



Air Pollution Control District
San Luis Obispo County

Proposed CEQA GHG Emissions Thresholds

Public Workshop
December 15, 2011



CEQA Air Quality Handbook

- Guide on quantifying new project construction and operational emission impacts & applying mitigation measures when needed
 - Target audience: lead agencies, planning consultants, project proponents, interested parties and general public
 - Air District Role in CEQA: lead, responsible or commenting agency
 - Handbook timeline:
 - First released in 1997, updated in 2003
 - 2009 Board adopted changes to the Handbook
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Legislation that's driving GHG Threshold

- **Executive Order S-3-05 (2005)**
 - Established specific targets to reduce GHG emissions statewide to the level of 2000 by 2010, to 1990 by 2020, and 80% below 1990 by 2050.
 - **Assembly Bill 32 (2006)**
 - Global Warming Solutions Act, set reduction goals into law. AB 32 requires statewide GHG emissions reduce to 1990 levels by 2020
 - **Senate Bill 97 (2007)**
 - Required the California Office of Planning and Research to develop CEQA Guidelines for the evaluation of GHG emissions impacts and recommend mitigation strategies
 - **Senate Bill 375 (2008)**
 - Aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation.
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Development of APCD's Proposed Threshold

- Over the past 3 years worked with ARB, CAPCOA and Air Districts to evaluate threshold options
 - Extensive research to determine most appropriate methodology for SLO County
 - Surveyed all Air Districts in California
 - Discussions with California Attorney General's office, OPR and Center for Biodiversity
 - Determined the methodology used by the Bay Area Air Quality Management District was most appropriate approach
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Summary

Residential/Commercial & Industrial Project Thresholds

Goal: To develop a **defensible** and **feasible** interim GHG threshold for lead agencies to ensure new development provides its fair share of GHG reductions to meet the State's goal in AB 32.

GHG Emissions Threshold Summary	
Projects other than Stationary Sources (Residential and Commercial)	Compliance with Qualified GHG Reduction Strategy OR 1,150 MT of CO₂e/yr OR 4.9 MT CO₂e/SP/yr (residents + employees)
Stationary Sources (Industrial)	10,000 MT of CO₂e/yr

Residential/Commercial Threshold

Three-Tiered Approach

Bright Line		Efficiency		Programmatic	
1150 MTCO ₂ e/yr		4.9 MTCO ₂ e/SP/yr		Qualified Plan	
Advantages	Disadvantages	Advantages	Disadvantages	Advantages	Disadvantages
Clear, easily understood	Requires ongoing, robust, local land-use trend data that is not readily available	Relies on statewide data that is readily available	Requires additional calculation beyond CalEEMod	CEQA streamlining for GHGs	Not all agencies have a Qualified GHG Reduction Plan
Easily calculated with current modeling tools	Difficult for large, dense, infill development to meet	Provides an attainable threshold option for dense, mixed-use, infill development	Metric for some projects not readily available	Allows for a “big picture” approach to reducing GHGs	Requires a resource intense planning effort

Tier 1: Programmatic

Qualified GHG Reduction Strategy

6 Elements

(CEQA Guidelines § 15183.5(b)) :

1. Quantify emissions
2. Set a target reduction level
3. ID & analyze sector specific GHGs
4. Specify GHG reduction measures
5. Establish tool to monitor progress
6. Adopt in a public process following environmental review.



