



New England Electricity Restructuring Roundtable

Economy-Wide Decarbonization Pathways, Policies, and Programs in New England

Kathleen Theoharides

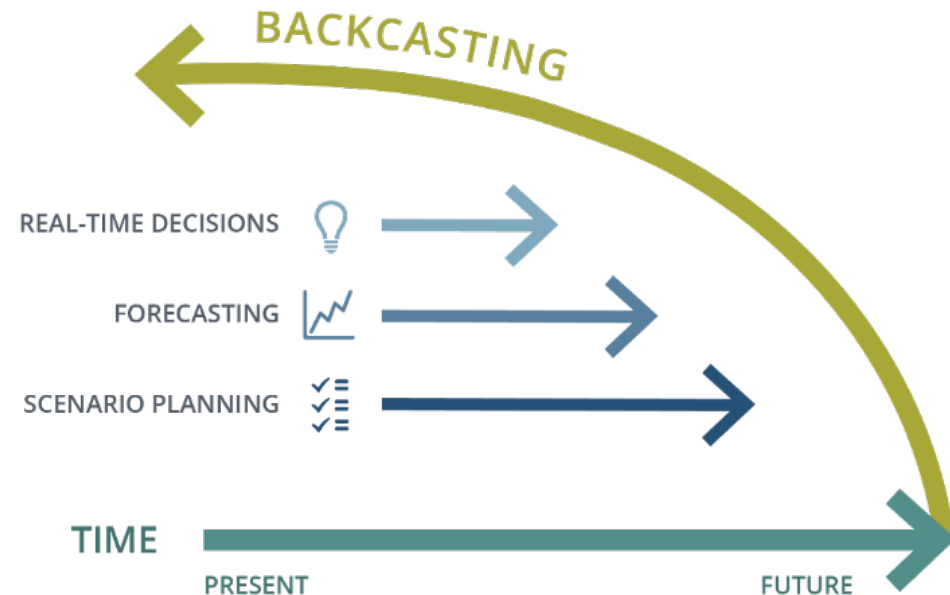
Secretary of Energy and Environmental Affairs

September 25, 2020

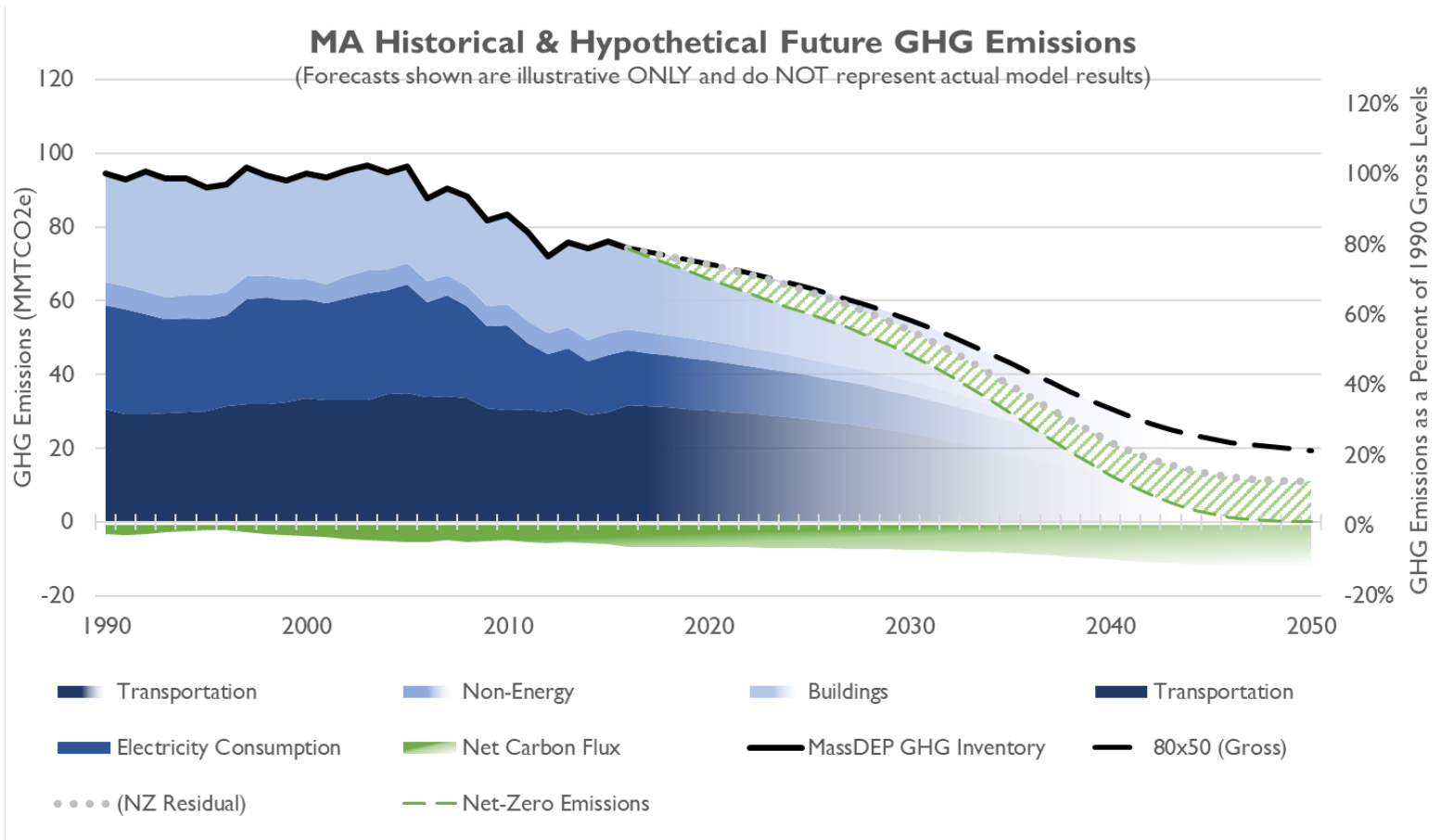
- Update on 2050 Roadmap Analysis
- Indicated Policy Directions
- Update on TCI
- Spheres of Action & Opportunity

