
TUESDAY, MARCH 3, 2020

The City Council also sits as the Lemon Grove Housing Authority, Lemon Grove Sanitation District Board, Lemon Grove Roadway Lighting District Board, and Lemon Grove Successor Agency.

Call To Order:
Mayor Vasquez called the Regular Meeting to order at 6:01 p.m.

Pledge of Allegiance:
Pledge of Allegiance to the Flag was led by Mayor Pro Tem Mendoza.

Present: Mayor Racquel Vasquez, Mayor Pro Tem Jennifer Mendoza, Councilmember Yadira Altamirano
Absent: Councilmember David Arambula, and Councilmember Jerry Jones

Staff Members Present:
Lydia Romero, City Manager, Kristen Steinke, City Attorney, Mike James, Assistant City Manager/Public Works Director, Noah Alvey, Community Development Manager, Shelley Chapel, City Clerk, Steven Swaney, Fire Chief, and Lieutenant J. Stranger, San Diego County Sheriff's Office - Lemon Grove Substation.

Presentation:
Mayor Vasquez and City Manager Romero invited Stephanie Boyce, Sr. Management Analyst to the podium to recognize her for her 12 years of service.

Mayor Vasquez introduced Fire Chief Swaney who gave the Annual Update and End of the Year Review for Heartland Fire Department.

Mayor Vasquez introduced Lieutenant Stranger who gave the Annual Update and End of the Year Review for San Diego County Sheriff's Office.

Public Comments:
Appeared to comment were: Lisa Kennedy, Chris Williams, Teresa Rosiak-Proffit, and Kathleen McLean.

City Council Oral Comments & Reports on Meetings Attended At City Expense: (G.C. 53232.3(d))

Mayor Pro Tem Mendoza attended the following meetings and events:
- Special Workshop Meeting for the City Council on Saturday, February 29, 2020
- Black History Month Celebration hosted by Thrive – commended Joyce Moore for successful event

Mayor Vasquez attended the following meetings and events:
- Group Conversation Strategy Session regarding homeless issue with Diane Jacob
- State of County Address with Chairman Greg Cox
- Presented Certificate of Recognition Mt. High Ministries for 30th Reunion at Lagoon Church
- Certificate of Recognition to Michael Love, Teacher at Mt. Miguel High School
- SANDAG Meeting

City Manager Report:
City Manager Romero announced the return of Administrative Services Director Brennan who will return to work on Monday, March 10 following a personal leave of absence.

Consent Calendar:

A. Waive Full Text Reading of All Ordinances on the Agenda.
B. Ratification of Payment of Demands
C. City Council Meeting Minutes for Regular Meeting of February 18, 2020.

Action: Motion by Mayor Pro Tem Mendoza, seconded by Councilmember Altamirano, to approve Consent Calendar Items A-C
The motion passed by the following vote:
Ayes: Vasquez, Mendoza, Altamirano
Noes: None.
Absent: Arambula, and Jones

Public Hearing:

1. Public Hearing to Consider 2019 General Plan Annual Progress Report

Mayor Vasquez introduced Noah Alvey, Community Development Manager who presented the staff report.

Mayor Vasquez opened/closed the Public Hearing at 8:04 p.m.

No public comment.

Action: The public hearing was closed at 8:04 p.m. on a motion by Mayor Vasquez, and second by Councilmember Altamirano.
The motion passed by the following roll call vote:
Ayes: Vasquez, Mendoza, Altamirano
Noes: None
Absent: Arambula, Jones

Action: It was moved by Mayor Pro Tem Mendoza, and seconded by Councilmember Altamirano to adopt Resolution No. 2020-3709, accepting the 2019 General Plan Annual Progress Report, and direct staff to submit the Report to the California State Office of Planning and Research (OPR) and the Department of Housing and Community Development (HCD). The motion passed by the following roll call vote:
Ayes: Vasquez, Mendoza, Altamirano
Noes: None
Absent: Arambula, Jones

Adjournment:
There being no further business to come before the Council, the meeting was adjourned at 8:05 p.m. to a Regular Meeting to be held on Tuesday, March 17, 2020, at 6:00 p.m. in the Lemon Grove Community Center located at 3146 School Lane.

_____
Shelley Chapel, MMC
City Clerk

CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 1.D

Meeting Date: April 7, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: City Manager's Office

Staff Contact: Shelley Chapel, City Clerk

Schapel@lemongrove.ca.gov

Item Title: **Note and File Planning Commission Meeting Minutes**

Recommended Action: Note and file.

Environmental Review:

☒ Not subject to review Negative Declaration

☐ Categorical Exemption, Section

☐ Mitigated Negative Declaration

Fiscal Impact: None.

Public Notification: None.

MINUTES OF A MEETING OF
THE LEMON GROVE PLANNING COMMISSION
MONDAY, NOVEMBER 25, 2019

Call To Order:
Chair Bailey called the Regular Meeting to order at 6:00 p.m.

Present: Chair Bailey, Vice-Chair Browne *(arrived at 6:04),* Commissioner LeBaron, and Commissioner Smith.
Absent: None.

Staff Members Present:
Planning Commission Attorney Avneet Sidhu, City Clerk/Commission Clerk Shelley Chapel, Noah Alvey, Community Services Manager, and Arturo Ortuño, Assistant Planner.

Pledge of Allegiance:
Pledge of Allegiance to the Flag was led by Chair Bailey.

Approval of Meeting Minutes

1. October 28, 2019 Regular Meeting

Action: Motion by Commissioner Smith, seconded by Vice-Chair Browne to approve meeting minutes.
The motion passed by the following vote:
Ayes: Bailey, Browne, LeBaron, and Smith
Absent: None.

Public Comment: There were no speakers.

Consent Items:

2. Adopted Resolution No. 2019-02, entitled, "A Resolution of the Planning Commission of the City of Lemon Grove, California, Approving a Time Extension of Approved Condition Use Permit No. CUP-180-0003 for a Veterinary Clinic with retail sales, indoor kennel, and outdoor activities at 7770 Broadway," extending the expiration date from September 24, 2019, to September 24, 2020.

3. Adopted Resolution No. 2019-03, entitled, "A Resolution of the Planning Commission of the City of Lemon Grove, California, Approving a Time Extension of Approved Condition Use Permit No. CUP-180-0004 for a Child Care Center located at 3468 Citrus Street," extending the expiration date from November 20, 2019, to November 20, 2020.

Commissioner LeBaron pulled both items to ask questions of staff.

Appeared to Comment was: Jim Elliott

Action: Motion by Commissioner LeBaron, seconded by Commissioner Smith to close public comment, and Motion by Commissioner Smith, seconded by Commissioner LeBaron to adopt the Resolutions.
The motion passed by the following vote:
Ayes: Bailey, Browne, LeBaron, and Smith
Absent: None.

Public Hearing:

4. Consider General Plan Amendment No. GPA-190-0001 and Planned Development Permit No. PDP-170-0002; A Request to Amend the City's General Plan Land Use Classification from Retail Commercial to Mixed-Use for the Construction of a 108,898 Square Foot Three-Story Commercial Mixed-Use Building in the General Commercial (GC) Zone.

   Arturo Ortuno, Assistant Planner presented the staff report and PowerPoint Presentation. Assistant Planner introduced the applicant representative, Rick Wallace of Wallace Design Group.

   Chair Bailey opened the Public Hearing at 7:16 p.m.

   Representative for the applicant presented the project and responded to questions of the Commission. In attendance were project representatives to respond to Commissioners questions.

   Appeared to comment were: Steve Laub, Janette Baranor, and Thom Rosenberger.

   Action: The public hearing was closed at 7:55 p.m. on a Motion by Commissioner LeBaron, seconded by Vice-Chair Browne.
   The motion passed by the following vote:
   Ayes: Bailey, Browne, LeBaron, and Smith
   Noes: None.

   Adopt Resolution No. 2019-04, entitled, "A Resolution of the Planning Commission for the City of Lemon Grove, California, Recommending City Council Approval of General Plan Amendment GPA-190-0001; A Request to Amend the City's General Plan Land Use Classification from Retail Commercial to Mixed Use for 8016 Broadway," including the Adoption of the Negative Declaration.

   Action: Motion by Commissioner LeBaron, seconded by Commissioner Smith to Adopt the Resolution.
   The motion passed by the following vote:
   Ayes: Bailey, LeBaron, and Smith
   Noes: Browne.

   And;

   Adopt Resolution No. 2019-05, entitled, "A Resolution of the Planning Commission for the City of Lemon Grove, California, Recommending City Council and Approval of a Planned Development Permit No. PDP-170-0002 for the Construction of a 108,898 Square Foot Three-Story Commercial Mixed-Use Building at 8016 Broadway," including the Adoption of the Negative Declaration. Including Amendments to the Conditions of Approval be changed to require internally accessible bathrooms, and changing the lighting to dawn to dusk lighting and recommendation to direct staff to work with the applicant before returning to Council to increase the sidewalk and to increase retail space.

   Action: Motion by Commissioner LeBaron, seconded by Commissioner Smith to Adopt the Resolution.
   The motion passed by the following vote:
   Ayes: Bailey, Browne, LeBaron, and Smith
   Noes: None.

Chair Bailey called for a recess at 8:18 p.m. The meeting reconvened at 8:24 p.m. with all of the Planning Commissioners present.

5. Consider Planned Development Permit No. PDP-170-0003 and Tentative Map TM0-0064; A Request to Construct Six (6) Condominium Units at 8200 Hilltop Drive in the Residential Medium High (RMH) Zone.

   Arturo Ortuno, Assistant Planner presented the Staff Report and PowerPoint Presentation.

   Chair Bailey opened the Public Hearing at 8:45 p.m.

   No speakers for comment.

Action: The public hearing was closed at 8:55 p.m. on a motion by Vice-Chair Browne and second by Commissioner Smith.
The motion passed by the following vote:
Ayes: Bailey, Browne, LeBaron, and Smith
Noes: None.

Adoption of Resolution No. 2019-07 entitled, "A Resolution of the Planning Commission of the City of Lemon Grove, California, Recommending City Council Approval of Planned Development Permit No. PDP-170-0003; Authorizing the Subdivision of a 0.25-Acre Parcel into Six (6) Condominium Units on an Undeveloped Site at 8200 Hilltop Drive," and the recommendation to Council to consider the compatibility of the color and materials used.

Action: Motion by Commissioner Smith and second by Commissioner LeBaron.
The motion passed by the following vote:
Ayes: Bailey, Browne, LeBaron, and Smith
Noes: None.

And;

Adoption of Resolution No. 2019-06, entitled, "A Resolution of the Planning Commission of the City of Lemon Grove, California, Recommending City Council Approval of Tentative (Condominium) Map TM0-0064; Authorizing the Subdivision of a 0.25-Acre Parcel into Six (6) Condominium Units on an Undeveloped Site at 8200 Hilltop Drive" and adoption of a Categorically Exemption.

Action: Motion by Vice-Chair Browne and second by Commissioner Smith.
The motion passed by the following vote:
Ayes: Bailey, Browne, LeBaron, and Smith
Noes: None.

Adjournment:

There being no further business to come before the Commission, the meeting was adjourned by motion by Commissioner Smith, and second by Commissioner LeBaron at 9:01 p.m. to a meeting to be held Monday, January 27, 2020, in the Lemon Grove Community Center located at 3146 School Lane, for a Regular meeting.

_____

Shelley Chapel, MMC
Planning Commission Clerk

CITY OF LEMON GROVE

CITY COUNCIL STAFF REPORT

Item No. 2

Meeting Date: April 7, 2020

Submitted to: Honorable Mayor and Members of the City Council

Department: Community Development Department

Staff Contact: Noah Alvey, Community Development Manager

Nalvey@lemongrove.ca.gov

Item Title: **Climate Action Plan**

Recommended Action: Conduct a Public Hearing, Receive Public Comment, and Adopt a Resolution approving the Climate Action Plan.

Summary: The Climate Action Plan (CAP) is a comprehensive plan outlining eight strategies intended to reduce pollution, improve community resilience, better manage natural resources, and reduce Greenhouse Gas (GHG) emissions in the City of Lemon Grove (City). The CAP is comprised of a GHG inventory, emissions projections, an implementation plan, and the following eight strategies:

- Increase Use of Zero-Emission/Alternative Fuel Vehicles;
- Reduce Fossil Fuel Use;
- Reduce Vehicle Miles Traveled;
- Increase Building Energy Efficiency;
- Increase Renewable and Zero-Carbon Energy;
- Increase Water Efficiency;
- Reduce and Recycle Solid Waste; and
- Carbon Sequestration

Discussion:

Inventory

A baseline GHG emissions inventory was prepared in 2012; the inventory is consistent with guidance in the California Air Resources Board's 2017 Climate Change Scoping Plan and uses the same base year (2012) as SANDAG's Series 13 Regional Growth Forecast. In 2012, community activities in the City accounted for 129,400 metric tons of carbon dioxide equivalent (MTCO2e). On-road transportation sources (e.g., vehicular gasoline and diesel consumption) accounted for 55 percent of citywide baseline emissions, and

energy sources (e.g., electricity and natural gas consumption in buildings) accounted for an additional 44 percent. The 2012 baseline inventory is used to forecast emissions and set targets for emissions reductions based on State of California (State) goals.

Projections

Citywide emissions projections were modeled based on a continuation of current trends in activity, population, and job growth. The business-as-usual (BAU) conditions provides estimates of future citywide emissions assuming no changes in citywide activities. Based on trend data, the City would experience a decrease in emissions through 2020 under BAU conditions to 14 percent below 2012 baseline levels. This decrease is primarily due to the Federal and State actions that have resulted in GHG reductions locally. Citywide emissions under BAU conditions would steadily rise after 2020 through 2030, but would still be 13 percent below 2012 baseline levels.

Federal and State actions that are planned to take place in the future would further reduce the City's projected emissions when applied across the various GHG emissions categories. This projection, with the application of legislative actions that would reduce local GHG emissions, is referred to as the Legislatively-Adjusted BAU condition. The City's emissions would be 18 percent below 2012 baseline levels in 2020 with legislative actions, and 36 percent below 2012 baseline levels in 2030.

Strategies

The City would meet its 2020 emissions reduction target under BAU conditions, based on existing activities and trends. However, to meet the City's 2030 reduction target, additional actions beyond those implemented at the Federal and State level are required. To meet the City's 2030 target, the CAP identifies strategies and measures to reduce GHG emissions citywide from a variety of emissions categories. In total, the City will implement eight strategies, listed below

- Increase Use of Zero-Emission/Alternative Fuel Vehicles;

  The actions under this strategy include: reducing municipal fleet gasoline and diesel use, installing electric vehicle charging stations, and transitioning to an electric school bus fleet.

- Reduce Fossil Fuel Use;

  City actions will reduce fuel use by continuing efforts to synchronize traffic lights, which improves vehicle flow and reduces idling, and increasing electric-powered or alternatively fueled construction equipment.

- Reduce Vehicle Miles Traveled;

  Actions under this strategy include participating in the San Diego Association of Government's iCommute vanpool program, developing a Transportation Demand Management Plan, implementing the Safe Routes to School Program, increasing

commute by bicycle and transit, reducing residential parking requirements, and transitioning to online building permits.

- Increase Building Energy Efficiency;

  Electricity and natural gas consumption in residential and non-residential buildings account for the majority of GHG emissions from the energy sector. City actions will aim to reduce emissions by reducing energy used by residential and non-residential consumers through increased energy efficiency in buildings and facilities.

- Increase Renewable and Zero-Carbon Energy;

  Transitioning from fossil fuels to renewable energy for electricity generation will reduce emissions and provide a more sustainable source of electricity. Under this strategy, emissions are reduced by incorporating cleaner, renewable energy for residential, commercial, and municipal operations within the City.

- Increase Water Efficiency;

  Actions under this strategy achieves emissions reductions by water use in landscaping and consumption in municipal facilities, including City parks.

- Reduce and Recycle Solid Waste; and

  Under this strategy, the City would reduce the amount of solid waste deposited at landfills by diverting it to other waste streams, such as recycling or composting. This diversion would also provide recycled solid waste materials for reuse in other products.

- Sequester Carbon

  This strategy focuses on increasing the number of new trees planted in public areas and at new developments to increase the amount of carbon sequestered. The presence of trees is a significant source of carbon sequestration and storage because of their natural process of converting CO2 into oxygen and carbon-based plant matter through photosynthesis.

Community Workshops and Feedback

Over the past several months, City staff have provided surveys and other CAP-related materials to various businesses and establishments within City limits. City staff also held multiple workshops on January 30, 2020, and February 20, 2020, to solicit feedback from community members. The attendees included residents, advocacy groups, and business owners. Generally, workshop attendees were supportive of all the proposed draft actions under the eight strategies. Highest ranking actions included: Providing more sidewalks in residential areas, creating protected bike lanes, phasing out natural gas from existing buildings, joining a Community Choice Aggregation (CCA) agency/provider, and planting more shade trees.

Implementation

The draft CAP contains an implementation chapter which identifies responsible departments or agencies and the timeframe for each action. Many of the actions involve existing or expanding programs. Where new programs or measures are proposed, additional time is needed to develop them and, in some cases, bring them back before the City Council for approval. The timeframe over which strategies are implemented varies between both short-term (i.e. within a couple years) and long-term (i.e. within several or multiple years). Prioritization of the measures is based on a timeframe in which measures can be implemented.

Planning Commission Recommendation

On March 9, 2020, the Planning Commission recommended that the City Council approve the Draft Climate Action Plan with two additional recommendations which were supporting actions to the proposed measures: 1) Coordinate with regional transit authorities and local school districts to improve public transit, including coordination to improve headways at City bus stops; and 2) Explore grant opportunities for tree planting at existing developments. These two recommendations have been incorporated into the Draft Climate Action Plan.

Environmental Review:

☒ Not subject to review, Section 15262 ☐ Negative Declaration

☐ Categorical Exemption ☐ Mitigated Negative Declaration

In accordance with Article 18 (Statutory Exemptions) of the CEQA Guidelines, this project is exempt from environmental review pursuant to Section 15262 which exempts Planning and Feasibility Studies. The CAP is a planning study which provides baseline information, through the GHG emissions inventory and emission forecast, and outlines possible measures that the City could take in the future to reduce greenhouse gas emissions. The CAP does not adopt any policy or put in place any action which would cause a physical change to the environment. The CAP will not have a legally binding effect on future activities as it is only a planning study and does not contain any mandatory measures or amendments to the General Plan and/or Municipal Code.

Fiscal Impact: Adoption of the CAP will result in no immediate fiscal impact. However, future implementation will involve staff time and potentially consultant costs. If adopted, the CAP affords the City with an opportunity to receive grant funding for future implementation actions to offset these costs.

Public Notification: The Notice of Public Hearing Notice was published in the March 26, 2020 edition of the East County Californian.

Staff Recommendation: Conduct a Public Hearing, Receive Public Comment, Adopt a Resolution Approving the Climate Action Plan.

Attachments:
Attachment A – Resolution
Attachment B – Climate Action Plan
Attachment C – Climate Action Campaign comment letter
Attachment D – San Diego Gas & Electric comment letter

RESOLUTION NO.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LEMON GROVE, CALIFORNIA, APPROVING A CLIMATE ACTION PLAN

WHEREAS, the City of Lemon Grove (City) General Plan is a comprehensive, long-term plan that guides land use and physical development of the geographic area of the incorporated City limits; and

WHEREAS, the General Plan provides policy direction supporting improved energy efficiency, alternative transportation options, infill, sustainable energy use, neighborhood connections, efficient municipal operations, and parks and open space development, which help reduce greenhouse gas (GHG) emissions; and

WHEREAS, the State of California (State) has established targets for the reduction of GHG emissions state-wide by 2020 and 2030; and

WHEREAS, the eight strategies included in the Climate Action Plan (CAP), along with specific actions and supporting measures, will reduce GHG emissions in the City consistent with State targets; and

WHEREAS, the CAP will result in co-benefits such as improved air quality and public health outcomes, increased clean technology employment, and improved access to transportation options; and

WHEREAS, the CAP is a planning study only and does not impose requirements on the City; and

WHEREAS, the City Council finds the Climate Action Plan to be exempt from California Environmental Quality Act (CEQA) review pursuant to Section 15262 which exempts Planning and Feasibility Studies. The CAP is a planning study which provides baseline information, through the GHG emissions inventory and emissions forecast, and outlines possible measures that the City could take in the future to reduce greenhouse gas emissions. The CAP does not adopt any policy or put in place any action which would cause a physical change to the environment. The CAP will not have a legally binding effect on future activities as it is only a planning study and does not contain any mandatory measures or amendments to the General Plan and/or Municipal Code; and

WHEREAS, the Planning Commission duly advertised and held a public hearing on March 9, 2020 to consider the Climate Action Plan and recommended approval by the City Council; and

WHEREAS, the City Council duly advertised and held a public hearing on April 7, 2020 to consider the Climate Action Plan; and

WHEREAS, the Notice of Public Hearing for this item was published in the March 26, 2020 edition of the East County Californian; and

WHEREAS, at the public hearing the City Council received evidence through public testimony and comment in the form of verbal and written communications and reports prepared and presented to the City Council; and

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Lemon Grove, California, hereby:

Section 1. Finds that the foregoing recital are true and correct, and are findings of fact of the Lemon Grove City Council in regard to the Climate Action Plan.

Section 2. That, based upon said findings of fact, the City Council approves the Climate Action Plan included as Exhibit A.

PASSED AND ADOPTED on _____, 2020, the City Council of the City of Lemon Grove, California, adopted Resolution No. _____, passed by the following vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

_____

Racquel Vasquez, Mayor

Attest: Shelley Chapel, MMC, City Clerk

Approved as to Form: Kristen Steinke, City Attorney

City of Lemon Grove

CLIMATE ACTION PLAN

April 2020

PREPARED BY:
The City of Lemon Grove

IN CONSULTATION WITH:
Ascent Environmental, Inc.
Energy Policy Initiatives Center

City of Lemon Grove Climate Action Plan

Prepared for:

City of Lemon Grove
3232 Main Street
Lemon Grove, California 91945

Prepared by:

1230 Columbia Street, Suite 440
San Diego, California 92101

5998 Alcalá Park
San Diego, California 92110

Prepared in partnership with the San Diego Association of Governments (SANDAG) and the Energy Roadmap Program. This Program is partially funded by California utility customers and administered by San Diego Gas & Electric Company under the auspices of the California Public Utilities Commission.

April 2020

Credits and Acknowledgements

City of Lemon Grove

City Council

Racquel Vasquez, Mayor

Jennifer Mendoza, Mayor Pro-Tem

David Arambula, Councilmember

Jerry Jones, Councilmember

Yadira Altamirano, Councilmember

City Manager's Office

Lydia Romero, City Manager

Mike James, Assistant City Manager/Public Works Director

Community Development Department

Noah Alvey, Community Development Manager

Mike Viglione, Associate Planner

Daniell Shirazi, Planning Intern

Ascent Environmental

Honey Walters, Principal

Poonam Boparai, Principal

Heidi Gen Kuong, Project Manager

Ricky Williams, Assistant Project Manager

Alyssa Way, Planner

Corey Alling, Communications Specialist

Michele Mattei, Document Production Specialist

Energy Policy Initiatives Center (EPIC) – University of San Diego

Scott Anders, Director

Nilmini Silva-Send, PhD, Assistant Director/Adjunct Professor

Yichao Gu, Technical Policy Analyst

San Diego Association of Governments (SANDAG)

Anna Lowe, Senior Regional Energy/Climate Planner

Katie Hentrich, Associate Regional Energy/Climate Planner

Maggie Soffel, Associate Regional Energy/Climate Planner

Table of Contents

Appendices

Figures

Tables

List of Abbreviations

°F	degrees Fahrenheit
2017 Scoping Plan	California Air Resources Board's 2017 Climate Change Scoping Plan
AB	Assembly Bill
AFV	alternative fuel vehicle
APG	Adaptation Planning Guide
BAU	business-as-usual
BEV	battery electric vehicle
CAA	Federal Clean Air Act
CAFE	Corporate Average Fuel Economy
CalGreen	California Green Building Standards
CalOES	California Office of Emergency Services
CalRecycle	California Department of Resources and Recycling and Recovery
CAP	Climate Action Plan
CARB	California Air Resources Board
CCA	Community Choice Aggregation
CCI	California Climate Investments
CDBG	Community Development Block Grant
CDC	Center for Disease Control
CDPH	California Department of Public Health
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	methane
City	City of Lemon Grove
CM	City of Lemon Grove City Manager's Office
CNRA	California Natural Resources Agency
CO_2	carbon dioxide
DVSP	City of Lemon Grove Downtown Village Specific Plan
EEM	Energy Efficient Mortgage
Energy Roadmap	City of Lemon Grove Energy Roadmap
Eng	City of Lemon Grove Engineering Department
EO	Executive Order
EPIC	Energy Policy Initiatives Center
EV	electric vehicle
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
GUHSD	Grossmont Union High School District
GWP	global warming potential
HERO	Home Energy Renovation Opportunity program
HPS	high pressure sodium

HUD	U.S. Department of Housing and Urban Development
in.	inches
LED	light-emitting diode
LGSD	Lemon Grove School District
MHMP	Multijurisdictional Hazard Mitigation Plan
MW	megawatt
MWD	Metropolitan Water District of Southern California
MWh	megawatt-hour
MPO	Metropolitan Planning Organization
$MTCO_2e$	metric tons of carbon dioxide equivalent
MTS	San Diego Metropolitan Transit System
N_2O	nitrous oxide
NFIP	National Flood Insurance Program
O_3	ozone
OBF	On-Bill Financing
PACE	Property Assessed Clean Energy
PFC	perfluorocarbons
PW	City of Lemon Grove Public Works Department
RCP	Representative Concentration Pathways
RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SB	Senate Bill
SCS	Sustainable Communities Strategy
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas & Electric
SF_6	Sulfur hexafluoride
SGC	Strategic Growth Council
SLCP	short-lived climate pollutant
sq. ft.	square feet
State	State of California
TDM	transportation demand management
UHIE	Urban Heat Island Effect
VMT	vehicle miles traveled
WELO	Water Efficient Landscape Ordinance
ZEV	zero-emissions vehicle

Glossary

Term	Definition
2017 Climate Change Scoping Plan	On December 14, 2017, the California Air Resources Board adopted the 2017 Climate Change Scoping Plan Update, which lays out the framework for achieving the State's 2030 greenhouse gas reductions goals. The Plan includes strategies that aim to lower GHG emissions, support a clean energy economy, provide equitable adaptation to ensure less pollution for all communities, improve public health, and improve natural and working lands.
Adaptation Planning	Adaptation planning is a process for identifying climate change impacts on a jurisdiction and developing strategies to help a community prepare for, respond to, and adapt to these impacts.
Business-As-Usual Emissions Projections	The business-as-usual emissions projection assumes that no additional greenhouse gas reduction efforts (e.g., regulations, climate action plans) beyond what have already been adopted by regulatory agencies would occur.
Cal-Adapt	Cal-Adapt is a climate adaptation planning tool, which assists local planning efforts by allowing users to identify potential climate change risks in specific geographic areas throughout California.
City of Lemon Grove	The City of Lemon Grove (City) is a diverse community of more than 26,000 residents, located a few miles east of the City of San Diego. The City was incorporated in 1977 and is governed by a five-member City Council elected at large.
Climate Action Plan	A Climate Action Plan is a plan prepared by an entity to reduce greenhouse gas emissions and identify climate change adaptation strategies to be implemented by the entity.
Co-Benefits	Co-benefits are environmental or economic outcomes that occur as a result of greenhouse gas reduction measures and strategies.
Downtown Village Specific Plan	In 2012, the City of Lemon Grove updated the Downtown Village Specific Plan which provides a policy and regulatory bridge between the General Plan and individual projects in the downtown village area. The downtown village area covers approximately 58 gross acres and includes primarily a mix of retail and offices uses.

Term	Definition
General Plan	The City of Lemon Grove General Plan provides a vision for future growth and development. The General Plan identifies the community's land use, transportation, environmental, economic, and social goals and policies as they relate to land use and development.
Global Climate Change	Human-caused emissions of greenhouse gases above natural ambient concentrations are responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the Earth's climate, known as global climate change.
Greenhouse Gases	A greenhouse gas is a type of gas that causes heat to be trapped in the atmosphere, resulting in warming effects for the Earth.
Greenhouse Gas Inventory	A greenhouse gas inventory provides a snapshot of emissions generated by community and municipal activities in a given year and provides a baseline from which emissions trends are projected.
Implementation Strategy	An implementation strategy determines the priority of strategies based on a variety of factors including cost, staff resources needed, ease of implementation, and timeframe.
Local Emissions Gap	The local emissions gap refers to reductions needed at the local level to achieve targets for each year after accounting for legislative adjustments.
Legislatively-Adjusted Business-As-Usual Projections	Legislatively-Adjusted business-as-usual projections account for a variety of approved federal and State legislative actions that will further reduce business-as-usual emissions in the City.
Reduction Targets	Consistent with the 2017 Scoping Plan targets, the Climate Action Plan sets target levels for local greenhouse gas reductions by 2020 and 2030. These targets would reduce emissions generated by community activities to four percent below 2012 levels by 2020 and 42 percent below 2012 levels by 2030.
Reduction Strategies and Measures	Greenhouse gas reduction strategies and measures aim to close the gap between the City's anticipated legislatively-adjusted business-as-usual emissions and the reduction targets.

Term	Definition
Sage Project	The Sage Project is a partnership between San Diego State University and a local government in the San Diego region. San Diego State University connects students and faculty with community projects identified by the partner local government. San Diego State University partnered with the City of Lemon Grove for the 2016-2017 academic year Sage Project.
San Diego Forward: The Regional Plan	Every four years, SANDAG prepares a Regional Plan in collaboration with the 18 cities and County of San Diego, along with regional, State, and federal partners. The Regional Plan identifies the transportation needs and improvements that would support future regional growth.
Sustainable Communities Strategy	All Metropolitan Planning Organizations in California are required to adopt a Sustainable Communities Strategy, or Alternative Planning Strategy, showing prescribed land use allocations in the Regional Transportation Plan.
United Nations Guiding Principles	In 2015, the United Nations published the *Guiding Principles for City Climate Action Planning* which sets forth eight "guiding principles" for climate action planning that should be integrated into local climate action plans.

Executive Summary

This Climate Action Plan (CAP) provides a comprehensive roadmap to address the challenges of climate change in the City of Lemon Grove (City). Acting on climate change means both reducing greenhouse gas (GHG) emissions from activities within the City and helping the community to adapt to climate change and improve its resilience over the long term. Climate change is a global issue that relies on the critical role of members of society, including local governments. The City has dedicated resources and partnered with the San Diego Association of Governments (SANDAG) to create this CAP and is committed to environmental stewardship by reducing GHG emissions at the community level. This CAP establishes GHG emission targets and identifying achievable, locally-based actions to reduce GHG emissions from municipal and community activities.

Source: City of Lemon Grove

Scientific evidence shows that the Earth's climate is experiencing a warming trend. The warming is a result of increasing GHGs in the atmosphere. Increasing average temperatures are also causing changes in the climate, including extreme weather and changes in precipitation; this phenomenon is known as global climate change. As California continues to experience historic trends of rising average temperatures, warmer storms, and higher sea levels, there is evidence that the effects of global climate change are already occurring and that reductions in GHG emissions are needed to prevent the most catastrophic effects of climate change.

This CAP aims to address climate change by reducing GHG emissions from activities within the City, and identifying strategies for adapting to future environmental conditions cause by climate change.

The State has also taken several steps to reduce GHG emissions and respond to the threat of global climate change. In 2006, the California Global Warming Solutions Act (Assembly Bill [AB] 32) established the State's first target to reduce GHG emissions, which set a goal of lowering emissions to 1990 levels by 2020. According to the California Air Resources Board (CARB), California has been making steady progress and is expected to achieve the 2020 target. In 2016, Senate Bill (SB) 32 was signed into law, which codified into statute the mid-term GHG reduction target of 40 percent below 1990 levels by 2030, established by Executive Order (EO) B-30-15. This 2030 target places California on a trajectory towards meeting its longer-term goal, which is to bring emissions down to 80 percent below 1990 levels by 2050. EO B-55-18, signed in September 2018, furthers California's efforts to reduce GHG emissions by setting a goal to achieve carbon neutrality by 2045 and achieve net negative GHG emissions thereafter.

This CAP includes strategies to improve the City's resilience to potential environmental risks and hazards over the long term. These strategies provide the City with programs and policies that would be implemented to reduce the effects of and adapt to global climate changes on the community.

Key Components of Climate Action Planning

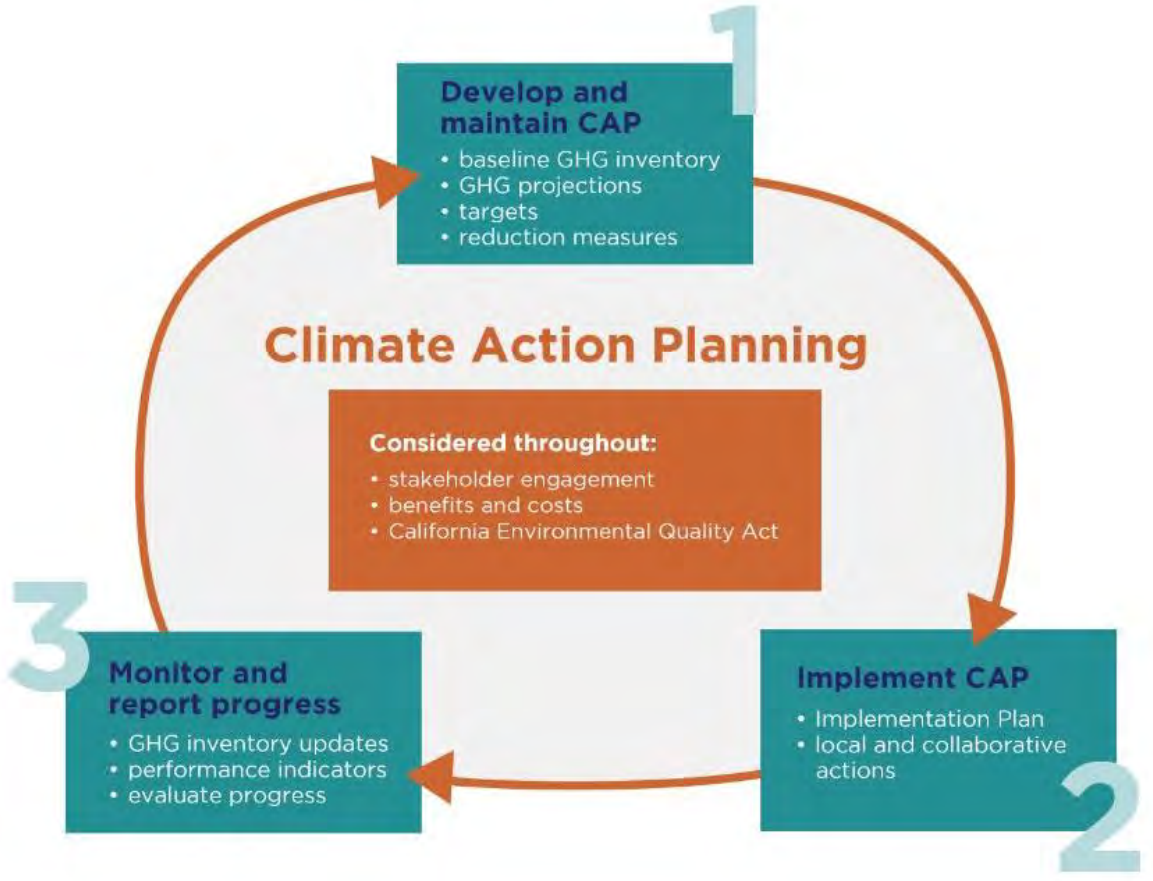
The climate action planning process is undertaking in three main steps:

Step 1: Develop and Maintain a CAP, which includes preparing baseline emissions estimates and projections and developing reduction targets and strategies.

Step 2: Implement the CAP through local measures.

Step 3: Monitor and Report Progress on CAP implementation and identify improvements or adjustments that can be made to the plan in the future.

Adoption of a CAP marks the beginning of an interactive process of maintaining, implementing, monitoring, and updating the CAP. Over time, the City will continue to repeat the iterative process by updating this CAP as new technologies, information, and inventories become available. The key components of the climate action planning process are summarized below and shown graphically in Figure ES-1.



Source: SANDAG 2018.

Figure ES-1 The Climate Action Planning Process

Step 1: CAP Development

Development of the CAP consists of setting a baseline inventory of citywide GHG emissions, projecting GHG emissions into future years, setting GHG reduction targets, and identifying strategies and measures the City will implement to achieve these targets. In developing this CAP, the City is committed to demonstrating consistency with the climate action planning guiding principles in the United Nations *Guiding Principles for City Climate Action Planning* (UN 2015).

Baseline GHG Inventory

A GHG inventory is a snapshot of the emissions associated with a community's various activities in a given year. A baseline GHG emissions inventory was prepared for 2012; the inventory is consistent with guidance in CARB's 2017 *Climate Change Scoping Plan* and uses the same base year (2012) as SANDAG's Series 13 Regional Growth Forecast. In 2012, community activities in the City accounted for 129,400 metric tons of carbon dioxide equivalent ($MTCO_2e$). On-road transportation sources (e.g., vehicular gasoline and diesel consumption) accounted for 55 percent of citywide baseline emissions, and energy sources (e.g., electricity and natural gas consumption in buildings) accounted for an additional 44 percent. The 2012 baseline inventory is used to forecast emissions and set targets for emissions reductions based on State goals, as described in detail in Chapter 2.

Source: City of Lemon Grove

Projections and Reduction Targets

Citywide emissions projections were modeled based on a continuation of current trends in activity, population, and job growth. The business-as-usual (BAU) conditions provides estimates of future citywide emissions assuming no changes in citywide activities. Based on trend data, the City would experience a decrease in emissions through 2020 under BAU conditions to 14 percent below 2012 baseline levels. This decrease is primarily due to the federal and State actions that have resulted in GHG reductions locally. Citywide emissions under BAU conditions would steadily rise after 2020 through 2030, but would still be 13 percent below 2012 baseline levels.

Federal and State actions that are planned to take place in the future would further reduce the City's projected emissions when applied across the various GHG emissions categories. This projection, with the application of legislative actions that would reduce local GHG emissions, is referred to as the Legislatively-Adjusted BAU condition. The City's emissions would be 18 percent below 2012 baseline levels in 2020 with legislative actions, and 36 percent below 2012 baseline levels in 2030.

Consistent with CARB's recommendations for community-wide targets, reduction targets were derived for the CAP using a mass emissions approach. These targets, to be achieved through the implementation of the CAP, are to reduce the citywide GHG emissions by four percent below 2012 levels by 2020 and by 42 percent below 2012 levels by 2030. A summary of the projections and targets is shown below in Table ES-1. Further descriptions of the methodology used for calculating each projection and City reduction targets are provided in Chapter 2.

Table ES-1 Greenhouse Gas Emissions Projections and Targets

Projection	2012 Baseline Emissions ($MTCO_2e$)	2020		2030	
		Total Emissions ($MTCO_2e$)	Change from 2012 Baseline (%)	Total Emissions ($MTCO_2e$)	Change from 2012 Baseline (%)
BAU	129,400	111,100	-14	112,800	-13
Legislatively-Adjusted BAU	--	105,800	-18	82,800	-36
Reduction Targets	--	124,400	-4	75,000	-42

Notes: BAU = business-as-usual; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent
Source: EPIC 2019.

Reduction Strategies and Measures

The City would meet its 2020 emissions reduction target under BAU conditions, based on existing activities and trends. However, to meet the City's 2030 reduction target, additional actions beyond those implemented at the federal and State level are required. To meet the City's 2030 target, this CAP identifies strategies and measures to reduce GHG emissions citywide from a variety of emissions categories. In total, the City will implement eight strategies, listed below in Table ES-2, with one or more measures associated with each.

Table ES-2 Strategies for Reducing Greenhouse Gas Emissions

Strategy	Description
Strategy 1	Increase the Use of Zero-Emission or Alternative Fuel Vehicles
Strategy 2	Reduce Fossil Fuel Use
Strategy 3	Reduce Vehicle Miles Traveled
Strategy 4	Increase Building Energy Efficiency
Strategy 5	Increase Renewable and Zero-Carbon Energy
Strategy 6	Increase Water Efficiency
Strategy 7	Reduce and Recycle Solid Waste
Strategy 8	Carbon Sequestration

Source: EPIC 2019.

Detailed measures were identified within each strategy by assessing the feasibility of implementation and potential co-benefits. Where strategies represent the high-level plans implemented to achieve reductions in each emissions category, measures provide specific actions the City will implement to achieve potential GHG emissions reductions associated with each measure. This CAP includes a total of 25 measures aimed at reducing GHG emissions from five emissions categories. The five measures included in this CAP that would result in the most significant GHG reductions include:

Measure S-1: The City will work with the local franchise waste hauler to achieve a citywide solid waste diversion rate from 51 percent in the baseline year to 80 percent by 2030, reducing citywide emissions by approximately 2,800 $MTCO_2e$ in 2030.

Measure E-7: The City will participate in a community choice aggregation, or similar program to increase grid-supply renewable and zero-carbon electricity supply to 75 percent by 2030, reducing citywide emissions by approximately 1,900 $MTCO_2e$ in 2030.

Measure T-13: The City will develop programs aimed at increasing the number of commuters to college and work that use transit to and from the City, reducing the citywide emissions by approximately 1,300 $MTCO_2e$ in 2030.

Measure T-11: The City will modify existing requirements and reduce the number of required parking spaces in new multi-family residential developments by at least 50 percent for developments near trolley stations, reducing the citywide emissions by approximately 700 $MTCO_2e$ in 2030.

Source: City of Lemon Grove

Measure T-8: The City will adopt a transportation demand management ordinance requiring new commercial developments to increase the use of alternative modes of transportation, reducing citywide emissions by approximately 600 $MTCO_2e$ in 2030.

A detailed description of the eight strategies and 25 measures, and associated GHG emissions reduction potential, is included in Chapter 3.

Steps 2 and 3: Implementation and Monitoring

Implementation of the CAP will require ongoing management, oversight, and collaboration, ensuring that measures translate to real GHG emissions reductions. Successful implementation requires investment, long-term commitments, and widespread community participation. Monitoring CAP measures is an important part of ensuring the success of achieving the City's 2030 reduction target. The City will monitor progress towards the 2030 goal by participating in SANDAG's biennial update of its local GHG inventory. City staff will provide periodic updates to the City Council on CAP implementation and efforts. The City will update the CAP to ensure CAP measures remain implementable and feasible, adjusting measures based on changing conditions or demands, and incorporating new technology not considered in the previous CAPs.

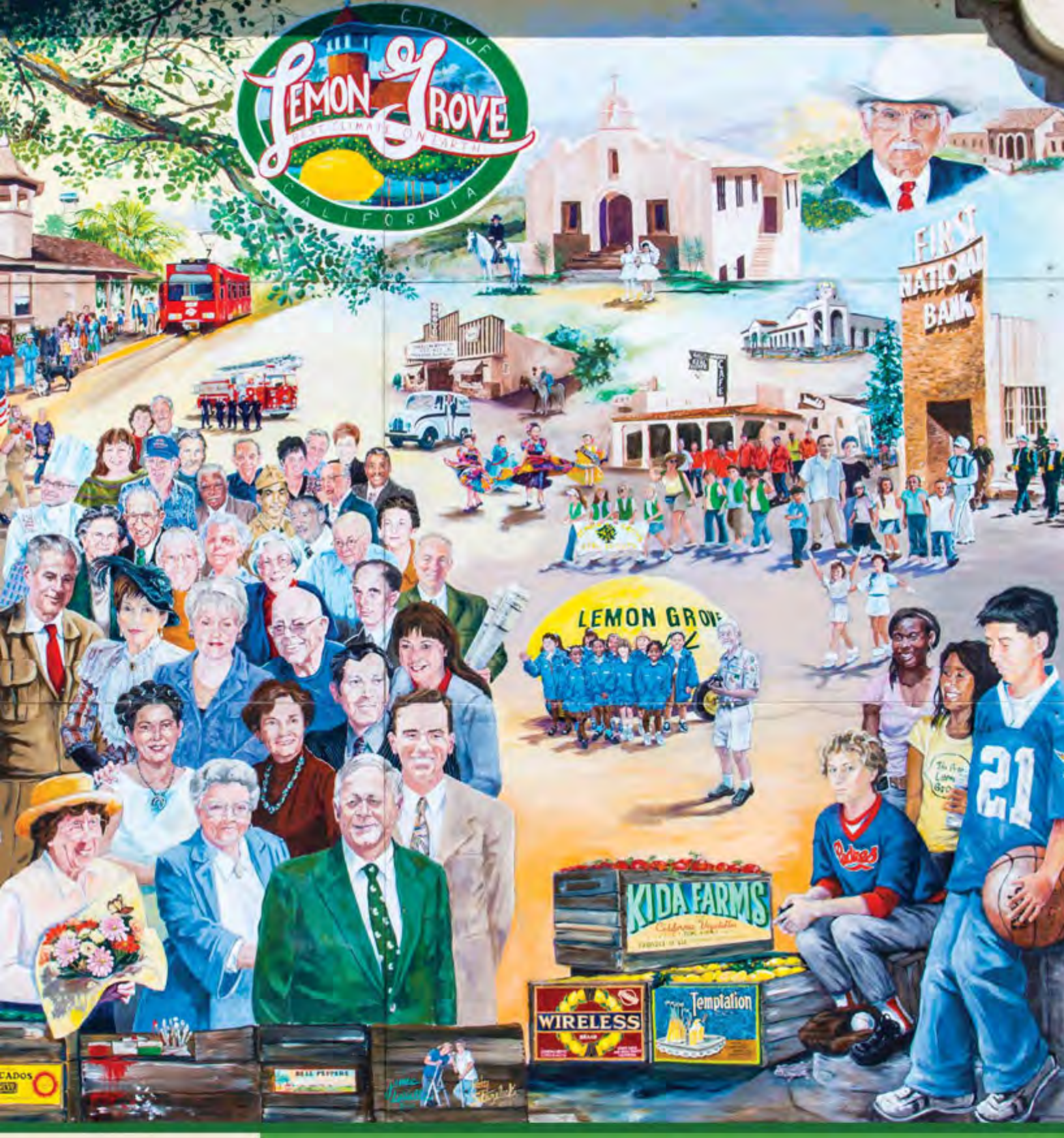
Source: City of Lemon Grove

Ongoing partnerships between community residents, businesses, property owners, the City, and other agencies and organizations in the region are essential for successful implementation. On a communitywide level, individuals and businesses can play an important role in reducing GHG emissions by changing habits to produce less waste, consume less water, or using alternative modes of transportation.

Source: City of Lemon Grove

The CAP includes strategies to improve the City's resilience to potential environmental risks and hazards over the long term. Strategies are organized to reduce climate change impacts associated with increased temperatures, increased frequency of extreme heat events and heat waves, changes in precipitation patterns and water availability, increased likelihood of flooding, and increased wildfire risk. Included within each adaptation strategy are programs and policies to support climate adaptation and resiliency, with a focus on specific vulnerabilities and impacts that have the potential to affect the community's populations, functions, and structures. A detailed discussion of the City's adaptation strategies and vulnerabilities is included in Chapter 4.

Implementation and monitoring mechanisms are identified in the CAP to ensure that all strategies and measures are implemented, and reduction targets achieved. These steps complete the cyclical process of climate action planning and provide the necessary information and feedback used to repeat and improve the process. A detailed description of the City's implementation and monitoring efforts and the importance of continued community engagement and outreach is outlined in Chapter 5.



01 Introduction

The City of Lemon Grove (City) Climate Action Plan (CAP) sets forth strategies and measures to reduce greenhouse gas (GHG) emissions from communitywide and municipal activities. The CAP is intended to meet State targets to reduce GHG emissions and establishes locally-based strategies and measures that focus on reducing GHG emissions, while also improving the livability and quality of life in the City. Though climate change is a global issue, it requires the efforts of local governments to reduce GHG emissions in their communities. In addition to identifying ways to reduce GHG emissions, the City has identified strategies to adapt to climate change and improve resilience over the long-term that focus on vulnerabilities and impacts of climate change that have the potential to affect the community's populations, functions, and structures.

1.1 Climate Action Plan Overview

The CAP provides the City with a roadmap to address two climate change challenges: to reduce GHG emissions from activities within the City and to improve its resilience to climate change over the long term.

The effects of global climate change are already occurring as California continues to experience rising average temperatures, warmer storms, and higher sea levels. The impacts of climate change vary across the State due to its diverse biophysical setting, climate, and community characteristics. While projections generally show little change in total annual precipitation statewide, even modest changes could have significant effects on the State's ecosystem. At a local level, annual temperatures are projected to steadily increase over time. At the same time, average precipitation levels are projected to remain relatively the same; however, this precipitation is expected to result from fewer, but more intense storms (CEC 2019). These changes could result in increased heat waves, wildfire risk, and flooding, resulting in adverse effects on human health and safety, economic prosperity, infrastructure capacity and maintenance, and provision of public services in the City.

This CAP sets forth strategies and measures designed to reduce GHG emissions consistent with the State's 2030 GHG reduction target and demonstrate progress towards the 2050 reduction goal. Technologies and markets are constantly changing how we approach and reduce the impacts of climate change. This CAP uses the best information, research, and technology currently available. The City will update the CAP to stay in step with new technologies that do not yet exist, and new State and federal laws, as outlined in Chapter 5, Implementation and Monitoring. The overarching goals of the CAP remain the same: to reduce GHG emissions and prepare for and adapt to climate change.

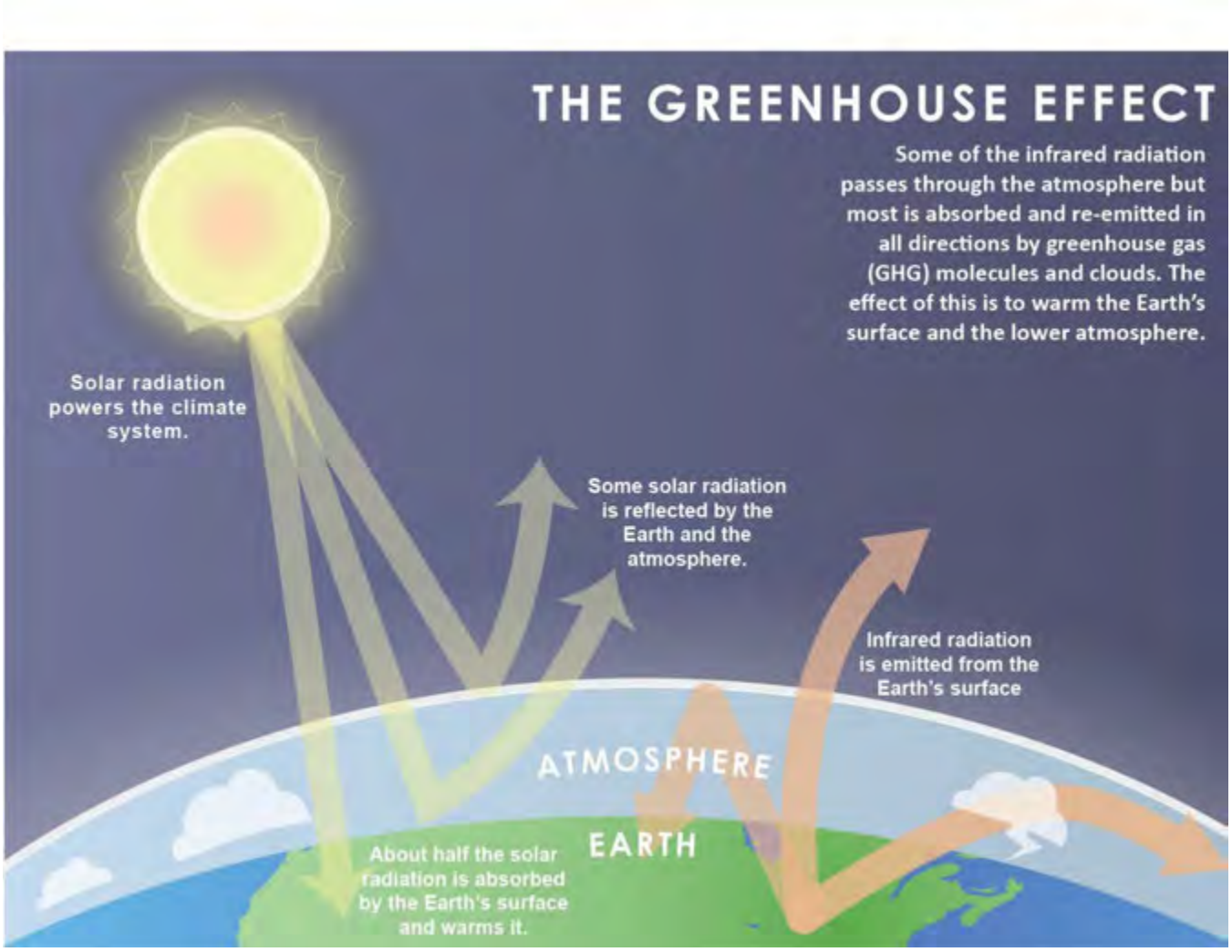
Source: City of Lemon Grove

This CAP represents an important step in acknowledging global climate change effects on the City. The document is divided into five chapters. Chapter 1 provides an overview and introduction to the regulatory framework. Chapter 2 summarizes the City's GHG emissions that are contributing to global warming. Chapter 3 includes a description of strategies and measures the City will implement to reduce local GHG emissions. Chapter 4 evaluates the City's vulnerability to climate change and current and future strategies the City is implementing to adapt to climate change impacts.

Chapter 5 provides an outline for how the City will implement the GHG reduction strategies and includes guidelines for monitoring and updating the CAP.

1.2 Introduction to Climate Change Science

The greenhouse effect, as outlined below in Figure 1-1, results from a collection of atmospheric gases called GHGs that insulate the Earth and help regulate its temperature. These gases, mainly water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone, and chlorofluorocarbons all act as effective global insulators, reflecting Earth's visible light and infrared radiation to keep temperatures on Earth conducive to life. Without the greenhouse effect, Earth would not be able to support life as we know it.



Source: Ascent Environmental 2019.

Figure 1-1 The Greenhouse Effect

Human activities (e.g., burning of fossil fuels for transportation and energy, increasing rates of deforestation and development) have contributed to the elevated concentration of these gases in the atmosphere. Human-caused (i.e., anthropogenic) emissions of GHGs above natural ambient concentrations are responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the Earth's climate, known as global climate change, or global warming. There is scientific consensus that it is "extremely likely" that most of the changes in the world's climate during the last 50 years are a result of anthropogenic GHG emissions (IPCC 2014).

Source: City of Lemon Grove

Furthermore, short-lived climate pollutants, which are GHGs that remain in the atmosphere for a much shorter period than long-lived climate pollutants (e.g., CO_2 and N_2O), are also powerful climate forcers that have an outsized impact on climate change in the near term. Despite their relatively shorter atmospheric lifespan, short-lived climate pollutants' relative potency in terms of how they heat the atmosphere (i.e., global warming potential) can be tens, hundreds, or even thousands of times greater than that of CO_2. Short-lived climate pollutants include CH_4; fluorinated gases, including hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride; and black carbon.

1.3 Regulatory Framework

In response to the threat of global climate change, the State and City have already taken several steps to both reduce GHG emissions and adapt to climate change. These efforts, briefly summarized below, provide important policy direction and context for the CAP.

1.3.1 Federal and State Regulations

In 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05, which directed California to reduce GHG emissions to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. A year later, in 2006, the Global Warming Solutions Act (Assembly Bill [AB] 32) was passed, establishing regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions. AB 32 put a cap on GHG emissions, setting a target of reducing GHG emissions to 1990 levels by 2020. As part of its implementation of AB 32 and Executive Order S-3-05, the California Air Resources Board (CARB) developed a Scoping Plan in 2008. The Scoping Plan, along with its Update in 2014, describes the approach California will take to reduce GHGs to achieve reduction targets and goals. California is currently on track to meet or exceed the AB 32 target of reducing GHG emissions to 1990 levels by 2020.

On April 20, 2015, Governor Edmund G. Brown Jr. signed Executive Order B-30-15, establishing a new GHG emissions reduction target of 40 percent below 1990 levels by 2030. This target aligns with those of leading international governments such as the 28-nation European Union which adopted the same target in October 2014. Executive Order B-30-15 also directed CARB to update the AB 32 Scoping Plan to reflect the path to achieving the 2030 target. In September 2016, Governor Brown

also signed Senate Bill (SB) 32, which codified into statute the mid-term 2030 target established by Executive Order B-30-15. The 2030 GHG emissions reduction target places California on a trajectory towards meeting the goal of reducing statewide emissions to 80 percent below 1990 levels by 2050. Executive Order B-55-18, signed in September 2018, furthers California's efforts to reduce GHG emissions by setting a goal to achieve carbon neutrality by 2045 and achieve net negative GHG emissions thereafter.

California aims to reduce annual GHG emissions Statewide to:

- 1990 levels by 2020;
- 40 percent below 1990 levels by 2030; and
- 80 percent below 1990 levels by 2050.

In November 2017, CARB published the *2017 Climate Change Scoping Plan* (2017 Scoping Plan), which lays out the framework for achieving the 2030 reductions as established in Executive Order B-30-15 and SB 32. The 2017 Scoping Plan identifies GHG reductions by emissions sector to achieve a statewide emissions level that is 40 percent below 1990 levels by 2030.

In addition to legislation setting statewide GHG reduction targets, SB 375, signed by Governor Schwarzenegger in 2008, better aligned regional transportation planning efforts, regional GHG emissions reduction targets, and land use and housing allocations. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy, showing prescribed land use allocations in each MPO's Regional Transportation Plan (RTP). CARB, in consultation with the MPOs, provides each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035.

To effectively address the challenges that a changing climate will bring, the State also prepared the 2009 California Climate Adaptation Strategy, which highlights climate risks and outlines possible solutions that can be implemented throughout California. This Strategy was updated in 2014 and is now known as *Safeguarding California*. In 2015, the State also developed the *Safeguarding California Implementation Action Plans*.