The Governor's Office
of Planning and Research



CALIFORNIA ENVIRONMENTAL
RESOURCES EVALUATION SYSTEM

Qualified GHG Reduction Plan

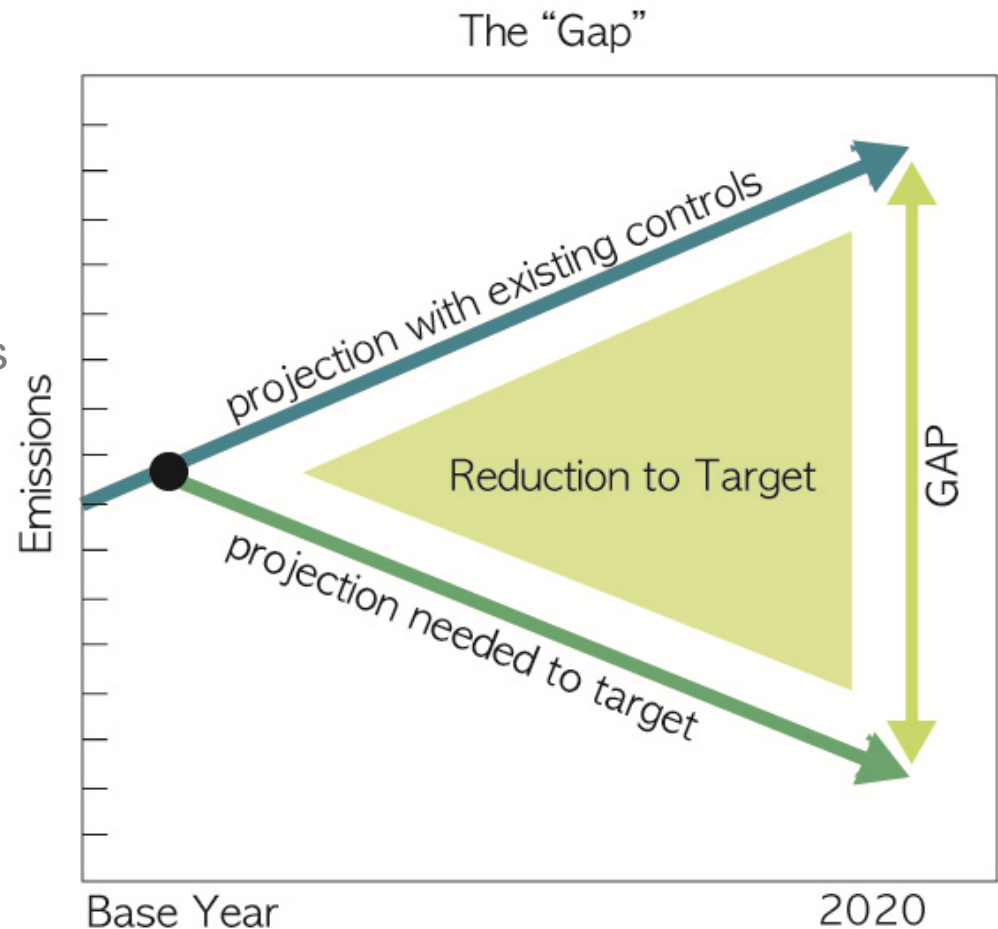
District Guidance – Elements to Include

- 1) The GHG emissions inventory should be complete and comprehensive
 - 2) Calculations and assumptions should be transparent
 - 3) GHG reduction strategies should rely primarily on mandatory measures
 - 4) Build in a margin of safety
 - 5) Measures should address existing as well as new development
 - 6) Implementation and monitoring should be clearly defined
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Tier 2: Bright-Line (Numeric) Threshold

Overview of Process:

- 1) Determine the statewide “gap” or shortfall between 2020 statewide land use emission inventory target and the anticipated emission reductions from existing programs
- 2) Apply statewide “gap” to determine region’s land-use fair share reduction target.
- 3) Forecast regional land use project emissions to 2020
- 4) Set threshold at level necessary to achieve the regional reduction target



1) Determine the statewide “gap” or shortfall between 2020 statewide land use emission inventory target and the anticipated emission reductions from existing programs

California 1990, 2008, and 2020 Land Use Sector GHG Emissions (MMT CO₂e/yr)				
Sector	1990 Emissions	2008 Emissions Projections	2020 BAU Emissions Projections	% of 2020 Total
Transportation	137.99	162.80	168.10	49.00%
On-Road Passenger Vehicles	108.95	128.00	127.00	37.02%
On- Road Heavy Duty	29.05	34.80	41.20	12.01%
Electric Power	110.63	117.20	107.60	31.37%
Electricity	95.39	103.00	91.10	26.56%
Cogen	15.20	14.20	16.50	4.81%
Commercial and Residential	44.08	43.10	45.30	13.20%
Residential Fuel Use	29.66	28.40	31.00	9.04%
Commercial Fuel Use	14.43	14.70	13.90	4.05%
Recycling and Waste	9.09	8.68	10.45	3.05%
Landfill	6.26	6.71	8.50	2.48%
Domestic Waste Water Treatment	2.83	1.97	1.95	0.57%
Agriculture/Farming	0.20	0.25	0.31	0.09%
Winery	0.20	0.25	0.31	0.09%
Off-road Equipment	6.36	9.21	11.29	3.29%
Lawn and Garden Equipment Subtotal	0.43	0.56	0.65	0.19%
Recreational & Pleasurecraft	1.23	1.73	2.55	0.74%
Light Commercial Equipment Subtotal	0.91	1.00	1.04	0.30%
Construction & Mining Equipment Subtotal	3.78	5.92	7.05	2.06%
TOTAL GROSS EMISSIONS	308.35	341.24	343.06	100%
% Reduction Goal from Statewide land use driven sectors			10.12%	
% Reduction Goal from AB32 Scoping Plan measures applied to land use sectors			-9.57%	
% Reducation needed statewide beyond Scoping Plan measures (Gap)			0.55%	

