



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Energy Programs Office



Pennsylvania Action on Climate Change

Presentation to Environmental Justice Advisory Board
May 21, 2020

Tom Wolf, Governor

Patrick McDonnell, Secretary

Feedback/Input

- What specific sectors/strategies/actions from the 2018 Climate Action Plan (CAP) need additional attention?
- What sector/strategy/action was missing in the 2018 CAP that should be included in 2021?
- Should the CAP include more specific sections on adaptation to climate change?
- Should the CAP contain educational content about causes of climate change?
- Should the CAP provide details on how actions would need to be carried out, and by whom?
- Should the CAP include implementation plans for greenhouse gas reduction/mitigation measures?

DEP Climate Program

Pennsylvania Climate Change Act (Act 70 of 2008) requires DEP to:

- Develop a climate impacts assessment (3 yrs.)
- Prepare and update a climate action plan (3 yrs.)
- Develop an inventory of greenhouse gases (GHGs) (update annually)
- Administer a Climate Change Advisory Committee (bimonthly)

Why a Climate Action Plan?

According to the 2015 Pennsylvania Climate Impacts Assessment:

- Over past 110 years, temperatures in PA increased by more than 1.8°F and are expected to increase by an additional 5.4°F by 2050
- Cities are expected to see increased frequency of 100+ degree days
- Annual precipitation in PA has increased by 10% since early 20th century and is expected to increase by another 8% by 2050, with a winter increase of 14%

Why a Climate Action Plan?

According to the 2015 Pennsylvania Climate Impacts Assessment:

- Higher temperatures will increase mortality from heat-related stress, but will decrease mortality from cold-related stress
- Climate change will worsen air quality relative to what it would otherwise be, causing increased respiratory and cardiac illness
- The linkage between climate change and air quality is most strongly established for ground-level ozone creation during summer

Why a Climate Action Plan?

According to the 2015 Pennsylvania Climate Impacts Assessment:

- Surface water quality could be impacted by 1) increased pathogen loads due to greater surface runoff from livestock farms & sewer overflows; and 2) increased risk of harmful algal blooms in eutrophied lakes and reservoirs
- Distribution and prevalence of vector-borne diseases such as Lyme Disease and West Nile Virus could increase

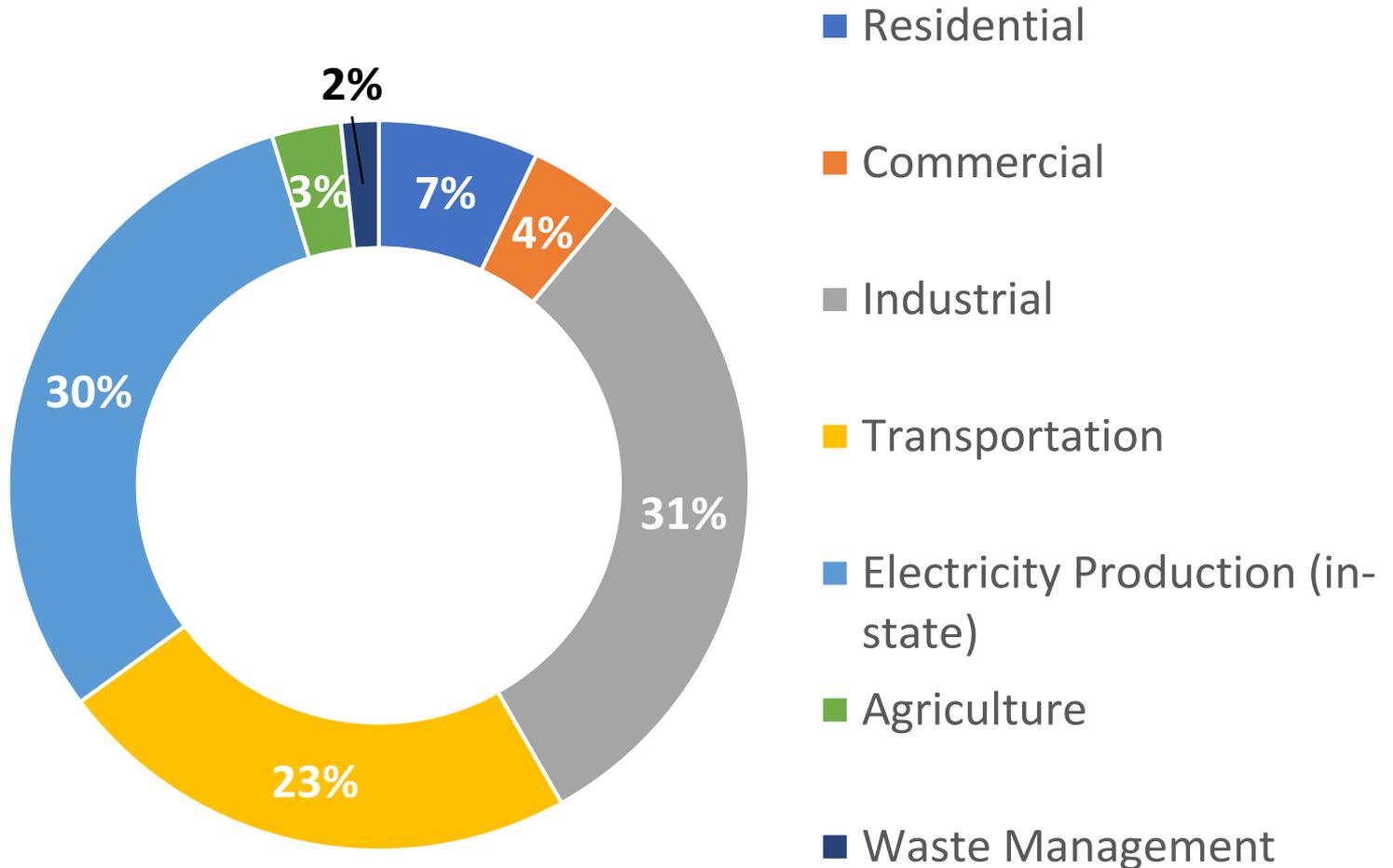
Why a Climate Action Plan?

