

Proposed Short-Lived Climate Pollutant Reduction Strategy

May 19, 2016

California Environmental Protection Agency

 **Air Resources Board**



Short-Lived Climate Pollutants

- Powerful climate forcers and harmful air pollutants
 - GWPs: tens to thousands of times greater than CO₂
 - About 40% of current global warming
- Black carbon, methane, and fluorinated gases (including hydrofluorocarbons or HFCs)
- Both CO₂ and SLCPs are critical for mitigating climate change
- Reducing SLCPs provides a wide array of climate, health, and economic benefits

California Already a Leader in Reducing SLCP Emissions

- Black carbon 90% lower than 1960s and cut in half again by 2020
- Methane emissions
 - Landfill regulation
 - Cap-and-Trade protocols
 - Oil and gas rules
- HFCs cut by 25% in 2020
 - Commercial Refrigeration
 - Motor vehicle air conditioning
 - Consumer products
- Opportunities for further reductions

Development of the SLCP Strategy

- Recommended action in the 2014 Scoping Plan Update
- Required by Senate Bill 605 (Lara, 2014)
- One of Governor's "pillars"
- Concept Paper released May 2015
- Draft Strategy released Sept 2015
- Proposed Strategy released April 2016

Public Outreach

- Extensive stakeholder outreach (e.g., NGOs, industry)
- Coordination with CAPCOA/air districts
- Consultation with the EJAC
- Seven public workshops
- Hundreds of letters received
- Proposed Strategy and Draft Environmental Analysis undergoing public review

