



# Pennsylvania Climate Action Plan 2021

Agricultural Advisory Board  
December 9, 2021

Tom Wolf, Governor

Patrick McDonnell, Secretary

# Today's Presenter



**David Althoff**  
DEP Energy Programs  
Office, Director

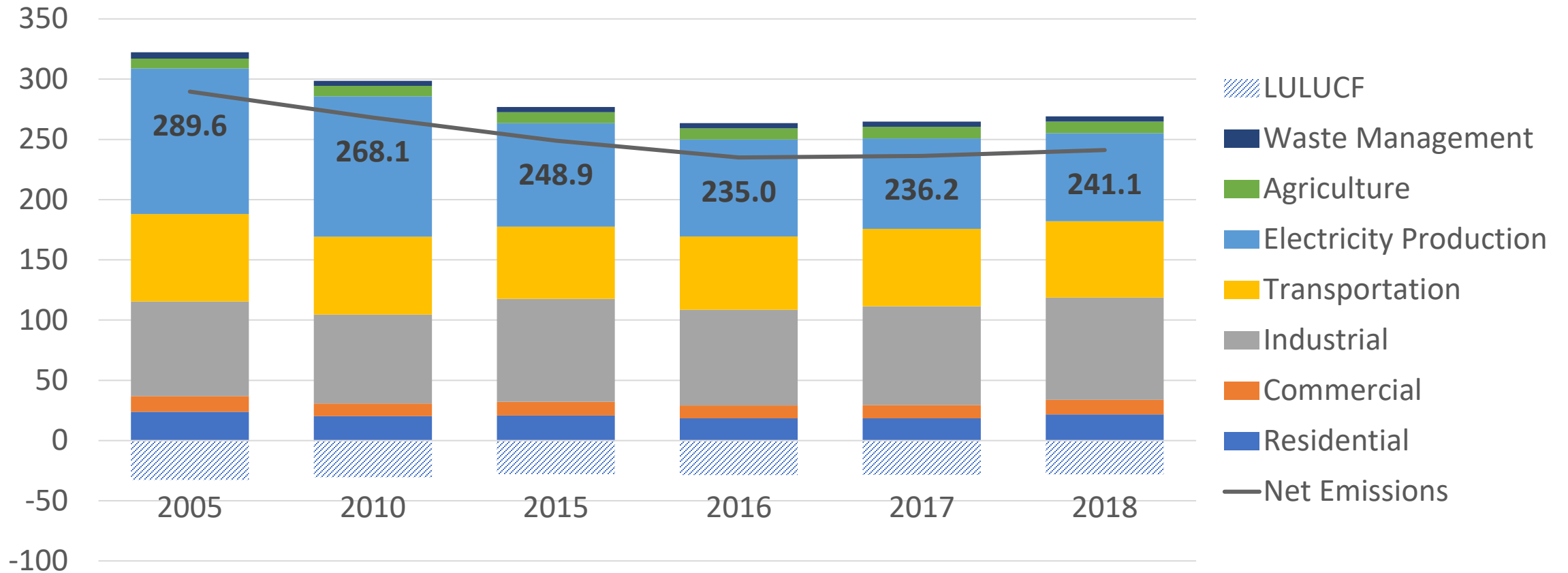
# DEP Climate Program

## 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](#) (CCAC) (bimonthly)
- Set up a voluntary registry of GHG emissions ([TCR](#))