Climate change impacts will vary by sector:

- PA dairy production is likely to be negatively affected due to losses in milk yield caused by heat stress
- Warmer climates in southern states could stimulate a large-scale movement of poultry and hog production north to states like PA
- PA's downhill ski and snowboard resorts are not expected to remain financially viable past mid-century
- Impacts of climate change on trout (cold-water) fishing are expected to be particularly severe in southeastern and northwestern PA

GHG Emissions by Sector in 2016

Pennsylvania 2016 GHG Emissions



Call to Action

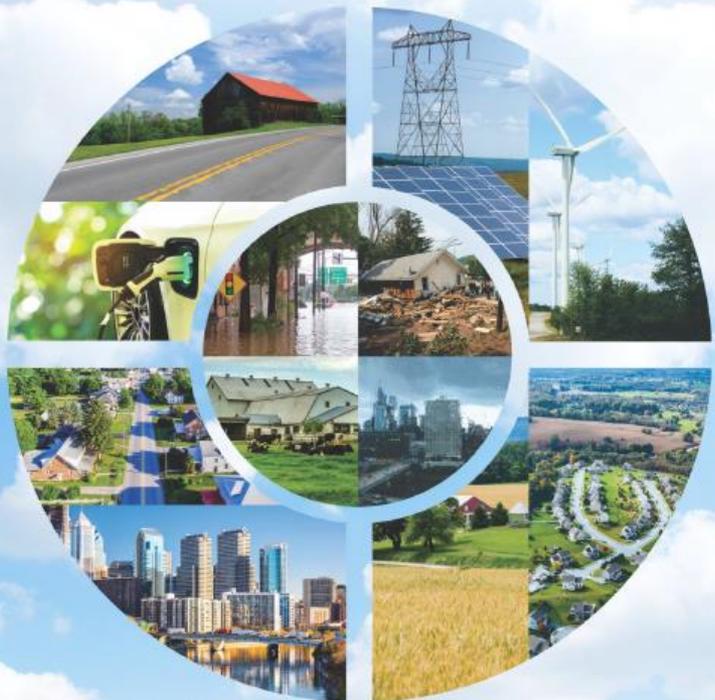
PA Leaders, Citizens, and Businesses should:

- Consider how PA's climate will change in the future
- Understand the impacts from those changes
- Take action to adapt to those changes and reduce GHG emissions