EJAC Participation

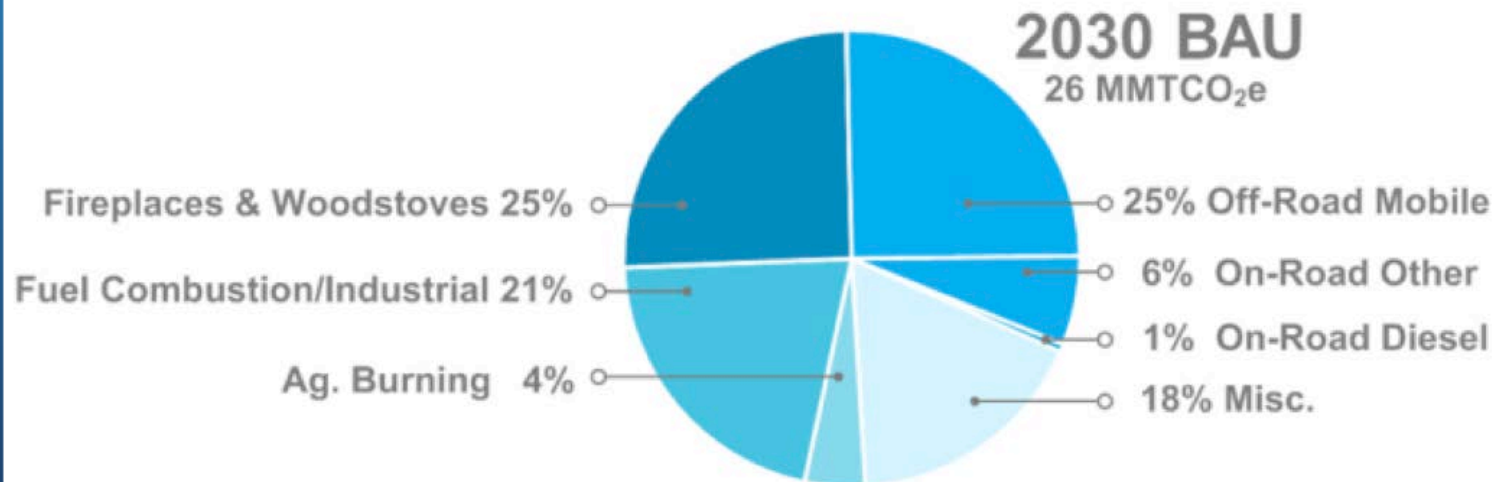
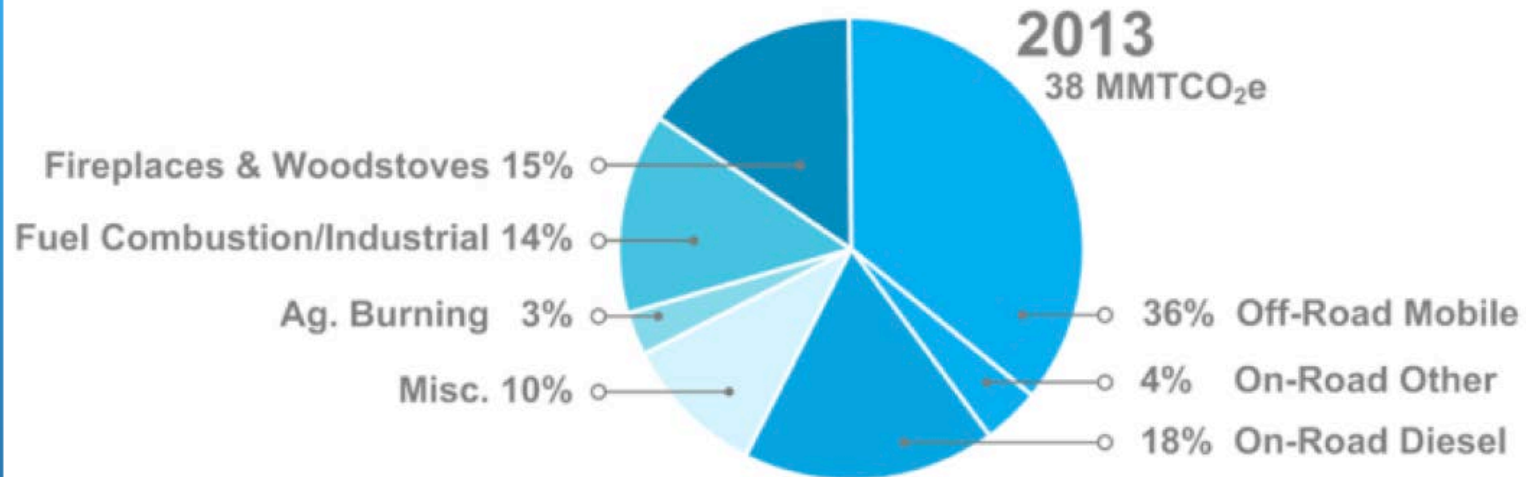
- Draft Strategy discussed at December 2015 EJAC meeting
- Deep dive with EJAC members in March 2016
- April 2016 EJAC recommendations incorporated into Proposed Strategy
- Regional workshops on Proposed Strategy

Proposed SLCP Emission Targets

	Inventory (2013)	Forecast (2030)	Targets (2030)	Percent Reduction from 2013 Levels
Black Carbon (Non-forest)	38	26	19	50%
Methane	118	117	71	40%
HFCs	40	65	24	40%

Emission Levels in MMTCO₂e (using 20-year GWPs)

Black Carbon Emissions



Existing Black Carbon Reduction Programs

- Reductions from air district and ARB programs
 - Prescribed, agricultural, and residential burning
 - Charbroiling
 - In-Use fleets
 - Off-Road engine standards
 - Clean fuels
 - Ship engine & fuel standards
 - Incentive programs
- Significant health benefits