# GHG Emissions Inventory

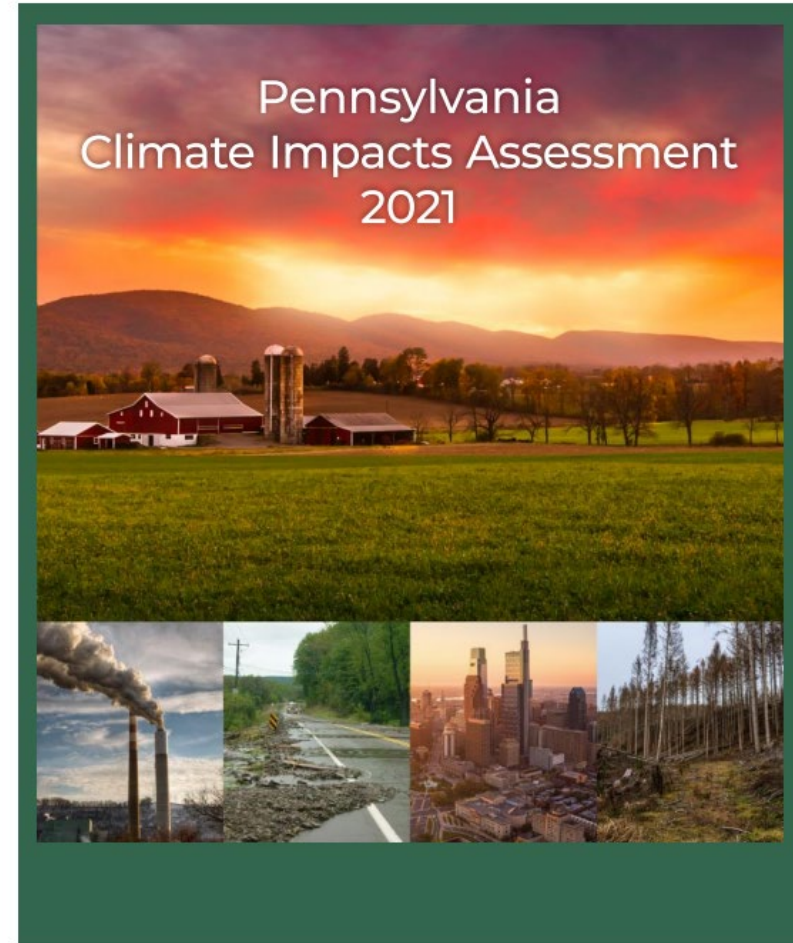
GHG Emissions (MMT<sub>CO<sub>2</sub>e</sub>) by Sector



# 2021 Impacts Assessment Focus Areas and Updates

## Purpose of this Report:

- Update: Reflect latest available information on climate science and impacts
- Risk-based approach: Understand relative timing and severity of impacts to inform overall risk ratings and priorities for adaptation
- Make it actionable: Directly inform priority adaptation actions in the Climate Action Plan (CAP)

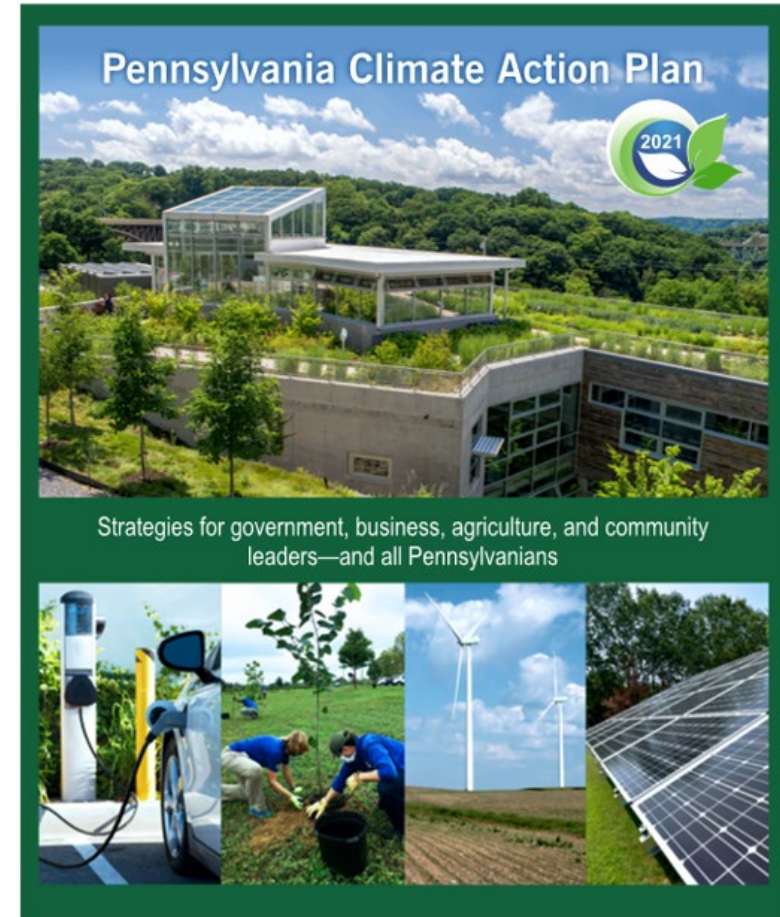


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# Pennsylvania Climate Action Plan 2021