Climate Action Plan Goals

Pennsylvania Climate Action Plan

Strategies and actions to reduce and adapt to climate change

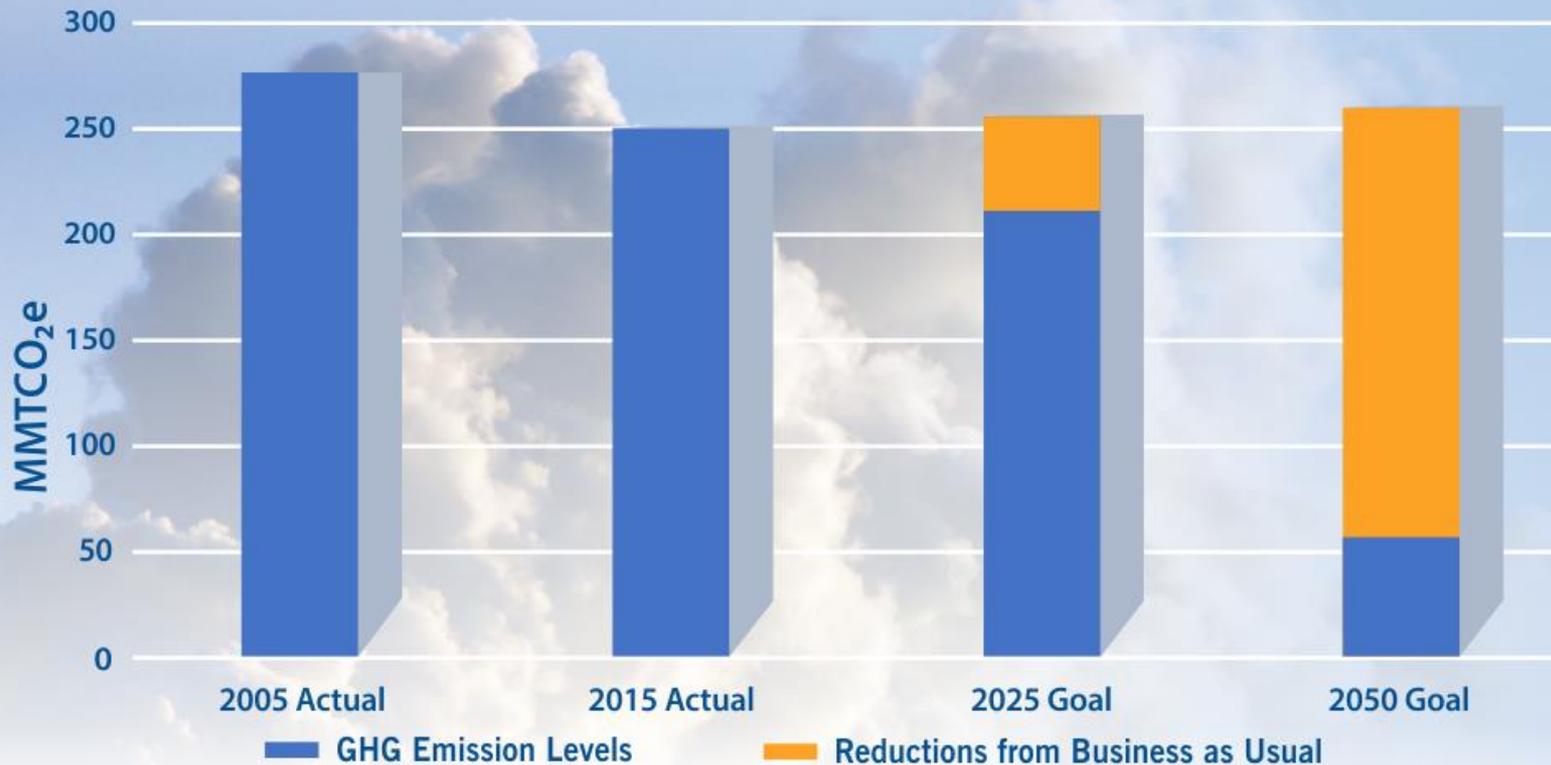


April 29, 2019

- Minimize disruptions to Pennsylvania's citizens, economy, and environment from climate-related hazards
- Increase PA's ability to prepare for and adapt to changing conditions and respond to and recover from climate-related disruptions
- Maintain cost-effectiveness

Plan Targets

Greenhouse Gas Reductions Needed to Meet 2025 and 2050 Goals



GHG = greenhouse gas; MMTCO₂e = million metric tons of carbon dioxide equivalent

Mitigation Targets:

- 26% reduction of net GHG emissions by 2025, from 2005 levels
- 80% reduction of net GHG emissions by 2050, from 2005 levels

Strategies and Actions

Summary of Strategies:

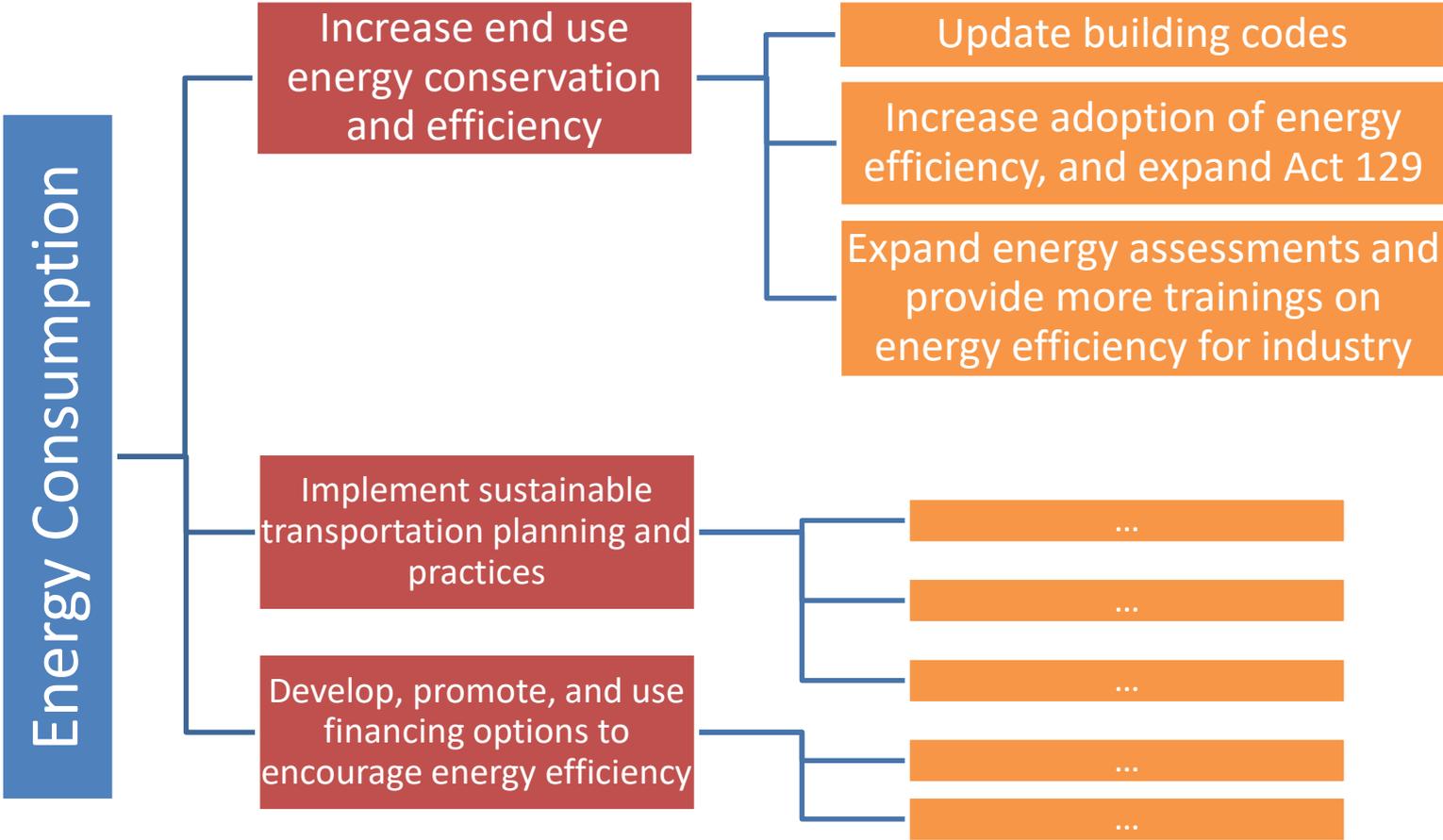
- 8 Sectors
- 19 Strategies
- Over 100 Leadership Actions
- 15 Quantitatively Analyzed Actions
- Additional Actions for Citizens and Businesses