Source: City of Lemon Grove

Other relevant federal and State regulations relevant to the CAP are identified below:

Table 1-1 Relevant Federal and State Regulations		
Federal	Federal Clean Air Act (CAA)	In 2007, the U.S. Supreme Court ruled that CO_2 is an air pollutant as defined under the CAA, and the U.S. Environmental Protection Agency has the authority to regulate emissions of GHG.
Federal	Corporate Average Fuel Economy (CAFE) Standards	The federal CAFE Standards determine the fuel efficiency of certain vehicle classes in the U.S.
State	SB 97	The State Office of Planning and Research prepared, and the Natural Resources Agency adopted amendments to the State California Environmental Quality Act (CEQA) Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. Effective as of March 2010, the revisions to the CEQA Environmental Checklist Form (Appendix G) and the Energy Conservation Appendix (Appendix F) provide a framework to address global climate change impacts in the CEQA process; State CEQA Guidelines Section 15064.4 was also added to provide an approach to assessing impacts from GHGs.
State	Executive Order S-21-09	Executive Order S-21-09, signed in 2009, directed CARB, under its AB 32 authority, to adopt a regulation by July 31, 2010 that sets a 33 percent renewable energy target as established by Executive Order S-14-08.
State	Executive Order S-01-07	Executive Order S-01-07, signed in 2007, set forth a low carbon fuel standard for California, whereby the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.
State	California Building Efficiency Standards Title 24 Part 6	The California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.
State	AB 1493	AB 1493 (Pavley), signed into law in 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks.
State	AB 197	AB 197 (Garcia), signed into law in 2016, creates a legislative committee to oversee CARB and requires CARB to take specific actions when adopting plans and regulations pursuant to SB 32 related to disadvantaged communities, identification of specific information regarding reduction measures, and information regarding existing GHGs at the local level.

State	SB 350	SB 350, signed into law in 2015, requires the State to set GHG emission reduction targets for the load serving entities through Integrated Resource Planning. SB 350 requires an increase in the Renewables Portfolio Standard to 50 percent by 2030 and doubling energy savings in electricity and natural gas end uses.
State	Advanced Clean Cars Program	In January 2012, CARB approved the Advanced Clean Cars program, which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of standards for vehicle model years 2017 through 2025.
State	SB X1-2	SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 mandates that renewables supplied to the California grid from sources within, or directly proximate to, California make up at least 50 percent of the total renewable energy for the 2011-2013 compliance period, at least 65 percent for the 2014-2016 compliance period, and at least 75 percent for 2016 and beyond.
State	SB 100	SB 100, singed into law in 2018, provides an update to SB X1-2 and requires California's renewable energy and zero-carbon resources supply 100 percent of electric retail sales to end-use customers and 100 percent of electricity procured to serve state agencies by 2045.

1.3.2 San Diego Association of Governments

SANDAG is the public agency that serves as the MPO for the San Diego region. SANDAG adopted *San Diego Forward: The Regional Plan* that integrates the RTP and SCS in October 2015 in response to SB 375.

SANDAG is currently working with local jurisdictions to help identify opportunities to reduce GHGs related to local operations through the Roadmap Program. Since 2010, the Roadmap Program has provided member agencies with voluntary, no-cost energy assessments known as "Energy Roadmaps." Each Energy Roadmap provides strategies, unique to each local government, to reduce energy use in municipal operations and in the community. The Roadmap Program is primarily funded by San Diego Gas & Electric and was expanded to include climate planning in 2016.

1.3.3 City of Lemon Grove

The City is actively engaged in climate planning at the local level through plan updates and implementation, municipal projects, and outreach and educational efforts. These activities are complimentary to the CAP and provide the baseline for sustainability activities occurring at the municipal and community levels. Climate planning and sustainability-related activities within the City have included:

General Plan Update. The City is currently in the process of updating its General Plan. The City's General Plan provides a vision for the future and identifies community land use, transportation, environmental, economic, and social goals and policies. The General Plan includes guiding principles the City will follow to protect and/or use natural resources in a sustainable manner, including water, air quality, energy, and biological resources.

Source: City of Lemon Grove

Downtown Village Specific Plan. The City adopted an update to the Downtown Village Specific Plan (DVSP) in 2012. This plan, which provides a bridge between the land use regulations in the downtown village and the City's General Plan, identifies the vision for the Downtown Village and Civic Center area, which serves as the primary activity center in the City. The DVSP provides land use changes and goals that encourage higher density, pedestrian friendly, and transit-oriented development.

Energy Roadmap. In 2014, the City prepared the *City of Lemon Grove Energy Roadmap* (Energy Roadmap) through the SANDAG Roadmap Program. The City's Energy Roadmap provides a framework to identify ways to save energy in government operations and in the community and includes wide-ranging, cost-effective opportunities to save electricity, natural gas, and transportation fuels.

Water Reduction Measures. The City has implemented multiple measures that reduce water consumption in municipal areas and increased landscaped areas to reduce stormwater runoff. In addition to the development and approval of the City's *Best Management Practices Design Manual,* which provides best practices for developments to reduce stormwater runoff, specific activities that have occurred in the City include:

- Replacement of hardscape along medians with decomposed granite and landscaping to reduce stormwater runoff.
- Replacement of standard irrigation controllers with smart controllers at municipal facilities to reduce water consumption in landscaped areas.
- Addition of rainwater capture devices at Civic Center Park, directing captured rainwater to landscaped areas and reducing overall water consumption.

Renewable Energy. The City has worked with existing homeowners to install photovoltaic systems on residential roofs, increasing the percentage of renewable energy generated citywide.

San Diego State Sage Project. During the 2016-2017 school year, the City partnered with San Diego State University to develop projects and plans through the Sage Project. Through this project, faculty and students, in partnership with City staff, developed projects to address social, economic, and environmental goals for the City. The Sage Project included 37 individual projects developed by

faculty and staff with sustainability focuses, including community garden feasibility plans, climate action vulnerability assessments, and marketing materials and support.

1.4 Purpose and Objectives

The City's CAP organizes strategies and measures based on emissions categories evaluated in the 2012 GHG emissions inventory. These categories include: on-road transportation, off-road transportation, electricity, natural gas, solid waste, water, and wastewater. Strategies were developed to target improving the GHG efficiency of communitywide and municipal activities. The CAP is an important document that acknowledges global climate change and its effects on the City. The overarching goals of the City's CAP are to reduce GHG emissions and identify adaptation measures for City government, businesses, and residents.

1.4.1 GHG Reduction Targets and Measures

As discussed in greater detail in Chapters 2 and 3, the City's GHG emissions inventory performed for the 2012 baseline year demonstrated that activities within the City emitted 129,400 metric tons of carbon dioxide equivalent. The GHG reduction targets for the CAP have been established in accordance with CARB's 2017 Scoping Plan recommendations for developing community-wide, plan-level reduction targets. Consistent with the Scoping Plan targets, the City must achieve the following reductions from 2012 levels:

- 4 percent below 2012 levels by 2020; and
- 42 percent below 2012 levels by 2030.

To achieve these targets, the City's CAP identifies a summary of baseline GHG emissions and the potential growth of these emissions over time, GHG emissions reduction targets and goals to reduce the community's contribution to global climate change, and identification and evaluation of strategies and measures to reduce GHG emissions.

1.4.2 Implementation Strategy

Meeting GHG reduction targets represents a challenge that will require significant City investments, long-term commitment, and the widespread participation of residents and business owners. Implementation will be dependent on the City adopting future implementing ordinances, policies, and programs, as well as evaluating the costs and benefits associated with the implementation of each measure. Meeting reduction targets will require continued collaboration among all City departments, as well as private, non-profit, and educational partners.

Source: City of Lemon Grove

Chapter 4 provides a high-level discussion of relative implementation costs and responsible departments. As the City allocates funding or identifies timelines for the implementation of each measure, action plans will be developed providing the framework for specific measure

implementation, including quantified costs, department/partner responsibilities, specific tasks to be achieved, and dates for task completion.

1.4.3 United Nations Guiding Principles

Published by the United Nations (UN) in 2015, *Guiding Principles for City Climate Action Planning* aims to help cities reduce GHG emissions and adopt low emission development trajectories, as well as to adapt to the impacts of climate change and build local climate resilience. This framework sets forth eight "guiding principles" for climate action planning that are recommended to be integrated into local climate action plans. The eight guiding principles state that climate action planning should be:

Ambitious 	Setting goals and implementing actions that evolve iteratively towards an ambitious vision
Inclusive 	Involving multiple City government departments, stakeholders, and communities (with particular attention to marginalized groups), in all phases of planning and implementation.
Fair 	Seeking solutions that equitably address the risks of climate change and share the costs and benefits of action across the City.
Comprehensive and Integrated 	Coherently undertaking adaptation and mitigation actions across a range of sectors within the City, as well as supporting broader regional initiatives and the realization of priorities of higher levels of government when possible and appropriate.
Relevant 	Delivering local benefits and supporting local development priorities.
Actionable 	Proposing cost-effective actions that can realistically be implemented by the actors involved, given local mandates, finances, and capabilities.

Evidence-Based 	Reflecting scientific knowledge and local understanding, and using assessments of vulnerability and emissions and other empirical inputs to inform decision-making.
Transparent and Verifiable 	Following an open decision-making process, and setting goals that can be measures, reported, independently verified, and evaluated.

The City is committed to demonstrating commitment to the reduction of global GHG emissions through this CAP. Each of the UN guiding principles are highlighted throughout this CAP, providing context for the relationship between the information presented and the relevant guiding principles.

1.5 Co-Benefits

While the measures included in the CAP are generally geared towards reducing GHG emissions, many will also result in environmental or economic "co-benefits." Environmental co-benefits can include improvements to air quality, water supplies, and biological resources, public health outcomes, and beneficial outcomes for other resources. Additional co-benefits identified in the CAP include:

Co-Benefits identified in the CAP:
- Improved Air Quality
- Improved Public Health
- Increased Non-Motorized Transportation
- Reduced Fossil Fuel Reliance
- Energy Efficiency/Reduced Energy Demand
- Increase Renewable Energy

- Improved air quality as a result of reducing the number of miles traveled in vehicles and associated fuel combustion.
- Increased energy efficiency in buildings and increased use of renewable energy sources resulting in reduced building heating and cooling costs and fossil fuel use.
- Improved public health through encouraging alternative transportation modes that allow people to drive less, save money, and enjoy a better quality of life.
- Enhanced community character and improved air quality from increased tree plantings in City rights-of-way, other public spaces, and new private developments.

In addition to these co-benefits, the CAP provides for other benefits to the City, including improved local control. The CAP allows the City to maintain control over GHG reduction strategies that are most advantageous to the City, while also promoting economic competitiveness and positioning the City for competitive grant funding. The CAP also demonstrates that the City is aligned with State targets for reducing GHG emissions. Further, co-benefits of reducing air pollution can be an important element of climate change policy, making these policies effectively cheaper by removing the need for additional policies or technologies to filter out air pollutants. More detailed discussion of reduction strategies and their co-benefits is included in Chapter 3.

1.6 Community Action and Public Involvement

While global change is happening worldwide, local efforts to reduce human-induced GHG emissions and build resilience in the face of adverse climate change effects can make a difference. Local action on climate change cannot be addressed insularly by one agency or community, but requires active and ongoing partnerships between residents, businesses, the City, and other agencies and organizations in the region. By beginning to plan now and engage in more sustainable practices, communities will be better suited to adapt to climate change and be more resilient in the future.

1.6.1 Community Action

At the regional and local scale, individuals and businesses can play an important role in combating climate change. By changing habits to consume less energy, producing less waste through recycling, conserving water, composting, and driving less by choosing to carpool, take transit, or walk and bike more frequently, individuals and businesses can work towards reducing their carbon footprint. The combination of these small efforts can lead to better outcomes for the environment and the City.

Source: City of Lemon Grove

Effective and long-term climate action and resiliency in the City can only be achieved through efforts that continue to change the way individuals interact with the environment. The CAP serves as a resource and starting point to support long term sustainability efforts. The City is committed to implementing the measures in the CAP to advance equality and reduce disparities. Opportunities to participate and share the benefits of the City's measures will be inclusive for all City residents.

1.6.2 Summary of Public Involvement

The City hosted four separate community meetings and performed outreach efforts at various community locations to ensure that the CAP equitably captured the ideas and concerns of residents and businesses. Outreach media were produced in both English and Spanish to advertise community events, solicit input on the CAP, and provide general information on the CAP development process. Outreach media included: postcards mailed to every address in the City; adult and children surveys; an educational brochure; and a GHG Reduction Measure input handout.

The City received general input from comments at community meetings, responses to the CAP Survey, and completed GHG Reduction Measures Handouts. A total of 100 people provided input during the CAP development process including 58 city residents. Most of the GHG reduction measure related input and feedback was received at the first set of community meetings, which had a collective 16 attendees. Input on the GHG reduction measures and general comments on the CAP document were received at the second set of community meetings. Additional input on the CAP was received through CAP surveys distributed at the community meetings, on the City's CAP website, and at various community locations. The multiple sets of events and additional

methods for providing input on the CAP outside of these events provided residents and stakeholder groups the opportunity to contribute to the CAPs development.

Feedback from the community showed that the majority of residents are very concerned with GHG emissions in the City, and are most interested in GHG reduction strategies that will increase waste diversion, increase procurement of renewable energy, and increase the number of residents commuting by public transit. Comments from the community meetings showed support for City participation in a Community Choice Energy *(CCE)* Program as a measure in the CAP, which would increase the percentage of electricity supplied to the City generated from renewable sources. Many residents who provided comments supported increasing urban trees to increase carbon sequestered in the City and implementing measures to reduce the urban heat island effect. More detailed discussion of outreach efforts and engagement is included in Appendix C.

02 Greenhouse Gas Emission Inventory, Projections, and Targets

This chapter summarizes the accounting of greenhouse gas (GHG) emissions within the City of Lemon Grove (City). It includes a discussion of the primary sources and annual levels of GHG emissions for the 2012 baseline year, describes likely trends if emissions are not reduced for 2020 and 2030, and sets a path forward to reduce emissions by establishing targets for 2030.

2.1 Purpose of the Inventory

Preparing a GHG emissions inventory is an important first step in the climate action planning process. The inventory provides a snapshot of emissions generated by community and municipal activities in a given year and provides a baseline from which emissions trends are projected. The City's inventory and projections are used to develop reduction targets consistent with State mandates. The resulting gap, referred to as the "emissions gap," between forecasted emissions and reduction targets serves as the foundation to determine the strategies and measures needed to reduce GHG emissions to meet the 2030 target.

Assembly Bill (AB) 32, Senate Bill (SB) 32, and Executive Orders B-30-15 and S-3-05 use 1990 emissions levels as a benchmark to identify statewide reduction targets. The City's Climate Action Plan (CAP) includes targets developed proportionally based on a 2012 baseline inventory in the absence of 1990 emissions data. This is consistent with the guidance provided by the California Air Resources Board (CARB) in the *2017 Climate Change Scoping Plan* (2017 Scoping Plan) and is the same baseline year as the San Diego Association of Government's (SANDAG's) Series 13 Regional Growth Forecast.

The inventory baseline is used to:

- Forecast emissions
- Develop reduction targets
- Identify necessary reduction strategies and measures

The City has included the baseline inventory and associated calculations and methodology as part of this CAP to provide transparent and verifiable data.

The City's GHG inventory also provides the ability to track citywide emissions over time, as the City will prepare updated GHG emissions inventories after the CAP is adopted. These updated inventories will be compared to the 2012 baseline inventory to track progress in emissions reductions resulting from CAP measure implementation.

2.2 Baseline Inventory

The baseline GHG inventory provides a detailed accounting of the sources and amounts of GHG emissions generated from activities within the City. The inventory provides an estimate of citywide emissions for a defined set of gases that contribute to climate change. The emissions inventory includes estimates of GHGs generated from five emissions categories that can be readily monitored and reduced through communitywide and municipal actions.

Three primary GHGs are quantified in the City's inventory: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). These gases are converted to a comparable unit by multiplying each non-CO_2 gas by their global warming potential (GWP), reporting emissions in terms of carbon dioxide equivalent (CO_2e). This conversion allows consideration of all gases in comparable terms and makes it easier to communicate how various sources and types of GHG emissions contribute to global climate change. A metric ton of CO_2e ($MTCO_2e$) is the standard measurement of the amount of GHG emissions produced and released into the atmosphere.

Source: City of Lemon Grove

The City's GHG emissions inventory was prepared for a 2012 baseline year and includes seven emissions categories. Table 2-1 provides a description of emissions associated with each category included in the 2012 inventory and is organized in order of total contribution to citywide GHG emissions.

Table 2-1 City of Lemon Grove Emissions Categories

Emissions Category	Description
On-Road Transportation	On-road transportation emissions associated with gasoline and diesel consumption from motor vehicles on local and regional roadways.
Electricity	Building energy use emissions associated with electricity in residential and non-residential buildings.
Natural Gas	Building energy use emissions associated with combustion of natural gas in residential and non-residential buildings.
Off-Road Transportation	Off-road transportation emissions associated with gasoline and diesel fuel use from recreational vehicles, construction equipment, and residential and commercial equipment.
Solid Waste	Waste emissions associated with waste generated by residents and businesses of the City and disposal of mixed and organic waste in landfills.
Water	Emissions associated with the water supplied, conveyed, treated, and distributed to residents and businesses within the City.
Wastewater	Wastewater treatment fugitive and process emissions consisting of GHGs from combustion of anaerobic digestor gas and operational fossil fuels.

Notes: City = City of Lemon Grove; GHG = greenhouse gas
Source: EPIC 2018.

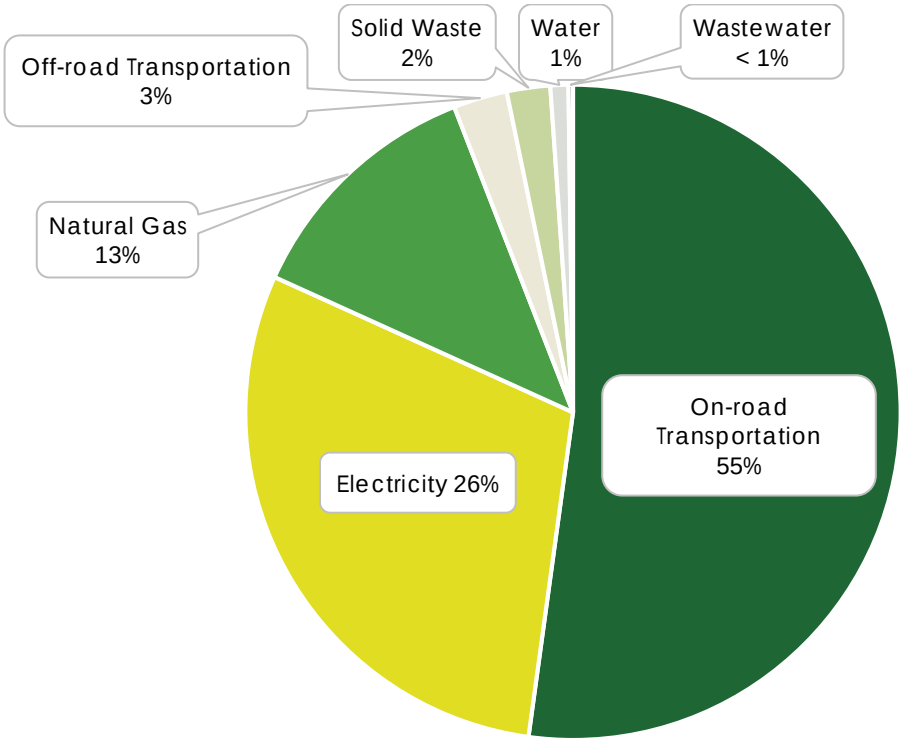
The GHG reduction strategies and measures identified in this CAP focus primarily on the City's ability to reduce inventoried emissions. However, reducing GHG emissions consistent with State goals would also require partnerships and individual efforts beyond the City's control. Daily choices made by residents, businesses, and organizations within the City result in the generation of GHG emissions

that extend beyond the influence of the City and this CAP. Individual actions, such as taking transit as an alternative to driving or composting organics instead of sending these materials to the landfill, have the ability to reduce GHG emissions beyond reductions identified in this CAP. These individual actions, along with efforts taken by the City, would combine to further reduce the local carbon footprint.

The City's 2012 GHG inventory used evidence-based methodologies to estimate emissions.

2.2.1 GHG Emissions Inventory

The City's 2012 baseline GHG emissions by category are shown in Figure 2-1. Community activities in the City in 2012 accounted for approximately 129,400 $MTCO_2e$. The primary category contributing to GHG emissions in the City is On-Road Transportation, which accounted for 55 percent of the total emissions in 2012. On-road transportation activities are primarily related to gasoline and diesel consumption in on-road vehicles on local and regional roadways. These emissions were calculated based on estimated vehicle miles traveled (VMT) for all vehicles traveling to, from, and within the City. Emissions from the electricity and natural gas categories, collectively referred to as the Energy category, account for an additional 39 percent of the City's 2012 emissions. Emissions generated in the energy category are associated with electricity and natural gas consumption in buildings within the City.



Source: EPIC 2018.

Figure 2-1 City of Lemon Grove 2012 GHG Emissions

The City's GHG emissions generated by each category in the 2012 inventory are shown in Table 2-2. Additional details related to specific emissions categories, data sources, assumptions, and methodology can be found in Appendix A.

Table 2-2 City of Lemon Grove 2012 Greenhouse Gas Emissions Inventory

Emissions Sector	$MTCO_2e$	Percent (%)
On-Road Transportation	70,700	55
Electricity	34,000	26
Natural Gas	16,700	13
Off-Road Transportation	3,600	3
Solid Waste	2,900	2
Water	1,200	1
Wastewater	300	<1
Total	129,400	100

Notes: Columns may not add to totals due to rounding.
$MTCO_2e$ = metric tons of carbon dioxide equivalent
Source: EPIC 2019.

2.3 Emissions Projections

GHG emissions projections provide an estimate of future emission levels that are based on a continuation of current trends in activity, population and job growth, and relevant legislative actions that have already been adopted. Projections provide insights into the scale of local reductions needed to achieve the GHG emissions reduction targets, in addition to legislative actions.

Two projections are used in this CAP: "business-as-usual" (BAU) and "Legislatively-Adjusted BAU". The BAU projection assumes that no additional efforts or legislative actions will be made to reduce GHG emissions in the future. This projection also assumes that population, employment, and transportation activity will grow over time, consistent with SANDAG projections. Legislatively-Adjusted BAU projections provide a reduction from the BAU projection accounting for federal and State actions that have been adopted since the baseline year, assuming the same demographic trends as the BAU projections.

The City's emissions projections assume existing trends will continue for:

- Population growth
- Job growth
- Transportation activity

Details on how the projections were developed and the indicators used to estimate each category can be found in Appendices A and B.

2.3.1 Demographic Trends

GHG emissions forecasts were estimated for 2020 and 2030 using City-specific demographic and vehicle activity projections through 2030 from the SANDAG Series 13 Regional Growth Forecast. At the time of writing this CAP, the SANDAG Series 13 Regional Growth Forecast represents the best available regional population, employment, and VMT forecasts. This data is based primarily on U.S. Census data, which is collected every ten years. The U.S. Census Bureau will begin collecting census data in mid-2020. This census data, providing the most up-to-date population information for the

City will be released for public use in early- to mid-2021. In general, the City is anticipated to experience modest growth by 2020 and 2030, as reflected in the emissions forecasts. Based on the regional growth forecast, the City's population is expected to increase by five percent by 2020 and 11 percent by 2030 from 2012 levels. Total jobs in the City are expected to increase by eight percent by 2020 and 14 percent by 2030 from 2012 levels. Further details on the underlying SANDAG data used for emissions forecasts can be found in Appendix A.

From 2012 levels, population in the City is expected to increase by:
- 5% by 2020, and
- 11% by 2030.

2.3.2 Business-As-Usual Projections

The BAU projections assume that no additional efforts beyond those already being implemented within the City will be made to reduce GHG emissions in the future. The City's annual emissions are projected to decrease from 2012 through 2020. This decrease in BAU emissions is reflective of actions taken by State and federal agencies and improved efficiency of new buildings and automobiles. Based on these projections, the City's GHG emissions would continue to decrease into the future through 2030.

Legislative Reductions

The Legislatively-Adjusted BAU scenario accounts for a variety of approved legislative actions that will further reduce BAU emissions in the City. This adjustment accounts for the implementation of legislative actions at the federal and State levels by estimating the impacts of these actions on the various GHG emissions-producing categories in the CAP. The Legislatively-Adjusted BAU does not include local-government actions, such as the implementation of GHG emissions reduction measures identified in this CAP. The legislative actions applied to estimate the Legislatively-Adjusted BAU include:

- Federal and State Vehicle Efficiency Standards: Tailpipe emissions standards through 2025, including California Zero Emissions Vehicle Program.[1]
- California Renewables Portfolio Standards: 43 percent renewables in 2016 increasing to 60 percent by 2030.
- California Energy Efficiency Programs: Utility's energy efficiency target, to be achieved though rebate programs, codes, and standards.
- California Solar Policies and Programs: California Solar Initiative, New Solar Homes Partnership, Net Energy Metering, building codes and standards updates.

Source: City of Lemon Grove

[1] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule was published during preparation of this CAP. Adjustments to GHG emission factors to account for the impact of the SAFE Rule have not been developed by CARB at the time of this writing. Therefore, the methodology used in the CAP is consistent with current published guidance from CARB. The City will continue to monitor updates to emission factors as they become available.

A detailed description and analysis of how specific legislative reductions are included in the City's Legislatively-Adjusted BAU GHG emissions inventory and projections can be found in Appendices A and B. In August 2019, the U.S. Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) jointly published a notice of proposed rulemaking for Part One of the Safer Affordable Fuel-Efficient Vehicle Rule (SAFE Rule). The SAFE Rule proposed new and amended CO_2 and Corporate Average Fuel Economy (CAFE) and GHG emissions standards for passenger cars and light trucks. Further, Part One of this rule proposed to withdraw the State of California's waiver, afforded under the Clean Air Act (CAA) to set GHG and zero-emission vehicle (ZEV) standards separate from the federal government. Part One of the SAFE Rule became effective in November 2019. CARB has provided adjustment factors for pollutants including nitrous oxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$) and carbon monoxide (CO) from light-duty vehicle exhaust to account for Part One of the SAFE Rule. However, corresponding adjustment factors for GHG emissions are not available at this time. In March 2020, EPA and NHTSA announced Part Two of the SAFE Rule, which would set amended fuel economy and CO_2 standards for passenger cars and light trucks for model years 2021-2026. Part Two would become effective 60 days after publication in the Federal Register. The impact of Parts One and Two of the SAFE Rule on GHG emissions factors in California has not been quantified by CARB in the Emissions Factor model (EMFAC) or related modeling tools. These modeling tools would need to be amended, or corresponding adjustment factors published, to quantitatively assess the impact on City GHG emissions. Therefore, the quantitative methodology used to project Legislatively-Adjusted BAU emissions in this does not include the impact of the SAFE rule. The methodology represents current guidance and best available data from CARB at the time of this writing. The City will continue to monitor the impact of the SAFE Rule as more information becomes available from regulatory agencies as discussed further in Chapter 5. Table 2-3 below shows the summary of the City's projected BAU and Legislatively-Adjusted BAU GHG emissions for the years 2020 and 2030.

Table 2-3 City of Lemon Grove Emissions Forecasts ($MTCO_2e$/year)

Emissions Sector	2012	2020		2030	
		BAU	Legislatively-Adjusted BAU	BAU	Legislatively-Adjusted BAU
On-Road Transportation	70,700	63,300	61,100	62,700	48,600
Electricity	34,000	24,600	21,900	26,100	11,100
Natural Gas	16,700	15,500	15,100	16,400	14,500
Solid Waste	3,600	3,600	3,600	3,800	3,800
Off-Road Transportation	2,900	2,700	2,700	3,400	3,400
Water	1,200	1,200	1,200	1,200	1,200
Wastewater	300	300	300	300	300
Total	129,400	111,100	105,800	112,800	82,800
Percent change from 2012 (%)	-	*-14%*	*-18%*	*-13%*	*-36%*

Notes: Columns may not add to totals due to rounding.
BAU = business as usual
GHG = greenhouse gas emissions
$MTCO_2e$ = metric tons of carbon dioxide equivalent
Source: EPIC 2019.

2.4 Reduction Targets

As directed in AB 32 and SB 32, this CAP focuses on reducing emissions consistent with these legislative actions by 2020 and 2030. The 2020 and 2030 targets set in AB 32 and SB 32, and the pathway to achieve these targets in the CARB's 2017 Scoping Plan, represent benchmarks consistent with prevailing climate science, charting an appropriate trajectory forward that is in-line with the State's role in stabilizing global warming below dangerous thresholds. These goals aim to reduce statewide emissions to:

- 1990 levels by 2020;
- 40 percent below 1990 levels by 2030; and
- 80 percent below 1990 levels by 2050.

Though framed to reduce emissions to meet the State's near-term requirements, these targets are intended to provide a pathway for reductions beyond 2030. To determine an equivalent reduction target at the local level, CARB's 2017 Scoping Plan recommends communitywide GHG reduction goals for local climate action plans that will help the State achieve its 2030 target and longer-term 2050 goal (80 percent below 1990 levels by 2050). Estimating the equivalent reduction needed from the City's 2012 baseline based on the State inventory, the following adjusted reduction targets should be achieved in the City:

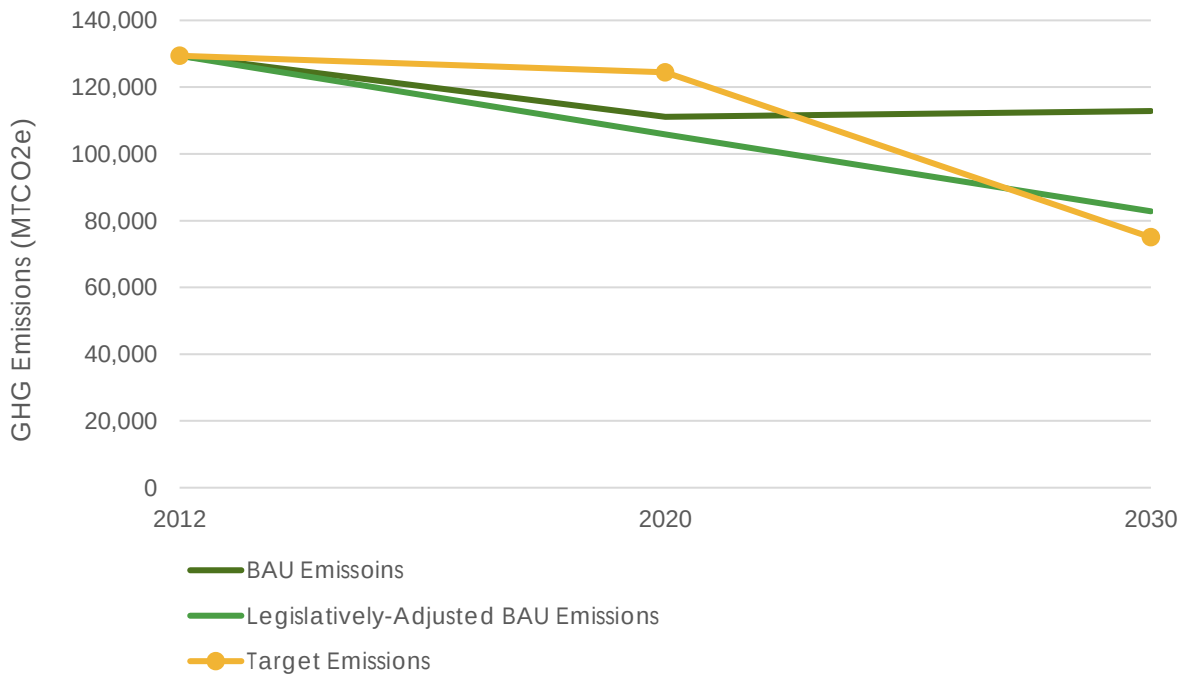
- 4 percent below 2012 levels by 2020; and
- 42 percent below 2012 levels by 2030.

The City has set its 2030 target based upon the trajectory necessary to meet the statewide 2050 goal. The City's targets would require GHG emissions to be reduced to 124,400 $MTCO_2e$ in 2020 and 75,000 $MTCO_2e$ in 2030.

The City's reduction targets for 2020 and 2030 represent the reductions necessary for the City to achieve its fair reduction contribution to meet Statewide targets.

2.5 Local Emissions Gap

Based on the current demographic trends, and as shown in Figure 2-2, the BAU projection would meet the City's 2020 target without any additional federal, State, or local actions. Under the BAU scenario, the City is projected to generate 111,110 $MTCO_2e$ annually, which would be 13,300 $MTCO_2e$ below the City's 2020 target. With State and federal adjustments applied, the City's Legislatively-Adjusted BAU emissions were estimated to be 105,800 $MTCO_2e$ in 2020, or 18,600 $MTCO_2e$ below the 2020 target.



Notes: BAU = Business-As-Usual; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent

Source: EPIC 2018; Ascent Environmental 2019.

Figure 2-2 City of Lemon Grove Projections and Targets Without Climate Action Plan Actions

Source: City of Lemon Grove

While existing activities would be adequate to meet the City's 2020 target, these activities along with federal and State legislative actions would not be adequate to achieve the City's 2030 GHG reduction target. With legislative adjustments, the City's estimated GHG emissions in 2030 would be 82,800 $MTCO_2e$ in 2030. Legislative actions would account for a large proportion of the reductions needed to achieve this goal; however, the City would need to implement additional actions to achieve further reductions. This additional reduction needed at the local level to meet the reduction targets for each year is referred to as the "local emissions gap." To close this gap, the City would need to implement local actions that would result in an additional reduction of approximately 7,800 $MTCO_2e$ in 2030.

The City's CAP reductions will be ambitious in order to meet the 2030 reduction target. The City will implement locally-oriented measures that will reduce emissions from local activities.

Because the City would achieve the 2020 emissions reduction target under BAU conditions, this CAP primarily focuses on reducing emissions in 2030 through local actions. While setting goals beyond 2030 is important to provide long-term objectives, it is difficult to establish longer-term targets for which defensible reduction assumptions can be made. This is primarily because of uncertainty around future technological advances and future changes in State and federal law beyond 2030. As climate change science and policy continues to advance, the City may be able to apply new strategies to assist in the State's long-term 2050 GHG emissions reduction goal in future CAP updates.

A detailed description of the calculations and estimates for these emissions projections and targets is provided in Appendix B.

03 Greenhouse Gas Reduction Strategies and Measures

This chapter presents the strategies and measures that the City of Lemon Grove (City) will implement to achieve its greenhouse gas (GHG) reduction targets. Accounting for legislative actions taken by the federal and State governments, this CAP focuses on locally-based measures the City can implement to reduce GHG emissions in various emissions categories.

CAP strategies are organized under five GHG emissions categories:

- Transportation
- Energy (Electricity and Natural Gas)
- Water
- Solid Waste
- Urban Landscaping

The City's Climate Action Plan (CAP) includes eight strategies, organized under five emissions categories, that serve as the foundation for identifying and addressing ways in which the City will reduce citywide GHG emissions. Within each strategy are a series of measures and supporting activities that define the activities, programs, policies, and projects the City will implement to reduce GHG emissions. The 25 measures identified in this CAP focus on reductions from communitywide activities and municipal operations. Through partnerships with and among the community, businesses, and other organizations, these measures would provide co-benefits, such as an improved environment, cost savings, resource conservation, and improved quality of life.

The City has identified reduction strategies and measures that are comprehensive and integrated and result in emissions reductions across all emissions categories.

3.1 Summary of Greenhouse Gas Reduction Strategies

Consistent with State goals, the City has established a 2020 GHG emissions reduction target (four percent below 2012 levels) and a 2030 target (42 percent below 2012 levels) to reduce annual emissions levels. As described in Chapter 2, the City would successfully meet its 2020 target under the business-as-usual (BAU) scenario if citywide growth is consistent with projections. The City is anticipated to generate 111,110 metric tons of carbon dioxide equivalent ($MTCO_2e$) in 2020 under BAU conditions, which would be 13,300 $MTCO_2e$ less than the 2020 target. Under BAU conditions, the City is anticipated to generate 112,800 $MTCO_2e$ in 2030. The measures in this CAP are focused on meeting the 2030 target, which would not be met under BAU conditions. It is anticipated the City would require the reduction of an additional 37,800 $MTCO_2e$ from BAU levels to achieve the 2030 target. State and federal regulations (see Legislatively-Adjusted BAU projections in Chapter 2) would further reduce citywide emissions in 2030; however, the City would still be responsible for reducing approximately 7,800 $MTCO_2e$ through local actions to meet its 2030 target.

Source: City of Lemon Grove

Table 3-1, below, shows the GHG reductions attributable to the measures in this CAP and how anticipated reductions will help the City close the gap of 7,800 $MTCO_2e$ to meet its 2030 target. Detailed calculations and descriptions of the calculation methodologies are provided in Appendix B.

Table 3-1 Greenhouse Gas Emissions Reductions from Business-as-Usual Conditions

Emissions Projection/Category	2030 Emissions ($MTCO_2e$)
BAU Emissions Projection	112,800
Federal and State Action Reductions	29,970
Legislatively-Adjusted BAU Emissions Projection (BAU Projection – Federal and State Action Reductions)	82,830
2030 Target Emissions	75,000
Reductions from CAP Transportation Measures	4,000
Reductions from CAP Energy Measures	2,730
Reductions from CAP Water Measures	10
Reductions from CAP Waste Measures	2,810
Reductions from CAP Carbon Sequestration Measures	40
Total Reductions from CAP Measures	9,630
City of Lemon Grove Emissions with CAP (Legislatively-Adjusted BAU – CAP Reductions)	73,200

Notes: Numbers are rounded to the nearest thousand (with the exception of reduction measure values which were rounded to the nearest hundred); values and totals may not equal the values summed in other tables or figures.
BAU = business-as-usual; CAP = Climate Action Plan; $MTCO_2e$ = metric tons of carbon dioxide equivalent
Source: EPIC 2019.

3.2 Reduction Strategies and Measures

To close the gap between the City's anticipated Legislatively-Adjusted BAU emissions and the CAP target in 2030, this CAP proposes eight strategies and 25 GHG reduction measures organized under five GHG emissions categories. These strategies and measures were developed based on a combination of factors, including:

- the feasibility of the measure to be implemented by the City;
- existing policies, actions, or programs that can be expanded or proposed policies yet to be adopted;
- feedback from community and other stakeholders; and
- technological innovations.

The CAP includes relevant reduction measures based on the best-available existing technologies that would reduce GHG emissions at a local level.

Each strategy, measure, and associated GHG emissions reductions are described below. Additional GHG reduction calculation details are included in Appendix B. The strategy framework consists of strategies, measures, target year, goals, and GHG reduction potential which are defined in Table 3-2. Implementation efforts for GHG reduction measures are described in Chapter 5.

Table 3-2 Greenhouse Gas Reduction Strategy Framework

Notation	Description
Strategy	High-level plans the City will implement to achieve GHG reductions in one of the five emissions categories. Each emissions category may have one or more associated strategies. The framework includes eight overall strategies.
Measure	Programs, policies, or projects the City will implement that will cause a direct and measurable reduction in GHG emissions.
Goal	Metric by which achievement of the specified measure will be determined in 2030.
GHG Reduction Potential in 2030	Estimated reduction in local GHG emissions if the goal is met. The year 2030 corresponds to the emissions target year set by the City (and in line with State mandates). Because the City would achieve its 2020 target under BAU conditions, the GHG reduction potential is presented for the year 2030.
Supporting Activities	Additional activities that are currently occurring or will occur within the community that may support implementation of identified measures and/or result in additional GHG reductions, but were not quantified within this CAP.

Notes: BAU = business-as-usual; CAP = Climate Action Plan; City = City of Lemon Grove; GHG = greenhouse gas
Source: Ascent Environmental 2019.

3.2.1 Transportation

Internal combustion from on-road transportation is the largest contributor to the City's GHG emissions. Emissions from on-road transportation sources accounted for 55 percent of the City's total emissions in 2012. Off-road transportation sources are also included in this emissions category, which accounts for usage of construction equipment, residential and commercial equipment, and recreational vehicles. Legislative reductions from improvements in federal and State vehicle fuel efficiency standards will contribute to reducing transportation emissions. At the local level, the State relies on local or regional agencies to implement strategies that would reduce the frequency or distance of vehicle travel or reduce the use of internal combustion vehicles by shifting to alternative modes of transportation. These strategies include increasing zero-emission or alternative fuel vehicle use, increasing transportation system efficiency for existing and future travel patterns, and increasing the use of alternative travel modes including bicycling, walking, and transit.

Source: City of Lemon Grove

Strategy 1: Increase Use of Zero-Emission or Alternative Fuel Vehicles

Strategy 1 Co-Benefits:

- Improved Air Quality
- Improved Public Health

The focus of this strategy is to reduce the use of gasoline or diesel-powered vehicles and equipment and increase the use of zero-emission or alternative fuel vehicles citywide. This reduction is achieved by increasing the purchase and use of zero-emission and alternative fuel vehicles. Reductions from this strategy would occur through municipal actions and partnerships with local businesses, developers, and agencies. This strategy includes four measures that would reduce the City's emissions by approximately 460 $MTCO_2e$ in 2030. Table 3-3 outlines the framework for this strategy.

Table 3-3 Strategy 1: Increase Use of Zero-Emission/Alternative Fuel Vehicles

Measure T-1: Transition to a Clean and More Fuel-Efficient Municipal Vehicle Fleet.	
Replace light-duty municipal vehicles with EVs or other types of ZEVs and replace diesel vehicles with AFVs.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Reduce municipal fleet gasoline use to 5,915 gallons in 2030.	17
Reduce municipal fleet diesel use to 1,845 gallons in 2030.	

Table 3-3 Strategy 1: Increase Use of Zero-Emission/Alternative Fuel Vehicles

Measure T-2: Install Electric Vehicle Charging Stations at Municipal Facilities.

Install publicly available EV charging stations at municipal facilities for use by City staff, contractors, or others conducting City-related business.

Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Install six Level 2 or better EV charging stations at municipal facilities by 2030.	71

Measure T-3: Increase the Number of Electric Vehicle Charging Stations at New and Existing Private Developments.

Adopt a zoning ordinance requiring the installation of EV charging stations for:

- Five percent of total parking spaces provided at new multi-family and commercial developments.
- Five percent of total parking spaces provided at multi-family and commercial renovations or additions, with a permit value of $100,000 or greater.

Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Adopt a zoning ordinance by 2022.	196
Install a total of 51 Level 2 or better EV charging stations at multi-family and commercial developments by 2030.	

Measure T-4: Transition to an Electric School Bus Fleet.

Support the GUHSD and LGSD in their efforts to convert the school bus fleet to electric buses.

Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Reduce diesel consumption in GUHSD and LGSD school buses to 17,003 gallons in 2030.	173

Supporting Activities for Strategy 1:

- Identify Sage Projects that would increase the use of zero-emission or alternative fuel vehicles and could be implemented by the City.

Notes: AFV = Alternative Fuel Vehicle; City = City of Lemon Grove; EV = Electric Vehicle; GHG = greenhouse gas; GUHSD = Grossmont Union High School District; LGSD = Lemon Grove School District; $MTCO_2e$ = metric tons of carbon dioxide equivalent; ZEV = Zero-Emissions Vehicle
Source: EPIC 2019.

Strategy 2: Reduce Fossil Fuel Use

Strategy 2 Co-Benefits:

- Improved Air Quality
- Reduced Energy Use
- Improved Public Health
- Reduced Traffic Congestion
- Enhanced Safety
- Enhanced Community Character

Vehicle efficiency standards and the use of alternative fuels are promoted through this strategy in support of federal and State mandates. Under this strategy, on-road transportation fuel consumption would be reduced by improving traffic flow and increasing the efficiency of the existing traffic network. Off-road vehicle and equipment fossil fuel consumption would be reduced using alternatively fueled equipment. Emissions reductions in this strategy would be achieved through interagency participation to implement projects in the City's right-of-way, and working with developers and fleet owners to phase out old, fossil fuel-reliant equipment. This strategy includes two measures that would reduce the City's emissions by approximately 660 $MTCO_2e$ by 2030. Table 3-4 outlines the framework for this strategy.

Table 3-4 Strategy 2: Reduce Fossil Fuel Use

Measure T-5: Synchronize Traffic Signals.	
Synchronize traffic signals at major corridors citywide and participate in the Regional Arterial Management System.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Synchronize 20 traffic signals by 2030.	248
Measure T-6: Increase Renewable and Alternative Fuel Use in Construction Equipment.	
Require new development projects to increase the use of electric-powered or alternatively fueled construction equipment.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Require at least 30 percent of construction equipment in new developments to be electric-powered or alternatively fueled.	416

Supporting Activities for Strategy 2

- Identify Sage Projects that would reduce fossil fuel use and could be implemented by the City
- Continue to work with the LGSD to improve safety and efficiency of drop-off/pick-up operations at schools to reduce vehicle idling time.

Notes: City = City of Lemon Grove; GHG = greenhouse gas; LGSD = Lemon Grove School District; $MTCO_2e$ = metric tons of carbon dioxide equivalent

Source: EPIC 2019.

Strategy 3: Reduce Vehicle Miles Traveled

To reduce vehicle miles traveled (VMT), this strategy focuses on increasing alternative modes of travel, reducing single-occupancy vehicle travel, and encouraging smart growth design. All measures to reduce VMT rely on participation from regional and municipal agencies, residents, and local businesses. Implementation of the seven measures identified in this strategy would reduce the City's GHG emissions by approximately 2,840 by 2030. Table 3-5 outlines the framework for this strategy.

Strategy 3 Co-Benefits:

- Improved Air Quality
- Reduced Energy Use
- Improved Public Health
- Reduced Traffic Congestion
- Improved Access to Low-Cost Transportation Options
- Enhanced Safety
- Enhanced Community Character

Table 3-5 Strategy 3: Reduce Vehicle Miles Traveled

Measure T-7: Participate in the **San Diego Association of Government's iCommute Vanpool Program.**	
Maintain the existing number of vanpools participating in SANDAG's iCommute Vanpool Program that start or end in the City, and promote participation of City residents and businesses.	
Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Maintain at least eight vanpools that start or end in the City through 2030.	88
Measure T-8: Develop a Citywide Transportation Demand Management Plan.	
Adopt a TDM ordinance requiring new commercial developments to increase the use of alternative modes of transportation and work with existing employment center[1] businesses to develop TDM policies.	
Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Increase the alternative mode share for new developments and businesses in the employment centers to eight percent through 2030.	581
Measure T-9: Implement the Safe Routes to School Program.	
Continue to support the LGSD's efforts to implement a Safe Routes to School program to increase the number of students walking and riding bicycles to and from schools.	
Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Increase the percentage of students walking to school to 30 percent by 2030.	18
Increase the percentage of students bicycling to school to 2.5 percent by 2030.	
Measure T-10: Increase Commute by Bicycle.	
Increase the number of commuters using bicycles by completing the *Connect Main Street* project, which includes the development of two miles of a new Class I bicycle path along Lemon Grove Avenue.	
Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Complete full buildout of the *Connect Main Street* project by 2030.	89

Table 3-5 Strategy 3: Reduce Vehicle Miles Traveled	
Measure T-11: Reduce Residential Parking Requirements Near Trolley Stations.	
Reduce the number of required parking spaces by at least 50 percent in new multi-family residential developments within the DVSP Transit Mixed Use Zones and near the Massachusetts Avenue trolley station.	
Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Develop at least 763 multi-family units near trolley stations with 50 percent or fewer parking spaces than standard requirements.	718
Measure T-12: Transition to an Online Building Permits Submittal System.	
Reduce the number of vehicle trips to municipal facilities by providing online permit submittal and processing for all types of building permits.	
Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Completely transition to an online permitting submittal system by 2030.	3
Measure T-13: Increase Commute by Transit.	
Increase the number of commuters to college and work that use transit to travel to and from Lemon Grove.	
Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Increase the total percentage of transit commuters in the City to eight percent by 2030.	1,343

Supporting Activities for Strategy 3:

- Identify Sage Projects that would reduce vehicle miles traveled and could be implemented by the City
- Work with SANDAG to continue its bicycle safety education activities including Bike Month, bicycle rodeos, and walk-and-roll programs.
- Work with community organizations and local bicycle advocacy groups to provide education outreach to school-aged populations.
- Explore micro-mobility for first mile/last mile needs.
- Participate in future SANDAG-led mobility hub planning programs.
- Coordinate with regional transit authorities and local school districts to improve public transit, including coordination to improve headways at bus stops within the city.

Notes: City = City of Lemon Grove; DVSP = Downtown Village Specific Plan; GHG = greenhouse gas; LGSD = Lemon Grove School District; $MTCO_2e$ = metric tons of carbon dioxide equivalent; SANDAG = San Diego Association of Governments; TDM = Transportation Demand Management

[1] Lemon Grove Employment Center defined by SANDAG in support of the 2021 Regional Plan. The Lemon Grove Employment Center is defined as a Tier 4 employment center.

Source: EPIC 2019.

3.2.2 Energy

Energy consumption in the City includes electricity and natural gas consumption, which accounted for 39 percent of the City's total emissions in 2012. Emissions reductions from the energy category are divided into two strategies to increase building energy efficiency and increase the use of renewable energy sources. The success of these strategies relies on coordination with local utilities and organizations, participation from the community, and administration of new or revised local policies and programs.

Source: City of Lemon Grove

Strategy 4: Increase Building Energy Efficiency

Electricity and natural gas consumption in residential and non-residential buildings accounts for the majority of GHG emissions from the energy sector. Although legislative reductions related to State actions will help reduce emissions associated with building energy, additional reductions are achievable by increasing building efficiency in the City. This strategy aims to reduce emissions by reducing energy used by residential and non-residential consumers through increased energy efficiency in buildings and facilities. This strategy includes three measures, each aimed at a separate energy consumer or land use type within the City (i.e., residential, commercial, and civic). Implementation of this strategy would reduce the City's emissions by approximately 230 $MTCO_2e$ by 2030. Table 3-6 outlines the framework for this strategy.

Strategy 4 Co-Benefits:

- Improved Air Quality
- Reduced Energy Use
- Improved Public Health
- Enhanced Safety
- Reduced Heat Island Effect
- Enhanced Community Character
- Increased Local Green Jobs
- Improved Resiliency to Climate Change Impacts

Table 3-6 Strategy 4: Increase Building Energy Efficiency

Measure E-1: Increase Street Lighting Efficiency Citywide.	
Reduce electricity use from City-owned streetlights by converting existing HPS lights to LED lights.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Reduce streetlight energy use by 40% by 2030.	27

Table 3-6 Strategy 4: Increase Building Energy Efficiency

Measure E-2: Reduce Non-Residential Energy Use.

Adopt an Energy Efficiency Ordinance that requires renovations or additions to existing non-residential developments with a permit value of $25,000 or greater to implement energy retrofit measures. Energy retrofits must demonstrate the development would result in a 15 percent decrease in energy consumption.

Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Adopt an Energy Efficiency Ordinance by 2022.	173
Approve at least 225,000 sq. ft. of major non-residential renovations or additions that implement energy retrofit measures by 2030.	

Measure E-3: Reduce Residential Energy Use.

Adopt an Energy Efficiency Ordinance that requires renovations or additions to existing residential developments with a permit value of $25,000 or greater to implement energy retrofit measures.

Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Adopt an Energy Efficiency Ordinance by 2022.	26
Approve at least 162 major residential renovations or additions that implement energy retrofit measures by 2030.	

Supporting Activities for Strategy 4:

- Identify Sage Projects that would increase building energy efficiency and could be implemented by the City.
- Work with SDG&E to identify local businesses with high hot water heating load that could benefit from installation of solar water systems.
- Implement building retrofit programs.
- Facilitate homeowner and business owner financing of energy efficiency measures through PACE financing options.

Notes: City = City of Lemon Grove; GHG = greenhouse gas; HPS = high pressure sodium; LED = light emitting diode; $MTCO_2e$ = metric tons of carbon dioxide equivalent; PACE = Property Assessed Clean Energy; SDG&E = San Diego Gas & Electric; sq. ft. = square feet

Source: EPIC 2019.

Strategy 5: Increase Renewable and Zero Carbon Energy

Transitioning from fossil fuels to renewable energy for electricity generation will reduce emissions and provide a more sustainable source of electricity. Under this strategy, emissions are reduced by incorporating cleaner, renewable energy for residential, commercial, and municipal operations within the City, and by adopting a community choice aggregation (CCA) or similar program to increase the amount of grid supplied renewable energy. Implementation of the four measures would reduce the City's emission by approximately 2,510 $MTCO_2e$ by 2030. Table 3-7 outlines the framework for this strategy.

Strategy 5 Co-Benefits:

- Improved Air Quality
- Reduced Energy Use
- Improved Public Health
- Enhanced Community Character
- Increased Local Green Jobs
- Improved Resiliency to Climate Impacts

Table 3-7 Strategy 5: Increase Renewable and Zero-Carbon Energy

Measure E-4: Increase Renewable Energy Generation at Non-Residential and Multi-Family Developments.	
Adopt an ordinance requiring the installation of PV at new non-residential developments and major multi-family and commercial renovations and additions (permit value of $100,000 or more).	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Install at least 0.08 MW of PV at new non-residential developments by 2030.	72
Install at least 0.15 MW of PV at existing non-residential buildings by 2030.	
Measure E-5: Achieve Zero Net Energy Municipal Operations.	
Achieve zero net energy municipal operations through the installation of PV systems or other renewable energy generation systems at municipal facilities.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Install PV systems that would generate at a minimum 1,172 MWh/year in 2030, or equivalent generation through other renewable systems.	212
Measure E-6: Require New Residential Uses to be All-Electric and Generate Renewable Energy On-Site.	
Adopt an ordinance requiring all new residential developments to be all-electric and install PV systems.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Develop at least 17 all-electric single-family residential homes with 1.1 kW PV systems by 2030.	287
Develop at least 333 all-electric multi-family units with 1.1 kW/unit PV systems by 2030.	

Table 3-7 Strategy 5: Increase Renewable and Zero-Carbon Energy	
Measure E-7: Increase Grid-Supply Renewable and Zero-Carbon Electricity.	
Participate in a CCA or similar program to increase grid-supply renewable and zero-carbon electricity supply to 75 percent by 2030.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Achieve 75 percent renewable and zero-carbon electricity supply by 2030.	1,938
Supporting Activities for Strategy 5 ▪ Identify Sage Projects that would increase renewable and zero-carbon energy and could be implemented by the City ▪ Support the implementation of SANDAG's Roadmap Program.	

Notes: CCA = Community Choice Aggregation; City = City of Lemon Grove; GHG = greenhouse gas; kW = kilowatt; $MTCO_2e$ = metric tons of carbon dioxide equivalent; MW = megawatt; MWh = megawatt-hour; PV = photovoltaic; SANDAG = San Diego Association of Governments
Source: EPIC 2019.

3.2.3 Water

GHG emissions are produced through the energy consumed to pump, transport, and treat water and wastewater. Though the water sector only accounts for 1 percent of the City's total emissions in 2012, reduction measures aimed at water consumption also play a role in adapting to climate change impacts. By reducing water consumption through water efficiency initiatives and recycling wastewater, the City can reduce water demand as climate change impacts reduce water supply. Beyond achieving emissions reductions, this strategy provides the City with sustainable practices that will allow it to better adapt to climate change.

Source: City of Lemon Grove

Strategy 6: Increase Water Efficiency

Water consumption reductions under this strategy would result from more efficient water use strategies in both residential and non-residential uses. The measures identified in this strategy would provide residents, businesses, and municipal operators effective ways to reduce water consumption. This strategy achieves emissions reductions by reducing the energy needed to supply, treat, and deliver water. The implementation of the two measures under this strategy would reduce the City's GHG emissions by approximately 10 $MTCO_2e$ by 2030. Table 3-8 outlines the framework for this strategy.

Strategy 6 Co-Benefits:

- Reduced Energy Use
- Improved Water Quality
- Enhanced Community Character
- Increased Local Green Jobs
- Improved Resiliency to Climate Impacts

Table 3-8 Strategy 6: Increase Water Efficiency	
Measure W-1: Increase Outdoor Water Efficiency.	
Require landscaped areas at new residential and non-residential projects to meet the City's WELO requirements by planting low water use plants and installing high efficiency irrigation systems.	
Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Develop at least 20,000 sq. ft. per year of new, WELO-compliant landscaped area through 2030.	3
Measure W-2: Reduce Water Use at City Parks and Municipal Facilities.	
Reduce water consumption in municipal facilities and landscape irrigation water use in City parks.	
Goal	GHG Reduction Potential in 2030 ($MTCO_2e$)
Reduce municipal water use in facilities and parks by 50 percent by 2030.	8

Supporting Activities for Strategy 6

- Identify Sage Projects that would increase water efficiency and could be implemented by the City.
- Identify methods to streamline graywater permit review.
- Create, maintain, and advertise graywater education programs.
- Encourage stormwater capture and reuse.
- Partner with Helix Water District to share information with residents and local businesses for water audit programs and incentives for water efficient landscaping.
- Promote Department of Water Resources Rebate Programs for turf installation, xeriscaping, and other water efficiency projects.

Notes City = City of Lemon Grove; $MTCO_2e$ = metric tons of carbon dioxide equivalent; sq. ft. = square feet; WELO = Water Efficient Landscape Ordinance
Source: EPIC 2019.

3.2.4 Solid Waste

GHG emissions from waste are generated through its disposal and off-gassing at landfills. Though this category represents only two percent of the City's total emissions in 2012, significant reductions could be made through changing individual behavior through partnerships with local waste haulers and outreach to residents and businesses.

Source: City of Lemon Grove

Strategy 7: Reduce and Recycle Solid Waste

Under this strategy, the City would reduce the amount of solid waste deposited at landfills by diverting it to other waste streams, such as recycling or composting. This diversion would also provide recycled solid waste materials for reuse in other products. The implementation of the one measure under this strategy would reduce the City's GHG emissions by approximately 2,800 $MTCO_2e$ by 2030. Table 3-9 outlines the framework for this strategy.

