AGENDA: 4

Community Choice Energy
In California

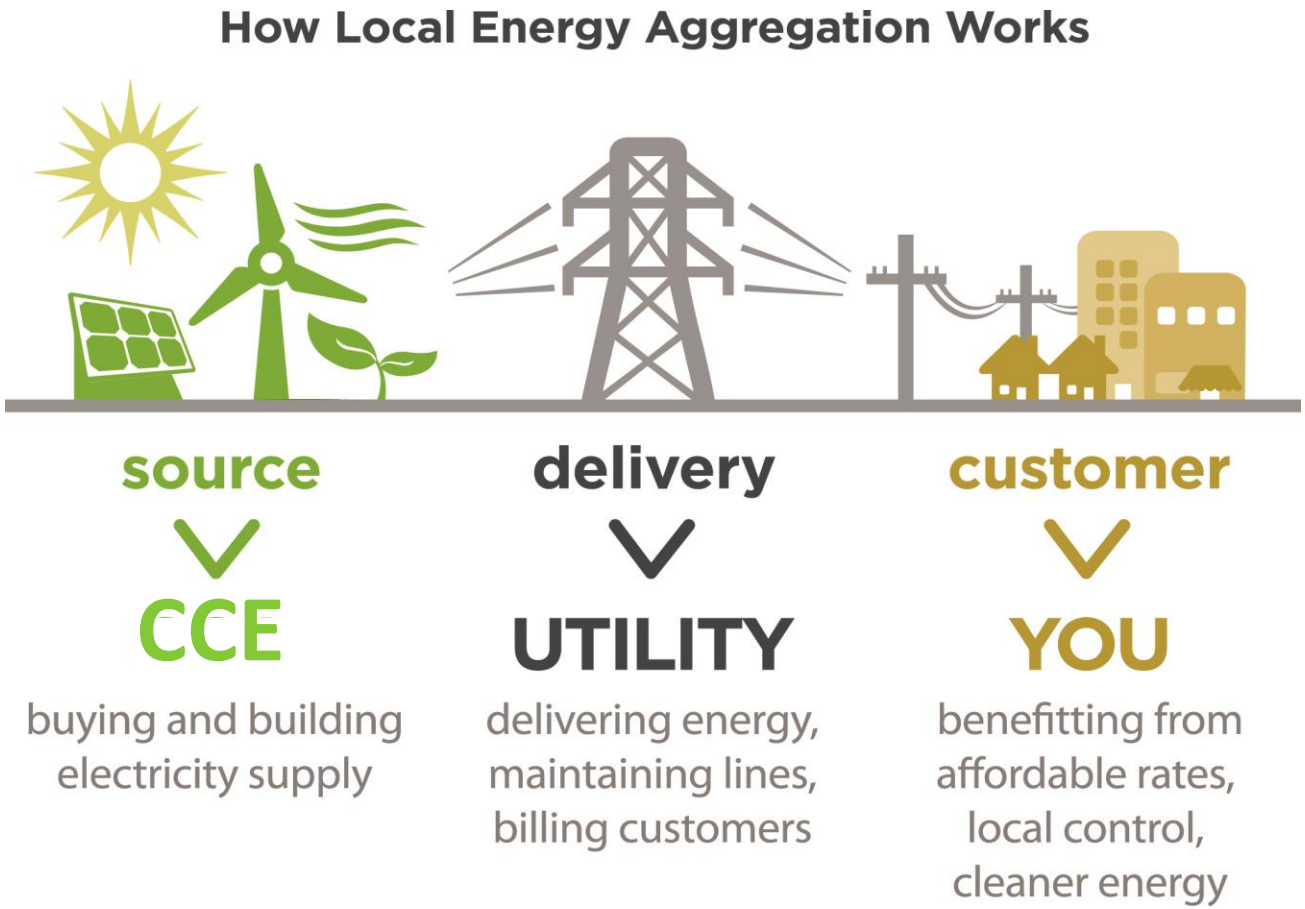
Where We've Been and Where We're Going

Bay Area Air Quality Management District
September 17, 2015

LEAN ENERGY U.S.
Local Energy Aggregation Network

What is Community Choice Energy?

CCE enables local governments to procure and/or develop power on behalf of their public facilities, residents and businesses. It creates a functional partnership between municipalities and existing utilities. It has the proven ability to lower electricity rates and rapidly green the grid.