Strategies and Actions

8 Sectors

19 Strategies

> 100 Actions



Sectors

Energy
Consumption

Energy
Production

Agriculture

Ecosystems
& Forestry

Outdoor Rec.
& Tourism

Waste
Management

Water
Resources

Human
Health



pennsylvania

DEPARTMENT OF ENVIRONMENTAL
PROTECTION

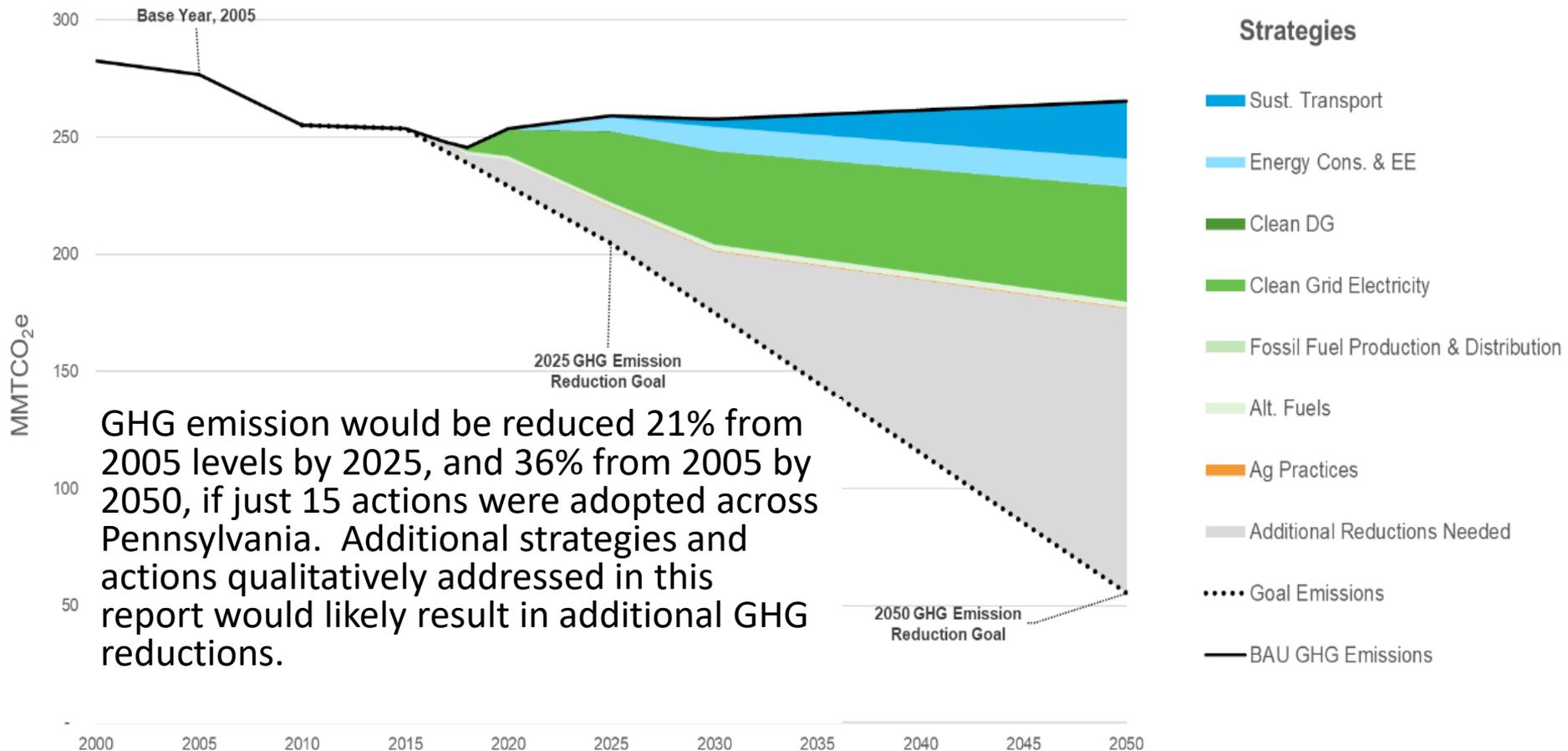
19 Strategies

1. Increase end use **energy conservation & efficiency**
2. Implement **sustainable transportation** planning & practices
3. Develop, promote, & use **financing options to encourage energy efficiency**
4. Increase use of **clean, distributed electricity generation** resources
5. Create a diverse portfolio of **clean, utility-scale electricity generation**
6. **Reduce** upstream **impacts of fossil fuel energy** production
7. **Increase** production & use of **alternative fuels**
8. Use **agricultural best practices**
9. Provide resources & **technical assistance to farmers** to adapt
10. **Protect ecosystem resilience**, including forest systems where species will shift
11. Monitor, identify, & **address ecosystem vulnerabilities**
12. **Help the outdoor tourism industry** manage shifting climate patterns
13. Reduce & **use waste sent to landfills**
14. Use **stormwater best management practices**
15. Promote integrated water resources management & **water conservation**
16. Improve reliability & accessibility of **public information about climate-related health risks**
17. Bolster **emergency preparedness** and response
18. **Lead by example** in commonwealth & local government practices & assets
19. **Incorporate** historical & projected **climate conditions into siting & design** decisions for long-term infrastructure

