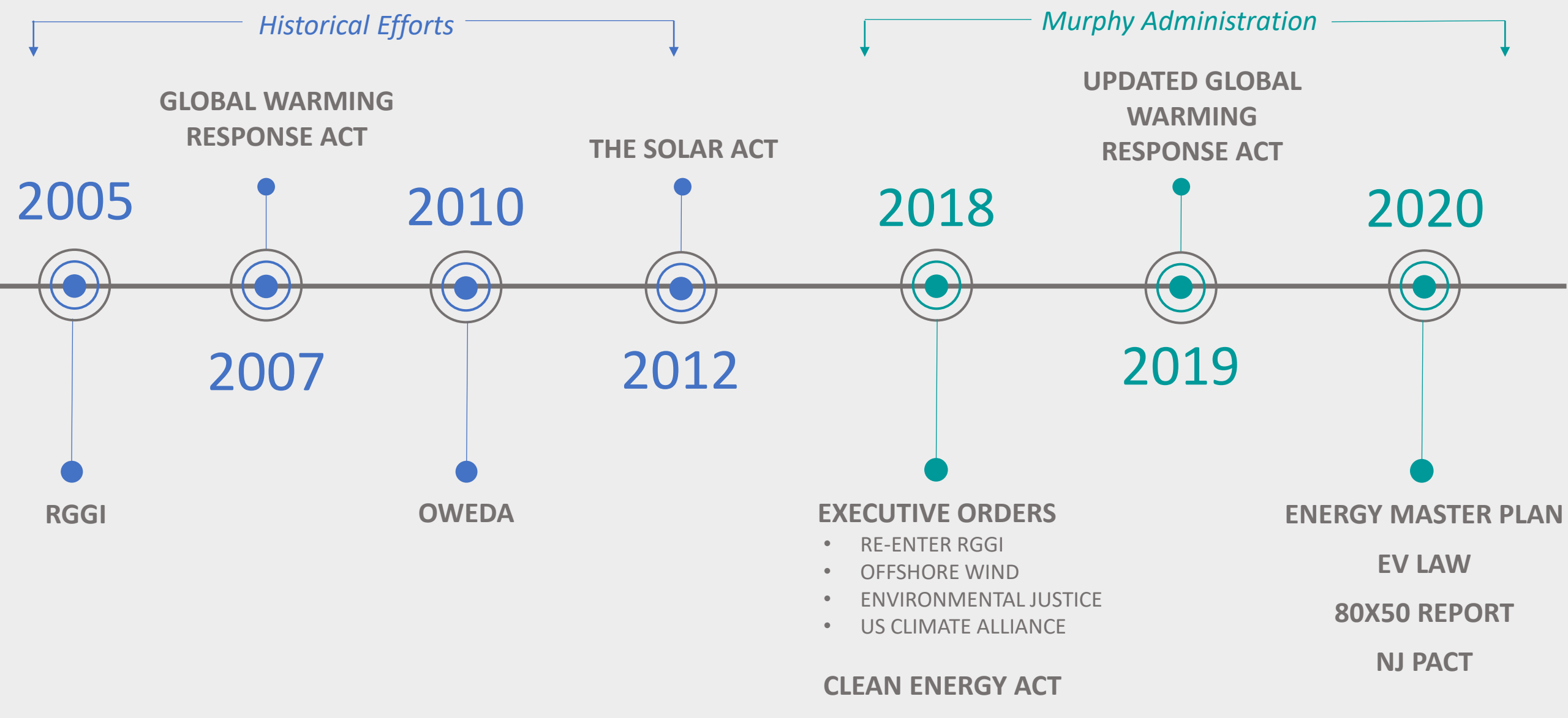
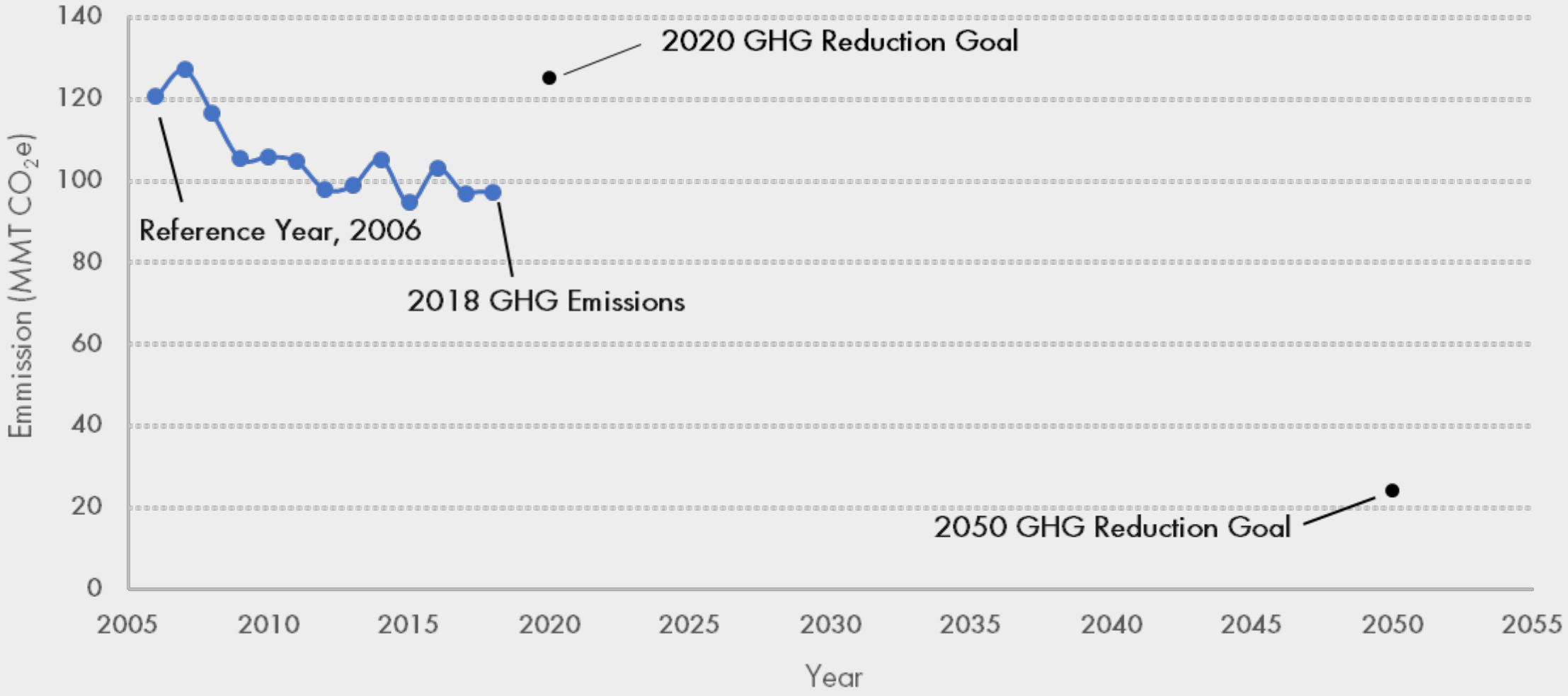
GLOBAL WARMING RESPONSE ACT 80X50 REPORT

Clean Air Council
January 20, 2021

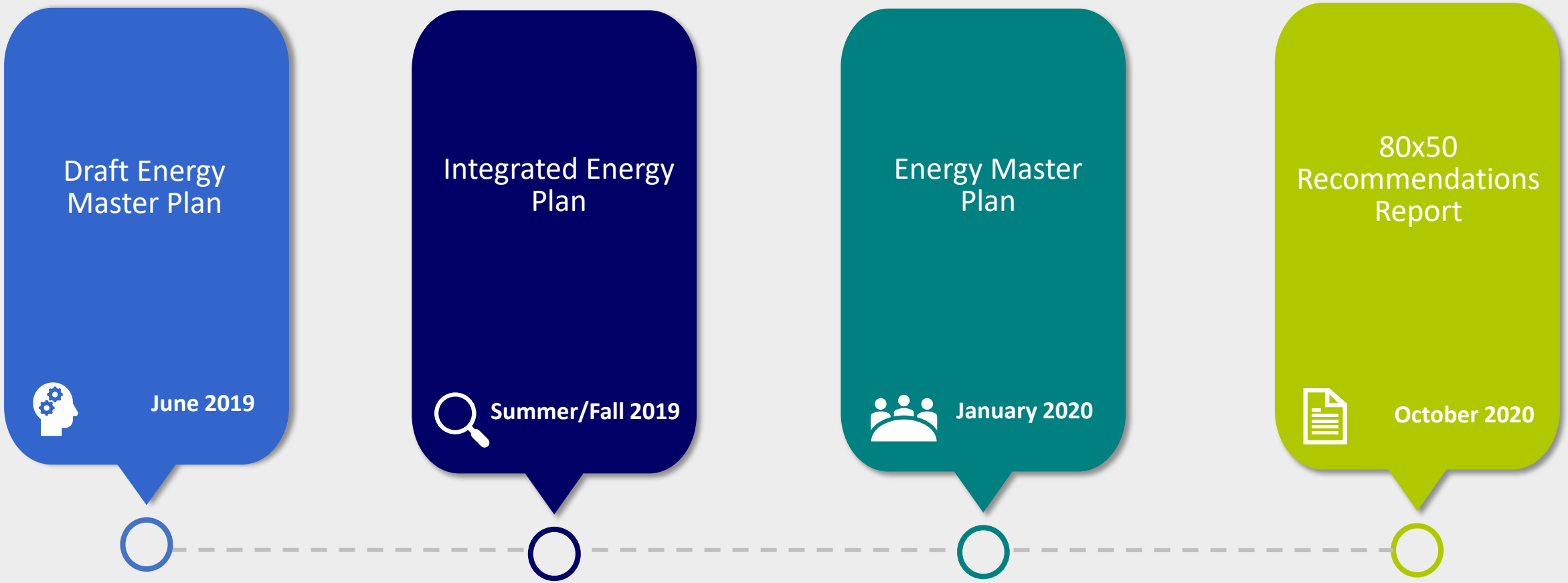
Climate Initiatives



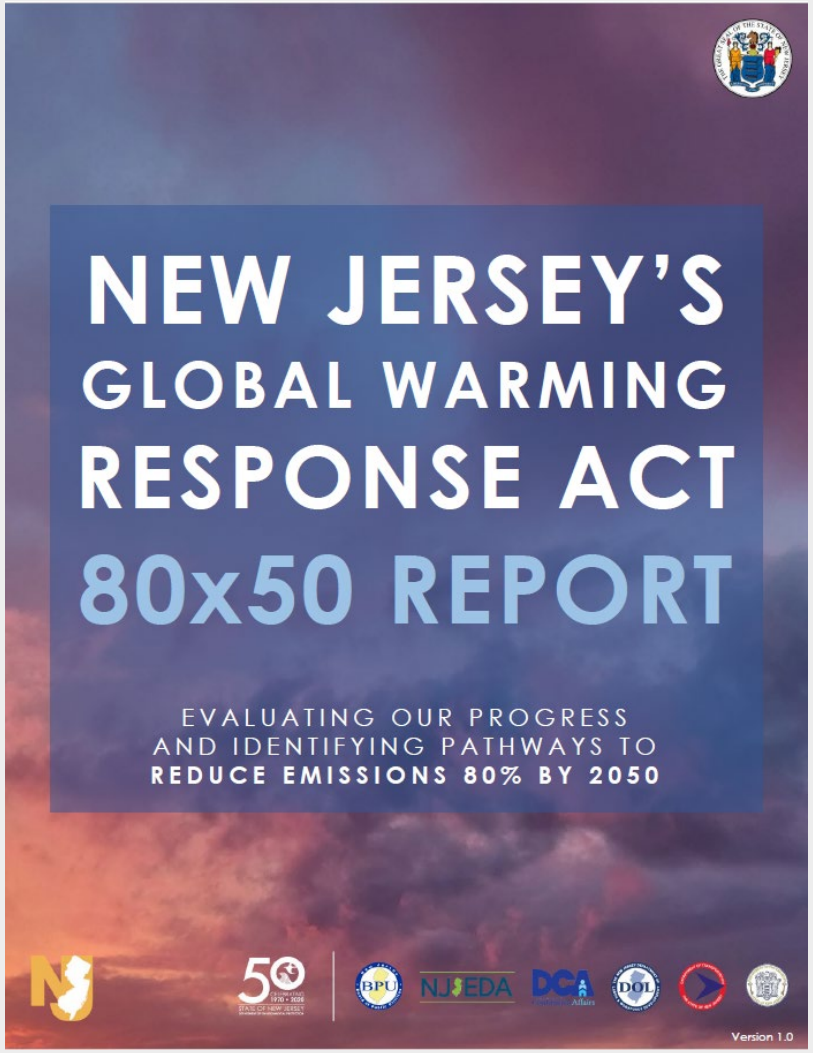
New Jersey's Greenhouse Gas Goals



Climate Mitigation Planning Process



Overview of Contents

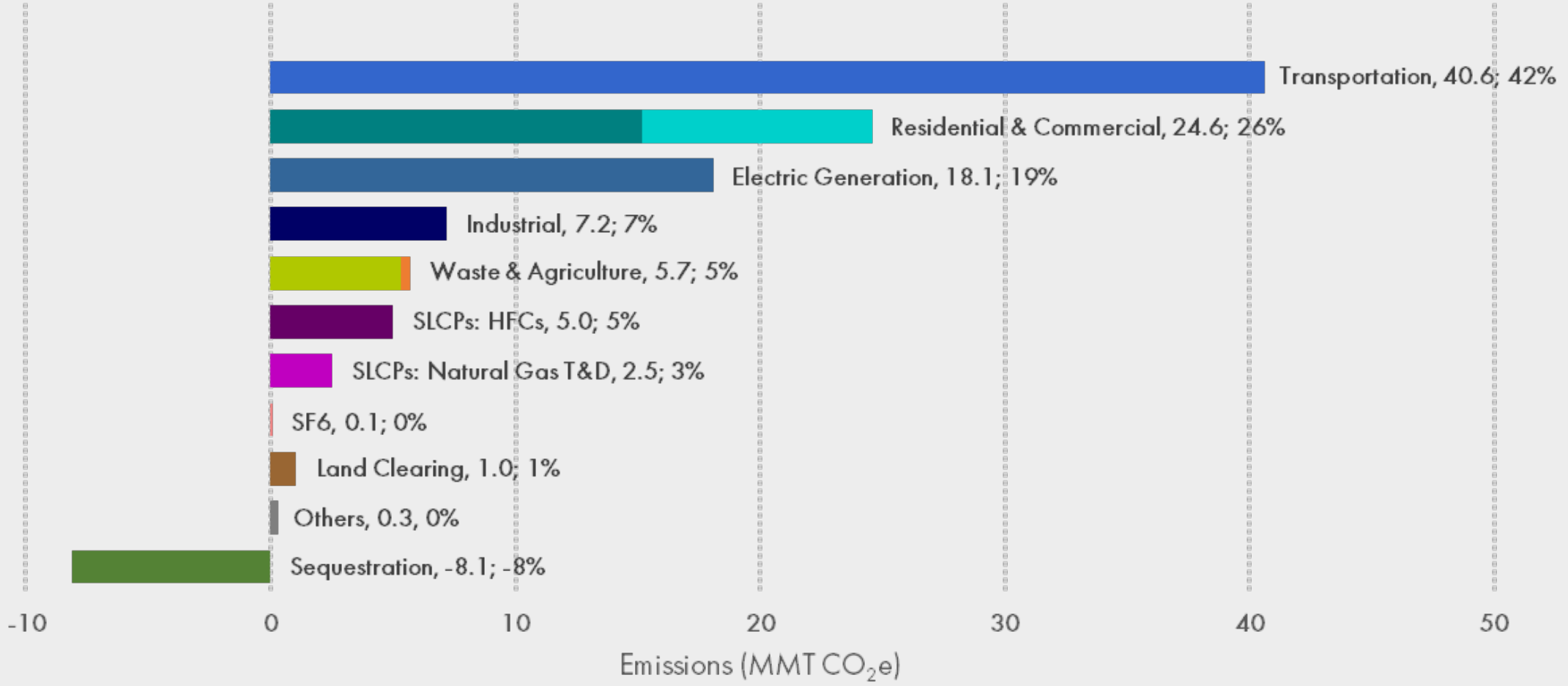


- Seven emission sectors are evaluated to determine how to achieve the 80x50 Goal.

- Each Sector Includes:
  - Business-as-Usual Projection.
  - Emissions Reduction Pathway Projections.
  - Specific legislative and administrative recommendations for achieving emissions reductions.