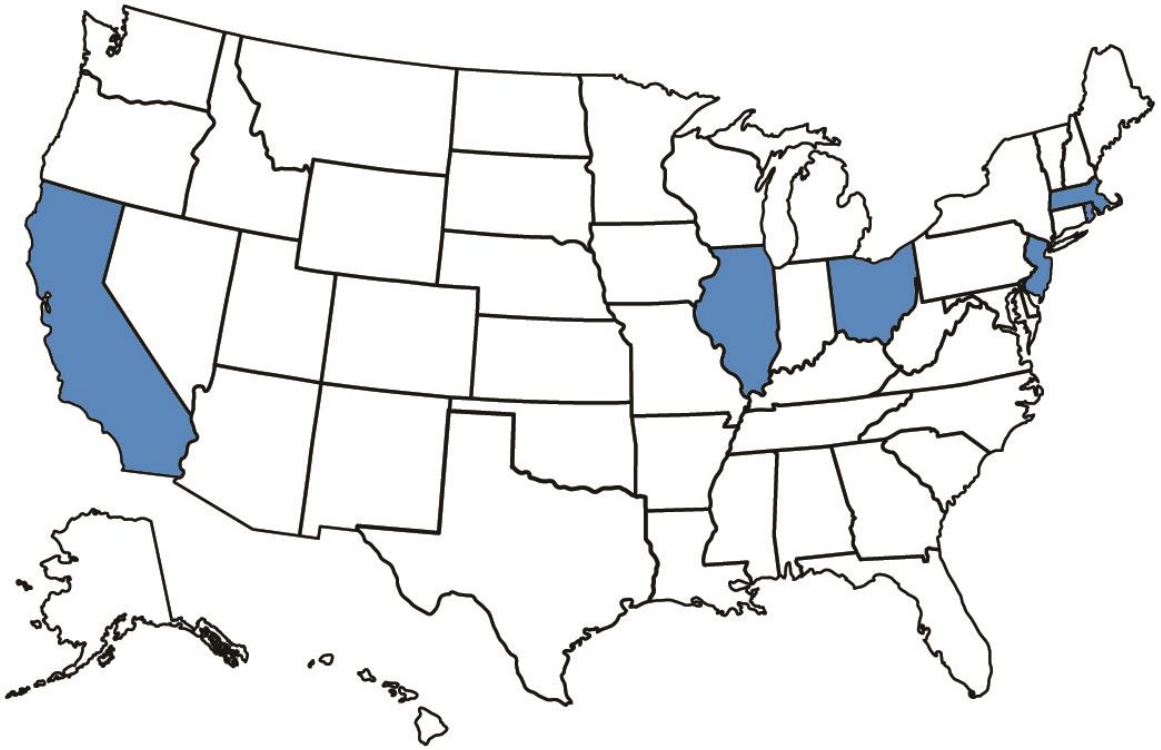
CCE Around the Country

Authorized by CA Assembly Bill 117 in 2002

<u>CCEs in 7 States</u>

- California
- Illinois
- Massachusetts
- New Jersey
- Ohio
- Rhode Island
- New York

<u>Under Consideration:</u>
Utah, Delaware, Minnesota



CA Policy Framework

CCE Responds to State and Local Climate & Energy Policy

2002/2011	**AB 117 and SB 790 -** CCA Legislation
2006	**AB 32** – Global Warming Solutions Act 15% below 1990 levels by 2020
2012/2015	**CA State RPS and RA requirements** 2012 - RPS = 33% by 2020 2015 - RPS = 50% by 2030 (SB 350)
2011/2012	**Governor's Renewable Energy Mandate -** 12,000 MW local/distributed RE by 2020 http://www.law.berkeley.edu/12901.htm
Current	**Local Climate Action & General Plans**

3 Programs in California… so far

	Launch Year	Avg. Customer Rate Savings	Power Options
MCE Clean Energy	2010	2-5% below PG&E	50% Renewable 100% Renewable Local Sol
Sonoma Clean Power	2014	6-14% below PG&E	33% Renewable 100% Renewable
Lancaster Choice Energy – The Power to Choose	2015	3-4% below SCE	35% Renewable 100% Renewable

Momentum Around the Bay

All Nine Counties Engaged …

Operational:	Marin, Sonoma Counties
Joined Marin:	Unincorporated Napa, Cities of Richmond, San Pablo, El Cerrito, Benicia
Launching Soon:	City/County of San Francisco
Under Development:	Alameda, San Mateo, Santa Clara counties
Early Investigations:	Contra Costa County
Next/Follow Up:	Solano County

CCE is Poised for Growth in California

Operational CCAs

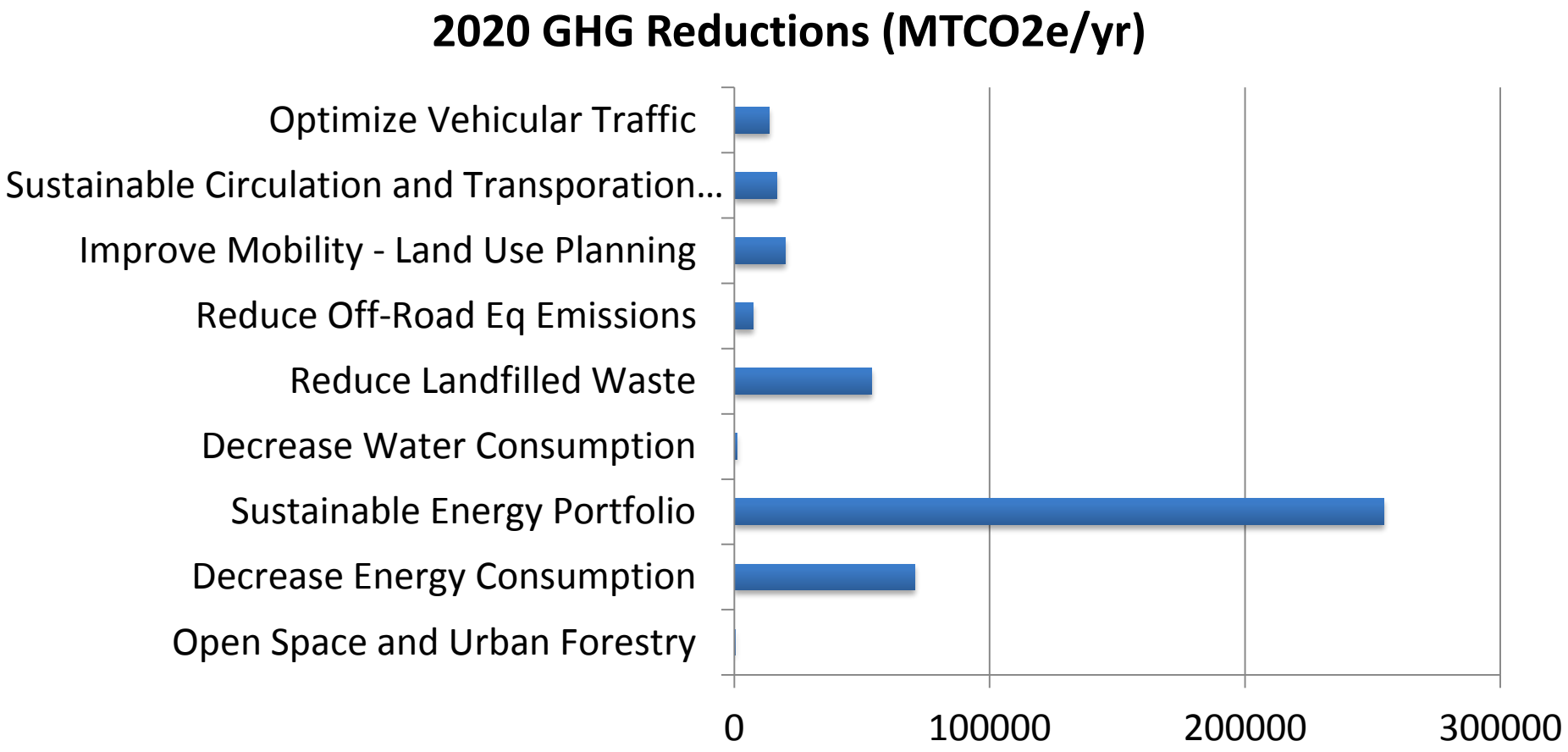
MCE Clean Energy
Lancaster Choice Energy
Sonoma Clean Power