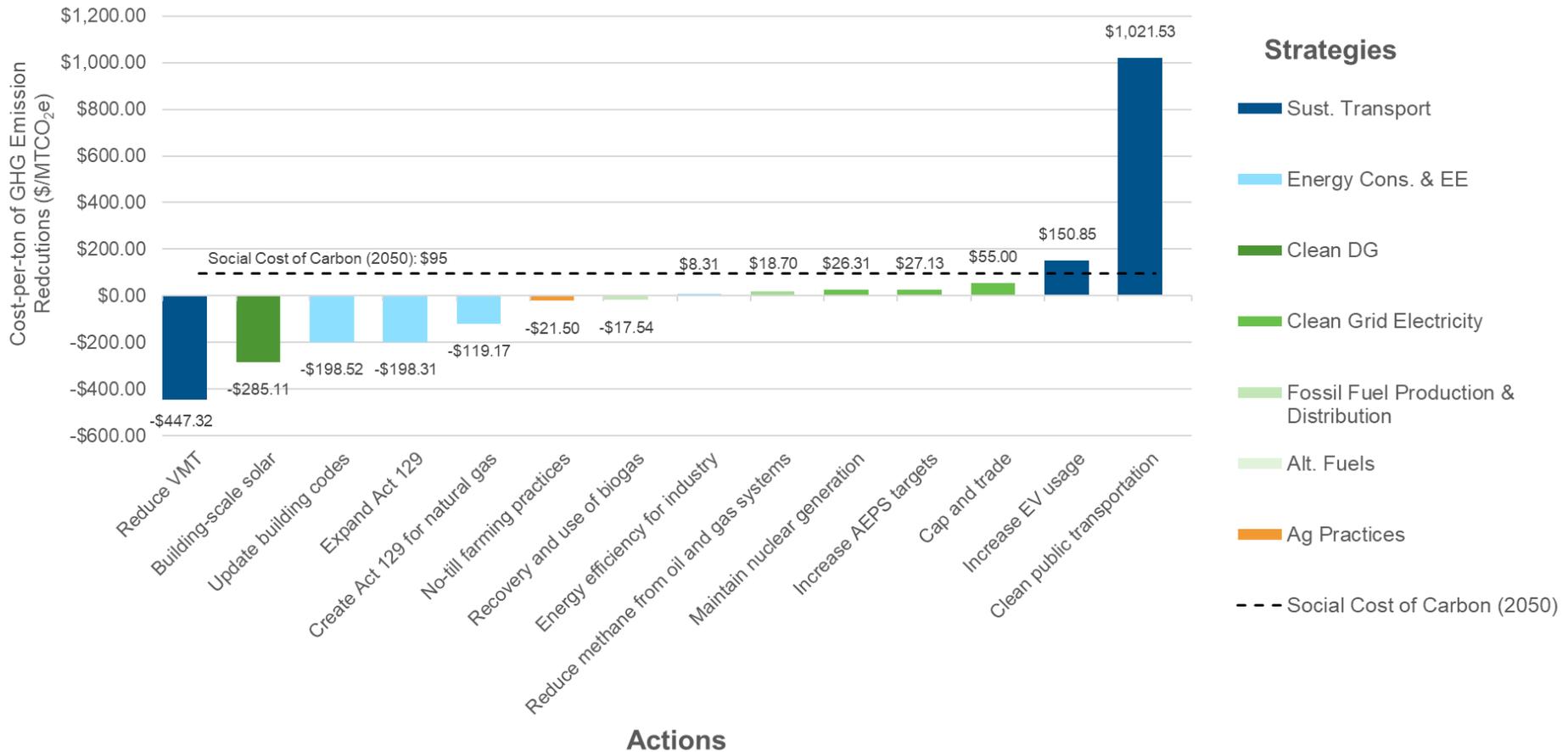
15 Modeled Leadership Actions

- Update building codes
- Increase adoption of energy efficiency, and expand Act 129
- Create an Act 129-like conservation and efficiency program for natural gas
- Expand energy assessments and provide more trainings on energy efficiency for industry
- Reduce vehicle miles traveled for single-occupancy vehicles
- Implement a strategic plan and incentives for increasing electric vehicle use
- Increase the use of clean public transportation through electric municipal bus fleets
- Invest in and promote building-scale solar
- Incentivize and increase use of combined heat and power (CHP)
- Increase Alternative Energy Portfolio Standard (AEPS) Tier 1 targets, and further increase in-state generation and use of renewables
- Implement policy to maintain nuclear generation at current levels
- Limit carbon emissions through an electricity sector cap and trade program
- Implement policies and practices to reduce methane emissions across oil and natural gas systems
- Increase recovery and use of gas from coal mines, agriculture, wastewater, and landfills for energy
- Increase adoption rate of and provide training for no-till farming practices

Resulting GHG Reductions



Cost Effectiveness



A social cost of carbon (the cost of damages of one ton of carbon emissions) of \$95 is used as the benchmark for cost-effectiveness. Anything below the benchmark (dotted line) is cost-effective, based on this perspective.

Job Creation

If the 15 quantified actions were implemented, approximately 40,000 jobs would be created by 2050.

Number of Annual Jobs Supported



What Businesses/Citizens Can Do

Each strategy outlined in the Plan includes actions the businesses and individuals can take.

What Businesses Can Do to Implement Sustainable Transportation Planning and Practices

Pennsylvania businesses can support this strategy by taking the following actions:

- ▶ Purchase fuel-efficient or low-emission vehicles (including fleets) to save money and reduce GHG emissions.
- ▶ Support sustainable transport by participating in transportation planning processes with your local government or metropolitan planning organization.
- ▶ Provide incentives to employees for smart commuting practices and allow for teleworking, where feasible.

What You Can Do to Increase End Use Energy Conservation and Efficiency

Pennsylvania citizens can support this strategy by taking the following actions:

- ▶ Install energy efficient lighting and appliances.
- ▶ Conduct a home energy audit to identify other efficiency opportunities.