Strategy 7 Co-Benefits:

- Reduced Energy Use
- Improved Air Quality
- Enhanced Community Character
- Increased Local Green Jobs
- Improved Resiliency to Climate Impacts

Table 3-9 Strategy 7: Reduce and Recycle Solid Waste

Measure S-1: Increase Citywide Waste Diversion.	
Work with the City's franchise waste hauler to achieve a citywide waste diversion rate of 80 percent by 2030.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Achieve 80 percent citywide waste diversion by 2030.	2,811

Supporting Activities for Strategy 7

- Identify Sage Projects focused on reducing and recycling solid waste and could be implemented by the City.
- Explore opportunities with franchise waste haulers and other local businesses to develop and encourage participation in commercial food scrap collection programs.
- Develop an outreach campaign for communitywide materials management service offerings and behavior changes focused on lifecycle of materials.
- Work with franchise waste haulers to add residential food scrap collection services to the City's waste collection contract.
- Collaborate with franchise waste hauler to promote an anaerobic digestion facility planned to open in 2021.

Notes: City = City of Lemon Grove; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent
Source: EPIC 2019.

3.2.5 Carbon Sequestration

The process of removing atmospheric CO_2 through artificial or natural processes is referred to as carbon sequestration. This process occurs daily through the natural respiration of vegetation and trees. As part of the natural carbon cycle, photosynthesis in plants takes CO_2 in the atmosphere and converts it into oxygen and carbon-based plant matter, storing the carbon captured from the atmosphere. Communities can enhance or improve their carbon sequestration potential by increasing the volume and rate of planting trees and creating an urban tree canopy. Conversely, carbon sequestration potential is lost when carbon sinks (i.e. trees) are cut down or neglected.

Source: City of Lemon Grove

Strategy 8: Carbon Sequestration

The presence of trees is a significant source of carbon sequestration and storage because of their natural process of converting CO_2 into oxygen and carbon-based plant matter through photosynthesis. In addition, tree sizes and longevity provide simple solutions for carbon storage. This strategy focuses on increasing the number of new trees planted in public areas and at new developments to increase the amount of carbon sequestered. In addition to offsetting CO_2 emissions generated by other sources, increased tree plantings result in co-benefits including improved air quality through the capture of air pollutants and community and public health benefits through the provision of shade and positive impacts on mental health. Implementation of the two measures through this strategy would reduce the City's emissions by approximately 40 $MTCO_2e$ by 2030. Table 3-10 outlines the framework for this strategy.

Strategy 8 Co-Benefits:

- Improved Air Quality
- Increased Natural Habitat
- Improved Public Health
- Improved Water Quality
- Reduced Heat Island Effect
- Enhanced Community Character
- Increased Local Green Jobs
- Improved Resiliency to Climate Impacts

Table 3-10 Strategy 8: Carbon Sequestration

Measure C-1: Develop a Citywide Urban Tree Planting Program.	
Develop and implement an Urban Tree Planting Program to increase the number of new trees planted at City-owned landscaped areas and rights-of-way.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Plant at least 50 new trees per year in City-owned landscaped areas through 2030.	24

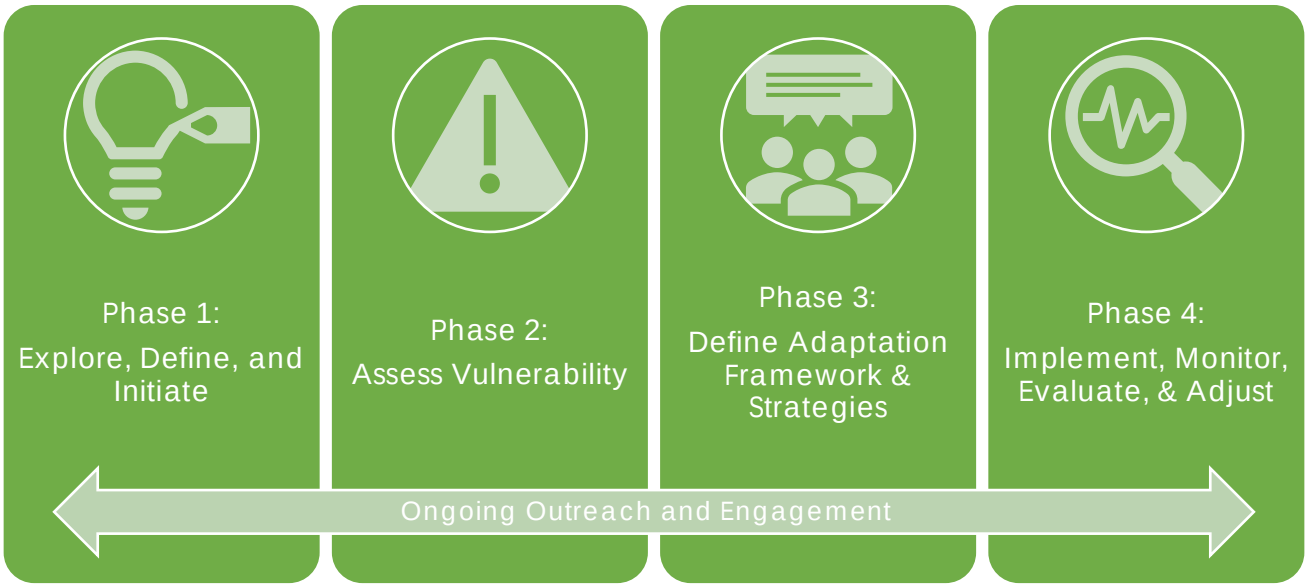
Table 3-10 Strategy 8: Carbon Sequestration	
Measure C-2: Increase Tree Planting at New Developments.	
Enforce the City's Landscape and Irrigation Regulations for new developments that include: a minimum of one tree for every six off-street parking spaces; and a minimum of one tree per 1,000 sq. ft. of landscaped area.	
Goal	**GHG Reduction Potential in 2030 ($MTCO_2e$)**
Plant at least 22 new trees per year at new developments through 2030.	12
Supporting Activities for Strategy 8 ▪ Identify Sage Projects that would increase carbon sequestration citywide and could be implemented by the City. ▪ Explore grant opportunities for tree planting at existing developments.	
Notes: City = City of Lemon Grove; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; sq. ft. = square feet Source: EPIC 2019.	

04 Climate Adaptation

This chapter summarizes climate change-related impacts that may affect the City of Lemon Grove (City) in the future; evaluates how these impacts would potentially affect the community's population, functions, and structures; and outlines key strategies for improving community resiliency and adaptation, while accounting for the City's current adaptation efforts.

4.1 Introduction

The California Adaptation Planning Guide (APG), developed by the California Office of Emergency Services (CalOES) and California Natural Resources Agency, helps communities throughout California plan for and adapt to the impacts of climate change (CalOES 2019). The APG includes a four-phase process, illustrated in Figure 4-1, which allows communities to assess their specific climate vulnerabilities and provides a menu of strategies for communities to reduce climate-related risks and prepare for current and future impacts of climate change.



Source: APG 2019; Ascent Environmental 2019.

Figure 4-1 The Four Phases in the Adaptation Planning Process

Preparing for the future impacts of climate change is a complex challenge. Climate science is evolving, and it is complicated by the uncertainty of global emissions levels expected in the mid- to late-21st century. As science evolves, so will the City's adaptation strategy. The policies, plans, and actions put in place to enhance adaptation and resilience to the effects of climate change must be grounded in the best available science of the time, and thoughtfully reevaluated as new information or technologies become available. To be most effective, climate change adaptation requires project- and program-specific decisions that require a broad understanding of the effects of climate change.

The California Adaptation Planning Guide was developed through a transparent and verifiable process and has been published as a publicly available guidance document.

Phase 1, "Explore, Define, and Initiate," includes identifying the potential climate change effects and important physical, social, and natural assets in the community. This phase also identifies the key stakeholders in the local government and throughout the community. Phase 2, "Assess Vulnerability," includes an analysis of potential impacts and adaptive capacity to determine the vulnerability for populations, natural resources, and community assets. The vulnerability assessment identifies how climate change could affect the community. Phase 3, "Define Adaptation Framework and Strategies," focuses on creating an adaptation framework and developing adaptation strategies based on the results of the vulnerability assessment. Adaptation strategies identify how the community will address the potential for harm based on the community's resources, goals, values, needs, and regional context. In Phase 4, "Implement, Monitor, Evaluate, and Adjust," the adaptation framework is implemented, consistently monitored and evaluated, and adjusted based on continual learning, feedback, or triggers.

4.2 Climate Change Effects

This Climate Action Plan (CAP) summarizes the City's climate change impact vulnerabilities. This section identifies localized climate change exposure and related effects, and the consideration of how likely and how quickly impacts would occur.

4.2.1 Climate Change Effects

Idenfitying the climate change effects the City would experience through the latter half of this century (2050-2099) serves as the first step in the climate adapation planning process. Climate change effects discussed in this chapter were identified using the Cal-Adapt tool, a climate change scenario-planning tool developed by the California Energy Commissions and the University of California, Berkeley Geospacial Innovation Facility. To address the uncertainty in future emissions of greenhouse gases (GHGs), Cal-Adapt uses Representative Concentration Pathways (RCPs), which project emissions and effects over time through two emissions scenarios:

- The Medium (RCP 4.5) emissions scenario models a future where communities attempt to reduce GHG emissions. This scenario predicts that GHG emissions will continue to rise until leveling-off, or plateauing, in the middle of the twenty-first century. GHG emissions would decrease to below 1990 levels by the end of the 21st century.
- The High (RCP 8.5) emissions scenario models business-as-usual (BAU) growth where GHG emissions will continue to increase through the end of the 21st century.

Source: City of Lemon Grove

The direct, or primary, changes identified for the City through this process are average temperatures and annual precipitation amounts. Secondary impacts, which can occur because of individual changes or a combination of these changes, are also addressed in this chapter and include effects on heat wave frequency, intense storms, landslides, droughts, wildfire, and reduced snowpack (CNRA 2012). The effects of each primary and secondary impact are discussed below.

The adaptation strategies and measures included identify actions the City can take to ensure fair solutions that equitably address climate change risks across diverse populations in the community.

Increased Temperatures

Annual temperatures in the San Diego region and the City in particular are projected to climb steadily. The City's annual average temperature is expected to rise from historical averages under both emissions scenarios. This projected change is shown on Table 4-1.

Table 4-1 City of Lemon Grove Changes in Annual Average Temperatures

Scenario	Annual Temperature		
	Minimum (°F)	Average (°F)	Maximum (°F)
Historical Average (1960-1990)	71.3	73.5	76.0
Medium Emissions Scenario (2050-2099)	75.2	78.3	82.0
High Emissions Scenario (2050-2099)	77.3	81.2	85.4

Notes: °F = degrees Fahrenheit
Source: CEC 2019

The City's annual average temperature, based on data from 1960-1990, is 73.5 degrees Fahrenheit (°F). By the end of the century, it is estimated that the average temperature in the City would increase by 4.8 °F under the medium emissions scenario and 7.7 °F under the high emissions scenario. Under both scenarios, the City's annual average minimum and maximum temperatures would increase between 4.0 and 9.0 °F by the end of the century.

Urbanized areas can experience higher temperatures, greater pollution, and negative health effects, especially during summer months, when compared to communities that are more rural. This phenomenon is known as the Urban Heat Island Effect (UHIE). Urban heat islands are created by a combination of heat-absorptive surfaces (e.g., dark pavement and roofing), heat-generating activities (e.g., automobile engines and industrial generators), and the absence of "green spaces" (which provide evaporative cooling). During periods of high temperatures, asphalt and darker surfaces reduce nighttime cooling (as retained heat is released from these surfaces). The UHIE can affect the City in multiple ways, including: increased energy demand for cooling; decreased ambient air quality; and increased heat-related public health risks (e.g., heat stroke, dehydration, and exposure to degraded air quality) (CalEPA 2019).

Increased Frequency of Extreme Heat Events

Extreme heat events include extreme heat days and heat waves. Extreme heat days and heat waves are a secondary impact of increasing temperatures in the San Diego region. Extreme heat days occur when the daily maximum/minimum temperature exceeds the 98th historical percentile of the daily maximum/minimum temperatures. Heat waves are characterized as periods of sustained, extreme heat over multiple days (i.e. four or more consecutive extreme heat days).

The extreme heat day threshold for the City is 93.6 °F or higher. Historically (between 1960 and 1990), the City experienced an average of four extreme heat days annually, occurring primarily between April 1 through October 31. As a result of rising average temperatures and climate change, the City is projected to experience 13 to 27 extreme heat annually from 2050 to 2099 under medium and high emissions projections (CEC 2019).

Higher temperatures are linked to increased respiratory problems as higher temperatures contribute to the build-up of harmful air pollutants.

Source: Center for Disease Control, 2014.

Cal-Adapt defines extreme heat waves for the City as four or more consecutive extreme heat days. These events have historically been infrequent in the City, as the historical annual average is less than one heat wave per year, and a maximum of two heat waves occurring in a single year between 1960 and 1990. As climate change effects continue, the City is expected to experience an increase in heat wave frequency. Under the medium emissions projection, the City would experience an average of one heat wave per year, and a maximum of four heat waves occurring in a single year between 2050 and 2099. Under the high emissions projection, the City would experience an average of three heat waves per year, and a maximum of 11 heat waves occurring in a single year between 2050 and 2099 (CEC 2019).

Source: City of Lemon Grove

In addition to increasing frequency of extreme heat days and heat waves, these climate change effects are projected to occur both earlier and later in the season. In the historic record, extreme heat days and heat waves have generally occurred from late-June and mid-October. Under both the medium and high emissions projections, these events are predicted to extend from early-April through the end of October (CEC 2019).

Heat waves and extreme heat days, intensified by the UHIE, would produce a number of public health risks, particularly for vulnerable populations including small children and the elderly. Additional groups would have higher risks for heat related illnesses including people with chronic diseases, low-income populations, and outdoor workers. Risks associated with extreme heat range from sunburns and heat rash to heat exhaustion and heat stroke, which can lead to increased hospital visits and emergency services (CDC 2014).

Changes to Water Availability

The unusually wet years of 2005, 2011, and 2017 and the droughts of 2001-2004, 2007-2010, and 2012-2015 exemplify the highly variable climate of the San Diego region. Southern California has the highest year-to-year variability of any place in the continental U.S. As noted in *California's Fourth Climate Change Assessment - San Diego Region Report,* climate models indicate that precipitation volatility will intensify in the future as the global climate continues to warm. While days with measurable precipitation become less frequent in Southern California, extreme precipitation events will intensify (Kalansky and Cayan et al. 2018).

Source: City of Lemon Grove

A secondary effect from changes in precipitation patterns in the State is water availability. Changes in weather patterns resulting from increases in global average temperatures could result in a decreased proportion of precipitation falling as snow in California, and an overall reduction in snowpack in the Sierra Nevada. Increases in temperature are already causing decreases in snowpack (DWR 2019a), from which as much as a third of California's water supply is provided. Warmer temperatures have resulted in snowpack melting faster and earlier, resulting in issues storing water for use throughout the dry season. Based on historical data and modeling, California Department of Water Resources projects that by the end of this century, California's Sierra Nevada snowpack will experience a 48-65 percent loss from the historical April 1 average, which would have a direct impact on water supply for Californians (DWR 2019b).

Source: City of Lemon Grove

The Colorado Basin, being even more arid than Sierra Nevada catchments, has a smaller portion of precipitation that results in runoff, so increased evaporation demand leaves proportionately less runoff. As a result, climate warming is projected to take a high toll on Colorado River streamflow, with estimated reductions in flow from the Upper Colorado Basin at Lees Ferry ranging from 10-45 percent by mid-twenty first century (Kalansky and Cayan et al. 2018). This projected decrease in flow into the Colorado River will also have a direct impact on one of the main sources of imported water for the Metropolitan Water District of Southern California, which supplies water to the San Diego County Water Authority.

According to Cal-Adapt, California has a highly variable climate and is susceptible to dry spells. Recent research suggests that extended drought occurrence (a "mega-drought") could become

more pervasive in future decades (CEC 2019). An extended drought scenario is predicted for all of California from 2051–2070 under a climate model using the BAU-emissions scenario. The extended drought scenario is based on the average annual precipitation over 20 years. This average value equates to 78 percent of the historical median annual precipitation averaged over the North Coast and Sierra California Climate Tracker regions.

The projected changes in annual precipitation for the City are shown in Table 4-2. Under both the medium and high emissions scenarios, the City is not expected to experience significant changes in average precipitation. However, the City would experience increased variability in precipitation each year. The City's minimum annual precipitation would decrease while the maximum annual precipitation would increase under both emissions scenarios.

Table 4-2 City of Lemon Grove Changes in Annual Average Precipitation

Scenario	Annual Precipitation		
	Minimum (in)	Average (in)	Maximum (in)
Historical Average (1960-1990)	3.5	12.0	24.4
Medium Emissions Scenario (2050-2099)	2.3	11.5	31.3
High Emissions Scenario (2050-2099)	2.3	12.0	28.0

Notes: in = inches
Source: CEC 2019

While projections appear to show little change in the total annual precipitation in California, even modest changes could have dramatic effects on California's ecosystems, which are conditioned to historic precipitation levels.[1]

Increased Likelihood of Flooding

Climate models indicate that precipitation volatility will intensify in the future as the global climate continues to warm. While days with measurable precipitation become less frequent in Southern California, extreme precipitation events will intensify. Similar to other California regions, the high year-to year variability of precipitation in San Diego County is heavily affected by extreme precipitation events (days having precipitation at or exceeding the 95th percentile), which accounts for 80 percent of the year-to-year variability (Kalansky and Cayan et al. 2018). Most of the heaviest events occur during winter, although the region occasionally experiences a few high rainfall events from tropical storms or convective rainfall patterns during late summer and early fall.

Currently, the City experiences localized flooding in certain areas during heavy rainfall and extreme weather events, typically near creeks or tributaries and at intersections located at the low-points of stormwater runoff basins. In the northwestern portion of the City, localized flooding occurs along Federal Boulevard.

[1] Data for this 20-year drought scenario also included another 20-year drought scenario for the earlier part of the twenty first century (2023-2042). The model for both was derived from downscaled meteorological and hydrological simulations, and the earlier twenty first century model resulted in the same precipitation rate as the latter century scenario.

The City's flooding potential will also be exacerbated when experiencing atmospheric rivers. Atmospheric rivers, which are transports of moisture from the tropics over the Pacific Ocean in long, thin ephemeral filaments responsible for most extreme events, will carry more moisture. This trend has recently been detected in observations and is expected to increase in intensity and magnitute, resulting in increased regional and localized flooding (Kalansky and Cayan et al. 2018).

During flooding events, infrastructure (e.g., roadways, power lines) may also be damaged, in turn disrupting communications, energy transmission, public services, and transportation systems. Floodwaters during storm events can also interact with sources of pollution and distribute hazardous pollutants locally and regionally. The resulting water contamination may lead to human health impacts, as well as degradation of ecosystems and sensitive habitats.

Source: City of Lemon Grove

Increased Wildfire Risk

Drought conditions are expected to increase the likelihood of large wildfires. Wildfires in the San Diego region occur throughout the year, primarily during late summer and early fall. In the past 10 years, the extent of wildfires has exceeded that during any past decade. In 2003 and 2007, wildfires burned nearly 740,000 acres. The cost of the 2007 wildfires in San Diego was estimated at nearly $2 billion for losses in residential and commercial properties. Increased incidence of wildfires also contributes to direct injuries and mortality and indirect health effects of air pollution (CEC 2009).

Wildfires threaten more than human and property safety; wildfires release harmful air pollutants into the atmosphere which can affect respiratory health of City residents.

The City is located in a primarily urban area, but has areas designated as Very High Fire Hazard Severity along the City's western boundary (CAL FIRE 2019). This Very High Fire Hazard Severity is located within the Chollas Valley, which is within the City's sphere of influence and adjacent to employment centers within the City along Federal Boulevard.

During the dry months, the wildfire risk in Very High Fire Hazard Severity areas can increase when exacerbated by Santa Ana winds and high temperatures. In addition, extreme weather conditions, such as heat waves, low humidity, and/or winds of extraordinary force, may cause an ordinary, localized fire to expand into a more intense and difficult to control wildfire.

In addition to increased threats of human safety, the increased frequency of wildfire results in the release of harmful air pollutants that can affect the respiratory health of residents across a broad geographical region. Wildfire can also cause direct and indirect damage to electrical infrastructure. In San Diego County, downed powerlines are the second leading cause of fire damage based on area burned (Kalansky and Cayan et al. 2018). Direct exposure to fire can sever transmission lines, and heat and smoke can affect transmission capacity.

Increased Demand on Infrastructure

Infrastructure provides the resources and services critical to City functions, including transportation (i.e. roadways, light rail lines), water (i.e. supply, storm, and sewer), electricity, gas, and communication systems. Climate change increases the likelihood of both delays and failures of infrastructure. Temporary delays or outages can result in inconvenience or economic loss, while larger failures can lead to disastrous economic and social effects. Secondary effects from climate change that impact infrastructure can include physical damages from floods or wildfires and increases in infrastructure demand, including increased stormwater capacity demand to accommodate major precipitation events and increased electricity demand to cool homes and businesses during extreme heat events.

Source: City of Lemon Grove

4.3 Adaptation Strategies

This section outlines strategies for the City to help its municipal operations and its residents adapt to the current and future impacts of climate change, while improving community resilience. These strategies can also be considered for incorporation into the next update of the City's Safety Element of the General Plan, pursuant to the requirements of Senate Bill 379, as well as in future updates to the *San Diego Multijurisdictional Hazard Mitigation Plan*. Future planning efforts by the City will use these proposed strategies to better integrate climate adaptation planning efforts into all relevant plans, policies, and programs.

Adaptation strategies are classified into five categories to address the climate change impacts identified in the vulnerability assessment. They are categorized as follows:

Strategy A-1: Prepare for Increased Temperatures and Frequency of Extreme Heat Events.

Strategy A-2: Prepare for Changes in Precipitation Patterns and Water Availability.

Strategy A-3: Prepare for Increased Flooding Risk.

Strategy A-4: Prepare for Increase Wildfire Risk.

Strategy A-5: Prepare for Increased Demand on Infrastructure.

Under each adaptation strategy, the City has identified multiple measures. The City is currently implementing adaptation efforts through existing programs and policies, and partnerships with other agencies. The following sections provide summaries of current adaptation efforts, along with the related adaptation strategy each effort supports and new adaptation measures identified by the City to support each strategy.

The adaptation strategies were identified to be comprehensive and integrated, addressing climate change impacts across a range of uses and populations in the City.

4.3.1 Current Adaptation Efforts

The City is currently addressing some of the challenges associated with climate change impacts through existing local policies, plans, programs, resources, and institutions. A summary of the existing climate change adaptation efforts occurring in the City is provided in Table 4-3.

Table 4-3 Current Adaptation Efforts in the City of Lemon Grove

Current Effort	Effort Description	Related Adaptation Strategy
Water Efficiency Measures	The City is continuing to work with the Helix Water District to implement water efficiency measures, such as eliminating runoff from irrigation and limited water use for washing paved surfaces.	2, 5
San Diego MHMP	Climate change impacts and adaptation efforts for the City have been briefly addressed in the San Diego MHMP, which provides a vulnerability assessment for all communities within San Diego County.	1-5
General Plan Update	The City is in the process of updating its General Plan. The City's General Plan update will include a Safety Element update that will identify climate change effects the City will experience and will include goals and policies to adapt and respond to these effects.	1-5
National Flood Insurance Program (NFIP)	The City is a participant in FEMA's NFIP which provides flood insurance for structures located within the floodplain areas of the City.	3
Low Income Housing Programs	The City, in partnership with the San Diego County Housing and Community Development Department, is assisting low income residents in rehabilitating homes and businesses to meet existing code requirements and improve building efficiency.	1, 2, 5
Drainage Infrastructure Analysis	The City has completed planning documents, including the Jurisdictional Runoff Management Plan completed in May 2019, that identify projects to improve water quality and reduce discharge into storm drain systems.	2, 3, 5

Notes: City = City of Lemon Grove; FEMA = Federal Emergency Management Agency; MHMP = Multijurisdictional Hazard Mitigation Plan; NFIP = National Flood Insurance Program
Source: Ascent Environmental, Inc. 2019.

4.3.2 Resiliency and Adaptation Measures

Adaptation strategies are classified into five categories to address the climate change impacts identified in the vulnerability assessment. Each category includes programs and policies to support climate adaptation and resiliency, focusing on specific vulnerabilities and impacts that have the potential to affect the City's populations, functions, and structures. The proposed strategies also have the potential to provide other important benefits to the community, or co-benefits (described in Chapter 1). Detailed strategies and measures are described below.

Strategy A-1: Prepare for Increases in Temperature and Extreme Heat Days

Rising temperatures caused by climate change will exacerbate the UHIE and increase the frequency and duration of extreme heat events (i.e. extreme heat days and heat waves). The City will implement the measures presented in Table 4-4 to mitigate health effects from extreme heat events and the effects of the UHIE to protect its populations, functions, and structures.

Table 4-4 Strategy A-1: Prepare for Increases in Temperatures and Extreme Heat Events
Measure A-1.1: Improve Access to Cool Zones
The City will work with local agencies, businesses, and institutions to promote "Cool Zones" and improve access for residents vulnerable to extreme heat, such as small children, people with chronic diseases, low-income populations, outdoor workers, and the elderly.
Measure A-1.2: Increase Green Infrastructure
The City will incorporate green infrastructure elements into its new and existing infrastructure to mitigate the effects of the UHIE by reducing areas of heat-absorbing paved surfaces and increasing landscaped areas with planted vegetation. Examples of green infrastructure include cool pavements (e.g., porous pavement and light-colored pavement), street trees and climate-appropriate landscaping, cool roofs, and the creation of additional greenspace.
Measure A-1.3: Increase Heat Event Public Outreach
The City will increase public outreach and education programs to inform the public of the health risks associated with extreme heat events. The City's outreach will focus primarily on providing educational opportunities for populations vulnerable to extreme heat such as children, those who are socioeconomically disadvantaged, people who work outside, and the elderly.
Measure A-1.4: Improve Building Cooling Efficiency
The City will promote the use of passive cooling design (e.g., appropriate building orientation, appropriate shade tree selection and location, window shading, cool roofs) and use the CalGreen voluntary measures for residential and nonresidential buildings to improve energy efficiency.
Measure A-1.6: Reduce Heat Island Effects at Transit Stations
The City will work with MTS to incorporate and expand shading and heat island effect reducing features at transit stations within the City. These efforts could include installing shade structure, cool roofs, cool pavements, or street trees along major routes or at major stations.
Notes: CalGreen = California Green Building Standards; City = City of Lemon Grove; MTS = San Diego Metropolitan Transit System; UHIE = Urban Heat Island Effect Source: Ascent Environmental, Inc. 2019.

Strategy A-2: Prepare for Changes in Precipitation Patterns and Water Availability

The Helix Water District provides potable water to the City and receives both imported and local water to supply its customers. Because of climate change, the City's reliance on various water resources will remain a critical issue in adapting to increased periods of drought. Considering the potential decrease in regional water resources available to the City due to changes in annual precipitation and an overall reduction in the Sierra Nevada snowpack, the City will implement the

measures presented in Table 4-5 to increase the City's adaptation and resilience concerning water supplies.

Table 4-5 Strategy A-2: Prepare for Changes in Precipitation Patterns and Water Availability
Measure A-2.1: Support Water Conservation Efforts
The City will coordinate with local and regional water resource agencies to support and improve water conservation efforts and programs for residents. This will include supporting educational outreach to residents, especially populations vulnerable to climate change, on how to best conserve water and reduce water demand.
Measure A-2.2: Require Efficient Landscapes
In support of implementation of GHG emissions reduction Measure W-1, the City will continue the implementation of its Best Management Practices Design Manual for new developments and redevelopment projects. As new technologies or best practices become available, the City will continue to update this manual to require efficient landscaping throughout the City.
Measure A-2.3: Encourage Greywater Systems
The City will encourage residents and businesses to install greywater systems to reduce the City's water demand.
Measure A-2.4: Promote Water Resource Projects
The City will pursue grant funding opportunities for water resource planning projects, when available, and will coordinate with local and regional water districts to develop local water supplies that would not be affected by climate change (e.g., advanced water purification). Specifically, the City will work with Helix Water District to promote diversification of water supplies, desalination as a drought-proof water supply, and increased efficiency of water transfers.
Notes: City = City of Lemon Grove Source: Ascent Environmental, Inc. 2019.

Strategy A-3: Prepare for Increased Flood Risk

Extreme precipitation events can lead to flooding and other damaging effects. Emissions scenarios from Cal-Adapt regarding increased extreme precipitation event frequency and intensity demonstrate the City's need to develop specific measures to help prepare for increased flood risks. The City will implement the measures identified in Table 4-6 to adapt to increased flooding events.

Table 4-6 Strategy A-3: Prepare for Increase Flood Risk
Measure A-3.1: Develop Emergency Preparedness Plans
The City will coordinate with relevant agencies (e.g., FEMA, CalOES, Heartland Fire Department) to identify, plan, and prepare necessary emergency services required to contend with flooding events, including evacuation services, flood management services, and recovery services.
Measure A-3.2: Enhance Flood Control
The City will seek grants and other sources of funding, including the State's Integrated Regional Water Management Grant Program and mitigation opportunities, to enhance flood control and improve water quality.

Table 4-6 Strategy A-3: Prepare for Increase Flood Risk
Measure A-3.3: Promote Ecosystem Restoration
The City will promote and/or engage in local and regional ecosystem restoration efforts that will result in increased climate resiliency for flooding events within the City.

Notes: CalOES = California Office of Emergency Services; City = City of Lemon Grove; FEMA = Federal Emergency Management Agency
Source: Ascent Environmental, Inc. 2019.

Strategy A-4; Prepare for Increased Wildfire Risk

Like many communities in the San Diego region, the City will likely experience increased wildfire risk in the future. Though the City is primarily urban and surrounded by other urban areas, the increased frequency and intensity of wildfires throughout the region would threaten health and safety within the City. The City would implement the measures identified in Table 4-7 to increase resiliency to wildfires through community education and new development requirements.

Table 4-7 Strategy A-4: Prepare for Increase Wildfire Risk
Measure A-4.1: Participate in a Community Alert System
The City will participate in the development of future community alert systems or notification systems that provide information to residents and business owners related to wildfires.
Measure A-4.2: Update City Code Requirements
The City will monitor new wildfire-related laws and regulations from the State legislation and will incorporate applicable regulations into the City's Municipal Code. The City will encourage the use of fire-resistant building design, materials, and landscaping.
Measure A-4.3: Preserve, Protect, and Restore Native Habitats
The City will explore funding opportunities to preserve, protect, and restore native habitats. The City will monitor/control invasive species by encouraging the removal of non-native vegetation from fire-prone areas.
Measure A-4.4: Maintain Fire Emergency Services
The City will continue to work with the Heartland Fire District to ensure adequate fire emergency services and resources are available to City residents and businesses.

Notes: City = City of Lemon Grove
Source: Ascent Environmental, Inc. 2019.

Strategy A-5: Prepare for Increased Demand on Infrastructure

Extreme and prolonged high temperatures threaten local energy supply due to high demand for electricity use, which burdens the ability of the utility provider to meet increased demand. Surges in energy use in the City and the San Diego region may cause brownouts or blackouts. Changes in precipitation patterns would result in increased demand for water storage to provide water during droughts and increased stormwater infrastructure capacity during extreme precipitation events. Climate change effects will put additional stress on the City's infrastructure. Measures to prepare for increased demand on infrastructure are provided in Table 4-8.

Table 4-8 Strategy A-5: Prepare for Increased Demand on Infrastructure
Measure A-5.1: Promote the Use of Solar Carports
The City will promote the use of solar carports on new and existing surface parking lots to mitigate heat absorption and increase shaded areas for the City's population. The implementation priority would be given to City-owned parking lots to serve as example solar carports. Solar carports would provide increased solar energy generation, reducing demand on existing generation facilities to serve future electricity needs in the City.
Measure A-5.2: Promote Climate-Adaptive Building Design
The City will promote climate-adaptive design (e.g. cool roofs) of buildings, public areas, and infrastructure to reduce reliance on mechanical cooling and energy use.
Measure A-5.3: Assess Stormwater and Wastewater Infrastructure
The City will continue to assess all stormwater and wastewater infrastructure in the City and analyze how this infrastructure may be affected or compromised by increased risk of extreme precipitation or flooding events when completing infrastructure projects.
Measure A-5.4: Promote Energy Efficiency
The City will encourage residents and businesses to adopt energy efficient practices to reduce energy and water demand, and optimize time-of-use.
Measure A-5.5: Encourage Renewable Energy Generation
In addition to the GHG reduction measures identified in this CAP, the City will encourage the development of solar-based or other renewable energy sources within the City and the larger region.
Notes: CAP = Climate Action Plan; City = City of Lemon Grove; GHG = greenhouse gas Source: Ascent Environmental, Inc. 2019.

4.4 Conclusion

Source: City of Lemon Grove

The City's efforts to adapt to climate change effects will be implemented alongside the GHG reduction measures identified in Chapter 3. Implementation of the five adaptation strategies and the 22 associated measures will provide alternative methods beyond GHG reduction measures for the City to address climate change impacts. Though not quantified within this CAP, several adaptation strategies and measures would result in additional GHG reduction benefits from actions such as increasing building efficiency, reducing water consumption, and adopting other sustainable practices. The implementation of adaptation strategies and measures alongside the GHG reduction measures would assist the City in actively combating and adapting to climate change.

05 Implementation and Monitoring

5.1 Introduction

This chapter outlines how the City of Lemon Grove (City) will implement and monitor the Climate Action Plan (CAP) strategies and measures over time to reduce greenhouse gases (GHGs) and adapt to climate change. To achieve the GHG emissions reductions and adaptation strategies described in Chapters 3 and 4, measures should also be continuously assessed and monitored to ensure that: (1) the measures are effective; (2) the CAP is on track to achieve the GHG reduction targets; and (3) desired community outcomes are attained.

5.2 Implementation Strategy

Implementation of the recommended reduction measures will require ongoing management, oversight, and staffing. Ensuring that the measures translate to on-the-ground results and reductions in GHG emissions is critical to the success of the CAP. Success of the City's CAP and GHG emissions reduction measures will depend on the participation of the City's residents, businesses, and local government entities.

This chapter describes how City staff will implement CAP measures, and how the CAP will be updated over time to ensure continued effectiveness and relevance of the document.

To achieve GHG reduction targets, an implementation strategy is required to determine the priority of the strategies described in Chapter 3. Priorities depend on a variety of factors, including cost, staff resources needed, ease of implementation, and timeframe of strategy implementation in order to achieve State and local targets. To continue successful implementation of the CAP strategies, the City will further expand on this initial examination once implementation has begun.

The City will prepare an implementation plan to ensure measures are actionable and implementation priorities are identified for each emissions reduction measure.

5.2.1 Implementation Activities

The City will implement strategies and measures of the CAP through several types of programs and activities that can be grouped into categories. The categories identified for implementation activities include: Municipal Operations; New Ordinances and Code Updates; Planning; Financing and Incentives; Partnerships; and Education and Outreach. While each measure identified in the CAP would fall into one of these categories, some measures overlap and belong to more than one category. For example, reducing solid waste disposal (Measure S-1) first requires partnerships with existing waste haulers to ensure solid waste is handled appropriately, but would also require education to inform residents on proper solid waste sorting and reduction strategies. Detailed descriptions of each category are provided below.

Municipal Operations: Many measures included in this CAP require specific City actions to update and make municipal operations more efficient. Examples include increasing the amount of renewable energy generated at municipal facilities (Measure E-5) and increasing the efficiency of streetlights by 40 percent (Measure E-1). These measures would be

implemented by the City and would reduce emissions specifically related to municipal operations.

New Ordinances and Code Updates: Several of the measures in the CAP would be implemented through new ordinances or amended regulations adopted by the City. Examples of measures that require municipal approval include requiring new and existing developments to increase the number of onsite electric vehicle (EV) charging stations (Measure T-3) and reducing the amount of residential parking near trolley stations (Measure T-11). New ordinances will ensure that the City requirements are in place to achieve the objectives of the CAP.

Source: City of Lemon Grove

Planning: The CAP identifies measures that are more programmatic in nature and that require visioning and a larger planning effort to realize GHG reductions. Examples of implementation or development of a variety of planning documents or programs include an Urban Tree Planting Program (Measure C-1) and a citywide Transportation Demand Management Plan (Measure T-8).

Financing and Incentives: Identifying mechanisms for funding and allocating resources will help ensure that the CAP is successfully implemented. Strategies and measures identified in the CAP would be implemented by community residents, business owners, and developers with opportunities and incentives to contribute to citywide GHG reductions. Promoting financing and incentive programs, like the San Diego Association of Governments (SANDAG) iCommute program (Measure T-7), increases the participation in achieving citywide reduction goals.

Partnerships: Interagency coordination and partnerships with other organizations are critical to ensuring implementation of certain measures. This includes collaboration with the San Diego Metropolitan Transit System (MTS) on increasing citywide commutes on transit (Measure T-13), with local school districts to track electric bus purchases (Measure T-4) and track the number of students walking/biking to school (Measure T-9), and with other government agencies, transportation agencies, and waste haulers in the region.

Source: City of Lemon Grove

Education and Outreach: Educational efforts about the objectives of the CAP will help create support for the CAP and involve the community in its implementation. Informing residents and business owners about the co-benefits of GHG reduction measures would encourage participation and awareness of the goals of the CAP.

The inclusive implementation strategy identifies which departments are primarily responsible for implementation and where partnerships are necessary for measure success.

5.2.2 Implementation Timeframe

The timeframe over which strategies are implemented varies between both short-term (i.e. within a couple years) and long-term (i.e. within several years). Prioritization of the measures is based on a timeframe in which measures can be implemented. Certain measures should be prioritized early because they would require more effort and would take longer to implement, and assigning such measures a higher priority would allow the City to allocate resources appropriately. Generally, timeframes associated with each measure can be categorized as follows:

- On-going: Implementation is already occurring
- Short-term: Implementation will occur within the next three years
- Mid-term: Implementation will occur within approximately five years
- Long-term: Implementation will occur within or beyond the next seven years

5.2.3 Implementation Effort

Levels of effort required to implement measures are based on implementation cost and ease of implementation, which were both evaluated for all CAP measures based on a scale of low, medium, or high. Consideration of staff implementation costs and the overall feasibility of implementation is needed to guide CAP measure implementation. Staff implementation costs are based on the anticipated levels of resources, staffing, and timeframe required to implement each measure. Implementation costs are not intended to represent the relative costs of compliance for residents and businesses, but rather focuses on the City's relative costs to facilitate program development and implementation. Ease of implementation is based on whether there are already existing programs that are related, coordination between different departments or agencies, and the comparison between existing and proposed strategies.

The implementation efforts provide an assessment of the relative costs of measure implementation. Identifying implementation efforts and departments responsible ensures fair distribution of resources throughout the City.

Sample criteria used to define the implementation efforts for each measure are shown in Table 5-1. It is possible for a measure to have a mix of implementation effort levels (i.e. have low staff implementation costs and high ease of implementation).

Table 5-1 Implementation Effort Sample Criteria

Implementation Effort Level	Staff Implementation Costs	Ease of Implementation
Low	▪ Requires limited resources of current staff ▪ Existing staff can implement but will require reprioritization of workload	▪ Existing programs in place to support implementation ▪ Limited external and internal coordination required ▪ Limited revisions to policy or code
Medium	▪ Requires staff resources beyond current capacity ▪ Requires new part-time staff or contracts to implement	▪ Requires external and internal coordination ▪ Involves policy or code revisions ▪ The amount of funding needed for implementation is known and it can be acquired
High	▪ Requires extensive staff resources ▪ Requires a significant number of new staff or contracts to implement	▪ Requires revisions to the General Plan or development of new policies, programs, or codes ▪ Requires robust outreach programs to residents and businesses ▪ Requires regional cooperation ▪ Requires securing long-term funding

Source: Ascent Environmental 2019.

5.2.4 Implementation Strategy Matrix

The implementation strategy matrix, outlined below in Table 5-2, provides a summary of the initial prioritization and categorization of the CAP's strategies and measures. The matrix includes an implementation activity type, responsible department or agency, implementation timeframe, level of implementation cost, and ease of implementation for each measure. Following adoption of the CAP, this implementation strategy matrix will serve as initial guidance for City staff. Future updates to the CAP will require the matrix to be adjusted according to feasibility and legislative requirements. Key staff in each department or agency will facilitate and oversee measure implementation, allocate staff resources, and secure funding as needed.

The implementation strategy provides a comprehensive and integrated, high level assessment of costs and time required to implement each GHG reduction measure identified in this CAP.

Following approval of this CAP, the City will develop an Implementation Plan that will outline the actions the City will undertake to reduce its GHG emissions. This Implementation Plan will build upon the strategies, measures, and implementation costs included in this CAP and further develop the information presented in this chapter. The Implementation Plan will include specific steps required to implement each CAP strategy and serve as a reference document for City staff to identify implementation tasks, timelines, and responsible departments. The Implementation Plan may need to reflect adjusted timeframes due to budget constraints.

Table 5-2 Implementation Strategy Matrix

Measure	Title	Category	Responsible Department/ Agency	Implementation Timeframe	Staff Implementation Costs	Ease of Implementation
Strategy 1: Increase Use of Zero-Emission or Alternative Fuel Vehicles						
T-1	Transition to a Clean and More Fuel-Efficient Municipal Vehicle Fleet	Municipal Operations	PW	Mid- to Long-Term	Low	Low
T-2	Install EV Charging Stations at Municipal Facilities	Municipal Operations	PW	Mid- to Long-Term	Low	Medium
T-3	Increase the Number of EV Charging Stations at New and Existing Private Developments	New Ordinances and Code Updates	CD	Mid-Term	Low	Medium
T-4	Transition to an Electric School Bus Fleet	Partnerships	GUHSD; LGSD; CD	Mid- to Long-Term	Low	Medium
Strategy 2: Reduce Fossil Fuel Use						
T-5	Synchronize Traffic Signals	Municipal Operations	PW	Mid- to Long-Term	Low	Medium
T-6	Increase Renewable and Alternative Fuel Use in Construction Equipment	New Ordinances and Code Updates	CD	Short-Term	Low	Low
Strategy 3: Reduce Vehicle Miles Traveled						
T-7	Participate in SANDAG's iCommute Vanpool Program	Partnerships	CM; CD	Ongoing	Low	Low
T-8	Develop a Citywide TDM Plan	Planning	CD	Short-Term	Medium	Medium
T-9	Implement the Safe Routes to School Program	Education and Outreach	CD; LGSD	Ongoing	Low	Low
T-10	Increase Commute by Bicycle	Planning	CD	Ongoing	Low	Medium
T-11	Reduce Residential Parking Requirements Near Trolley Stations	New Ordinances and Code Updates; Planning	CD	Mid-Term	Medium	Medium
T-12	Transition to an Online Building Permits Submittal System	Municipal Operations	CD; CM	Mid- to Long-Term	Low	Low
T-13	Increase Commute by Transit	Planning; Partnerships	CD; MTS	Mid- to Long-Term	Medium	Medium
Strategy 4: Increase Building Energy Efficiency						
E-1	Increase Street Lighting Efficiency Citywide	Municipal Operations	PW	Ongoing	Low	Medium
E-2	Reduce Non-Residential Energy Use	Financing and Incentives; Education and Outreach	CD; CM	Mid-Term	Medium	Medium

Table 5-2 Implementation Strategy Matrix

Measure	Title	Category	Responsible Department/ Agency	Implementation Timeframe	Staff Implementation Costs	Ease of Implementation
E-3	Reduce Residential Energy Use	Financing and Incentives; Education and Outreach	CD; CM	Mid-Term	Medium	Medium
Strategy 5: Increase Renewable and Zero Carbon Energy						
E-4	Increase Renewable Energy Generation at Non-Residential and Multi-Family Developments	New Ordinances and Code Updates	CD	Mid-Term	Low	Medium
E-5	Achieve Zero Net Energy Municipal Operations	Municipal Operations	PW	Ongoing	Medium	High
E-6	Require New Residential Uses to be All-Electric and Generate Renewable Energy On-Site	New Ordinances and Code Updates; Education and Outreach	CD	Mid-Term	Low	High
E-7	Increase Grid-Supply Renewable and Zero-Carbon Electricity	Financing and Incentives; Partnerships; Education and Outreach	CD; CM	Ongoing	Medium	High
Strategy 6: Increase Water Efficiency						
W-1	Increase Outdoor Water Efficiency	New Ordinances and Code Updates	CD	Ongoing	Low	Low
W-2	Reduce Water Use at City Parks and Municipal Facilities	Municipal Operations	PW	Ongoing	Low	Medium
Strategy 7: Reduce and Recycle Solid Waste						
S-1	Increase Citywide Waste Diversion	New Ordinances and Code Updates; Partnerships	CD; PW	Mid-Term	Medium	High
Strategy 8: Carbon Sequestration						
C-1	Develop a Citywide Urban Tree Planting Program	Planning	CD; PW	Short-Term	Low	Medium
C-2	Increase Tree Planting at New Developments	New Ordinances and Code Updates	CD	Short-Term	Low	Low

Notes: CD = Community Development Department; CM = City Manager's Office; Eng = Engineering Department; EV = electric vehicle; GUHSD = Grossmont Union High School District; LGSD = Lemon Grove School District; MTS = San Diego Metropolitan Transit System; PW = Public Works; SANDAG = San Diego Association of Governments; TDM = Transportation Demand Management
Source: Ascent Environmental, Inc. 2019.

5.3 Monitoring and Updates

The CAP lays out a broad-based strategy to reduce GHG emissions and improve the sustainability and resilience of the community. However, the CAP will need to be updated and maintained if it is to remain relevant and effective. Thus, City staff will need to evaluate and monitor plan performance over time and make recommendations to alter or amend the plan if it is not achieving the proposed reduction targets. This will include conducting periodic GHG emissions inventory updates and analyzing measure performance.

The City will continuously monitor CAP implementation progress and provide transparent and verifiable reports to City Council and the public.

The City will begin implementing the CAP's measures upon adoption and start-up, and initiation of data tracking will begin two years following CAP adoption. City staff will also present summaries of CAP progress to City Council. These update presentations would include summaries of achievements to date and provide transparency and promote engagement with the public after CAP adoption. Through the climate planning services offered via its Roadmap Program, SANDAG is updating GHG emissions inventories for the cities in the San Diego region every two years, beginning with the 2016 baseline year. The City will seek to coordinate updates to its GHG inventory to remain consistent with SANDAG's schedule, beginning with the 2018 baseline year. As the City prepares updated emissions inventories and implements CAP measures, it will continue to review applicable updates to legislative actions at the State and federal levels, and apply changes to methodologies as new legislative requirements and associated adjustment factors become available.[1]

Source: City of Lemon Grove

In addition to updating the City's emissions inventory, City staff will also evaluate the cost, effectiveness, and benefits of each individual measure. Evaluating CAP measure performance entails monitoring the level of community participation, costs, and barriers to implementation, as well as actual reductions in fuel consumption, vehicle miles traveled, energy usage, water usage, landfilled waste, or other activities that result in GHG emissions reductions. By evaluating whether implementation of a measure is on track to achieve its reduction potential, the City can identify successful measures and reevaluate or replace under-performing ones.

[1] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule was published during preparation of this CAP. Part One of the SAFE Rule which became effective in November 2019, revoked the State of California's wavier for the State's GHG and zero emissions vehicle (ZEV) programs afforded under the Clean Air Act. In March 2020, Part Two of the SAFE Rule was issued, setting revised fuel economy and GHG emissions standards for passenger cars and light trucks. Adjustments to GHG emission factors to account for the impact of the SAFE Rule have not been developed by CARB at the time of this writing. Therefore, the methodology used in the CAP is consistent with current published guidance from CARB. The City will continue to monitor updates to emission factors as they become available.

City staff will prepare a monitoring report in conjunction with an inventory update. This report will provide updates on CAP implementation progress, the GHG reductions achieved to date, and other important milestones in the CAP implementation process. As technologies and markets change and the City implements the measures in the CAP, these reports will be used to track progress and identify measures that need to be improved, adjusted, or removed. The report will also serve to inform City Council and the general public about implementation progress on measures, as well as overall progress towards the City's GHG reduction targets.

Finally, the City will prepare a CAP update every five years, beginning in 2025. CAP updates would reflect the findings and recommendations of the monitoring reports and inventory updates. Future CAP updates would be necessary to account for any new State or federal legislation that may affect the CAP, and to focus on GHG reduction strategies that may have been difficult to implement previously due to a lack of appropriate technologies or high upfront implementation costs.

Figure 5-1 outlines the CAP implementation and monitoring schedule.

Implementation and Monitoring Schedule

2020	CAP Adopted City Council adopts plan and staff begins to implement CAP measures.
2020	Initial Set-up Staff performs initial start-up tasks and implementation of data tracking.
2020	Receive GHG Emissions Inventory Data from SANDAG In coordination with SANDAG, the City will receive 2018 baseline emissions estimates, accounting for City-specific demographics.
2022 & 2024	Monitoring Report and Receive GHG Inventory Data from SANDAG City staff prepares monitoring report and updates to GHG inventory, starting with the 2018 inventory year (in coordination with SANDAG). City staff presents the report to City Council, assessing the CAP's performance in achieving targets.
2025	Measure Review and CAP Review Based on findings from the monitoring report and inventory updates, City staff will review the performance of each individual measure and prepare a CAP update, if necessary.

Source: Ascent Environmental, Inc. 2019.

Figure 5-1 Climate Action Plan Implementation and Monitoring Schedule

5.4 Ongoing Engagement

As the City continues to implement and monitor progress on the CAP, continued engagement with, and participation by the community is critical. This includes individual residents and businesses, community organizations, developers, property owners, other local and regional government agencies, and others. While this CAP focuses on measures in which the City has a role, many of the measures require partnership and collaboration.

The City is also committed to public education about the important role individuals play in combating climate change. Effective and long-term climate action and resiliency in the City can only be achieved through efforts that continue to change the way individuals interact with the environment. Many of the measures in Chapter 3, as well as the adaptation strategies in Chapter 4, are focused on increasing community awareness and participation in existing programs or connecting the community with new information, tools, funding, or resources to take action. Thus, this CAP serves as a resource that supports community-based action.

5.5 Funding Sources

The City will incur costs to implement CAP measures. These include initial start-up, ongoing administration, staffing, and enforcement costs. While some measures will only require funding from public entities, others would result in increased costs for businesses, new construction, and residents. However, implementation of CAP measures will result in substantial cost-savings for the City, residents, and business owners in the long term. The City will be proactive in seeking cost-effective implementation and strategic funding opportunities and developing partnerships to lessen the burden of implementation costs. All measures with potential for significant costs will be brought to City Council for consideration and approval.

Ultimate success of CAP implementation will rely on the City's ambitious implementation efforts to achieve GHG emissions reductions.

Success of the CAP will require capital improvements, investments, and increased operations and maintenance costs. The summary of current funding and financing options are provided in Table 5-3 below. Funding options are included from a variety of sources, including the City, regional agencies such as SANDAG, or San Diego Gas & Electric (SDG&E). The City will monitor private and public funding sources for new grant and rebate opportunities, as funding sources and programs are subject to change over time. Leveraging funding opportunities would facilitate successful implementation of the GHG reduction measures. The City will continue to search for new funding sources through the State's Climate Change Funding Wizard website, which provides the most up-to-date information on funding opportunities for projects for climate change mitigation and adaptation.

The state's Climate Change Funding Wizard provides updates for funding available to cities, residents, and businesses to reduce GHG emissions and improve local resiliency.

Table 5-3 Potential Funding Sources to Support GHG Reduction Measures	
Funding Source	**Description**
City	
California Department of Resources Recycling and Recovery (CalRecycle)	▪ CalRecycle grant programs allow jurisdictions to assist public and private entities in management of waste streams. ▪ Incorporated cities and counties in California are eligible for funds. ▪ Program funds are intended to: • Reduce, reuse, and recycle all waste. • Encourage development of recycled-content products and markets. • Protect public health and safety and foster environmental sustainability.
California Air Resources Board (CARB)	▪ CARB offers several grants, incentives, and credit programs to reduce on-road and off-road transportation emissions. Residents, businesses, and fleet operators can receive funds or incentives depending on the program. ▪ The following programs can be utilized to fund local measures: • Air Quality Improvement Program (Assembly Bill 118) • Loan Incentives Program • California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project
Transportation-Related Federal and State Funding	▪ For funding measures related to transit, bicycle, or pedestrian improvements, the following funding sources from SANDAG may be utilized: • Smart Growth Incentive Program • Active Transportation Grant Program • Job Access and Reverse Commute and New Freedom Programs • Specialized Transportation Grant Program
New Development Impact Fees	▪ These types of fees may have some potential to provide funding for proposed programs and projects, but such fees are best implemented when the real estate market and overall regional economic conditions are strong.
General Obligation Bond	▪ A general obligation bond is a form of long-term borrowing and could be utilized to fund municipal improvements.
Other Funding Mechanisms for Implementation	▪ Grants may be available from the Strategic Growth Council or the State Department of Conservation to fund sustainable community planning, natural resource conservation, and development, and adoption.
Community	
San Diego Gas & Electric (SDG&E)	▪ SDG&E is one of the utilities participating in the Go Solar initiative. ▪ A variety of rebates are available for existing and new homes. ▪ Photovoltaics, thermal technologies, and solar hot water projects are eligible. ▪ Single-family homes, commercial development, and affordable housing are eligible.

Table 5-3 Potential Funding Sources to Support GHG Reduction Measures	
Funding Source	**Description**
Property-Assessed Clean Energy (PACE)	▪ The PACE finance program is intended to finance energy and water improvements within a home or business through a land-secured loan, and funds are repaid through property assessments. ▪ Municipalities are authorized to designate areas where property owners can enter into contractual assessments to receive long-term, low-interest loans for energy and water efficiency improvements, and renewable energy installation on their property. ▪ Financing is repaid through property tax bills. ▪ SANDAG has implemented the Home Energy Renovation Opportunity (HERO; a PACE program) in San Diego County to assist residents in financing residential energy efficiency and solar retrofits.
Clean Vehicle Rebate Program	▪ Individual, fleet operators, local government entities, and businesses can apply for rebates for purchases of plug-in electric hybrids, battery electric vehicles (BEVs), fuel-cell electric vehicles, and other non-highway, motorcycle and commercial BEVs.
Energy Upgrade California	▪ Program is intended for home energy upgrades. ▪ Funded by the American Recovery and Reinvestment Act, California utility ratepayers, and private contributions. ▪ Utilities administer the program, offering homeowners the choice of one of two upgrade packages—basic or advanced. ▪ Homeowners are connected to home energy professionals. ▪ Rebates, incentives, and financing are available. ▪ Homeowners can receive up to $4,000 back on an upgrade through the local utility.
Federal Tax Credits for Energy Efficiency	▪ Tax credits for energy efficiency can be promoted to residents.
Energy Efficient Mortgages (EEM)	▪ An EEM is a mortgage that credits a home's energy efficiency in the mortgage itself. ▪ Residents can finance energy saving measures as part of a single mortgage. ▪ To verify a home's energy efficiency, an EEM typically requires a home energy rating of the house by a home energy rater before financing is approved. ▪ EEMs typically are used to purchase a new home that is already energy efficient, such as an ENERGY STAR® qualified home.
Private Funding	▪ Private equity can be used to finance energy improvements, with returns realized as future cost savings. ▪ Rent increases can fund retrofits in commercial buildings. ▪ Net energy cost savings can fund retrofits in households.

Table 5-3 Potential Funding Sources to Support GHG Reduction Measures

Funding Source	Description
	▪ Power Purchase Agreements (PPA) involve a private company that purchases, installs, and maintains a renewable energy technology through a contract that typically lasts 15 years. After 15 years, the company would uninstall the technology or sign a new contract. ▪ On-Bill Financing (OBF) can be promoted to businesses for energy-efficiency retrofits. Funding from OBF is a no-interest loan that is paid back through the monthly utility bill. Lighting, refrigeration, heating, ventilation, and air conditioning, and light-emitting diode streetlights are all eligible projects.
Community Choice Aggregation (CCA) Revenue	▪ Revenue generated by a local CCA program may be used to fund or incentivize GHG reduction measures.
Housing Rehabilitation Loan Programs	▪ Critical Home Repair Program through Habitat for Humanity provides home improvements for low-income homeowners to improve home efficiency, safety, and accessibility. ▪ The U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant program provides communities with resources to address redevelopment needs, specifically for home rehabilitation. ▪ HUD also administers the HOME program, providing grants to improve affordable housing opportunities and conditions.
General	
CivicSpark Program	▪ Supports sustainability-focused research, planning, and implementation projects throughout California by providing public agencies and other organizations with capacity building support and community engagement ▪ Provides volunteer engagement through AmeriCorps fellows to provide added staff capacity for eleven months
California Climate Investments (CCI)	▪ CCI is the statewide initiative that provides funds from the Cap-and-Trade program for GHG reducing projects and programs. ▪ Funds can support a variety of projects including affordable housing, renewable energy, public transportation, zero-emission vehicles, environmental restoration, sustainable agriculture, recycling, and more. ▪ Numerous state programs listed above are funded by CCI; however, the program continues to evolve and is updated by the state periodically to include new or modified programs.

Source: Ascent Environmental 2019.

06 References

California Air Resources Board. 2017 (November). *California's 2017 Climate Change Scoping Plan*. Available at https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed on January 9, 2020.

California Department of Forestry and Fire Protection. 2019. *Wildfire Hazard Map for the County of San Diego*. Available at https://www.readysandiego.org/content/oesready/en-us/wildfire-hazard-map.html. Accessed on December 3, 2019.

California Department of Water Resources. 2019a. Climate Change Basics. Available at https://water.ca.gov/Water-Basics/Climate-Change-Basics. Accessed on May 14, 2019.

———. Climate Change and Water. 2019b. Available at https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Change-and-Water. Accessed on May 14, 2019.

California Energy Commission. 2019. *Cal-Adapt. Climate Tools for the City of Lemon Grove.* Available at https://cal-adapt.org/tools/. Accessed on December 3, 2019.