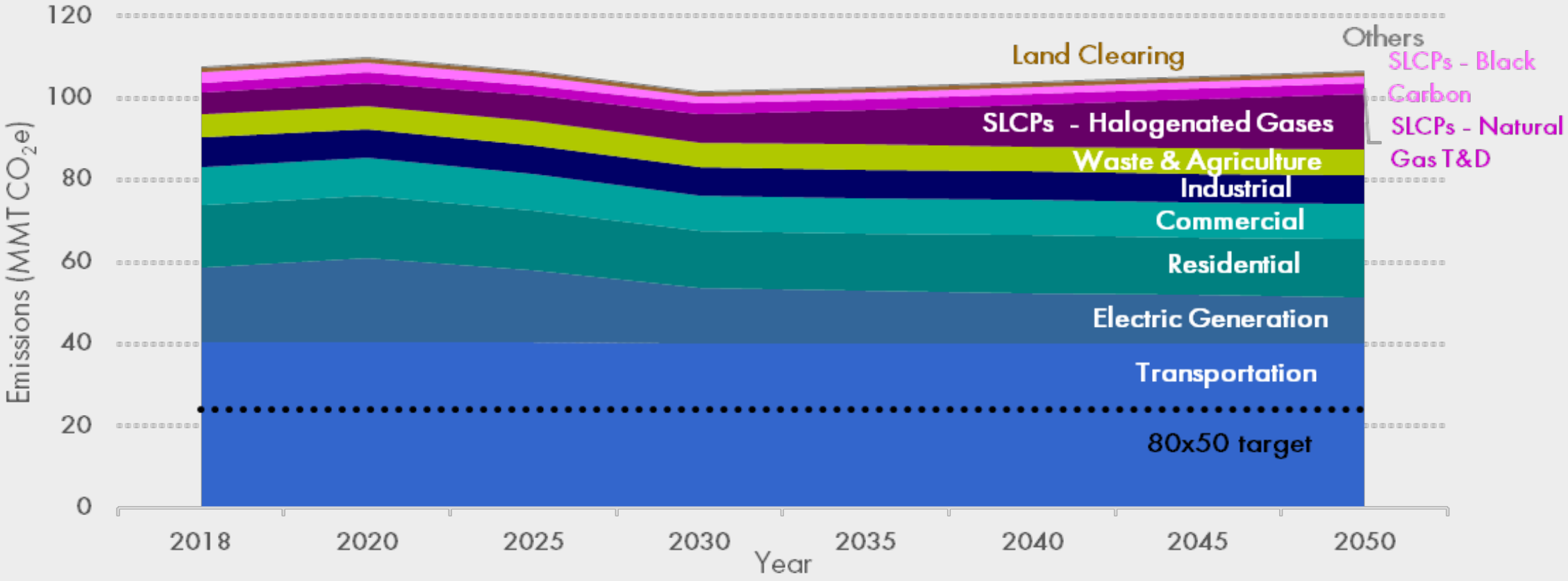
- Four electric demand scenarios are evaluated based on various levels of electrification throughout the state.

New Jersey's 2018 GHG Inventory



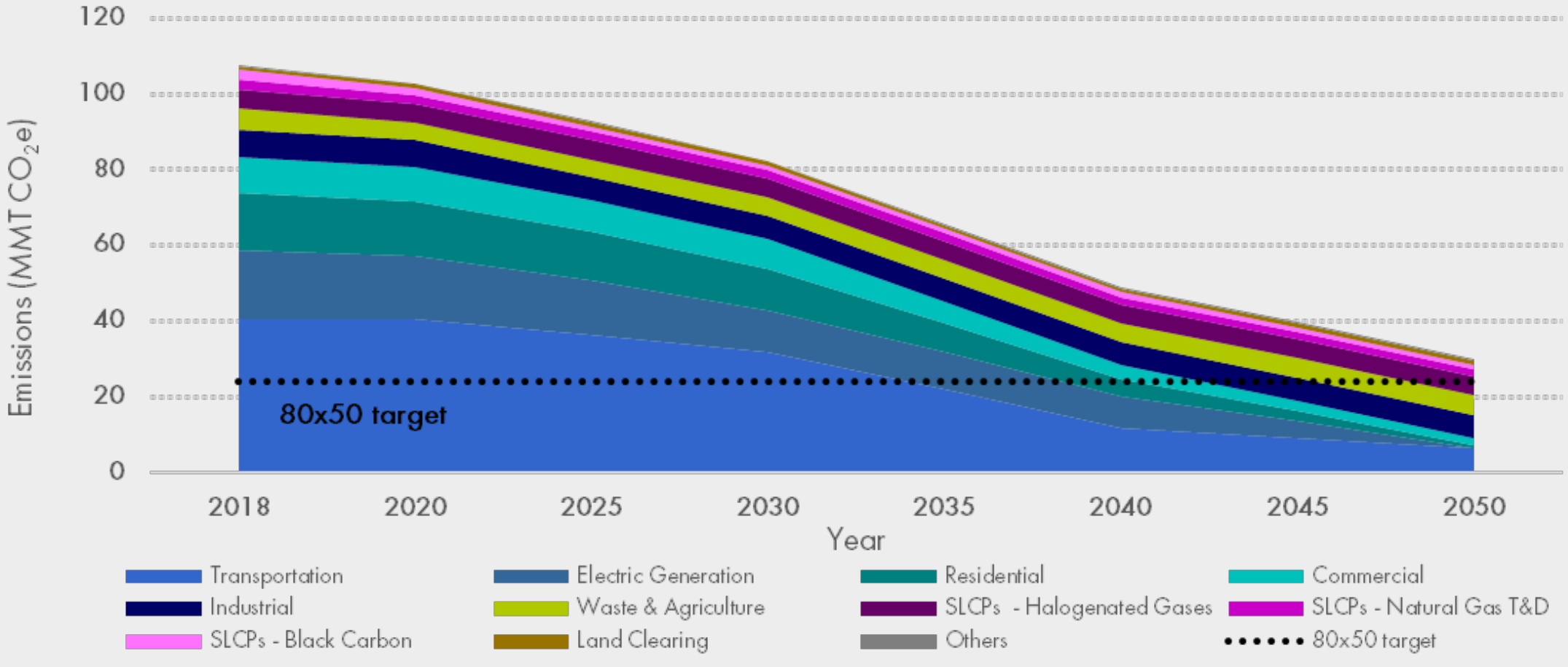
Business-as-Usual

- New Jersey is currently not on a trajectory to achieve its 80x50 GHG reduction goal.
- If the state stays on its current course, emissions would be higher than they are today, an estimate 106 MMT CO_2e.



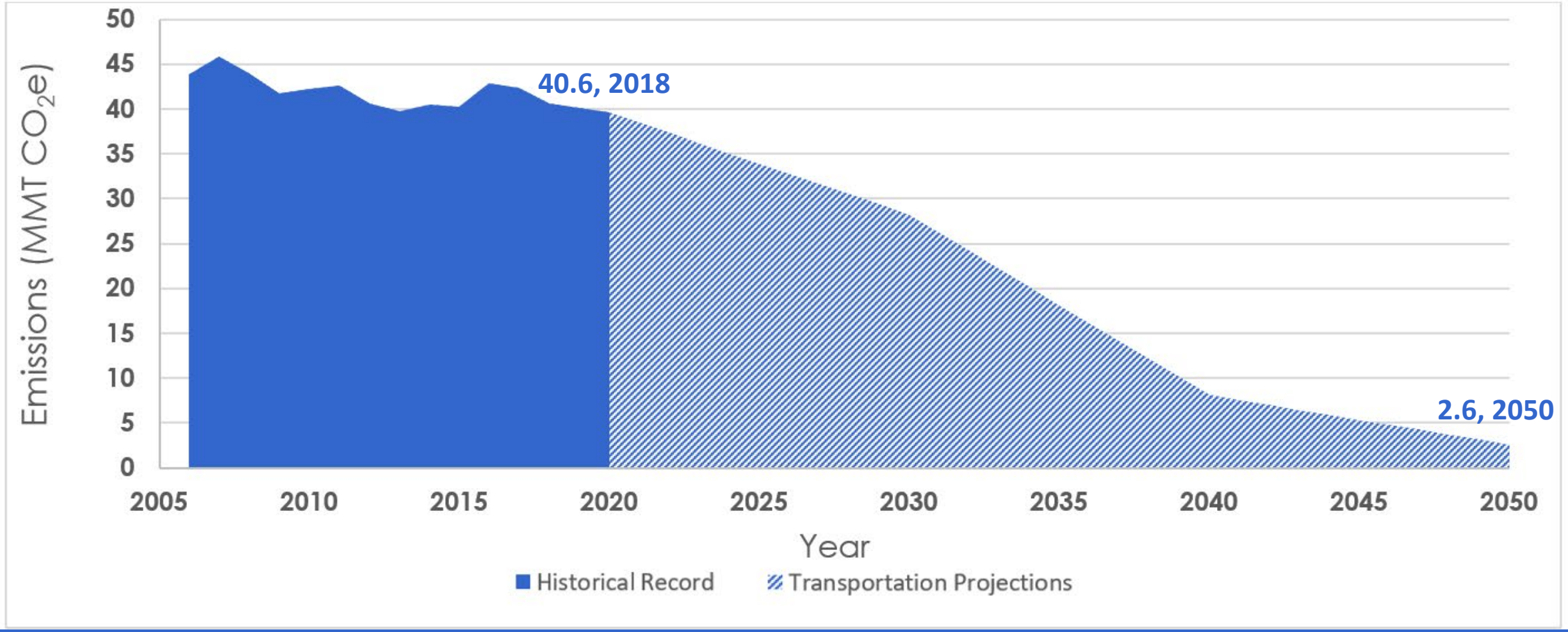
Pathway to 2050

- If New Jersey implements the pathways proposed in this report, GHG emissions can be reduced to 29.8 MMT CO_2e by 2050. After accounting for carbon sequestration, net emissions would be 19 MMT CO_2e, achieving the 80x50 goal.

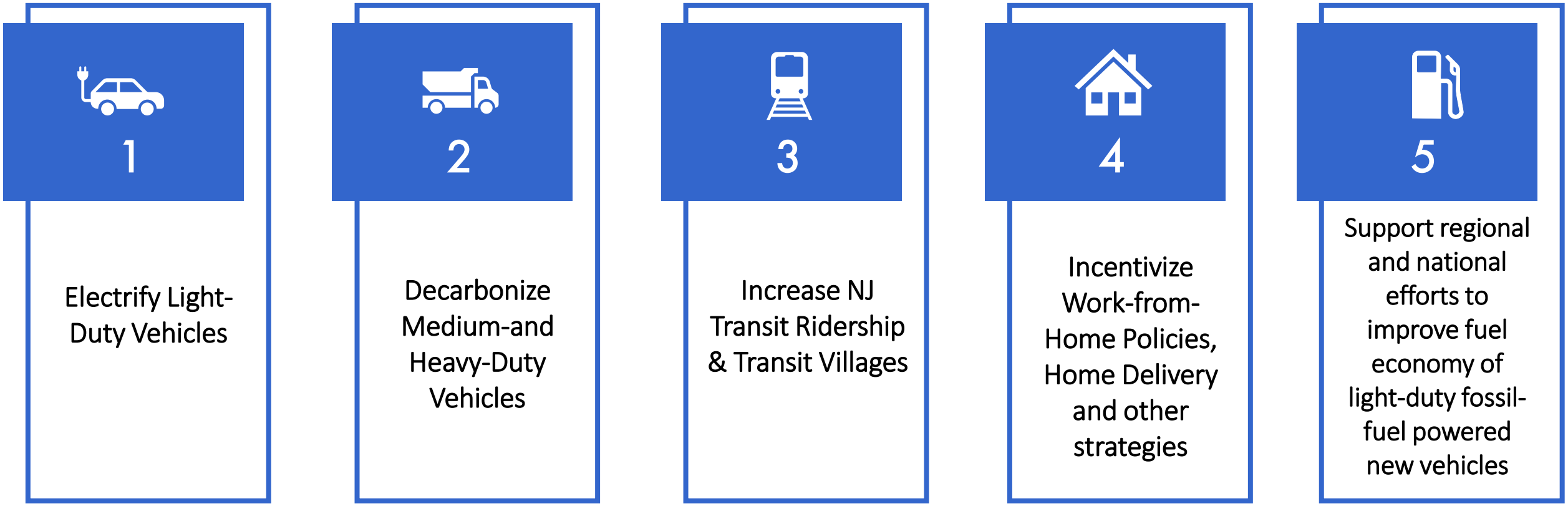


Transportation

Transportation Emissions

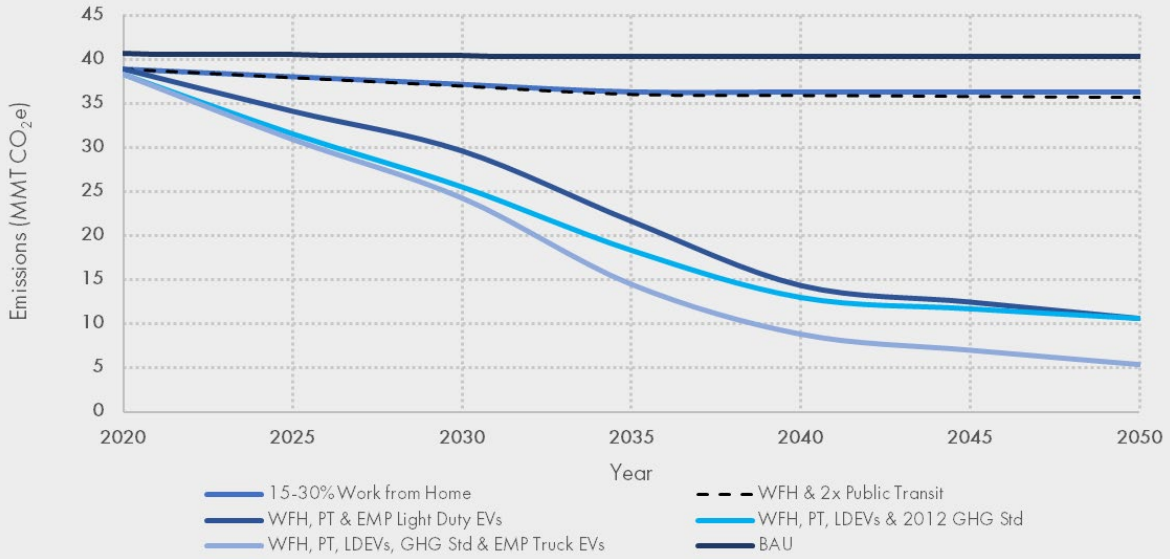


Emission Reduction Pathways

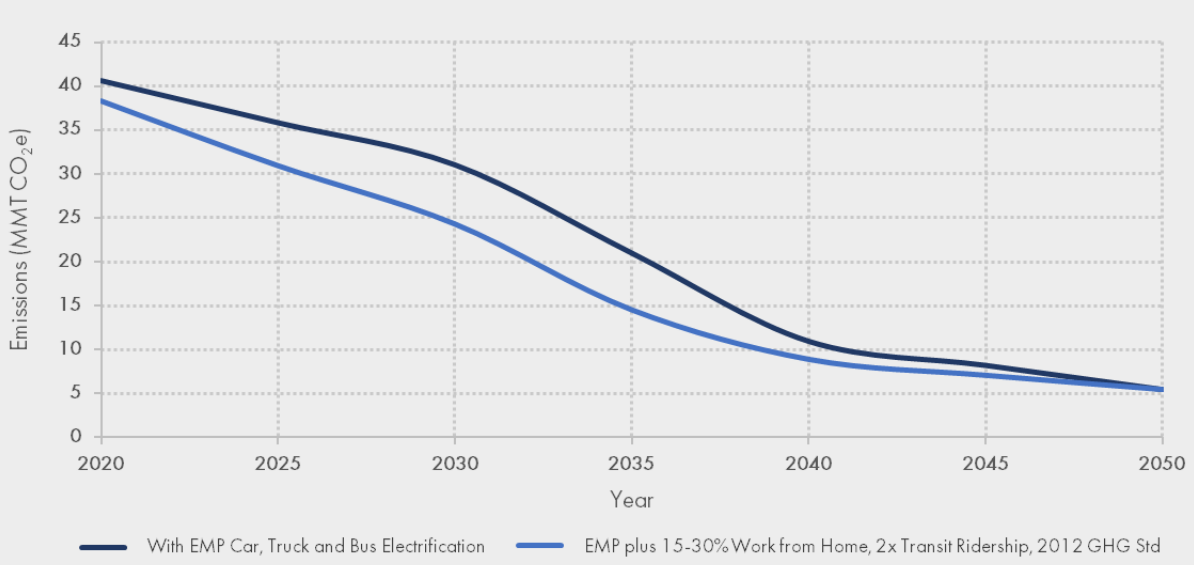


Emission Reductions – Combined Pathway Analysis

Transportation Sector Emissions under a Combined Policy Scenario



Transportation Sector Emissions under 2019 EMP Alone versus with additional measures