Exploring / in Process

Alameda County
Butte County
City of Arcata/Humboldt County
City of Davis/Yolo County
City of San Diego
City/County of San Francisco
City of Sunnyvale/Silicon Valley Partnership
Contra Costa County
LA County/South Bay Consortium
Lake County
Mendocino County
Monterey Bay Community Power (Tri-County)
Napa County Cities
San Bernardino County
San Diego County
San Luis Obispo/Morro Bay
San Mateo County
Santa Barbara County
Solano County
Ventura County

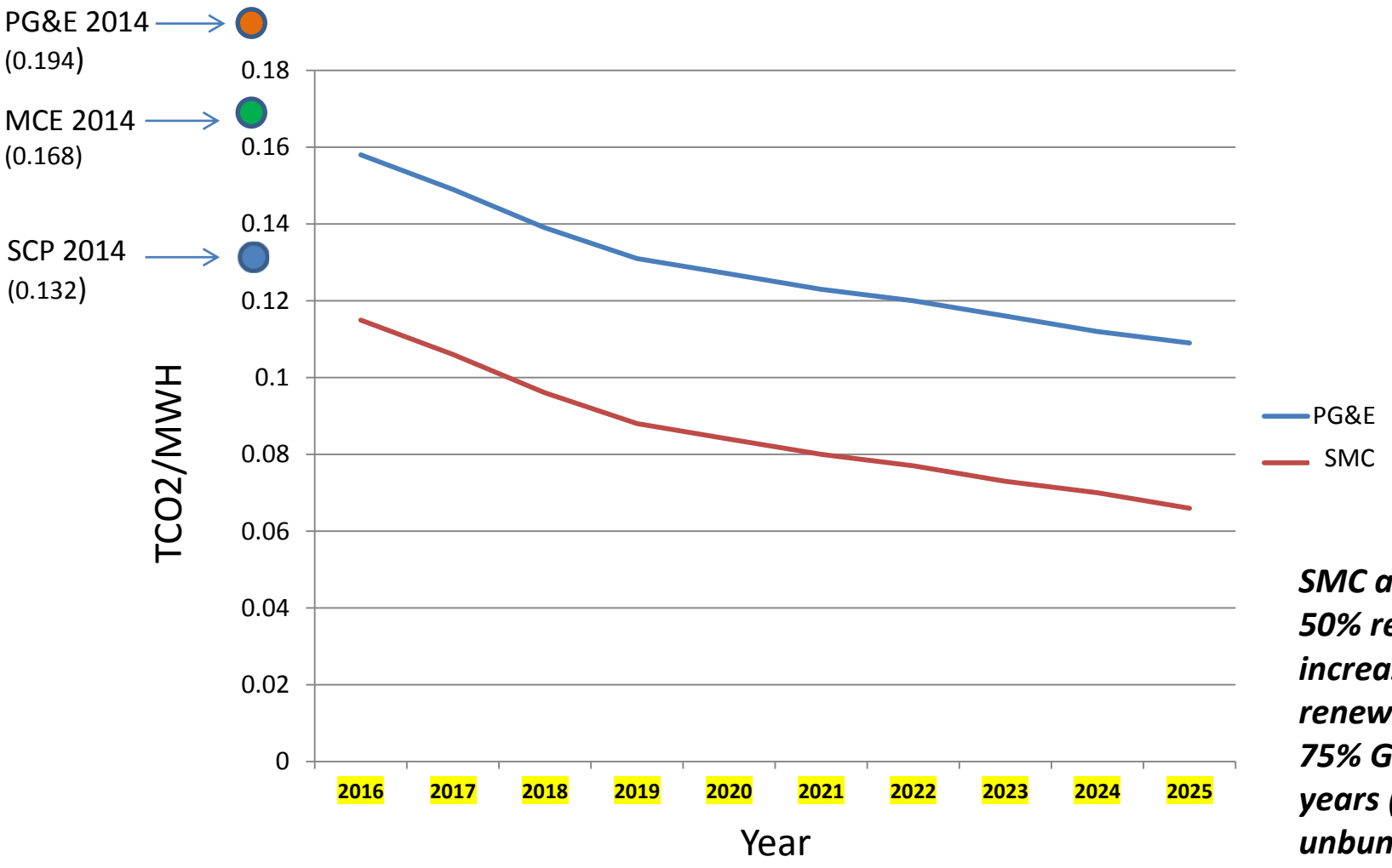
CCE Supercharges GHG Reduction

Excerpt from City of Sunnyvale CAP



Sunnyvale CAP - CCE realizes more GHG emission reductions than all other CAP measures **COMBINED**!

