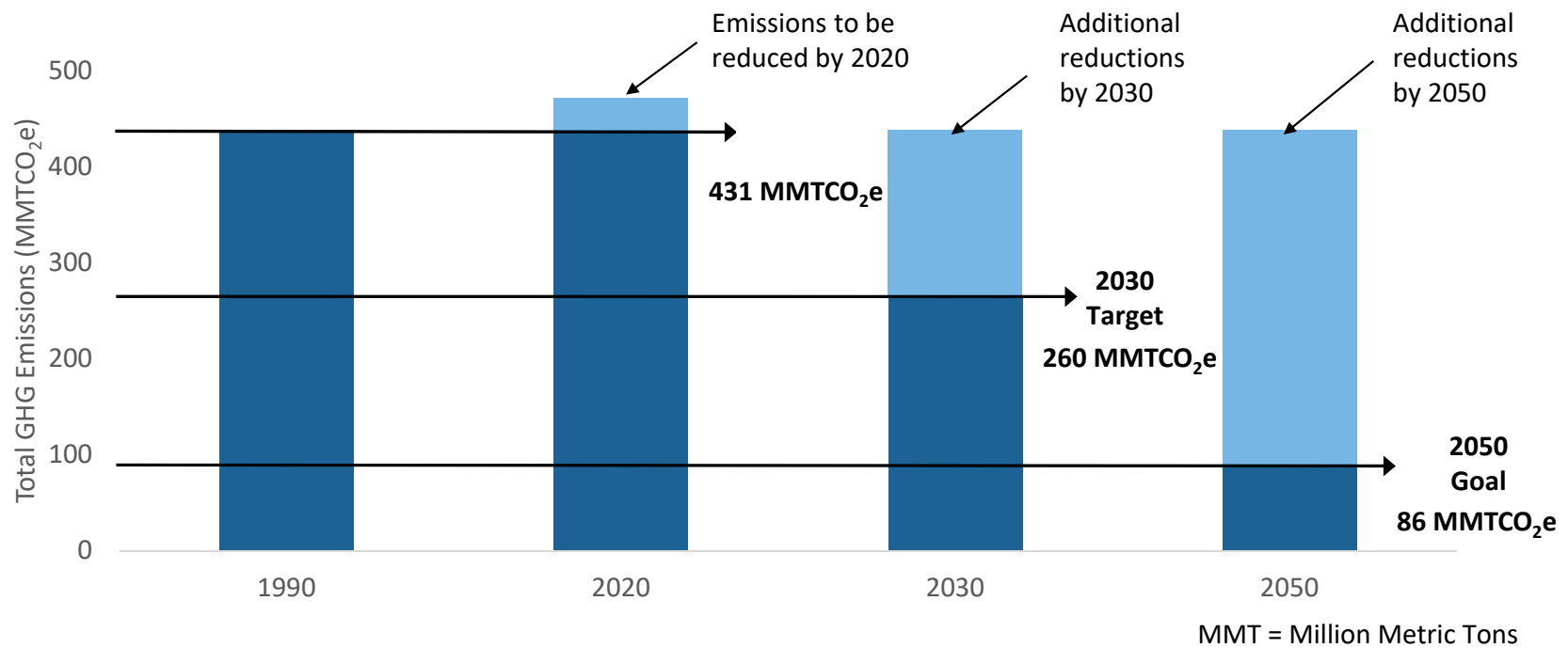


Implementation Update: 2017 Scoping Plan



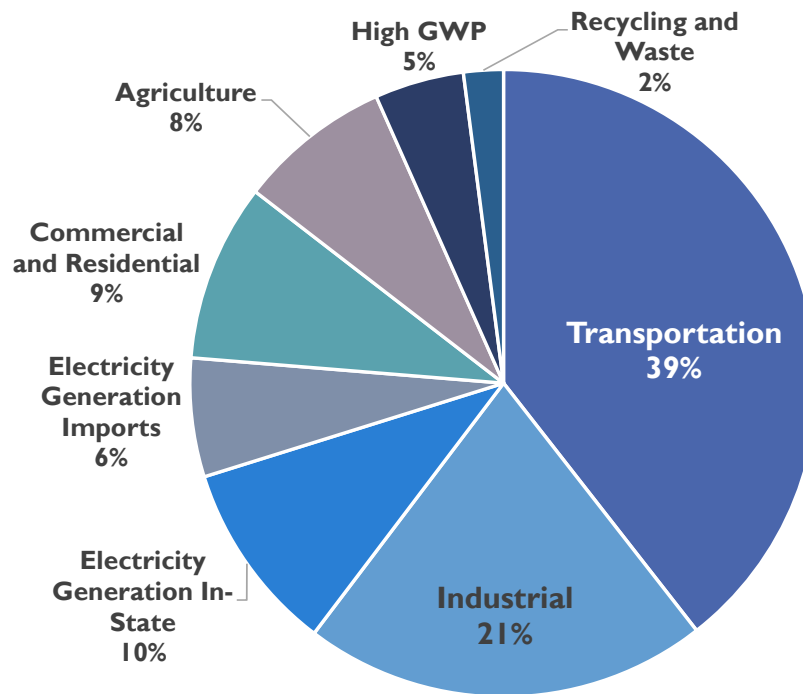
FEBRUARY 21, 2019

California GHG Emissions Reduction Targets



*2016 emissions below 2020 target

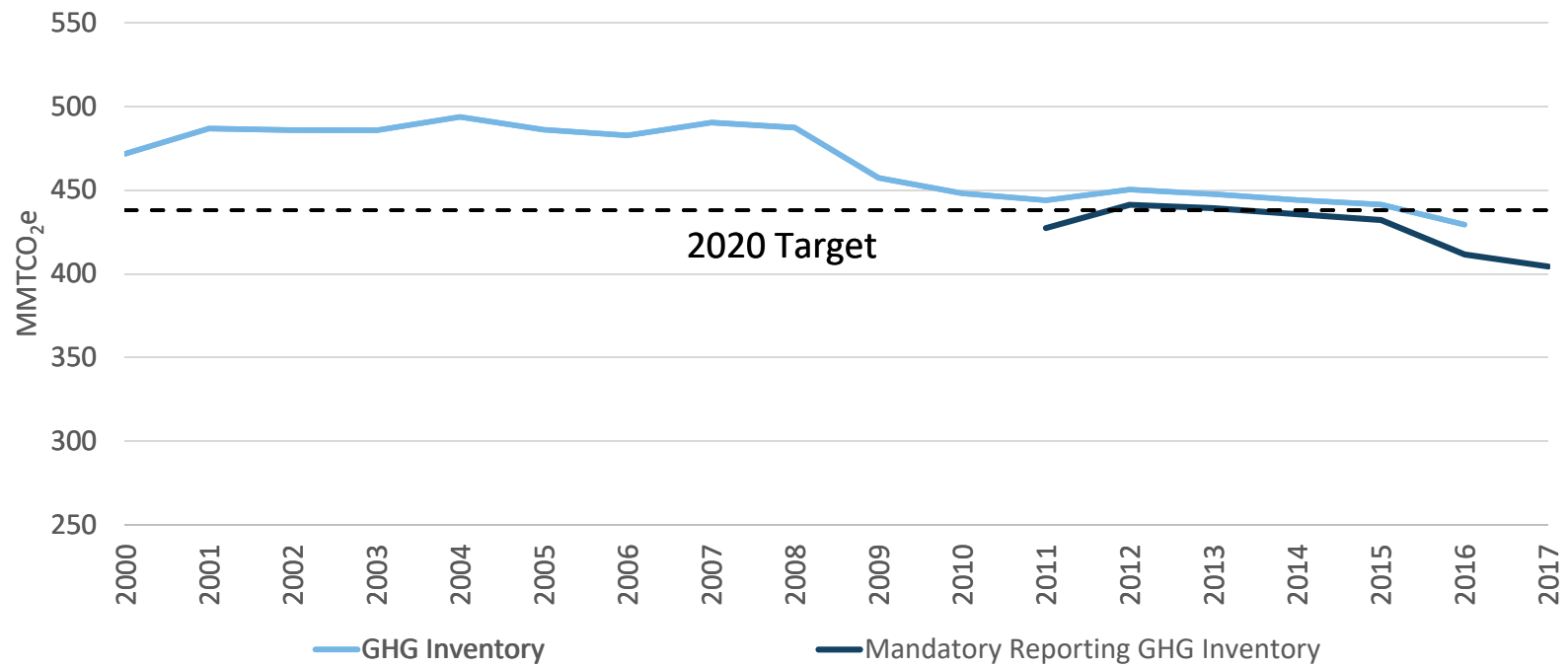
California's GHG Emissions



2016 Total CA Emissions: 429.4 MMTCO₂e

Source: CARB, 2018 Edition
California GHG Inventory

Progress on Reducing GHG Emissions

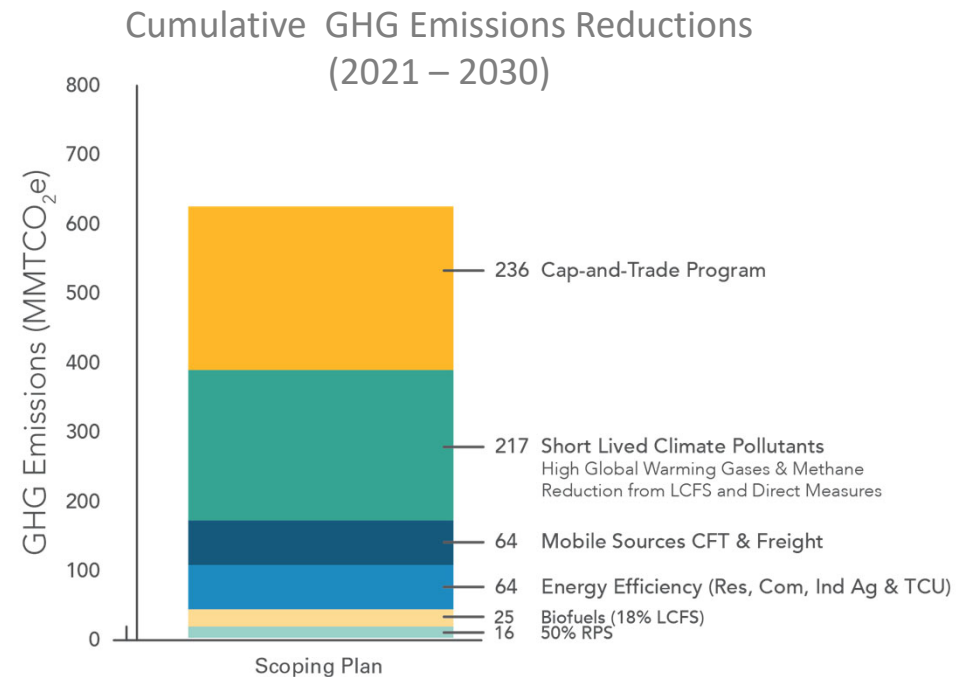


Source: CARB, 2018

MMT = Million Metric Tons

Scoping Plan Measures to Achieve 2030 Target

- Reflected best available data at the time
- Policy and regulatory changes since Scoping Plan adoption
- Short-lived climate pollutant strategy second largest measure
 - Sources not covered by Cap-and-Trade



Source: CARB, California's 2017 Climate Change Scoping Plan

Metrics for Tracking Progress

- Annual Emissions Reporting
 - Greenhouse gas data
 - Enhanced criteria and toxics data
- Trends Data
 - State GDP and population
 - Energy and fuel use
 - Renewable electricity generation
 - Low carbon fuel volumes
 - Technology deployment
 - New source-based emission analysis
 - Vehicle miles traveled
- Climate Change Investments Reports

Summary of Board Actions in 2018

- Set GHG Planning Targets
 - Electricity sector and retail electricity providers
 - Sustainable Communities Strategies
- Strengthen/Extend Existing Regulations
 - Vehicle Standards
 - Low Carbon Fuels
 - Cap-and-Trade Program
- Adopt New Requirements
 - Short-Lived Climate Pollutants from refrigeration/foam end uses