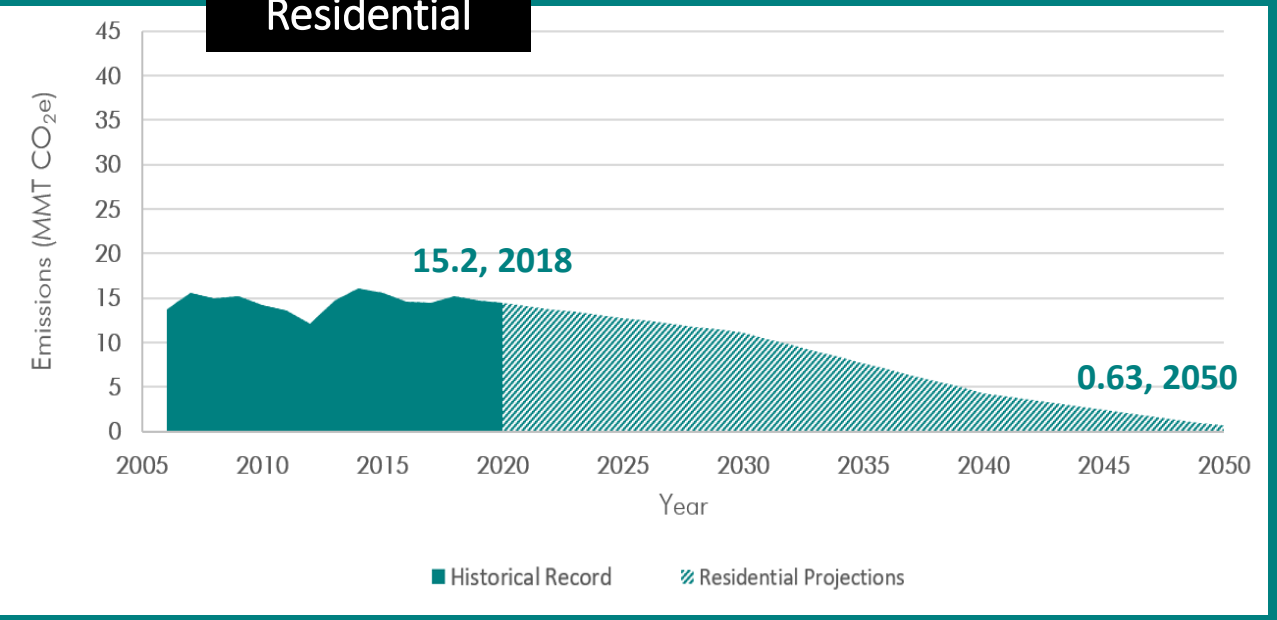
Recommendations

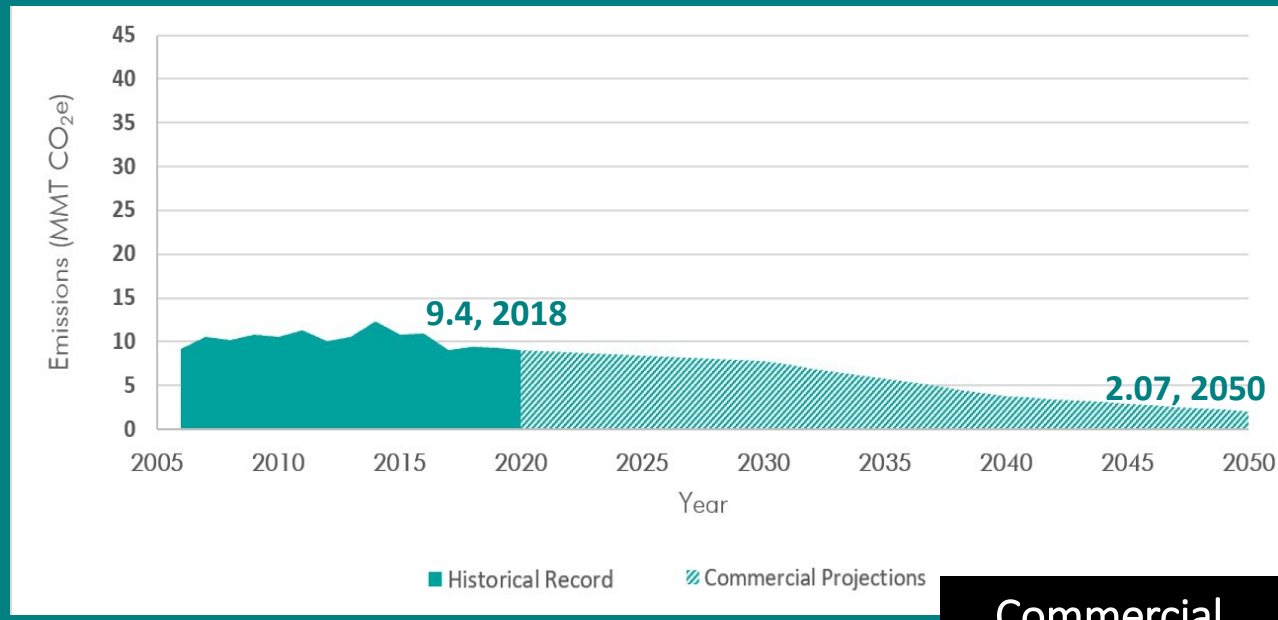
Actions	Entity	Timeframe	References
Develop a program to facilitate a complete transition away from gasoline-powered vehicles, until all light-duty vehicles and light-duty trucks are electric by 2035.	DEP, BPU, EDA	Near-term	2019 EMP Goal 1.1.1, State Zero Emission Vehicle Program Memorandum of Agreement, EV Law
Implement a long-term infrastructure program dedicated to constructing a statewide electric vehicle charging network	DEP, BPU	Near-term	
Assist county and local governments to lead by example by electrifying their vehicle fleets.	DEP, BPU	Near-term	
Consider alternative mechanisms for increased electric vehicle adoption.	Legislature, BPU, DEP, DOT, Treasury	Throughout	
Partner with industry to develop incentives to electrify the medium- and heavy-duty vehicle fleet.	EDA	Throughout	2019 EMP Goal 1.1.

Residential & Commercial

Residential & Commercial Emissions

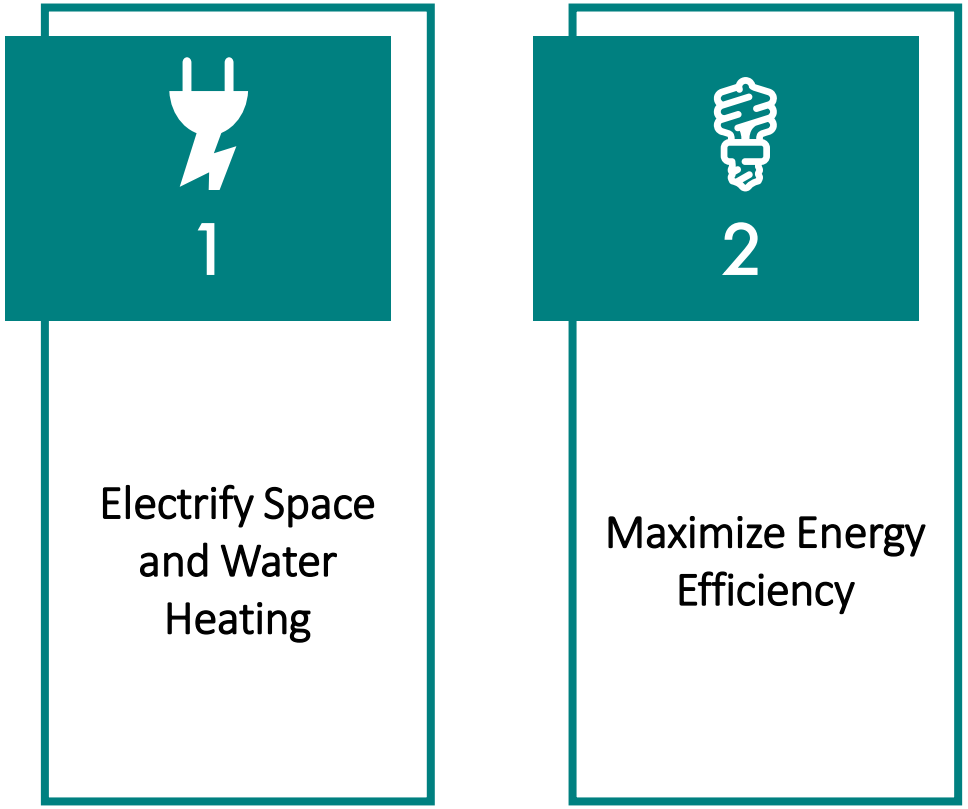
Residential





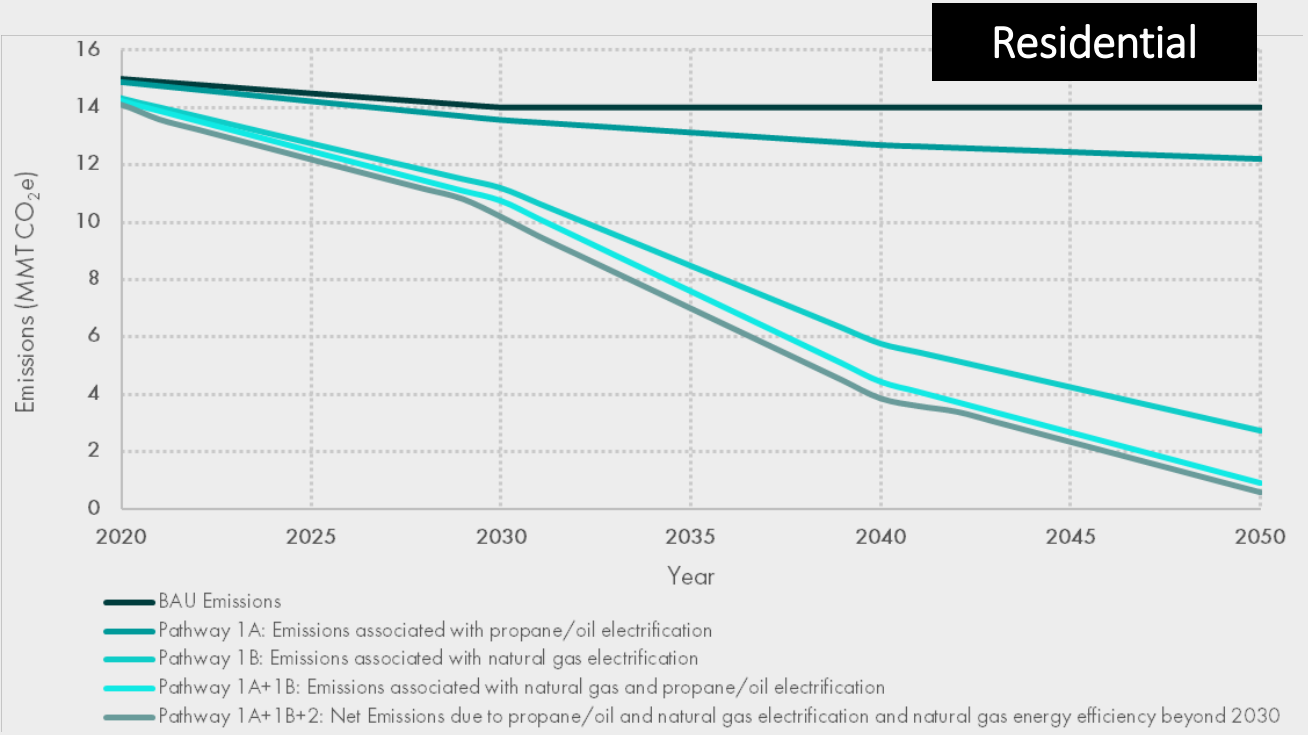
Commercial

Emission Reduction Pathways

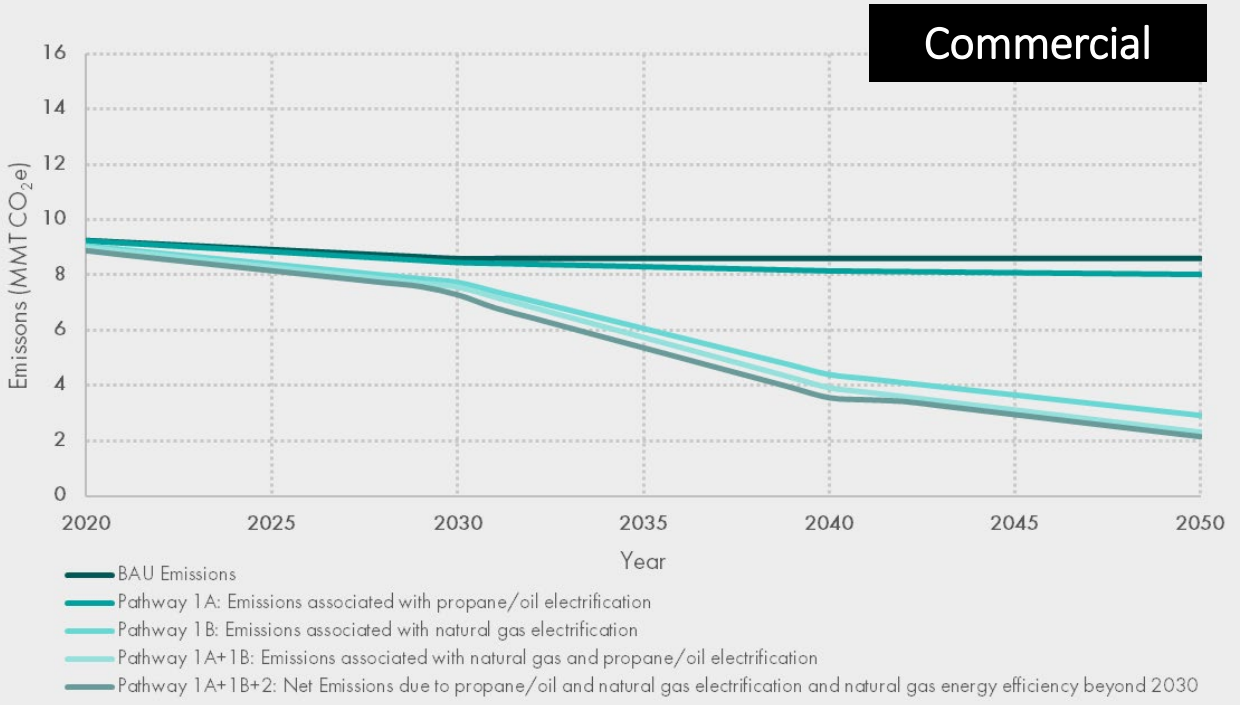


Emission Reductions Analysis

Estimated emissions due to electrification and natural gas energy efficiency in the Residential Sector



Estimated emissions due to electrification and natural gas energy efficiency in the Commercial Sector