———. 2009. *Climate Change-Related Impacts in the San Diego Region by 2050*. Available at https://ww2.energy.ca.gov/2009publications/CEC-500-2009-027/CEC-500-2009-027-F.PDF. Accessed on January 9, 2020.

California Environmental Protection Agency. 2019. *Understanding the Urban Heat Island Index*. Available at https://calepa.ca.gov/climate/urban-heat-island-index-for-california/understanding-the-urban-heat-island-index/. Accessed on December 3, 2019.

California Natural Resources Agency. 2012. July. *California Adaptation Planning Guide: Planning for Adaptive Communities*. Available at http://resources.ca.gov/docs/climate/01APG_Planning_for_Adaptive_Communities.pdf. Accessed on May 14, 2019.

Cal OES. *See* Governor's Office of Emergency Services.

CalEPA. *See* California Environmental Protection Agency.

CARB. *See* California Air Resources Board.

CDC. *See* U.S. Centers for Disease Control and Prevention.

CEC. *See* California Energy Commission

City. *See* City of Lemon Grove.

CNRA. *See* California Natural Resources Agency.

City of Lemon Grove. 2012 (April). *City of Lemon Grove Downtown Village Specific Plan*. Available at https://www.lemongrove.ca.gov/home/showdocument?id=6112. Accessed on January 9, 2020.

———. 2014 (December). *City of Lemon Grove Energy Roadmap*. Prepared by SANDAG for the City of Lemon Grove. Available at https://www.sandag.org/uploads/projectid/projectid_373_19027.pdf. Accessed on January 9, 2020.

———. 2016 (February). *City of Lemon Grove Best Management Practices Design Manual*. Available at https://www.lemongrove.ca.gov/home/showdocument?id=2258. Accessed on January 9, 2020.

DWR. *See* California Department of Water Resources.

Energy Policy Initiatives Center. 2018 (August). *City of Lemon Grove Greenhouse Gas Emissions Inventory and Projections*. Prepared for the City of Lemon Grove.

———. 2019 (November). *Methods for Estimating Greenhouse Gas Emissions Reductions in the Lemon Grove Climate Action Plan*. Prepared for the City of Lemon Grove.

EPIC. *See* Energy Policy Initiatives Center.

Governor's Office of Emergency Services. 2019 (November). *California Adaptation Planning Guide, Public Review Draft*. Available at https://www.caloes.ca.gov/HazardMitigationSite/Documents/APG2-PUBLIC-REVIEW-DRAFT-FINAL-12%2011%2019-WEB.pdf. Accessed on January 9, 2020.

Intergovernmental Panel on Climate Change. 2014. *Climate Change 2014 Synthesis Report Summary for Policy Makers*. Available at https://www.ipcc.ch/site/assets/uploads/2018/02/AR5_SYR_FINAL_SPM.pdf. Accessed on January 9, 2020.

IPCC. *See* Intergovernmental Panel on Climate Change.

Kalansky and Cayan et al. 2018. *San Diego Summary Report, California's Fourth Climate Change Assessment*. Prepared for the State of California by University of California San Diego. Available at https://www.energy.ca.gov/sites/default/files/2019-07/Reg%20Report-%20SUM-CCCA4-2018-009%20SanDiego.pdf. Accessed on September 3, 2019.

San Diego State University. *The Sage Project Partnership with the City of Lemon Grove, Summary Report 2016-2017*. Available at https://www.lemongrove.ca.gov/home/showdocument?id=4828. Accessed on January 9, 2020.

SDSU. *See* San Diego State University.

United Nations. 2015. *Guiding Principles for City Climate Action Planning, Version 1.0*. Available at http://e-lib.iclei.org/wp-content/uploads/2016/02/Guiding-Principles-for-City-Climate-Action-Planning.pdf. Accessed on January 9, 2020.

UN. *See* United Nations

U.S. Center for Disease Control and Prevention. 2014. *Extreme Heat*. Available at https://www.cdc.gov/disasters/extremeheat/index.html.

Appendix A

City of Lemon Grove Greenhouse Gas Emissions Inventory and Forecast

City of Lemon Grove Greenhouse Gas Emissions Inventories and Projections

August 2018

Prepared for the City of Lemon Grove

Prepared by the Energy Policy Initiatives Center

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

About EPIC

The Energy Policy Initiatives Center (EPIC) is a non-profit research center of the USD School of Law that studies energy policy issues affecting California and the San Diego region. EPIC's mission is to increase awareness and understanding of energy- and climate-related policy issues by conducting research and analysis to inform decision makers and educating law students.

For more information, please visit the EPIC website at www.sandiego.edu/epic.

Prepared in partnership with the San Diego Association of Governments (SANDAG) and the Roadmap Program. This Program is partially funded by California utility customers and administered by San Diego Gas & Electric Company under the auspices of the California Public Utilities Commission.

Table of Contents

Tables

Figures

1 OVERVIEW

A greenhouse gas (GHG) emissions inventory forms the backbone of a climate action plan, which is a plan that demonstrates how GHGs can be reduced over time. For local jurisdictions, GHG reductions are expected to be consistent with California's adopted GHG targets for years 2020 and 2030, and goal for 2050. The state targets and goal are as follows:

- 2020: achieve 1990 GHG levels (according to the 2006 Global Warming Solutions Act (also known as AB32))
- 2030: achieve 40% below 1990 levels (SB32, 2016)
- 2050: goal of 80% below 1990 levels (Executive Order S-30-05, 2005)

The state's Scoping Plan,[1] first approved in 2008 and most recently updated in 2017, describes California's strategy for meeting its GHG reduction targets. The Scoping Plan also recognizes the important role of local governments in helping to achieve these targets, and provides recommendations for local target-setting consistent with the state's GHG reduction targets.

This document presents a summary of the GHG emissions estimates for the City of Lemon Grove (referred to as "Lemon Grove" or "the City") from 2012 to 2014, calculated according to standard methodologies for GHG inventories. It also provides the business-as-usual (BAU) emissions projections for 2020, 2030 and 2040. While 2020 and 2030 coincide with the state target years, 2040 was chosen by the City as an additional target year, which is the build-out year for the City's General Plan. The BAU projection itself demonstrates emissions growth in the absence of any new policies and programs, and does not consider future impacts of currently adopted federal and State policies. GHG reductions from these policies are not included in this report but are considered later in the climate action planning process in a projection referred to as the "legislatively-adjusted BAU".

The San Diego region has been working with SANDAG and other jurisdictions to develop consistent methods and processes for GHG inventories and climate action plans. These procedural and methodological consistencies have been incorporated into this report, which will become a part of the Lemon Grove Climate Action Plan as an Appendix.

The report is organized as follows: Section 2 describes the background sources and common assumptions used for the inventory and projections. Section 3 provides the results of the GHG emissions inventory for 2012 to 2014. The methods used to prepare each category of the inventory are provided in Section 4. Section 5 provides a summary of the emissions projections for 2020, 2030, and 2040, and the methods used to prepare each category of the projections.

1.1 Rounding of Values in Tables and Figures

Rounding is used for the final GHG values within the tables and figures throughout the document. Values are not rounded in the intermediary steps in the actual calculation. Because of rounding, totals may not equal the exact values summed in any table or figure.

[1] California Air Resources Board: AB 32 Scoping Plan.

2 BACKGROUND

2.1 Greenhouse Gases

The GHGs included in the emissions estimates in city inventories are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Each GHG has a different capacity to trap heat in the atmosphere, known as its global warming potential (GWP), as shown in Table 1. The GWP of CH_4 is 25 times that of CO_2, that is, CH_4 warms up the atmosphere 25 times more than the same amount of CO_2. These values are used to compare the warming potential of non-CO_2 gases with that of CO_2 and aggregate them into one standard unit called carbon dioxide equivalents (CO_2e). GHGs also have different GWPs over different periods of time. In general, the 100-year GWPs reported by the Intergovernmental Panel on Climate Change (IPCC) are used to estimate CO_2e emissions for city inventories. The GWPs used in this inventory are from the IPCC Fourth Assessment Report (AR4).[2]

Table 1 Global Warming Potentials Used in Lemon Grove GHG Emission Inventory & Projections

Greenhouse Gas	Global Warming Potential
Carbon dioxide (CO_2)	1
Methane (CH_4)	25
Nitrous oxide (N_2O)	298

2.2 Categories of Emissions

The U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (U.S. Community Protocol)[3] is a standardized set of methodologies for community GHG inventory estimation. This requires six [4]basic emissions-generating activities to be included in a community-scale GHG inventory. These categories are: electricity, natural gas, on-road transportation, water and wastewater, and solid waste. GHG emissions are calculated by multiplying activity data (e.g., kilowatt-hours of electricity, tons of solid waste) by an emission factor (e.g., pounds of CO_2e per unit of electricity). For these categories, methods used in this inventory, while based on the U.S. Community Protocol standard methods, were modified with regional- or City-specific data when available.

Additionally, the City requested that GHG emissions from off-road transportation be included in the inventory and projections. This is based on the methods and models used by California Air Resources Board (CARB) in the statewide GHG emission inventory.[5]

All activity data and GHG emissions reported in this document are annual values, and all emission factors reported in this document are annual average values, unless stated otherwise.

[2] IPCC Fourth Assessment Report: Climate Change 2007: Direct Global Warming Potentials (2013).
[3] ICLEI – Local Governments for Sustainability USA: U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.0 (2012).
[4] The protocol combines water and wastewater so that officially there are five categories.
[5] California Air Resources Board (CARB): California Greenhouse Gas Emission Inventory – 2016 Edition (June 2016).

2.3 Demographics

The San Diego Association of Governments (SANDAG) estimates and forecasts population and employment for all jurisdictions in the San Diego region. The population and jobs estimates for 2012-2014 used in this report for Lemon Grove are provided in Table 2.[6]

Table 2 Population and Jobs Estimates (Lemon Grove, 2012-2014)

Year	Population	Jobs
2012	25,646	6,774
2013	25,820	6,842
2014	26,110	6,911
SANDAG 2013, 2017. Energy Policy Initiatives Center, 2018.		

3 SUMMARY OF GHG EMISSIONS INVENTORY

Total GHG emissions in the years 2012, 2013, and 2014 are provided in Table 3.

Table 3 Total and Breakdown of GHG Emissions in Lemon Grove (2012–2014)

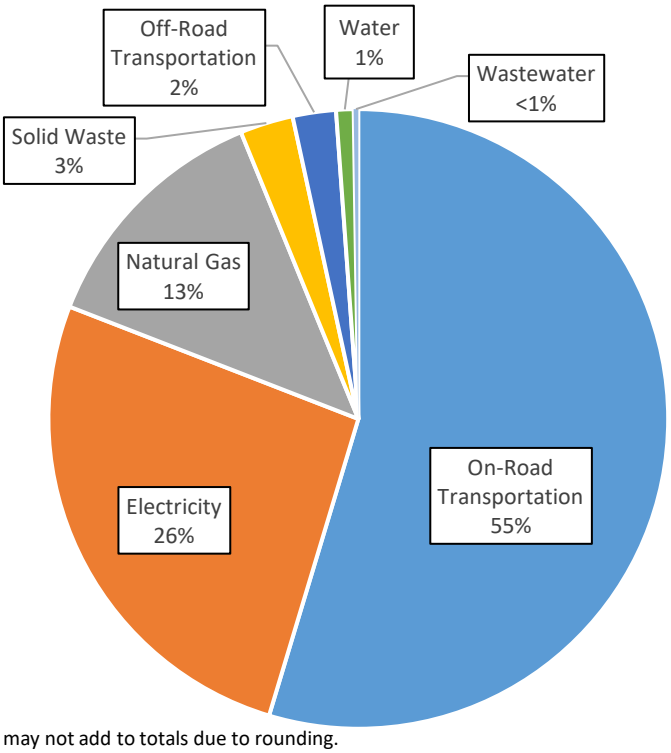
Emissions Category	2012 GHG Emissions (MT CO_2e)	2013 GHG Emissions (MT CO_2e)	2014 GHG Emissions (MT CO_2e)
On-Road Transportation*	70,700	72,100	73,200
Electricity	34,000	32,800	29,300
Natural Gas	16,700	17,100	14,200
Solid Waste	3,600	3,600	2,900
Off-Road Transportation	2,900	2,900	2,900
Water	1,200	1,400	1,400
Wastewater	300	300	300
Total	**129,400**	**130,200**	**124,200**

Sums may not add up to totals due to rounding.
GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation.
* Based on SANDAG Series 13 vehicle miles traveled (VMT) estimates. 2012 is the Base Year.
Energy Policy Initiatives Center, 2018.

Total emissions decreased by 4% from 2012 to 2014, with decreases seen in electricity and natural gas and an increase in on-road transportation emissions.

The distribution of emissions into the categories in 2012 is shown in Figure 1. Both 2013 and 2014 GHG emissions have similar distributions among the emissions categories as the 2012 GHG inventory. The on-road transportation category contributed the most (55%) to the overall GHG emissions in 2012, while the wastewater category contributed the least (<1%).

[6] 2012-2014 Population is from SANDAG's Demographic & Socio-Economic Estimates (March 9, 2017 Version). Jobs in 2012 are from the SANDAG Series 13 Regional Growth Forecast (October 2013). Jobs in 2013 and 2014 are interpolated linearly based on 2012 and 2020 jobs estimates. SANDAG Data Surfer, accessed on October 24, 2017.



Percentage may not add to totals due to rounding.
Energy Policy Initiatives Center, 2018

Figure 1 Breakdown of GHG Emissions in Lemon Grove (2012)

4 METHODS TO CALCULATE EMISSIONS INVENTORY

4.1 On-Road Transportation

The emissions associated with on-road transportation in Lemon Grove are calculated by multiplying the estimated vehicle miles traveled (VMT) and the average vehicle emission rate in the San Diego region in a given year. Average weekday VMT data were provided by SANDAG based on its activity-based model[7] and the Origin-Destination (O-D) method.[8] The O-D VMT method is the preferred method proposed by the U.S. Community Protocol in 'TR.1 Emissions from Passenger Vehicles' and 'TR.2 Emissions from Freight and Service Trucks' that estimates miles traveled based on where a trip originates and where it ends to better attribute on-road emissions to cities and regions of miles traveled (Figure 2).[9]

[7] SANDAG (2015): San Diego Forward: The Regional Plan. Appendix T Travel Demand Model Documentation.
[8] SANDAG (2013): Vehicle Miles Traveled Calculation Using the SANDAG Regional Travel Demand Model. Technical White Paper.
[9] ICLEI – Local Governments for Sustainability USA: U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.0 (2012), Appendix D: Transportation and Other Mobile Emission Activities and Sources.

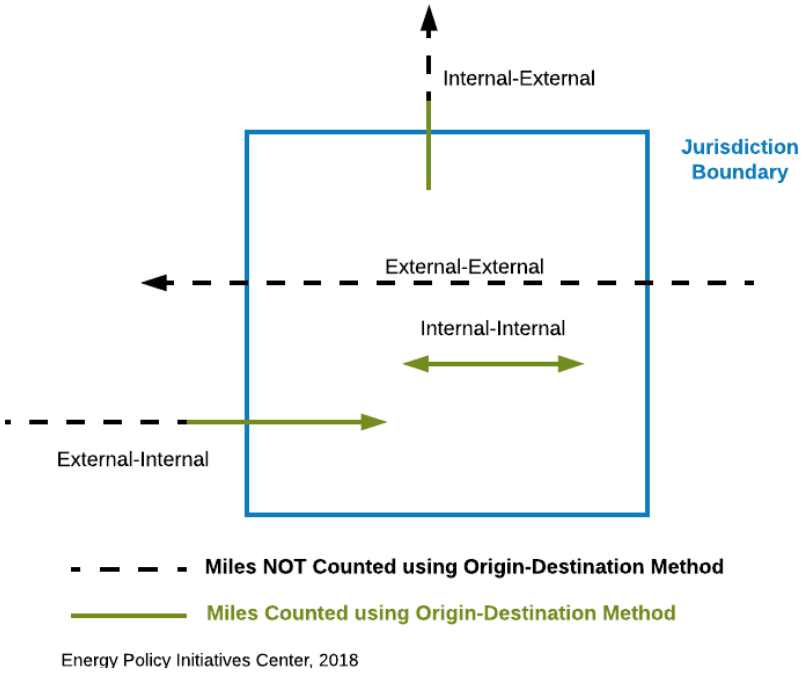


Figure 2 Components of O-D Method for VMT Calculation

O-D VMT data include all the miles traveled for trips that originate and end within a boundary (in this case, within Lemon Grove City limits, referred to as Internal-Internal), and half of the miles traveled of the trips that either begin within the boundary and end outside the boundary (referred to as Internal-External), or vice versa (referred to as External-Internal). In accordance with the methodology, VMT from trips that begin and end outside Lemon Grove that only pass through the City limits (referred to as External-External) are not included in the total City VMT.

The average weekday O-D VMT data for each trip type in 2012 and 2014 were provided by SANDAG, and 2013 VMT were interpolated linearly by EPIC using 2012 and 2014 values (Table 4).[10]

Table 4 O-D VMT and Trip Types (Lemon Grove, 2012-2014)

Year	Internal-Internal Trips (Miles/Average Weekday)	External-Internal/Internal-External Trips (Miles/Average Weekday)	External-External Trips (Miles/Average Weekday (Information only, excluded from City VMT)*
2012	11,218	821,281	629,954
2013	11,775	849,635	642,560
2014	12,332	877,990	655,165
*Miles from External-External trips (pass-through trips) are the portion within the City boundary, not the entire trip. Based on SANDAG Series 13 VMT estimates. 2012 is the Base Year. 2013 is linearly interpolated between 2012 and 2014. SANDAG, 2018; Energy Policy Initiatives Center, 2018.			

[10] Series 13 2012 (Base Year) and 2014 average weekday VMT estimates were provided by SANDAG (March 23, 2017 and November 7, 2017). 2013 VMT were interpolated linearly between 2012 and 2014 VMT. Original data tables provided by SANDAG are given in Appendix A.

In accordance with the methodology, all estimated and projected Internal-External and External-Internal miles associated with Lemon Grove are divided in half to allocate the miles between Lemon Grove and all other outside jurisdictions (see Appendix for source data). EPIC multiplies the total average weekday VMT by 347 to adjust from average weekday VMT to average annual VMT, which includes weekends.[11]

The average annual vehicle emission rate expressed in grams of CO_2e per mile driven (g CO_2e/mile) were derived from the statewide mobile source emissions model EMFAC2014, developed by the California Air Resources Board (CARB).[12] EMFAC2014 was used to generate average emission rates for the San Diego region for all vehicle classes, model years, speeds, and fuel types.[13] The average emission rates (g CO_2e/mile) were calculated based on the VMT distribution of each vehicle class and its emission rate. The average vehicle emission rate was adjusted from g CO_2/mile to g CO_2e/mile, to account for total GHG emissions, including CO_2, CH_4 and N_2O.[14] It is assumed Lemon Grove has the same distribution of vehicle types as the region.

The total VMT, average vehicle emission rates, and corresponding GHG emissions from the on-road transportation category from 2012 to 2014 are given in Table 5.

Table 5 VMT, Emission Rate and GHG Emissions from On-Road Transportation Category (Lemon Grove, 2012-2014)

Year	Average Vehicle Emission Rate (g CO_2e/mile)	Total VMT		GHG Emissions (MT CO_2e)
		Average Weekday Miles*	Average Annual Miles	
2012	483	421,858	146,384,867	70,700
2013	476	436,593	151,497,698	72,100
2014	467	451,327	156,610,529	73,200

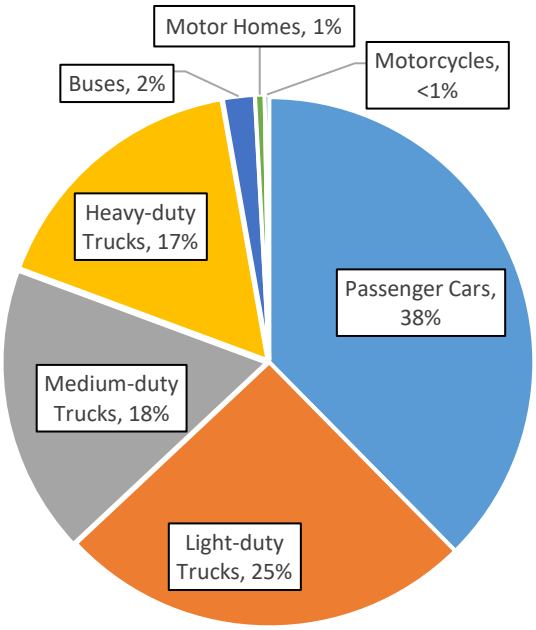
*Consistent with the methodology, this is the sum of internal-internal and half of both external-internal and internal-external VMT from Table 4. Weekday miles are converted to annual average before converting to GHG emissions.
Based on SANDAG Series 13 VMT estimates. 2012 is the Base Year. 2013 is linearly interpolated between 2012 and 2014.
GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation.
CARB, 2015; SANDAG, 2018; Energy Policy Initiatives Center, 2018.

The decrease in the emissions rate is likely due to the vehicle turnover rate in the San Diego region and the improved vehicle emission standards for new vehicles.

Figure 3 gives the breakdown of emissions by vehicle class in 2012, based on the EMFAC vehicle class distribution in the San Diego region. This report assumes Lemon Grove has the same distribution of vehicle types as the region. Passenger cars and light-duty trucks account for about 63% of the City's on-

[11] The conversion of 347 weekdays to 365 days per year as used by CARB. CARB: California's 2000-2014 Greenhouse Gas Emission Inventory Technical Support Document (2016 Edition), p. 41 (September 2016).
[12] California Air Resources Board: EMission FACtors model. EMFAC2014 (2015).
[13] EMFAC2014 Web Database. Emission Rates for SANDAG, download date: January 22, 2016. The vehicle classes in EMFAC2014 are the same as the vehicle classes in previous model EMFAC2011.
[14] The conversion factor, 1.01, was calculated based on the ratio of CO_2 emissions to total GHG emissions (CO_2, CH_4 and N_2O expressed as CO_2e) using methods from EPA GHG Equivalencies Calculations and References. Emissions were from mobile fossil fuel combustion in the transportation end-use category in 2013 (the latest available data year), on-road emissions. EPA. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2013.* (2015). Table 3-12 to 3-14.

road transportation emissions, while medium- and heavy-duty trucks account for an additional 35 percent of the on-road transportation emissions.[15]



EMFAC2014. Energy Policy Intiatvies Center, 2017
Percentages may not add to totals due to rounding.
*EMFAC vehilce categorization is different from Enviromental Protect Agency (EPA) Emission Standards categorization.

Figure 3 On-Road Transportation Emissions by Vehicle Class in the San Diego Region

4.2 Electricity

Emissions from electricity use in Lemon Grove were estimated using the Built Environment (BE.2) method from the U.S. Community Protocol.[16] Annual metered electricity sales by the local utility, San Diego Gas & Electric (SDG&E) to Lemon Grove customers[17] were adjusted by: 1) a loss factor[18] of 1.07[19] to account for transmission and distribution losses; and 2) subtracting electricity use associated with water distribution, which is allocated to the water category emissions.

Emissions are calculated by multiplying the adjusted net energy for load (electricity sales + losses) by the corresponding City-specific electricity emission factor, given in Table 6, expressed in pounds of CO_2e per megawatt-hour (lbs CO_2e/MWh). For a given year, the City-specific electricity emission factor is

[15] In California's EMFAC2014, passenger cars are all cars and fuel types designated as Light Duty Automobiles (LDAs). Light Duty Trucks (LDTs) are divided into LDT1 and LDT2, where LDT1 includes gas, diesel, and electric fuel vehicles, while LDT2 does not include electric vehicles. Medium-duty trucks included medium duty vehicles (MDV with Gross Vehicle Weight Rating (GVWR) 5751-8,500 lbs), and heavy-duty trucks (HDTs), with GVWR larger than 8,500 lbs. In contrast, under the EPA Emission Standard category vehicles with GVWR under 8,500 lbs are considered light-duty trucks/vehicles.
[16] ICLEI – Local Governments for Sustainability USA: U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.0 (2012), Appendix C: Built Environment Emission Activities and Sources.
[17] 2012-2016 metered electricity sales were provided by SDG&E to EPIC (August 14, 2017).
[18] The transmission and distribution loss factor is used to scale end-use demand or retail sales to produce net energy for load. L. Wong. *A Review Of Transmission Losses In Planning Studies*, CEC Staff Paper (2011)
[19] California Energy Commission (CEC): *California Energy Demand 2016-2026 Final Forecast Mid-Case Final Baseline Demand Forecast Forms*, SDG&E Mid. The transmission and distribution loss factor is calculated based on the ratio of net energy for load (total sales + net losses) and total sales from SDG&E Form 1.2 Mid.

estimated based on the specific power mix of bundled power[20] and Direct Access (DA) power[21], and their respective emission factors. The SDG&E bundled emission factors are calculated using Federal Energy Regulatory Commission (FERC) Form 1[22] data, the California Energy Commission (CEC) Power Source Disclosure Program[23] data on SDG&E-owned and purchased power, and U.S. Environmental Protection Agency (EPA) Emissions and Generating Resource Integrated Database (eGRID)[24] on specific power plant emissions. The DA emission factor is taken from the California Public Utilities Commission (CPUC) Decision D.14-12-037.[25]

The differences in the electricity emission factors from 2012 to 2014 reflect the change in the electricity power mix in the City and in SDG&E's service territory. The emission factor increased in 2012 due to the shutdown of the zero-emissions electricity supply from the San Onofre Nuclear Generation Station (SONGS) and replacement by other natural gas-fired power plant sources.[26] In the later years, more renewable resources were included in the power mix that result in the decrease in the electricity emission factors. SDG&E had 32% renewable sources in the electricity supplied to its bundled customers in 2014, an increase from 19% in 2012.[27]

The net energy for Lemon Grove's load (electricity sales + losses), electricity emission factors, and corresponding GHG emissions from the electricity category for the years 2012-2014 are given in Table 6.

Table 6 Net Energy for Load, Emission Factor and GHG Emissions from Electricity Category (Lemon Grove, 2012-2014)

Year	Net Energy for Load (electricity sales + losses) (MWh)	City-Specific Emission Factor (lbs CO_2e/MWh)	GHG Emissions (lbs)	GHG Emissions (MT CO_2e)
2012	98,492	760	74,887,061	34,000
2013	97,225	743	72,250,077	32,800
2014	99,561	650	64,681,904	29,300
GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. Conversion factor: 1 pound = 0.0004536 metric tons SDG&E, 2017; Energy Policy Initiatives Center, 2018.				

GHG emissions from the electricity category decreased 14% from 2012 to 2014 which may be partly attributed to the increase of renewable content in the electricity supply as reflected in the emission factor.

[20] SDG&E bundled power includes the electricity from SDG&E-owned power plants and the electricity from its net procurements.
[21] The SDG&E Direct Access Program includes electricity that customers purchased from non-SDG&E electric service providers (ESPs), but SDG&E still provides transmission and distribution services.
[22] Federal Energy Regulatory Commission (FERC): Form 1- Electricity Utility Annual Report, download date: July 20, 2015
[23] California Energy Commission (CEC) Power Source Disclosure Program under Senate Bill 1305. SDG&E annual power source disclosure report (2012-2014) were provided by CEC staff to EPIC.
[24] U.S. EPA. eGRID 2012. (2015) and eGRID 2014 v2 (2017).
[25] Decision 14-12-037, December 18, 2014 in Rulemaking 11-03-012 (Filed March 24, 2011). The recommended emission factor is 0.379 MT CO_2e/MWh (836 lbs CO_2e/MWh).
[26] SONGS is partially owned by SDG&E and historically accounted for approximately 15-20% of SDG&E power generation. SONGS was permanently closed in 2013 and the energy generation was replaced by other sources, including non-renewable sources, which increased the emission factor of SDG&E-generated electricity.
[27] California Energy Commission: Utility Annual Power Content Label. Access date: July 30, 2018

The net energy for load does not include self-serve renewable supply such as customer-owned behind-the-meter photovoltaic (PV) systems or self-serve non-renewable supply. The estimated cumulative PV capacity in Lemon Grove at the end of 2014 was 1.6 MW, 80% higher than the cumulative PV capacity at the end of 2012 (0.9 MW), corresponding to an estimated total of 2,730 MWh of behind-the-meter solar generation.[28] The number of newly added PV systems in each year from 2012 to 2014 is also shown in Table 7.[29] Electricity generation from PV systems are assumed to have no associated GHG emissions.

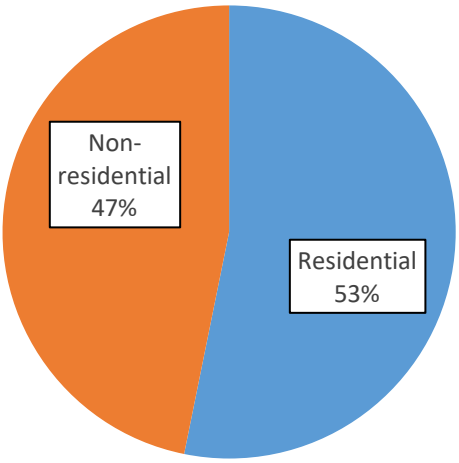
Table 7 Behind-the-meter PV Systems and Electricity Generation (Lemon Grove, 2012-2014)

Year	New PV Systems		Cumulative PV Systems since 2001		Estimated Behind-the-meter Solar Generation (MWh)*
	Number of Systems	Capacity (MW_{dc})	Number of Systems	Capacity (MW_{dc})	
2012	40	0.2	95	0.9	1,496
2013	57	0.3	152	1.2	1,952
2014	96	0.5	248	1.6	2,730

*Electricity generation is converted from capacity (MW_{dc}) to energy (MWh) using an average solar PV system capacity factor of 20% and annual system degradation rate of 1%.
California Distributed Generation Statistics, 2017; Energy Policy Initiatives Center, 2018.

The emissions from the electricity category can be broken down further into residential and non-residential customer classes. In 2012, 47% of emissions were attributed to non-residential electricity use, 53% were attributed to residential electricity use, as shown in Figure 4.

[28] Electricity generation is converted from capacity (power) to energy using an average solar PV system capacity factor of 20% and annual system degradation rate of 1%.
[29] NEM Interconnection Data Set (current as of May 31, 2017), download date: September 12, 2017. Based on date of NEM interconnection applications approved. Solar capacities are in direct current (DC).



Energy Policy Initiatives Center 2018.

Figure 4 Electricity Emissions by Customer Class (Lemon Grove, 2012)

4.3 Natural Gas

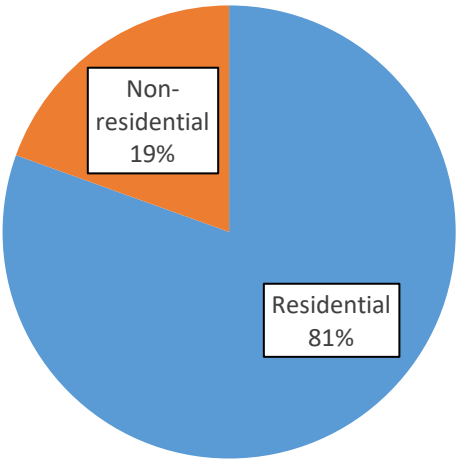
Emissions from natural gas end-use in Lemon Grove were estimated using method Built Environment (BE.1) from the U.S. Community Protocol.[30] Annual natural gas sales by customer class were provided by SDG&E and aggregated into residential and non-residential.[31] To estimate emissions from the combustion of natural gas, fuel sales were multiplied by an emission factor for natural gas based on data from the CARB.[32] The total natural gas use and corresponding GHG emissions from the natural gas category for the years 2012-2014 are given in Table 8.

Table 8 Natural Gas Use and GHG Emissions from Natural Gas Category (Lemon Grove, 2012-2014)

Year	Natural Gas Use (Million Therms)	Natural Gas GHG Emission Factor (MT CO_2e/Therms)	GHG Emissions (MT CO_2e)
2012	3.05	0.055	16,700
2013	3.13	0.055	17,100
2014	2.59	0.055	14,200
A therm is a unit of heat energy equal to 100,000 British Thermal Units (BTUs), approximately equal to the energy from burning 100 cubic feet of natural gas. GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. SDG&E, 2017; Energy Policy Initiatives Center, 2018.			

Emissions from the natural gas category can be broken down further into residential and non-residential (commercial) customer classes. In 2012, 81% of emissions resulted from residential natural gas use and the result 19% resulted from non-residential natural gas use, as shown in Figure 5.

[30] ICLEI – Local Governments for Sustainability USA: U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.0 (2012), Appendix C: Built Environment Emission Activities and Sources.
[31] 2012–2016 metered natural gas sales were provided by SDG&E to EPIC (August 14, 2017).
[32] Emission factor for natural gas.California Air Resources Board (CARB), Documentation of California's GHG Inventory – Index.



Energy Policy Initiatives Center 2018.

Figure 5 Natural Gas Emissions by Customer Class (Lemon Grove, 2012)

4.4 Solid Waste

Emissions from solid waste disposed by the community of Lemon Grove were estimated using method Solid Waste (SW.4) from the U.S. Community Protocol.[33] This method estimates future emissions attributed to and resulting from solid waste generated and disposed in a given year. To estimate these emissions, the amount of waste disposed by a city in a given year is multiplied by an emission factor for mixed solid waste. Solid waste disposal data were retrieved from the California Department of Resources Recycling and Recovery (CalRecycle) Disposal Reporting System (DRS).[34]

The emission factor of mixed solid waste depends on the percentage of each waste type within the waste stream disposed in a landfill. The City of San Diego's 2012-2013 Waste Characterization Study was used as a reasonable proxy for Lemon Grove's waste composition to determine the percentage of each waste type within the mixed solid waste. These percentages were applied to the 2012-2014 Lemon Grove waste disposal amounts in the emissions calculation.[35]

Only the CH_4 emissions from landfill waste degradation are considered to be part of the GHG emissions in accordance with the SW 4.1 methodology. The CO_2 emissions from waste degradation are not included in this category.

In addition, some of the methane generated may be captured for conversion to energy at a landfill. The default capture rate of CH_4 emissions from landfills is 75% based on the U.S. Community Protocol and only the CH_4 emission above this is accounted for as emissions from the solid waste category.

[33] ICLEI – Local Governments for Sustainability USA: U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.0 (2012), Appendix E: Solid Waste Emission Activities and Sources.
[34] CalRecycle: Disposal Reporting System (DRS): Jurisdiction Disposal and Alternative Daily Cover (ADC) Tons by Facility. 2012–2014 solid waste disposal data from CalRecycle were confirmed by City staff, download date: June 7, 2017.
[35] City of San Diego. 2014. *Waste Characterization Study 2012-2013 Final Report*. Emission factor, 0.744 MT CO_2e/short ton calculated based on waste distribution and emission factor for each waste type in *Version 13 Waste Reduction Model (WARM)* . A short ton is equal to 2,000 pounds in weight and is the commonly used version of ton in the U.S. It can be differentiated from the British long ton (approximately 2,240 tons) and the metric ton (2,204 pounds).

The total City solid waste disposal amounts and the corresponding GHG emissions for the years 2012-2014 are given in Table 9.

Table 9 Solid Waste Disposal and GHG Emissions from Solid Waste Category (Lemon Grove, 2012-2014)

Year	Solid Waste Disposed			GHG Emission Factor (MT CO_2e/Short Ton)	Oxidation Rate	Total GHG Emissions (MT CO_2e)	Default CH_4 Capture Rate	Remaining Emissions (MT CO_2e)
	City-wide (Short Tons/Year)	City-wide (Metric Tons/Year)	Per Capita Solid Waste Disposal (kg/person/day)*					
2012	21,476	19,483	2.1	0.744	10%	14,384	75%	3,600
2013	21,637	19,628	2.1	0.744	10%	14,492	75%	3,600
2014	17,461	15,841	1.7	0.744	10%	11,695	75%	2,900

The conversion factor for short tons to metric tons is 0.91 metric ton equals 1 short ton. The calculation accounts for 10% oxidation rate, therefore only 90% modeled CH_4 generation is emitted.
GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation.
* Informational, based on total waste disposal and SANDAG population estimates for 2012-2014 (Table 2). Used in projections.
CalRecycle, 2017; Energy Policy Initiatives Center, 2018.

4.5 Off-Road Transportation

The emissions from off-road transportation in Lemon Grove, such as from gasoline and diesel fuel use for off-road vehicles and equipment, were estimated based on CARB off-road models. OFFROAD2007 is the main model for estimating off-road transportation emissions. [36] After the release of OFFROAD2007, CARB has been developing inventories and models for each sub-category of off-road equipment and vehicles based on specific regulatory requirements.[37] For example, the recreational equipment category in OFFROAD2007 was replaced by RV2013.[38] In this report, new inventories and models were used if available; otherwise, OFFROAD2007 was used.

Due to the lack of jurisdiction-specific data from CARB models, the emissions or fuel consumption from CARB model outputs for the San Diego region were scaled to the City based on sub-category-specific scaling factors. The off-road activity sub-categories that are relevant to Lemon Grove and the scaling factors are given in Table 10.

[36] CARB: Off-Road Motor Vehicles, OFFROAD 2007.
[37] CARB: Mobile Source Emissions inventory – Off-Road Diesel Vehicles.
[38] CARB: Off-Road Gasoline-Fueled Equipment. Recreational Vehicles, RV2013 (Inventory Model Database).

Table 10 Sub-Categories Included in the Off-Road Transportation Categories

Sub-Category	Model Source	Common Equipment Type	Scaling Factor
Recreational Vehicles	CARB RV2013	Terrain vehicles, golf carts, minibikes, off-road motorcycles	Population
Lawn and Garden Equipment	CARB OFFROAD2007	Lawn mowers, trimmers, brush cutters, chainsaws, leaf blowers/ vacuums	Population
Light Commercial Equipment	CARB OFFROAD2007	Generator set, pumps, welders	Commercial Jobs
Construction and Mining	CARB In-Use Off-Road Equipment 2011 Inventory	Excavators, off-highway tractors, loaders, paving equipment	Construction Jobs
Industrial	CARB In-Use Off-Road Equipment 2011 Inventory	Aerial lifts, forklifts, sweepers/scrubbers	Industrial Jobs
Diesel-Fueled Portable Equipment	CARB Portable Equipment 2017	Compressors, generators, pumps	Jobs

In the RV2013 model, the GHG emissions from recreational vehicles in the San Diego region were reported in metric tons per day and converted to annual emissions. In the Portable Equipment 2017 model and In-Use Off-Road Equipment 2011 Inventory, the fuel consumption for the equipment in the San Diego region was reported in gallons per year and converted to annual GHG emissions. For other sub-categories, the OFFROAD2007 model outputs are annual emissions for the San Diego region. The scaling factors and the corresponding GHG emissions from the off-road transportation category in 2012 to 2014 are given in

Sub-category	San Diego Region (Million MT CO_2e)			Scaling Factor	Lemon Grove (MT CO_2e)		
	2012	2013	2014		2012	2013	2014
Recreational Vehicles	0.004	0.004	0.004	0.8%	31	30	30
Lawn and Garden Equipment	0.095	0.094	0.093	0.8%	777	770	760
Light Commercial Equipment	0.103	0.102	0.102	0.5%	531	525	518
Construction and Mining	0.184	0.185	0.186	0.6%	1,177	1,178	1,174
Industrial	0.012	0.012	0.013	0.4%	50	53	55
Diesel-Fueled Portable Equipment	0.070	0.064	0.065	0.5%	353	321	322
Total					2,900	2,900	2,900

Only total GHG emissions from off-road transportation have been rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation.
CARB, 2007, 2011, 2013 and 2017; Energy Policy Initiatives Center, 2018.

.

Table 11 GHG Emissions from Off-Road Transportation Category (Lemon Grove, 2012–2014)

Sub-category	San Diego Region (Million MT CO_2e)			Scaling Factor	Lemon Grove (MT CO_2e)		
	2012	2013	2014		2012	2013	2014
Recreational Vehicles	0.004	0.004	0.004	0.8%	31	30	30
Lawn and Garden Equipment	0.095	0.094	0.093	0.8%	777	770	760
Light Commercial Equipment	0.103	0.102	0.102	0.5%	531	525	518

Construction and Mining	0.184	0.185	0.186	0.6%	1,177	1,178	1,174
Industrial	0.012	0.012	0.013	0.4%	50	53	55
Diesel-Fueled Portable Equipment	0.070	0.064	0.065	0.5%	353	321	322
Total					2,900	2,900	2,900
Only total GHG emissions from off-road transportation have been rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. CARB, 2007, 2011, 2013 and 2017; Energy Policy Initiatives Center, 2018.							

4.6 Water

Helix Water District (Helix WD) is a San Diego County Water Authority (SDCWA) member agency that provides potable water to the City of Lemon Grove. Helix WD's water service area is larger than Lemon Grove and covers east San Diego County cities including El Cajon, La Mesa and unincorporated communities of San Diego County.[39]

Helix WD's potable water supply sources include: 1) imported untreated water from SDCWA; 2) local surface water runoff at Lake Cuyamaca, the El Capitan Reservoir, and at Lake Jennings; and 3) groundwater from Well 1010 in the El Monte Basin.[40] It is assumed that the percentage of water from each source supplied to the City of Lemon Grove is the same as that of the Helix WD's service area.

The potable water supplied to Lemon Grove and the percentage of water from each source are given in Table 12.[41]

Table 12 Potable Water Supplied and Supply Source (Lemon Grove, 2012-2014)

Year	% of Potable Water from each Water Supply			Potable Water Supplied (Acre-Feet)*
	SDCWA Untreated Water	Local Surface Water	Local Groundwater	
2012	80%	19%	0.4%	2,603
2013	98%	1%	0.3%	2,647
2014	99%	1%	0.4%	2,589
Helix WD, 2017. * An Acre-Foot (AF) is the volume of water contained in one acre of area and one foot in depth.				

The energy used to produce, treat and distribute potable water from each supply is different due to the different raw source type and its location. Emissions from water use in Lemon Grove were estimated using method Wastewater and Water (WW.14) from the U.S. Community Protocol.[42] The method considers each segment of the water-use cycle (water supply and conveyance, water treatment, and water distribution) individually, as described below.

[39] Helix Water District (July 2016). 2015 Urban Water Management Plan. Section 3.1 General Description.
[40] Helix Water District (July 2016). 2015 Urban Water Management Plan. Section 6 System Supply.
[41] Water supply sources represents Helix WD's water supply sources. The calendar year 2012-2014 water supply sources data and the water delivered by Helix WD to Lemon Grove were provided by Helix WD to EPIC for a separate energy-water nexus study funded by a grant from The San Diego Foundation (TSDF), January 2017.
[42] ICLEI – Local Governments for Sustainability USA: U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.0 (2012), Appendix F: Wastewater and Water Emission Activities and Sources.

Upstream Supply and Conveyance – This is defined as the supply and conveyance of water from the raw sources to the local service area. The upstream supply and conveyance energy use for SDCWA untreated water consists of conveyance of water from the State Water Project and Colorado River through Metropolitan Water District's service area and SDCWA's service area.

Local Supply and Conveyance – This is defined as the supply and conveyance of local surface and groundwater within the water agency (Helix WD)'s service area. The local supply and conveyance energy use includes the energy use to convey local surface water (from Lake Jennings and El Capitan) and groundwater (from Well 101) to the water treatment plant (WTP).

Local Water Treatment – This is the energy used for water treatment plant operations. Helix WD owns and operates the R.M. Levy WTP located in Lakeside. The WTP treats both imported SDCWA water and local water.

Local Water Distribution – This is defined as the energy required to move treated water from the water treatment plants to end-use customers. Distribution energy use includes energy use for water pump stations and/or pressure reduction stations, water storage tanks, etc. Lemon Grove has a gravity distribution system, however, energy is needed to pump water from WTP to the distribution system.

The energy intensity per unit of water for each segment of the water-use cycle is given in Table 13.

Table 13 Energy Intensity for Each Segment of Water-Use Cycle (Lemon Grove, 2012-2014)

Year	Upstream Supply and Conveyance - SDCWA untreated water (kWh/acre-foot)[43]	Local Water Conveyance Energy Intensity (kWh/acre-foot)[44]	Local Water Treatment Energy Intensity (kWh/acre-foot)[45]	Local Distribution Energy Intensity (kWh/acre-foot)[46]
2012	1,755	120	49	28
2013		68	48	34
2014		69	50	36
Helix WD, 2017; MWD, 2016; SDCWA, 2016.				

For upstream supply and conveyance emissions, the volume of untreated water from SDCWA was multiplied by the upstream energy intensity to estimate the total electricity use from upstream supply. The electricity use was multiplied by the average California electricity emission factor to calculate the GHG emissions.[47] Because the electricity use and GHG emissions associated with upstream supply and conveyance are outside the City boundary and would not be included in the electricity category, they

[43] Upstream supply and conveyance energy intensity for SDCWA *untreated* water includes conveyance from the State Water Project and Colorado River water to MWD's distribution system, distribution from MWD to MWD's member agencies, and SDCWA's conveyance of raw water supplies to SDCWA's member agencies.

[44] The calendar year 2010–2015 water conveyance energy intensities were provided by Helix WD to EPIC for a separate energy-water nexus study funded by a grant from The San Diego Foundation (TSDF), January 2017.

[45] The calendar year 2010–2015 water treatment energy intensities at R.M. Levy WTP were provided by Helix WD to EPIC for a separate energy-water nexus study funded by a grant from The San Diego Foundation (TSDF), January 2017.

[46] The fiscal year 2012–2016 water distribution energy intensities for Lemon Grove's water distribution were provided by Helix WD to EPIC for a separate energy-water nexus study funded by a grant from The San Diego Foundation (TSDF), January 2017.Fiscal year energy intensities data were used as proxies for calendar years. Helix WD estimated the energy use of the gravity system based on the % of energy use of the gravity system to total system energy use.

[47] The Western Electricity Coordinating Council (WECC) CAMX (eGRID Subregion) emission rate (653 lbs CO_2e/MWh) from eGRID was used as representative of the average California electricity emission rate for upstream electricity. U.S. EPA. eGRID 2012 (2015) and eGRID 2014 v2 (2017).

are accounted for in the water category. The upstream supply and conveyance GHG emissions are provided in Table 14.

Table 14 Water: Upstream Supply and Conveyance GHG Emissions (Lemon Grove, 2012-2014)

Year	Volume of SDCWA Untreated Water (Acre-Feet)	Upstream Supply and Conveyance - SDCWA Untreated Water Energy Intensity (kWh/Acre-Foot)[48]	Upstream GHG Emission Factor (lbs CO_2e/MWh)*	Upstream GHG Emissions (lbs)	Upstream GHG Emissions (MT CO_2e)
2012	2,095	1,755	653	2,399,936	1,089
2013	2,600		653	2,977,988	1,351
2014	2,559		653	2,931,219	1,330

Helix WD, 2017; MWD, 2016; SDCWA, 2016. Energy Policy Initiatives Center, 2018.
* This is the most recent available California average grid emission factor (2012)
Conversion factor: 1 pound = 0.000454 metric tons

For local supply and conveyance emissions, the volume of surface and groundwater was multiplied by the local conveyance energy intensity to estimate the total electricity use. The electricity use was multiplied by SDG&E's electricity emission factor to calculate the GHG emissions. Because the electricity use and GHG emissions associated with local supply and conveyance are outside the City boundary and would not be included in the electricity category, they are accounted for here in the water category. The local supply and conveyance GHG emissions are provided in Table 15.

Table 15 Water: Local Supply and Conveyance GHG Emissions (Lemon Grove, 2012-2014)

Year	Volume of Local Surface and Groundwater (Acre-Feet)	Local Water Conveyance Energy Intensity (kWh/Acre-Foot)[49]	SDG&E Emission Factor (lbs CO_2e/MWh)	Local Supply and Conveyance Emissions (lbs)	Local Supply and Conveyance GHG Emissions (MT CO_2e)
2012	508	120	750	45,657	21
2013	47	68	729	<22,000	<10
2014	30	69	622	<22,000	<10

SDG&E electricity emission factors are different from the City-specific electricity emission factors in Table 6.
Conversion factor: 1 pound = 0.000454 metric tons
Helix WD, 2017. Energy Policy Initiatives Center, 2018.

Emissions from water treatment were calculated by multiplying the volume of potable water used by Lemon Grove by the water treatment energy intensity and SDG&E's electricity emission factor. The electricity use associated with water treatment is not included in the electricity category for Lemon Grove since the treatment plants are located outside Lemon Grove boundaries, therefore, the GHG emissions are accounted for in this water category. The treatment GHG emissions are provided in Table 16.

[48] Upstream supply and conveyance energy intensity for SDCWA *untreated* water includes conveyance from the State Water Project and Colorado River water to MWD's distribution system, distribution from MWD to MWD's member agencies, and SDCWA's conveyance of raw water supplies to SDCWA's member agencies.
[49] The calendar year 2010–2015 water conveyance energy intensities were provided by Helix WD to EPIC for a separate energy-water nexus study funded by a grant from The San Diego Foundation (TSDF), January 2017.

Table 16 Water Treatment GHG Emissions (Lemon Grove, 2012-2014)

Year	Volume of Water Treated (Acre-Feet)	Local Water Treatment Energy Intensity (kWh/Acre-Foot)[50]	SDG&E Emission Factor (lbs CO_2e/MWh)	Water Treatment Emissions (lbs)	Water Treatment GHG Emission (MT CO_2e)
2012	2,603	49	750	96,082	44
2013	2,647	48	729	92,571	42
2014	2,589	50	622	79,887	36
SDG&E electricity emission factors are different from the City-specific electricity emission factors in Table 6. Conversion factor: 1 pound = 0.000454 metric tons Helix WD, 2017; Energy Policy Initiatives Center, 2018.					

GHG emissions associated with water distribution were estimated by multiplying potable water used by Lemon Grove (i.e., "volume of water distributed") by the energy intensity for local water distribution and the SDG&E electricity emission factor. The portion of electricity and GHG emissions associated with water distribution that occurs within the City boundary and have been subtracted from the electricity category, as they are accounted for in the water category. The water distribution GHG emissions are provided in Table 17.

Table 17 Water Distribution GHG Emissions (Lemon Grove, 2012-2014)

Year	Volume of Water Distributed (Acre-Feet)	Local Distribution Energy Intensity (kWh/Acre-Foot)[51]	SDG&E Emission Factor (lbs CO_2e/MWh)	Water Distribution Emissions (lbs)	Water Distribution GHG Emission (MT CO_2e)
2012	2,603	28	750	54,072	25
2013	2,647	34	729	65,393	30
2014	2,589	36	622	57,195	26
SDG&E electricity emission factors are different from the City-specific electricity emission factors in Table 6. Conversion factor: 1 pound = 0.000454 metric tons Helix WD, 2017; Energy Policy Initiatives Center, 2018.					

No recycled water was supplied to the City during the inventory years 2012 to 2014.

Results of the emissions calculations for each segment of the water use cycle is provided in Figure 6for the year 2012. In all inventory years, more than 90% of the GHG emissions in the water category were from upstream supply and conveyance.

[50] The calendar year 2010–2015 water treatment energy intensities at R.M. Levy WTP were provided by Helix WD to EPIC for a separate energy-water nexus study funded by a grant from The San Diego Foundation (TSDF), January 2017.
[51] The fiscal year 2012–2016 water distribution energy intensities for Lemon Grove's water distribution were provided by Helix WD to EPIC for a separate energy-water nexus study funded by a grant from The San Diego Foundation (TSDF), January 2017. Fiscal year energy intensities data were used as proxies for calendar years. Helix WD estimated the energy use of the gravity system based on the % of energy use of the gravity system to total system energy use.

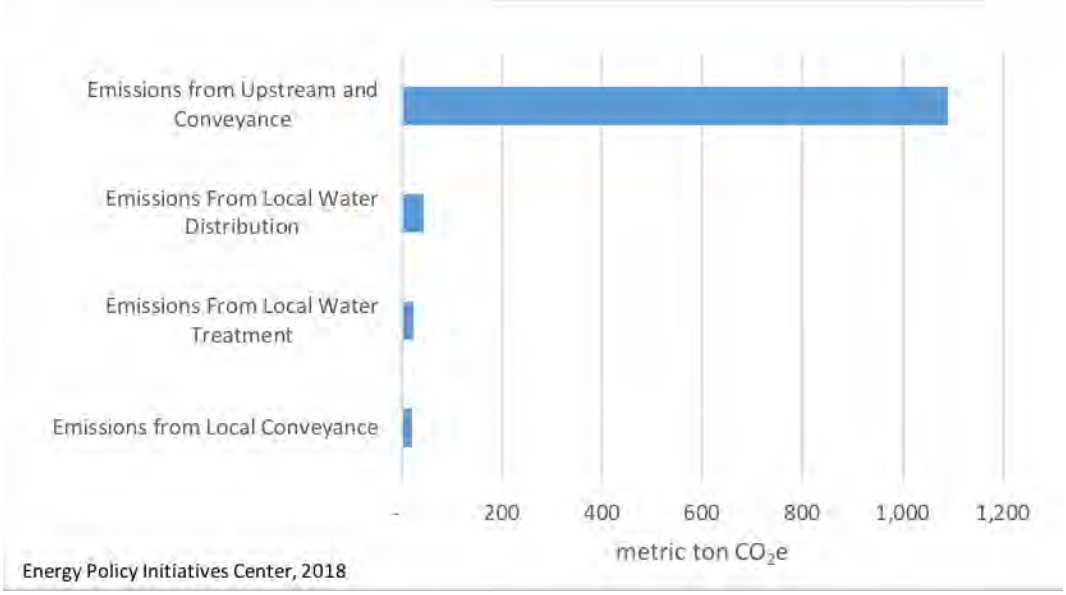


Figure 6 Emissions from Water Category by Water System Segment (Lemon Grove, 2012)

The total and gallon per capita day (GPCD) supplied, as well as the corresponding GHG emissions from the water category for the years 2012–2014 are summarized in Table 18.

Table 18 Water Supplied and GHG Emissions from the Water Category (Lemon Grove, 2012-2014)

Year	Potable Water Supplied (acre-foot)	Per Capita Potable Water Supplied (GPCD)	GHG Emissions (MT CO_2e)
2012	2,603	91	1,200
2013	2,647	92	1,400
2014	2,589	89	1,400
GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. Energy Policy Initiatives Center, 2018.			

4.7 Wastewater

The emissions from wastewater generated by Lemon Grove were estimated by multiplying the total amount of wastewater generated in a given year with the emission factor of the wastewater treatment processes.

The Lemon Grove Sanitation District operates and maintains the wastewater collection system within the City. The wastewater is delivered to the City of San Diego Metropolitan Sewerage System and treated at its wastewater treatment plants (WWTPs).

The wastewater treatment emission factor (MT CO_2e/million gallon) at Point Loma WWTP, one of the WWTPs in the Metropolitan Sewage System, is used to estimate the wastewater emissions. Point Loma WWTP reports the wastewater flow in its plant annual report[52] and plant operation GHG emissions to

[52] City of San Diego, Public Utilities. Point Loma Wastewater Treatment Plant & Ocean Outfall – Annual Reports.

CARB under the Mandatory GHG Reporting Regulation (MRR).[53] The reported GHG emissions include three components: 1) direct CO_2 from combustion of anaerobic digester gas; 2) CH_4 and N_2O emissions from digester gas combustion; and 3) operational fossil fuel emissions from complete combustion. The direct CO_2 from combustion of anaerobic digester gas is considered biogenic, while the other two components of CO_2 emissions are considered non-biogenic emissions.

The wastewater emission factor derived from Point Loma WWTP was applied to all annual wastewater flow from the City of Lemon Grove. The total wastewater flow, wastewater emission factors, as well as the corresponding GHG emissions are given Table 19.[54]

Table 19 Wastewater Generated and GHG Emissions from Wastewater Category (Lemon Grove, 2012-2014)

Year	Total Wastewater Generated (Million Gallons/year)	Wastewater Emission Factor (MT CO_2e/Million Gallons)	GHG Emissions (MT CO_2e)
2012	760	0.41	300
2013	756	0.38	300
2014	737	0.45	300
GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. CARB, 2017; City of San Diego, 2017; Energy Policy Initiatives Center, 2018.			

5 BUSINESS-AS-USUAL GHG EMISSIONS PROJECTIONS

To inform the development of GHG reduction strategies within a jurisdiction's Climate Action Plan (CAP), GHG emissions are projected from the latest data available, as well as projections for population, housing, and job growth. The latest year with available data may be different for different inventory categories. This is used to develop a business-as-usual (BAU) projection, which demonstrates emissions growth in the absence of any new policies and programs. Next, emissions reductions attributable to federal and State policies and programs are applied in the future, creating a legislatively-adjusted BAU.

Figure 7 provides an illustrative example of the difference between a BAU and a legislatively-adjusted BAU. Only the BAU projection is discussed in this document; GHG reductions from the policies and programs included in the legislatively-adjusted BAU are considered later in the climate action planning process.

[53] CARB, Mandatory GHG Reporting – Reported Emissions.
[54] 2010–2016 Wastewater (million gallons per day) flow from Lemon Grove to Metropolitan Sewerage System were provided by City of San Diego through a Public Records Request in July 2017 and converted to million gallons per year.