Climate Investments



affordable
housing



public
transportation



renewable
energy



zero-emission
vehicles



environmental
restoration



recycling



sustainable
agriculture



and
much more

- \$1.4 billion appropriated in fiscal year 2018-2019
- \$8.4 billion appropriated since 2014
- > 50% of investments to date benefit disadvantaged communities

Transportation Focus in 2018

- Implementation of 2017 Scoping Plan will reduce on-road fuel demand 45% by 2030
 - Transportation sector GHG emissions increased 2% from 2015-2016
- Board direction to investigate additional cost-effective technologically feasible GHG reduction measures
 - Interagency Workshop on Opportunities for Additional GHG Reductions from Petroleum Transportation Fuels
- Governor direction to explore new regulatory actions to accelerate ZEVs
 - Workshop on Assessment of a Zero Emission Vehicle Requirement for Public and Private Light- and Heavy-Duty Vehicle Fleets

Transportation: Additional Actions Needed

- Need Vehicle Miles Traveled (VMT) reductions to achieve the 2030 GHG emission reduction target
 - VMT reduction of 7% below projected 2030 levels, 15% below projected 2050 levels
 - SB375 regional targets do not achieve the VMT level called for in the Scoping Plan
- Sustainable Development
 - Reduce VMT
 - Protect Natural and Working Lands
 - Develop Affordable Housing
- AB 32: Achieve reductions in this sector to compensate for potential federal waiver revocation

SLCP Strategy: 2-Yr Collaboration with Dairy Working Group

Working Group

Fostering Markets for Non-Digester Projects



Fostering Markets for Digester Projects

Research Needs, Including Enteric Fermentation

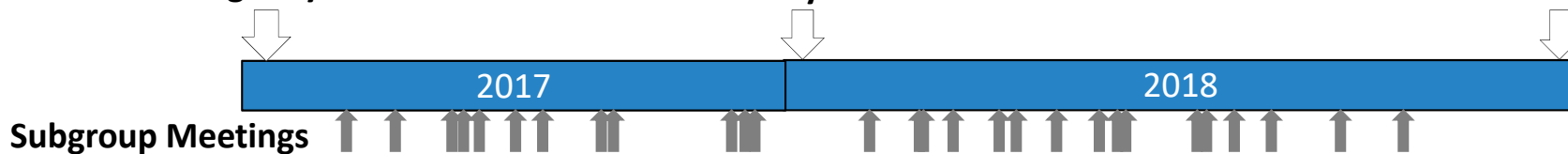
Subgroups' Membership

- Dairy Industry
- Utilities
- Project Developers
- Environmental Justice (EJ) Organizations
- Conservation Groups
- Financial Consultants
- NGOs
- Academia
- Local, State, and Federal Agencies