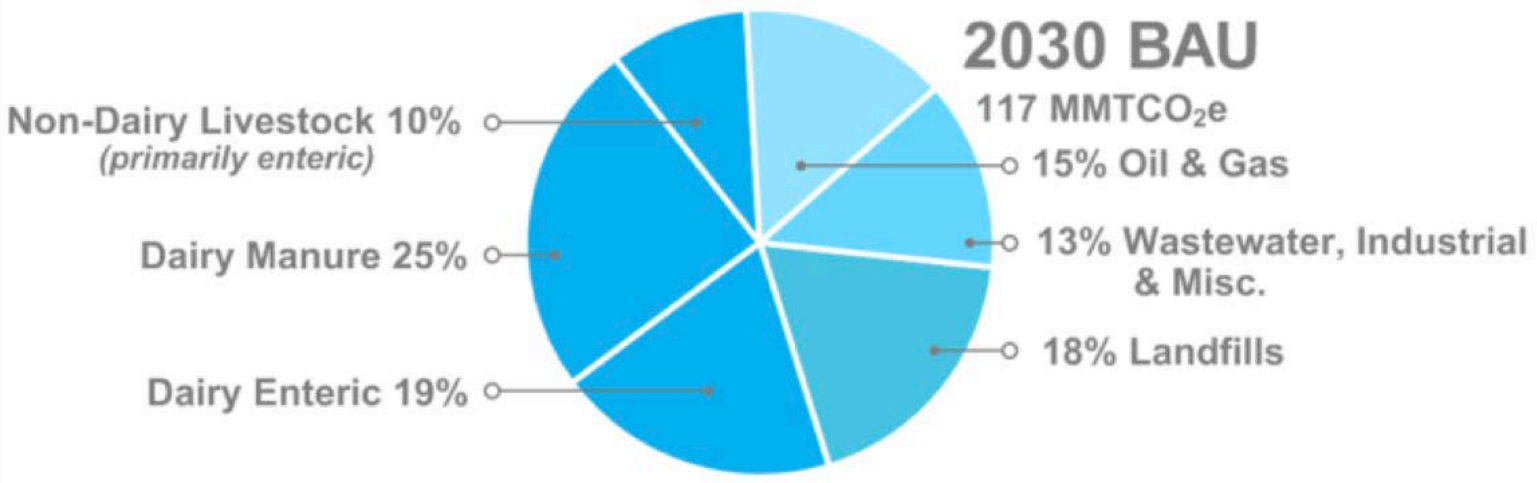
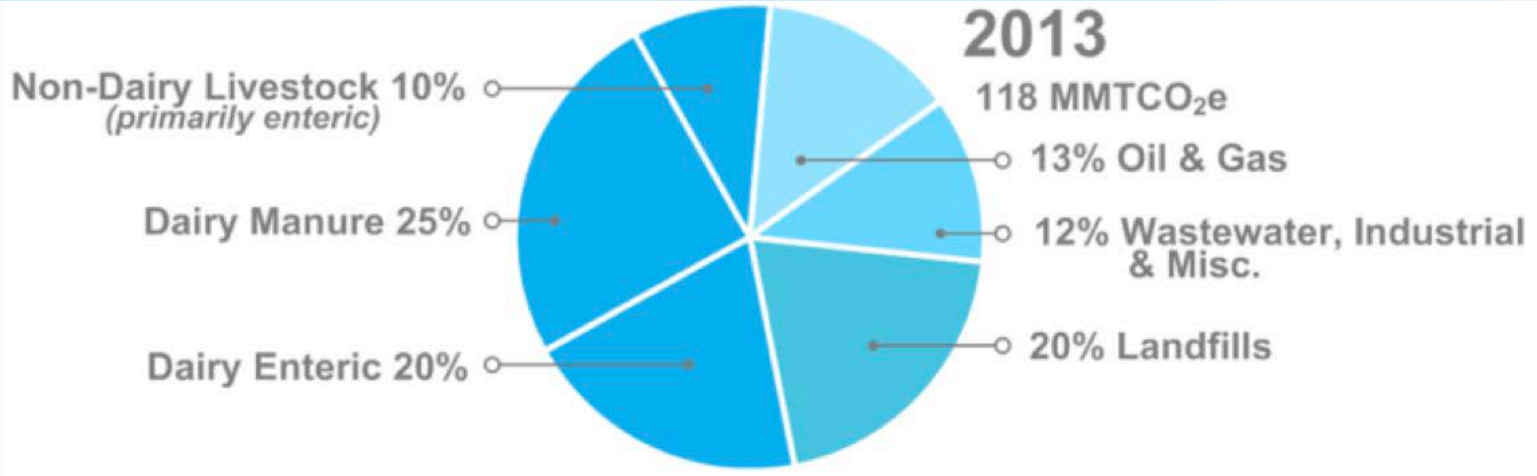
Black Carbon Measures (Non Forest-Related Sources)