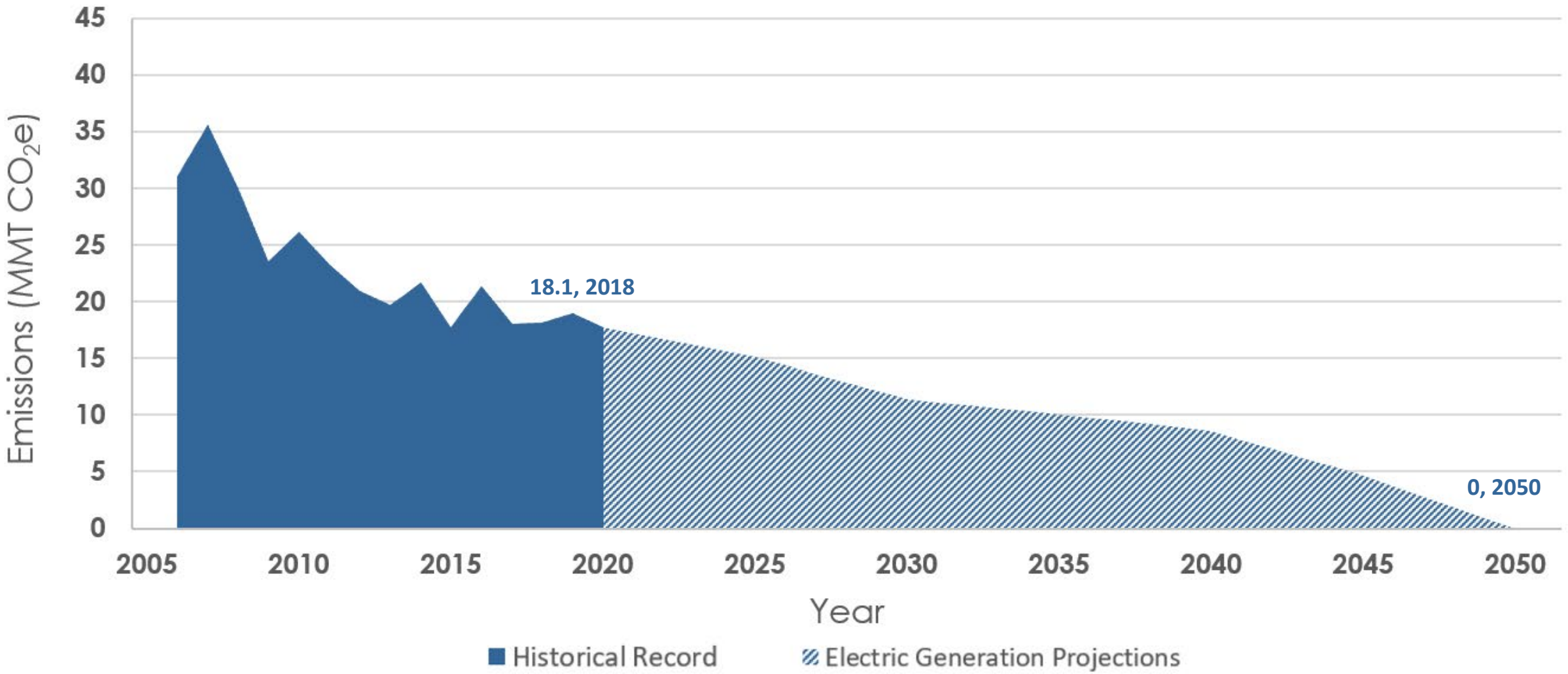


Recommendations

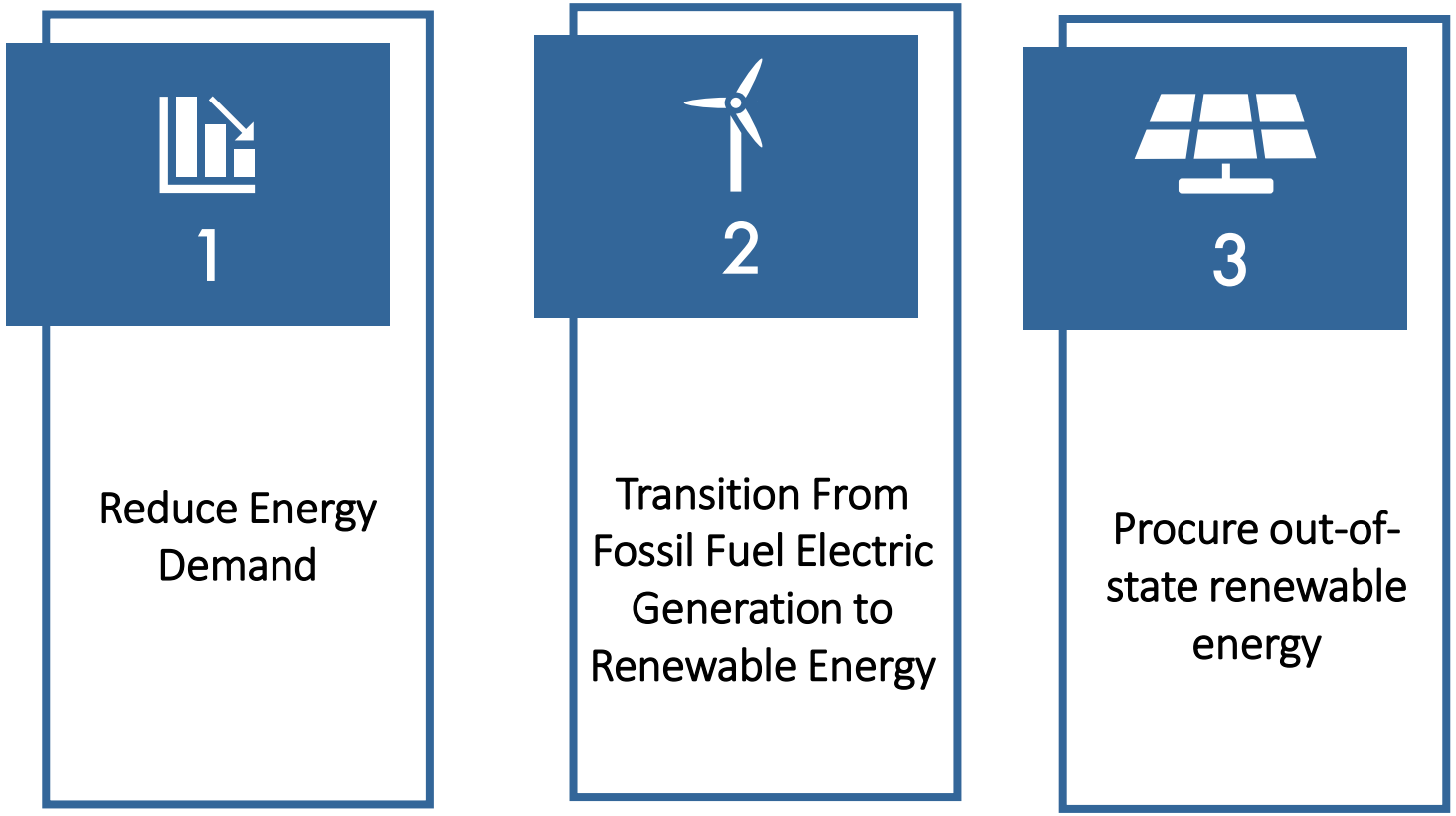
Actions	Entity	Timeframe	References
Consider enabling legislation to ensure DCA can adopt more stringent building and energy codes.	Legislature	Near-term	EMP Goal 4.1.4
Develop a roadmap to a fully electrify the building sector.	BPU, DCA and DEP	Near-term	2019 EMP Goal 4.2.2
Create an interagency task force to lead the building sector transition.	BPU, DCA and DEP	Near-term	2019 EMP Goal 4.2.2
Prioritize near-term conversion of buildings relying on propane and heating oil, starting no later than 2021.	BPU, DCA	Near-term	
Mandate energy audits in State buildings.	BPU, Treasury	Near-term	EMP Goal 3.3.5
Adopt new construction net zero carbon goals for commercial and residential buildings.	Legislature, BPU, DCA and DEP	Near-term	

Electric Generation

Electric Generation Emissions

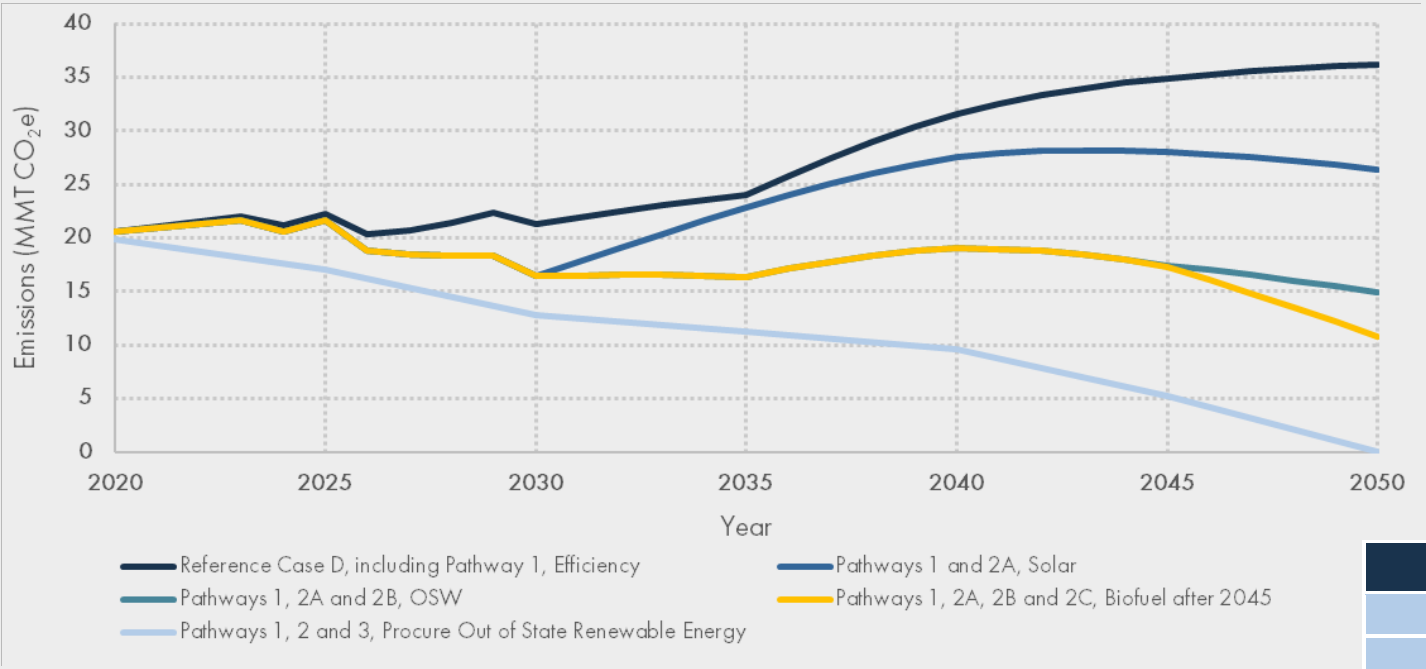


Emission Reduction Pathways



Emission Reductions Analysis

Estimated emissions due to renewable energy and energy efficiency in the Electric Generation Sector



In-State Installed Capacity Goals by Year (GW)

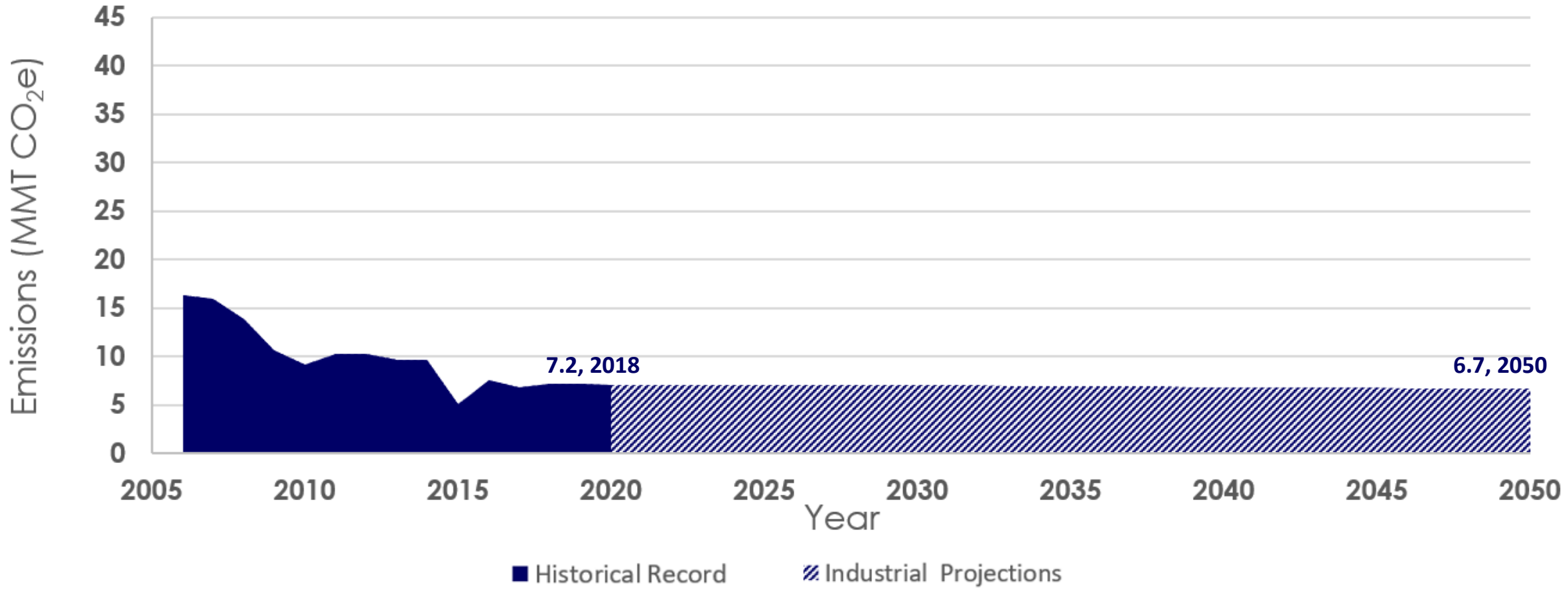
Resource Type	2020	2025	2030	2035	2040	2045	2050
NJ Solar	3.5	5.2	12.2	17.2	22.2	27.2	32.2
Offshore Wind	0	1.1	3.5	7.5	8.8	10.1	10.7
Nuclear	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Fossil Gas	11.7	10.1	10.7	10.8	12.4	13.7	0
Biogas, Biofuels and Hydrogen	0	0	0	0	0	0.3	17.6
Storage	0.6	1.6	2.5	2.5	2.5	5.2	8.7
Other[1]	0.97	0.25	0.26	0.22	0.19	0.16	0.15
Total	**20.3**	**21.8**	**32.7**	**41.7**	**49.6**	**60.2**	**72.9**

Recommendations

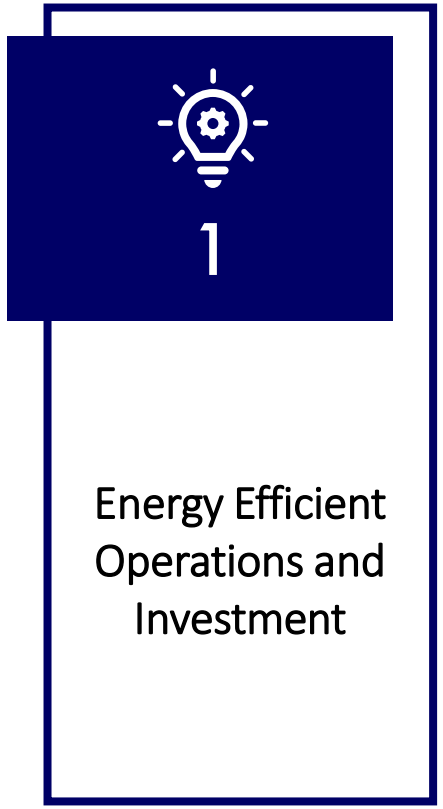
Actions	Entity	Timeframe	References
Timely creation of a successor solar incentive program.	BPU	Near-term	
Creation of a large-scale grid supply solar incentive program.	Legislature	Near-term	
Consider legislation creating a dedicated Office of Renewable Energy Siting.	Legislature	Near-term	New York State Acceleration Act
Consider legislation requiring solar PV on new construction.	Legislature	Near-term	
Implement regulatory limitations on CO_2 emissions.	DEP	Near-term	

