

Energy



The Most Important Fiscal and Economic Issues Facing New York State



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Principles and Strategies for an Affordable and Effective State Energy Plan

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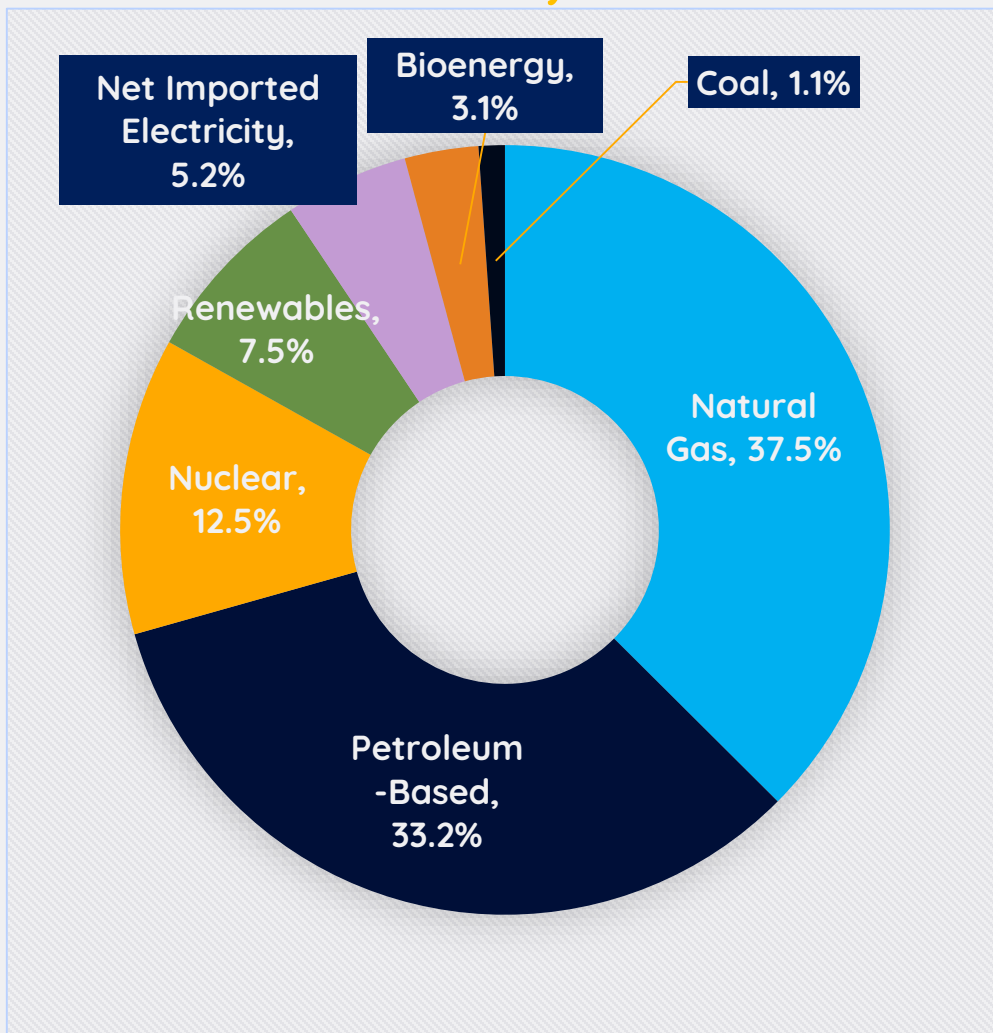