1) Determine the statewide “gap” or shortfall between 2020 statewide land use emission inventory target and the anticipated emission reductions from existing programs

2020 Land Use Sector GHG Emission Reductions from State Regulations & AB 32 Measures

Affected Emissions Source	California Legislation/AB32 Measure	% Reduction from Statewide 2020 LU GHG Inventory	End Use Sector	Scaled % Emissions Reduction of SLO Area LU Sector (Credit to Overall Statewide LU Gap)
Mobile	LCFS (On road only)	7.9%	On road transportation (Pass, LD) (46%)	3.6%
	LCFS (On road only)	9.7%	On road transportation (HD/MD) (10%)	1.0%
	SB 375	0.0%	On road transportation (Pass, LD) (46%)	1.1%
Area	Energy Efficiency - Gas	6.0%	Natural gas (Residential) (12%)	0.8%
			Natural gas (Commercial) (4%)	0.2%
	Energy Efficiency - Electricity	13.1%	Electricity (20%)	2.6%
Indirect	Solar Roof	1.2%	Electricity (exclude Cogen) (19%)	0.2%
Total credits given land use-driven emission inventory sectors from Scoping Plan Measures				9.57%

2) Apply statewide “gap” to determine region’s land-use fair share reduction target.

SLO APCD 2008, 2020 GHG Emissions Inventories and Projections (MT CO₂e/yr)			
Sector	2008 Emissions (MT CO₂e/yr)	2020 Forecast w/ Annual Compounding	% of Total
Transportation	1,310,997.19	1,419,690.39	57%
On-Road Passenger Vehicles	1,065,344.33	1,159,744.28	46%
On-Road Heavy Duty	245,652.86	259,946.11	10%
Off-road Res. and Light Commercial	37,029.70	97,974.75	4%
Lawn and Garden Equipment	7,198.11	7,474.11	
Recreational & Pleasure craft	20,317.46	30,814.53	
Light Commercial Equipment	9,514.12	10,548.88	
Construction & Mining Equipment	41,368.59	49,137.23	
Electric Power	456,766.12	497,240.07	20%
Electricity	445,563.64	485,044.94	19%
Cogen	11,202.48	12,195.13	0%
Commercial and Residential	376,539.30	403,504.57	16%
Residential Fuel Use	291,353.48	313,362.23	12%
Commerical Fuel Use - Non-Permitted	85,185.82	90,142.34	4%
Recycling and Waste	72,023.60	78,405.60	3%
Landfill Combustion Sources	22,295.09	24,270.65	
Landfill Fugitive Sources	48,063.01	52,321.87	
Domestic Waste Water Treatment	1,665.51	1,813.09	
Agricultural/Farming	9,608.53	10,167.60	0%
Wineries	9,608.53	10,167.60	
Sectoral Emissions (MT CO₂e/yr)	2,262,506.89	2,506,982.99	100%
Statewide Gap (Applied to Regional Emissions Inventory)		0.55%	
Regional Mass Emission Reductions Needed (MT/Yr)		13,788	

SLO County is responsible for reducing 13,788 MT CO₂e per year

3) Forecast regional land use project emissions to 2020

Forecast for Regional Land Use Projects & Emissions to 2020				
Land Use Type	New Emissions from LU (2011-2020) MTCO₂e	Average Annual LU Emissions per year (2011-2020) MTCO₂e/yr	# of Total New LU Projects (2011-2020)	# of New LU Projects Per Year (2011-2020)
Residential	180,676.76	18,067.68	978.69	97.87
Non Residential	969,015.05	96,901.51	163.80	16.38
Total	1,149,691.81	114,969.18	1,142.48	114.25