- ▶ Install smart thermostats, home energy management systems, and other smart controls.
- ▶ Avoid energy intensive activities during peak times (especially late afternoon and evening). For example, run appliances (e.g., dishwashers, dryers) during utility off-peak hours.

Key Takeaways

- Suite of strategies recommended in the Plan maximize GHG reductions and are cost-effective
- Commonwealth government will need to prioritize and phase implementation for quantified and non-quantified strategies in the Plan
- Actions which are low cost and have large GHG and economic benefits offer PA the best short-term solutions
- Actions that may take more time and resources to implement and have more tradeoffs to consider still need to be enacted, as they'll help PA maximize the impact of the Plan
- Ambitious and quick action is needed by all actors, including leadership, businesses, and citizens

▶ Lead by Example – State Government

Climate Goal for the Commonwealth of Pennsylvania

The Commonwealth shall strive to achieve a 26 percent reduction of net greenhouse gas emissions statewide by 2025 from 2005 levels, and an 80 percent reduction of net greenhouse gas emissions by 2050 from 2005 levels.

▶ Lead by Example – State Government

Executive Order 2019-01 directs commonwealth agencies to:

- Reduce energy use by 3% per year and 21% by 2025 from 2017 levels
- Procure renewable energy to offset at least 40% of the Commonwealth's annual electricity use
- Design and construct new buildings/renovation projects as a high-performance buildings
- Replace 25% of the state vehicle fleet with battery electric and plug-in electric hybrid cars by 2025

▶ Lead by Example – State Government

On April 29, 2019, Governor Tom Wolf announced Pennsylvania's membership in the U.S. Climate Alliance

- Alliance states commit to:
 - Implement policies that advance the goals of the Paris Agreement, aiming to reduce greenhouse gas emissions by at least 26-28 percent below 2005 levels by 2025
 - Track and report progress to the global community in appropriate settings, including when the world convenes to take stock of the Paris Agreement
 - Accelerate new and existing policies to reduce carbon pollution and promote clean energy deployment at the state and federal level

▶ Lead by Example – State Government

Executive Order 2019-07 directs commonwealth agencies to:

- Commits DEP to create a rule to limit CO₂ from electric power plants by July 31, 2020
- Engage in a robust public outreach effort
- Provide for the auction of CO₂ emissions allowances through a market-based mechanism
- Be consistent with the RGGI Model Rule