Emissions Rate Comparisons: San Mateo County CCA vs. PG&E



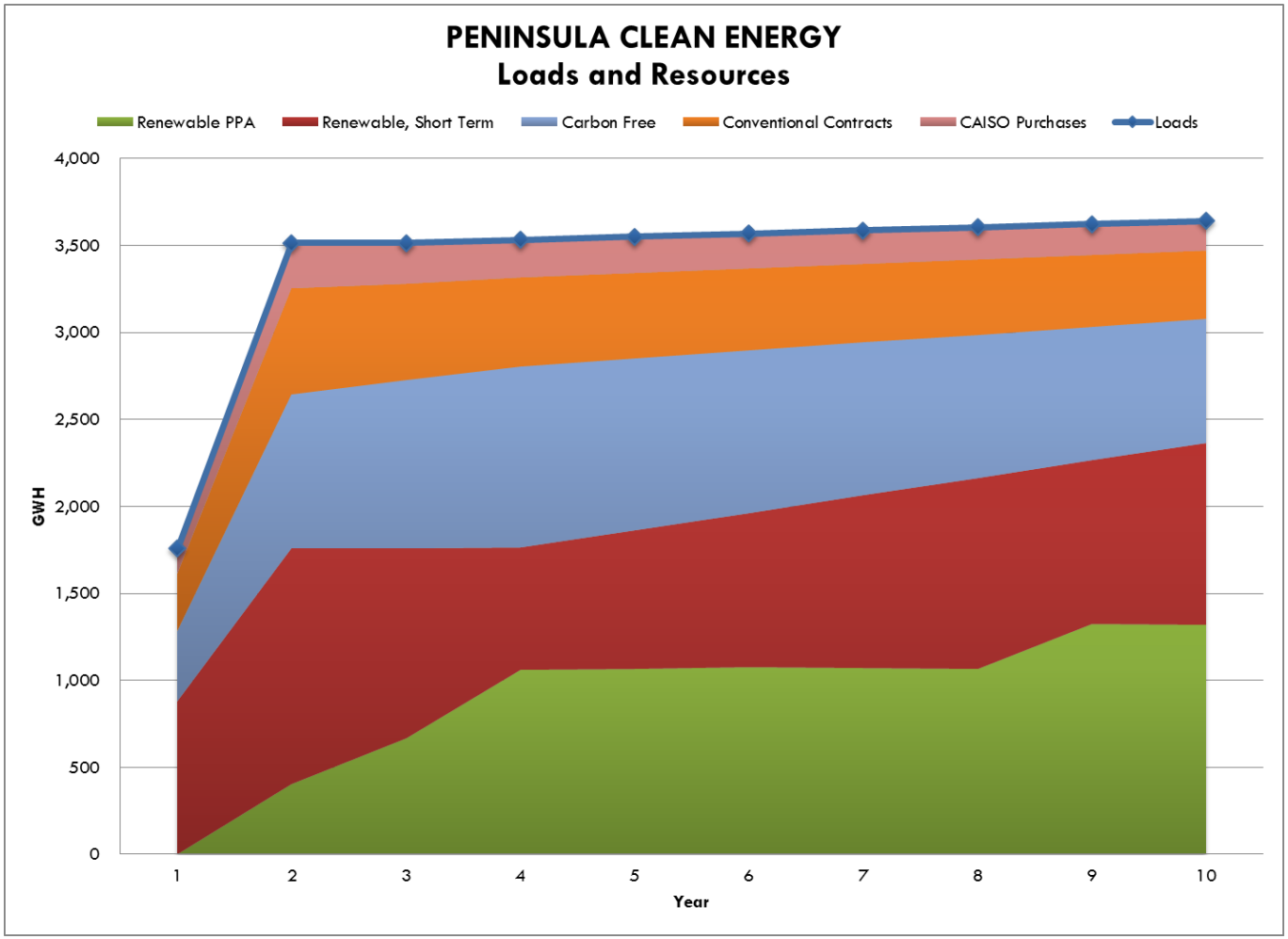
SMC assumptions: 50% renewable increasing to 65% renewable and 75% GHG-free in 10 years (no unbundled RECS)

In 2014 (for comparison):

PG&E = 0.194 **MCE = 0.168** **SCP = 0.132**

Source: Pacific Energy Advisors, Sept 2015

Possible San Mateo County Resource Mix ("Scenario 2")



Source: Pacific Energy Advisors, Sept 2015

2014 Emission Profile: Sonoma Clean Power

Electric Power Generation Mix*

Specific Purchases	Percent of Total Retail Sales (kWh)		
	PG&E	Sonoma Clean Power	
		CleanStart	EverGreen
Renewable	22%	33%	100%
• Biomass & Biowaste	4%	9%	0%
• Geothermal	5%	15%	100%
• Eligible hydroelectric	2%	0%	0%
• Solar electric	5%	0%	0%
• Wind	6%	9%	0%
Coal	0%	0%	0%
Large hydroelectric	10%	37%	0%
Natural gas	28%	0%	0%
Nuclear	22%	0%	0%
Other	0%	0%	0%
Unspecified sources of power	18%	30%	0%
Total	100%	100%	100%

* PG&E's generation data represents 2013 is provided in the "Annual Report to the California Energy Commission: Power Source Disclosure Program." SCP's generation data is forecast for 2014.

Total CO_2 Emissions from Electricity Sales per Megawatt-Hour**

PG&E	CleanStart	EverGreen
445 pounds	294 pounds	70 pounds

** The CO_2 emission rates reflect the energy generation provided by PG&E in 2012. SCP's CO_2 emission data is forecast for 2014.