4) Set threshold at level necessary to achieve the regional reduction target

GHG Threshold Sensitivity Analysis						
Threshold Option (Metric Tons/Year)	No. of Projected New LU Projects Over Threshold	Percent of Projects Over Threshold (Project Capture)	Percent of Emissions Over Threshold (Emissions Capture)	Overall Mitigation Program Effectiveness	Actual Mitigation Effectiveness	Emissions Reduced (MT/Yr)
1100	56	5%	22%	25%	19.1%	16,508
				30%	20.5%	17,720
				35%	21.9%	18,933
1150	56	5%	19%	25%	16.4%	14,158
				30%	17.8%	15,370
				35%	19.2%	16,583
1175	56	5%	18%	25%	15.0%	12,983
				30%	16.4%	14,195
				35%	17.8%	15,408

Staff proposes a Bright-Line threshold of 1150MTCO₂e/yr

Tier 3: Efficiency Threshold

- The efficiency threshold is a per-capita threshold that encourages infill, transit-oriented development based on quantitative efficiency measures.
 - GHG efficiency metrics can be used as thresholds to assess the GHG efficiency of a project on a service population (residents +employees) basis.
 - Locally, we are mirroring the South Coast AQMD's approach to calculating the efficiency threshold, which excludes industrial employees from the calculation.
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Efficiency Threshold

California 2020 Emissions, Population, Employment & GHG Efficiency Threshold Project Level - Land Use Inventory Sectors (Metric Tons CO ₂ e)	
Land Use Sectors Greenhouse Gas Emissions Target	308,349,358
Population	44,135,923
Employment	18,226,478
California Service Population (SP)(Population + Employment)	62,362,401
Project Level Efficiency Threshold: Greenhouse Gas Emissions/Service Population (Metric Tons CO ₂ e per SP)	4.9

Note: GHG Efficiency levels are calculated using only the land-use related sectors

Statewide Reduction Target divided by Statewide Service Population equals Efficiency Threshold

Industrial Threshold

10,000 MTCO₂e/year

- Applies to new or modified stationary source projects will need to be analyzed under CEQA and mitigated to the maximum extent feasible
- Proposed threshold based on capturing at least 90% of the GHG emissions from all new or modified stationary source projects
 - Derived using the SLO APCD 2009 GHG emissions inventory for combustion sources from all permitted facilities
 - CO₂e emissions above 10,000 metric tons accounted for 94% of all combustion-related CO₂e emissions in 2009
 - Generating 356,000 tons CO₂e compared to a countywide total of 377,000 tons CO₂e from all combustion sources.
 - 10,000 MT/yr would be equivalent to an industrial boiler with a rating of approximately 27 mmBtu/hour of heat input, operating at an 80% capacity factor.
- SCAQMD and BAAQMD have adopted a 10,000 MTCO₂e/yr threshold for stationary sources with the goal of achieving emission capture rates between 90 to 95%

Screening Criteria: Project Air Quality Analysis

Land Use	Unit of Measure	Size of Urban Project Expected to Exceed APCD GHG Numerical Threshold:	Size of Urban Project Expected to Exceed APCD Ozone Precursor Significance Threshold:	
		1150 CO ₂ e (MT/year)	25 lbs/ Day ROG + Nox	25 tons/year ROG + Nox
COMMERCIAL				
Bank (with Drive-Through)	1000 sf	25	17	115
General Office Building		70	91	669
Government Office Building		26	21	167
EDUCATIONAL				
Elementary School	1000 sf	69	62	483
RECREATIONAL				
Quality Restaurant	1,000 SF	18	21	128
RESIDENTIAL				
Apartment Low Rise	Dwelling Units	109	94	688
Condo/Townhouse General		103	93	680
Single Family Housing		70	68	463
RETAIL				
Regional Shopping Center	1000 sf	36	31	215
Strip Mall		40	38	238

These are examples of historical Single Family Housing projects from 2001 to 2010 would be subject to CEQA review based on GHG emissions, with adoption of the Bright-Line threshold.

Development Name	# Units	Location
The Trilogy at Monarch Dunes	323	Arroyo Grande
Twin Oaks Development	208	Paso Robles
Deer Park Estates	194	Paso Robles
Berry Gardens	184	Arroyo Grande
Montebello Estates	184	Paso Robles
Meadowlark Estates	170	Paso Robles
Ventana	169	Paso Robles
Arena Rd	154	Atascadero
Playa Vista	148	Avila Beach
Tolosa Ranch	148	San Luis Obispo
Red River Dr	146	Paso Robles
Wedgewood Development	128	Paso Robles
Pasobrooks	127	Paso Robles
Mission Heights	126	San Miguel

Development Name	# Units	Location
Oak Leaf Estates	121	Nipomo
San Anselmo Rd	121	Atascadero
The Lakes Development	118	Atascadero
River View	113	Paso Robles
Honey Grove Ln	109	Nipomo
Via Fuchsia	106	Paso Robles
Dove Creek	105	Atascadero
Highlands	101	Arroyo Grande
Vineyard Homes	93	Templeton
Cedarwood Av	90	Nipomo
Silverwood	78	Paso Robles
Chalk Mountain Willow	76	Atascadero
Creston Courtyards	75	Paso Robles

Single Family Housing Developments with 70 units or more would typically exceed the 1150MTCO₂e Bright-Line threshold.