- Incentive programs to replace wood burning stoves
- Governor's proposed budget includes \$40 million of C&T proceeds for woodstove replacements
- Additional reductions from other planning activities to meet air quality and GHG goals
 - California Sustainable Freight Action Plan
 - State Implementation Plans
 - 2030 Target Scoping Plan Update
- 50% Reduction Target

Forest-Related Sources of Black Carbon Emissions

- Increase rate of fuel reduction to improve forest health and reduce wildfire risk
 - Proposed State goal to match U.S. Forest Service restoration target of 500,000 acres/yr for non-federal forestlands
- Requires significant investment
 - Governor's proposed budget has \$150 million to support forest programs
 - Support market development for beneficial uses of woody waste
- Integrate forest planning efforts and goals with SLCP, 2030 Target Scoping Plan Update, and State's Forest Carbon Plan

Methane Emissions



Dairy Targets

- Manure management:
 - 20% reduction in 2020
 - 50% reduction in 2025
 - 75% reduction in 2030
- Enteric Fermentation
 - 25% reduction goal by 2030
- These efforts would lead to roughly 50% reduction from dairy sector by 2030



Dairies — Achieving Reductions

- Incentives needed to support infrastructure investments
- Governor's proposed budget
 - \$35M C&T proceeds for dairy digesters
 - \$20M for Healthy Soils
- Research to better understand management practices and benefits
- Establish working group to address barriers
- Begin regulatory process in 2017



Landfills

- Develop regulation with CalRecycle by 2018:
 - Virtually eliminate organics disposal in landfills by 2025
 - Includes food waste prevention and rescue programs
- Governor's proposed budget includes \$100M C&T proceeds for waste diversion



Wastewater Treatment Plants

- Develop regional opportunities to co-digest waste at existing and new digester facilities
- ARB and other agencies to assess actions to require capturing and utilizing methane
- 40% Reduction Target