Industrial

Industrial Emissions

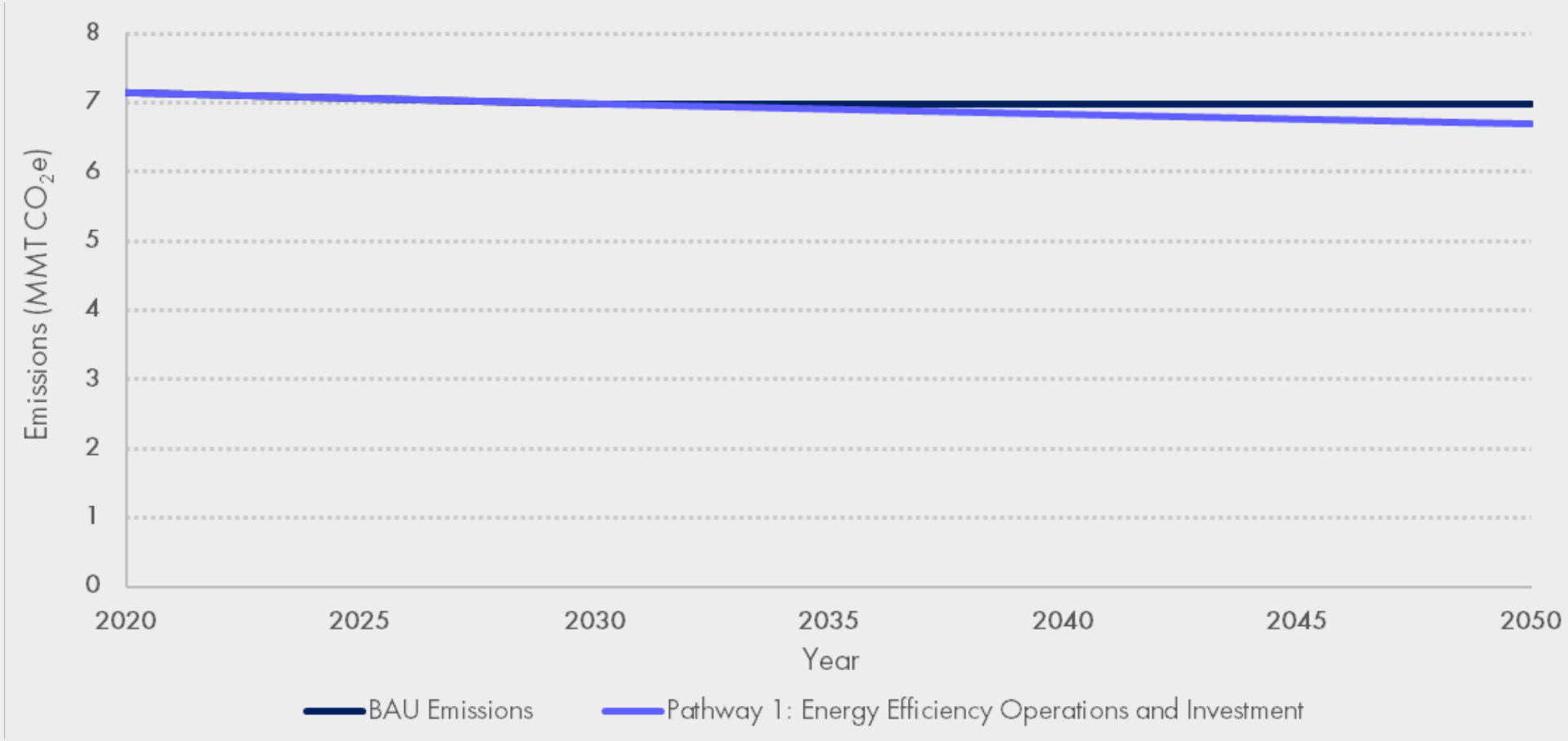


Emission Reduction Pathway



Emission Reductions Analysis

Estimated emissions due to energy efficiency in the Industrial Sector



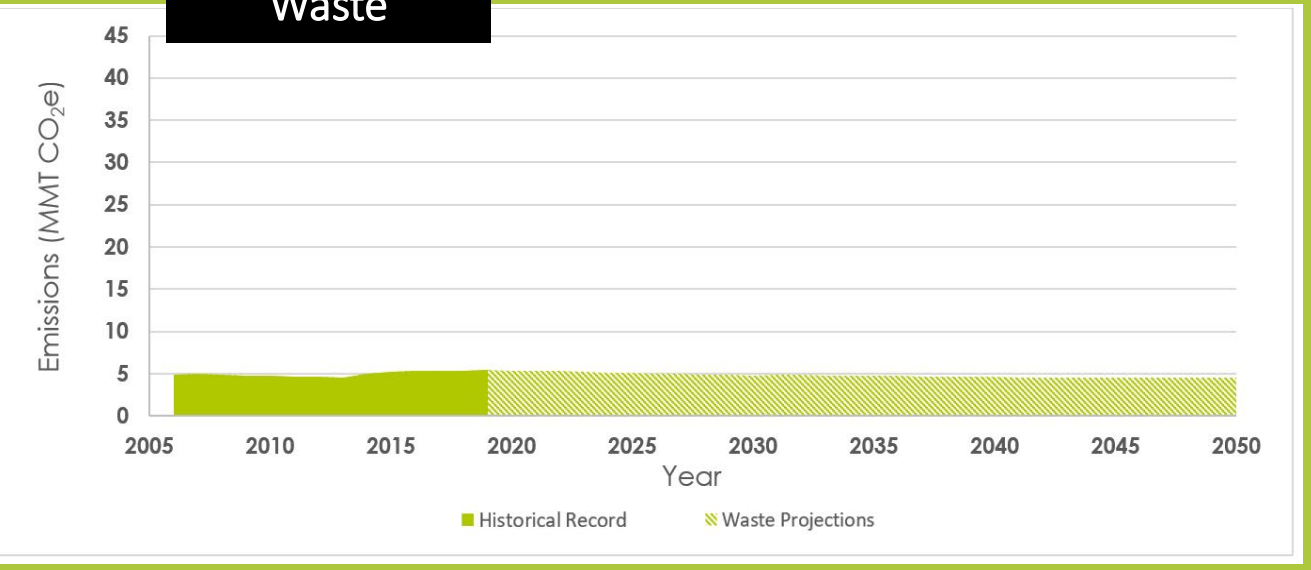
Recommendations

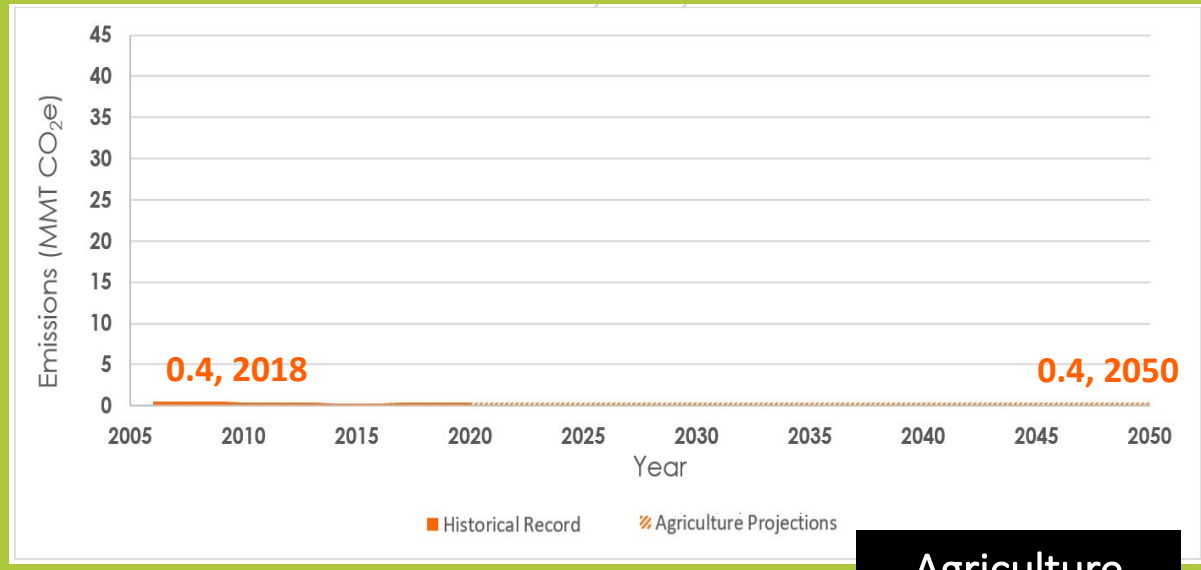
Actions	Entity	Timeframe	References
Increase awareness of and access to New Jersey's Clean Energy Program and its suite of statewide programs. Improve marketing, education, awareness and program management.	BPU	Throughout	2019 EMP Goal 3.1.2 and 3.1.6
Establish strategic and targeted energy efficiency programs to increase energy reductions and customer engagement.	BPU	Throughout	2019 EMP Goal 3.1.3
Expand CEA requirement for benchmarking energy use in the EPA Energy Star Portfolio manager program to industrial facilities.	Legislature, BPU	Throughout	2019 EMP Page 6.
Adopt equitable clean energy financing mechanisms (Green Bank, On-bill financing, Rebates) that enable greater penetration of energy efficiency measures.	EDA, BPU	Throughout	2019 EMP Goal 3.1.5
Investigate opportunities to reduce industrial CO_2 emissions through NJ PACT regulations.	DEP	Near-term	NJPACT

Waste and Agriculture

Waste & Agricultural Emissions

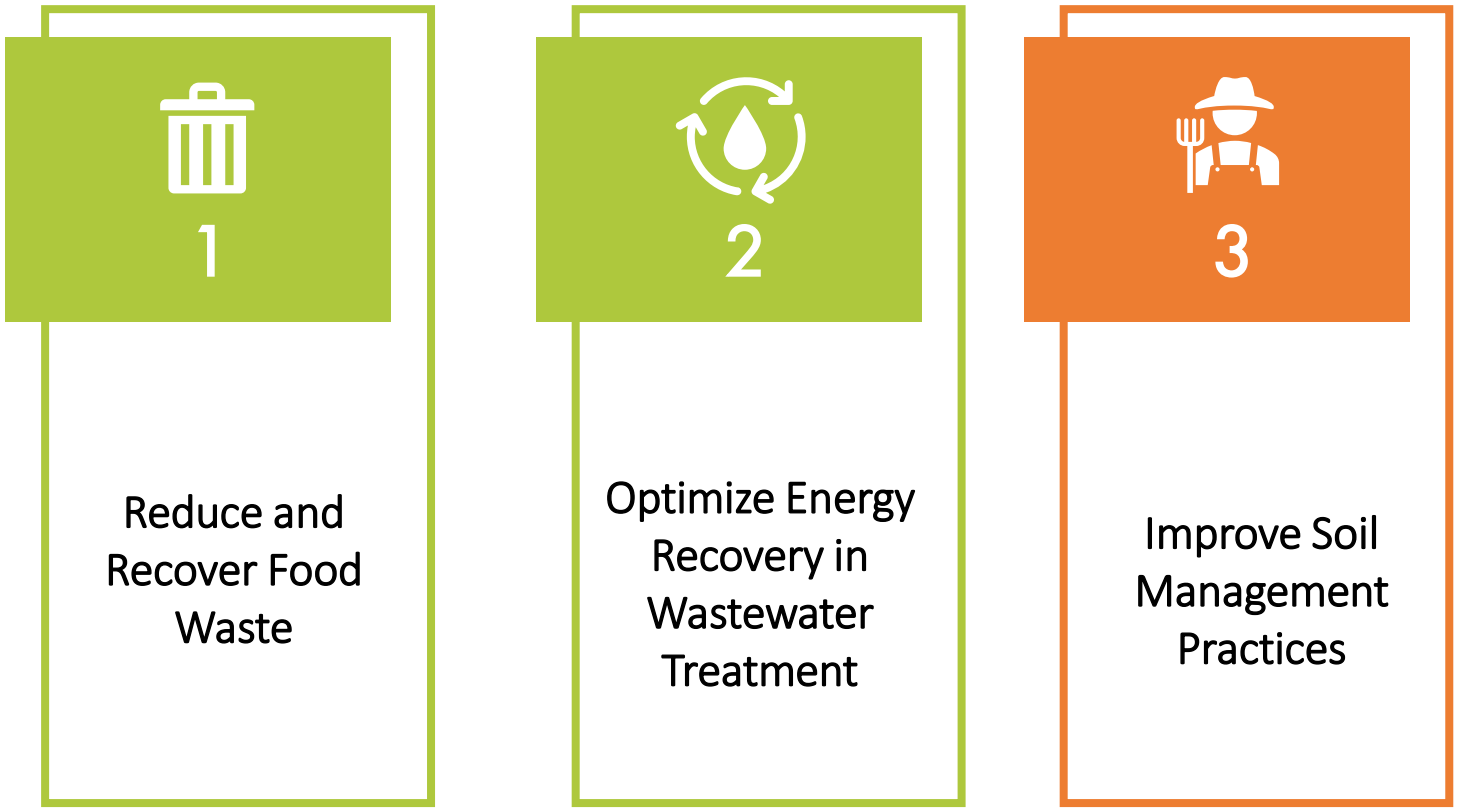
Waste





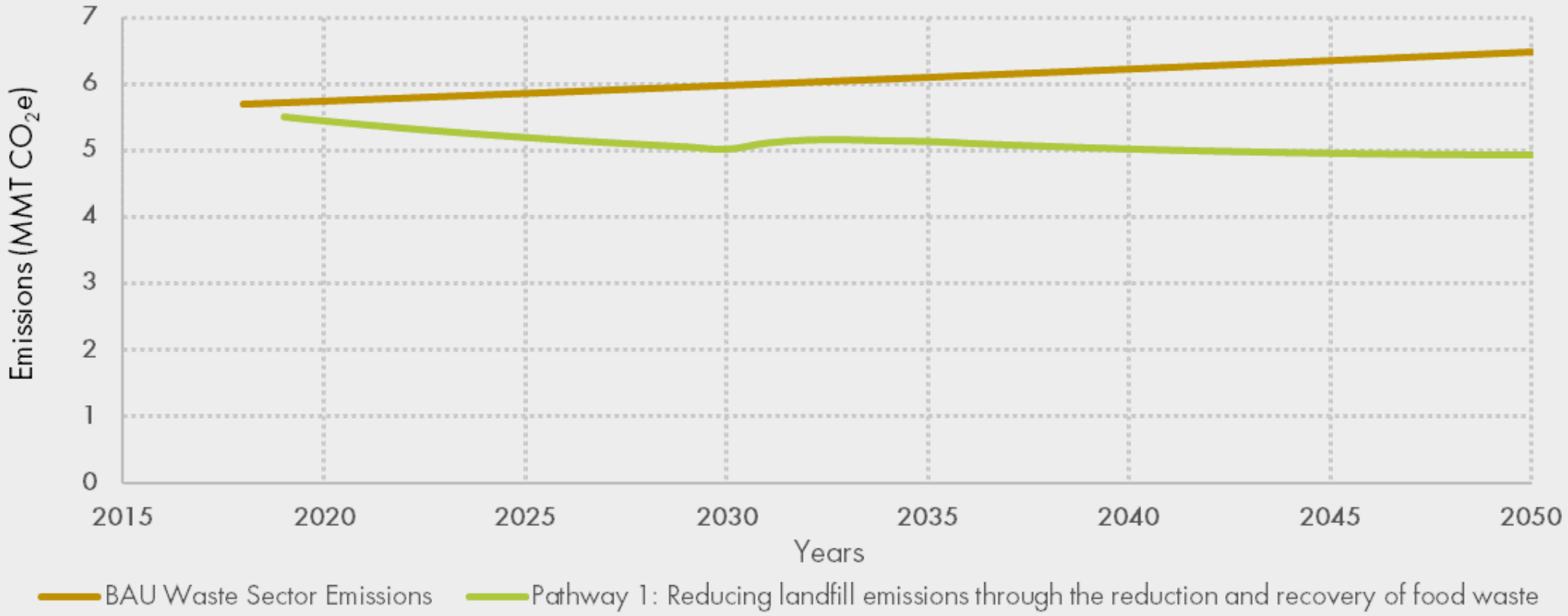
Agriculture

Emission Reduction Pathways



Emission Reductions Analysis

Estimated Waste and Agricultural 2050 emissions

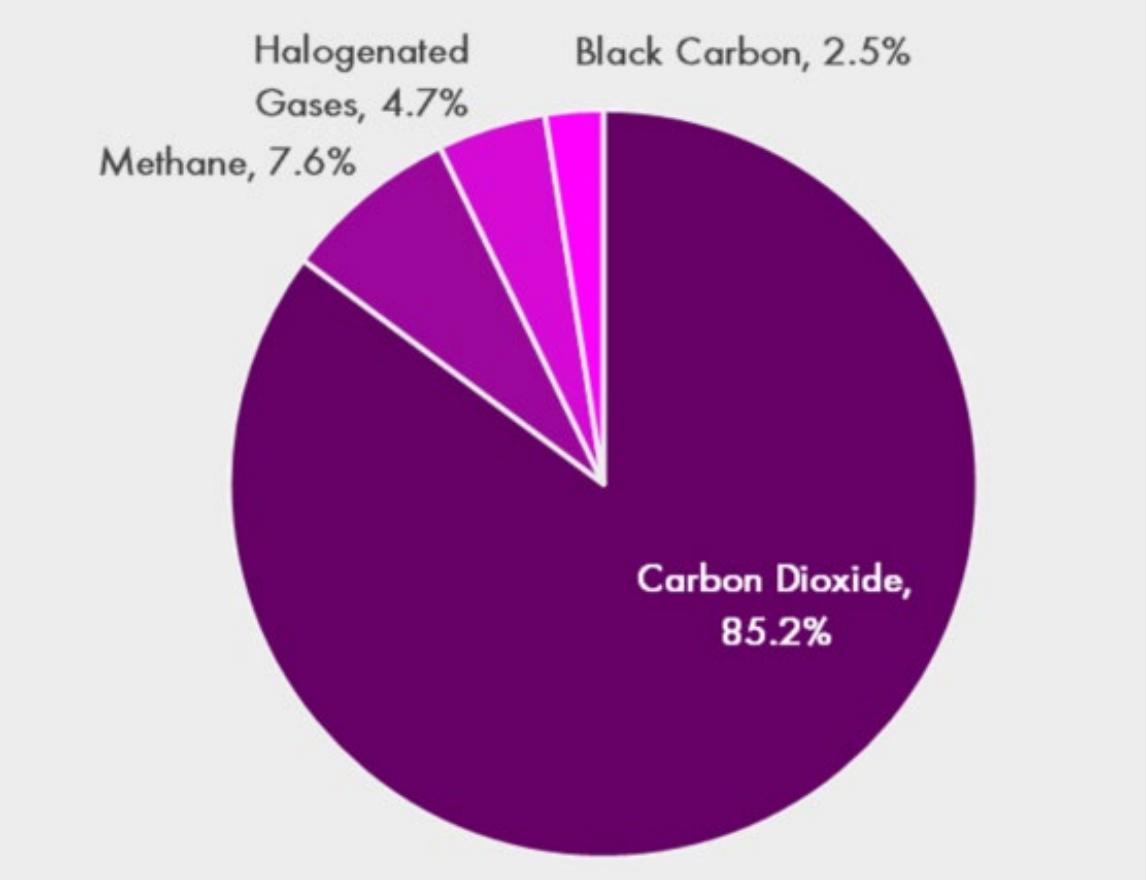


Recommendations

Actions	Entity	Timeframe	Reference
Finalize the food waste reduction plan.	DEP	Near-term	Pursuant to P.L. 2017, c.136
Adopt food waste reduction rules.	DEP	Near-term	Pursuant to P.L. 2017, c.136
Adopt food waste recycling rules for large generators.	DEP	Near-term	Pursuant to P.L. 2020, c. 24
Create guidelines/recommendations for county siting and streamlined state planning and permitting of food waste recycling facilities.	DEP	Near-term	
Create incentives to site organic waste recycling, composting or anaerobic digestion operations.	Legislature, DEP, EDA,	Near-term	
Adopt a community composting rule to streamline the approval process across the DEP.	DEP, NJDA	Near-term	
Encourage and incentivize precision agriculture.	DEP, NJDA	Throughout	