Presentation Overview

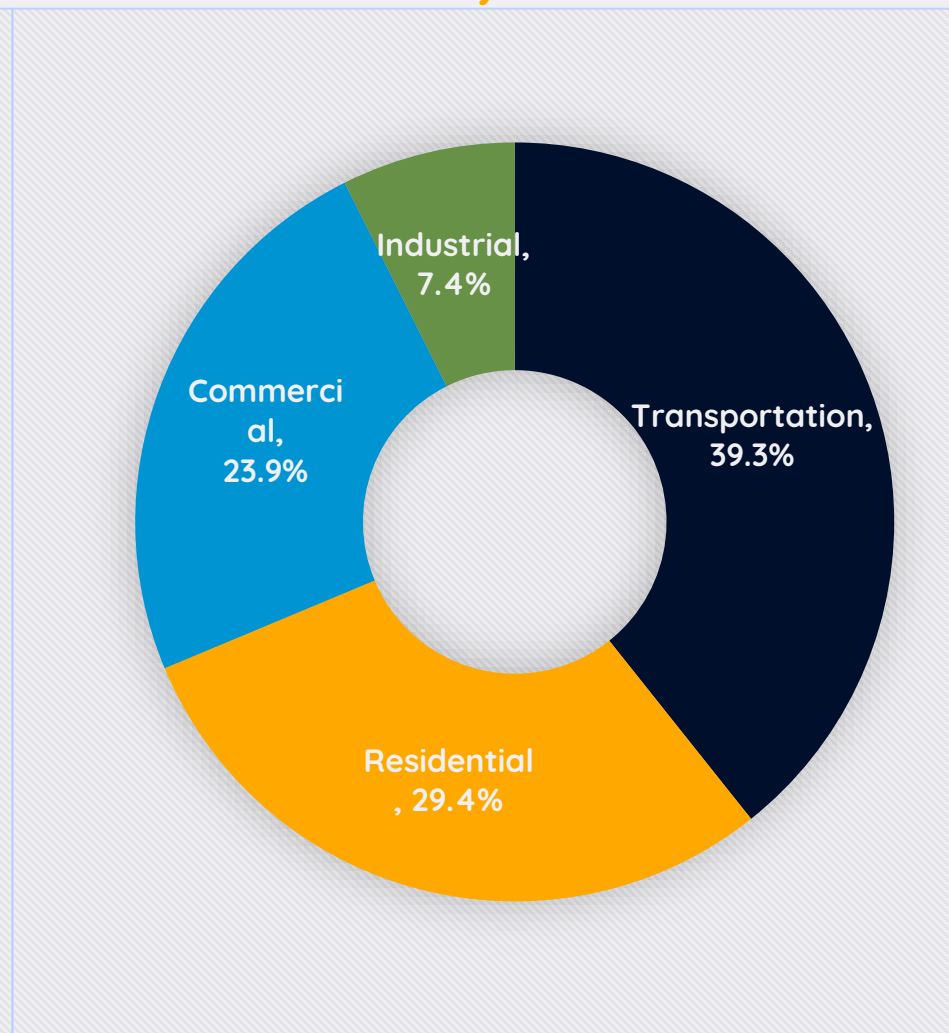
- New York: Energy Basics
- New York State Energy Plan Goals
- Principles for Assessing Options for Achieving Energy Goals
- Recommendations

Sources and Uses of Power in NYS

Sources, 2015



Uses, 2015



Shift to Cleaner Sources of Electricity

Electric Sector GHG Emissions Down 42%

Source	Metric Tons CO2 per MWh, 2015	Share of KWh Energy		Share of Carbon Output	
		1990	2015	1990	2015
Coal	1.2	19%	2%	39%	9%
Petroleum	.83	25%	1%	41%	5%
Natural Gas	.47	17%	41%	19%	82%
Nuclear	-	17%	32%	-	-
Wind & Hydro	-	21%	22%	-	-
Other		1%	2%	2%	5%

Note: May not add to 100% due to rounding.

Source: Energy Information Administration, State Electricity Profiles, New York, 2016.