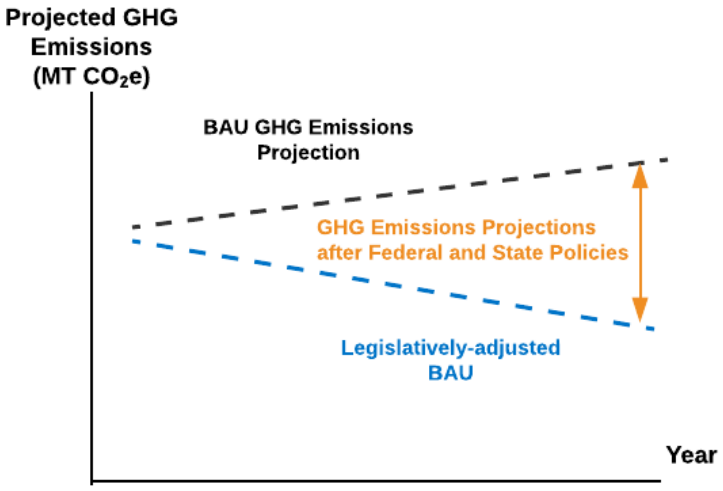
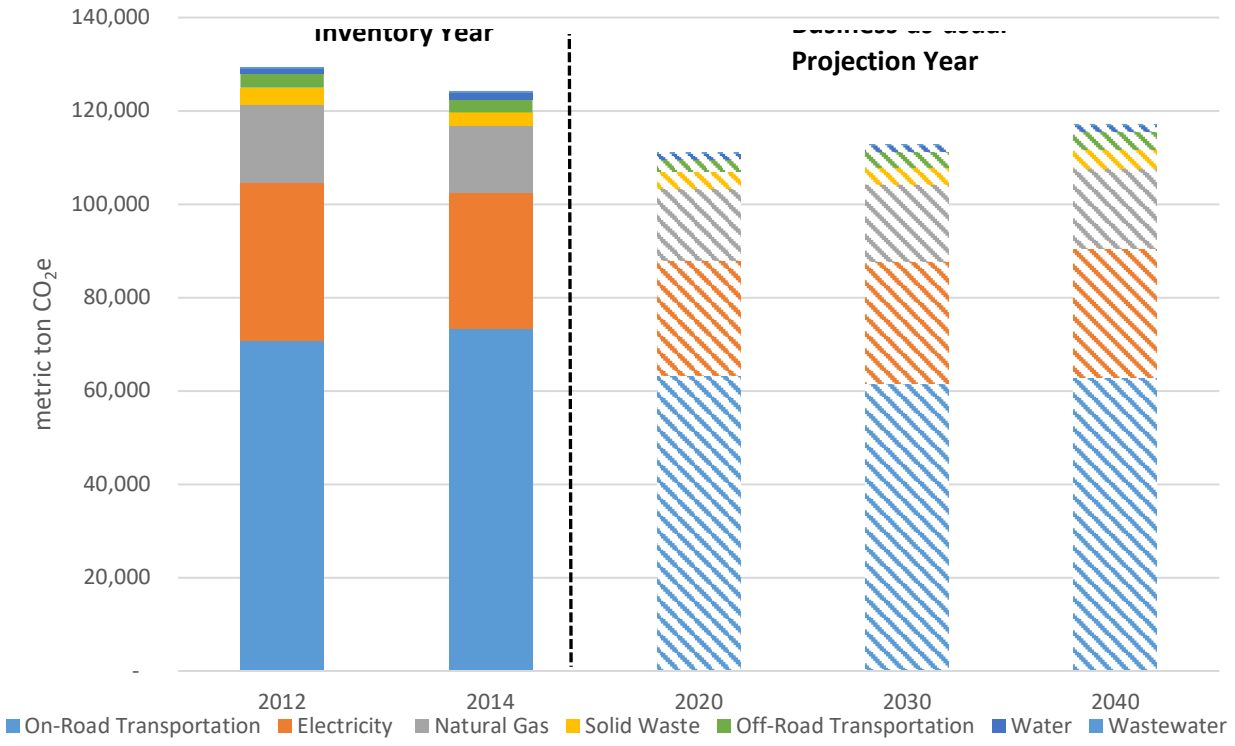


Figure 7 Illustrative Example Only: BAU and Legislatively-adjusted BAU Emissions Projections

Section 5.1 provides a summary of the BAU emissions projections for years 2020, 2030, and 2040, and Section 5.2 provides the projection methodologies used for each category.

5.1 Emissions Projections for 2020, 2030 and 2040

The total GHG emissions in 2020 are projected to be 111,100 MT CO_2e, 14% lower than the 2012 emissions level and 11% lower than the 2014 emissions level. The total GHG emissions in 2030 are projected to be 112,800 MT CO_2e and the total GHG emissions in 2040 are projected to be 117,100 MT CO_2e. Figure 8 below shows a comparison of the emissions breakdown by category for the inventory years (2012 and 2014) and projection years (2020, 2030, and 2040).



Energy Policy Initiatives Center, 2018

Figure 8 BAU GHG Emissions Projections (Lemon Grove, 2020, 2030, and 2040)

As shown in Figure 8, the on-road transportation category contributes the most to the overall emissions in each projection year. Emissions from on-road transportation are expected to decline through 2025 and then rise again through 2040. One of the possible reasons for the decline of on-road transportation emissions is the decline of the average vehicle emission rate, as newer, more efficient vehicles replace old vehicles in the region.

The total and distribution of projected emissions by category are presented in Table 20.

Table 20 Projected Total and Category-GHG Emissions in Lemon Grove (2020, 2030 and 2040)

Year	Projected GHG Emissions (MT CO_2e)							
	On-Road Transportation	Electricity	Natural Gas	Solid Waste	Off-Road Transportation	Water	Wastewater	Total
2020	63,300	24,600	15,500	3,600	2,700	1,200	300	111,100
2030	61,700	26,100	16,400	3,800	3,400	1,200	300	112,800
2040	62,800	27,700	17,200	3,900	3,800	1,300	300	117,100

Sum may not add up to totals due to rounding. Projected GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation.
Energy Policy Initiatives Center, 2018.

5.2 Methods to Project GHG Emissions

The SANDAG Series 13 Regional Growth Forecast was used as the basis of population and job growth in Lemon Grove, as shown in Table 21.[55] To determine GHG emissions for a given future year, the basic pattern is to multiply an emissions per capita, or emissions per job, by a population or job factor based on this growth projection. The specific methods used to project future emissions are provided below for each emissions category.

Table 21 Population and Job Growth Forecast (Lemon Grove, 2020, 2030, and 2040)

Year	Population	Jobs
2020	26,884	7,320
2030	28,438	7,756
2040	29,544	8,418
SANDAG, 2013.		

5.2.1 On-Road Transportation

Average weekday O-D VMT forecast for each trip type in 2020, 2030, and 2040 were provided by SANDAG based on its Series 13 activity-based model, as shown in Table 22 (See Appendix A for original data tables provided).[56]

Table 22 Projected O-D VMT and Trop Types (Lemon Grove, 2020, 2030, and 2040)

Trip Type (Miles/Average Weekday)	2020	2030	2040
Internal-Internal	11,836	13,142	12,855
Internal-External/External-Internal	860,614	912,437	934,007
External-External (Information only, excluded from VMT and GHG calculations)*	650,953	683,212	698,730
*Miles from External-External trips are the portion within the City boundary, not the entire trips. SANDAG, 2018.			

To convert VMT of each type to total VMT, the method as discussed in Section 4.1 was used. The VMT was multiplied by the adjusted average vehicle emission rate derived from EMFAC2014 for each projection year. Two adjustments were made to the EMFAC2014 emission rates for the projections: 1) the electric vehicle penetration rate in 2016 was kept constant for all projection years[57], 2) for all new vehicles entering the fleet after 2016, the emission rates are equal to the emission rates of new model year 2016 vehicles with the same vehicle class and fuel type.[58]

[55] Population and jobs data are from the SANDAG Series 13 Regional Growth Forecast (Updated in October 2013). SANDAG Data Surfer, accessed on October 24, 2017. Series 13 has a baseline calibrated year of 2012. Therefore projections from the 2012 baseline may differ from more recent estimates by the state, such as the Department of Finance (DOF).

[56] Series 13 2020, 2030, 2035 and 2040 VMT average weekday projections were provided by SANDAG (March 23, 2017 and November 7, 2017).

[57] This uses a fixed 2016 electric vehicle penetration rate of about 2% of light duty vehicles instead of using the estimated impact of the state Zero Emission Vehicle (ZEV) program on BAU emissions. The 2016 electric vehicle penetration rate is based on EMFAC2014 Technical Documentation, Section 3.2.2.4.3. The ZEV program requires auto manufacturers to make and sell ZEVs that will increase VMTs driven by ZEVs.

[58] This uses a fixed actual emission rate of the new 2016 models instead of the effect of adopted federal and state vehicle efficiency standards 2017–2025 for light-duty and heavy-duty vehicles.

The projected total VMT, average vehicle emission rates, and corresponding GHG emissions from the on-road transportation category are given in Table 23.

Table 23 Projected VMT, Average Vehicle Emission Rate and GHG Emissions from On-Road Transportation Category (Lemon Grove, 2020, 2030, and 2040)

Year	Projected Total VMT		Average Vehicle Emission Rate (g CO_2e/mile)	Projected GHG Emissions (MT CO_2e)
	Average Weekday Miles	Average Annual Miles		
2020	442,143	153,423,590	412	63,300
2030	469,360	162,868,019	379	61,700
2040	479,858	166,510,886	377	62,800
Projected GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. CARB, 2015. SANDAG, 2018. Energy Policy Initiatives Center, 2018.				

As newer, more efficient vehicles replace old vehicles in the region, the average vehicle emission rate decreases.

5.2.2 Electricity

Electricity use in the City was projected separately for the residential and non-residential customer classes. For the residential customer class, the per-capita electricity use (metered electricity sales) in 2016 (1,687 kWh/person/year), the latest year with available SDG&E data, was calculated by dividing the total electricity sales in the residential class by the population in 2016. The per-capita electricity use in 2016 is held constant and used to project BAU total electricity use for a future year by multiplying by the SANDAG Series 13 population forecast for the future year. The projected total electricity use was multiplied by the City-specific electricity emission factor in 2016 (563 lbs CO_2e/MWh), held constant, for a projected total GHG emission. The City-specific electricity emission factor in 2016 is significantly lower than that of 2012 and 2014 because SDG&E has since reached 43% renewable energy in its power mix.[59]

A similar method was used for the non-residential class. The total non-residential BAU electricity use was projected based on job growth and the per-job electricity consumption in 2016 (6,110 kWh/job/year). The per-job electricity consumption in 2016, the latest year available from SDG&E data, was calculated by dividing the total electricity sales in the non-residential class by the number of jobs in 2016. The per-job electricity use in 2016 is held constant and used to project BAU non-residential electricity use for a future year by multiplying by the SANDAG Series 13 job forecast for the future year. The total projected net energy for load (electricity sales + transmission and distribution losses) and corresponding GHG emissions from the electricity category are given in Table 24.[60]

[59] 2016 renewable content in SDG&E bundled power is based on SDG&E's 2016 power source disclosure report submitted to the California Energy Commission (CEC). The 2016 report was provided by CEC staff to EPIC in July 2017.
[60] The net energy for load of each future year is adjusted using the method described in Section 4.2. The net energy for load does not include self-serve renewable supply, such as electricity generation from behind-the-meter PV systems.

Table 24 Projected Net Energy for Load and GHG Emissions from the Electricity Category (Lemon Grove, 2020, 2030, and 2040)

Year	Projected Net Energy for Load (electricity sales + losses) (MWh)	Projected City-Specific Emission Factor (lbs CO_2e/MWh)	Projected GHG Emissions (pounds)	Projected GHG Emissions (MT CO_2e)
2020	96,406	563	54,233,716	24,600
2030	102,063	563	57,540,650	26,100
2040	108,391	563	61,068,047	27,700
Projected GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. Conversion factor: 1 pound = 0.000454 metric tons Energy Policy Initiatives Center, 2018.				

5.2.3 Natural Gas

The projection method for the natural gas category is similar to that for the electricity category. The natural gas use in the residential and non-residential classes are calculated separately. The per-capita residential natural gas consumption (79 therms/person/year, Section 4.3) and the per-job natural gas consumption (98 therms/job/year, Section 4.3) in 2016 were held constant with population and job growth for the BAU projection. The natural gas emission factor used in Section 4.3 was held constant. The projected total natural gas use and corresponding GHG emissions from the natural gas category are given in Table 25.

Table 25 Projected Natural Gas Use and GHG Emissions from Natural Gas Category (Lemon Grove, 2020, 2030, and 2040)

Year	Projected Total Natural Gas Use (Million Therms)	Natural Gas Emission Factor (MT CO_2e/Therms)	Projected GHG Emissions (MT CO_2e)
2020	2.8	0.0554	15,500
2030	3.0	0.0554	16,400
2040	3.2	0.0554	17,200
Projected GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. Energy Policy Initiatives Center, 2018.			

5.2.4 Solid Waste

The BAU solid waste disposal projection uses the population growth and the per-capita solid waste disposed in 2016, which is the latest data available for cities from CalRecycle. The per capita solid waste disposed was calculated in the same way as it was for 2012-2014 (Section 4.4) and based on SANDAG's population estimate for Lemon Grove for 2016. The estimated per capita waste disposed for 2016 was 2 kg/person/day). This value was held constant going forward, to be consistent with other categories. The projected emissions from the disposal were calculated by multiplying the disposal amount with the same emission factor for mixed solid waste provided in Table 9 Section 4.4. The projected total waste disposal and corresponding GHG emissions from the solid waste category are given in Table 26.

Table 26 Projected Solid Waste Disposal and GHG Emissions from Solid Waste Category (Lemon Grove, 2020, 2030, and 2040)

Year	Projected Solid Waste Disposal (MT)	GHG Emission Factor (MT CO_2e/Short Ton)	Oxidation Rate	Total GHG Emissions (MT CO_2e)	Default CH_4 Capture Rate	Remaining GHG Emissions (MT CO_2e)
2020	19,417	0.744	10%	14,336	75%	3,600
2030	20,540	0.744	10%	15,164	75%	3,800
2040	21,339	0.744	10%	15,754	75%	3,900
The calculation accounts for 10% oxidation rate, therefore only 90% modeled CH_4 generation is emitted. Projected GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. Energy Policy Initiatives Center, 2018.						

5.2.5 Off-Road Transportation

In the off-road transportation category, the direct output of OFFROAD2007 (lawn and garden equipment and light commercial equipment), RV2013 model (recreational equipment), and diesel-fueled potable equipment for the San Diego region were used and scaled down to Lemon Grove based on the scaling factor as described in Section 4.5. For the construction and industrial equipment sub-category, the In-Use Off-Road Equipment 2011 Inventory does not include emissions output after 2030. For the years 2020 and 2030, the direct output for the San Diego region from the model was used and scaled down to El Cajon. For 2040, the emissions were estimated based on the commercial and industrial job growth. The projected total and sub-category off-road transportation emissions are given in Table 27.

Table 27 Projected GHG Emissions from Off-Road Transportation Category (Lemon Grove, 2020, 2030, and 2040)

Year	Projected GHG Emissions (MT CO_2e)						
	Recreational Equipment	Lawn and Garden Equipment	Light Commercial Equipment	Construction and Mining	Industrial	Diesel-Fueled Portable Equipment	Total
2020	38	684	482	1,080	69	323	2,700
2030	46	779	510	1,539	84	393	3,400
2040	50	882	550	1,752	91	489	3,800
Only total GHG emissions are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. CARB, 2007, 2011, 2013 and 2017; Energy Policy Initiatives Center, 2018.							

5.2.6 Water

The most recent water use data from the city is for the year 2015, which is not part of the inventories reported here from 2012-2014 but should be used for projections. The 2015 water use and SANDAG's population estimate for 2015 was used to develop a per capita water use (Section 4.6). This was held constant for projection years. It is assumed that the current percentage of water from each supply source (SDCWA untreated, and local surface and groundwater) remains unchanged for the BAU projection. It is also assumed that no recycled water sources or new potable water sources are developed under the BAU projection.

The estimated per-capita potable water use in 2015 was 73 gallons/person/day, significantly lower than in 2012 (91 gallons/person/day) and 2014 (89 gallons/person/day). The energy intensity for each segment of the water system (Table 13) and the electricity emission factor was held constant for all projection years. The projected total potable water supply and corresponding GHG emissions calculated as described in Section 4.6 are given in Table 28.

Table 28 Projected Potable Water and GHG Emissions from the Water Category (Lemon Grove, 2020, 2030, and 2040)

Year	Projected Potable Water Supply (acre-foot)	Projected GHG Emissions (MT CO_2e)
2020	2,197	1,200
2030	2,324	1,200
2040	2,414	1,300
Projected GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. Energy Policy Initiatives Center, 2018.		

5.2.7 Wastewater

The total wastewater generation for all BAU projection years is based on the fixed 2016 per-capita wastewater generation (62 gallons/person/day), calculated by dividing the 2016 wastewater generated (564 million gallons) by the SANDAG 2016 population estimates. This was held constant and multiplied by SANDAG's population estimates for projection years. Similarly, the 2016 Point Loma WWTP wastewater emission factor was held constant for the projection years.

The projected total wastewater generation and the GHG emissions from the wastewater category are given in Table 29.

Table 29 Projected Wastewater Generated and GHG Emissions from the Wastewater Category (Lemon Grove, 2020, 2030, and 2040)

Year	Projected Wastewater treated at Centralized WWTP (Million Gallons)	Wastewater Emission Factor (MT CO_2e/Million Gallons)	Projected GHG Emissions (MT CO_2e)
2020	570	0.46	300
2030	603	0.46	300
2040	626	0.46	300
Projected GHG emissions for each category are rounded to the nearest hundreds. Values are not rounded in the intermediary steps in the calculation. Energy Policy Initiatives Center, 2018.			

Appendix A. LEMON GROVE VMT BY TRIP TYPE

Average weekday VMT data tables were provided by SANDAG (from SANDAG ABM Series 13, Release 13.3.0). Revenue Constrained refers to the transportation network scenario adopted in San Diego Forward: The 2015 Regional Plan.[61] Emphasis (red squares and text) was added by EPIC.

2012 Base Year

JURISDICTION	TOTAL VMT	TOTAL City of Lemon Grove VMT	Two Trip End City of Lemon Grove VMT	One Trip End City of Lemon Grove VMT	NON-City of Lemon Grove VMT
		I-I, I-E and E-I	I-I	I-E and E-I	E - E
CARLSBAD TOTAL	3,112,142	3,426	-	3,426	3,108,716
CHULA VISTA TOTAL	3,516,776	24,463	-	24,463	3,492,313
CORONADO TOTAL	403,278	2,525	-	2,525	400,753
DEL MAR TOTAL	77,409	37	-	37	77,372
EL CAJON TOTAL	1,895,376	34,101	-	34,101	1,861,275
ENCINITAS TOTAL	1,798,588	3,589	-	3,589	1,794,999
ESCONDIDO TOTAL	2,644,337	3,536	-	3,536	2,640,801
External TOTAL	173,565	358	-	358	173,207
IMPERIAL BEACH TOTAL	92,294	218	-	218	92,076
LA MESA TOTAL	1,529,817	64,358	-	64,358	1,465,459
LEMON GROVE TOTAL	790,801	160,847	11,218	149,629	629,954
NATIONAL CITY TOTAL	1,545,818	13,910	-	13,910	1,531,908
OCEANSIDE TOTAL	2,675,295	1,252	-	1,252	2,674,043
POWAY TOTAL	868,013	841	-	841	867,172
SAN DIEGO TOTAL	36,928,734	379,762	-	379,762	36,548,972
SAN MARCOS TOTAL	1,838,273	565	-	565	1,837,708
SANTEE TOTAL	947,193	7,034	-	7,034	940,159
SOLANA BEACH TOTAL	603,982	1,575	-	1,575	602,407
Unincorporated TOTAL	16,372,819	130,038	-	130,038	16,242,781
VISTA TOTAL	1,610,600	64	-	64	1,610,536
REGIONWIDE TOTAL	79,425,110	832,499	11,218	821,281	78,592,611

100% of I-I VMT

50% of I-E/E-I VMT

0% of E-E VMT

Figure A-1 Lemon Grove 2012 VMT by Trip Type

2014 Estimates

JURISDICTION	TOTAL VMT	TOTAL City of Lemon Grove VMT	Two Trip End City of Lemon Grove VMT	One Trip End City of Lemon Grove VMT	NON-City of Lemon Grove VMT
		I-I, I-E and E-I	I-I	I-E and E-I	E - E
CARLSBAD TOTAL	3,203,488	3,932	-	3,932	3,199,556
CHULA VISTA TOTAL	3,692,997	25,962	-	25,962	3,667,035
CORONADO TOTAL	411,739	2,694	-	2,694	409,045
DEL MAR TOTAL	78,343	27	-	27	78,316
EL CAJON TOTAL	1,995,802	37,876	-	37,876	1,957,926
ENCINITAS TOTAL	1,847,350	3,993	-	3,993	1,843,357
ESCONDIDO TOTAL	2,773,383	4,284	-	4,284	2,769,099
External TOTAL	207,246	414	-	414	206,832
IMPERIAL BEACH TOTAL	92,994	210	-	210	92,784
LA MESA TOTAL	1,574,973	70,481	-	70,481	1,504,492
LEMON GROVE TOTAL	826,374	171,209	12,332	158,877	655,165
NATIONAL CITY TOTAL	1,587,714	14,440	-	14,440	1,573,274
OCEANSIDE TOTAL	2,812,792	1,567	-	1,567	2,811,225
POWAY TOTAL	875,057	956	-	956	874,101
SAN DIEGO TOTAL	37,907,376	402,331	-	402,331	37,505,045
SAN MARCOS TOTAL	1,896,873	532	-	532	1,896,341
SANTEE TOTAL	973,959	7,539	-	7,539	966,420
SOLANA BEACH TOTAL	623,215	1,793	-	1,793	621,422
Unincorporated TOTAL	17,593,241	139,989	-	139,989	17,453,252
VISTA TOTAL	1,667,838	93	-	93	1,667,745
REGIONWIDE TOTAL	82,642,754	890,322	12,332	877,990	81,752,432

100% of I-I VMT

50% of I-E/E-I VMT

0% of E-E VMT

Figure A-2 Lemon Grove 2014 VMT by Trip Type

[61] San Diego Forward: The 2015 Regional Plan was adopted by the SANDAG Board of Directors on October 9, 2015.

2020 Revenue Constrained

JURISDICTION	TOTAL VMT	TOTAL City of Lemon Grove VMT	Two Trip End City of Lemon Grove VMT	One Trip End City of Lemon Grove VMT	NON-City of Lemon Grove VMT
		I-I, I-E and E-I	I-I	I-E and E-I	E-E
CARLSBAD TOTAL	3,472,436	3,649	-	3,649	3,468,787
CHULA VISTA TOTAL	4,110,315	27,185	-	27,185	4,083,130
CORONADO TOTAL	412,772	2,631	-	2,631	410,141
DEL MAR TOTAL	75,193	22	-	22	75,171
EL CAJON TOTAL	1,999,957	36,592	-	36,592	1,963,365
ENCINITAS TOTAL	1,882,878	3,598	-	3,598	1,879,280
ESCONDIDO TOTAL	2,805,409	3,444	-	3,444	2,801,965
External TOTAL	194,117	380	-	380	193,737
IMPERIAL BEACH TOTAL	91,844	184	-	184	91,660
LA MESA TOTAL	1,600,130	71,979	-	71,979	1,528,151
LEMON GROVE TOTAL	822,920	171,967	11,836	160,131	650,953
NATIONAL CITY TOTAL	1,620,907	14,599	-	14,599	1,606,308
OCEANSIDE TOTAL	2,854,499	1,360	-	1,360	2,853,139
POWAY TOTAL	925,978	753	-	753	925,225
SAN DIEGO TOTAL	39,059,773	387,496	-	387,496	38,672,277
SAN MARCOS TOTAL	1,971,319	399	-	399	1,970,920
SANTEE TOTAL	1,028,034	7,854	-	7,854	1,020,180
SOLANA BEACH TOTAL	643,319	1,641	-	1,641	641,678
Unincorporated TOTAL	17,475,190	136,666	-	136,666	17,338,524
VISTA TOTAL	1,666,374	51	-	51	1,666,323
REGIONWIDE TOTAL	84,713,364	872,450	11,836	860,614	83,840,914

0% of E-E VMT

100% of I-I VMT

50% of I-E/E-I VMT

Figure A-3 Lemon Grove 2020 VMT by Trip Type

2030 Revenue Constrained

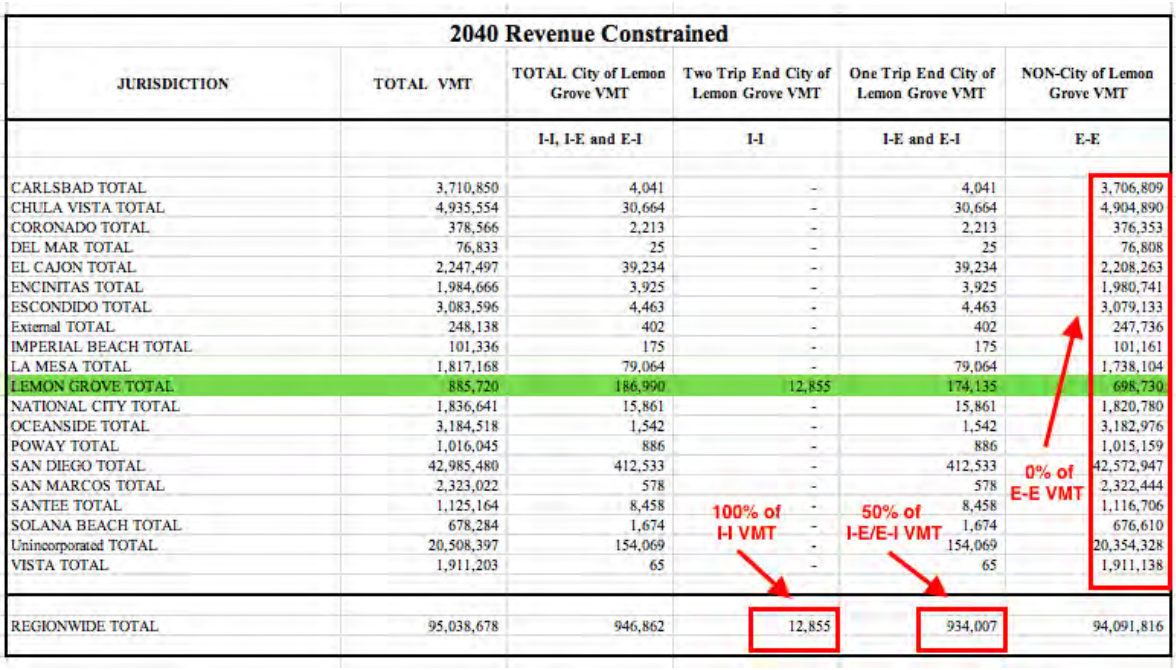
JURISDICTION	TOTAL VMT	TOTAL City of Lemon Grove VMT	Two Trip End City of Lemon Grove VMT	One Trip End City of Lemon Grove VMT	NON-City of Lemon Grove VMT
		I-I, I-E and E-I	I-I	I-E and E-I	E - E
CARLSBAD TOTAL	3,612,570	3,844	-	3,844	3,608,726
CHULA VISTA TOTAL	4,707,744	29,675	-	29,675	4,678,069
CORONADO TOTAL	420,507	2,614	-	2,614	417,893
DEL MAR TOTAL	76,024	29	-	29	75,995
EL CAJON TOTAL	2,161,071	38,819	-	38,819	2,122,252
ENCINITAS TOTAL	1,924,311	3,675	-	3,675	1,920,636
ESCONDIDO TOTAL	2,972,037	3,624	-	3,624	2,968,413
External TOTAL	222,080	375	-	375	221,705
IMPERIAL BEACH TOTAL	95,173	210	-	210	94,963
LA MESA TOTAL	1,755,098	77,478	-	77,478	1,677,620
LEMON GROVE TOTAL	867,492	184,280	13,142	171,138	683,212
NATIONAL CITY TOTAL	1,777,970	15,532	-	15,532	1,762,438
OCEANSIDE TOTAL	3,048,450	1,418	-	1,418	3,047,032
POWAY TOTAL	966,183	745	-	745	965,438
SAN DIEGO TOTAL	41,736,317	405,888	-	405,888	41,330,429
SAN MARCOS TOTAL	2,215,053	562	-	562	2,214,491
SANTEE TOTAL	1,097,270	7,888	-	7,888	1,089,382
SOLANA BEACH TOTAL	667,905	1,689	-	1,689	666,216
Unincorporated TOTAL	19,108,723	147,163	-	147,163	18,961,560
VISTA TOTAL	1,829,321	71	-	71	1,829,250
REGIONWIDE TOTAL	91,261,299	925,579	13,142	912,437	90,335,720

0% of E-E VMT

100% of I-I VMT

50% of I-E/E-I VMT

Figure A-4 Lemon Grove 2030 VMT by Trip Type



2040 Revenue Constrained

JURISDICTION	TOTAL VMT	TOTAL City of Lemon Grove VMT	Two Trip End City of Lemon Grove VMT	One Trip End City of Lemon Grove VMT	NON-City of Lemon Grove VMT
		I-I, I-E and E-I	I-I	I-E and E-I	E-E
CARLSBAD TOTAL	3,710,850	4,041	-	4,041	3,706,809
CHULA VISTA TOTAL	4,935,554	30,664	-	30,664	4,904,890
CORONADO TOTAL	378,566	2,213	-	2,213	376,353
DEL MAR TOTAL	76,833	25	-	25	76,808
EL CAJON TOTAL	2,247,497	39,234	-	39,234	2,208,263
ENCINITAS TOTAL	1,984,666	3,925	-	3,925	1,980,741
ESCONDIDO TOTAL	3,083,596	4,463	-	4,463	3,079,133
External TOTAL	248,138	402	-	402	247,736
IMPERIAL BEACH TOTAL	101,336	175	-	175	101,161
LA MESA TOTAL	1,817,168	79,064	-	79,064	1,738,104
LEMON GROVE TOTAL	885,720	186,990	12,855	174,135	698,730
NATIONAL CITY TOTAL	1,836,641	15,861	-	15,861	1,820,780
OCEANSIDE TOTAL	3,184,518	1,542	-	1,542	3,182,976
POWAY TOTAL	1,016,045	886	-	886	1,015,159
SAN DIEGO TOTAL	42,985,480	412,533	-	412,533	42,572,947
SAN MARCOS TOTAL	2,323,022	578	-	578	2,322,444
SANTEE TOTAL	1,125,164	8,458	-	8,458	1,116,706
SOLANA BEACH TOTAL	678,284	1,674	-	1,674	676,610
Unincorporated TOTAL	20,508,397	154,069	-	154,069	20,354,328
VISTA TOTAL	1,911,203	65	-	65	1,911,138
REGIONWIDE TOTAL	95,038,678	946,862	12,855	934,007	94,091,816

Figure A-5 Lemon Grove 2040 VMT by Trip Type

Appendix B. SOURCE DATA FOR THE SOLID WASTE EMISSION FACTOR

Waste Component	Waste Distribution (%)[1]	Landfill Gas Emissions	
		CH_4 without LFG Recovery (MT CO_2e/short ton)	Source[2]
Paper	16.8%	-	-
Corrugated Containers/Cardboard	*5.0%*	2.36	Exhibit 3-27, WARM v14 Containers /Packaging
Newspaper	*0.8%*	0.95	Exhibit 3-27, WARM v14 Containers /Packaging
Magazine	*0.6%*	1.08	Exhibit 3-27, WARM v14 containers /packaging
Mixed Paper (general)	*10.4%*	2.14	Exhibit 3-27, WARM v14 containers /packaging
Plastic	8.9%	-	-
Glass	1.7%	-	-
Metal	3.5%	-	-
Organics	38.9%	-	-
Food	*15%*	1.57	Exhibit 1-49, WARM V14 Organic Materials
Tree	*5.3%*	0.77	Exhibit 2-11 WARM V14 Organic Materials
Leaves and Grass	*6.8%*	0.59	Exhibit 2-11 WARM V14 Organic Materials
Trimmings	*3.5%*	0.59	Exhibit 2-11 WARM V14 Organic Materials
Mixed Organics	*8.3%*	0.53	Exhibit 2-11 WARM V14 Organic Materials
Electronics	0.6%	-	-
Construction & Demolition	24.6%	-	-
Household Hazardous Waste	0.2%	-	-
Special Waste	3.1%	-	-
Mixed Residue	1.6%	0.53	
Mixed Waste Emission Factor		**0.744**	
Source: 1) City of San Diego 2014 2) EPA Waste Reduction Model (WARM) Version 14 (2016)			

Appendix B

Methods for Estimating Greenhouse Gas Emissions Reductions from Lemon Grove Climate Action Plan

Methods for Estimating Greenhouse Gas Emissions Reductions in the Lemon Grove Climate Action Plan

November 2019

Prepared for the City of Lemon Grove

Prepared by the Energy Policy Initiatives Center

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

About EPIC

The Energy Policy Initiatives Center (EPIC) is a non-profit research center of the USD School of Law that studies energy policy issues affecting California and the San Diego region. EPIC's mission is to increase awareness and understanding of energy- and climate-related policy issues by conducting research and analysis to inform decision makers and educate law students.

For more information, please visit the EPIC website at www.sandiego.edu/epic.

Prepared in partnership with the San Diego Association of Governments (SANDAG) and the Roadmap Program. This Program is partially funded by California utility customers and administered by San Diego Gas & Electric Company under the auspices of the California Public Utilities Commission.

Table of Contents

Tables

Figures

1 OVERVIEW

The City of Lemon Grove CAP GHG Reduction Methods (document) provides a summary of the methods used to calculate greenhouse gas (GHG) emissions reductions for the strategies and measures included in the City of Lemon Grove's (referred to as "the City" or "Lemon Grove") Climate Action Plan (CAP).

Section 2 of the document details the emission reduction targets for Lemon Grove in the years 2020 and 2030, and GHG reduction goal in 2035. Section 3 provides a summary of emissions reduction estimates from federal and State (California) actions, as well as eight CAP strategies, used to meet 2030 target and 2035 goal. Section 4 outlines the common data sources and methods used throughout the document while Sections 5 and 6 detail the methods used to estimate emissions reductions from each specific strategy and measure.

Unless stated otherwise, all activity data and GHG emissions reported in this document are annual values for the calendar year, and all emission factors reported in this document are annual average values for the calendar year.

1.1 Rounding of Values in Tables and Figures

Rounding is used for the final GHG values within the tables and figures throughout the document. Values are not rounded in the intermediary steps in any calculation. Because of rounding, some totals may not equal the values summed in any table or figure.

2 EMISSION REDUCTION TARGETS

California has a statewide target of reaching the 1990 GHG emissions levels, equal to an annual total of 431 million metric tons of carbon dioxide equivalent (MMT CO_2e), by 2020. For 2030, the State target is 40% below the 1990 level, or 260 MMT CO_2e.[1] According to the California Air Resources Board's (CARB) statewide inventory, the statewide total GHG emissions level in 2012 was 450 MMT CO_2e.[2] At the State level, the emissions reduction target for 2020 is equivalent to 4% below 2012; for 2030, it is equivalent to 42% below 2012, and for 2035, it is equivalent to 52% below 2012, as illustrated in Figure 1.

[1] AB 32 (Nunez) (Chapter 488, Statutes of 2006): California Global Warming Solutions Act of 2006. SB 32 (Pavley) (Chapter 249, Statutes of 2016): California Global Warming Solutions Act of 2006: emissions limit (2015–2016).
[2] California Air Resources Board: California Greenhouse Gas Inventory for 2000–2016 (June, 2018), accessed on December 13, 2018.

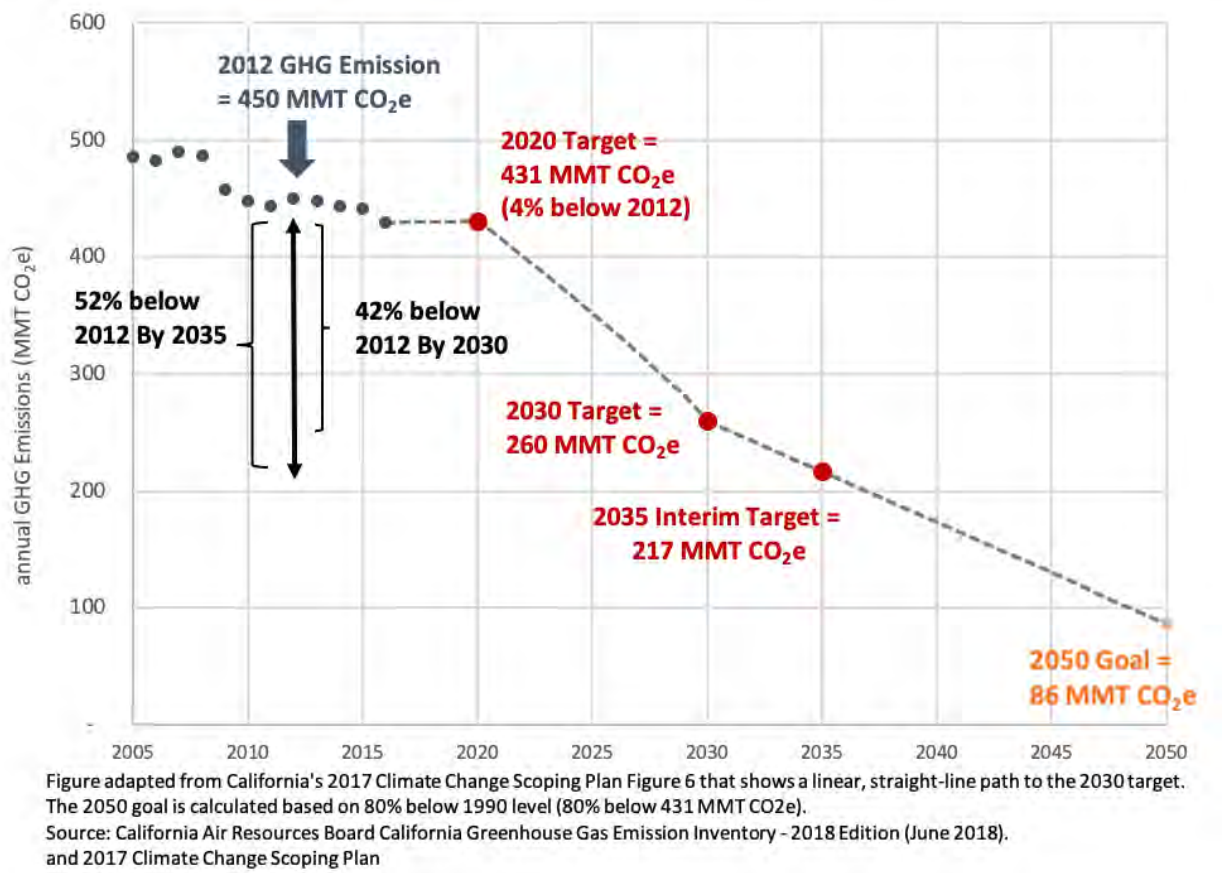


Figure 1 California Statewide GHG Inventory and Emissions Reduction Targets

The Lemon Grove CAP utilizes a baseline year of 2012 for the purposes of calculating targets. 2012 was selected as the baseline year for the CAP because it features the best available transportation activity data for use in the City's GHG emissions inventory. As emissions from transportation account for more than half of City's total emissions, the inventory year should align with the best available transportation data. The target emissions levels for Lemon Grove are set at 4% below the 2012 emissions level by 2020, 42% below the 2012 emissions level by 2030, and 52% below 2012 emissions level by 2035. These mass reduction targets are consistent with the emissions reduction targets at the State level.

Table 1 shows the business-as-usual (BAU) emissions projections, which represent emissions levels in the absence of any new policies and programs, targets, and CO_2e reductions needed in 2020, 2030, and 2035 to achieve the target levels.[3]

[3] The method to project emissions at 2020 and 2030 is provided in *Appendix A: City of Lemon Grove Greenhouse Gas Emissions Inventories and Projections* (EPIC, 2018).

Table 1 Emissions Projections, Targets, and Emissions Reductions Needed

Year	Business-as-usual Projection (MT CO_2e)	Target Emissions Level (% below baseline)	Target Emissions Level (MT CO_2e)	Emissions Reduction Needed to Meet Target (MT CO_2e)
2012	129,400	-	-	-
2020	111,100	-4%	124,400	none
2030	112,800	-42%	75,000	37,800
2035*	113,900	-52%	62,500	51,400

*Emissions reduction goal in 2035.
Emissions projection and reduction values are rounded.
Energy Policy Initiatives Center 2019.

No local actions are needed for Lemon Grove to reach its 2020 target. In 2030, a reduction of 37,800 MT CO_2e is needed to meet the target, and in 2035, a reduction of 51,400 MT CO_2e is needed to meet the goal. This document focuses on the State and local measures needed to reach the 2030 target and 2035 goal.

3 SUMMARY OF EMISSIONS REDUCTION ESTIMATES

This section summarizes the GHG emissions reductions from strategies and measures included in the Lemon Grove CAP. Table 2 below presents a summary of emissions reductions from the eight local strategies in the Lemon Grove CAP, as well as the reductions from federal and State actions.

Table 2 Summary of 2030 GHG Emissions Reduction by Strategy in the Lemon Grove CAP

Summary of Federal and State Actions and CAP Strategies		Emissions Reductions (MT CO_2e)	
		2030	2035
CAP Strategies	1. Increase Use of Zero Emission/Alternative Fuel Vehicles (T)	456	763
	2. Reduce Fossil Fuel Use (T)	663	1,102
	3. Reduce Vehicle Miles Traveled (T)	2,840	4,170
	4. Increase Building Energy Efficiency (E)	226	215
	5. Increase Renewable and Zero-Carbon Energy (E)	2,509	5,244
	6. Increase Water Efficiency (W)	11	16
	7. Reduce and Recycle Solid Waste (S)	2,811	3,081
	8. Carbon Sequestration (C)	36	49
Federal and State Actions		29,970	37,566
Total Emissions Reduction*		39,500	52,200

T – Transportation, E – Energy, W – Water, S – Solid Waste, and C – Carbon Sequestration
*Total emissions reduction values in 2030 and 2035 are rounded.
Energy Policy Initiatives Center 2019.

Each CAP strategy includes several quantifiable measures.
Table 3 presents a detailed summary of the emissions reductions from each CAP measure and from each federal and State action.

Table 3 Summary of 2030 and 2035 GHG Emissions Reductions from Measures in Lemon Grove CAP

CAP Strategies	Federal and State Regulations and CAP Measures	Emissions Reductions (MT CO_2e)	
		2030	2035
1. Increase Use of Zero Emission/Alternative Fuel Vehicles (T)	T-1 Transition to a more fuel-efficient municipal vehicle fleet	17	33
	T-2 Install electric vehicle charging stations at City facilities	71	181
	T-3 Increase the Number of electric vehicle charging stations at new and existing private development	196	290
	T-4 Convert school bus fleet to electric	173	259
2. Reduce Fossil Fuel	T-5 Synchronize traffic signals	248	349
	T-6 Increase renewable or alternative fuel construction equipment	416	753
3. Reduce Vehicle Miles Traveled (T)	T-7 Participate in SANDAG's Vanpool Program	88	83
	T-8 Develop a citywide transportation demand management (TDM) plan	581	582
	T-9 Implement the Safe Routes to School Program	18	17
	T-10 Increase commute by bicycle	89	87
	T-11 Reduce parking requirements near Trolley Stations	718	872
	T-12 Transition to an online building permits submittal system	3	3
	T-13 Increase commute by transit	1,343	2,527
4. Increase Building Energy Efficiency (E)	E-1 Increase street lighting efficiency citywide	27	8
	E-2 Reduce non-residential energy use	173	174
	E-3 Reduce residential energy use	26	33
5. Increase Renewable and Zero-Carbon Energy (E)	E-4 Increase renewable energy generation at non-residential and multi-family developments	72	140
	E-5 Achieve zero net energy municipal operations	212	264
	E-6 Require new residential uses to be all-electric and generate renewable energy on-site	287	384
	E-7 Increase grid-supply renewable and zero-carbon electricity	1,938	4,456
6. Increase Water Efficiency (W)	W-1 Increase outdoor water efficiency	3	4
	W-2 Reduce water use at city parks and municipal facilities	8	12
7. Reduce and Recycle Solid Waste (S)	S-1 Increase citywide waste diversion	2,811	3,081
8. Carbon Sequestration (C)	C-1 Develop a citywide Urban Tree Planting Program	24	33
	C-2 Increase tree planting at new developments	12	16
Federal and State Actions	Federal and California Vehicle Efficiency Standards	13,119	15,541
	California Energy Efficiency Programs	3,404	2,160
	Renewables Portfolio Standard	9,771	15,224
	California Solar Policy, Programs and 2019 Mandates	3,676	4,640
	Total Reduction from Federal and State Regulations	29,970	37,566
	Total Reduction from CAP Measures	9,530	14,634
	Total Reduction (Federal, State and CAP Measures)*	39,500	52,200

*Total emissions reductions values in 2030 and 2035 are rounded.
Energy Policy Initiatives Center 2019.

Figure 2 provides a visualization of the emissions trend for the CAP horizon year through 2035.

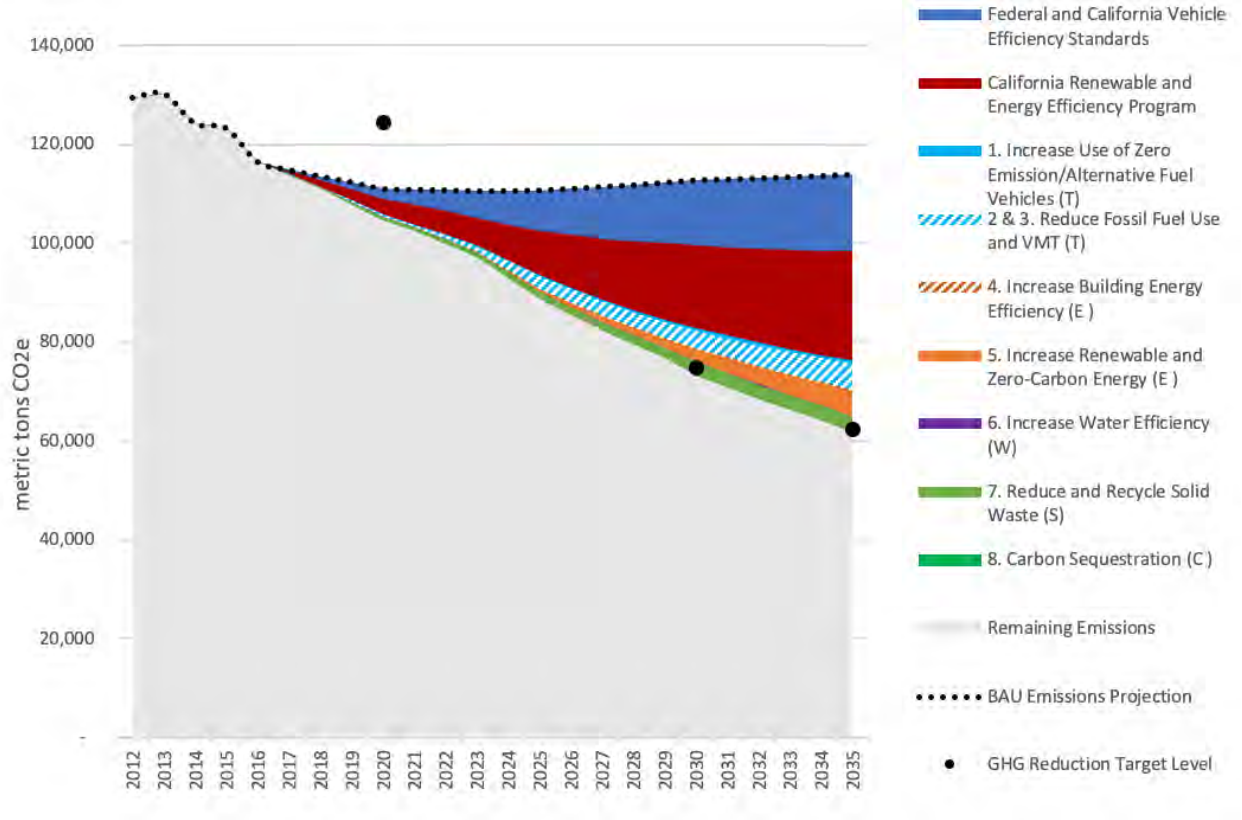


Figure 2 Lemon Grove GHG Emissions Trend (2012–2035)

In Figure 2, the BAU emissions projection is represented along the top of the graph (black dashed line). The three black dots represent the target emissions levels in 2020, 2030, and 2035. The colored wedges represent the reduction from each local CAP strategy and from federal and State actions. Each wedge represents the cumulative GHG reduction from each strategy from when the strategy is initiated, through 2035. The grey area beneath the colored wedges represents the remaining emissions after all the actions have taken place. As shown in the Figure, the City meets all targets with the federal and State actions and local measures identified in the CAP.

4 BACKGROUND AND COMMON ASSUMPTIONS

A set of common assumptions and sources was used to calculate potential emissions reductions for many of the measures included in the CAP. The following section describes the assumptions that are applied to measures related to electricity, natural gas, and on-road transportation. Measures related to other categories do not have common assumptions. The detailed methods and data for each measure are provided in Sections 5 and 6.

4.1 Common Background Data

Table 4 presents a summary of common data used to estimate overall GHG emissions levels and the reduction estimates across several CAP measures.

Table 4 Common Data Used for the Lemon Grove CAP

Year	2012	2030	2035
Population[4]	25,646	28,438	28,673
Labor Force[5]	12,600	14,427	14,942
Vehicle Miles Traveled (VMT) (annual miles)[6]	288,877,153	321,175,913	323,104,539
Electricity Gross Generation (GWh)[7]	100	113	115
GWh – gigawatt hours VMT projections are based on the SANDAG Series 13 forecast. 2012 is the Series 13 Base Year. Data in 2012 are historical data and data in 2030 are the latest available forecasted data. Energy Policy Initiatives Center 2019.			

4.2 Common Assumptions and Methods for Calculating Electricity Emissions Reductions

The following overall assumptions and methods are used in the calculation of emissions reductions related to electricity, including both those from federal and State actions and local CAP measures. Details for the calculation of each action are provided in Sections 5 and 6.

4.2.1 GHG Emission Factor for Electricity

The GHG emission factor for electricity for a city, expressed in pounds of CO_2e per megawatt-hour (lbs CO_2e/MWh), is specific to each city and depends upon the sources of electricity supplied to the city. Therefore, for the purpose of estimating GHG reductions, the GHG emission factor for electricity in Lemon Grove is the weighted average emission factor of gross generation from four sources of supply: San Diego Gas & Electric (SDG&E), other electric retail suppliers for SDG&E's Direct Access (DA) customers, a local renewables and zero-carbon program, and behind-the-meter photovoltaic (PV) systems. This citywide emission factor is needed to estimate the effects of State actions and local CAP measures that increase the grid-supply of renewable and zero-carbon electricity, as well as the impact of adding behind-the-meter PV systems and increasing building energy efficiency.

The citywide emission factor is calculated based on the percentage of renewable and zero-carbon content in, and the percentage of, gross generation from each source of supply as described below. This method is applied to 2016, the starting year for emissions projections, as well as to each year included in the CAP horizon.[8] As the percentage of renewable and zero-carbon supply in the mix increases, the weighted average emission factor of electricity supply decreases.

[4] The 2012 population is from SANDAG's Demographic & Socio-Economic Estimates (March 9, 2017 version). The population in 2030 and 2035 are from SANDAG's Series 13 Regional Growth Forecast (Updated in October 2013). SANDAG Data Surfer, accessed on November 2, 2017. Series 13 has a base year of 2012. Projections from 2012 may differ from more recent estimates by the State, such as from the Department of Finance (DOF).

[5] The 2012 labor force is from the California Employment Development Department (EDD) Database, accessed on August 12, 2019. The 2030 labor force is based on the SANDAG Series 13 forecast for civilian jobs estimates in 2030, and the ratio of the 2012 labor force and 2012 SANDAG Series 13 civilian jobs estimate (2012 is the forecast base year). SANDAG's Series 13 Regional Growth Forecast (Updated in October 2013). SANDAG Data Surfer, accessed October 24, 2017.

[6] Based on SANDAG Series 13 Origin-Destination weekday VMT, provided by SANDAG (March 23, 2017 and November 7, 2017). Weekday VMT were converted to annual VMT using the methods described in *Appendix A: City of Lemon Grove Greenhouse Gas Emissions Inventories and Projections* (EPIC, 2018).

[7] Gross generation is the sum of the forecasted utility electricity sales, electricity generated from behind-the-meter PV systems, additional load from electric vehicles (EVs) and transmission and distribution losses.

[8] The method to project emissions in 2030 is provided in the *Appendix A: City of Lemon Grove Greenhouse Gas Emissions Inventories and Projections* (EPIC, 2018).

4.2.1.1 Supply from SDG&E

SDG&E's power mix includes electricity generated from SDG&E's own power plants and electricity procured by SDG&E (both specified and unspecified sources), known as bundled power. As of 2016, SDG&E's bundled power mix is 43% renewable.[9] SDG&E has already met the 2020 mandate of 33% renewable energy standard required by the Renewables Portfolio Standard (RPS) under SB 100 (de León) (Chapter 312, Statutes of 2016).[10] It is assumed that SDG&E will be at 60% renewable by 2030 and 73% renewable by 2035, in line with the mandates.[11] The RPS mandate is discussed in Section 5.1.

4.2.1.2 Supply from Electric Retail Suppliers of SDG&E Direct Access Customers

Like SDG&E, retail electricity suppliers of SDG&E DA customers are required to meet RPS targets.

4.2.1.3 Supply from Renewables and Zero-Carbon Program

Under CAP Measure E-7, the City would present options to the City Council to increase grid-supply renewable and zero-carbon electricity. It is assumed that such a program would increase the renewable and zero-carbon electricity to 75% in 2030 and 100% in 2035, or 15 percentage points and 17 percentage points beyond the current RPS mandates for 2030 and 2035, respectively.

The renewable and zero-carbon content of the program would affect the citywide weighted average emission factor. Because the RPS requires all of California's retail electricity suppliers to meet the RPS requirement, a portion of the emissions reduction from RPS compliance is credited to State actions. The remaining portion of reductions, beyond 60% in 2030 and 73% in 2035, is attributed to the City under Measure E-7.

4.2.1.4 Supply from behind-the-meter PV Systems

Electricity generation from behind-the-meter PV systems, including residential and non-residential PV systems, is considered a part of the overall electricity supply. Electricity generation from PV is considered 100% zero-carbon (i.e., GHG-free). The State's solar policies and programs, the 2019 California Building Energy Efficiency Standards (Title 24, Part 6) residential PV mandates, and CAP Measure E-1 to E-3 all increase behind-the-meter PV systems in the city; they are discussed in Sections 6.5.1 to Section 6.5.3.

Considering behind-the-meter PV as a supply source that contributes to the citywide emission factor helps to calculate the effects of energy efficiency programs that may reduce behind-the-meter electricity use, or from additional electric vehicle (EV) charging load, which may come from behind-the-meter electricity sources and not just from grid supply.

4.2.1.5 Weighted Average GHG Emission Factor for Electricity

The weighted average GHG emission factor for electricity is based on the percentage of gross generation from each previously referenced supply, as well as the percentage of renewable and zero-carbon content in each supply.

[9] California Energy Commission: 2016 Power Content Label San Diego Gas & Electric.
[10] SB 100 (de León) California Renewables Portfolio Standard Program: emissions of greenhouse gases (2017–2018). The interim RPS targets are 44% by 2024 and 52% by 2027 from eligible renewable energy resources.
[11] 73% renewable by 2035 target is linearly interpolated between the 60% renewable mandate by 2030 and the 100% renewable and zero-carbon mandate by 2045 under SB 100.

Table 5 shows the contribution from each supply to gross generation and its renewable and zero-carbon content, as well as the overall citywide annual weighted average emission factors for 2016, 2030, and 2035.

Table 5 2016 and Projected 2030 and 2035 GHG Emission Factor for Electricity in Lemon Grove

Year		2016	2030	2035
Renewables and Zero-Carbon Program	% of Gross Generation Supplied	-	64%	63%
	Zero-Carbon Content in Supply	-	75%	100%
Other Electric Retail Suppliers	% of Gross Generation Supplied	12%	10%	10%
	Renewable Content in Supply	21%	60%	73%
SDG&E	% of Gross Generation Supplied	82%	6%	7%
	Renewable Content in Supply	43%	60%	73%
Behind-the-meter PV	% of Gross Generation Supplied	6%	20%	20%
	Renewable Content in Supply	100%	100%	100%
Overall Citywide	**Citywide Renewable and Zero-Carbon Supply**	**44%**	**77%**	**95%**
	Electricity Emission Factor (lbs CO_2e/MWh)	**516**	**207**	**42**

lbs CO_2e/MWh – pounds of carbon dioxide equivalent per megawatt hour
2016 is the latest year with utility data available. The 2016 electricity emission factor is used for BAU emissions projections in future years, including 2030 and 2035.
2030 and 2035 data are projections under the CAP based on CAP assumptions, current status, and future impact of State policies and programs.
Energy Policy Initiatives Center 2019.

In 2016, SDG&E and other electric retail suppliers supplied accounted for 94% of the gross generation, and behind-the-meter PV systems supplied the remainder. SDG&E's 2016 bundled emission factor was 525 lbs CO_2e/MWh, resulting in a citywide emission factor of 516 lbs CO_2e/MWh in 2016.[12]

In 2030, the projected electricity supply from behind-the-meter PV systems is estimated to be 20% of gross generation. To comply with the 2030 RPS target, the renewable content in the supply for both SDG&E and other electric retail suppliers will increase to 60%; this document assumes the renewable supply is fixed at the RPS mandate level to avoid overestimating the emissions reduction from their renewable supply. The renewables and zero-carbon program (CAP Measure E-7) is assumed to have 75% renewable and zero-carbon sources in 2030. Based on these supplies' contributions, the citywide annual weighted electricity emission factor in 2030 is projected to be 207 lbs CO_2e/MWh (77% renewable or zero-carbon).[13] Using the same method, the projected citywide electricity emission factor in 2035 would be 42 lbs CO_2e/MWh (95% renewable or zero-carbon).

These annual weighted citywide electricity emission factors are used to calculate the GHG reductions from CAP measures that increase renewable and zero-carbon supply or reduce electricity use.

[12] The SDG&E bundled emission factor is calculated by EPIC and the methodology is reported in the SANDAG Regional Climate Planning Framework (ReCAP) Technical Appendix I, Table 6 (2018).
[13] Starting with SDG&E's 2016 bundled emission factor of 525 lbs CO_2e/MWh (43% renewable), the projected 2030 SDG&E and other electric retail provider's emission factor is 368 lbs CO_2e/MWh (60% renewable) and the projected 2030 local program emission factor is 230 lbs CO_2e/MWh (75% renewable or zero-carbon). The 2030 citywide emission factor is then 230 lbs CO_2e/MWh* 63% + 368 lbs CO_2e/MWh*17%.