Note that today, PG&E is at 427 lbs

SCP is where PG&E is expected to be in 2020

2014 Emission Profile: MCE (approx. 370 lbsCO2/MWH)

Electric Power Generation Mix*

Specific Purchases	Percent of Total Retail Sales (kWh)		
	PG&E	MCE Light Green	MCE Deep Green
Renewable	27%	56%	100%
• Biomass & Biowaste	5%	5%	0%
• Geothermal	5%	4%	0%
• Eligible hydroelectric	1%	0%	0%
• Solar electric	9%	<1%	0%
• Wind	7%	46%	100%
Coal	0%	0%	0%
Large hydroelectric	8%	9%	0%
Natural gas	24%	0%	0%
Nuclear	21%	0%	0%
Other	0%	0%	0%
Unspecified sources of power	21%	35%	0%
Total	100%	100%	100%

* 2014 data is from the "Annual Report to the California Energy Commission: Power Source Disclosure Program." PG&E data is subject to an independent audit and verification that will not be completed until October 1, 2015. The figures above may not sum up to 100 percent due to rounding.

CCE Generation Rate Comparison

(Per Kwh; As of May 2015)

Generation Rate	PG&E	MCE/Light Green	MCE Deep Green
E-1 (residential)	$0.098	$0.079	$0.089
A-1 (small commercial)	$0.102	$0.079	$0.089
E-19 (large industrial)	$0.099	$0.077	$0.087
AG-1 (agricultural)	$0.103	$0.089	$0.099
	PG&E	**SCP/Clean Start**	**SCP/Evergreen**
E-1 (residential)	$0.097	$0.071	$0.106
A-1 (small commercial)	$0.102	$0.076	$0.111
E-19 (large industrial)	$0.102	$0.077	$0.112
AG-1 (agricultural)	$0.108	$0.081	$0.116

***Note**: No guarantee will always be lower; existing CCE programs changes rate once a year compared to multiple times a year for PG&E.*

MCE and SCP Financial Conditions

Both programs are fiscally sound

	MCE (FY15-16)	SCP (FY15-16)
Total Projected Revenue	$145,933,000	$165,495,000
Expenses	$141,433,000	$148,588,000
Cost of Energy	$129,522,000	$130,100,000
Cost of Administration	4%	3.5%
Net Increase in Reserves	$4,500,000	$16,907,000

CCE's Collective Value in the Bay

County	2013 Total CEC Electricity Usage (Million kwh)	Est Annual Revenue @ .079/kwh (in Millions)	CA RPS (33%) (Million kwh)
Alameda	10,599	$837	3,498
Contra Costa	9,156	$723	3,022
Marin	1,391	$110	459
Napa	1,042	$82	344
San Francisco	5,868	$464	1,936
San Mateo	4,507	$356	1,487
Santa Clara	16,573	$1,309	5,469
Solano	3,223	$255	1,064
Sonoma	2,960	$234	977
TOTALS	**55,319 B kwh**	**$4.370 B**	**18,255 B kwh**

http://ecdms.energy.ca.gov/elecbycounty.aspx

CCE's Green Multiplier Effects…

- MCE and SCP have collectively put over 300MWs of new renewable power on the grid; of that, nearly 100 MW is local power
- New power projects use PLA agreements and union labor
- Local Feed-in-Tariff, Net Energy Metering programs incentivize local DG
- Public/Private Partnerships : Community solar, commercial and residential battery storage, home area networks/demand reduction, EV charging stations
- Energy efficiency funding is available from utility and state
- On-bill repayment option and green business loans
- Local job training programs that focus on underserved populations

Now is the time to take control of your local energy future.

CCA is the path forward.

For More Information:

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AGENDA: 5

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Air District Activities to Monitor, Analyze and Reduce Methane Emissions

Climate Protection Committee
September 17, 2015

Phil Martien, PhD
Exposure Assessment & Emissions Inventory Manager

Methane Sources

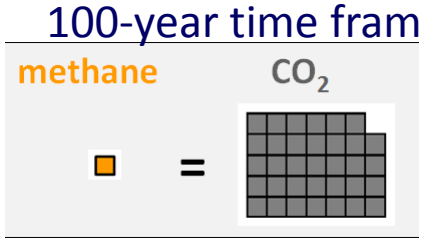
- Decomposition of organic matter
- Natural gas leaks & incomplete fuel combustion
- **Natural sources:** wetlands, wildfires
- **Human activities:** landfills, agriculture, wastewater, natural gas distribution, oil & gas wells, industry

Methane: a Fast-Action Strategy

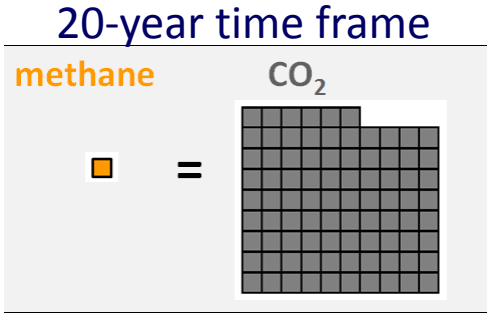
- Methane has a higher global warming potential than carbon dioxide (CO_2)
- Methane is removed from the atmosphere more quickly than CO_2
- Methane reductions are a fast-action strategy to slow the rate of climate change
- Key component of 10-Point Climate Work Program:
  - Update greenhouse gas (GHG) emissions inventory & forecasts
  - Improve & expand our methane measurement network
  - Initiate rule development
  - Expand enforcement efforts

Quantifying Methane's Warming Potential

- **Long-term:** Global warming potentials (GWPs) usually expressed on a 100-year time frame
  - **100-year time frame:** about **34* times** more warming from methane than CO_2