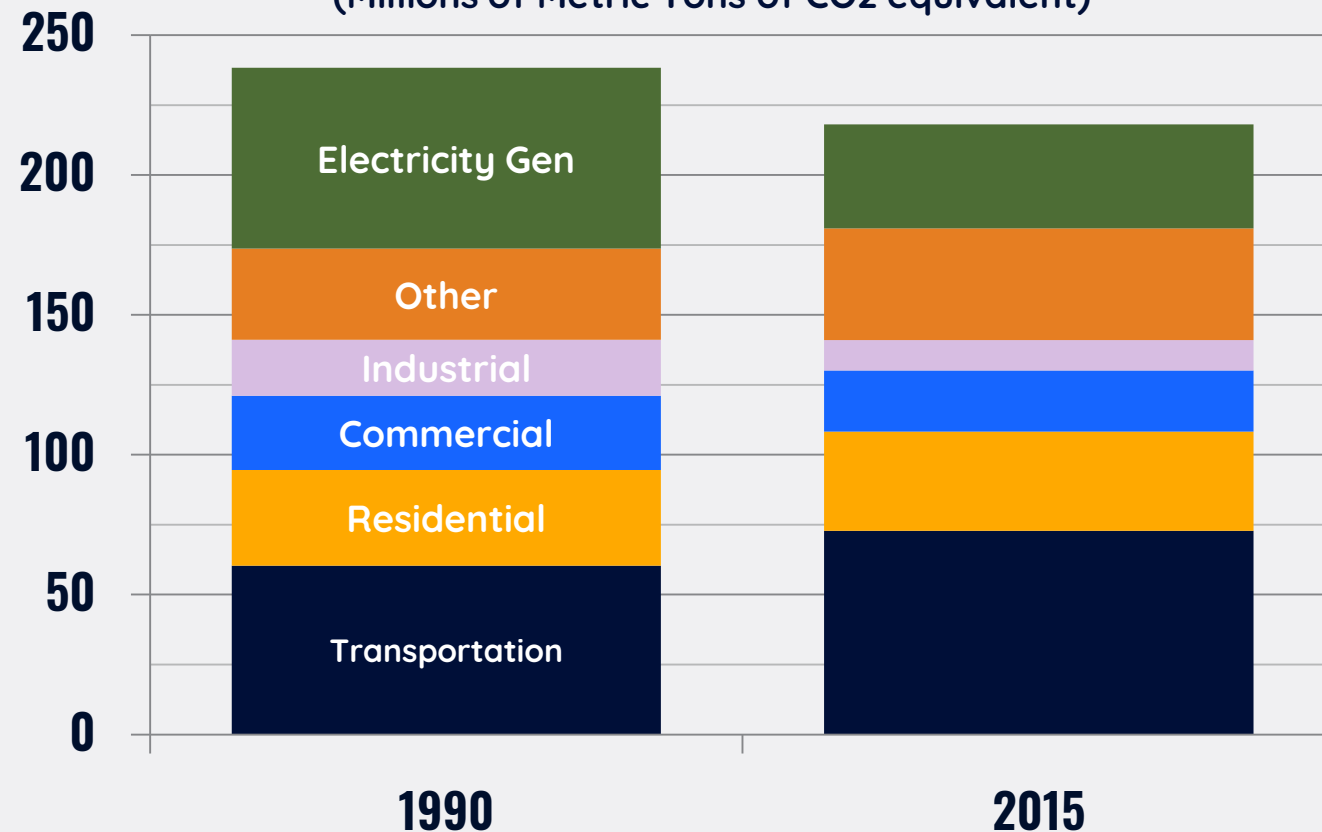
Green and Getting Greener



Rank in
State CO2
Emissions
Per Capita,
2015

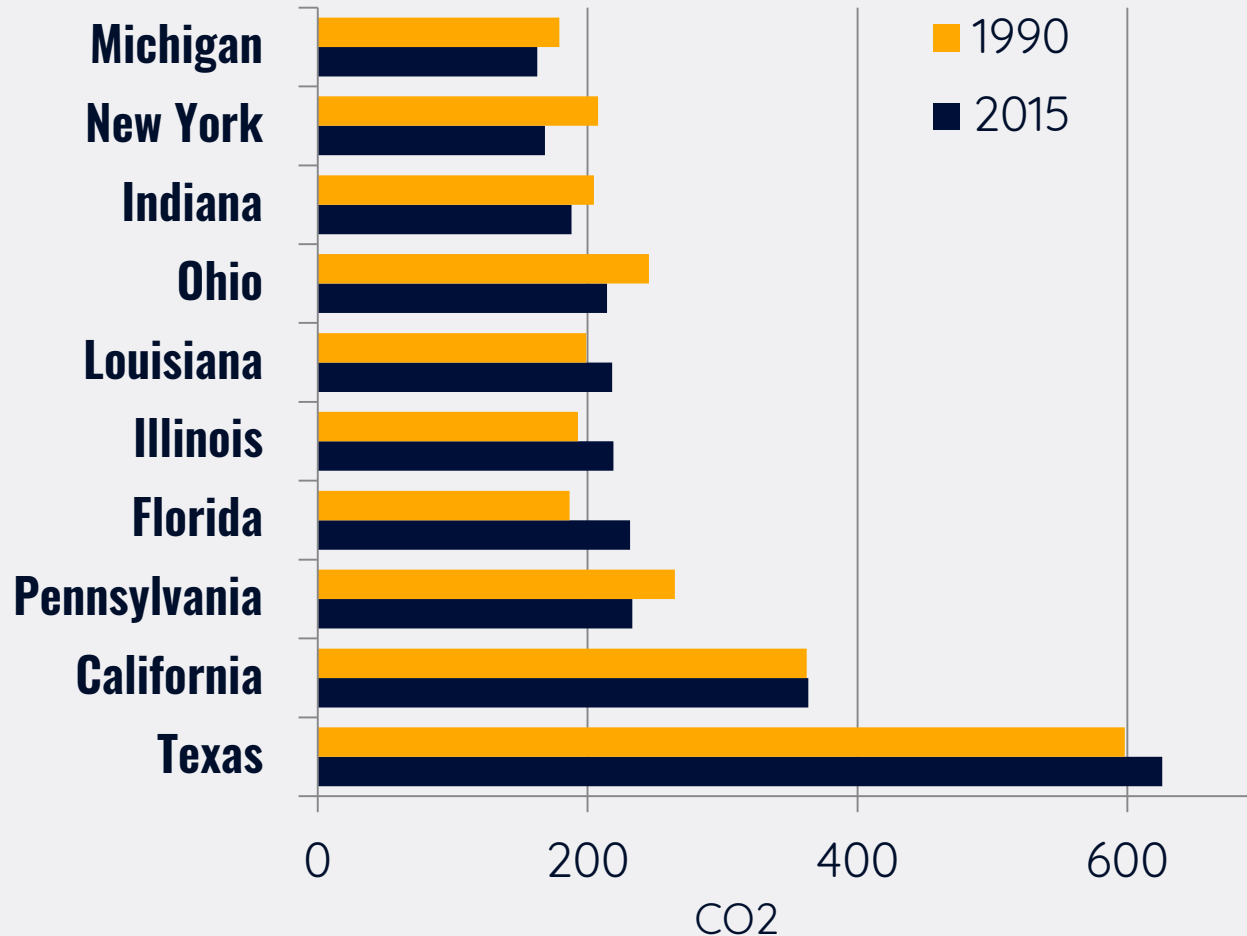
8.4% Reduction in GHG Emissions, 1990 and 2015

(Millions of Metric Tons of CO2 equivalent)



NY Among 5 Large States With Declines

Increased or Steady Emissions in 5 Other Large States



Regional Greenhouse Gas Initiative (RGGI)