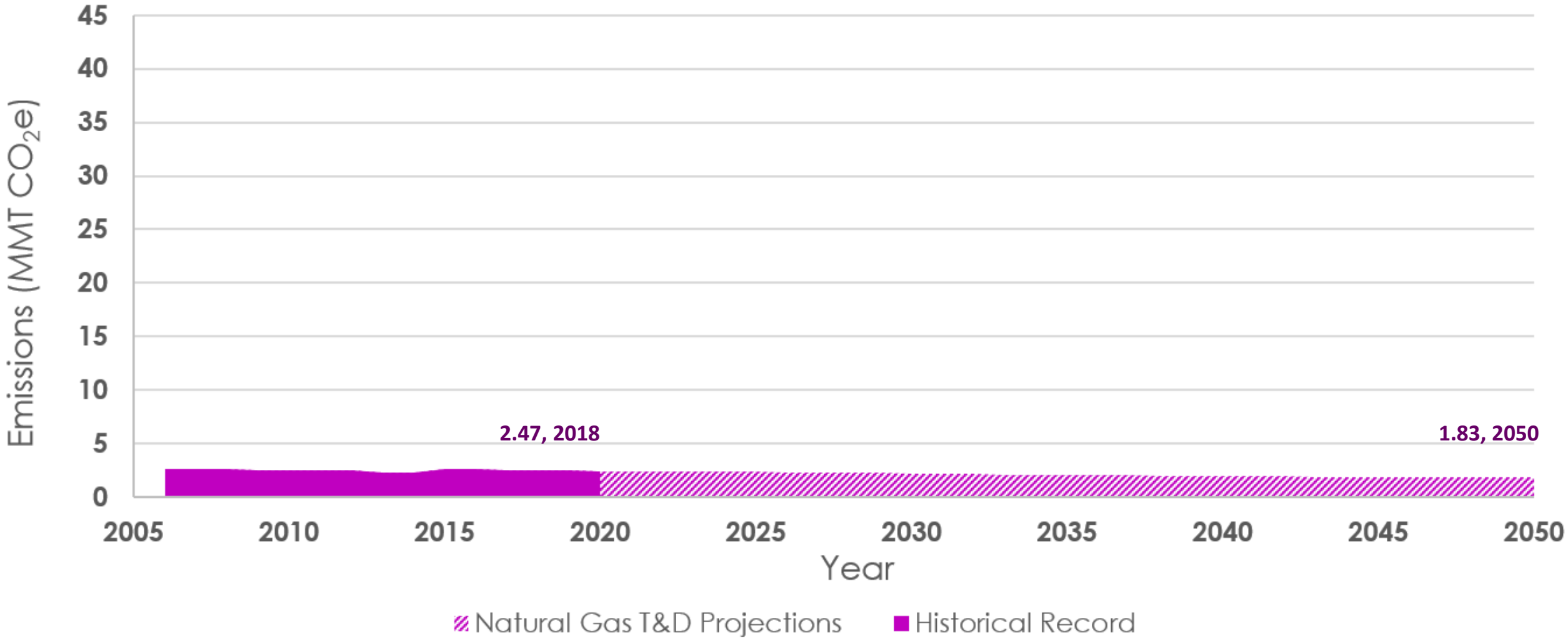
Short-Lived Climate Pollutants

- Short-Lived Climate Pollutants (SLCPs), include methane, halogenated gases and black carbon.
- SLCPs have greater impacts on climate change in the near term but remain in the atmosphere for less time.

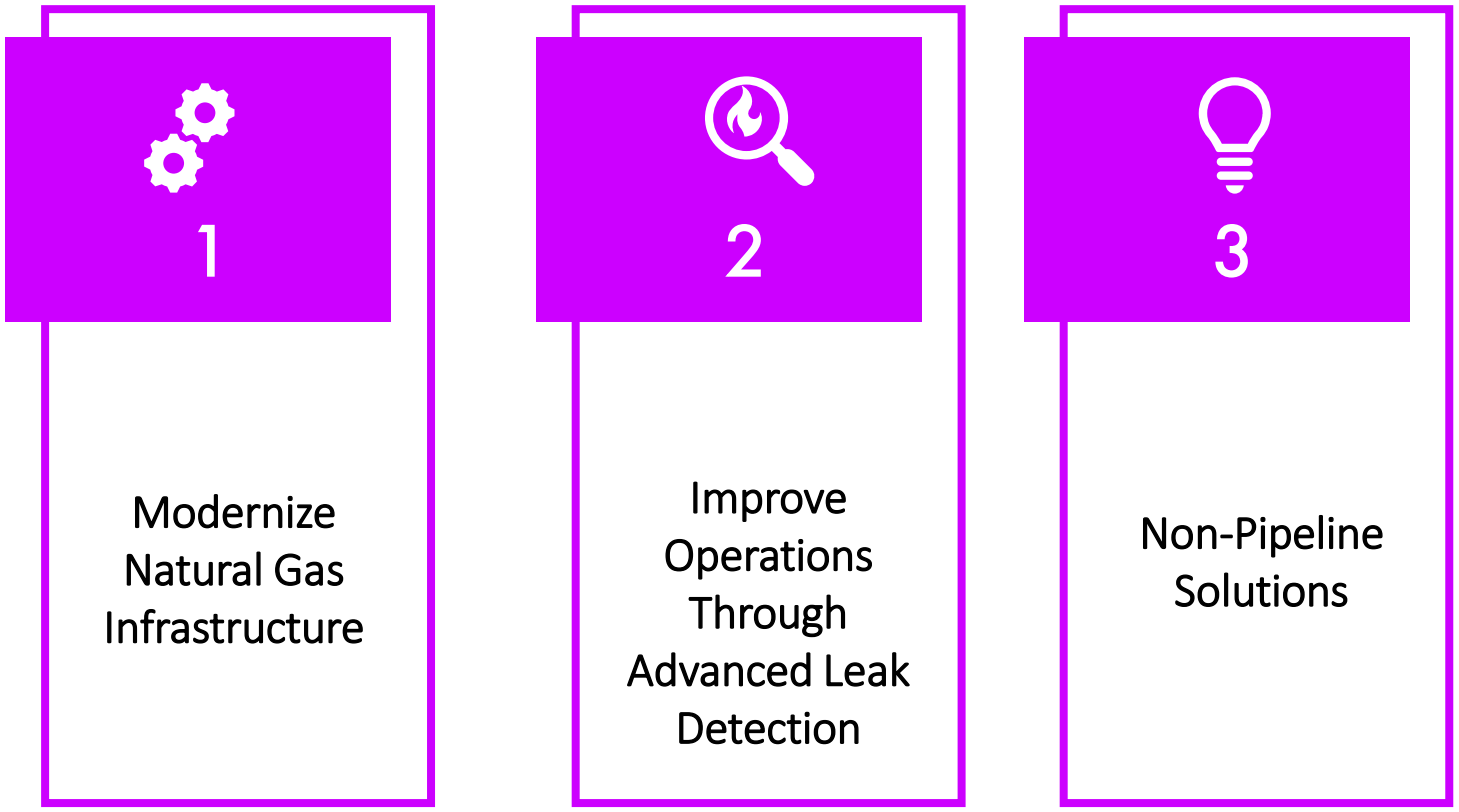


Methane from Natural Gas T&D

SLCPs - Natural Gas T&D Emissions



Emission Reduction Pathways



Emission Reductions Analysis

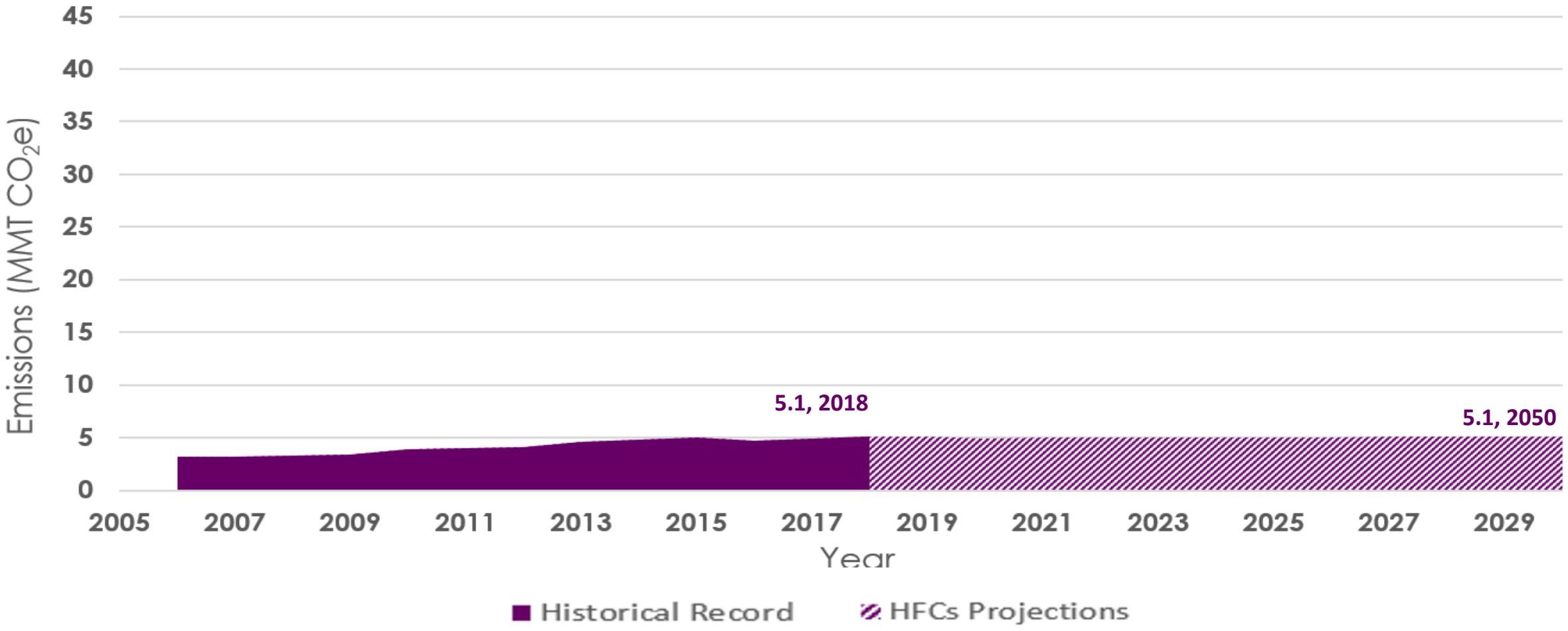
Natural Gas T&D Estimated Pathway Emissions

Recommendations

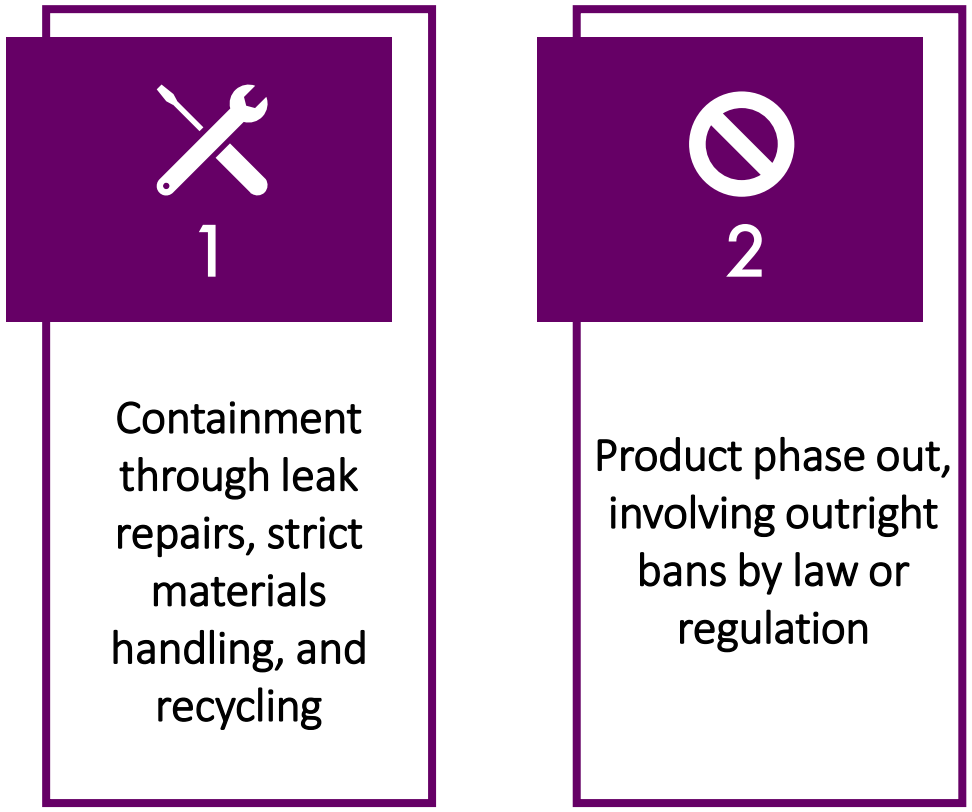
Actions	Entity	Timeframe	References
Incorporate advanced leak detection technology into natural gas operations to find, quantify, report, and prioritize gas pipeline repair and replacement and to file repair, replacement or retirement plans with BPU.	BPU, DEP	Near-term	2019 EMP Goal 5.4.4 California's "26 Best Practices" for methane leak detection, quantification and elimination.
Evaluate requiring leak prone pipes and equipment to be replaced or retired on an established schedule.	BPU, DEP	Near-term	Massachusetts has established a 20-year timeframe to replace all leak prone infrastructure
Evaluate establishing emission limits from natural gas transmission and distribution systems.	BPU, DEP	Near-term	Massachusetts set a declining cap from 2018-2020 to help meet the state's 2020 GHG emissions limit.
Evaluate mandating abatement of environmentally significant non-hazardous leaks (by leak flow volume).	BPU, DEP	Near-term	Massachusetts has existing regulations.
Evaluate the need to expand natural gas infrastructure and evaluate existing incentive structures for phaseout.	BPU	Near-term	2019 EMP Goal 5.4.1