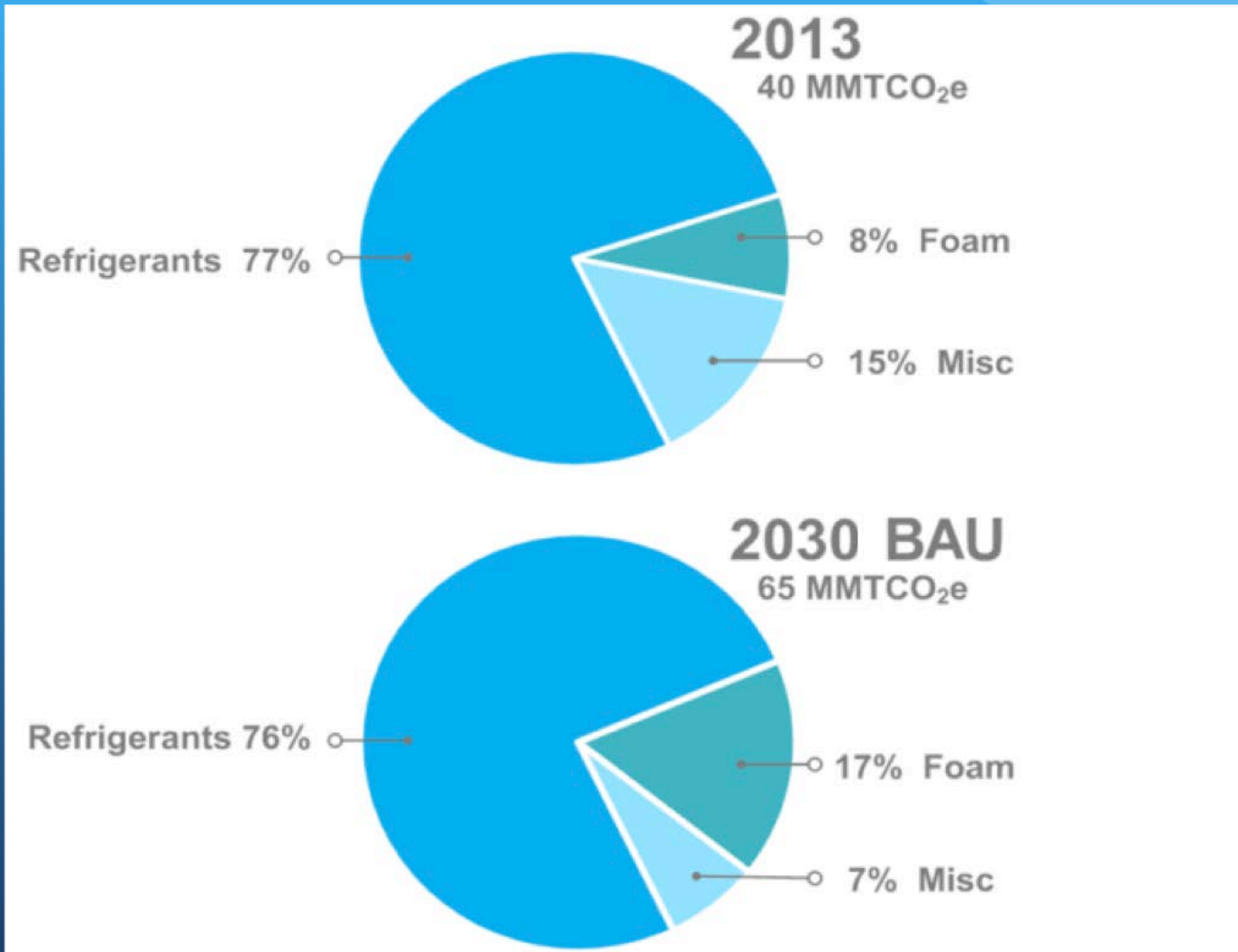


Oil and Gas Sector

- ARB 2016 rulemaking to reduce fugitive and venting methane emissions from oil and gas sector
- CPUC rulemaking by 2017 to minimize methane leaks from natural gas pipelines (SB1371, Leno)
- 45% Reduction Target



HFC Emissions



HFC Measures

- Global phasedown of production and use through federal agreements
- Evaluate alignment with other jurisdictions in absence of agreements in 2016
- Prohibitions beginning in 2020:
 - Sale of new very-high GWP refrigerants
 - Use of high-GWP refrigerants in new equipment
- 40% Reduction Target



HFC Measures – Incentives

- Early adoption incentives for low-GWP refrigeration before national/state requirements
- Governor's proposed budget includes \$20 million for refrigerants program
- Focus on grocery stores in EJ / DAC



Economic Analysis

- Conducted for new measures identified in Proposed Strategy:
 - Residential Fireplace Conversion
 - Dairy Manure Management
 - Landfill Organic Waste Diversion
 - ARB's Proposed Oil and Gas Regulation
 - HFC Reduction Measures

Economic Analysis (cont.)

- Analysis included:
 - Direct economic costs of new strategies
 - Direct economic benefits (e.g., efficiency cost savings, revenue from marketable products)
- Billions of dollars in infrastructure investments
- Potential billions of dollars in revenue
 - Sale of LCFS and federal fuel credits
- SLCP measures will be included in the macroeconomic analysis of Scoping Plan Update

Public Health Impacts

- SLCP emissions contribute to both ozone and PM2.5
- Reducing SLCPs will have public health and environmental co-benefits
 - Converting wood stoves can reduce sources of local PM emissions
 - Converting methane to renewable fuels can displace diesel use
 - Changing manure management practices can help improve nutrient management and water quality
 - Diverting organics from landfills can reduce need for landfill expansion
 - Food rescue and recovery could provide better access to healthy foods

Environmental Analysis

- Draft Environmental Analysis (EA) completed
 - Potentially significant impacts found for some resource areas
- Released for 45-Day public comment period
 - April 11, 2016 – May 26, 2016
- ARB will prepare written responses to comments received on Draft EA

Next Steps

- Comment period ends for Draft EA and Proposed Strategy on May 26, 2016
- Methane symposium on natural gas system June 6-7, 2016
- Present final SLCP Strategy, written responses, and Final EA for Board consideration in Fall 2016
- Final SLCP Strategy integrated into upcoming 2030 Target Scoping Plan Update