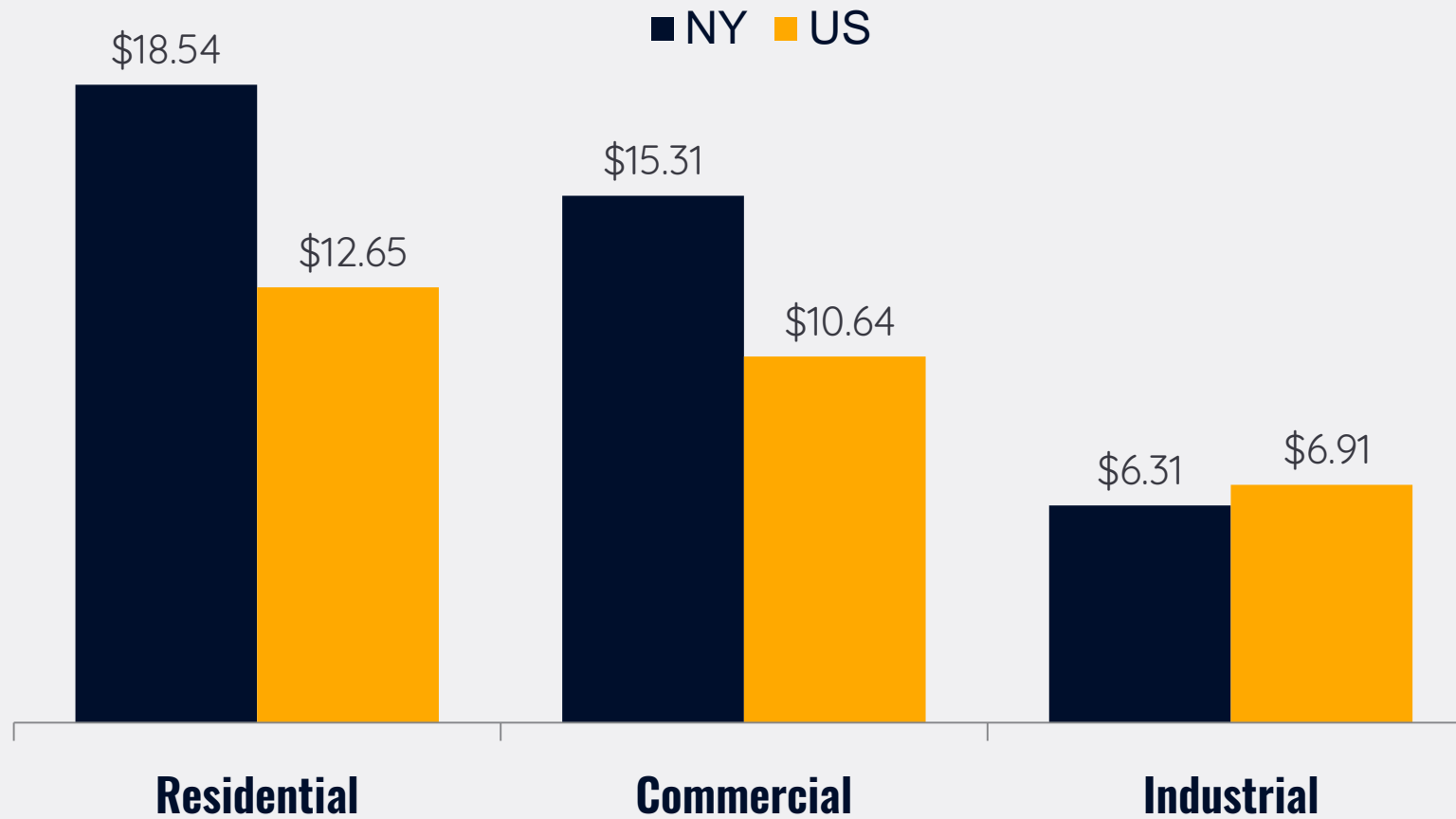
An effective 9-state cap-and-trade system

40%

Electric power sector emissions decrease in RGGI states between 2005 and 2015

High Electrical Rates

Hourly Rates Per KWh, 2015



Source: US Energy Information Agency

State Energy Plan



Objective: Clean, resilient and affordable energy system

Primarily concerned with greenhouse gas (GHG) reductions as indicated by defined targets:

- 40% reduction of GHGs from 1990 levels by 2030 (80% by 2050)
- 50% of electric energy produced by renewables by 2030
- 600 trillion Btu increase in statewide energy efficiency

Heavy Lift to Meet Renewable Target

Proposed Projects	Capacity (in megawatts)	Capacity Factor	Projected Energy (In Gigawatt Hours)
Upstate Wind	4,264	27%	10,100
Offshore Wind RFP	2,400	45%	9,500
Deepwater Wind	90	45%	350
Total			19,950
Shortfall Against 29,200 GHW Goal			(9,250)

Even more may be required if decarbonization of transportation and residential and commercial heating sectors occurs to meet goals.