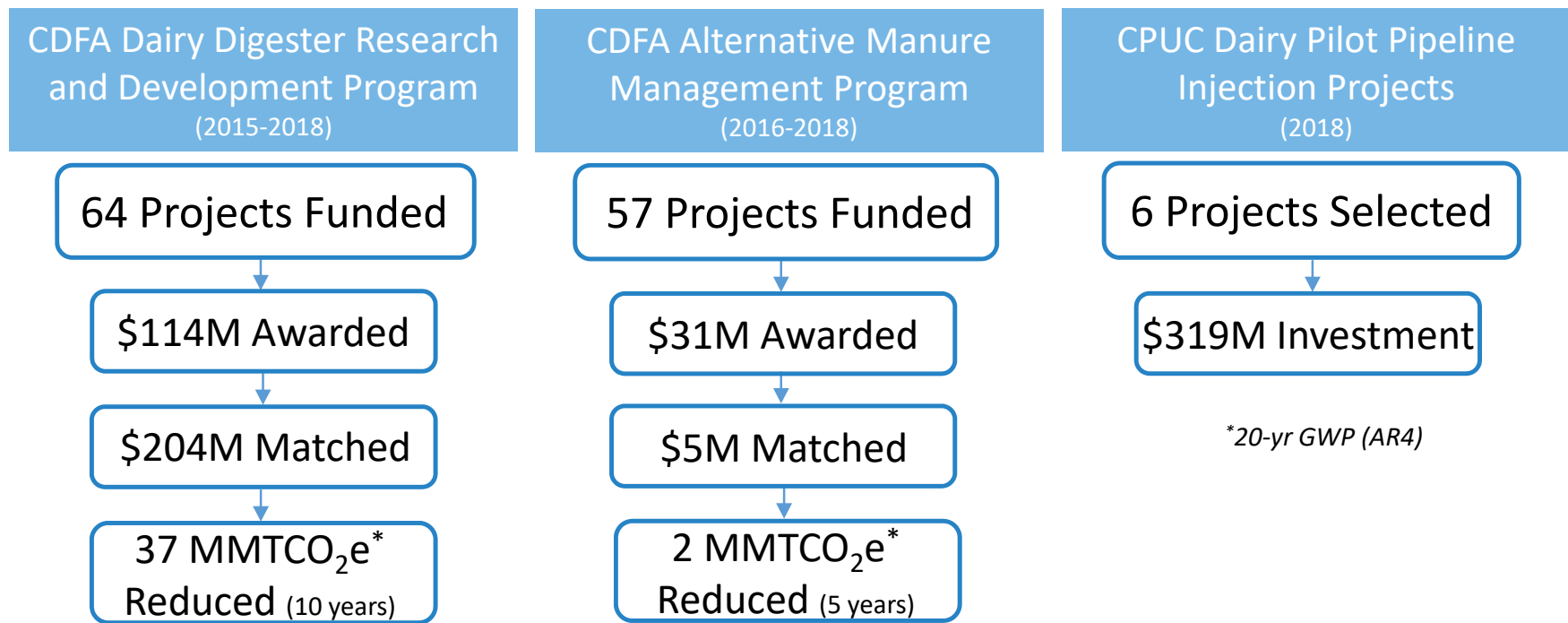
Workgroup Kick-Off Meeting May 2017

Workgroup Update Meeting January 2018

Workgroup Final Meeting December 2018



SLCP Strategy: Significant Public and Private Funding of Dairy Projects



Not shown above: additional \$99M was allocated for DDRDP and AMMP in FY 2018/2019