Halogenated Gases

SLCPs - HFCs

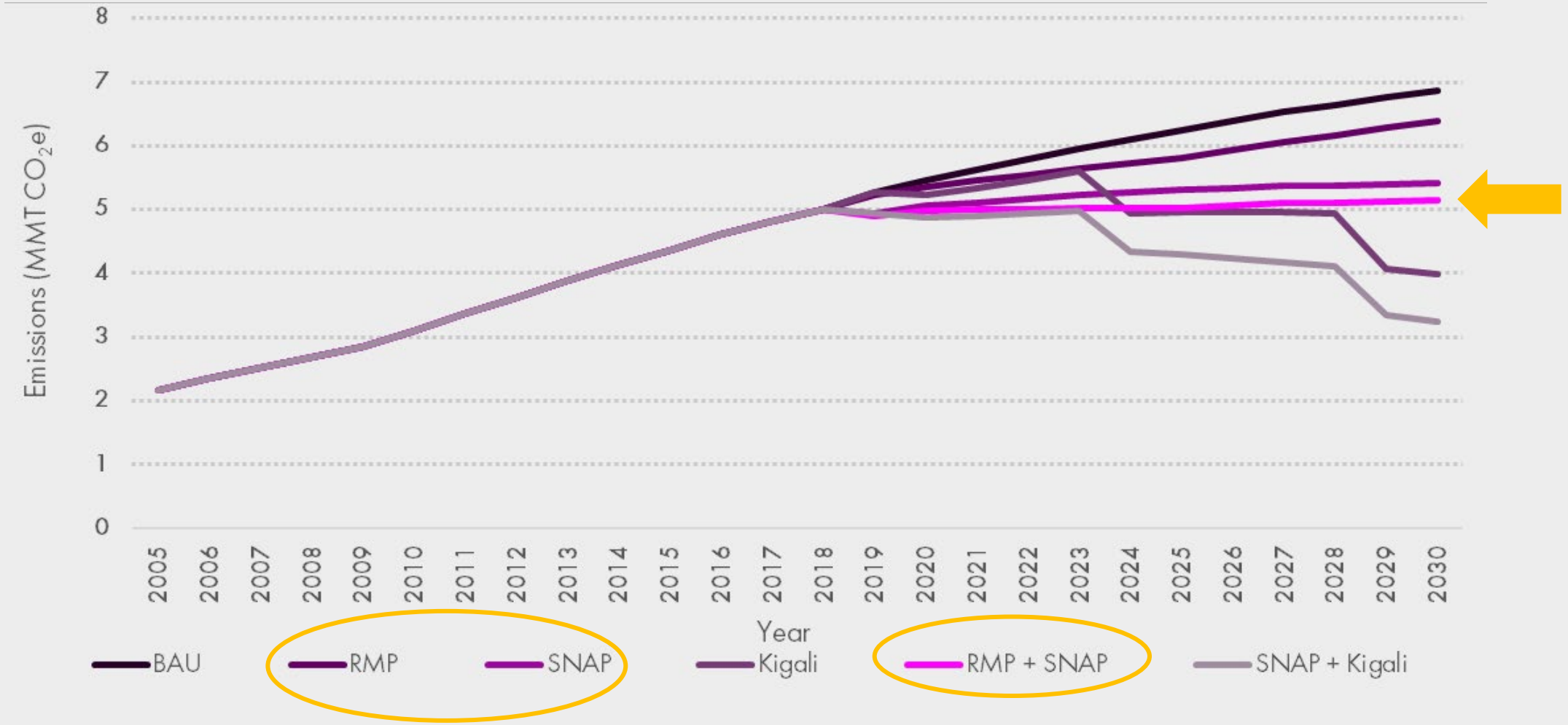

45
40
35
30
25
20
15
10
5
0
Emissions (MMT CO_2e)
5.1, 2018
5.1, 2050
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029
Year
Historical Record
HFCs Projections

Emission Reduction Pathways



Emission Reductions Analysis

HFC Estimated Pathway Emissions

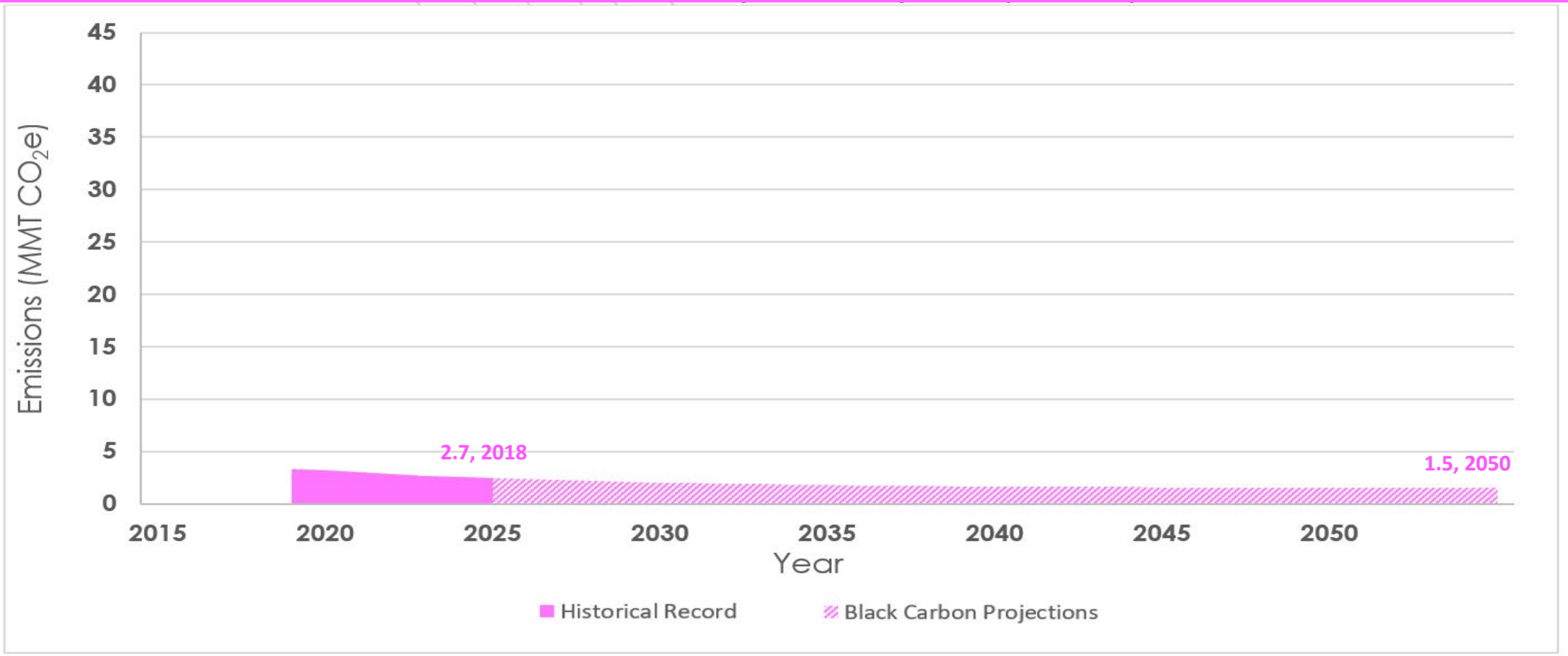


Recommendations

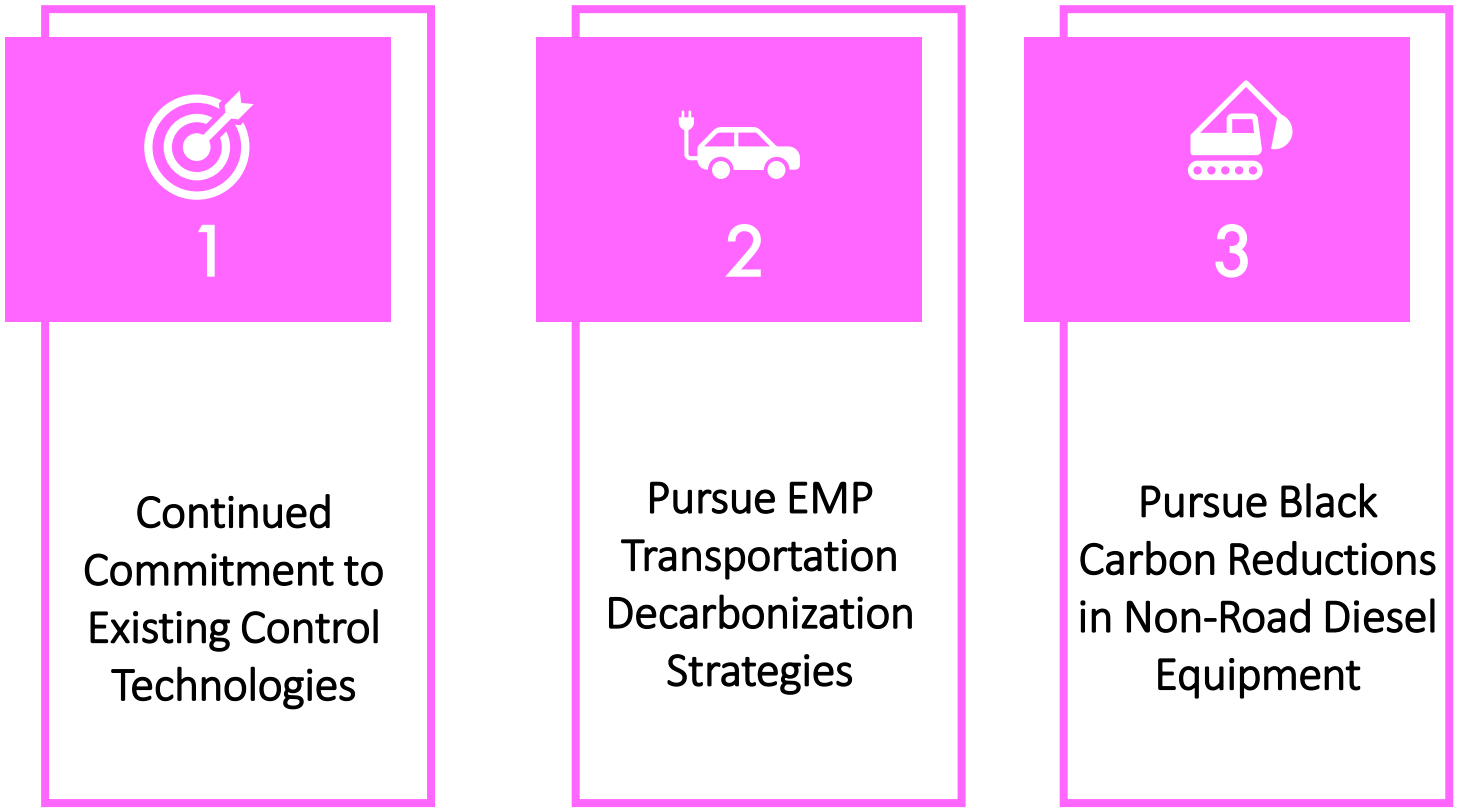
Actions	Entity	Timeframe	References
Develop a program, to phasedown the use of HFCs, including the modification of deadlines when necessary, evaluate the potential risk of substitutes, and approve substitutes for end-uses.	DEP	Near-term	Pursuant to P.L. 2019, c.507
Develop a program, pertaining to the disposal, leak repair, maintenance, recycling, and technical certification requirements for those who install, repair, or maintain stationary refrigeration or air conditioning appliances.	DCA	Near-term	Pursuant to P.L. 2019, c.507
Develop a Refrigerant Management Program, which require the owners and operators to track leak rates and submit a plan to make necessary repairs if leaks go above a predetermined level.	DEP	Near-term	Pursuant to P.L. 2019, c.507
Develop a reporting program for manufacturers, distributors, and users, who sell, distribute or install products or equipment that contain a significant amount of HFC-containing raw material.	DEP	Near-term	Pursuant to N.J.S.A. 26:2C-41

Black Carbon

SLCPs – Black Carbon

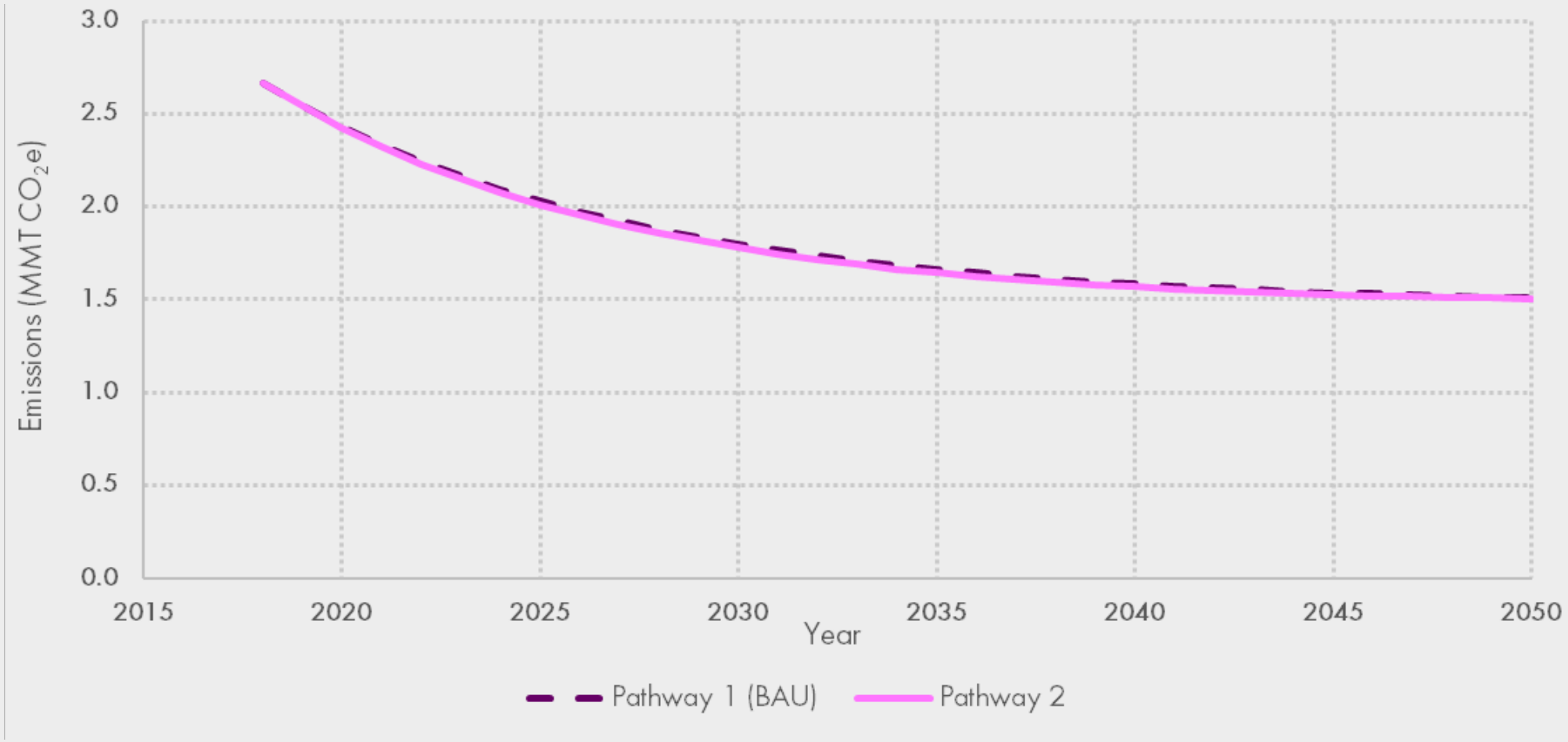


Emission Reduction Pathways



Emission Reductions Analysis

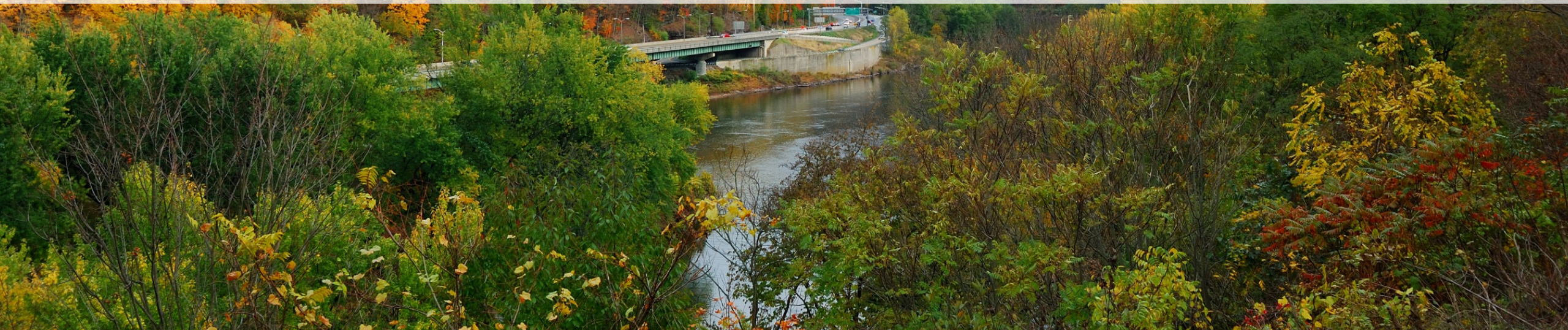
Total Black Carbon Emissions from All Sources with and without 2019 EMP Electrification of On-Road Vehicles.