4.2.2 Allocation of GHG Emissions Reductions from Actions that Increase Renewables in Electricity to State Actions and Local CAP Measures

The projected citywide electricity emission factor is used to estimate the GHG emissions reductions from any measures that increase the overall renewable and zero-carbon supply. The total reduction resulting from State and local CAP measures to increase renewable and zero-carbon supply is given in Table 6. It is calculated using the projected gross generation in target years, as well as the difference in the 2030 and 2035 citywide emission and BAU emission factors.

Table 6 Emissions Reductions from All Actions Increasing Renewable and Zero-Carbon Supply in Lemon Grove

Year	Gross Generation (GWh)	BAU Projections		Projections with State and Local Actions Increasing Renewable and Zero-Carbon Supply		Emissions Reduction from Increased Renewable and Zero-Carbon Supply (MT CO_2e)
		BAU Electricity Emission Factor (lbs CO_2e/MWh)	BAU Emissions from Electricity (MT CO_2e)	Projected Electricity Emission Factor (lbs CO_2e/MWh)	Projected Emissions from Electricity (MT CO_2e)	
2030	113	516	26,329	207	10,589	15,740
2035	115	516	27,014	42	2,179	24,835

The projections with increasing renewable and zero-carbon supply are based on CAP assumptions and State policies and programs.
Energy Policy Initiatives Center 2019.

The BAU emission factor for 2016 (Table 5) is kept constant through the year 2035, as opposed to using the emission factor for the 2012 baseline year; this is because the additional renewable content in SDG&E's supply and behind-the-meter PV supply in 2016 are already included in the BAU emissions projection.[14]

The total emissions reduction from increasing renewable and zero-carbon supply, as calculated above (Table 6), is attributed to each supply based on its renewable (or zero-carbon, if beyond the RPS mandate) contribution to the total citywide renewable content. This attribution and its impact on GHG reduction from each supply are shown in Table 7.

Table 7 Allocation of Emissions Reductions to Supplies that Increase Renewable (or Zero-Carbon) Supply in Lemon Grove

Year	Electricity Supply	Total	Renewables and Zero-Carbon Program	Other Electric Retail Suppliers	SDG&E	Behind-the-meter PV
2030	% of Gross Generation Supplied by Renewables and Zero-Carbon Sources	77%	48%	6%	4%	20%
	Emissions Reduction from Increased Renewables and Zero-Carbon Supply (MT CO_2e)	15,740	9,691	1,227	791	4,030
2035	% of Gross Generation Supplied by Renewables and Zero-Carbon Sources	95%	63%	7%	5%	20%

[14] The method to project emissions is provided in the *Appendix A: City of Lemon Grove Greenhouse Gas Emissions Inventories and Projections* (EPIC, 2018).

	Emissions Reduction from Increased Renewables and Zero-Carbon Supply (MT CO_2e)	24,835	16,504	1,938	1,239	5,155
2030 and 2035 data are the projections under the CAP, based on CAP assumptions and the future impact of State policies and programs. Energy Policy Initiatives Center 2019.						

4.3 Common Assumptions and Methods for Calculating Natural Gas Emissions Reductions

The default emission factor of 0.0055 MT CO_2e per therm is used for all years to estimate the emissions reductions for the CAP measures related to reducing natural gas use.[15]

4.4 Common Assumptions and Methods for Calculating On-Road Transportation Emissions Reductions

The following assumptions and methods are used to calculate emissions reductions for strategies related to on-road transportation, including federal and State actions and local CAP measures.

4.4.1 GHG Emission Factor for On-Road Transportation

The GHG emission factor for on-road transportation, expressed in grams of CO_2e per mile (g CO_2e/mile), is used in several ways throughout the document. It is used to estimate the effect of State actions to increase the vehicle fuel efficiency standard, the impact of reduced vehicle miles traveled (VMT), and the effect of State and local actions to increase the miles driven by EVs.

The default outputs of CARB's Mobile Source Emissions Inventory EMFAC2014 model are used to determine the average vehicle emission rates for the San Diego region.[16] The average vehicle emission rates for the San Diego region were used as proxies for Lemon Grove. The EMFAC2014 model outputs include effects of all key federal and State regulations related to tailpipe GHG emissions reductions that were adopted before the model release date in 2015.[17] The regulations embedded in the outputs are:

- For passenger cars and light-duty vehicles – Federal Corporate Average Fuel Economy (CAFE) standards and California Advanced Clean Car (ACC) Program[18]
- For heavy-duty vehicles (heavy-duty trucks, tractors, and buses) – U.S. Environmental Protection Agency's Phase-I GHG Regulation and CARB Tractor-Trailer GHG Regulation[19]

[15] Emission factor for natural gas is from California Air Resources Board (CARB), Documentation of California's GHG Inventory – Index.

[16] CARB: Mobile Source Emissions Inventory. EMFAC2014 was the latest model available at the beginning of the CAP development process (early 2018). The latest model is EMFAC2017 released in March 2018.

[17] As of October 2019, California and other states have an on-going lawsuit with the federal government over its decision to revoke the State's power to set tougher vehicle emissions standards than those required by the federal government. However, the official mobile source emissions estimation model used by CARB, EMFAC2014 and the most recent version EMFAC2017, have not been updated to reflect potential changes to the State's ability to set vehicle emissions standards. EPIC will update the projections should these models be revised in future.

[18] The ACC program includes additional standards for vehicle model years 2017–2025, and the Zero Emission Vehicle (ZEV) program requires manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles for 2017–2025 model year vehicles. CARB: EMFAC2014 Technical Documentation, Section 1.4 (v1.0.7 May 2017).

[19] EPA's Phase-I GHG regulation includes GHG emission standards for heavy-duty vehicle model years 2014–2018. CARB's Tractor-Trailer GHG Regulation includes the aerodynamic and tire improvements requirements to reduce GHG emissions from heavy-duty trucks. CARB: EMFAC2014 Technical Documentation, Section 1.4.

Using the EMFAC2014 default output, the average vehicle emission rates (g CO_2/mile) are calculated based on the distribution of VMT for each vehicle class and its emission rate. The results are adjusted to convert from g CO_2/mile to g CO_2e/mile to account for total GHG emissions, including CO_2, CH_4, and N_2O.[20] The average vehicle emission rates (Table 8) are used to estimate the GHG emissions reduction impact of policies that increase vehicle efficiency and increase the number of zero emission vehicles (ZEVs) on the road.[21]

Table 8 Average Vehicle Emission Rate in the San Diego Region

Year	Average Vehicle Emission Rate - with the Impact of all Adopted State and Federal Policies (g CO_2e/mile)
2016	446
2030	297
2035	279
Based on CARB EMFAC2014 Model. The model includes all key federal and State regulations related to tailpipe GHG emissions reductions that were adopted before the model release date in 2015. CARB 2015, Energy Policy Initiatives Center 2019.	

The projected average vehicle emission rates in Table 8 are also used to estimate the emissions reductions from CAP measures that reduce VMT. Because vehicle efficiency improves and the population of ZEVs increases over time, the average vehicle emission rate decreases. Therefore, measures that reduce the same amounts of VMT would lead to decreasing amounts of GHG emissions throughout the CAP horizon.

4.4.2 GHG Emissions Reduction from Increasing Zero Emission Vehicles

CAP Measure *T-2: Install Electric Vehicle Charging Stations at Municipal Facilities* and Measure *T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments* assist in the implementation of the State ZEV program that requires manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles (PHEVs).

The total effect of the ZEV program in future years is estimated by comparing the emissions rate in the BAU projection with no additional policy impacts after 2016 (fixed 2016 ZEV penetration rate for the CAP horizon) and the emissions rate with the impact of the ZEV program (EMFAC2014's default ZEV penetration rate), as shown in Table 9.[22] The BAU projection is based on 2016, not the 2012 baseline year, to be consistent with the projection methodology in the electricity category. The additional 2016 model year vehicle fuel efficiency and ZEVs are already taken into consideration in the BAU emissions projection.

[20] The calculation and adjustment method are described in Section 4.1 of the *Appendix A: City of El Cajon Greenhouse Gas Emissions Inventories and Projections* (EPIC, 2018).
[21] EVs are ZEVs, however, ZEVs may include vehicles with other technologies such as fuel cell vehicles. EMFAC2014 only models the impact of EVs as ZEVs, therefore, in this document EVs and ZEVs are interchangeable.
[22] The method to project emissions is provided in the *Appendix A: City of Lemon Grove Greenhouse Gas Emissions Inventories and Projections* (EPIC, 2018).

Table 9 Emissions Reduction from Increasing Miles Driven by Zero Emission Vehicles

Year	Projected VMT (annual million miles)	BAU Projection - With No Policy Impact after 2016		With Impact of Adopted ZEV Program		Total Emissions Reduction from ZEVs (MT CO_2e)
		BAU Average Vehicle Emission Rate* (g CO_2e/mile)	BAU Emissions from On-Road Transportation (MT CO_2e)	Average Vehicle Emission Rate (g CO_2e/mile)	Emissions from On-Road Transportation (MT CO_2e)	
2030	163	379	61,697	361	58,739	2,959
2035	164	377	61,721	355	58,171	3,550

*Despite the absence of additional policies and programs to increase vehicle efficiency, the BAU average vehicle emission rate decreases with natural turnover of the fleet as newer vehicles replace old vehicles
The 2030 VMT projection is based on the SANDAG Series 13 Growth Forecast. The projected emission rates are the projections under the CAP, including future impact of State policies and programs used in the CARB EMFAC2014 model.
Energy Policy Initiatives Center 2019.

Portions of the total emissions reduction from ZEVs (2,959 MT CO_2e in 2030 and 3,550 MT CO_2e in 2035) are attributed to Measure T-2 and Measure T-3 in proportion to each measure's contribution of EV miles. Table 10 provides the key assumptions and results of the attribution.

Table 10 Allocation of GHG Emissions Reduction from Increasing Zero Emission Vehicles

Year	Projected Miles Driven by EVs of Total VMT	Projected Miles Driven by EVs Due to (annual million miles)			Emissions Reduction from EVs Due to (MT CO_2e)		
		ZEV Program	Measure T-2	Measure T-3	ZEV Program	Measure T-2	Measure T-3
2030	7.6%	12.4	0.3	0.8	2,959	71	196
2035	8.9%	14.5	0.7	1.2	3,550	181	290

Measure T-2: Install Electric Vehicle Charging Stations at Municipal Facilities and Measure T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments.
Projected miles driven by EVs as percent of total VMT are based on the assumptions in the CARB EMFAC2014 model for the San Diego Region. The emissions reduction from EVs is the projection under the CAP, including future impact of State policies and programs used in the CARB EMFAC2014 model and assumptions used for local CAP actions.
Energy Policy Initiatives Center 2019.

Based on the EMFAC2014 model assumptions, in 2030, 7.6% of all VMT in the San Diego region will be driven by EVs, corresponding to 12.4 million miles driven in Lemon Grove. The requirement through Measure T-3 would result in about 0.8 million EV miles in 2030. Therefore, 6% (the ratio of 0.8 million miles to 12.4 million miles) of emissions reductions from the ZEV program are attributed to Measure T-3. The emissions reductions for measure T-2 and target year 2035 are attributed using the same method.

5 FEDERAL AND STATE ACTIONS

Federal and State actions are expected to reduce emissions significantly over the CAP horizon. This section provides a summary of the methods used to estimate the emissions reductions associated with the following federal and State actions to increase renewable electricity, building energy efficiency, and clean and efficient transportation.

- California Renewables Portfolio Standard
- California Solar Programs, Policies and 2019 Mandates
- California Energy Efficiency Programs
- Federal and California Vehicle Efficiency Standards

5.1 California Renewables Portfolio Standard

SB 100, the 100 Percent Clean Energy Act of 2018, adopts a 60% RPS for all of California's retail electricity suppliers by 2030; this increases the current RPS standard from 50% to 60%. The legislation also provides goals for the intervening years before 2030 and establishes a State policy requiring that "zero-carbon" resources supply 100% of all retail electricity sales to end-user customers and all State agencies by December 31, 2045.[23] If interpolated linearly between 60% renewable in 2030 and 100% zero-carbon in 2045, the interim 2035 target would be 73% renewable. The SB 100 renewable and zero-carbon targets are shown in Figure 3 below.

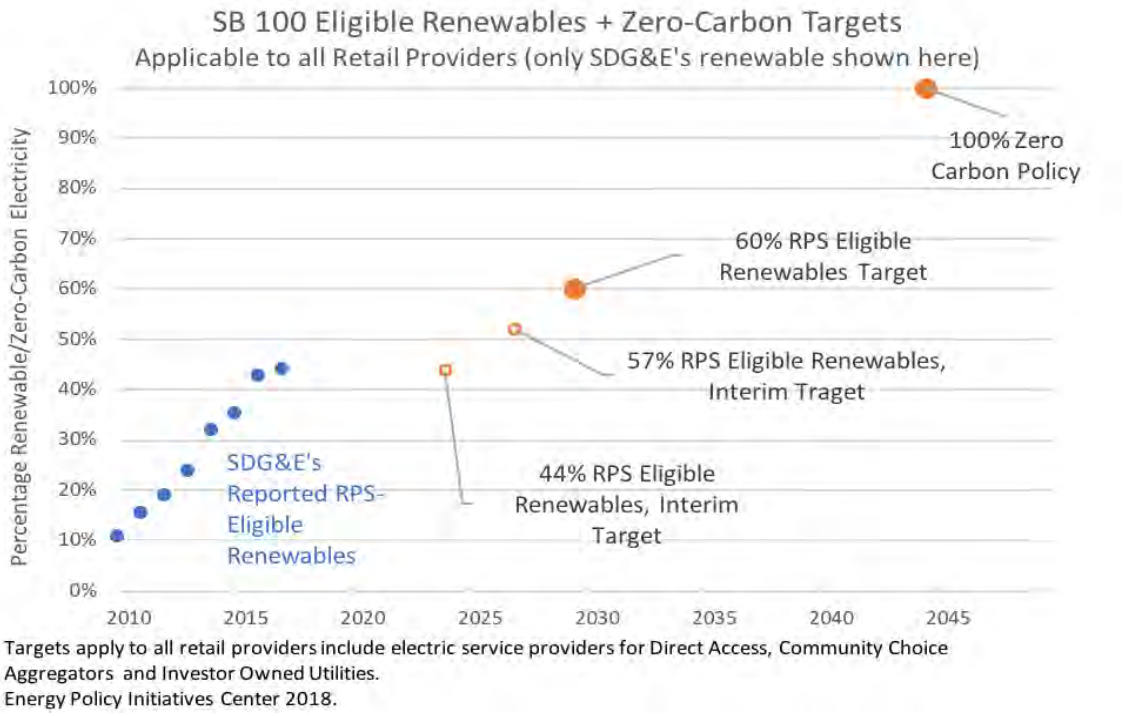


Figure 3 SB 100 Renewables and Zero-Carbon Targets

All retail electricity suppliers are required to meet the State's RPS requirements, including SDG&E, retail electricity suppliers for SDG&E's DA customers, and any other renewables and zero-carbon programs. In this document, a conservative approach is taken that assumes all providers for current utility customers, including electricity sales to DA customers, will meet, but not surpass, the RPS requirements for 2030 and 2035. Under this assumption, all emissions reductions from SDG&E and electric retail suppliers reaching 60% renewables in 2030 and 73% renewables in 2035 are credited to the State under the RPS requirements.

[23] SB 100 (de León): California Renewables Portfolio Standard Program: emissions of greenhouse gases (2017–2018). The interim RPS targets are 44% by 2024 and 52% by 2027 from eligible renewable energy resources.

For the renewables and zero-carbon program considered under Measure E-7, the target is to reach 75% zero-carbon in 2030 and 100% zero-carbon in 2035. A portion of the emissions reductions from the program will be credited to the State under RPS compliance, and the remaining reduction will be attributed to local measure E-7, as described in Section 6.5.4. Table 11 shows results from RPS mandates in target years.

Table 11 Electricity Suppliers and Projected 2030 Emissions Reduction from California Renewables Portfolio Standard

Year	(a) RPS-Related Emissions Reduction from the Utility* (MT CO_2e)	(b) RPS-Related Emissions Reduction from Renewables and Zero-Carbon Program Under Measure E-7 (MT CO_2e)	(a + b) All RPS-Related Emissions Reductions (MT CO_2e)
2030	2,018	7,753	9,771
2035	3,176	12,048	15,224
*Includes SDG&E and electric retail suppliers of SDG&E Direct Access customers. 2030 and 2035 data are projections under the CAP based on current status, future impact of State policies and programs, and CAP measures assumptions. Energy Policy Initiatives Center 2019.			

5.2 California Solar Programs, Policies and 2019 Mandates

5.2.1 Solar Policies and Programs

California has several policies and programs to encourage customer-owned, behind-the-meter PV systems, including the California Solar Initiatives, New Solar Home Partnership, Net Energy Metering, and electricity rate structures designed for solar customers.

The latest California Energy Demand 2018–2030 Revised Forecast, developed by the California Energy Commission (CEC), has projections for behind-the-meter PV generation in the SDG&E planning area through 2030. The demand forecast provides three scenarios: the high demand case, mid-demand case and low demand case. The PV projection from 2018–2030 in the SDG&E planning area mid-demand case forecast is used to project the PV generation in Lemon Grove.[24]

The California Distributed Generation (DG) Statistics database includes capacities of behind-the-meter PV systems interconnected in a jurisdiction in a given year for each of the three Investor Owned Utility (IOUs) planning areas, including SDG&E. The DG Statistics database also provides detailed information about the behind-the-meter PV systems installed in a jurisdiction from the start year of incentive programs through the current year. This provides a historical record used to determine the capacity in GHG inventory years and can also help determine trends in PV installation.

A comparison of the estimated capacity and electricity generation from PV systems in Lemon Grove and in the SDG&E planning area are given in Table 12.[25]

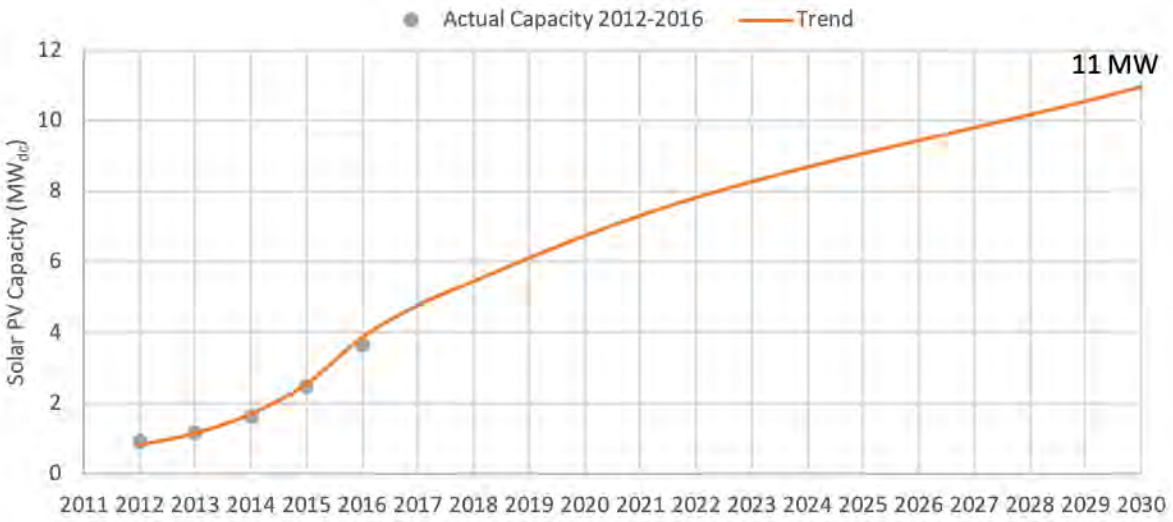
[24] Kavalec et al., 2018. Mid Case Revised Demand Forecast (February 2018). CEC, Electricity Assessments Division. Publication Number: CEC-200-2018-002-CMF, accessed July 11, 2018.
[25] The capacity of all interconnected PV systems in Lemon Grove are from the California Distributed Generation Statistics NEM Currently Interconnected Data Set (current as of May 31, 2017), download date: September 12, 2017.

Table 12 Behind-the-meter PV Capacity and Estimated Electricity Generation

Year	Lemon Grove*		SDG&E Planning Area**	Historical Ratio of Electricity Generation from PV (Lemon Grove to SDG&E)
	PV Capacity (MW)	Estimated Electricity Generation (GWh)	Estimated Electricity Generation (GWh)	
2012	0.9	1.6	238	0.7%
2013	1.2	2.0	335	0.6%
2014	1.6	2.8	496	0.6%
2015	2.4	4.3	744	0.6%
2016	3.7	6.4	1,129	0.6%
			Average	0.6%

*Estimated electricity generation based on PV capacity and 20% capacity factor.
**California Energy Demand 2018–2030 Revised Forecast mid-demand case (February 2018 version).
California Distributed Generation Statistics 2017, CEC 2018, Energy Policy Initiatives Center 2019.

For future years, the electricity generation and capacity of behind-the-meter PV systems in the City are estimated based on the PV generation in CEC's mid-demand forecast for SDG&E's planning area, and the average ratio of PV generation in the City to that of SDG&E's planning area from 2012–2016 (0.6%). Because of California's solar programs and policies, the estimated PV capacity in 2030 in Lemon Grove is projected to be 11 megawatts (MW). It is assumed the PV capacity from State programs will remain at 11 MW due to the lack of statewide PV projections beyond 2035. The trend of behind-the-meter PV in the City is shown in Figure 4.



Source of historical capacity: California Distributed Generation Statistics, 2017.
Source of capacity trend: California Energy Demand 2018-2030 Revised Forecast in San Diego planning area, mid-demand scenario (Feburary 2018 version). The forecast does not include the additional PV installation due to 2019 Title 24 PV mandates or local CAP measures.
Energy Policy Initiatives Center, 2018.

Figure 4 Behind-the-meter PV Historical and Projected Trend in Lemon Grove (2012–2030)

5.2.2 2019 Building Energy Efficiency Standards PV Mandates

The new California 2019 Building Energy Efficiency Standards, which go into effect on January 1, 2020, require all newly constructed single-family homes, low-rise multi-family homes, and detached accessory dwelling units (ADUs) to have PV systems installed, unless the building receives an exception.[26]

The San Diego Association of Governments (SANDAG) Series 13 Forecast assumes that approximately 40 new single-family homes and 500 new multi-family homes will be added in Lemon Grove from 2020 to 2035.[27] In this document, it is assumed that all new single-family and low-rise multi-family homes are subject to the mandate. For the PV system size requirement of each housing unit type, the minimum size required by the 2019 Building Energy Efficiency Standards is calculated based on the average unit size of the housing type, as shown in Table 13.[28]

[26] CEC: 2019 Building Energy Efficiency Standards – 2019 Residential Compliance Manual (December 2018). For the requirements on newly constructed single-family and low-rise multi-family homes, see Section 7.2 Prescriptive Requirements for Photovoltaic System. For the requirements on newly constructed and detached ADU, see Section 9.3.5 Accessory Dwelling Units (ADUs).
[27] SANDAG Series 13 Regional Growth Forecast (October 2013). SANDAG Data Surfer, accessed October 24, 2017.
[28] Average unit size based on 2019 Building Energy Efficiency Standard Computer Compliance Program (CBECC-Res 2019.1.0) prototype homes.

Table 13 Estimated PV Requirement for New Homes after 2020 in Lemon Grove

Housing Unit Type	Average Size of Unit (sq. ft.)*	Minimum PV Required for the Unit Size (kW_{dc})**
Single-family	2,700	2.7
Multi-family	870	1.7
* Based on the prototype home. ** Calculated based on unit size (sq. ft.) and 2019 Building Energy Efficiency Standards Residential Compliance Manual Equation 7-1 and Table 7-1. Lemon Grove is in Climate Zone 7. Energy Policy Initiatives Center 2019.		

It is assumed that 20% of the new homes would be exempt for other reasons, which is consistent with the assumptions in the CEC's mid-case scenario for additional achievable PV.[29] The Energy Demand 2018–2030 Revised Forecast already assumes that a certain percentage of new single-family homes will install PV systems regardless of these mandates; therefore, the result of the PV mandate is assumed to be the additional installation not captured in the Forecast and beyond the baseline assumption for single-family PV installation. The numbers of new homes with PV systems as a result of the PV mandate, as well as the estimated minimum system capacity, are given in Table 14. The numbers of new homes with PV systems and capacity are those added between 2020 and 2030, and between 2020 and 2035.

Table 14 New Homes with PV Systems after 2020 in Lemon Grove

Year	New Single-family Homes after 2020 with PV Systems due to State Mandates		New Multi-family Homes after 2020 with PV Systems due to State Mandates		All New Homes after 2020 with PV Systems due to State Mandates	
	Number of Additional Homes with PV Systems	PV System Capacity (MW)	Number of Homes with PV Systems	PV System Capacity (MW)	PV System Capacity (MW)	Estimated Electricity Generation (MWh)
2030	14	38	368	626	0.7	1,162
2035	28	74	426	724	0.8	1,398
PV system capacities are the additional capacities in 2030 and 2035 from all systems added to new homes after 2020 as a result of PV mandates. The capacities do not include existing PV, PV installation at new single-family homes already shown in the projection in Figure 4, or PV added on other new non-residential projects. Energy Policy Initiatives Center 2019.						

5.2.3 All Solar Policies, Programs and Mandates

The California Energy Demand 2018–2030 Revised Forecast, discussed in Section 5.2.1, does not include the additional impact of the 2019 PV mandates; therefore, the PV installation trend shown in Figure 4 does not include the additional MW PV capacity from new homes after 2020.[30] The total estimated PV

[29] This approach is consistent with the CEC's additional achievable PV forecast mid-case scenario for single-family homes. CEC's forecasts do not model the impact of PV mandates on low-rise multi-family homes. Personal communication with CEC staff, December 14, 2018.

[30] The 2018–2030 Revised Forecast assumes a percentage of new single-family homes will install PV systems without the mandates. The 2020–2030 percentages vary by year. However, it does not model the impact of PV mandates on low-rise multi-family homes. Personal communication with CEC staff, December 14, 2018.

capacity in Lemon Grove resulting from California solar policies, programs, and PV mandates is projected to be 11.6 MW in 2030 and 11.8 MW in 2035.

Through CAP *Measure E-4: Increase Renewable Energy Generation at Non-residential and Multi-Family Developments,* the City plans to require PV installation at new non-residential development. Like the residential PV mandates, this measure is not captured in the Energy Demand Forecast and would result in additional PV installations. CAP *Measure E-5: Achieve Zero Net Energy Municipal Operations* and *Measure E-6: Require New Residential Uses to be All-Electric* would also both result in additional PV installations. The estimated PV capacities as a result of Measures E-1 through E-3 would be 1.1 MW in 2030 and 1.3 MW in 2035, as discussed in detail in Sections 6.5.1 through 6.5.3, which brings the projected total PV capacity in the city to be 12.7 MW in 2030 and 13.1 MW in 2035.

The emissions reductions from all State and CAP measures that increase behind-the-meter renewable supply are 4,030 MT CO_2e in 2030 and 5,155 MT CO_2e in 2035, as shown in Table 7 (Allocation of Emissions Reductions to Supplies that Increase Renewable (or Zero-Carbon) Supply in Lemon Grove). The total reduction is allocated based on estimated capacity (MW) that would result from each action. As shown in Table 15, GHG emissions reductions are the projected reduction amounts in the years 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035.

Table 15 Key Assumptions and Results for California Solar Policies, Programs and Mandates

Year	State or City Action	Total	Measure E-4: Increase Renewable Energy Generation at Non-residential and Multi-Family Developments	Measure E-5: Achieve Zero Net Energy Municipal Operations	Measure E-6: Require New Residential Uses to be All-Electric and Generate Renewable Energy On-site*	California Solar Policies, Programs, and Mandates **
2030	Projected Behind-the-meter PV Capacity (MW)	12.7	0.2	0.7	0.2	11.6
	Projected Emissions Reduction (MT CO_2e)	4,030	72	212	70	**3,676**
2035	Projected Behind-the-meter PV Capacity (MW)	13.1	0.4	0.7	0.3	11.8
	Projected Emissions Reduction (MT CO_2e)	5,155	140	264	110	**4,640**

*Does not represent all emissions reduction from E-6.
**Solar policies, programs and mandates include the impact of the PV mandates from the 2019 Building Energy Efficiency Standard. The projected capacity and emissions reductions based on current conditions, the future impact of State policies and programs, and CAP assumptions.
Energy Policy Initiatives Center 2019.

In 2030, 91% (11.6 MW out of 12.7 MW) of the projected citywide PV capacity will be due to State polices, programs, and mandates; therefore, 91% of the total emissions reduction from increasing behind-the-meter PV (4,030 MT CO_2e) is allocated to this State action (3,676 MT CO_2e). The reductions and allocations from other measures and in target year 2035 are calculated using the same method.

5.3 California Energy Efficiency Program

In September 2017, the California Public Utilities Commission (CPUC) adopted energy efficiency goals for ratepayer-funded energy efficiency programs (Decision 17-09-025); these went into effect in 2018. The

adopted energy saving goals for SDG&E's service territory are given in the Decision on an annual basis from 2018 to 2030.[31] The sources of the energy savings include, but are not limited to, rebated technologies, building retrofits, behavior-based initiatives, and codes and standards.[32]

To evaluate the impact of the energy efficiency program on Lemon Grove, the total energy savings in SDG&E's service territory by 2030 are allocated to the City using a ratio of the City's natural gas and electricity demand to those of SDG&E's entire service territory. In the past three years, the ratios have been 0.5% for electricity and 0.6% for natural gas.[33] SDG&E's service territory electricity and natural gas savings were allocated accordingly to Lemon Grove, as shown in Table 16.[34]

Table 16 Estimated Energy Savings from California Energy Efficiency Program

Year	Electricity Savings* (GWh)		Natural Gas Savings (Million Therms)	
	SDG&E Service Territory	Allocation of Savings to Lemon Grove	SDG&E Service Territory	Allocation of Savings to Lemon Grove
2030	3,564	17	60	0.3

*Include transmission and distribution losses.
SDG&E service territory savings are the cumulative savings after 2018 based on the 2018–2030 annual saving goals in CPUC Decision 17-09-025.
Energy Policy Initiatives Center 2019.

The utility's energy efficiency goal is not estimated by the CPUC beyond 2030; therefore, it is assumed the electricity and natural gas savings in 2035 from energy efficiency programs will be the same as in 2030. Emissions reductions from electricity savings are calculated by multiplying the electricity savings by the citywide GHG emission factor for electricity, discussed in Section 4.2.1 (GHG Emission Factor for Electricity) and shown in Table 5 (2016 and Projected 2030 and 2035 GHG Emission Factor for Electricity in Lemon Grove). As the renewable and zero-carbon content in electricity increases, the emissions reduction from the electricity portion of the energy efficiency program decreases. Emissions reductions from natural gas savings were calculated using the natural gas savings amount and natural gas emission factor. Table 17 summarizes the energy savings and GHG emissions reductions in years 2030 and 2035.

[31] CPUC: Decision 17-09-025, Adopting Energy Efficiency Goals for 2018–2030, accessed December 12, 2018. SDG&E's electricity service territory is larger than San Diego region.
[32] Navigant Consulting: Energy Efficiency Potential and Goals Study for 2018 and Beyond (August 2017), accessed December 12, 2018. Rebated technologies are the energy efficiency technologies from the utility's historic incentive programs, including equipment and retrofits.
[33] SDG&E's service territory demand is from California Energy Demand 2018–2030 Revised Forecast, SDG&E's planning area load 2014–2016. 2016 is the latest year with historical data in the demand forecast. Electricity and natural gas demand in Lemon Grove were provided to EPIC by SDG&E for the GHG inventory. *Appendix A: City of Lemon Grove Greenhouse Gas Emissions Inventory and Projection* (EPIC, 2018).
[34] CPUC: Decision 17-09-025, Adopting Energy Efficiency Goals for 2018–2030, accessed December 12, 2018. The 2018 and beyond goals are given on an annual basis for each year from 2018 to 2030, different from previous studies, in which the cumulative goals are given. The cumulative savings in 2030 from 2018 are the sum of the annual savings.

Table 17 Emission Reductions from California Energy Efficiency Programs

Year	Electricity Savings			Natural Gas Savings			Total Emissions Reduction (MT CO_2e)
	Electricity Savings (GWh)	Emission Factor (lbs CO_2e/MWh)	GHG Reduction from Electricity Savings (MT CO_2e)	Natural Gas Savings (million therms)	Emission Factor (MT CO_2e/therm)	GHG Reduction from Natural Gas Savings (MT CO_2e)	
2030	17	207	1,555	0.3	0.0055	1,848	3,404
2035	17	42	312	0.3	0.0055	1,848	2,160
The emissions reductions are projected based on CAP assumptions and future impact of State policies and programs. Energy Policy Initiatives Center 2019.							

5.4 Federal and California Vehicle Efficiency Standards

As discussed in Section 4.4 (Common Assumptions and Methods for Calculating On-Road Transportation Emissions Reductions), CARB's EMFAC2014 model includes all key federal and State regulations related to tailpipe GHG emissions reductions for both light-duty and heavy-duty vehicles that were in place before the 2015 model release date.

Table 18 compares the average vehicle emission rate and emissions from on-road transportation under the BAU projection, as well as with the impact of policies that increase vehicle efficiency and ZEVs. As discussed in Section 4.4.2 (GHG Emissions Reduction from Increasing Zero Emission Vehicles), to avoid double-counting, the maximum emission reductions related to all measures in the CAP facilitating ZEV-driven miles are set at the amount expected from statewide programs and policies.

In order to attribute these reductions to the City, the effects of *Measure T-2: Install Electric Vehicle Charging Stations at Municipal Facilities* and *Measure T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments* are subtracted from the maximum emissions reductions from State policies. Table 18 summarizes the key assumptions and results. The GHG emissions reductions are the projected reduction amount in the years 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035

Table 18 Key Assumptions and Results for Federal and California Vehicle Efficiency Standards

Year	Projected City VMT (annual million miles)	BAU Projection - With No Policy Impact after 2016		With Impact of Adopted Statewide Policies		Emissions Reduction ($MT CO_2e$)		
		Average Vehicle Emission Rate* (g CO_2e/mile)	Emissions from On-Road Transportation ($MT CO_2e$)	Average Vehicle Emission Rate (g CO_2e/mile)	Emissions from On-Road Transportation ($MT CO_2e$)	With Impact of Adopted Statewide Policies	From CAP Measure T-2 and T-3	Remaining from Statewide Policies
2030	163	379	61,697	297	48,312	13,386	267	13,119
2035	164	377	61,721	279	45,709	16,012	471	15,541

*Despite the absence of additional policies and programs to increase vehicle efficiency, the BAU average vehicle emission rate decreases with natural fleet turnover as new vehicles replace old vehicles
Measure T-2: Install Electric Vehicle Charging Stations at Municipal Facilities and Measure T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments.
The 2030 VMT projections are based on SANDAG's Series 13 Growth Forecast. The emission rates and emissions reductions are projected based on CAP assumptions and future impact of State policies and programs used in the CARB EMFAC2014 model.
Energy Policy Initiatives Center 2019.

6 CAP STRATEGIES AND MEASURES

The following section describes the methods used to estimate the GHG reductions from local CAP measures, which are organized into the following eight strategies:[35]

- Strategy 1: Increase the Use of Zero-Emission or Alternative Fuel Vehicles (T)
- Strategy 2: Reduce Fossil Fuel Use (T)
- Strategy 3: Reduce Vehicle Miles Traveled (T)
- Strategy 4: Increase Building Energy Efficiency (E)
- Strategy 5: Increase Renewable and Zero-Carbon Energy (E)
- Strategy 6: Increase Water Efficiency (W)
- Strategy 7: Reduce and Recycle Solid Waste (S)
- Strategy 8: Carbon Sequestration (C)

6.1 Strategy 1: Increase the Use of Zero-Emission or Alternative Fuel Vehicles (T)

The goal of this strategy is to reduce on-road transportation fossil fuel use by increasing the use of ZEVs or alternative fuel vehicles (AFVs) citywide through the following four measures.

6.1.1 Measure T-1: Transition to a Clean and More Efficient Municipal Vehicle Fleet

At the time of municipal vehicle replacement, the City plans to convert light-duty vehicles to EVs or other types of ZEVs, and convert diesel vehicles to AFVs.

The average annual Lemon Grove municipal fleet fuel use, which was used as the baseline, is 7,400 gallons of gasoline and 2,300 gallons of diesel.[36] Assuming the municipal fleet fuel use does not increase

[35] Transportation (T), Energy (E), Water (W), Solid Waste (S) and Carbon Sequestration (C).
[36] Average annual fuel use from 2015 to 2018. Monthly fuel uses of the municipal fleet are provided by the City (July 2019).

from bassline, the targets to reduce fuel use are 20% from the baseline by 2030 and 40% by 2035, and the GHG emissions reductions in 2030 and 2035 are shown in Table 19.[37]

Table 19 Key Assumptions and Results for Measure T-1: Transition to a Clean and More Efficient Municipal Vehicle Fleet

Year	Reduction in Gasoline Use			Reduction in Diesel Use			Total Emissions Reduction (MT CO_2e)
	Gasoline Reduction (gallons)	Gasoline Carbon Content* (lbs CO_2/gallon)	Emissions Reduction (MT CO_2e)	Diesel Reduction (gallons)	Diesel Carbon Content (lbs CO_2/gallon)	Emissions Reduction (MT CO_2e)	
2030	1,485	17.8	12	455	22.4	5	17
2035	2,970	17.8	24	910	22.4	9	33

*California gasoline blend has 10% ethanol.
The emissions reduction is based on the projection under the CAP assumptions.
Energy Policy Initiatives Center 2019

6.1.2 Measure T-2: Install Electric Vehicle Charging Stations at Municipal Facilities

The City plans to add publicly-available electric vehicle charging stations (EVCSs) at City facilities for City staff or contractors to charge their vehicles, or for charging municipal vehicles for business use within the City.[38] The goal is to add six EVCSs by 2030 and an additional nine by 2035, for a total of 15 EVCSs.

For the EVCSs, it is assumed that Level 2 or better chargers will be installed and the chargers will be available for use during City business hours, with approximately five hours of charging a day per charger.[39] The EV miles resulting from the EVCSs are estimated based on the charging capacity of a Level 2 charger, EV drive efficiency, and hours in use, as shown in Table 20.[40] On average, it is assumed that 49,343 EV miles per year are attributed to charging at an EVCS located at a City facility, and the EVCS would be at least a high capacity Level 2 charger

[37] Gasoline carbon content is based on estimates from U.S. Energy Information Administration. Frequently Asked Questions, accessed on October 24, 2018. CEC: Ethanol in California, accessed November 26, 2019.
[38] The EVCSs would not be used to charge the municipal fleet, to avoid double counting with Measure T-1.1.
[39] Idaho National Laboratory: Plugged In: How Americans Charge Their Electric Vehicles. Based on the study, public Level 2 charging stations at parking lots and garages serving multiple venues have the potential to support 7 to 11 charges per day. The estimated number of charging hours is based on this potential and the minimum vehicle dwell time of 30 minutes.
[40] The Level 2 charger capacity range comes from the Center for Sustainable Energy: Electric Vehicle Charging Station Installation Best Practice (June 2016). The vehicle drive efficiency assumption is based on Bedir et al., 2018. California Plug-In Electric Vehicle Infrastructure Projections: 2017–2025. CEC. Publication Number: CEC-600-2018-001.

Table 20 Electric Vehicle Charging Efficiency by Level 2 Charger Type

Type of Charging (Level 2)	Capacity (kW)*	Hours in Use per Day	EV load (kWh/day)	Vehicle Drive Efficiency (kWh/mile) **	EV miles per Day of Charge	EV miles per Year per Commercial EVCS
Low	3.3	5	20	0.25	66	16,830
Medium	6.6	5	40	0.25	132	33,660
High	9.6	5	58	0.25	192	48,960
Highest	19.2	5	115	0.25	384	97,920
					Average	49,343

*Based on Electric Vehicle Charging Station Installation Best Practice, Center for Sustainable Energy, 2016.
**Based on CEC Plug-in Electric Vehicle Infrastructure Projections: 2017–2025 vehicle driven efficiency assumptions.
Assume chargers are used on workdays only (255 days per year) at City facilities.
Energy Policy Initiatives Center 2019.

The GHG emissions reduction is estimated based on the ratio of projected EV miles due to Measure T-1.2 to the total EV miles from EMFAC2014 model estimates, as discussed in Section 4.4.2 (GHG Emissions Reduction from Increasing Zero Emission Vehicles) and shown in Table 10 (Allocation of GHG Emissions Reduction from Increasing Zero Emission Vehicles). It is assumed that all EV miles driven by City employees and contractors are within the City. The number of EVCSs, projected EV miles, and GHG emissions reduction in 2030 are shown in Table 21.

Table 21 Key Assumptions and Results for Measure T-2: Install Electric Vehicle Charging Stations at Municipal Facilities

Year	Number of Public EVCSs at City Facilities	EV Miles Charged at Public EVCSs	Emission Reduction (MT CO_2e)
2030	6	296,055	71
2035	15	740,138	181

The emissions reduction is projected based on CAP assumptions and future impact of State policies and programs used in the CARB EMFAC2014 model.
Energy Policy Initiatives Center 2019.

6.1.3 Measure T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments

To facilitate the increasing demand of EV infrastructure at commercial developments and multi-family homes, the City will present an ordinance to the City Council in 2021 requiring the following developments to install EVCSs at 5% of total parking spaces: 1) new multi-family and commercial developments, and 2) multi-family and major commercial renovations and additions with a permit value of $100,000 or more. The estimated effective year of the ordinance is 2022.

Based on recent permitting data, approximately 6,800 square feet (sq. ft.) of commercial development would have been subject to the EV requirement on average per year. [41] The Lemon Grove Municipal

[41] The average annual new commercial development sq. ft. is calculated based on the sq. ft. new projects added in 2017 and 2018, as provided by the City (August 2019). The sq. ft. is new gross floor area added each year include additions, patio cover projects, etc.

Code off-street parking regulations require approximately one parking space per 500 sq. ft. gross floor area; therefore, approximately 14 parking spaces will be added every year at these new commercial developments.[42] For the EVCSs, it is assumed that Level 2 chargers, or better, will be installed and that the charging profile will be similar to the one described in Table 20. However, the EVCSs will be available daily and over a longer period of time compared to the EVCSs at municipal facilities because of longer business hours, leading to an of 84,753 additional EV miles per year on average.[43]

The estimated number of new EVCSs and EV miles due to the requirement for new commercial development in Measure T-3 is shown in Table 22.

Table 22 Assumptions for New Commercial Electric Vehicle Charging Stations under Measure T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments

Year	New Annual Commercial Development Space Added after 2022* (sq. ft. per year)	Total Number of New Parking Spaces at Commercial Developments after 2022	% of Parking Spaces with EVCSs	Number of New EVCSs after 2022	Annual EV Miles Charged at the EVCSs (miles per year)	Annual Lemon Grove EV Miles due to the EVCS** (miles per year)
2030	6,800	122	5%	6	420,138	212,959
2035	6,800	190	5%	9	653,547	331,269

*New gross floor area. Based on recent years' new development data.
**The difference between the "Annual EV Miles Charged at the EVCSs" and the "Annual Lemon Grove EV Miles" is due to the allocation of miles to jurisdictions in the methodology. Not all the charging will result in miles driven only in Lemon Grove. 51% of all EV miles are allocated to Lemon Grove based on the Origin-Destination VMT allocation methods, assuming trips driven by EVs will have at least one trip-end within Lemon Grove.
The number of parking spaces is based on Lemon Grove off-street parking requirements and assumes 10% of new commercial development would qualify for an exemption of the requirement. The projections are based on the current conditions and CAP assumptions.
Energy Policy Initiatives Center 2019.

Similarly, an annual average of 12,000 sq. ft. of major commercial renovations and additions valued at $100,000 or greater were permitted in the past five years. Assuming this trend continues, approximately 12,000 sq. ft. of major commercial renovations and additions per year will be subject to the requirement beginning in 2022.[44] Given the off-street parking requirement of one space per 500 sq. ft. of floor area, approximately 24 parking spaces will be added every year with these sites.[45] For the EVCSs, it is assumed the charging profile will be the same as the ones installed at new commercial projects.

The estimated number of new EVCSs and EV miles due to the requirement for major renovations and additions in Measure T-3 is shown in Table 23.

[42] Lemon Grove Municipal Code: Off-street Parking Requirement (Section 17.24.010), accessed on August 12, 2019. The minimum parking requirements for retail, office, vehicle service and manufacturing are all one space per 500 sq. ft. of floor area.
[43] Assuming the EVCSs are available 365 days a year and each EVCS is in use at least six hours a day.
[44] The average annual commercial major renovations and additions sq. ft. value is calculated based on the floor area of projects meeting the criteria in the last five years, as provided by the City (August 2019). Only the commercial project data are available, multi-family project data are not available.
[45] Lemon Grove Municipal Code: Off-street Parking Requirement (Section 17.24.010), accessed on August 12, 2019. The minimum parking requirements for retail, office, vehicle service and manufacturing are all one space per 500 sq. ft. of floor area.

Table 23 Assumptions for New Commercial Electric Vehicle Charging Stations under Measure T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments

Year	Commercial Major Renovations after 2022* (sq. ft. per year)	Total Number of New Parking Spaces at Commercial Major Renovations after 2022	% of Parking Spaces with EVCSs	Number of New EVCSs after 2022	Annual EV Miles Charged at the EVCSs (miles per year)	Annual Lemon Grove EV Miles due to the EVCS** (miles per year)
2030	12,000	216	5%	10	741,419	375,810
2035	12,000	336	5%	15	1,153,319	584,593

* Gross floor area. Based on recent years' data on major renovations and additions with a permit valued at $100,000 or greater.
** The difference between the "Annual EV Miles Charged at the EVCSs" and the "Annual Lemon Grove EV Miles" is due to the allocation of miles to jurisdictions in the methodology. Not all the charging will result in a miles driven only in Lemon Grove. 51% of all EV miles are allocated to Lemon Grove based on Origin-Destination VMT allocation methods, assuming trips driven by EVs will have at least one trip-end within Lemon Grove.
The number of parking spaces is based on Lemon Grove off-street parking requirements and assumes 10% of the projects would qualify for exemption of the requirement. The projections are based on the current conditions and CAP assumptions.
Energy Policy Initiatives Center 2019.

For multi-family development in the City, SANDAG Series 13 projects that 398 new multi-family units will be added from 2022 to 2030, and an additional 72 units will be added from 2030 to 2035.[46] The Lemon Grove Municipal Code off-street parking regulations require two (2) parking spaces for each multi-family unit.[47] At new multi-family developments, the EVCSs will be used to charge the residents' personal EVs. Based on the EMFAC2014 model, approximately 35 miles per day are driven by EVs in the San Diego region.[48] The estimated number of new EVCSs and EV miles are shown in Table 24.

Table 24 Assumptions for Multi-family New Electric Vehicle Charging Stations under Measure T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments

Year	Number of New Multi-Family Units after 2022*	Number of New Parking Spaces at Multi-Family Developments after 2022	% of Parking Spaces with EVCS	Number of New EVCSs after 2022	Annual EV Miles Charged at the EVCSs (miles per year)	Annual Lemon Grove EV Miles due to the EVCS** (miles per year)
2030	398	795	5%	36	457,141	231,715
2035	470	939	5%	42	539,923	273,675

*Based on SANDAG Series 13 Regional Growth Forecast.
** The difference between the "Annual EV Miles Charged at the EVCSs" and the "Annual Lemon Grove EV Miles" is due to the allocation of miles to jurisdictions in the methodology. Not all the charging will result in miles driven only in Lemon Grove. 51% of all EV miles are allocated to Lemon Grove based on Origin-Destination VMT allocation methods, assuming trips driven by EVs will have at least one trip-end within Lemon Grove.
The number of parking spaces is based on Lemon Grove off-street parking requirements and assumes 10% of new multi-family development would qualify for exemption of the requirement. The projections are based on the current conditions and CAP assumptions.
Energy Policy Initiatives Center 2019.

[46] SANDAG Series 13 Regional Growth Forecast (October 2013). SANDAG Data Surfer, accessed October 24, 2017. The annual new multi-family units added are estimated using linear interpolation between 2020 and 2030.
[47] Lemon Grove Municipal Code: Off-street Parking Requirement (Section 17.24.010), accessed on August 12, 2019. The minimum parking requirements are different for studio and other apartments, the average is used here.
[48] CARB: Mobile Source Emissions Inventory. EMFAC2014 San Diego County 2020–2030 estimates.

The GHG emissions reduction from this measure is estimated based on the ratio of projected EV miles due to this Measure T-3 to the total EV miles from EMFAC2014 model estimates, as discussed in Section 4.4.2 (GHG Emissions Reduction from Increasing Zero Emission Vehicles) and shown in Table 10 (Allocation of GHG Emissions Reduction from Increasing Zero Emission Vehicles). The total number of parking spaces with EVCSs, projected EV miles, and GHG emissions reductions are shown in Table 25. The GHG emissions reductions are the projected reduction amounts in 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035.

Table 25 Key Assumptions and Results for Measure T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments

Year	Number of EVCS added due to the Ordinance	Annual Lemon Grove EV Miles due to the EVCSs (miles per year)	Emissions Reduction (MT CO_2e)
2030	51	820,483	196
2035	66	1,189,538	290
The emissions reduction is projected based on CAP assumptions and future impact of State policies and programs used in the CARB EMFAC2014 model. Energy Policy Initiatives Center 2019.			

6.1.4 Measure T-4: Transition to an Electric School Bus Fleet

The Grossmont Union High School District's (GUHSD) boundary covers Lemon Grove, and operates school bus service for the Lemon Grove School District (LGSD, K-8 schools). GUHSD has plans to transition from diesel to electric school buses.

GUHSD received a grant to purchase up to 10 electric school buses and related infrastructure to replace their diesel buses. The oldest diesel buses will be replaced first, with a potential new bus delivery date in late 2019.[49] However, GUHSD's district boundary is larger than Lemon Grove and covers the cities of Santee and El Cajon, as well as communities in the unincorporated County of San Diego (e.g., Alpine). The information on which routes will be replaced by electric buses or the number of buses serving schools in Lemon Grove was not available at the time of CAP development. Through this Measure T-4, the City will work with GUHSD to tracking the diesel consumption of buses serving only Lemon Grove and convert all buses serving Lemon Grove to electric buses. It is assumed that approximately 15% of GUHSD's school bus diesel consumption is for operating buses serving only Lemon Grove schools.[50] Based on this assumption, the GHG emissions reductions in 2030 and 2035 are shown in Table 26.[51]

[49] Based on information provided by GUHSD to EPIC during the El Cajon CAP development process, not through the Lemon Grove CAP development process.

[50] Fuel use for buses servicing Lemon Grove schools specifically is not available at the time of this CAP development. The percentage of fuel use is estimated based on the number of schools in each jurisdiction and assumes that some schools in the unincorporated County of San Diego do have school bus service.

[51] The carbon content of diesel is based on estimates from U.S. Energy Information Administration. Frequently Asked Questions, accessed October 24, 2018. The 2018 GUHSD diesel fuel use was estimated to be 170,033 gallons based on information provided by GUHSD to EPIC during the El Cajon CAP development process, not through the Lemon Grove CAP development process.

Table 26 Key Assumptions and Results for Measure T-4: Transition to an Electric School Bus Fleet

Year	School Bus Diesel Reduction (gallons)*	GHG Emission from Diesel (lbs CO_2/gallon)	GHG Emissions Reduction (MT CO_2e)
2030	17,003	22.4	173
2035	25,505	22.4	259
*Diesel consumption of buses serving schools within Lemon Grove is not available. Assumes 15% of GUHSD's diesel school bus fuel use is for schools in Lemon Grove only and will be replaced fully in 2035. The emissions reduction is based on the projections under the CAP assumptions. Energy Policy Initiatives Center 2019.			

6.2 Strategy 2: Reduce Fossil Fuel Use (T)

The goal of this strategy is to reduce on-road transportation fossil fuel use by improving traffic flow and to reduce off-road vehicle and equipment fuel use through increasing renewable or alternative fuel use. The strategy includes the following two measures.

6.2.1 Measure T-5: Synchronize Traffic Signals

The City plans to synchronize traffic signals through major corridors citywide and participate in the Regional Arterial Management System. The goal is to synchronize traffic signals at 30 intersections by 2035 to obtain more efficient fuel use through smoother traffic flow.

The effect of traffic signal synchronization on fuel reduction depends on the traffic volume, number of intersections, and size of the intersections on the arterials. Based on the study of a project of similar size, the annual fuel savings per intersection is around 2,400 gallons.[52] However, as the vehicles in the region become more efficient and the number of ZEVs increases, fuel savings per synchronized intersection will decrease in future years. Assuming the 2,400 gallons of annual fuel savings per intersection could be realized in the 2012 CAP baseline year, the increase in vehicle fuel efficiency would reduce the fuel savings to approximately 1,500 gallons in 2030, and 1,400 gallons in 2035.[53] The GHG emissions reductions in 2030 and 2035 from traffic signal synchronization are shown in Table 27.[54]

[52] Sunkari: The Benefits of Retiming Traffic Signals (2004). The Jacksonville traffic signal retiming project at a 25-intersection section resulted in estimated annual fuel savings of 65,000 gallons.
[53] The average vehicle emission rate in 2030, 297 g CO_2e/mile, is 39% less than that in 2012, 483 g CO_2e/mile, as discussed in Section 4.4.
[54] Emissions per gallon of fuel use for an average vehicle calculated based on 2030 CO_2 emissions from on-road transportation and total vehicle fuel use.

Table 27 Key Assumptions and Results for Measure T-5: Synchronize Traffic Signals

Year	Number of Intersections with Traffic Signal Synchronization	Increase in Vehicle Fuel Efficiency Comparing with Baseline Year 2012	Equivalent Fuel Saving per Intersection (gallon per year)	Fuel Saving from All Intersections (gallon/year)	GHG Emission for Fuel* (lbs CO_2e/gallon)	GHG Emissions Reduction (MT CO_2e)
2030	20	39%	1,474	29,471	18.5	248
2035	30	42%	1,386	41,578	18.5	349

*Emissions per gallon of fuel use for an average vehicle in the San Diego region, regardless of fuel type, vehicle type, or fuel economy. Increases in vehicle fuel efficiency in 2030 and 2035 compared with 2012 are based on the decreases in the average vehicle emission rates in the San Diego region. The 2012 annual fuel saving per intersection is assumed to be about 2,400 gallons.
The emissions reduction is the assumption under the CAP, including future impact of State policies and programs used in CARB EMFAC2014 model and CAP assumptions.
Energy Policy Initiatives Center 2019.

6.2.2 Measure T-6: Increase Renewable or Alternative Fuel Construction Equipment

Through the construction permitting process, the City will require a certain percentage of construction equipment in new development projects to be electric-powered or alternatively-fueled. The standard would require 30% of all construction equipment to be electric-powered or alternatively-fueled in 2030, and 50% in 2035, which would yield an approximately 30% reduction in construction GHG emissions in 2030, and 50% reduction in 2035.[55] The method to project 2030 and 2035 construction emissions are based on CARB's In-Use Off-Road Equipment 2011 Inventory and the number of construction jobs in Lemon Grove.[56] The GHG emissions reductions in 2030 and 2035 are shown in Table 28.

Table 28 Key Assumptions and Results for Measure T-6: Increase Renewable or Alternative Fuel Construction Equipment

Year	Projected Emissions from Construction Equipment (MT CO_2e)	Percent Reduction in Emissions	GHG Emissions Reduction (MT CO_2e)
2030	1,539	30%	416
2035	1,674	50%	753

The construction emissions are projected based on San Diego region's construction emissions and the ratio of construction jobs in Lemon Grove to those in the region. Assume 10% of new development would qualify for an exemption of the requirement.
CARB 2011, Energy Policy Initiatives Center 2019.

6.3 Strategy 3: Reduce Vehicle Miles Traveled (T)

The goal of this strategy is to reduce the labor force commute VMT citywide by increasing alternative modes of transportation and avoiding use of single-occupancy vehicles (SOVs), and to reduce household VMT by reducing parking requirements. The strategy includes the following seven measures.

[55] The requirement would be based on the construction equipment's horsepower.
[56] The method to project construction emissions is provided in *Appendix A: City of Lemon Grove Greenhouse Gas Emissions Inventories and Projections* (EPIC, 2018).

6.3.1 Measure T-7: Participate in the San Diego Association of Government's iCommute Vanpool Program

SANDAG's iCommute Vanpool Program provides a convenient way for groups of five or more people to get to work in and around the San Diego region. The Vanpool Program provides a subsidy of up to $400 per month to offset the vehicle lease cost, and vanpool participants share the remaining vehicle lease and gas cost. In general, Vanpools generally exceed average commute distance of approximately 25 miles round trip.[57] The number of vanpools that are in operation varies from year to year. On average, from 2016 to 2018, eight SANDAG vanpools were in operation annually that either started or ended within Lemon Grove.[58] Through this measure, the City would promote the SANDAG Vanpool Program among Lemon Grove residents and business-owners to encourage ongoing participation through the CAP target years. The specific goal is to maintain the eight SANDAG vanpools that start or end in Lemon Grove through 2035.

The vanpools in the program have different commute distances, trip frequencies, and number of participants. The estimated average commute distance, commute VMT avoided due to vanpools, and the GHG emissions reductions are shown in Table 29.[59]

Table 29 Projected SANDAG Vanpools in Lemon Grove and GHG Emissions Reductions from Avoiding Single-Occupancy Vehicle Trips

Year	Number of SANDAG Vanpools	Average Number of Passengers in the Vanpool	Average Vanpool Distance (miles per roundtrip per workday)	Annual VMT Avoided due to Vanpool (miles per year)	Annual Lemon Grove VMT Avoided due to Vanpool (miles per year)*	Average Vehicle Emission Rate (g CO_2e/mile)	GHG Emissions Reduction (MT CO_2e)
2030	8	6	64	837,274	424,397	297	126
2035	8	6	64	837,274	424,397	279	118

Average number of passengers and commute distance of the SANDAG vanpools in recent years. 255 workdays per year.
*51% of all avoided miles are allocated to Lemon Grove based on Origin-Destination VMT allocation methods.
The projections are based on the current conditions and CAP assumptions.
Energy Policy Initiatives Center 2019.