Lead by Example – Local Government

Local Climate Action Program

- ICLEI Local Governments for Sustainability – USA hired as contractor
- College student matched with local government
- ICLEI trains student on inventory tool (fall semester) and climate action planning (spring semester)
- Final product: 20 GHG inventories & 20 local climate action plans
- First training webinar in early September 2019 & final work completed by June 30, 2020

Lead by Example – Local Government

Local Climate Action Assistance Program

- Caln Township
- Narberth Borough
- Jermyn Borough
- Carlisle Borough
- Derry Township
- Armstrong Township
- Bellefonte Borough
- Indiana Borough
- Millvale Borough
- Etna Borough
- Sharpsburg Borough
- West Homestead Borough
- Borough of Munhall
- Elizabeth Township
- Borough of Forest Hills
- City of Reading
- City of York
- Chester County
- Erie County
- Centre Region Council of Governments

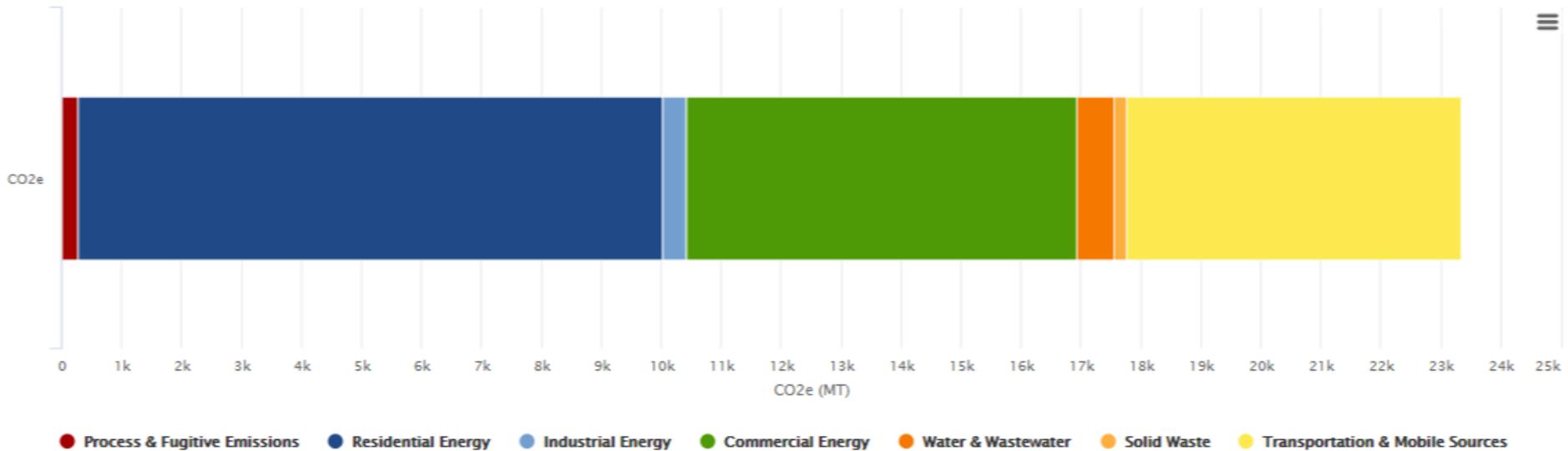
Lead by Example – Local Government

Inventory By Sector

CO2e by sector for the selected inventory year.

Bellefonte Borough

Sector	CO2e
Transportation & Mobile Sources	5,570
Solid Waste	219
Water & Wastewater	617
Commercial Energy	6,507
Industrial Energy	404
Residential Energy	9,754
Process & Fugitive Emissions	261



Lead by Example – Local Government

[Jurisdiction] Climate Action Plan



Local Actions and Policies to Reduce [Jurisdiction]'s Greenhouse Gas Emissions

Approved by [Local Authority]

[Date Approved]

[Reference to Public Record]

[Reference to Further Information]

Produced by [Name of Lead Department or Task Force]

Through partnership with ICLEI – Local Government for Sustainability (ICLEI)



Online Survey

Please read the CAP booklet:

www.dep.pa.gov/climate

Then, provide your feedback via our online
survey:

<https://www.surveymonkey.com/r/5JPCFFJ>



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Energy Programs Office



Thank you!

Heidi J. Kunka, LEED AP BD+C, CC-P

Energy Program Specialist
PADEP Energy Programs Office

hkunka@pa.gov

717-214-4243

DEP Website: www.dep.pa.gov