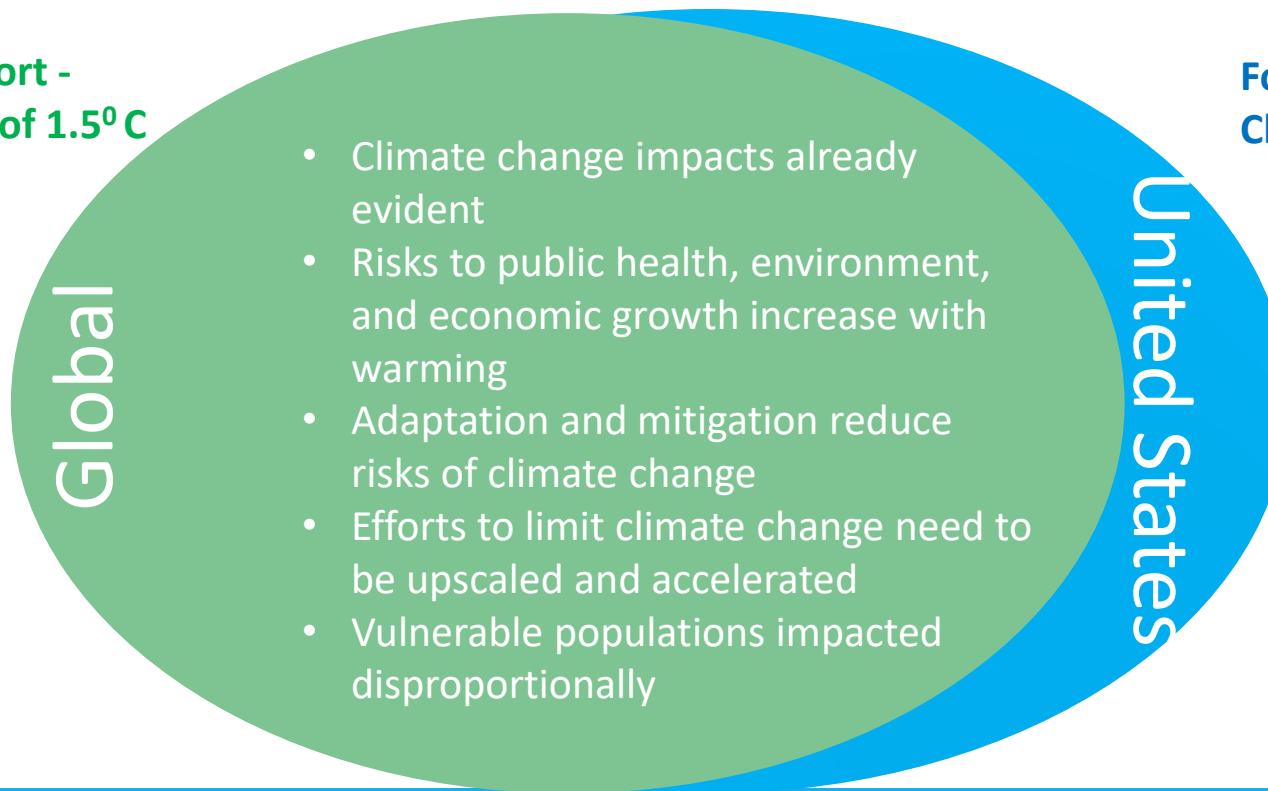
SLCP Strategy: Dairy-Related Next Steps

- 2020 analysis (SB 1383)
- Implementation of Subgroup recommendations
- Explore improvements to competitiveness of in-State renewable natural gas
- Continue research into dairy and livestock emissions reductions

2018 Climate Change Reports

**IPCC Special Report -
Global Warming of 1.5° C**

**Fourth National
Climate Assessment**



Framing the Path Forward

IPCC Report – Carbon neutrality by 2045 may hold global warming to 1.5°C



Some regions are net emitters; others are sinks



Carbon Neutrality by 2045



Reduce fossil energy and NWL emissions; evaluate potential sinks

Portfolio Approach and Ambition

IPCC

- Carbon pricing, complemented with other policies, can increase ambition cost-effectively
- Innovation policies and international cooperation can contribute to the development, commercialization, and widespread adoption of new and possibly disruptive technologies and practices
- Education, information, and community approaches, when combined with other policies, are more effective in accelerating wide-scale behavior changes

California

- Since the 2008 Scoping Plan, California has implemented a portfolio of incentives, prescriptive regulations, and carbon pricing

International Carbon Neutrality Efforts

- European Union
 - strategic long-term vision climate-neutral economy by 2050
 - aggregate goal over a region of 28 member states
- Sweden
 - goal of net zero emissions of greenhouse gases by 2045, negative thereafter
 - 85 percent reductions achieved in-jurisdiction, balance remaining 15 percent with investments abroad
- Costa Rica
 - aims to achieve carbon neutrality by 2021

California Carbon Neutrality (CO₂e)

Today



AB 32 GHG Inventory



Conversion

Natural & Working
Lands Inventory

Minimize emissions

Transition from source to sink

Mid-century



Both categories emit GHGs

No net GHG emissions

Carbon Neutrality: Key Questions for California

- Pathways to minimize emissions in fossil energy and industrial sectors by mid-century?
- Long-term potential of a resilient NWL to store and sequester carbon and timing to transition from emissions source to sink?
- Options for additional mechanical sequestration technologies?
- Optimal mix of carbon pricing with complementary policies?
- Tools to assess economic and environmental outcomes of achieving carbon neutrality under different scenarios at multiple levels (e.g., state economy, jobs, households and small businesses)?
- How to maximize co-benefits for vulnerable communities?

2019 Engagement

- Carbon Neutrality Webinar and Bioresources Economy Summit
- Workshops to explore topic areas on achieving carbon neutrality
 - Energy demand and supply
 - Transformation across economic sectors (i.e. transportation, industrial)
 - Options and support for sequestration activities
- Continued collaboration
 - State and local agencies
 - Academics and researchers
 - International partners

Thank You