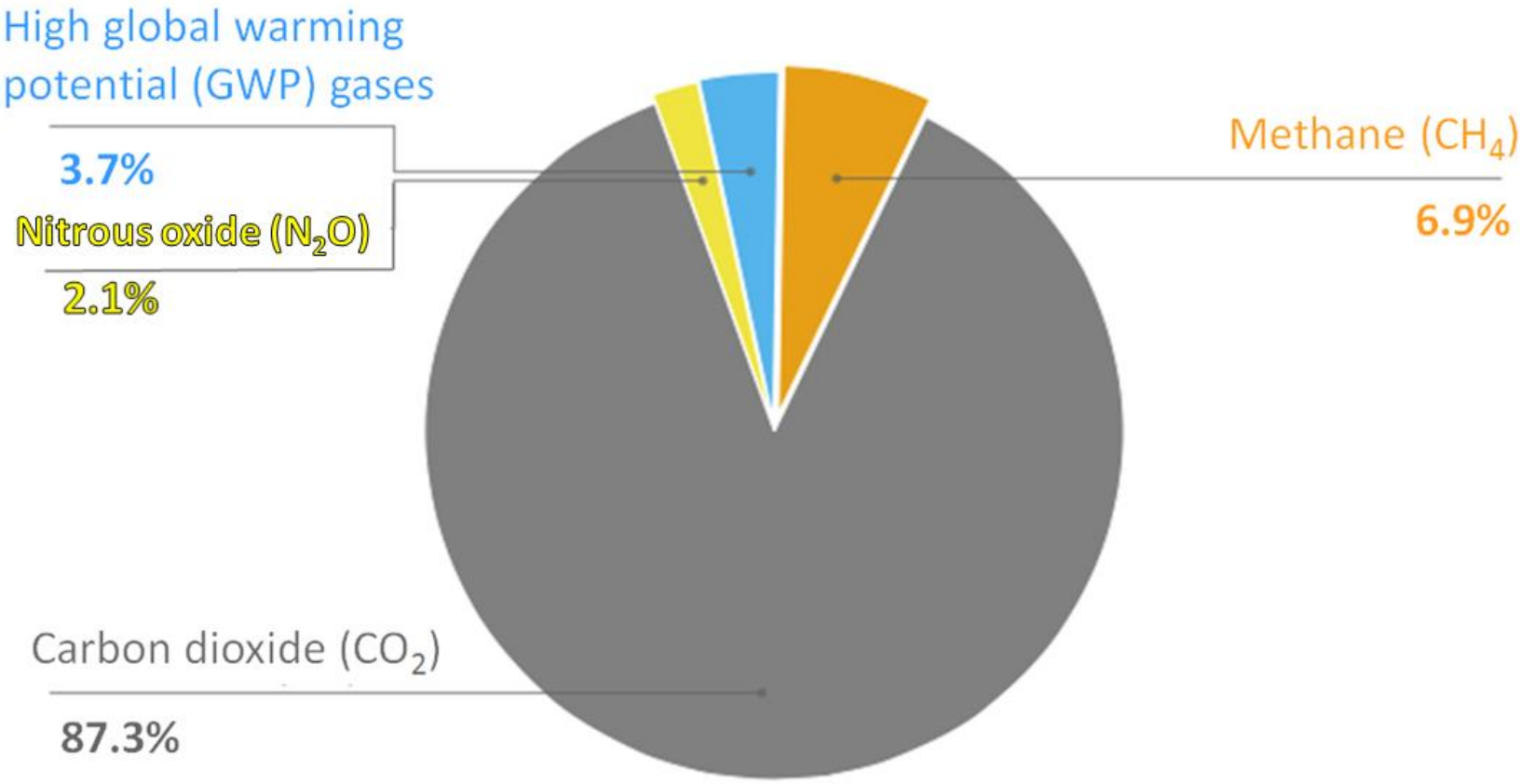


- **Near-term:** For short-lived climate pollutants, researchers sometimes use a 20-year time frame
  - **20-year time frame:** about **86* times** more warming from methane