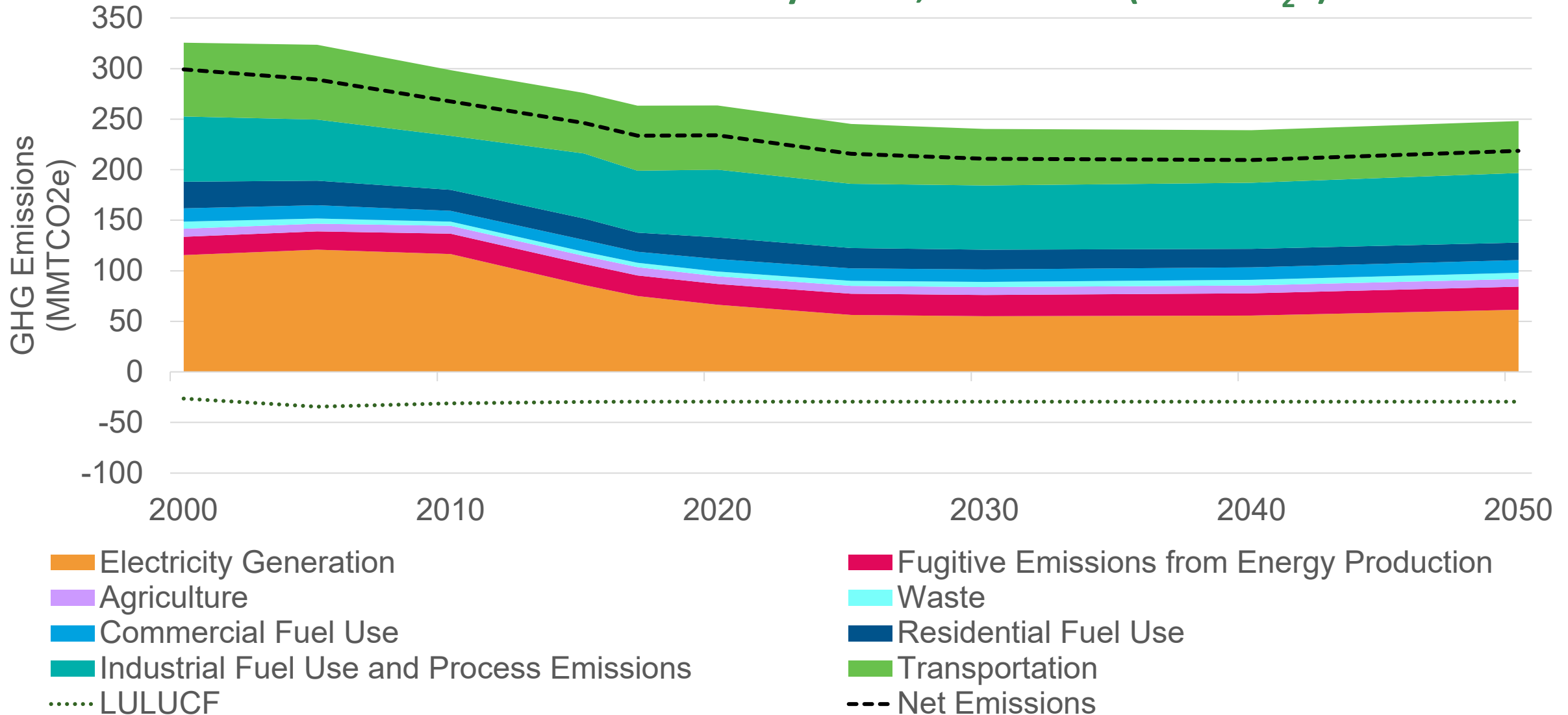
## Purpose of this Report:

- Updated BAU Emissions Scenario Projections
- Outlines a pathway to reaching PA's GHG reduction goals: 26% by 2025 and 80% by 2050 from 2005 levels
- Quantifies GHG reduction and economic costs/benefits of climate action
- Includes discussion on the role of “enabling technologies” in meeting PA's GHG reduction goals
- Priority adaptation actions directly informed by the Pennsylvania Climate Impacts Assessment 2021
- Focus on equity throughout



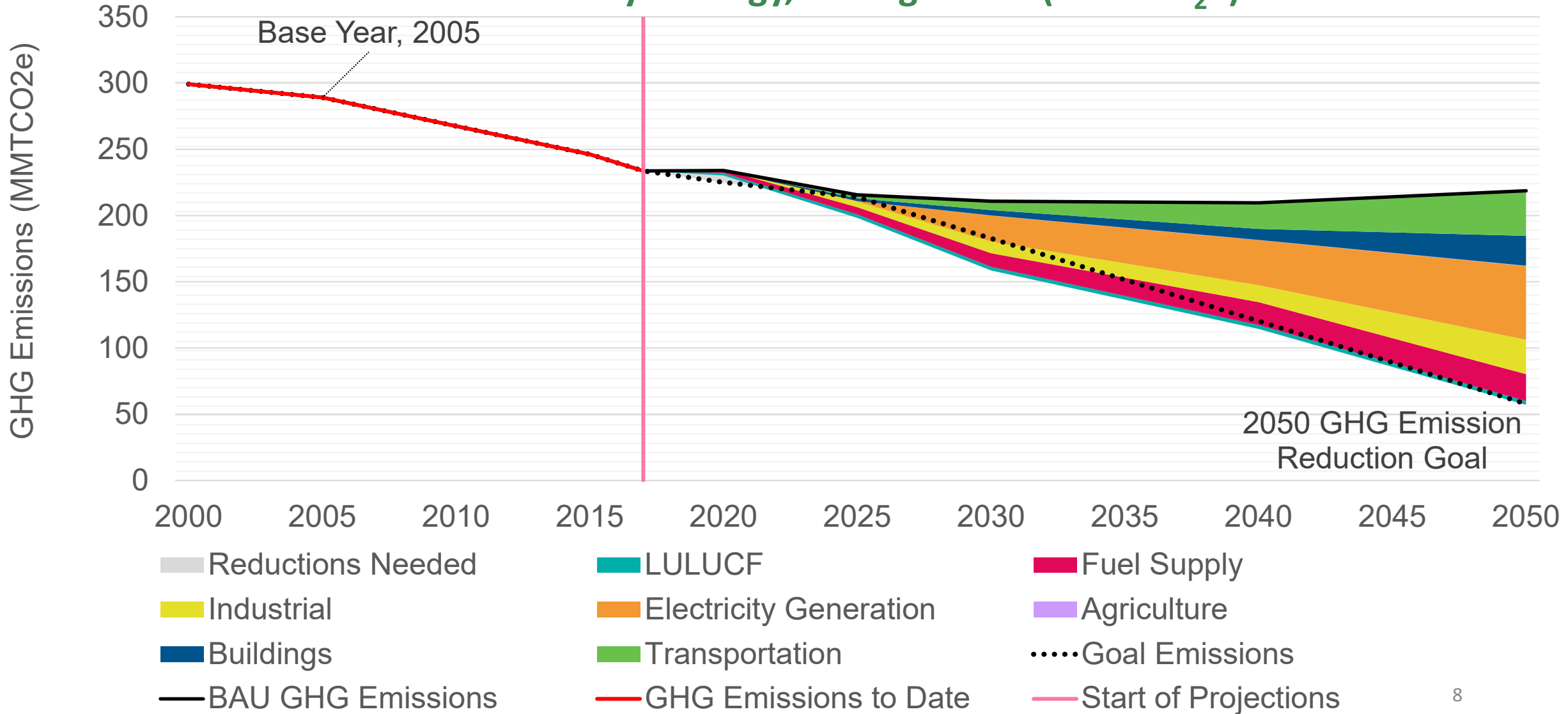
# Pennsylvania Climate Action Plan – Business As Usual