Poly Canyon Village

Land Use	Size Metric
Apartment Low Rise	618 units
Fast Food Restaurant (No Drive Thru)	10 1000 sf
Parking Structure	1900 spaces
Other Non-Asphalt Surfaces	11.82 acres
Annual Emissions (MTCO₂e/yr) with designed mitigation	7353
Service Population (population + employment)	2718
Per Capita Emissions (MTCO₂e/yr/SP) with designed mitigation	2.7

Poly Canyon

Do Annual emissions exceed the bright-line threshold of 1,150 MTCO₂e? **Yes.**

Do per capita emissions exceed the efficiency threshold of 4.9 MTCO₂e? **No.**

Exceeds bright-line threshold, but less than the efficiency threshold



Poly Canyon

Mitigation

<u>Mitigation Measures</u>	<u>Applied Metric</u>
Traffic	
Increase Density	20.6 units per acre
	0.6 jobs per acre
Improve Walkability Design	2230 intersections per square mile
Improve Destination Accessibility	0 miles to job center
Increase Transit Accessibility	0 miles to transit station
Improve Pedestrian Network	Yes site, and connecting off-site
Provide Traffic Calming Measures	100 % streets with improvement
Increased Parking Fee	\$495 per year
Limit Parking Supply	30 % reduction in spaces
Energy	
Exceed Title 24	10 % Improvement
Installs High Efficiency Lighting	10 % Energy Reduction
Water	
Install Low-Flow Kitchen Faucet	18 % Reduction in flow
Install Low-Flow Shower	20 % Reduction in flow
Use Water Efficient Irrigation Systems	50 % Reduction
Solid Waste	
Institute Recycling and Composting Service	50 % Reduction in Waste Disposed

Example Residential Development

100 Unit, Single Family Housing Development	
Land Use	Size Metric
SFH	100 units
Service Population (Residents)	236 people
Annual Emissions (MTCO₂e/yr) without mitigation	1330.02
Annual Emissions (MTCO₂e/yr) with mitigation	1101.72
Per Capita Emissions (MTCO₂e/yr/SP) without mitigation	5.6
Per Capita Emissions (MTCO₂e/yr/SP) with mitigation	4.7

Do Annual emissions exceed the bright-line threshold of 1,150 MTCO₂e? **No.**

Do per capita emissions exceed the efficiency threshold of 4.9 MTCO₂e? **No.**



Exceeds efficiency and Bright-Line Thresholds before mitigation, but drops below both thresholds after mitigating 17%.

No further action would be required.

Example Residential Development

Mitigation

Mitigation Measures	Applied Metric
Traffic	
Improve Walkability Design	2230 intersections per square mile
Improve Destination Accessibility	0 miles to job center
Increase Transit Accessibility	0 miles to transit station
Integrate Below Market Rate Housing	10 number of units
Improve Pedestrian Network	Yes site, and connecting off-site
Provide Traffic Calming Measures	100 % streets with improvement
	100 % intersections with improvement
Limit Parking Supply	% with improvement
Area	
Uses Electric Landscape Equipment	75 % Electric
Energy	
Exceed Title 24	10 % Improvement
Installs High Efficiency Lighting	30 % Energy Reduction
On Site Renewable Energy	25 % of Electricity Generated
Water	
Use Reclaimed Water	75 % outdoor use
Install Low-Flow Bathroom Faucet	32 % Reduction in flow
Install Low-Flow Kitchen Faucet	18 % Reduction in flow
Install Low-Flow Toilet	20 % Reduction in flow
Install Low-Flow Shower	20 % Reduction in flow
Turf Reduction	60 % Reduction
Use Water Efficient Irrigation Systems	6.1 % Reduction
Solid Waste	
Institute Recycling and Composting Services	50 % Reduction in Waste Disposed