Note: Capacity Factor is a measure of full power productivity across all hours of the year.

Costly Proposals

Preferred Approach: Additional OffShore Wind

Proposed Projects	Capacity (in megawatts)	Capital Cost (per KWh)	Cost (in billions)
Upstate Wind	4,264	\$1,800	\$7.7
Offshore Wind RFP	2,400	\$5,000	\$12.0
Deepwater Wind	90	\$5,000	\$0.5
Additional Offshore Wind		\$5,000	\$11.5
Total			\$31.7
Potential Hit to Rate Payers:		10%	

Source: Estimated capital costs from US Department of Energy, National Renewable Energy Laboratory.

Principles for GHG Reduction Approaches

- Prioritize the most **cost-effective** options in terms of incremental carbon reduction per dollar spent
- Utilize **market incentives** to influence behavior where possible
- **Partner** with other states and Canada to promote market solutions
- Preserve **long-term flexibility** by maintaining optionality
 - Use a portfolio approach to meeting the goals
 - Be technology and fuel neutral

Policy Recommendations

1. Establish an economy-wide pricing system covering all sectors
2. Retain the use of nuclear energy
3. Look for low-cost, low-emission energy suppliers across state borders
4. Avoid self-imposed constraints such as limiting gas pipeline capacity
5. Promote transportation solutions that build on existing infrastructure
6. Pursue renewables that are cost-justified