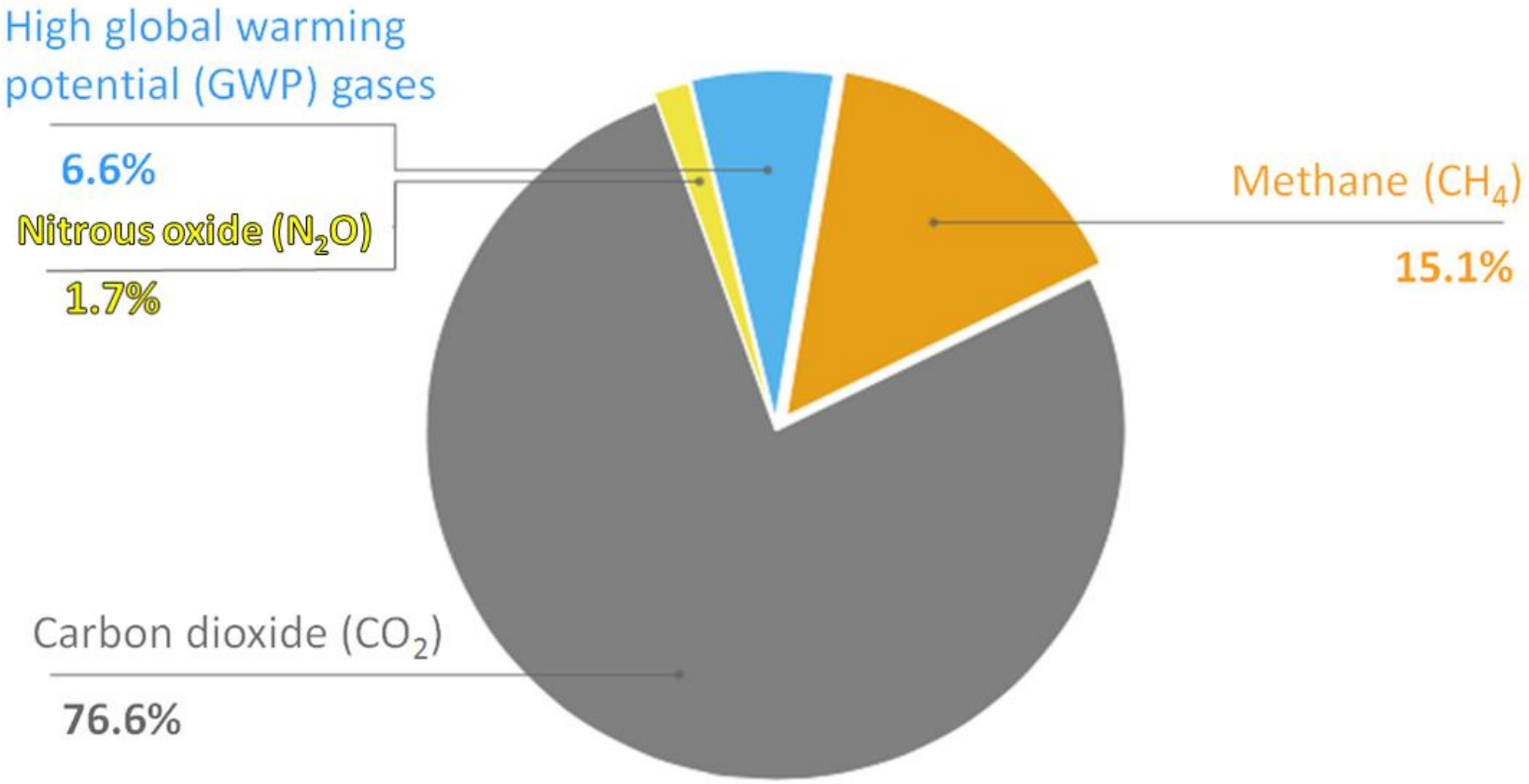


* Using the latest GWPs from the Intergovernmental Panel on Climate Change (IPCC; 5th Assessment Report, 2013)

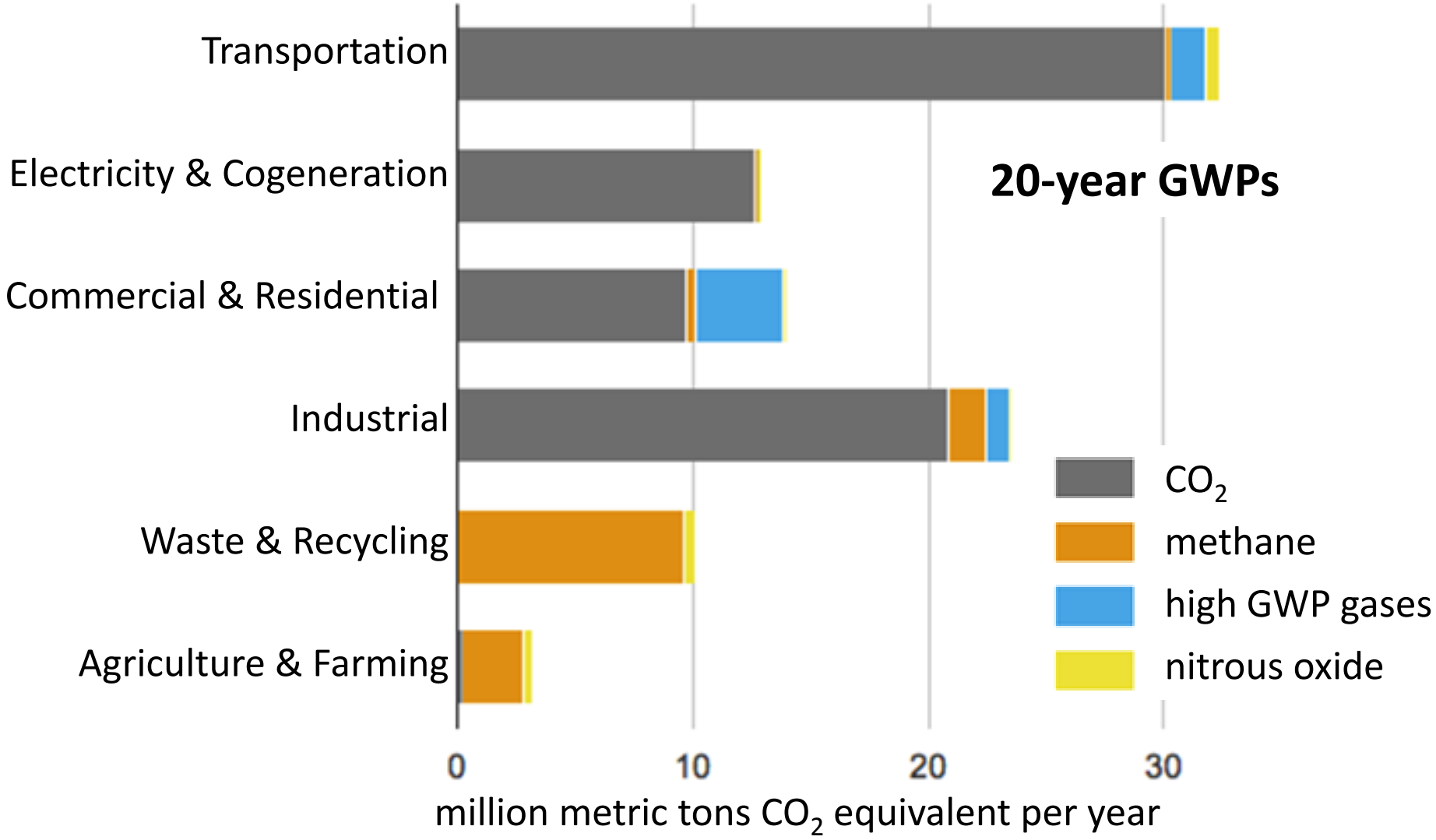
2015 Bay Area GHG Emissions: 100-year time frame