A portion of the emissions avoided from reducing SOV trips is offset by the emissions from operating the vanpool vehicles. As the vehicle fleet becomes more efficient, the fuel economy of a potential vanpool vehicle also improves. Assuming the average fuel economy (miles per gallon, or "MPG") of the vanpool vehicle is 20 MPG in 2019, and that it will improve to 28 MPG in 2030 due to more stringent vehicle efficiency standards, there will be reduced fuel use and reduced GHG emissions from operating the vanpool vehicles.[60] GHG emissions resulting from vanpool vehicles are shown in Table 30.

[57] SANDAG: iCommute Vanpool.
[58] SANDAG Vanpool Program: active vanpools as of November 16, 2018. 2006 to 2018 vanpool data were provided by SANDAG to EPIC (November 2018). If the vanpool has an origin or a business city identified as Lemon Grove, they are accounted for here. All Lemon Grove vanpools as of November 2018 started in Lemon Grove.
[59] SANDAG Vanpool Program: active vanpools as of November 16, 2018. 2006 to 2018 vanpool data were provided by SANDAG to EPIC (November 2018). The average number of passengers are estimated based on van capacity and the 80% capacity requirement. All vanpools start or end in Lemon Grove run from Monday to Friday, therefore, the 255 workday to year conversion is used.
[60] Based on the SANDAG Vanpool Program data the most common vanpool vehicles are Ford Traverse, Dodge Grand Caravan, and Buick Enclave. The 2019 new vehicle fuel economy of these vehicle models are approximately 20 MPG. U.S. Department of Energy: Fuel Economy Estimates, accessed January 10, 2019. The San Diego regional average vehicle emission rate in 2030, 297

Table 30 GHG Emissions Added from Projected SANDAG Vanpools in Lemon Grove

Year	Number of SANDAG Vanpools	Average Fuel Economy of Vanpool Vehicle (miles per gallon)	Average Fuel Use of Vanpool Vehicle (gallons per year)	Carbon Content of Vanpool Gasoline Use* (lbs CO_2e/gallon)	GHG Emissions Resulting from Vanpools (MT CO_2e)
2030	8	28	588	17.8	38
2035	8	28	553	17.8	36

*Assume gasoline blend is 10% ethanol.
Vehicle fuel economy in 2030 and 2035 are based on the decreases in the average vehicle emission rates in San Diego and the 2019 vanpool vehicle fuel economy. Annual fuel use is calculated based on commute distance of the SANDAG vanpools in recent years (64 mile per roundtrip per workday) and 255 workdays per year.
The projections are based on the current conditions and CAP assumptions.
Energy Policy Initiatives Center 2019.

The net GHG emissions reductions in 2030 and 2035, which combine the reductions from avoiding SOV trips and emissions resulting from vanpool vehicles, are shown in Table 31.

Table 31 Results for Measure T-7: Participate in the San Diego Association of Government's iCommute Vanpool Program

Emissions Reduction from SANDAG Vanpool Program	GHG Emissions Reduction in 2030 (MT CO_2e)	GHG Emissions Reduction in 2035 (MT CO_2e)
Emissions Reduction from Avoiding Single Occupancy Vehicle Commute	126	118
Emissions Resulting from Operating Vanpool Vehicles	-38	-36
Net Emissions Reduction due to SANDAG Vanpool Program	88	83

Negative emissions reduction means emissions are added.
The projections are based on the current conditions and CAP assumptions.
Energy Policy Initiatives Center 2019.

6.3.2 Measure T-8: Develop a Citywide Transportation Demand Management (TDM) Plan

Through this measure, the City would develop a Transportation Demand Management (TDM) Plan that will include: 1) adoption of a TDM ordinance that would specify alternative modes of transportation required at new commercial developments (if meeting certain parking spaces, average daily trips, or other threshold), and 2) working with Lemon Grove employment center businesses to develop TDM policies. The TDM plan would require new commercial developments or existing Lemon Grove employment center businesses to include a list of TDM activities leading to an 8% increase in alternative travel modes from employee commuting.

g CO_2e/mile, is 28% less than that in 2019, 410 g CO_2e/mile. EMFAC2014. The ratio of emission rates is used to estimate 2030 MPG.

Table 32 lists potential TDM activities that can lead to an 8% increase in alternative modes of transportation. However, other TDM activities may be recommended or required in the ordinance.[61] The ordinance is anticipated to be effective in 2023.

Table 32 Examples of TDM Activities and Effects on Increasing Alternative Transportation Modes

TDM Activity Number	Activity Details	Effect on Alternative Transportation Modes	Source
TDM-1	Provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets around the project sites	1% of additional employees will walk to work	CAPCOA - SDT-1 San Francisco TDM Ordinance Active - 1
TDM-2	Provide "end-of-trip" facilities for bicycle riders including secure bicycle parking spaces or bicycle racks, showers and clothes lockers (Number of amenities will be based on occupied floor areas and/or number of employees)	2% of additional employees will bicycle to work	CAPCOA - SDT-6 and SDT-7 San Francisco TDM Ordinance Active - 2 and 3
TDM-3	Provide discounted monthly MTS transit passes or provide at least 25% transit fare subsidies to employees (if employees are using daily or multi-day MTS transit pass)	2% of additional employees will use mass transit to work	CAPCOA - TRT-4 San Francisco TDM Ordinance HOV - 1
TDM-4	Provide employer-sponsored vanpool during morning and afternoon peak period and/or offer incentives for employees to participate in SANDAG vanpool program	2% of additional employees will vanpool to work	San Francisco TDM Ordinance HOV - 3
TDM-5	Provide transportation marketing services and communication campaigns including carpool and vanpool ride-matching services	1% of additional employees will carpool to work	San Francisco TDM Ordinance INFO - 1
CAPCOA – California Air Pollution Control Officers Association. CAPCOA 2010, City of San Francisco 2018.			

Although TDM activities may also lead to additional VMT reductions (e.g., reduce business trip VMT), the reduction in employee commute VMT is readily observable (e.g., through commuter surveys). Therefore, for this measure, only avoided commute VMT is quantified.

Increasing each type of alternative transportation mode leads to different reductions in VMT. For example, the commute distance by bicycle riders and vanpoolers are different. The percentage of jobs eligible for the alternative transportation mode and the estimated VMT reduction as a result of said mode are shown in Table 33.[62]

[61] TDM activities and their impacts are from California Air Pollution Control Officers Association's GHG mitigation measure and San Francisco's TDM Program Measures. CAPCOA: Quantifying Greenhouse Gas Mitigation Measures (2010). City of San Francisco: TDM Program Standards Appendix A: TDM Measures, updated June 7, 2018, access November 19, 2018.
[62] SANDAG: Lemon Grove employment center (2019), accessed August 12, 2019.

Table 33 VMT Reduction from the Examples of TDM Activities

Increase in Alternative Modes of Transportation	Goal (% Increase)	% of Jobs that are Eligible	Miles Avoided per Workday*	Miles Avoided per Year**	Lemon Grove Miles Avoided per Year***
Commute by Walking	1%	100%	2	450	450
Commute by Bicycle	2%	100%	9	1,980	1,980
Commute by Mass Transit	2%	100%	15	3,375	1,711
Commute by Carpool	1%	100%	19	4,365	2,212
Commute by Vanpool	2%	100%	64	14,344	7,270

*The "Commute by Vanpool" distance is based on recent year vanpools that start in Lemon Grove. The remaining miles avoided by mode are based on SANDAG activity-based travel model results for Lemon Grove employment center. **225 workdays per year. ***Miles associated with commuting by walking and bicycling are all within Lemon Grove and miles associated with the rest of the modes are allocated to Lemon Grove based on Origin-Destination VMT allocation methods.
Energy Policy Initiatives Center 2019.

To calculate emissions avoided in 2030 and 2035, miles avoided per year were converted to GHG emissions reductions using the number of new commuters using alternative modes of transportation and the average vehicle emission factors, discussed in Section 4.4.1 (GHG Emission Factor for On-Road Transportation). The GHG emissions reductions in 2030 and 2035 are shown in Table 34.[63]

Table 34 Key Assumptions and Results for Measure T-8: Develop a Citywide Transportation Demand Management (TDM) Plan

Year	New Labor Force			Employee Center			Total	
	Labor Force Added after 2023	New Commuters Using Alternative Modes of Transportation	VMT Avoided from Increasing Alternative Modes (miles per year)	Number of Employees in Lemon Grove Employment Center	New Commuters Using Alternative Modes of Transportation	VMT Avoided from Increasing Alternative Modes (miles per year)	Average Vehicle Emission Rate (g CO_2e/mile)	GHG Emissions Reduction (MT CO_2e)
2030	572	46	20,303	7,395	592	1,817,994	297	581
2035	1,087	87	267,324	7,395	592	1,817,994	279	582

The emissions reduction is the assumption under the CAP, including future impact of State policies and programs used in CARB EMFAC2014 model, and CAP assumptions.
Energy Policy Initiatives Center 2019.

6.3.3 Measure T-9: Implement the Safe Routes to School Program

Lemon Grove has an ongoing effort with LGSD to implement the Safe Routes to School (SRTS) program, including the completion of infrastructure projects near San Miguel Elementary School and San Altos Elementary School.

Through Measure T-9, the City will continue the implementation of the SRTS program at all schools in LGSD to increase the number of students walking and riding bicycles to and from school. The SRTS program would include infrastructure improvements surrounding schools (e.g., sidewalk and crosswalk

[63] Number of employees in Lemon Grove employment center are based on SANDAG: Lemon Grove employment center (2019), accessed August 12, 2019.

improvements, traffic calming measures) and education programs (e.g., develop pedestrian and bicycle safety education curriculum, organize safety trainings, and safety awareness campaigns) at schools.

Assuming the City completes SRTS program at all LGSD schools by 2030, the numbers of additional students walking or riding bicycles to school are shown in Table 35.[64]

Table 35 Number of Additional Lemon Grove School District Students Walking or Riding Bicycles to School

Year	Number of Students in Lemon Grove School District*	Students Walking to School			Students Riding Bicycle to School		
		Baseline (%) **	With Safe Routes to School (%)	Number of Additional Students Walking to School	Baseline (%) **	With Safe Routes to School (%)	Number of Additional Students Riding Bicycle to School
2030	3,159	21%	30%	299	2.0%	2.5%	15
2035	3,159	21%	30%	299	2.0%	2.5%	15

* Not all schools in the District are within Lemon Grove (Vista La Mesa Academy) ** The baseline assumption is based on a San Diego Unified School District 2015-2016 student-parent survey.
Energy Policy Initiatives Center 2019.

The vehicle miles avoided are estimated based on the number of additional students walking or riding bicycles to school and miles avoided per trip. Miles avoided per year were converted to GHG emissions reductions using the average vehicle emission factors, discussed in Section 4.4.1 (GHG Emission Factor for On-Road Transportation). The GHG emissions reductions in 2030 and 2035 are shown in Table 36.[65]

Table 36 Key Assumptions and Results for Measure T-9: Implement the Safe Routes to School Program

Year	VMT Avoided from Students Walking or Riding Bicycles to School* (miles per year)	Average Vehicle Emission Rate (g CO_2e/mile)	GHG Emissions Reduction (MT CO_2e)
2030	60,558	297	18
2035	60,558	279	17

*Assumes a one-mile roundtrip distance for students walking to school and a 2.5-mile roundtrip distance for students riding bicycles to school, based on a San Diego Unified School District 2015-2016 student-parent survey, and 180 school days per year.
The emissions reduction is the projection under the CAP, including future impact of State policies and programs used in CARB EMFAC2014 model, and CAP assumptions.
Energy Policy Initiatives Center 2019.

6.3.4 Measure T-10: Increase Commute by Bicycle

Bicycle facilities are categorized as follows: 1) Class I bicycle paths, which have a completely separated right-of-way designed for the exclusive use of bicycles and pedestrians; 2) Class II separated bicycle

[64] The current percentage of students who walk or ride bicycles to school in LGSD is not available. The results are based on a San Diego Unified School District 2015-2016 student-parent survey (EPIC), unpublished. The percent increase in walking and riding bicycles to school are based on Stewart, et al., 2014: Multistate Evaluation of Safe Routes to School Program, accessed August 10, 2019. Student population is from 2018–2019 school district population, without Vista La Mesa Academy, accessed August 13, 2019.

[65] The current trip distance of students who walk or ride bicycles to school in LGSD is not available. The results are based on a San Diego Unified School District 2015–2016 student-parent survey (EPIC), unpublished.

lanes, typically designated with striping; 3) Class III bicycle routes, where bicyclists share streets with motor traffic; and 4) Class IV cycle tracks, that provide a right-of-way designated exclusively for bicycle travel which are physically protected from vehicular traffic. Lemon Grove currently has 2.3 miles of Class I, 7.4 miles of Class II, and 1.5 miles of Class III bicycle facilities.

Through the Connect Main Street project, the City plans to complete two miles of a two-way bicycle path (Class I) along Lemon Grove Avenue. The goal is to complete the project by 2030. Bicycle lanes are used for both recreational and commuting purposes. For this measure, only the impact on avoiding commute VMT is quantified. The increase in percentage of bicycle commuters is assumed to be proportional to the increase in bicycle lane miles per square mile. The elasticity of adding one additional mile of Class II or better bicycle lane per square mile is roughly one percent for commuters.[66] This means for example, that one additional mile of Class II or better bicycle lanes per square mile will lead to roughly one additional percent of commuters riding bicycles to work. Lemon Grove's developed area is approximately 3.8 square miles, which leads to an additional one mile of bicycle lane per square mile (A (a total of two miles of bicycle lane in both directions).[67]

To calculate annual commute VMT avoided, the increase in the percentage of commuters by bicycle was multiplied by the average commute distance avoided per workday (8.8 miles), assuming bicycle commuters are traveling within the City. The avoided VMT is converted to GHG emissions reductions using the average vehicle emission factors, discussed in Section 4.4.1 (GHG Emission Factor for On-Road Transportation). The GHG emissions reductions in 2030 and 2035 are shown in Table 37.[68]

Table 37 Key Assumptions and Results for Measure T-10: Increase Commute by Bicycle

Year	Labor Force	Additional Bicycle Lanes Added (bicycle lane miles per square mile)	% of Additional Labor Force Using Bicycle to Commute	Additional Labor Force Using Bicycles to Commute	Commute VMT Avoided (miles per year)	Average Vehicle Emission Rate (g CO_2e/mile)	GHG Emissions Reduction (MT CO_2e)
2030	14,427	1.0	1.0%	151	299,694	297	89
2035	14,942	1.0	1.0%	157	310,398	279	87
The average VMT avoided by commuting by bicycle is assumed to be 8.8 miles per workday based on Lemon Grove employment center data, with 255 workdays per year. The emissions reduction is projected based on CAP assumptions and future impact of State policies and programs used in the CARB EMFAC2014 model. Energy Policy Initiatives Center 2019.							

6.3.5 Measure T-11: Reduce Residential Parking Requirements Near Trolley Stations

The City's current Downtown Village Specific Plan identifies Transit Mixed Use Zones (TMU Zones) intended to provide a mix of retail, commercial, office, and residential development and that take advantage of the convenient access to nearby transit services and high-density residential uses.[69] Based on recent projects built in the City's TMU zones, the ratio of parking spaces to number of multi-family units is close to 1:1, which is approximately 50% fewer than the parking requirements for the general

[66] Dill and Carr (2013): Bicycle Commuting and Facilities in Major U.S. Cities: If you build them, commuters will use them – another look.
[67] Developed based on SANDAG's Series 13 Regional Growth Forecast (Updated in October 2013). SANDAG Data Surfer, accessed October 24, 2017.
[68] SANDAG: Lemon Grove employment center (2019), accessed August 12, 2019.
[69] City of Lemon Grove: Downtown Village Specific Plan (2012), accessed August 12, 2019. Transit Mixed Use (7, 5 &3) Zones.

residential zone.[70] Assuming that future units in the TMZ zone have the same ratio of parking spaces to number of units, the reduction in parking spaces would lead to VMT reduction in these households and increase the use of alternative modes of transportation.

238 multi-family units have been added in the TMU zones that are adjacent to the Lemon Grove Depot Trolley Station, as of September 2019, since the adoption of the Downtown Village Specific Plan in 2012. If the maximum potential yield of housing units can be achieved in 2030, an additional 481 multi-family units would be added in the areas with reduced parking spaces (assuming 1:1 unit to parking space ratio), for a total of 719 units.[71] In addition, if similar mixed-use zoning can be achieved near the Massachusetts Avenue Trolley Station through a Specific Plan development or General Plan amendment, approximately 283 units could be realized near the station with a parking reduction.[72] With these changes, a total of approximately 1,000 units could be added with reduced parking within mixed-use areas.

The VMT reduction yielded from parking reduction varies based on the size of projects and availability of alternative modes of transportation services nearby (e.g., transit services, bicycle infrastructure). Based on several studies, the ratio of VMT reduction to parking reduction is 50% (i.e., 20% parking reduction would lead to 10% VMT reduction).[73] The average VMT avoided per household in 2030 and 2035 is shown in Table 38.[74]

Table 38 Average VMT Avoided from Households with Parking Reduction

Year	% Parking Space Reduction	Conversion from Parking Reduction to VMT Reduction*	% VMT Reduction per Household	Average Household VMT** (miles/weekday)	VMT Reduction per Household (miles/year)	Lemon Grove VMT Reduction per Household*** (miles/year)
2030	50%	50%	25%	72	6,260	3,173
2035	50%	50%	25%	71	6,157	3,121

*CAPCOA Quantifying GHG Mitigation Measures PDT-1.
**Assumes three persons per household in Lemon Grove and 23-mile average weekday VMT per capita (SANDAG Series 13 projection for San Diego region).
***Assumes 347 average weekdays per year and 51% of all household VMT is allocated to Lemon Grove based on Origin-Destination VMT allocation methods, assuming trips will have at least one trip-end within El Cajon.
CAPCOA 2010, Energy Policy Initiatives Center 2019.

[70] The reduction is compared with the minimum parking requirement for multi-family homes, approximately 2 spaces per unit. Lemon Grove Municipal Code: Off-street Parking Requirement (Section 17.24.010), accessed on August 12, 2019. The minimum parking requirements are different for studio and other apartments, the average is used here. The ratio of parking space to number of units is based on the projects added near Lemon Grove Depot Station in TMU Zone 5 and 7, provided by the City (August 2019).
[71] The potential number of units is based on Lemon Grove's Housing Element assumptions, provided by the City (August 2019).
[72] Currently, there are no multi-family housing units zoned near the Massachusetts Avenue Trolley Station. The number of potential multi-family units with future specific plans or general plan changes was provided by the City (August 2019).
[73] CAPCOA: Quantifying Greenhouse Gas Mitigation Measures (2010). PDT-1 Parking Policy/Pricing, accessed on November 19, 2018.
[74] SANDAG: San Diego Forward: The Regional Plan Program Environmental Impact Report 4.15 Transportation (2015), accessed on November 29, 2018. 2012, 2020, and 2035 San Diego region VMT per capita is from the Regional Plan, all other years are linearly interpolated. The number of persons per household is based on SANDAG Series 13 Regional Growth Forecast (October 2013). SANDAG Data Surfer, accessed on October 24, 2017.

To calculate annual avoided VMT, the total number of units projected to have reduced parking is multiplied by the VMT avoided per household in Table 38 and converted to GHG emissions reductions using the average vehicle emission factor described in Section 4.4.1 (GHG Emission Factor for On-Road Transportation). The GHG emissions reductions in 2030 and 2035 are shown in Table 39.

Table 39 Key Assumptions and Results for Measure T-11: Reduce Residential Parking Requirements Near Trolley Stations

Year	Number of Multi-Family Units with Reduced Parking after 2012*	Lemon Grove VMT Reduction per Household (miles/year)**	VMT Reduction from all Multi-Family Units (miles/year)	Average Vehicle Emission Rate (g CO_2e/mile)	GHG Emissions Reduction (MT CO_2e)
2030	763	3,173	2,421,657	297	718
2035	1,002	3,121	3,126,770	279	872

*As of 2019, 238 units near Lemon Grove Depot Station have already been built. Number of units in 2030 is estimated assuming linear growth to 100% buildout in 2035 **This is the VMT reduction for the homes projected to be built in target years, which may differ from the VMT reduction from the homes built prior to target years.
The emissions reduction is the projection under the CAP, including future impact of State policies and programs used in the CARB EMFAC2014 model and CAP assumptions.
Energy Policy Initiatives Center 2019.

6.3.6 Measure T-12: Transition to an Online Building Permit Submittal System

Currently, Lemon Grove residents, business owners, and developers submit building permits applications and other necessary documents in person, over the counter at City Hall. The City plans to complete the transition to online permit submittal by 2030 to increase efficiency of permit application and plan review and to reduce the VMT associated with permit submittal trips.

On average, the City fields 400 permit applications annually, each of which requires an applicant to make an average of three (3) round trips to City Hall.[75] Assuming half of permitting trips occur entirely within the city, all City internal miles would be avoided by switching to online permit submittal. For the other half of permitting trips, it is assumed developers or contractors will travel from outside the city. The avoided VMT is calculated and converted to GHG emissions reductions using the average vehicle emission factors described in Section 4.4.1 (GHG Emission Factor for On-Road Transportation). The GHG emissions reductions in 2030 and 2035 are shown in Table 40.

[75] Average per year and average trips per permit were provided by the City (August 2019).

Table 40 Key Assumptions and Results for Measure T-12: Transition to an Online Building Permit Submittal System

Year	Annual Average Number of Building Permits Submitted	Average Trips per Permit Application	Average Distance per Trip* (miles/trip)	Miles Avoided by Transition to Online Submission (miles/year)	Average Vehicle Emission Rate (g CO_2e/mile)	GHG Emissions Reduction (MT CO_2e)
2030	400	3	13	9,500	297	3
2035	400	3	13	9,500	279	3

*Assumes that half of the trips are within the city (9 miles roundtrip based on the size of the city), and half of the trips are contractors or developers from outside the city (19 miles roundtrip).
The emissions reduction is the projection under the CAP assumptions, including future impact of State policies and programs used in the CARB EMFAC2014 model and CAP assumptions.
Energy Policy Initiatives Center 2019.

6.3.7 Measure T-13: Increase Commute by Transit

Lemon Grove is served by two major San Diego Metropolitan Transit System (MTS) trolley stations (the Lemon Grove Depot and Massachusetts Avenue Stations, as well as several bus routes like (e.g., Route 740 from Cuyamaca College to San Diego State University (SDSU), Route 795 from SDSU to Spring Valley)..[76] These mass transit services bring employees and college students to or from Lemon Grove and currently make up approximately 4% of mode share. Under Measure T-13, the City aims to increase the mode share for commuters traveling to and from work or colleges on mass transit to 8% by 2030 and 12% by 2035.[77]

In 2017, the two trolley stations in Lemon Grove served a total of 2,600 passengers on an average weekday, and the bus routes in Lemon Grove served a total of 1,600 passengers on an average weekday. Assuming that 70% of trolley passengers and 50% of bus passengers are commuters travelling to and from work or colleges, the baseline number of mass transit commuters is approximately 2,620 per weekday.[78] The VMT avoided are calculated based on the number of mass transit commuters, which is assumed to double by 2030 and triple by 2035 with Measure T-13, and the miles avoided per trip. The VMT avoided are then converted to GHG emissions reductions using the average vehicle emission factors discussed in Section 4.4.1 (GHG Emission Factor for On-Road Transportation). The GHG emissions reductions in 2030 and 2035 are shown in Table 39.[79]

[76] Metropolitan Transit System (MTS): Bus Routes, accessed September 19, 2019.
[77] 2013–2017 American Community Survey 5-Year Estimates: Means of Transportation to Work, Lemon Grove City, California, accessed August 17, 2019.
[78] FY2017 mass transit ridership by routes and stops were provided to EPIC by SANDAG (November 2018). The percentage of trolley passengers that are commuters are based on MTS passenger boarding data by hour and assume that peak hour passengers are commuters. MTS: Community Impact and Performance Report 2016, accessed September 3, 2019.
[79] SANDAG: Lemon Grove employment center (2019), accessed August 12, 2019.

Table 41 Key Assumptions and Results for Measure T-13: Increase Commute by Transit

Year	Target Mass Transit Mode Share* (%)	Travel to and from Work or Colleges by Bus		Travel to and from Work or Colleges by Trolley		Miles Avoided (miles/year)	Total	
		Number of Commuters - Baseline**	Number of Additional Commuters with Target Mode Share	Number of Commuters - Baseline**	Number of Additional Commuters with Target Mode Share		Average Vehicle Emission Rate (g CO_2e/mile)	GHG Emissions Reduction (MT CO_2e)
2030	8%	813	813	1,835	1,835	4,529,079	297	1,343
2035	12%	813	1,625	1,835	3,670	9,058,157	279	2,527

*The current mass transit mode share is 4%. **2017 fiscal year ridership is used as the baseline, assuming 70% trolley riders and 50% bus riders travel to work or school.
The average VMT avoided by mass transit commuters is assumed to be 15 miles per workday based on Lemon Grove Employment Center data, with 255 workdays per year. VMT is allocated to Lemon Grove based on Origin-Destination VMT allocation methods, assuming trips will have at least one trip-end within Lemon Grove.
The emissions reduction is the projection under the CAP assumptions, including future impact of State policies and programs used in CARB EMFAC2014 model, and CAP assumptions.
Energy Policy Initiatives Center 2019.

6.4 Strategy 4: Increase Building Energy Efficiency (E)

The goal of this strategy is to increase building energy efficiency and reduce building electricity and natural gas use through the following three measures.

6.4.1 Measure E-1: Increase Street Lighting Efficiency Citywide

The City plans to reduce electricity use from City-owned street lights by converting the current high-pressure sodium (HPS) lights to LED lights. The transition would start in and expand from the downtown district. It is assumed that a lighting retrofit will result in a 60% reduction in electricity use.[80] The BAU electricity use projections for street lighting are based on 2016 citywide energy use; therefore, it is assumed the retrofit would reduce the electricity use for street lighting by 60%, if all lights are retrofitted by 2035.

Emissions reductions from electricity savings are calculated by multiplying the electricity savings by the GHG emission factor for electricity, discussed in Section 4.2.1 (GHG Emission Factor for Electricity) and Table 5 (2016 and Projected 2030 and 2035 GHG Emission Factor for Electricity in Lemon Grove). As the renewable and zero-carbon content in electricity increases, the emissions reduction decreases correspondingly. The GHG emissions reductions in 2030 and 2035 are shown in Table 42.[81]

[80] Lighting retrofits data from Lemon Grove were not available at the time of CAP development. The lighting retrofit savings were the estimated savings from a Solana Beach Municipal Retrofit Report on street lights retrofits (unpublished), assuming the LED lights provide the same luminance as the HPS lights.
[81] Baseline street lighting electricity use was provided by SDG&E for the Lemon Grove GHG inventory calculation.

Table 42 Key Assumptions and Results for Measure E-1: Increase Street Lighting Efficiency Citywide

Year	Baseline Street Lighting Electricity Use* (kWh/year)	Electricity Reduction Target (%)*	Electricity Savings (kWh per year)	Electricity Emission Factor (lbs CO_2e/MWh)	Emissions Reductions (MT CO_2e)
2030	700,784	40%	281,748	207	27
2035	700,784	60%	422,622	42	8

*Baseline 2016 **Assumes electricity savings from switching to LED from HPS is approximately 60% if all lights are switched.
The emissions reduction is the projection under the CAP assumptions.
Energy Policy Initiatives Center 2019.

6.4.2 Measure E-2: Reduce Non-Residential Energy Use

Pursuant to Measure E-2, City staff will present an ordinance to the City Council requiring all major non-residential renovations or additions with a permit value of $25,000 or more to implement energy retrofit measures to reduce energy use in existing commercial spaces. The ordinance will be presented in 2021, and the anticipated effective year of the ordinance is 2022.

For non-residential energy retrofits, the effect of the same type of retrofit activity may vary significantly by building type and building footprint. For example, a heating, ventilation, and air conditioning (HVAC) improvement project may have very different energy savings in a restaurant than in a multi-story office building. Due to the variability in non-residential energy use, energy savings from specific energy efficiency activities are not estimated; Rather, energy savings from non-residential energy retrofits are assumed to be 15%, based on similar reach code requirements in the San Diego region.[82] According to the California Commercial End-Use Survey, the average electricity and natural gas energy intensity of retail, restaurant, and offices spaces in SDG&E's service area is 23 kWh/sq. ft. and 0.55 therms/sq. ft; therefore, the electricity and natural gas savings are 3.4 kWh/sq. ft. and 0.08 therms/sq. ft. a year, respectively.[83]

Based on recent permitting data, approximately 25,000 sq. ft of commercial development would have been subject to the retrofit requirement on average per year. Assuming this trend continues, approximately 25,000 sq. ft. of commercial development will be subject to the requirement per year beginning in 2022.[84] Certain buildings completed in recent years would be exempt from this requirement due to building age or other limitations. It is assumed 10% of the projects would be exempt.

Emissions reductions from electricity savings are calculated by multiplying the electricity savings by the GHG emission factor for electricity, discussed in Section 4.2.1 (GHG Emission Factor for Electricity) and Table 5 (2016 and Projected 2030 and 2035 GHG Emission Factor for Electricity in Lemon Grove). As the renewable and zero-carbon content in electricity increases, the emissions reduction decreases

[82] Based on Carlsbad Nonresidential Energy Conservation Ordinance, adopted by Carlsbad City Council on March 2019 and approved by CEC on August 2019, accessed August 19, 2019. The Carlsbad Ordinance mandates CalGreen Volunteer Tier 1 measures, which provides approximately 15% less energy than the CalGreen mandatory requirement.
[83] Non-residential energy intensities in Lemon Grove are not available, therefore the non-residential energy intensities in SDG&E service are used as proxy. CEC: California Commercial End-Use Survey (2006), accessed August 14, 2019. The 2006 survey is still the latest available statewide commercial end-use survey, with the 2019 version in development.
[84] Projects with permits valued at $25,000 or greater were provided by the City (August 2019).

correspondingly. The emissions reductions from electricity savings due to E-2 are summarized in Table 43.

Table 43 Electricity and Emissions Savings from Measure E-2: Reduce Non-Residential Energy Use

Year	Commercial Floor Area with Energy Retrofits after 2022* (sq. ft.)	Baseline Commercial Electricity Use** (kWh/sq. ft./year)	Savings per Retrofit (%)	Savings per Retrofit (kWh/sq. ft./year)	Total Savings from all Retrofits (kWh/year)	Electricity Emission Factor (lbs CO_2e/MWh)	Emissions Reductions from Electricity Savings (MT CO_2e)
2030	225,000	23	15%	3.4	764,269	207	72
2035	337,500	23	15%	3.4	1,146,403	42	22

*Assumes 10% major renovations will be exempt from this requirement due to building age or other limitations. **Average of energy intensities of retail, restaurant, and office in SDG&E's service area.
The projected retrofits and emissions reductions are the projections under the CAP, based on current status, future impact of State policies and programs, and CAP assumptions.
Energy Policy Initiatives Center 2019.

Emissions reductions from natural gas savings were calculated using the natural gas savings amount and the natural gas emission factor discussed in Section 4.3. The emissions reductions from natural gas savings due to E-2 are summarized in Table 44.

Table 44 Natural Gas and Emissions Savings from Measure E-2: Reduce Non-Residential Energy Use

Year	Commercial Floor Area with Energy Retrofits after 2022* (sq. ft.)	Baseline Commercial Natural Gas Use** (therms/sq. ft./year)	Savings per Retrofit (%)	Savings per Retrofit (therms/sq. ft./year)	Total Natural Gas Savings from all Retrofits (therms/year)	Natural Gas Emission Factor (MT CO_2e /therm)	Emissions Reductions from Natural Gas Savings (MT CO_2e)
2030	225,000	0.6	15%	0.08	18,563	0.0055	102
2035	337,500	0.6	15%	0.08	27,844	0.0055	152

*Assumes 10% major renovations will be exempt from this requirement due to building age or other limitations. **Average energy intensities of retail, restaurant and office in SDG&E service area.
The projected retrofits and emissions reductions are the projections under the CAP, based on current status, future impact of State policies and programs, and CAP assumptions.
Energy Policy Initiatives Center 2019.

The total emissions reductions from Measure E-2 are 173 MT CO_2e in 2030 and 174 MT CO_2e in 2035, or the sum of the target year emissions reductions from Table 43 and Table 44.

6.4.3 Measure E-3: Reduce Residential Energy Use

Similar to Measure E-2, City staff will present an ordinance to the City Council in 2021 requiring all residential property owners conducting major renovations or additions with a permit value of $25,000 or more to implement energy retrofit measures to reduce the energy use in existing homes. The anticipated effective year of the ordinance is 2022.

Based on recent permit data, an average of 20 residential projects met this threshold per year that would have been subject to the ordinance. Assuming the trend continues, approximately 20 homes per

year will be required to implement energy efficiency measures.[85] Recently constructed homes will be exempt from this requirement, and an additional estimated 10% of the homes will be exempt due to building age or other limitations. The energy efficiency activities that could be required under this measure are based on the City of Carlsbad's Residential Energy Conservation Ordinance and include: attic insulation; HVAC ducts; cool roofs, roof installation; and installation of water heaters, a heating package, packages and a/or lighting packages.[86] Energy savings from retrofit activities depend on the age of the home, as older homes will yield higher energy savings when implementing than newer homes for the same activity. For an average home, the average energy savings are 372 kWh and 23 therms.[87] Carlsbad and Lemon Grove are both in Climate Zone 7; and therefore, it is assumed the energy savings from the energy efficiency activities would be the same for each jurisdiction.

Similar to Measure E-4.2, emissions reductions from electricity savings are calculated by multiplying the electricity savings by the GHG emission factor for electricity, discussed in Section 4.2.1 (GHG Emission Factor for Electricity) and Table 5 (2016 and Projected 2030 and 2035 GHG Emission Factor for Electricity in Lemon Grove). As the renewable and zero-carbon content in electricity increases, the emissions reduction decreases correspondingly. The emissions reductions from electricity savings due to Measure E-3 are summarized in Table 45.

Table 45 Electricity and Emissions Savings from Measure E-3: Reduce Residential Energy Use

Year	Number of Home Energy Retrofits after 2022*	Electricity Savings per Retrofit** (kWh/home/year)	Total Electricity Savings from all Retrofits (kWh/year)	Electricity Emission Factor (lbs CO_2e/MWh)	Emissions Reductions from Electricity Savings (MT CO_2e)
2030	162	372	60,318	207	6
2035	252	372	93,828	42	2

*Assumes 10% of homes will be exempt from this requirement due to building age or other limitations. **Energy savings are based on Carlsbad Residential Energy Conservation Ordinance energy efficiency measure examples.
The projected retrofits and emissions reductions are the projections under the CAP, based on current status, future impact of State policies and programs, and CAP assumptions.
Energy Policy Initiatives Center 2019.

Similarly, emissions reductions from natural gas savings were calculated using the natural gas savings amount and natural gas emission factor, discussed in Section 4.3. The emissions reductions from natural gas savings due to Measure E-3 are summarized in Table 46.

[85] The number of residential projects that meet the threshold from 2014 to 2018 were provided by the City (July 2019). The average from 2014 to 2018 is used here.
[86] City of Carlsbad: Residential Energy Conservation Ordinance, adopted by Carlsbad City Council on March 2019 and approved by CEC on August 2019, accessed August 12, 2019.
[87] Carlsbad's Residential Energy Conservation Ordinance is based on a statewide Existing Building Efficiency Upgrade Cost-Effective Study, for the 2016 Energy Code (June 2018), accessed August 12, 2019. The results from Table 20 for Climate Zone 7 – single-family efficiency upgrade package cost-effectiveness results are used here. The average energy savings are the average of energy savings of pre-1978, 1978–1991, and 1992–2005 homes. As of September 2019, a similar study for the 2019 Energy Code was not available.

Table 46 Natural Gas and Emissions Savings from Measure E-3: Reduce Residential Energy Use

Year	Number of Home Energy Retrofits after 2022*	Natural Gas Savings per Retrofit** (therms/home/year)	Total Natural Gas Savings from all Retrofits (therms/year)	Natural Gas Emission Factor (MT CO_2e/therm)	Emissions Reductions from Natural Gas Savings (MT CO_2e)
2030	162	23	3,726	0.00547	20
2035	252	23	5,796	0.00547	32

*Assumes 10% of homes will be exempt from this requirement due to building age or other limitations. **Energy savings are based on the Carlsbad Residential Energy Conservation Ordinance energy efficiency measure examples.
The projected retrofits and emissions reductions are the projections under the CAP, based on current status, future impact of State policies and programs, and CAP assumptions.
Energy Policy Initiatives Center 2019.

The total emissions reductions from Measure E-3 are 26 MT CO_2e in 2030 and 32 MT CO_2e in 2035, or the sum of the target year emissions reductions from Table 45 and Table 46.

6.5 Strategy 5: Increase Renewable and Zero-Carbon Energy (E)

The goal of this strategy is to increase both grid-supply and behind-the-meter generation of renewable and zero-carbon electricity through the following four measures.

6.5.1 Measure E-4: Increase Renewable Energy Generation at Non-residential and Multi-Family Developments

City staff will present an ordinance to the City Council in 2021 requiring certain developments to install PV systems with a minimum capacity of 1.5 watts (W) per sq. ft. of gross floor area ft., to increase behind-the-meter PV at non-residential buildings, especially existing non-residential buildings. The following developments would be subject to the ordinance: 1) new commercial developments; and 2) major multi-family and commercial renovations and additions with a permit value of $100,000 or more. The estimated start year of the ordinance is 2022.

The minimum PV requirement is based on the minimum requirement in Carlsbad's Nonresidential Photovoltaic & Water Heating Ordinances.[88] The PV requirement is assumed to be equally cost-effective given Carlsbad and Lemon Grove are both in Climate Zone 7. As with *Measure T-3: Increase Electric Vehicle Charging Stations at New and Existing Private Developments,* approximately 6,800 sq. ft. of new commercial development and 12,000 sq. ft. of major commercial renovations and additions will be subject to the requirement beginning in 2022.[89]

It is assumed that 10% of the projects cannot install on-site PV systems due to building age or other limitations. Based on the minimum PV requirement and square footage of new commercial developments anticipated to be added after 2022, the PV capacity at new commercial developments due to Measure E-4 is given in Table 47.

[88] City of Carlsbad: Nonresidential Photovoltaic & Water Heating Ordinances, adopted by Carlsbad City Council on March 2019 and approved by CEC on August 2019, accessed August 12, 2019.
[89] The average annual new commercial and commercial major renovations and additions sq. ft. is calculated based on the sq. ft. of projects meet the criteria in the last five years, as provided by the City (August 2019). Only the commercial projects data were available, multi-family project data were not available.

Table 47 Assumptions for New Commercial PV Capacity due to Measure E-4: Increase Renewable Energy Generation at Non-residential and Multi-Family Developments

Year	New Commercial Floor Area Added after 2022 (sq. ft.)*	PV Size Requirement (W per sq. ft.)	Total PV at New Commercial due to Measure E-4 (kW)	Total PV at New Commercial due to Measure E-4 (MW)
2030	55,080	1.5	83	0.08
2035	85,680	1.5	129	0.13
*Assumes 10% new development will be exempt from this requirement due to other limitations. The projected capacity are the projections under the CAP assumptions. Energy Policy Initiatives Center 2019.				

Similarly, the PV capacity at major commercial renovations and additions due to Measure E-4 is given in Table 48.

Table 48 Assumptions for Major Commercial Renovations and Additions PV Capacity due to Measure E-4: Increase Renewable Energy Generation at Non-residential and Multi-Family Developments

Year	Major Commercial Renovations Floor Area after 2022 (sq. ft.)*	PV Size Requirement (W per sq. ft.)	Total PV at Major Commercial Renovations due to Measure E-4 (kW)	Total PV at Major Commercial Renovations due to Measure E-4 (MW)
2030	97,200	1.5	146	0.15
2035	151,200	1.5	227	0.23
*Assumes 10% new development will be exempt from this requirement due to other limitations. The projected capacity is based on the projections under the CAP assumptions. Energy Policy Initiatives Center 2019.				

The emissions reductions from all State and CAP actions that increase behind-the-meter renewable supply are given in Table 7 (Allocation of Emissions Reductions to Supplies that Increase Renewable (or Zero-Carbon) Supply in Lemon Grove). The total reduction is attributed based on estimated capacity, in MW, that would result from each measure. As shown in Table 49, GHG emissions reductions from Measure E-4 are the projected reduction amounts in the years 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035.

Table 49 Key Assumptions and Results for Measure E-4: Increase Renewable Energy Generation at Non-residential and Multi-Family Developments

Year	State or City Action	Total	Measure E-4: Increase Renewable Energy Generation at Non-residential and Multi-Family Developments	Measure E-5: Achieve Zero Net Energy Municipal Operations	Measure E-6: Require New Residential Uses to be All-Electric and Generate Renewable Energy On-site*	California Solar Policies, Programs, and Mandates**
2030	Projected Behind-the-meter PV Capacity (MW)	12.7	0.2	0.7	0.2	11.6
	Projected Emissions Reduction (MT CO_2e)	4,030	**72**	212	70	3,676
2035	Projected Behind-the-meter PV Capacity (MW)	13.1	0.4	0.7	0.3	11.8
	Projected Emissions Reduction (MT CO_2e)	5,155	**140**	264	110	4,640

*Does not represent all emissions reductions from E-6
**Solar policies, programs and mandates include the impact of the PV mandates from the 2019 Building Energy Efficiency Standard.
The projected capacity and emissions reductions are the projections under the CAP, based on current status, future impact of State policies and programs, and CAP assumptions.
Energy Policy Initiatives Center 2019.

6.5.2 Measure E-5: Achieve Zero Net Energy Municipal Operations

Through Measure E-5, the City plans to install PV systems (or other renewable generation) equipment at municipal facilities and parking lots to have City operations achieve Zero Net Energy by 2030. This means that the City's annual on-site renewable energy generation least must offset the municipal electricity and natural gas use.

Currently, the City does not have any on-site renewable energy generation. The annual average electricity and natural gas use at the City from 2016 to 2018 are used as the baseline. It is assumed that this average use would be offset by on-site renewable generation. In this document, the on-site renewable generation is assumed to be electricity generation from an on-site PV system, however, the options are not limited to PV systems. Based on the annual electricity and natural gas use, the estimated PV system capacity is shown in Table 50.[90]

[90] Municipal electricity and natural gas use for Lemon Grove were provided to EPIC (July 2019) from SDG&E for the City's Regional Climate Action Planning Framework (ReCAP) Snapshot (2019 edition, not completed as of October 2019).

Table 50 Estimated Minimum PV System Size for Zero Net Energy City Operations

Electricity Use at Municipal Operations (MWh/year)*	Natural Gas Use at Municipal Operations*			Renewable Electricity Needed to Offset Municipal Operation Energy Use (MWh/year)	Minimum PV Size Needed (MW)
	Therms/year	MMBtu/year	Renewable Electricity Needed to Offset (MWh/year)		
1,113	2,017	202	59	1,172	0.7
*Average of 2016-2018 Lemon Grove Municipal Electricity and Natural Gas Use. SDG&E 2019, Energy Policy Initiatives Center 2019.					

The emissions reductions from all State and CAP actions that increase behind-the-meter renewable supply are given in Table 7 (Allocation of Emissions Reductions to Supplies that Increase Renewable (or Zero-Carbon) Supply in Lemon Grove). The total reduction is attributed based on estimated capacity (MW) that would result from each measure. As shown in Table 51, GHG emissions reductions from Measure E-5 are the projected reduction amounts in the years 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035.

Table 51 Key Assumptions and Results for Measure E-5: Achieve Zero Net Energy Municipal Operations

Year	State or City Action	Total	Measure E-4: Increase Renewable Energy Generation at Non-residential and Multi-Family Developments	Measure E-5: Achieve Zero Net Energy Municipal Operations	Measure E-6: Require New Residential Uses to be All-Electric and Generate Renewable Energy On-site*	California Solar Policies, Programs, and Mandates**
2030	Projected Behind-the-meter PV Capacity (MW)	12.7	0.2	0.7	0.2	11.6
	Projected Emissions Reduction (MT CO_2e)	4,030	72	**212**	70	3,676
2035	Projected Behind-the-meter PV Capacity (MW)	13.1	0.4	0.7	0.3	11.8
	Projected Emissions Reduction (MT CO_2e)	5,155	140	**264**	110	4,640
*Does not represent all emissions reduction from E-6. *Solar policies, programs and mandates include the impact of the PV mandates from the 2019 Building Energy Efficiency Standard. The projected capacity and emissions reductions are the projections under the CAP, based on current status, future impact of State policies and programs, and CAP assumptions. Energy Policy Initiatives Center 2019.						

6.5.3 Measure E-6: Require New Residential Uses to be All-Electric and Generate Renewable Energy On-site

City staff will present an ordinance to the City Council requiring new homes to be all-electric to further decarbonize newly constructed buildings. For the new all-electric homes to be cost-effective, the ordinance will also include energy efficiency measures and a PV requirement beyond 2019 Building Code mandates. The anticipated effective year of the ordinance is 2023.

Based on a cost-effectiveness study for the 2019 residential reach code (the Study), the cost-effectiveness of a code-compliant all-electric home compared with a code-compliant mixed-fuel (electricity and natural gas) home varies by Climate Zone. All-electric homes are not cost-effective in certain Climate Zones. However, adding efficiency and PV requirements for code-compliant all-electric homes increases the cost-effectiveness in all Climate Zones. The "Efficiency + PV" package modeled in the Study is cost-effective for both single-family and multi-family homes when compared with a mixed-fuel code-compliant home in all Climate Zones.[91] Table 52 shows the natural gas savings of compared to an all-electric home prototype compared to a mixed-fuel home prototype in Climate Zone 7 where Lemon Grove is located. Table 52 also shows the added electricity demand and additional PV capacity required to off-set the increased demand.

Table 52 Key Assumptions of All-Electric Homes (Single-Family and Multi-Family)

All-Electric Home Type	Single-Family	Multi--Family
Natural Gas Savings Compared with Mixed-Fuel Home (Therms per unit)	196	110
Additional Electricity Added Compared with Mixed-Fuel Home (kWh per unit)	674	51
Additional PV Needed (kW per unit)*	1.1	0.6
*In addition to the PV mandate requirement. Based on prototype homes in Climate Zone 7, all-electric home with efficiency and PV option. California Energy Codes & Standard Reach Codes Team 2019.		

SANDAG Series 13 projects that 20 new single-family homes and 370 new multi-family homes will be added to Lemon Grove from 2023 to 2030, and an additional 17 new single-family homes and 70 new multi-family homes will be added from 2030 to 2035.[92] It is assumed that 10% of the homes will be exempt from the requirement due to certain limitations. The emissions reduction from natural gas savings, emissions added from additional electricity use, and emissions reduction from added PV systems are shown in Table 53 through Table 55.

[91] The package is cost-effective based on both On-Bill and Time Dependent Value (TDV) methodologies. California Energy Codes & Standard Reach Codes Program: 2019 Cost-effectiveness Study: Low-Rise Residential New Construction, July 2019 version, accessed August 20, 2019.

[92] SANDAG Series 13 Regional Growth Forecast (October 2013). SANDAG Data Surfer, accessed October 24, 2017. The annual new units added are estimated using linear interpolation between 2020 and 2030.

Table 53 Emissions Reduction from Natural Gas Savings due to Measure E-6: Require New Residential Uses to be All-Electric and Generate Renewable Energy On-site

Year	Single-Family Homes		Multi-Family Homes		Total		
	Number of New All-electric Homes due to Reach Code after 2023*	Natural Gas Savings due to All-Electric (Therms/home/ year)	Number of New All-electric Homes due to Reach Code after 2023*	Natural Gas Savings due to All-Electric (Therms/home /year)	Total Natural Gas Savings (Therms/year)	Natural Gas Emission Factor (MT CO_2e/Therm)	Emissions Reductions from Natural Gas Savings (MT CO_2e)
2030	17	196	333	110	40,037	0.00547	219
2035	33	196	398	110	50,163	0.00547	275

*Assumes 10% of homes will be exempt from this requirement due to limitations.
The projected natural gas savings and emissions reduction are the projections under the CAP, based on current status, future impact of State policies and programs, and CAP assumptions.
Energy Policy Initiatives Center 2019.

Table 54 Emissions Added from Additional Electricity Use due to Measure E-6: Require New Residential Uses to be All-Electric and Generate Renewable Energy On-site

Year	Single-Family Homes		Multi-Family Homes		Total		
	Number of New All-electric Homes due to Reach Code after 2023*	Electricity Added due to All-Electric (kWh/home /year)	Number of New All-electric Homes due to Reach Code after 2023*	Electricity Added due to All-Electric (kWh/home /year)	Total Electricity Added (kWh /year)	Electricity Emission Factor (lbs CO_2e/MWh)	Emissions Added from Additional Electricity Use (MT CO_2e)
2030	17	674	333	51	11,648	207	3
2035	33	674	398	51	21,959	42	1

*Assume 10% of homes will be exempt from this requirement due to limitations.
The projected electricity use and emissions added are the projections under the CAP based on current status, future impact of State policies and programs, and CAP assumptions.
Energy Policy Initiatives Center 2019.

Table 55 Emissions Reduction from Additional PV Systems due to Measure E-6: Require New Residential Uses to be All-Electric and Generate Renewable Energy On-site

Year	Single-Family Homes		Multi-Family Homes		Total	
	Number of New All-electric Homes due to Reach Code after 2023*	Additional PV Needed due to All-Electric (kW/home)	Number of New All-electric Homes due to Reach Code after 2023*	Additional PV Needed due to All-Electric (kW/home)	Total PV Capacity Added (kW/year)	Emissions Reductions from Additional PV (MT CO_2e)
2030	17	1.1	333	0.6	222	70
2035	33	1.1	398	0.6	279	110

*Assumes 10% of homes will be exempt from this requirement due to limitations.
The projected PV capacity and emissions reduction are the projections under the CAP, based on current status, future impact of State policies and programs, and CAP assumptions.
Energy Policy Initiatives Center 2019.

The net emissions reductions from Measure E-6 are shown in Table 56, the reductions are the projected reduction amounts in the year 2030 and 2035 only, do not represent the cumulative reductions from baseline year 2012 to 2030 or 2035.

Table 56 Results for Measure E-6: Require New Residential Uses to be All-Electric and Generate Renewable Energy On-site

Emissions Reduction from All-Electric Homes	GHG Emissions Reduction in 2030 (MT CO_2e)	GHG Emissions Reduction in 2035 (MT CO_2e)
Emissions Reduction from Natural Gas Savings	219	275
Emissions Reduction from Additional PV	70	110
Emissions Added from Additional Electricity Use	-3	-1
Net Emissions Reduction due to All-Electric Homes	287	384
The emission reductions are the projections under the CAP, based on current status, future impact of State policies and programs, and CAP assumptions. Energy Policy Initiatives Center 2019.		

6.5.4 Measure E-7: Increase Grid-Supply Renewable and Zero-Carbon Electricity

As discussed in Section 5.1, SB 100 (100 Percent Clean Energy Act of 2018) adopts a 60% RPS for all of California's retail electricity suppliers by 2030 and 100% zero-carbon electricity by 2045. Through Measure E-7, the City would present options to City Council to increase grid-supply to 75% renewable or zero-carbon electricity by 2030 and 100% renewable or zero-carbon electricity by 2035.

Based on the assumptions used in the most recent Community Choice Aggregation feasibility study in the San Diego region, it is assumed 95% of SDG&E's residential bundled customers' electric load and 85% of SDG&E's commercial bundled customers' electric load would be supplied by the local renewable and zero-carbon program. SDG&E DA customers, whose electric load is supplied by other retail electric suppliers, will stay with their current electric suppliers and not participate in the local renewable program.[93]

As previously explained in Section 5.1 and Table 7 Allocation of Emissions Reductions to Supplies that Increase Renewable (or Zero-Carbon) Supply in Lemon Grove), because the local renewables and zero-carbon program is required to comply with the State's RPS mandates, a portion of the total emissions reduction from Measure E-7 is credited to the State's RPS compliance. The remaining emissions reduction beyond RPS compliance is allocated to local Measure E-5.4. The allocation of GHG emissions reduction in 2030 from this measure to the State and the City is shown in Table 57.

[93] The Cities of Chula Vista, La Mesa, and Santee: Community Choice Aggregation Technical Feasibility Study, Section: CCA Participation and Opt-Out Rates, Final Draft, July 16 2019, accessed August 3, 2019.

Table 57 Key Assumptions and Results for Measure E-7: Increase Grid-Supply Renewable and Zero-Carbon Electricity

Year	State or City Action	Total for Local Renewables and Zero-Carbon Program	Local Renewables and Zero-Carbon program to Complying with RPS	Local Renewables and Zero-Carbon Program above RPS (E-7)
2030	Projected Renewables and Zero Carbon (%)	75%	60%	15%
	Emissions Reduction (MT CO_2e)	9,691	7,753	**1,938**
2035	Projected Renewables and Zero Carbon (%)	100%	73%	27%
	Emissions Reduction (MT CO_2e)	16,504	12,048	**4,456**

*Calculated in Table 7.
The emissions reduction is the projection under the CAP, based on CAP assumptions and future impact of State policies and programs. Energy Policy Initiatives Center 2019.

6.6 Strategy 6: Increase Water Efficiency (W)

The goal of this strategy is to increase indoor and outdoor water efficiency through the following two measures.

6.6.1 Measure W-1: Increase Outdoor Water Efficiency

The City's current Water Efficient Landscape Ordinance (WELO), updated in 2016, and is based on the statewide 2015 Model Water Efficient Landscape Ordinance (MWELO). All new landscape projects and renovated landscape areas in Lemon Grove are subject to the WELO.[94]

After the WELO went into effect in 2016, the City had approximately 12,000 sq. ft. of residential landscape area in 2016 and 28,000 sq. ft. of commercial landscape area in 2017 that were subject to the requirement.[95] Using the maximum applied water allowance (MAWA) calculation in the City's WELO, and assuming that low water use plants and high-efficient irrigation systems are used, the annual water uses from the 2016 residential and 2017 non-residential landscape projects are estimated at 192,000 gallons and 354,000 gallons, respectively.[96] Assuming that this trend continues, approximately 20,000 sq. ft. of new landscape area per year will be subject to the City's WELO.[97] Compared to the previous MAWA, the water savings with the current WELO are approximately 20% for residential landscape projects and 35% for non-residential landscape projects.[98] Therefore, the WELO would lead to 122,000 gallons of water savings per year.

The water savings are converted to GHG reductions based on the water GHG intensities in 2030 and 2035. The water GHG intensities are calculated based on projected water use and the GHG emissions

[94] Lemon Grove Municipal Code: Chapter 18.44 Water Efficient Landscape Regulations - Section 18.44.040 Applicability. Accessed October 31, 2019.
[95] Square footage of landscape areas in 2016 and 2017 are provided by the City (August 2019).
[96] Lemon Grove Municipal Code: Chapter 18.44 Water Efficient Landscape Regulations, accessed August 7, 2019. The maximum applied water allowance (MAWA) in the City's WELO the same as the MWA established by the State MWELO.
[97] It is assumed half of the landscape areas will be from residential projects and the rest from non-residential projects.
[98] Department of Water Resource: Model Water Efficiency Landscape Ordinance: 2015 Revision, updated July 31, 2015, accessed November 12, 2018. City's WELO has the same MAWA as the State MWELO.

from water, as assumed in the BAU emissions projection.[99] Table 58 summarizes the key assumptions and results. The GHG emissions reductions projected are the reduction amounts in the years 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035.

Table 58 Key Assumptions and Results for Measure W-1: Increase Outdoor Water Efficiency

Year	Outdoor Water Use Reduction due to WELO* (gallons)	Outdoor Water Use Reduction due to WELO (acre-feet)	Water-GHG Intensity** (MT CO_2e/acre-foot)	GHG Emission Reduction (MT CO_2e)
2030	1,706,536	5	0.54	3
2035	2,316,013	7	0.54	4

* Total water savings from all projects subject to WELO starting 2016. **Water-GHG intensity of imported water.
Energy Policy Initiatives Center 2019

6.6.2 Measure W-2: Reduce Water Use at City Parks and Municipal Facilities

Currently, the City tracks municipal building water use and outdoor irrigation (parks and landscape irrigation) separately. The annual average water use for municipal buildings and irrigation is 5,300 hundred cubic feet (HCF) and 15,000 HCF, respectively.[100] The City aims to reduce both municipal building and outdoor landscape water use by 50% by 2035.

The water savings are converted to GHG reductions based on the water GHG intensities in 2030 and 2035. The water GHG intensities are calculated based on projected water use and the GHG emissions from water, as assumed in the BAU emissions projection.[101] Table 59 summarizes the key assumptions and results. The GHG emissions reductions projected are the reduction amounts in the years 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035.

Table 59 Key Assumptions and Results for Measure W-2: Reduce Water Use at City Parks and Municipal Facilities

Year	Municipal Landscape Irrigation and Facilities Water Use (Hundred Cubic Feet)	Water Reduction Target (%)	Water Use Reduction (Hundred Cubic Feet)	Water Use Reduction (Acre-Feet)	Water-GHG Intensity (MT CO_2e/Acre-Foot)*	GHG Emission Reduction (MT CO_2e)
2030	19,976	33%	6,659	15	0.54	8
2035	19,976	50%	9,988	23	0.54	12

*Water-GHG intensity of imported water.
City of Lemon Grove 2019, Energy Policy Initiatives Center 2019.

6.7 Strategy 7: Reduce and Recycle Solid Waste (S)

The goal of this strategy is to reduce emissions from landfill waste through Measure S-1.