## Business-as-usual net emissions by sector, 2000-2050 (MMTCO<sub>2</sub>e)



# Pennsylvania Climate Action Plan – Business As Usual

## GHG reductions by strategy, through 2050 (MMTCO<sub>2</sub>e)





# Pennsylvania Climate Action Plan – Strategies

## Start Now and Implement in 5 years:

- A. Institute the most up-to-date building codes for energy efficiency.
- B&C. Improve residential and commercial energy efficiency.
- E. Increase distributed on-site solar energy.
- J. Increase Industrial energy efficiency and fuel switching.
- P. Use programs and incentives to increase energy efficiency for agriculture.
- L. Incentivize use of distributed combined heat and power.
- N. Keep nuclear energy generation at current levels.

# Pennsylvania Climate Action Plan – Strategies

## Start Now and Implement in 10 years:

- D. Incentivize building electrification.
- F. Increase fuel efficiency of light-duty vehicles and reduce vehicle miles traveled for single-occupied vehicles.
- H. Increase use of light-duty electric vehicles.
- I. Institute a low-carbon fuel standard to reduce the carbon intensity of transportation fuels.
- K. Increase capture of biogenic methane from non-fossil sources, including animal manure, food waste, and landfill gas, for use in by commercial and industrial properties.
- M. Reduce fugitive methane emissions from fossil fuel extraction industries such as oil and natural gas operations.
- **Q. Provide training and tools for agricultural best practices.**
- R. Increase land and forest management to increase carbon absorption.

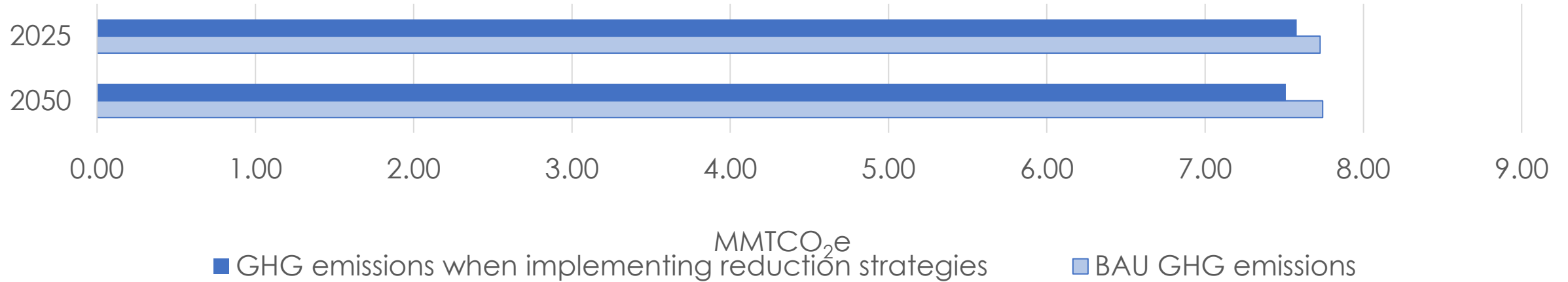
# Pennsylvania Climate Action Plan – Strategies

## Start Now and Implement in 10+ years:

- G. Implement a multi-state Memorandum of Understanding to make all medium- and heavy-duty vehicle sales zero emissions vehicles by 2050.
- O. Establish a carbon emissions-free grid.

# Pennsylvania Climate Action Plan – Strategies

## Agriculture GHG emissions with reduction strategies compared to business as usual



## Agriculture sector GHG reduction strategies and associated reductions (MTCO<sub>2</sub>e)

GHG Reduction Strategy	2025	2050
P. Use programs, tools, and incentives to increase energy efficiency for agriculture	2,069	2,965
Q. Provide trainings and tools to implement agricultural best practices	145,799	229,597
<b>Total GHG Reductions</b>	<b>147,868</b>	<b>232,562</b>

# Pennsylvania Climate Action Plan – Enabling Tech

## Enabling Technologies

- Incentivizing grid-level battery storage;
- Power-to-gas and blue and green hydrogen;
- Carbon capture, utilization, and storage (CCUS);
- Direct Air Capture (DAC);
- Peak energy load and balancing strategies;
- Carbon offsets; and
- Disruptive digital technologies.