2015 Bay Area GHG Emissions: 20-year time frame



2015 Bay Area GHG Emissions by Source & Pollutant

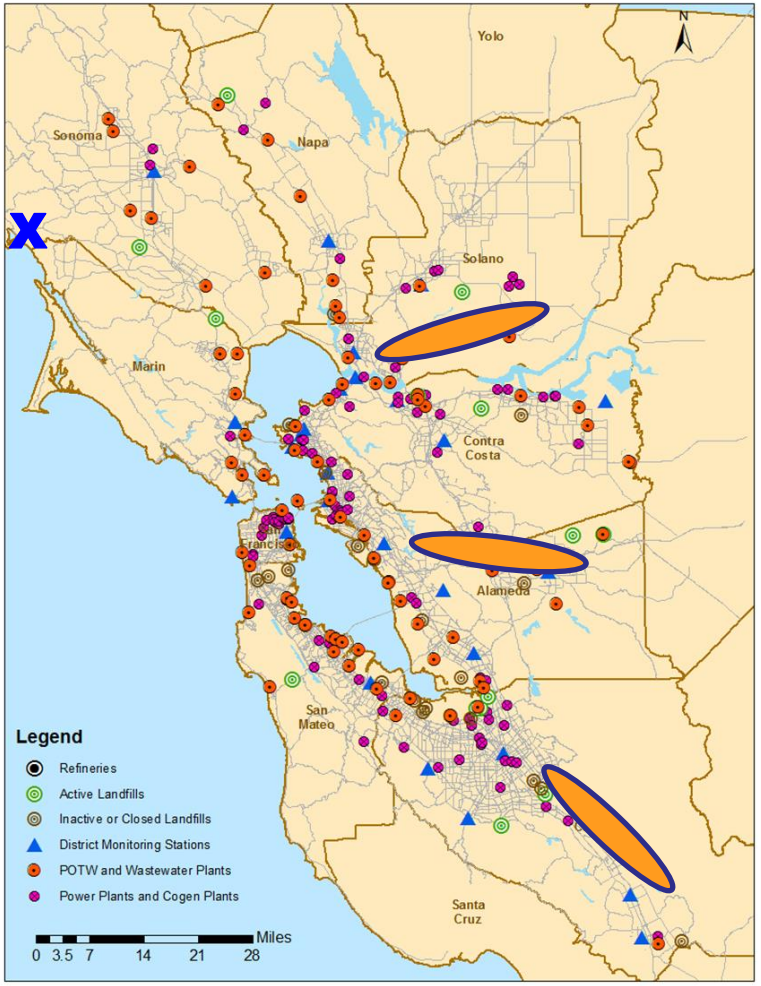


Reconciling Methane Emissions

- Recent studies in US, California and Bay Area:
  - Measure actual concentrations of methane
  - Indicate that current methods are under-reporting methane by **about 50 percent**
- Are we accurately calculating large sources of methane?
  - Landfills, natural gas distribution lines, animal waste, wastewater treatment, oil & gas wells
- Important implications for GHG reduction strategies

Enhanced Methane Measurements Phase 1

- Measure methane and CO_2
- Measure methane at background (**X**) & well-mixed, exit (⬭) sites
- Determine & track Bay Area contribution of methane, CO_2
- Use methane measurements to improve emissions estimates
- Operational fall 2015
- First air district in nation to develop regional GHG monitoring



Mobile Monitoring and Near-Source Methane Sampling – Phase 2

- Measure methane, CO_2 and N_2O
- Also measure methane isotopes (chemical markers) and "co-pollutants," such as NO_x
- Use ultraportable methane analyzer to measure near specific sources and detect leaks
- Operational first half 2016

Expected Outcomes from Enhanced Methane Measurements

- Increased accuracy in methane inventory
- Better data to inform rule-making and other climate protection programs
- Ability to track the progress and efficacy of policies
- Model approach for other air districts, state and federal air agencies

Initial Proposed Climate Rulemaking

(Methane Regulations Highlighted)

Regulations	Timeline
Limit GHGs in Permits (New Source Review)	Q2 2016
Cap & Trade Backstop for Refineries	TBD
Further Reduce Emissions from Back-up Diesel Generators	Q2 2016
Further Reduce Methane from Capped Wells	Q4 2016
Further Reduce Fugitive Methane from Oil & Gas Production (w/ ARB)	TBD
Further Reduce Methane Leaks from Natural Gas Transmission & Distribution (w/CPUC, ARB)	TBD
Further Reduce Black Carbon from Wood Burning	Q4 2015
Further Reduce Methane from Landfills	Q3 2016
Regulations Under Evaluation	**Timeline**
Cap & Trade Backstop for Other Sources	TBD
Reduce Emissions from Composting Operations	Q4 2016
Reduce Emissions from Wastewater Treatment Facilities	TBD
Require New Construction to be EV Ready	TBD
Limit Fossil Fuel Combustion from Furnaces, Water Heaters	TBD

Additional Activities to Reduce Methane Emissions

Activity	Description
Assistance to Local Governments	Support local methane strategies: reduce landfill waste, increase composting, etc.
Enhanced Enforcement	Increase focus on methane emission compliance, for example at landfills
Collaboration with State and other Air Districts	Work with the California Air Resources Board (ARB) and the California Air Pollution Control Officers Association (CAPCOA) on offset protocols for methane sources

Next Steps

- Continue to implement measures to limit methane
- Install/evaluate monitoring equipment
- Initiate mobile & source-specific sampling
- Continue emissions inventory analysis with LBNL
- Coordinate GHG measurements with academic and agency collaborators
- Partner with ARB on short-lived climate pollutant planning process
- Collaborate with regulators, researchers, business and non-government organizations