Chinatown	
Land Use	Size Metric
General Office Building	5.6 1000sqft
Other Non-Asphalt Surfaces	0.3 1000sqft
Parking Structure	30.4 1000sqft
Hotel	85.4 Room
Quality Restaurant	6.0 1000sqft
Apartments Low Rise	19.2 Dwelling Unit
Strip Mall	51.2 1000sqft
Annual Emissions (MTCO₂e/yr) without mitigation	2509.7
Annual Emissions (MTCO₂e/yr) with mitigation	1948.7
Service Population (population + employment)	260.2
Per Capita Emissions (MTCO₂e/yr/SP) without mitigation	9.6
Per Capita Emissions (MTCO₂e/yr/SP) with mitigation	7.5

Chinatown

Do Annual emissions exceed the bright-line threshold of 1,150 MTCO₂e? **Yes.**

Do per capita emissions exceed the efficiency threshold of 4.9 MTCO₂e? **Yes.**

Exceeds the bright-line and also exceeds the efficiency thresholds after 22% mitigation.



Chinatown

Mitigation

Mitigation Measures	Applied Metric
Traffic	
Increase Density	30.6 units per acre
	91 jobs per acre
Increase Diversity of Uses	Yes adds more Land-Use types
Improve Walkability Design	1345 intersections per square mile
Improve Destination Accessibility	0 miles to job center
Increase Transit Accessibility	0 miles to transit station
Improve Pedestrian Network	Yes project site
Provide Traffic Calming Measures	25 % streets with improvement
	25 % intersections with improvement
Limit Parking Supply	50 % with improvement
Energy	
Installs High Efficiency Lighting	5 % Energy Reduction

Could Chinatown change to meet the efficiency threshold?

Chinatown - Redesign	
Land Use	Size Metric
General Office Building	5.6 1000sqft
Other Non-Asphalt Surfaces	0.3 1000sqft
Parking Structure	30.4 1000sqft
Hotel (was 85 rooms)	25.0 Room
Quality Restaurant	6.0 1000sqft
Apartments Low Rise (was 19 Dwelling Units)	50.0 Dwelling Unit
Strip Mall	51.2 1000sqft
Annual Emissions (MTCO₂e/yr) without mitigation	1804.0
Annual Emissions (MTCO₂e/yr) with mitigation	1336.6
Service Population (population + employment)	282.9
Per Capita Emissions (MTCO₂e/yr/SP) without mitigation	6.4
Per Capita Emissions (MTCO₂e/yr/SP) with mitigation	4.7

Decrease the number of hotel rooms, while increasing the number of apartments.

Do Annual emissions exceed the bright-line threshold of 1,150 MTCO₂e? **Yes.**

Do per capita emissions exceed the efficiency threshold of 4.9 MTCO₂e? **No.**



Example Commercial Strip Mall & Restaurant

Commercial Strip Mall and Restaurant	
Land Use	Size Metric
Quality Restaurant	3 1000 sf
Strip Mall	45 1000 sf
Parking Lot	100 Spaces
Service Population (population+employment)	111
Annual Emissions (MTCO₂e/yr) without mitigation	1465.34
Annual Emissions (MTCO₂e/yr) with mitigation	1141.21
Per Capita Emissions (MTCO₂e/yr/SP) without mitigation	13.2
Per Capita Emissions (MTCO₂e/yr/SP) with mitigation	10.3

Do Annual emissions exceed the **bright-line threshold** of 1,150 MTCO₂e? **No.**

Do per capita emissions exceed the **efficiency threshold** of 4.9 MTCO₂e? **Yes.**

With 22% Mitigation, this project is able to reduce emissions below the Bright-Line Threshold.



Commercial Strip Mall & Restaurant

Mitigation

<u>Mitigation Measures</u>	<u>Applied Metric</u>
Traffic	
Improve Pedestrian Network	Yes site, and connecting off-site
Limit Parking Supply	25 % with improvement
Energy	
Exceed Title 24	10 % Improvement
Installs High Efficiency Lighting	50 % Energy Reduction
On Site Renewable Energy	75 % of Electricity Generated
Water	
Water Conservation Strategy	15 % reduction outdoor water use
Install Low-Flow Bathroom Faucet	32 % Reduction in flow
Install Low-Flow Kitchen Faucet	18 % Reduction in flow
Install Low-Flow Toilet	20 % Reduction in flow
Solid Waste	
Institute Recycling and Composting Services	50 % Reduction in Waste Disposed

Next Steps

Finalizing GHG Thresholds

- Public comment due date (January 6) to be addressed in staff report to the APCD Board
 - APCD Board Consideration (January 25)
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Questions?