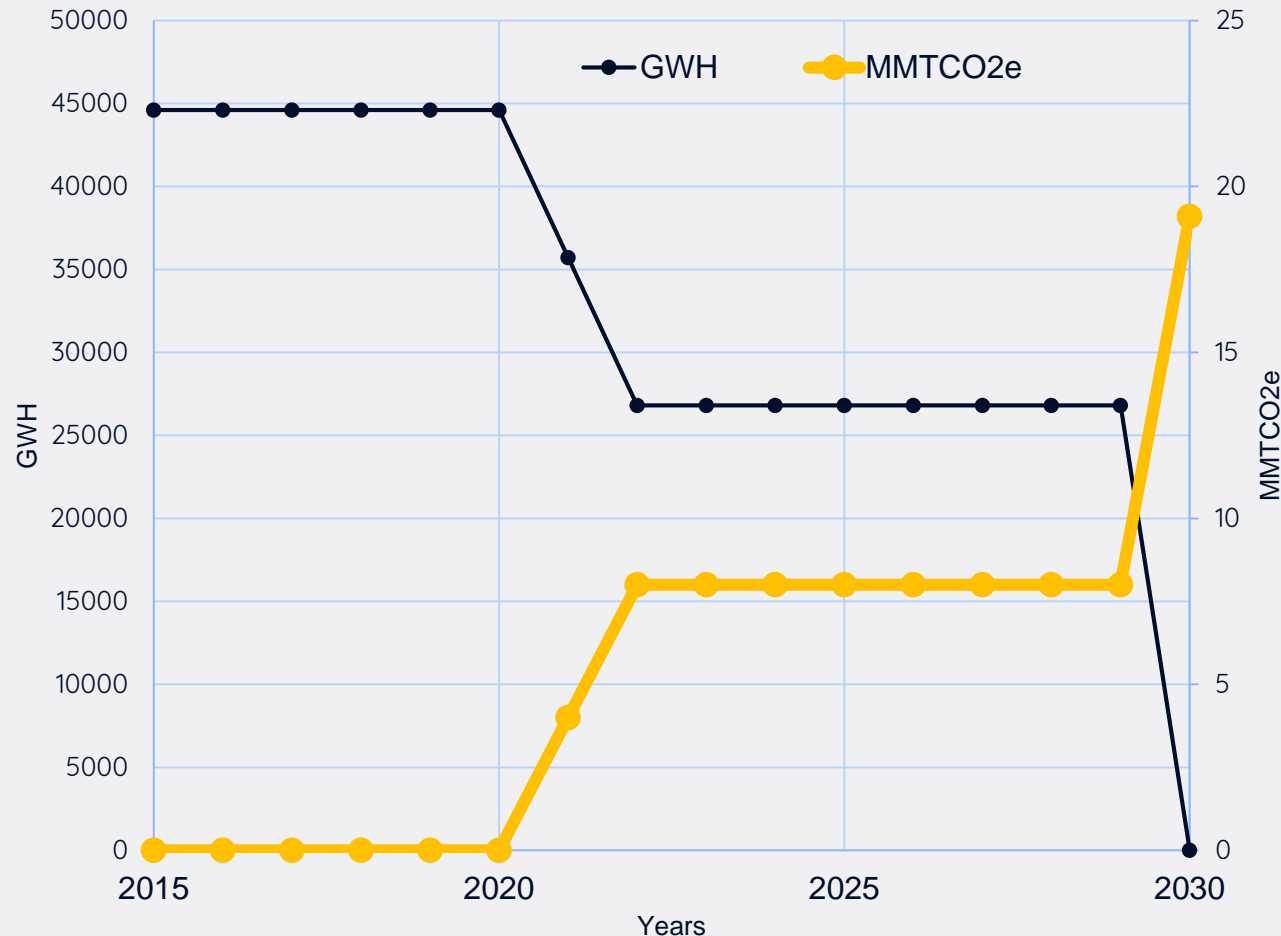
Economy-Wide Carbon Pricing

Build on the RGGI Model

- Expand existing cap-and-trade system to encompass all sectors
 - RGGI currently covers only power sector, which accounted for 17% of NY MMTCo_{2e} emissions in 2015
- Adopt a carbon tax on all sources of fuel
 - Sends a common price signal and leads to an efficient deployment of resources
 - Politically challenging, but clearer, fairer, and easier to implement and administer
 - Should include clear mechanisms to return funds to taxpayers

Retain GHG Benefits of Nuclear Energy

Impact of Nuclear Plant Closings



- Indian Point plants shutting down in 2020 and 2021; three more plants shutting down by 2034
- Zero Emission Credits (ZECs) expire in 2029
- In the short-term, will be replaced by natural gas
- Will erase nearly all reductions achieved in electrical power sector from 1990-2015

Look Beyond NY's Borders

O Canada....

- Currently, import 7,000 GWH annually from Canada
- Hydro Quebec, Canadian Utility, has proposed new transmission lines to NY to supplement this, but have been denied
- Public Service Commission (PSC) does not currently recognize new hydropower facilities as eligible for renewable energy credits
- Hydro lifecycle GHG emissions are on par with wind and solar; PSC should reconsider its ruling

Avoid Self-Imposed Constraints

- Pursuit of GHG emission reductions should not preclude short-term reliance on natural gas
- Restraints on natural gas supply absent alternative energy sources have counterproductive side effects
 - Limits new natural gas customers and conversions from higher emitting fossil fuels

Tackle Transportation

- Subsidizing electric personal vehicles is an expensive GHG reduction strategy
- More effective to reduce vehicle miles traveled and bolster public transportation options:
 - Stem ridership losses on New York City Transit (NYCT)
 - Expand public transportation to underserved areas
 - Reduce congestion through pricing, especially of single-occupancy vehicles

Pursue Cost-Justified Renewables

- Renewables are and should continue to be part of the state's energy portfolio; but price signals should determine how much wind capacity
- Long-term contracts limit benefit from technological innovations
- Overreliance on one technology could lead to unnecessary cost increases

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