# Adaptation Planning – Climate Action Plan

- For each adaptation priority, develop an “adaptation pathway” – a recommended sequence of strategies to adapt to and prepare for climate change impacts
- Environmental justice and equity focus areas prioritize reducing impacts on already overburdened and vulnerable populations
- Adaptation priority areas by hazard and consequence category:
  - Primary focuses: health, environmental justice and equity, and built infrastructure
  - Primary hazards: increasing average temperature, heat waves, and flooding

1. Impacts of Increasing Average Temperatures and Heat Waves on Health

2. Impacts of Flooding and Storms on Health

3. Impacts of Increasing Average Temperatures on Environmental Justice and Equity

4. Impacts of Flooding on Environmental Justice and Equity

5. Impacts of Increasing Average Temperatures on Forests, Ecosystems, and Wildlife

6. Impacts of a Warmer and Wetter Climate on Agriculture

7. Impacts of Increasing Average Temperatures on Recreation and Tourism

8. Impacts of a Changing Climate on Built Infrastructure

9. Impacts of Landslides on Built Infrastructure

# Adaptation Planning – Climate Action Plan

Example: Adaptation strategy pathway to reduce the impacts of a warmer and wetter climate on agriculture

## Types of Foundational Strategies to Understand Impacts and Vulnerabilities

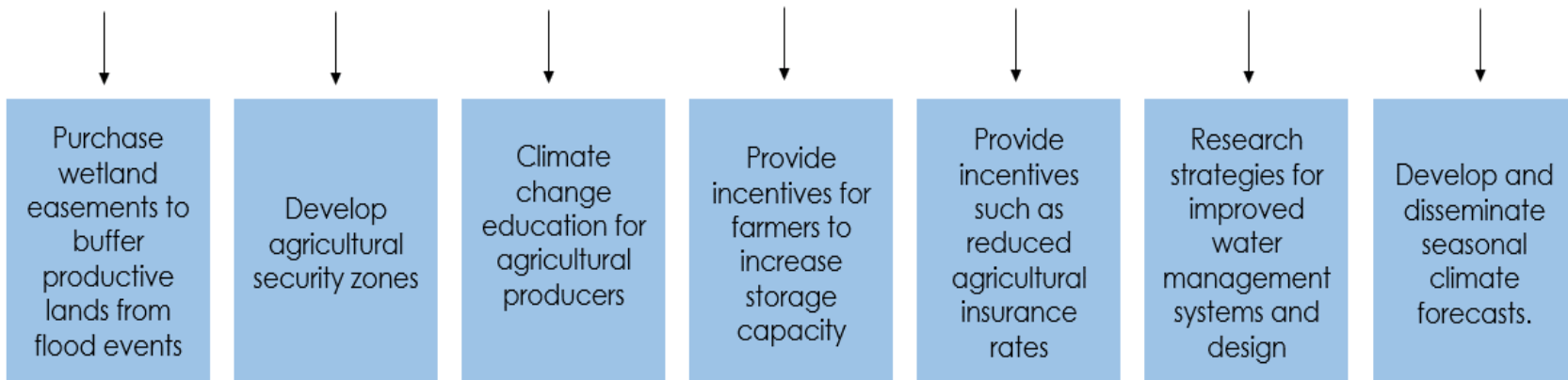


## Approaches to Reduce Vulnerabilities and Manage Impacts

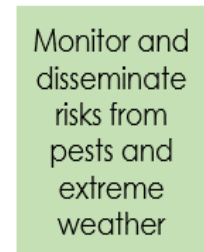
Types of Approaches



Example Strategies

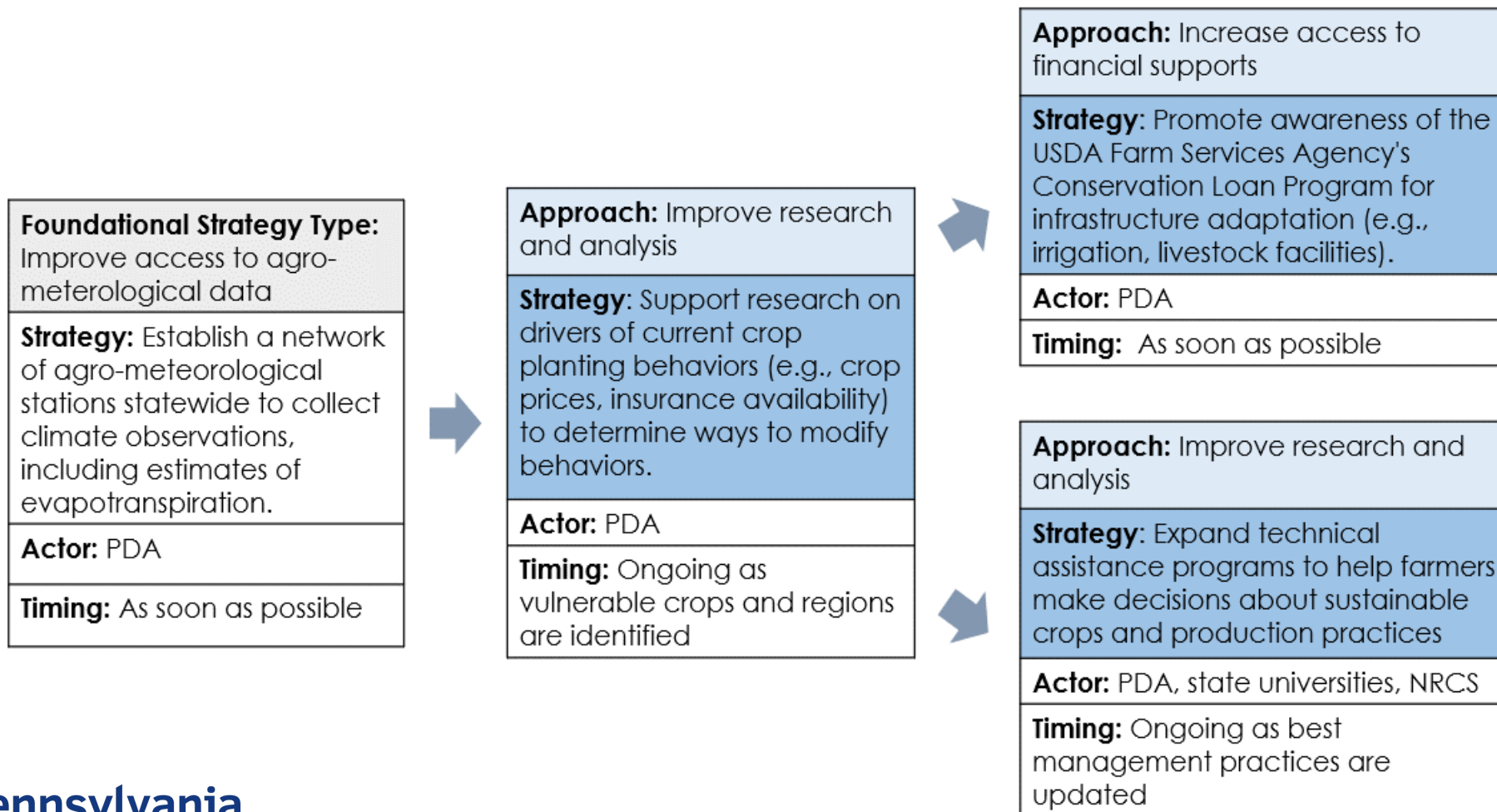


Ongoing Strategies



# Adaptation Planning – Climate Action Plan

Example set of strategies to be pursued to support farmers vulnerable to a warmer and wetter climate





# Adaptation Planning – Climate Action Plan

## Case Study

### USDA Northeast Climate Hubs



The USDA's climate hubs provide a wide array of information and resources on climate impacts to agriculture and on adaptation opportunities. The Northeast Hub aims to fill gaps and supply the needed resources for agricultural producers, including farmers and other stakeholders in Pennsylvania.

<https://www.climatehubs.usda.gov/hubs/northeast>



**pennsylvania**  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Energy Programs Office

# Thank you!

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