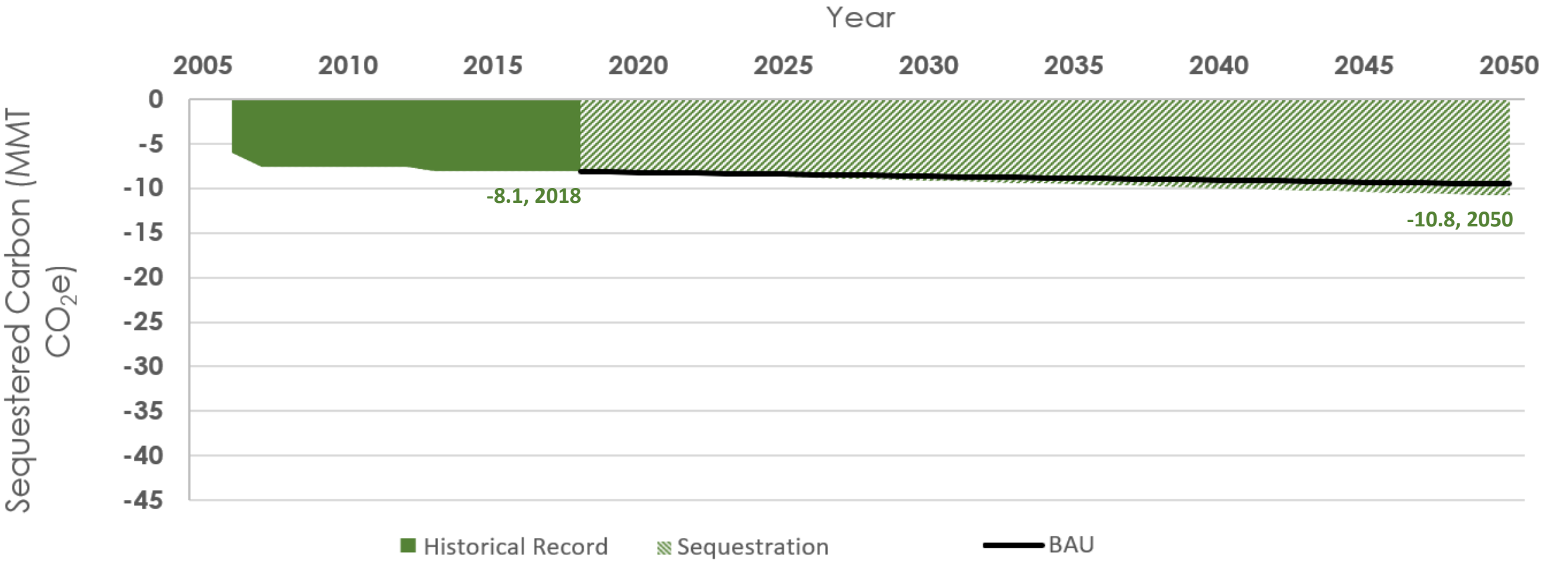
Recommendations

Actions	Entity	Timeframe	References
Oppose federal rollbacks of emission standards.	DEP	Throughout	
Transportation electrification recommendations as contained in the Transportation Chapter of this report should be pursued.			
Explore regulatory development that would require non-road equipment located at a site for an extended period of time to be regulated as a stationary source.	DEP	Near-term	NJ PACT
Explore regulations for ships, cargo handling equipment and drayage trucks.	DEP	Near-term	NJ PACT
Establish clean construction equipment standards, such as fleet emissions averaging, within state funded construction projects (roads, building, etc.).	All Government Agencies	Near-term	

Carbon Sequestration



Sequestration



Carbon Gain Pathways

Reforestation

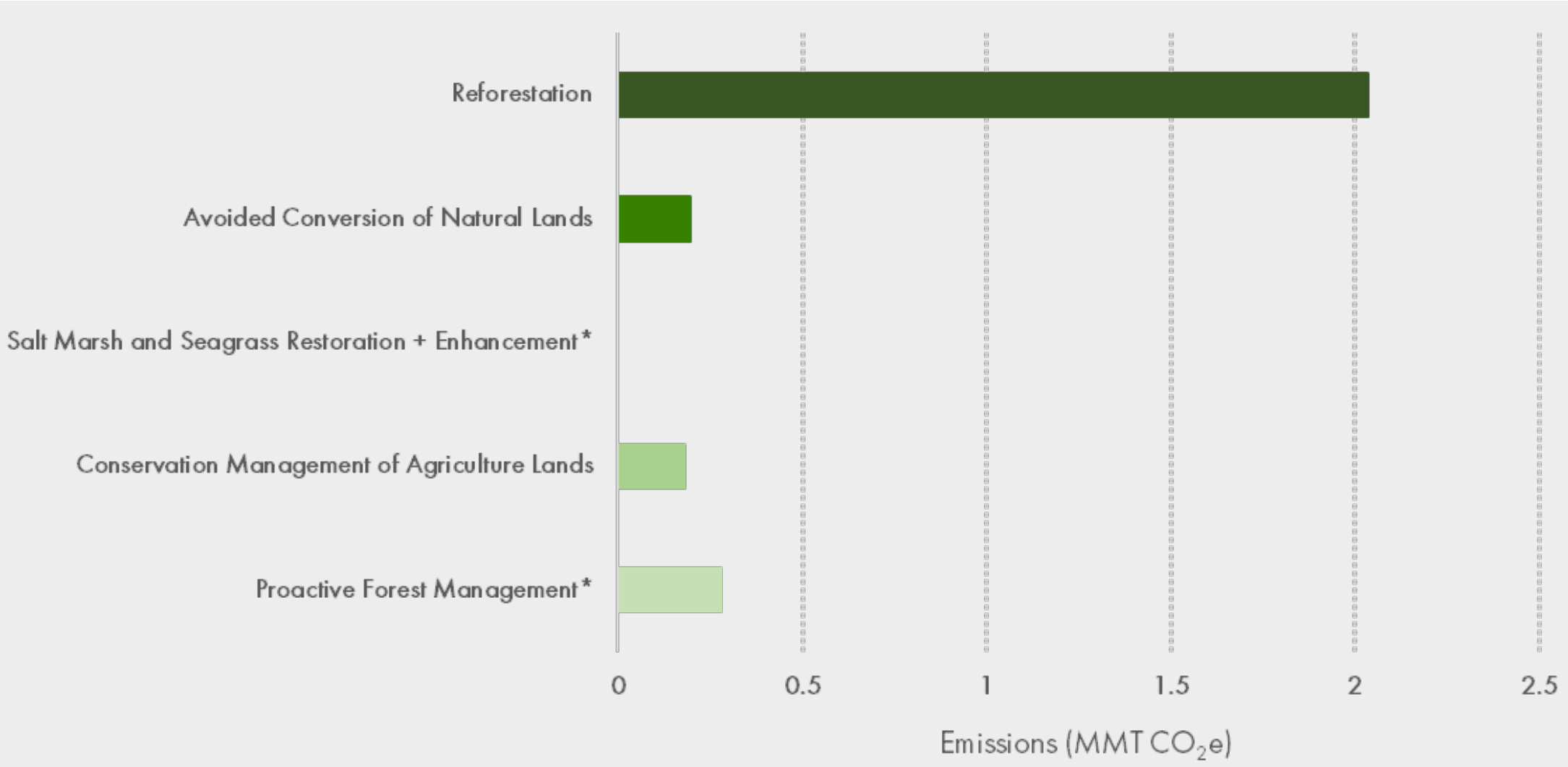
Avoided Conversion of Natural Lands

Salt Marsh and Sea Grass Restoration and Enhancement

Conservation Management of Agricultural Lands

Proactive Forest Management

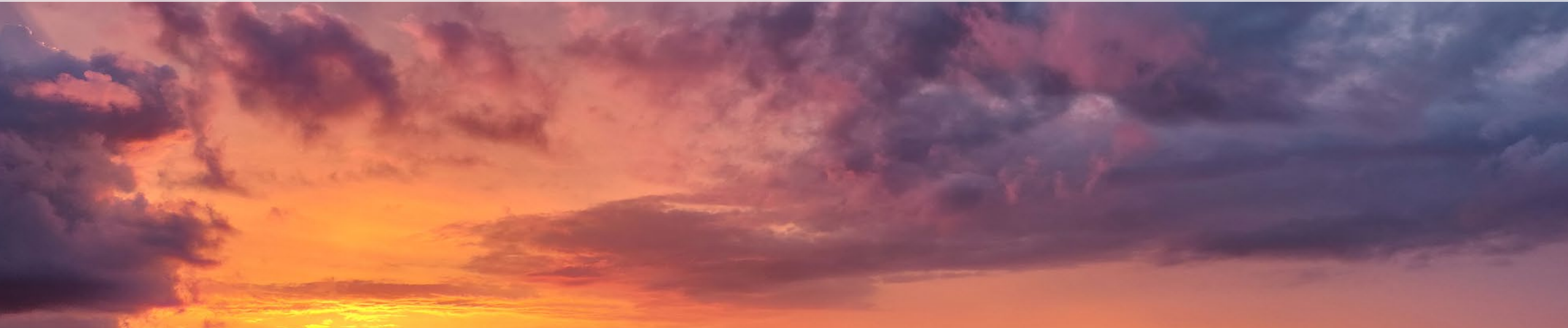
Carbon Gain Estimates



Recommendations

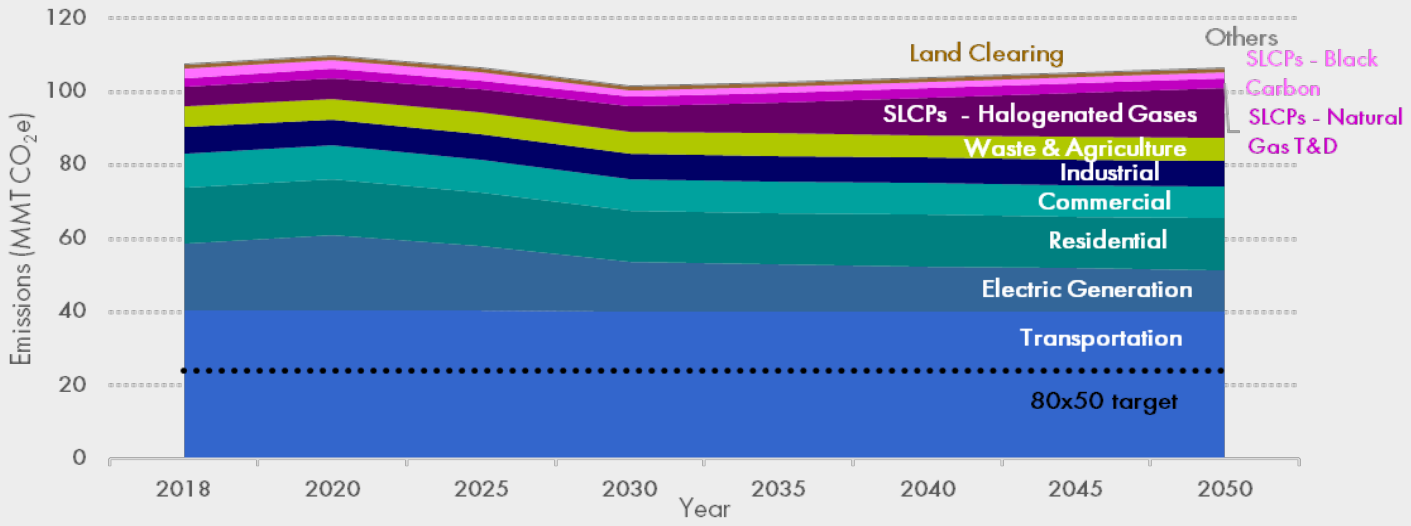
Actions	Entity	Timeframe	Reference
Set a statewide carbon sequestration target for 2030 and 2050.	DEP, NJDA	Near-term	
Develop a New Jersey Carbon Sequestration Plan.	DEP, NJDA	Near-term	
Sign onto the U.S. Climate Alliance Natural and Working Lands Challenge.	Legislature	Near-term	
Refine sequestration estimates in the Greenhouse Gas Inventory.	DEP	Throughout	
Offer a Private Woodland Conservation Program.	Legislature, DEP, NJDA	Throughout	
Create an incentive program to encourage reforestation of 5+ acre parcels.	Legislature, DEP, NJDA	Near-term	
Develop and adopt minimum forest cover objectives for land development, including performance of requirements for forest stand delineations and implementation of forest conservation.	DEP	Near-term	Maryland's Forest Conservation Act (Natural Resources Article 5-1601-5-1613).

Conclusion

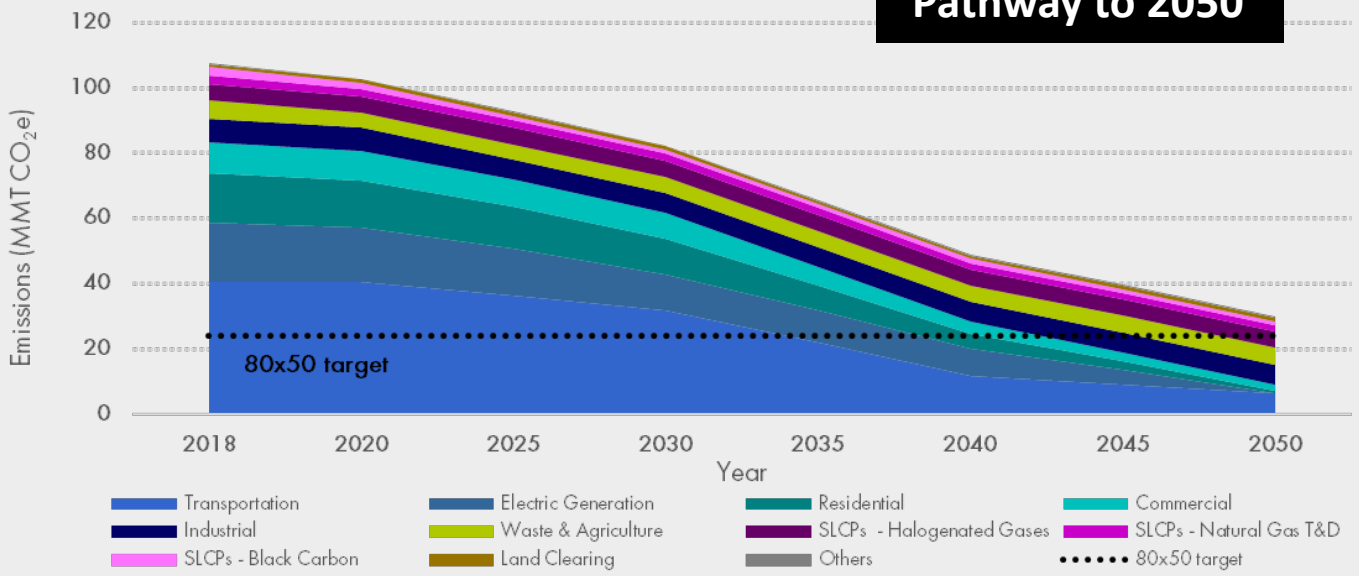


How it's going & where we need to be

Business-as-Usual



Pathway to 2050



How can you help?

- Make your next car purchase an EV
- Purchase electric appliances when its time to upgrade
  - Heat pumps (low GWP)
  - Electric Stoves
  - Electric/Solar Thermal Water Heaters
  - Electric Lawn Equipment
- Reduce your energy demand at home
  - Do a home energy audit
  - Insulate, insulate, insulate
  - Programmable Thermostat
  - Strategize remodeling to improve efficiency
- Consider rooftop Solar PV + battery storage technologies

Thank You

www.nj.gov/dep/climatechange/mitigation.html

Questions

Paul Orlando, Director of Division of Climate, Clean Energy & Radiation Protection

Bob Kettig, Assistant Director of Climate Change, Clean Energy & Sustainability

Helaine Barr, Supervisor in Bureau of Climate Change & Clean Energy