[99] Emissions from water and projected water use are provided in *Appendix A: City of Lemon Grove Greenhouse Gas Emissions Inventories and Projections* (EPIC, 2018).
[100] Monthly water use from June 2017 to June 2019 for municipal building and for irrigation were provided by the City (August 2019). Some building water use may include a portion of irrigation, however they are not metered separately, and is included in municipal building water use. Only the irrigation water use metered separately is included as irrigation water use.
[101] Emissions from water and projected water use are provided in *Appendix A: City of Lemon Grove Greenhouse Gas Emissions Inventories and Projections* (EPIC, 2018).

6.7.1 Measure S-1: Increase Citywide Waste Diversion

Through Measure S-1, the City will work with its waste hauler to achieve an 80% waste diversion rate by 2030, and a 85% waste diversion rate by 2035. The 80% waste diversion rate would result in 1.9 pounds per person per day (PPD) waste disposed in landfills in 2030, and the 85% waste diversion rate would result in 1.4 PPD waste disposed in 2035.

The citywide waste disposal amounts were 4.6 PPD in the 2012 baseline year and 4.4 PPD in 2016, corresponding to approximately 51% and 53% diversion rates, respectively. From 2012 to 2016, the diversion rates fluctuated between 51% and 57%.[102] The City has not conducted a waste characterization study recently; therefore, the baseline 2012 waste composition is used and held constant through the CAP horizon.[103] Landfills in the San Diego region are in the process of upgrading gas collection systems. It is assumed the landfill gas capture rate in 2030 will be 85%, an increase from the default 75% used in the BAU emissions projection.[104] The emissions avoided from increasing the waste diversion rate is the difference between the waste category BAU emissions and the solid waste emissions using the target diversion rates and corresponding PPD waste amounts. Table 60 summarizes the key assumptions and results. The GHG emissions reductions projected are the reduction amounts in the years 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035.

Table 60 Key Assumptions and Results for Measure S-1: Increase Citywide Waste Diversion

Year	Waste Disposed at Landfills from Lemon Grove			Landfill Gas Capture Rate	Emissions with Targeted Diversion Rate (MT CO_2e)	Business as Usual Emissions (MT CO_2e)	GHG Emissions Reduction (MT CO_2e)
	lbs./person/day	short tons/year	MT/year				
2030	1.9	9,757	8,851	85%	980	3,791	2,811
2035	1.4	7,378	6,693	85%	741	3,822	3,081

Emissions from waste are calculated based on the mixed waste emission factor (0.74 MT CO_2e/short ton), oxidation rate (10%), and the waste capture rates. The projected emissions reductions are based on the CAP assumptions.
Energy Policy Initiatives Center 2019.

6.8 Strategy 8: Carbon Sequestration (C)

The most recent urban tree canopy assessment in the San Diego region, conducted in 2014 using high-resolution Light Detection and Ranging (LiDAR), showed an urban tree canopy covering approximately 16% of Lemon Grove.[105] The goal of this strategy is to increase the urban tree cover within Lemon Grove through the following two measures.

[102] Method to convert PPD to estimated diversion rate is based on Calrecycle. Per Capita Disposal and Goal Measurement. Jurisdiction PPD from 2012–2016 were downloaded from CalRecycle Jurisdiction Diversion Summary.
[103] Recent State actions include organic waste recycling, which may reduce the mixed waste emission factor in future years.
[104] The main landfill, City of San Diego's Miramar Landfill, has added a landfill gas recovery improvement project to be completed late 2018.
[105] The assessment was done in 2014 for all urban areas in the San Diego County using methods developed by University of Vermont and USDA Forest Service.

6.8.1 Measure C-1: Develop a Citywide Urban Tree Planting Program

Through Measure C-1, the City will develop and implement an Urban Tree Planting Program which would increase tree planting requirements, include standards to right-size trees and minimize pruning and irrigation needs, and tracking tree planting and maintenance by the City. The number of trees planted by the City varies by year. From 2016 to 2018, the City planted a total of 83 trees. Moving forward, the goal is to plant an average of 50 new trees annually.

The carbon sequestration potential is based on the projected total number of trees planted and the CO_2 absorption rate per tree.[106] Table 61 summarizes the key assumptions and results. The GHG emissions reductions are the projected reduction amounts in the years 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035.

Table 61 Key Assumptions and Results for Measure C-1: Develop a Citywide Urban Tree Planting Program

Year	Annual Number of New Trees Added	Number of New Trees Added by Target Year*	CO2 Sequestered** (MT CO_2/tree/year)	Carbon Sequestration (MT CO_2)
2030	50	683	0.0354	24
2035	50	933	0.0354	33

*Includes 83 trees planted by the City from 2016 to 2018.
**Average of trees. An improved estimate of the carbon sequestration rate can be evaluated once the implementation parameters are decided.
The projected carbon sequestration rates are based on the CAP assumptions.
Energy Policy Initiatives Center 2019.

6.8.2 Measure C-2: Increase Tree Planting at New Developments

The City's current landscape and irrigation regulations include the following requirements for tree planting: 1) a minimum of one tree for every six parking spaces for projects with off-street parking areas of five or more spaces; and 2) a minimum of one tree per 1,000 sq. ft. of landscape area. A minimum of 15 gallons in size and proper irrigation and maintenance are required.[107]

As discussed in Section 6.6.1, approximately 20,000 sq. ft. of new landscape area per year will be subject to the WELO's landscape area tree planting requirement thus yielding 20 new trees annually. The projected total number of new trees added by 2030 and 2035 are shown in Table 62.

[106] On average, the CO_2 sequestration rate is 0.035 MT CO_2 per tree per year. The carbon sequestration rate depends on the tree species, climate zone, planting location, and tree age. A more accurate carbon sequestration rate will be evaluated once the parameters are decided in implementation of the measure. California Emissions Estimator Model (CALEEMOD). Appendix D Default Data Tables (October 2017).

[107] City of Lemon Grove: Landscape & Irrigation (June 2016), accessed August 12, 2019. Lemon Grove Municipal Code: Chapter 12.10.00 Street Trees Required also requires the installation of street trees at a rate of one tree per 30 linear feet of street frontage when public street improvements are required, accessed on October 31, 2019.

Table 62 Number of New Trees Added at Landscape Areas due to Measure C-2: Increase Tree Planting at New Developments

Year	Annual New Landscape Area Subject to Requirement* (sq. ft./year)	Tree Requirement (sq. ft./tree)	Annual Number of New Trees Added	Number of New Trees Added by Target Year**
2030	20,000	1,000	20	300
2035	20,000	1,000	20	400
*Average annual landscape area added from 2016 to 2018 **Includes trees added from 2016 to 2018. Energy Policy Initiatives Center 2019.				

As discussed in Section 6.1.3, it is anticipated that an average of 6,800 sq. ft. of new commercial development will occur annually. In the City's landscape and irrigation regulation, it is assumed that 14 new trees will be planted annually in new commercial parking lots through parking space tree planting requirement.[108] The projected total number of new trees added by 2030 and 2035 are shown in Table 63.

Table 63 Number of New Trees Added At Parking Spaces due to Measure C-2: Increase Tree Planting at New Developments

Year	Annual New Non-residential Developments Subject to Requirement* (sq. ft. of gross floor area/year)	Parking Space Requirement (sq. ft. gross floor area/parking space)	Tree Requirement (parking spaces/tree)	Annual Number of New Trees Added	Number of New Trees Added by Target Year**
2030	6,800	500	6	2	29
2035	6,800	500	6	2	41
*Average annual new non-residential gross floor area added from 2017 to 2018. **Includes trees added from 2017 to 2018. Energy Policy Initiatives Center 2019.					

Similar to Measure C-1, the carbon sequestration potential from the new trees is based on the projected total number of trees planted and the CO_2 absorption rate per tree.[109] Table 64 summarizes the key assumptions and results. The GHG emissions reductions are the projected reduction amounts in the years 2030 and 2035 only, not the sum of the annual reductions from baseline year 2012 to 2030 or 2035.

[108] The number of sq. ft. per parking space requirement is discussed in Section 6.1.3. Lemon Grove Municipal Code: Off-street Parking Requirement (Section 17.24.010), accessed on August 12, 2019. The minimum parking requirements for retail, office, vehicle service and manufacturing are all one space per 500 sq. ft. of floor area. The tree planting requirements are not limited to the commercial parking lots.

[109] On average, the CO_2 sequestration rate is 0.035 MT CO_2 per tree per year. The carbon sequestration rate depends on the tree species, climate zone, planting location, and tree age. A more accurate carbon sequestration rate will be evaluated once the parameters are decided in implementation of the measure. California Emissions Estimator Model (CALEEMOD). Appendix D Default Data Tables (October 2017).

Table 64 Key Assumptions and Results for Measure C-2: Increase Tree Planting at New Developments

Year	Number of New Trees Added by Target Year	CO2 Sequestered* (MT CO_2/tree/year)	Carbon Sequestration (MT CO_2)
2030	329	0.0354	12
2035	440	0.0354	16

*Average number of trees. An improved estimate of the carbon sequestration rate can be evaluated once the implementation parameters are decided. The projected carbon sequestration rates are based on the CAP assumptions.
Energy Policy Initiatives Center 2019.

Appendix C

City of Lemon Grove Climate Action Plan Outreach Summary Results

City of Lemon Grove

Climate Action Plan

Outreach Results Summary

Prepared by:
Rincon Consultants, Inc.
180 N Ashwood Avenue
Ventura, California 93003
805-644-4455

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

City of Lemon Grove

Climate Action Plan

Outreach Results Executive Summary

This Outreach Results Summary Report provides the City of Lemon Grove *(City)* with an assessment of the public outreach campaign conducted as part of the Climate Action Plan *(CAP)*. The objective of the public outreach campaign was to provide education and community input for development of the City's CAP. This report details the outreach components and their results.

Outreach Efforts and Engagements

Reached and received input from:

100 Community Members

50 Residents

Community Meetings

Collectively **30** community members in attendance

Promoted Community Meetings Through:

- City of Lemon Grove website
- Postcards mailed to all addresses in Lemon Grove with English and Spanish translation
- Banner displayed above "The World's Biggest Lemon"

Community Comments:

- Explore Community Choice Energy to increase renewable energy
- Increase commute by public transit
- Increase the number of trees planted City-wide

Outreach at Community Events and Locations

City staff gained input from:

50 Community Members

by promoting CAP involvement at various locations and events throughout the City

CAP Survey

Feedback received from:

60 Community Members

through distribution of a CAP survey

This Outreach Summary Report provides the City of Lemon Grove *(City)* with an assessment of the public outreach campaign conducted as part of the Climate Action Plan *(CAP)*. The objective of the public outreach campaign was to provide education and community input for development of the City's CAP. This report details the outreach components and their results.

Outreach Efforts and Engagement

Outreach efforts by the City of Lemon Grove reached and received input from 100 community members, including 50 residents. These efforts included hosting four separate community meetings and engaging with community members at various community locations.

Community Meetings

The four community meetings hosted by the City had a collective attendance of 30 community members. These meetings provided opportunity for attendees to learn more about the CAP and provide their input on the proposed policies included in the plan. The most common comments received during the meetings were to:

- Explore Community Choice Energy to increase renewable energy
- Increase commute by public transit
- Increase the number of trees planted City-wide

The community meetings were promoted through various medium, including: the City of Lemon Grove website, postcards mailed to all addresses in Lemon Grove with English and Spanish translation, and a banner displayed above "The World's Biggest Lemon".

Outreach at Community Events and Locations

City staff gained input from 50 community members by promoting CAP involvement at various locations and events throughout the City. These locations included transit stops, the Lemon Grove Senior Community Center, and other City events.

CAP Survey

A CAP Survey was developed and distributed to obtain the community's input on potential CAP Strategies and learn more about the community's interest in programs and commute patterns. Feedback was received from 60 community members through the CAP Survey, with: 4 respondents via the CAP website or by mail, 6 respondents via community meetings, and 50 respondents via outreach at various in-person community events and locations.

Introduction

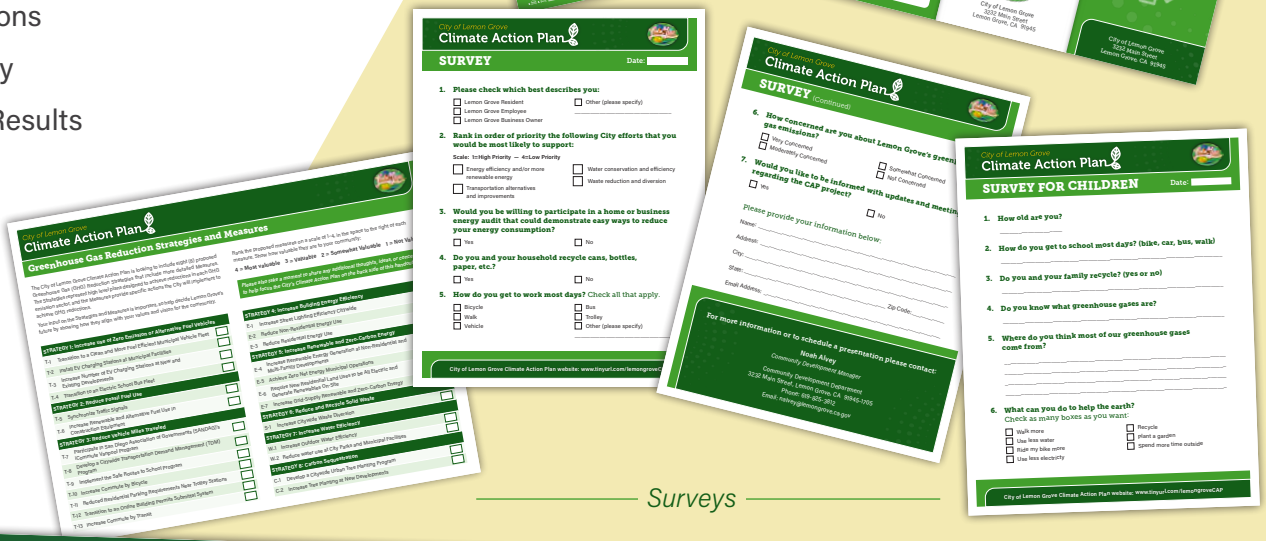
This Outreach Results Summary Report provides the City of Lemon Grove *(City)* with an assessment of the public outreach campaign conducted as part of the Climate Action Plan *(CAP)*. The objective of the public outreach campaign was to provide education and community input for development of the City's CAP. The outreach efforts and their results are detailed below. In this report you'll find a concise overview of the following outreach components:

- Overall Outreach Efforts and Engagement
- Community Meetings
  (including Community Discussion and Proposed Greenhouse Gas (GHG) Reduction Measure Feedback)
- Outreach at Community Events and Locations
- CAP Survey
- Outreach Results

Outreach Material Examples

Postcard

Brochure



Surveys

Banner

Overall Outreach Efforts and Engagement

To ensure that the CAP equitably captured the voices and concerns of all Lemon Grove residents and businesses, the City hosted four separate community meetings and performed outreach efforts at various community locations. Outreach media were produced in both English and Spanish to advertise community events, solicit input on the CAP, and provide general information. These included: postcards mailed to every address in the City, adult and children surveys, an educational brochure, and a Greenhouse Gas *(GHG)* Reduction Measure input handout.

The City received general input from comments at community meetings, CAP Survey responses, and GHG Reduction Measures Handout completions. Input was gained from a total of 100 people, including 50 residents. The majority of the input and feedback related to GHG reduction measures was provided at the first set of community meetings, which had a collective attendance of 16. The second set of community meetings also provided opportunity for input on the GHG reduction measures, as well as general comments on the CAP document. Additional input was provided through the CAP survey, which was distributed at the community meetings, on the City's CAP website, and at various community locations. This ensured the residents of Lemon Grove and stakeholder groups had adequate opportunity to contribute to the CAP.

Feedback from the community showed that the majority of residents are very concerned with GHG emissions in the City, and are most interested in GHG reduction strategies that will increase waste diversion, increase procurement of renewable energy, and increase commute by public transit. Comments from the community meetings showed support for the City to include participation in a Community Choice Energy *(CCE)* Program as a policy in the CAP, in order to increase the percentage of electricity received from renewable sources. Many residents who reported comments showed support for increasing urban trees for carbon sequestration and combating the urban heat island effect.

Bilingual Outreach Media

- Postcards
- Surveys
- Brochure
- GHG Handout

Input Provided

100
People Provided Input

50
of which were Residents of Lemon Grove

Community Meetings

The City of Lemon Grove hosted two sets of community meetings on both January 30th and February 20th *(a total of four community meetings)*. Meetings hosted on each of these dates included one morning *(11 am)* meeting, aimed towards business groups in Lemon Grove, and one evening *(6 pm)* meeting, aimed towards Lemon Grove residents. The community meetings were advertised through the following avenues:

- City of Lemon Grove website.
- Postcards of meeting invites were mailed to all addresses in Lemon Grove with English and Spanish translation.
- Banner with workshop information was displayed above "The World's Biggest Lemon".

The first set of meetings on January 30th focused on providing background information on the CAP process and soliciting comments and input on the proposed GHG reduction measures included in the CAP. This first set of community meetings had an attendance of 4 for the morning group and 12 for the evening group. During this meeting, the Community Development Manager gave a presentation which: introduced the drivers behind the CAP, provided an overview of the CAP development process, presented the results of the GHG Inventory and Forecast, and introduced the proposed GHG reduction strategies and measures. The meeting also included opportunity for discussion of any related topics and issues. A handout was provided to all attendees, which gave opportunity to provide input on each proposed GHG Reduction Measure and Strategy by assigning each a value of one through four; where one represented the strategy being not valuable, and four represented the strategy being most valuable. This handout was completed by four attendees.

The second set of meetings on February 20th provided an overview of the Draft CAP document, showcasing how community members' input was implemented, as well as provide an opportunity for additional comments on the entire document. This second set of community meetings had an attendance of 2 for the morning group and 12 for the evening group. At the meeting, the Community Development Manager gave a presentation highlighting changes to the GHG reduction measures resulting from community input, and an overview of the Draft CAP. Printed copies of the Draft CAP were provided for meeting attendees to review and provide comments.

January 30th Meetings

4
Business Meeting Attendees

12
Resident Meeting Attendees

February 20th Meetings

2
Business Meeting Attendees

12
Resident Meeting Attendees

Community Discussion

The Community Meetings provided opportunity for community members to express comments and questions regarding the CAP and its associated GHG reduction strategies and policies. Attendees were encouraged to write their comments on large sheets displaying the proposed GHG reduction measures. Additional comments were received from attendees who spoke at the meetings and provided comments by email. The most common comment the City received was for supporting the joining of a Joint Powers Authority *(JPA)*, thus allowing the City to obtain increased renewable energy through a Community Choice Energy *(CCE)* program, or by joining San Diego Community Power. In general, there was wide support for measures that would increase the procurement and generation of renewable energy, as well as measures that would set higher and more stringent goals for zero-carbon energy. Additionally, there was significant support for reducing commute by passenger vehicles, including suggestions for setting higher goals for shifting future commutes to public transit. The comments received at the community meetings are outlined below.

COMMENTS RECEIVED

Transportation

Alternative Fuel Use/Electric Vehicle

- Provide Alternative Fuel Rental Equipment.
- Increase Use of Clean Diesel in Municipal Fleet and construction equipment.
- How would increase of alternative and renewable fuels in construction equipment be enforced?
- Support EV charging stations at municipal facilities.
- Transitioning to an electric school bus fleet would not cost the City any money.
- Explore SDG&E grants for transition to an electric school bus fleet.
- Utilize SDG&E partnerships to increase the number of EV charging stations at private developments.
- Need public and private EV chargers.

Public Transit

- Provide Community shopping carts to rent and take home to encourage walking to the market.
- Work with MTS to provide better routes from Lemon Grove to Kearny Mesa.
- What can the community do to help increase commute by transit?
- Reinstate residential bus service to and from trolley and bus stations.
- Can Lemon Grove shift more than 8% of VMT to public transit? San Diego is committing to 25%.
- Support SANDAG in their transition to a World-Class public transit system.

Alternative Transportation

- Install sidewalks for areas that do not have any.
- Repair and add additional sidewalks.
- Install protected bike lanes.
- Include mode share target in CAP.
- Make commitments to Class I bike paths.
- Showcase data on biking/walking commuters.
- Increase targets for transportation reductions.
- Set specific targets for bicycles and pedestrians.

COMMENTS RECEIVED

Waste

- Have more and increase promotion of community volunteer events for waste diversion.
- Use a methane digester for organic waste.
- Recycle corn oil to create biofuels.
- Provide citywide composting.
- Aim for 100% waste diversion.
- Host composting workshops.
- Increase access to public recycling bins.
- Provide a drop-off facility for composting.

Energy

Electrification/Energy Efficiency

- Install more LED streetlights Citywide.
- Phase out the use of natural gas in existing buildings.
- Incentivize use of electricity over natural gas.
- Provide information on the City's website about the easy home installation of EV chargers.
- Reduce and eliminate fossil fuels by joining a CCE.
- Would zero net energy municipal operations be too costly?
- Applaud the requirements for new residential developments to be all electric and install PV systems.
- Require all new buildings to be 100% electric.

Renewable Energy

- Join the JPA to become part of Community Choice Energy.
- What would it take to join JPA?
- Move forward with CCA with goal of 100% renewable energy, not 75%, by joining the JPA with SD Community Power.
- Commit to 100% renewable energy.
- The City should be a net energy producer through stand alone and rooftop PV.

Water

- Provide water rebates for remote metering devices.
- Use rainwater only for outdoor yard and plants.
- Require water drip systems for large landscaped areas.
- Increase education on outdoor water efficiency.
- Use native landscape and xeriscape and reduction of landscaped areas at City parks and Municipal facilities.
- Replace turf with drought tolerant varieties.
- Use weather based central control systems for irrigation at City parks and Municipal facilities.

Carbon Sequestration

- Utilize Empty Bank of America Lot for Green Space.
- Develop an Urban Forestry Plan.
- Plant fruit and vegetable gardens in the Downtown area.
- Work with County to provide tax breaks for greening empty lots.
- Plant mature shade trees.
- Work with Tree San Diego to plant more trees.
- Create a tree inventory for grant applications.
- Require developers to increase trees.
- Increase the number of trees being planted.
- Plant drought tolerant trees.
- Plant fruit trees, similar to orange trees in Spain.
- Install pop-up/pocket parks on vacant lots.
- Expand community gardens.
- Employ community help in planting more trees.

Additional Comments

- Would like to see city make a commitment to Social Equity in its CAP, ensure low-income and elderly communities benefit from implementation.
- Some measures do not have specific timelines.
- The CAP should plan for zero carbon in the long-term.
- Low-income communities should be prioritized.
- The plan should be monitored annually, not just in 2022 and 2025. Tracking each year will ensure modifications can be made quickly to ensure goals are met.

Proposed GHG Reduction Measure Feedback

A GHG Reduction Measures Input Handout was provided to Community Meeting attendees in order to solicit feedback on the proposed GHG reduction strategies and measures. This handout provided a rating system of 1–4 *(Not Valuable to Most Valuable)* for the proposed measures, with space for additional comments. A total of four meeting attendees completed the handouts, with the results shown below in the table below. The measures that gained the most support were those that reduce vehicle miles traveled through alternative commute options, the reduction of non-residential energy use, and increasing the supply of zero-carbon energy.

GHG Reduction Measure	Number of Responses			
	Most Valuable	Valuable	Somewhat Valuable	Not Valuable
Strategy 1: Increase use of Zero-Emission or Alternative Fuel Vehicles				
T-1 Transition to a Clean and More Fuel Efficient Municipal Vehicle Fleet	1			
T-2 Install EV Charging Stations at Municipal Facilities	1			
T-3 Increase Number of EV Charging Stations at New and Existing Developments	1	1		
T-4 Transition to an Electric School Bus Fleet	1			
Strategy 2: Reduce Fossil Fuel Use				
T-5 Synchronize Traffic Signals		1		
T-6 Increase Renewable and Alternative Fuel Use in Construction Equipment	1			
Strategy 3: Reduce Vehicle Miles Traveled				
T-7 Participate in San Diego Association of Governments *(SANDAG)*'s iCommute Vanpool Program	1			
T-8 Develop a Citywide Transportation Demand Management *(TDM)* Program	2			
T-9 Implement the Safe Routes to School Program				
T-10 Increase Commute by Bicycle	3		1	
T-11 Reduced Residential Parking Requirements Near Trolley Stations	1			
T-12 Transition to an Online Building Permits Submittal System				
T-13 Increase Commute by Transit	3	1		

GHG Reduction Measures *(continued)*

GHG Reduction Measure	Number of Responses			
	Most Valuable	Valuable	Somewhat Valuable	Not Valuable
Strategy 4: Increase Building Energy Efficiency				
E-1 Increase Street Lighting Efficiency Citywide			1	
E-2 Reduce Non-Residential Energy Use	2			
E-3 Reduce Residential Energy Use		2		
Strategy 5: Increase Renewable and Zero-Carbon Energy				
E-4 Increase Renewable Energy Generation at Non-Residential and Multi-Family Developments				1
E-5 Achieve Zero Net Energy Municipal Operations		1	1	
E-6 Require New Residential Land Uses to be All Electric and Generate Renewables On-Site	1			
E-7 Increase Grid-Supply Renewable and Zero-Carbon Energy	2			
T-6 Increase Renewable and Alternative Fuel Use in Construction Equipment				
Strategy 6: Reduce and Recycle Solid Waste				
S-1 Increase Citywide Waste Diversion				
Strategy 7: Increase Water Efficiency				
W-1 Increase Outdoor Water Efficiency				
W-2 Reduce water use at City Parks and Municipal Facilities				
Strategy 8: Carbon Sequestration				
C-1 Develop a Citywide Urban Tree Planting Program	2			
C-2 Increase Tree Planting at New Developments	1	1		

Outreach at Community Events and Locations

Outreach was conducted by City employees at various locations and events throughout the City in order to gain CAP input from a wider sample of people. These outreach efforts occurred between August of 2019 and February of 2020. City employees went to various locations and events throughout the community to distribute the CAP Survey to community members and promote involvement in the CAP development. These locations and events included: transit stops during morning commute hours, the Lemon Grove Home Depot, the Concerts in the Park event on August 15th, the Health Fair on October 5th, and meetings at the Lemon Grove Senior Community Center on February 5th and 12th. The number of surveys filled out at each community event and location are detailed in the CAP Survey section, along with the feedback obtained from the surveys.

The Concerts in the Park and the Lemon Grove Senior Community Center were able to reach the most people who were interested in providing input on the CAP. While there was input obtained at the transit-oriented locations and Lemon Grove Home Depot, people indicated that they mainly did not have time to complete the survey or were not residents of Lemon Grove and not interested as such.

Best Community Event and Location Feedback Sources

Concerts in the Park

&

Lemon Grove Senior Community Center

CAP Survey

The City used various mediums throughout the public outreach program to distribute the CAP Survey, which was designed to obtain the community's input on potential CAP Strategies and learn more about the community's interest in programs and commute patterns. Unlike the GHG Reduction Measure Input Handout, the CAP Survey was much shorter and intended to obtain a higher level assessment of awareness of the issues surrounding climate action planning. The CAP Survey also served as a means to promote and foster participation in the CAP development process. The Survey was distributed through the City's CAP webpage, at the community meetings, and at various community events and locations. As shown in the table below, the CAP Survey had a total of 60 respondents, with: 4 respondents via the CAP website or by mail, 6 respondents via community meetings, and 50 respondents via outreach at various in-person community events and locations. A Spanish translated version of the Survey was created; however, no Spanish responses were received. An additional children's version of the survey was distributed, which had 1 respondent.

60
Survey Respondents:

CAP Website & Mail:
4

Community Meetings:
6

Community Events & Locations:
50

Survey Distribution	English Responses	Spanish Responses	Children's Survey	Total Responses
Lemon Grove Clergy Association	2	0	0	2
Concerts in the Park	10	0	0	10
Lemon Grove Depot Trolley Station (2 days)	8	0	0	8
Massachusetts Ave. Trolley Station (3 days)	5	0	0	5
Health Fair	3	0	1	4
Senior Center (2 days)	22	0	0	22
Community Meeting 1 (January 30th)	6	0	0	6
Community Meeting 2 (February 20th)	0	0	0	0
Absentee	4	0	0	4
TOTAL	**59**	**0**	**1**	**60**

CAP Survey *(continued)*

The CAP Survey had six questions that were relevant to overall development of the CAP. These questions included a ranking of potential City efforts, interest in energy audits, recycling habits, commute mode, and concern over GHG emissions. The Survey responses are shown in Figures 1 through 6 below. Over 50% of respondents were residents and 37% selected other, most of which were visitors from neighboring cities *(Figure 1)*. Transportation alternatives and improvements was ranked the highest priority *(Rank 1)* for a majority of respondents, followed by energy efficiency and/or renewable energy *(Figure 2)*. The lowest ranked priority *(Rank 4)* was waste reduction and diversion *(Figure 2)*.

Figure 1: What best describes you?

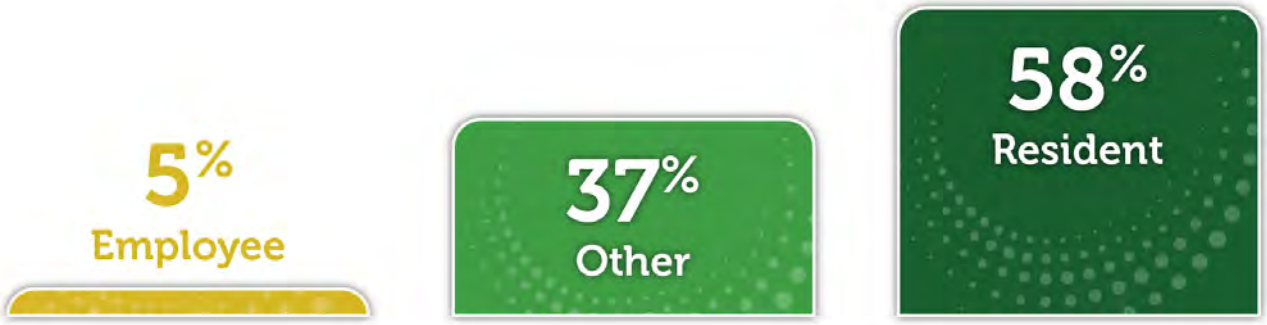
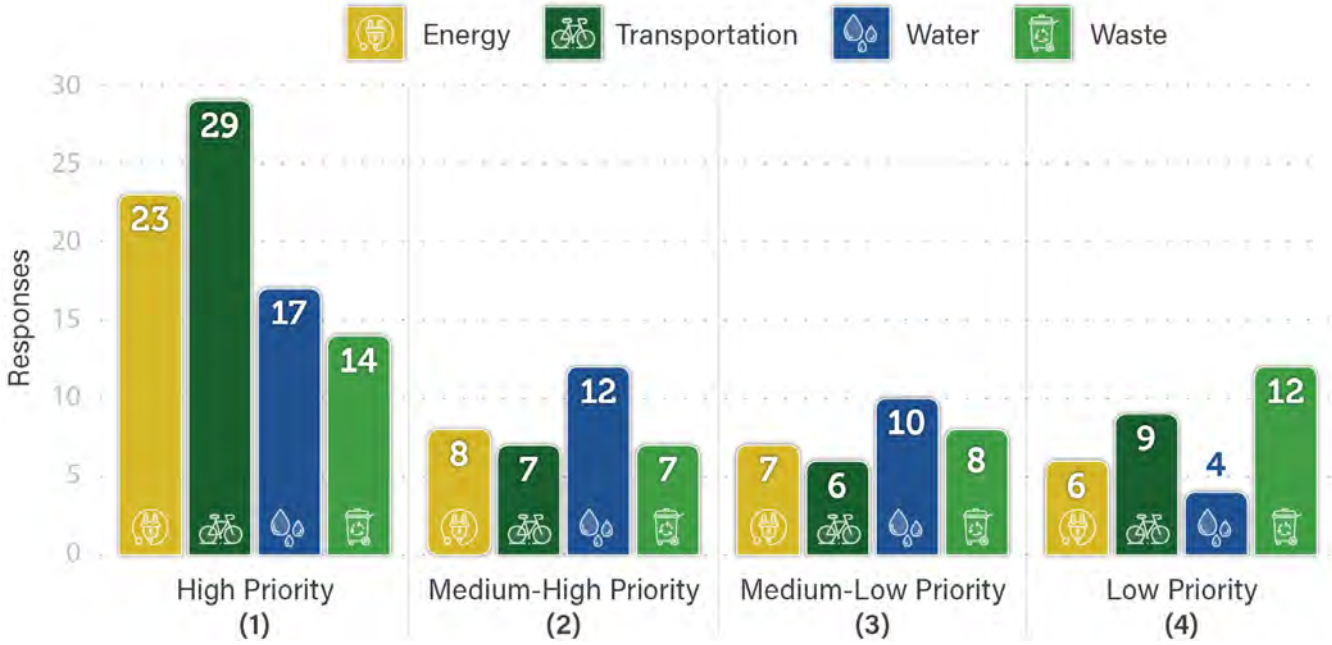


Figure 2: Priority Ranking of City Efforts (1 = High Priority, 4 = Low Priority)

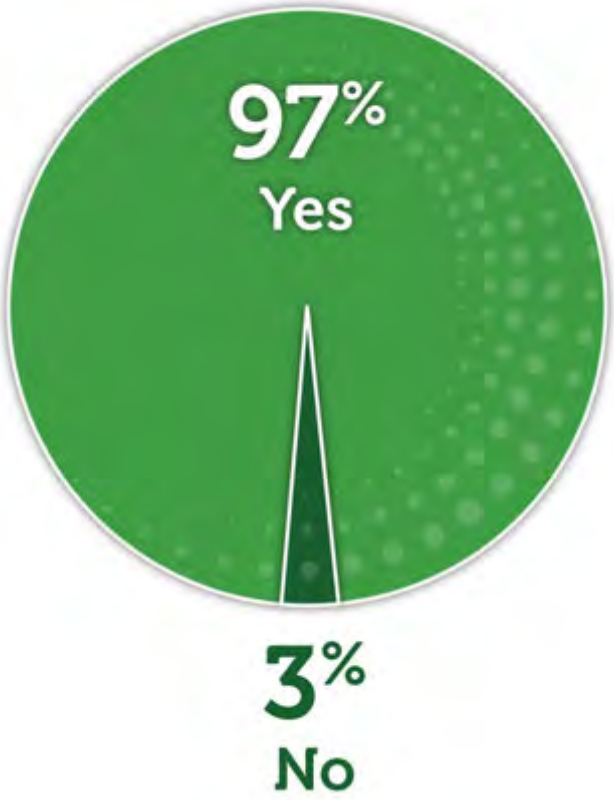


CAP Survey *(continued)*

Of the total respondents, 40% indicated they would be willing to participate in a home or business energy audit that could demonstrate ways to reduce energy consumption, and 97% indicated that they recycle cans, bottle, paper, etc. in their homes *(Figure 3 and Figure 4, respectively)*.

Figure 3: Would you be willing to participate in a home/ business audit that could demonstrate ways to reduce energy consumption?

Figure 4: Do you and your household recycle cans, bottles, paper, etc.?



CAP Survey *(continued)*

Over 60% of respondents specified that they drive a car to get to work with approximately 17% indicating that they take a form of alternative transportation: bus, trolley, and walking *(Figure 5)*. Lastly, over 70% of respondents indicated that they were either moderately or very concerned about greenhouse gas emissions in Lemon Grove, while approximately 15% specified that they were not concerned *(Figure 6)*.

Figure 5: How do you get to work most days?

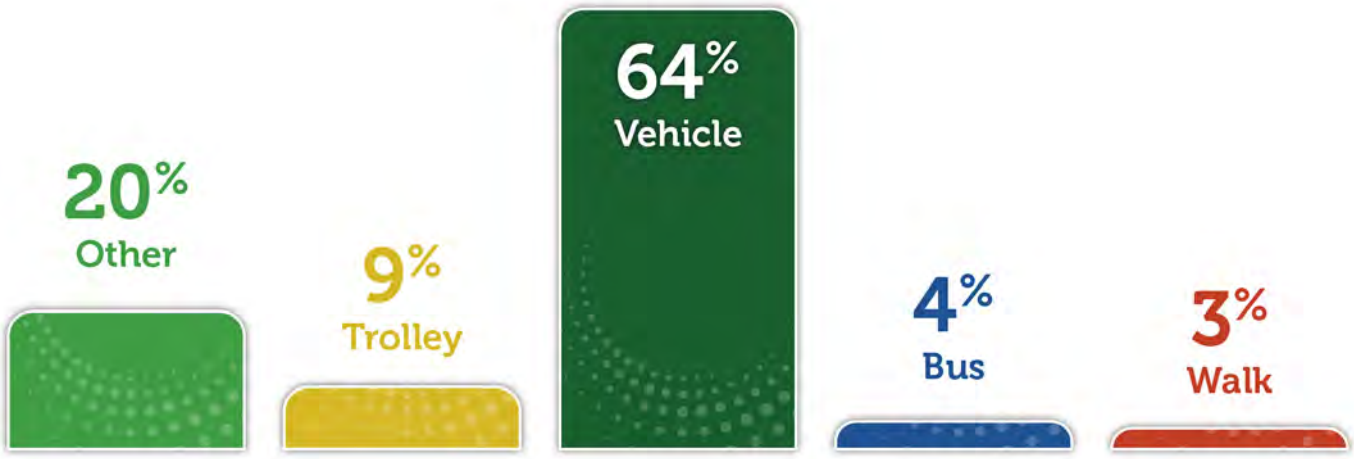
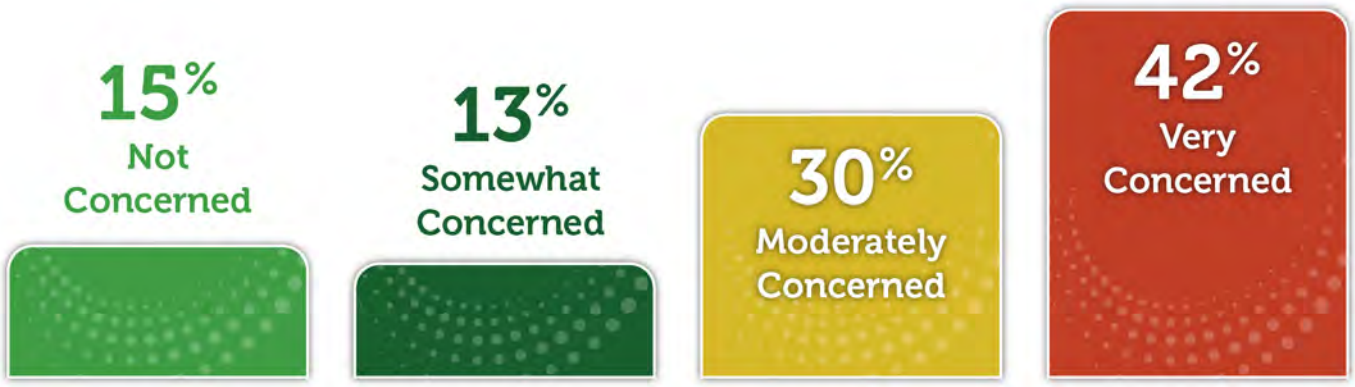


Figure 6: How concerned are you about Lemon Grove's greenhouse gas emissions?



Outreach Results

The City of Lemon Grove employed various outreach methods in order to solicit community input and spur engagement in the process of developing the Climate Action Plan. The total number of Lemon Grove residents reached by all outreach methods combined was 50. The table below summarizes the number of residents reached by each method, and any relevant comments received. These efforts spurred interest and awareness of development of the CAP in residents who may not actively follow these issues. This allowed a more diverse set of views and opinions to influence the development of the CAP.

These outreach efforts found that the majority of people reached are moderately to very concerned about GHG emissions in Lemon Grove and are in support of City efforts to increase the procurement of renewable energy and increase alternative transportation modes. The Community Meetings showed that to support the efforts, residents suggested that the City of Lemon Grove join Community Choice Energy to increase electricity from renewable sources and to work with regional public transportation agencies to provide more accessible public transit. Residents are looking for more options for public and private electric vehicle charging stations, and are interested in making the City more walkable and bikeable to reduce vehicle miles traveled. Many residents who reported comments at community meetings also showed support for increasing urban trees for carbon sequestration and combating the urban heat island effect.

Outreach Event	Residents Reached	Primary Comments
Lemon Grove Clergy Association	2	Transportation alternatives is the highest priority
Concerts in the Park	5	Very concerned about GHG emissions in the City, with Waste reduction and Energy Efficiency/Renewable Energy being the highest priorities
Lemon Grove Home Depot	0	N/A
Lemon Grove Depot Trolley Station (2 days)	0	N/A
Massachusetts Ave. Trolley Station (3 days)	3	Moderately to not concerned about GHG emissions in Lemon Grove, and indicated transportation alternatives as the highest priority
Health Fair	1	Energy Efficiency/Renewable Energy is the highest priority
Senior Center (2 days)	15	Would like to see measure that focus towards seniors
Community Meeting 1 (January 30th)	12	See Table 1
Community Meeting 2 (February 20th)	12	See Table 1
TOTAL	**50**	

Mayor Vasquez and Council
City of Lemon Grove
3232 Main Street
Lemon Grove, CA 91945

March 2, 2020

Re: Recommendations for Lemon Grove's Climate Action Plan (CAP)

Dear Mayor Vasquez and Council,

Climate Action Campaign is a San Diego-based nonprofit organization with a simple mission: to stop the climate crisis.

Lemon Grove's Climate Action Plan is an opportunity to develop a comprehensive plan to secure a safe and livable future for Lemon Grove residents in the face of the climate crisis, as well as bring clean air, safe streets, affordable clean energy, and economic benefits to families and businesses in Lemon Grove.

We offer the following recommendations to help ensure that the CAP for Lemon Grove will deliver a safe and healthy future for families in Lemon Grove.

COMMENTS ON THE CAP:

Adopt a Legally Binding Plan

A legally binding plan is not subject to the vagaries of political whim or will. Rather, it is a stated commitment to the public that the City of Lemon Grove will do everything in its power to protect and preserve the future for Lemon Grove residents. Currently, eight cities in San Diego County have legally binding CAPs: the City of San Diego, San Marcos, Carlsbad, National City, La Mesa, Vista, Encinitas, and Escondido. Climate Action Planning throughout the region has shifted to favor legally binding plans that signal bold leadership on climate change. We urge the City of Lemon Grove to make a similarly strong statement of support for current and future generations of Lemon Grove residents by making the updated CAP legally binding.

Amend Planning Horizon from 2030 to 2045 In Line With State Targets

As a long-range planning document, Lemon Grove's's CAP should amend the planning horizon from 2030 until at least 2045, and the target for that year should align with Executive Order B-55-18, which aims to achieve carbon neutrality by 2045. Other cities in California, including Los Angeles and Santa

Monica, are already planning for this goal, showing that planning for carbon neutrality is not only necessary, but achievable today.

The UN IPCC Special Report on Global Warming of 1.5℃ and other recent climate science findings show that, at every level of government, we must plan for and fully execute a total transition away from fossil fuels. To achieve that transition, we need all of our cities to establish the roadmap and begin deep decarbonization today.

Include Smart Land Use Policies with Affordable Housing Near Transit

Building affordable housing near transit is a necessary strategy to reduce VMT and reduce GHG emissions.[1] However, the CAP does not currently include strategies that advance the development of affordable housing in Lemon Grove, especially near the City's transit centers and high-frequency bus lines.

We recommend that the CAP include the following measures to increase the supply of affordable housing near transit:

- Although we support Measure T-11, which requires development of 763 multi-family units near trolley stations with 50% fewer parking spaces than standard requirements, we strongly recommend the CAP requiring that those be dedicated to affordable housing for very low-income and low-income families.
- Pursue State grants such as the Affordable Housing and Sustainable Communities grants to support affordable housing projects near transit.
- Pursue other opportunities to utilize existing properties adjacent to transit and employment centers to develop housing affordable to very low-income and low-income families.
- Present to Council for consideration an inclusionary housing ordinance that would require a portion of all multi-family housing to be set aside for families earning less than 80% of the Area Median Income. Inclusionary housing ordinances help boost affordable housing production and supports racial and economic integration.
- Present to Council for consideration an ordinance prohibiting the practice of landlords' denying rental applications because they hold housing vouchers, known as Source of Income Discrimination. Allowing this practice reinforces segregation, and cities that are highly segregated are far more likely to experience the impacts of environmental injustice, such as failing infrastructure as a result of inequitable investment, poor air quality, high lead levels, toxic wastes that contaminate soils and sicken children, and other hazards. Fair housing and environmental justice go hand in hand; for all families to be able to enjoy a high quality of life, cities must proactively dismantle segregationist systems.

---

[1] Center for Neighborhood Technology, California Housing Partnership Corporation. (2016). *Location Matters: Affordable Housing and VMT Reduction in San Diego County.* Retrieved from: https://static1.squarespace.com/static/5a6bd016f9a61e52e8379751/t/5a80f33bec212d81181be01d/1518400319715/Climate+Action+-+Affordable+Housing+And+VMT+Reduction.pdf

The CAP should also add a measure specifying where smart growth and density should be targeted and what transportation mode share, VMT, and land use goals should be set for specific communities throughout the city so there is clarity for the public and City Staff. The City of San Diego's ongoing struggle to ensure that community plan updates in urban, transit-priority communities are aligned with CAP targets, and to agree upon what goals each community is responsible for meeting, highlights the importance of including both a neighborhood-level specificity and a jurisdiction-wide approach in the CAP.

Amend the Renewable Energy Target to 100% by 2030 and Commit to Community Choice Energy

We recommend amending Measure E-7 to be: "Establish a Community Choice Energy Program. Present to City Council for consideration a Community Choice Energy program in 2020 that increases renewable electricity supply. Achieve 100 percent renewable electricity supply by 2030."

Seven cities in the San Diego region (San Diego, Del Mar, Solana Beach, Chula Vista, Encinitas, Imperial Beach, and La Mesa) have set 100% clean energy targets by either 2030 or 2035, with a commitment to pursue Community Choice as the means to that end. In 2019, all seven cities also joined a Community Choice Energy program and will begin providing clean energy to residents in 2021.

Community Choice is the only viable pathway to reaching 100% clean energy at the local level, and nearly two dozen programs are operating successfully in over 160 cities across California. Therefore, we strongly urge the City to avoid wasting time and resources by exploring "similar programs", and instead express the intent to join a Community Choice program to meet its renewable energy targets.

Include a Residential Energy Disclosure Ordinance to Increase Energy Efficiency

We were pleased to see multiple measures identifying water conservation and energy efficiency ordinances for residential and non-residential buildings, and especially the ordinance requiring all new residential developments to be all-electric and install PV systems.

In addition to Measure E-2: "Reduce Non-Residential Energy Use" and Measure E-3: "Reduce Residential Energy Use," we recommend a Residential Energy Disclosure Ordinance similar to the one adopted in Portland, Oregon (and called for in the City of San Diego's CAP), which requires sellers of homes to obtain and disclose a Home Energy Report estimating the energy-related use, associated costs, and cost-effective solutions to improve the home's efficiency.[2]

In addition to reducing emissions, energy efficiency promotes lower energy bills and creates good-paying green jobs.[3]

---

[2] City of Portland Home Energy Score, City of Portland, Bureau of Planning and Sustainability, https://www.pdxhes.com/

[3] Ettenson, Lara. "Good News for Good Jobs: Clean Energy Soars." NRDC.org, NRDC, 30 May 2018, https://www.nrdc.org/experts/lara-ettenson/good-news-good-jobs-clean-energy-outpaces-fossil-fuels.

Set Overall Mode Share Targets for Biking, Walking, and Transit

In the Draft CAP, Strategy 3 addresses the broad goal of reducing vehicle miles traveled by increasing the share of trips taken using walking, biking, and public transit. While the steps enumerated are worthwhile actions to take, they do not provide a clear roadmap to reduce emissions by a specified amount.

We strongly recommend setting overall targets for pedestrian, bicycle, and mass transit mode shares. For example, the City of San Diego states its goal as, "Achieve mass transit mode share of 12% by 2020 and 25% by 2035 in Transit Priority Areas," "Achieve walking commuter mode share of 4% by 2020 and 7% by 2035 in Transit Priority Areas," and, "Achieve 6% bicycle commuter mode share by 2020 and 18% mode share by 2035 in Transit Priority Areas." Lemon Grove's CAP should set aggressive mode share targets tailored to the City's local context, and include strategies to meet them.

Articulating those goals allows the development of aligned strategies to ensure goals are met, resulting in an evidence-based roadmap toward ambitious, feasible targets. Mode share goals also help municipalities plan and budget to facilitate a shift away from car-centric growth, as well as advocate for assistance for better transit infrastructure. Finally, they can also help communities plan for anticipated or desired health outcomes.

Walking and Biking: Measure T-10 "Increase Commute by Bicycle" aims to increase the number of commuters using bicycles, including adding two miles of a Class I bicycle path along Lemon Grove Avenue. This goal should be updated to include a specific, trackable mode share target for biking. Measure T-9 "Implement the Safe Routes to School Program" sets specific targets of increasing the percentage of students walking and biking to school by 30% and 2.5%, respectively, by 2030. Similarly, specific mode share targets should be set for walking and biking for all commuters.

Transit: Measure T-13 "Increase Commute by Transit" does set a specific mode share target of 8% by 2030. However, we highly recommend setting a more aggressive target to more effectively reduce transportation emissions. We also recommend adding a supporting measure, "Support planning and policy decisions at SANDAG that would reduce both GHG emissions and VMT and would increase transit ridership."

TDM: Measure T-8 commits to increasing the alternative mode share for new developments and businesses in employment centers for 8% by 2030, but does not indicate what proportion are due to biking, walking, and transit.

Commit to Zero Waste

The CAP should achieve zero waste through strategies such as eliminating single-use materials, composting, and capturing landfill gas.

Currently, measure S-1 reads, "Achieve 80 percent citywide waste diversion by 2030." We recommend adopting a Zero Waste policy that commits to 100% waste diversion by 2030.

Commit to Fully Electrifying the City's Municipal Vehicle Fleet

While we support that the Draft CAP commits to a fleet conversion plan, we strongly recommend that the CAP exclusively commit to ZEV's, and not to alternative fuel vehicles.

Currently, measure T-1 reads, "Replace light-duty municipal vehicles with EVs or other types of ZEVs and replace diesel vehicles with AFVs" We recommend amending that language to read: "Develop a Fleet Management Program to guide the replacement of vehicles to zero emission vehicles by 2030."

Adopt Green Infrastructure Strategies

The CAP should include green infrastructure strategies to sequester carbon and deliver environmental, social, and economic benefits to the City. Green infrastructure is an approach to stormwater management that mimics or protects natural water systems.

Under Strategy 8: "Carbon Sequestration," Measure C-1 sets a goal of planting 50 new trees per year in City-owned landscaped areas. The CAP should also commit to a quantifiable target for an increase in tree canopy coverage by planting and caring for drought-tolerant trees.

The CAP should additionally adopt green infrastructure strategies such as preserving or restoring natural lands, implementing green streets using techniques such as street trees, permeable pavements, bioretention, and swales, and adopting retrofit policies for public and private properties that promote projects such as permeable pavement and green roofs.[4] We recommend quantifying targets associated with each of these strategies, including a tree canopy coverage target.

Include an Equity Section

Climate change hits hardest in communities that are disproportionately burdened by multiple sources of pollution and face health and socioeconomic challenges. California's Environmental Health Screening Tool, CalEnviroScreen 3.0, identifies communities most vulnerable to pollution and climate impacts so that the state and local governments can direct attention and resources toward the pursuit of environmental justice in those places.

In Lemon Grove, one census tract falls in the top 30 percent of CalEnviroScreen's statewide rankings. We recommend that Lemon Grove's CAP include a Social Equity section that utilizes CalEnviroScreen to explicitly define how Lemon Grove will ensure that these communities are prioritized in the implementation of GHG reduction strategies, including affordable housing development and investments in urban forestry, active transportation, renewable energy, and energy efficiency measures.

---

[4] "Green Infrastructure Municipal Handbook." *Green Infrastructure*, United State Environmental Protection Agency, December 2018, https://www.epa.gov/sites/production/files/2015-10/documents/gi_munichandbook_retrofits.pdf.

The development and implementation of this section should take place in consultation with a diverse set of stakeholders from the most impacted of the City's communities.

Hire a CAP Administrator and Commit to Annual Monitoring Reports

In order to ensure timely and transparent progress, we recommend amending the Implementation and Monitoring Section of the CAP to commit to the following:

- Hire a CAP administrator or identify a task force to coordinate and oversee CAP implementation strategies.
- Require annual monitoring reports on implementation progress.
- Require a greenhouse gas inventory every three years.

Outstanding Questions

1) What role does the City have in working with GUHSD and LGSD to convert the school bus fleet to electric buses (Measure T-4)?
2) How does the City plan to enforce Measure T-6, which requires at least 30% of construction equipment in new developments to be electric-powered or alternatively fueled?

Recommend Inclusion of Best Practices As Described in 2018 CAP Report Card

In addition to the previous strategies, we recommend that Lemon Grove include the following best practices adopted by numerous cities across the San Diego region. For more detail on the strategies and which cities have incorporated each into their CAPs, please consult CAC's 2018 CAP Report Card.

Thank you for the opportunity to weigh in on the development of this critically important document. Lemon Grove's CAP presents an opportunity to help protect the health and safety of current and future generations from the worst impacts of climate change. We urge you to direct staff to incorporate the recommendations above to comply with legal requirements, maximize emissions reductions, and deliver economic, safety, and health benefits to families and businesses.

Sincerely,

Galena Robertson-Geibel
Climate Action Campaign

April 1, 2020

Ms. Lydia Romero
City Manager
City of Lemon Grove
3232 Main Street
Lemon Grove, CA 91945

Re: City of Lemon Grove Climate Action Plan Support

Dear City Manager Romero,

San Diego Gas & Electric Company (SDG&E) appreciates the opportunity to support the City of Lemon Grove's forward-thinking Climate Action Plan (CAP). We share the City's ambitions for achieving reductions in greenhouse gas (GHG) emissions and are committed to helping achieve the long-term goals outlined in the plan. I had the opportunity to personally attend your CAP workshops, and was so impressed with the thoughtful public outreach your staff engaged in.

The City of Lemon Grove's CAP aligns well with SDG&E's mission to build the cleanest, safest, and most reliable energy infrastructure company in America and have among the cleanest energy portfolios in the nation. Currently, we are delivering around 45% renewable energy to all our customers, including residents, businesses located within the City of Lemon Grove. Due to our forward-looking planning for the procurement of renewable energy, SDG&E is well-positioned to meet the 60% Renewable Portfolio Standard (RPS) by 2030 as outlined in Senate Bill 100.

We understand many customers want more clean energy solutions and we are working diligently to meet those needs. For interested customers, SDG&E designed the EcoChoice Program to offer an immediate and cost-effective way to reduce carbon emissions through the purchase of up to 100% renewable energy directly from SDG&E. Although the EcoChoice Program is now fully subscribed for commercial/municipal customers, it is still available to all residential customers in the City of Lemon Grove. We procure renewable energy with steel-in-the ground, local, new-build projects specifically for EcoChoice customers. And if joining or forming a Community Choice Aggregation (CCA) program is in the best interest of the City, SDG&E fully supports customer choice and will collaborate closely to ensure the transition to CCA is seamless and fully supported from SDG&E's standpoint.

As noted in the draft CAP, 55% of the GHG emissions in the City come from on-road transportation, therefore focusing on driving clean is critical for any measurable impact on GHG emissions reduction. There are numerous areas which SDG&E can be a critical advisor/partner supporting the transition to transportation electrification. With the City's CAP requirement to support electric vehicle use for municipal, school, and new construction multi-family residential and commercial sites in the City, SDG&E

looks forward to working with the City to install the infrastructure needed to fulfill its clean transportation goals. Through our newly approved programs for EV charging infrastructure for medium/heavy duty trucks and for schools and parks, we have a program that can assist with meeting the City's EV charging infrastructure needs. As our regulators have noted, every municipality in the State of California could procure 100% renewable energy and we still wouldn't meet our climate reduction goals. We need to focus on clean transportation for GHG reduction, health, national security and economic reasons.

Additionally, given the regional reliance on natural gas as a clean-burning fuel, SDG&E filed a request asking state regulators at the California Public Utilities Commission (CPUC) to allow the utility to offer its customers the option to buy their natural gas from renewable sources. Renewable natural gas is a fuel produced from waste and agriculture that can be used to fuel heating systems and water heaters in homes and businesses, for cooking, in trucks and buses, and to generate electricity.

The City proposes an ordinance for 100% electrification with solar installation for new residential construction by 2030. While SDG&E recognizes the need to reduce the use of fossil fuels, we also support customer choice and encourage the City to consider looking at all energy pathways and possibilities, including renewable natural gas, prior to making any ordinance decisions. Restricting construction to only electric energy presents clear equity issues for communities of concern, and restricts current innovations in the renewable natural gas space.

We are also proud to have over 1,200 residential Net Energy Metering solar customers in the City, whom have invested in rooftop solar. We are encouraging our customers to go green by offering an online application that makes the private solar rooftop interconnection process fast and convenient for new solar adopters – it is the fastest approval time in the state. Additionally, SDG&E employees invented a Renewable Meter Adapter device which helps customers bypass costly electric panel upgrades often needed to install private solar systems. This innovation, combined with our fast track process, has helped close to 190,000 customers in the region to install private solar equivalent of almost 1,000 MW of renewable generation capacity.

Reaching the City's GHG emissions goals will require a host of thoughtful and complementary efforts, including energy efficiency, clean energy, and clean transportation programs, in which SDG&E plans to continue supporting the City in a comprehensive manner to meet our mutual objective to improve the lives of those in our communities through a cleaner energy future.

SDG&E is committed to its continued partnership with the City and would be pleased to work with you to develop a detailed plan that meets the needs of the City in support of its CAP objectives.

Sincerely,

Dinah Willier
Public Affairs Manager
San Diego Gas & Electric Company

cc: Honorable Mayor Racquel Vasquez
Honorable Mayor Pro Tem David Arambula

Honorable Councilmember Yadira Altamirano
Honorable Councilmember Jerry Jones
Honorable Councilmember Jennifer Mendoza
Mr. Mike James, Assistant City Manager/Public Works Director
Mr. Noah Alvey, Community Development Manager