2050 Roadmap Analysis

- Exploration to understand dynamics & develop options
- Advance energy demand and emissions limits to 2050; then work backwards to today
- Working for least-cost energy supply within annual emissions caps
- To provide insights to the interactions between sectors as MA decarbonizes and to show tradeoffs between pathways analyzed
- 2030 Clean Energy Climate Plan (CECP) will set the 2030 emissions limit in accordance with E.O. 569



Net Zero

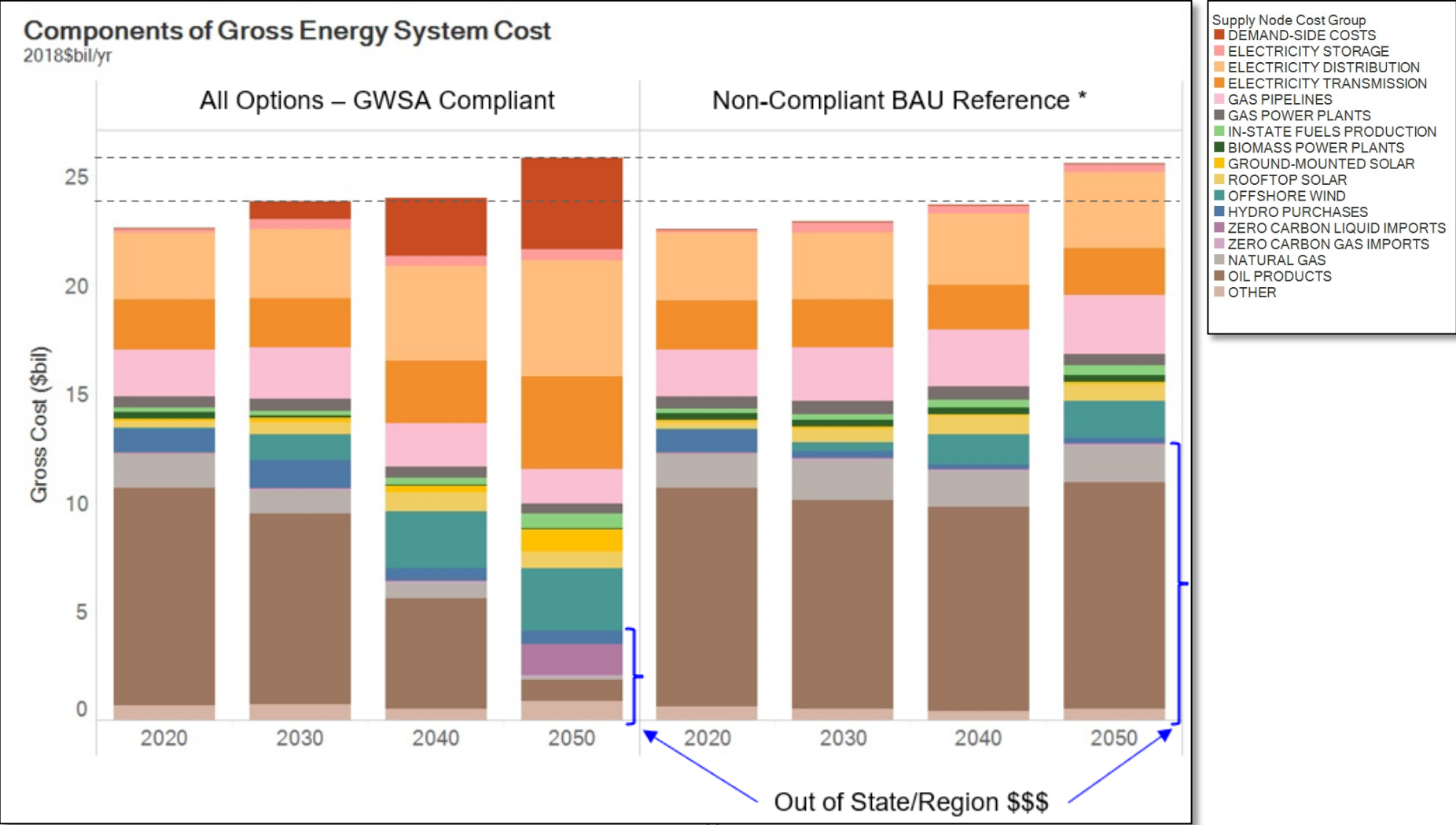


2050 Roadmap Analysis – Potential Pathways

<i>Pathways Analyzed</i>	<i>Key Characteristics / Distinguishing Features</i>	
All Options	Baseline analysis – model selecting most economic resources to meet emissions limits using baseline cost assumptions.	Least Cost / Lower Risk
DER Breakthrough	High deployment of behind-the-meter solar + battery storage	
Regional Expansion	Lower-cost electric transmission (TX) + export of captured CO2	
OSW Constrained	Region constrained to 30GW of higher cost offshore wind; economic expansion of nuclear allowed	Highest Cost
Pipeline Gas	Reduced carbon pipeline gas; less building/industry electrification	
Limited Energy Efficiency	Buildings, industry & transport remain at reference efficiency	
100% Renewable	Fossil fuels disallowed throughout economy; nuclear retired	
No Thermal	Forced retirement of all gas and oil electricity generation	

Variations applied to All Options

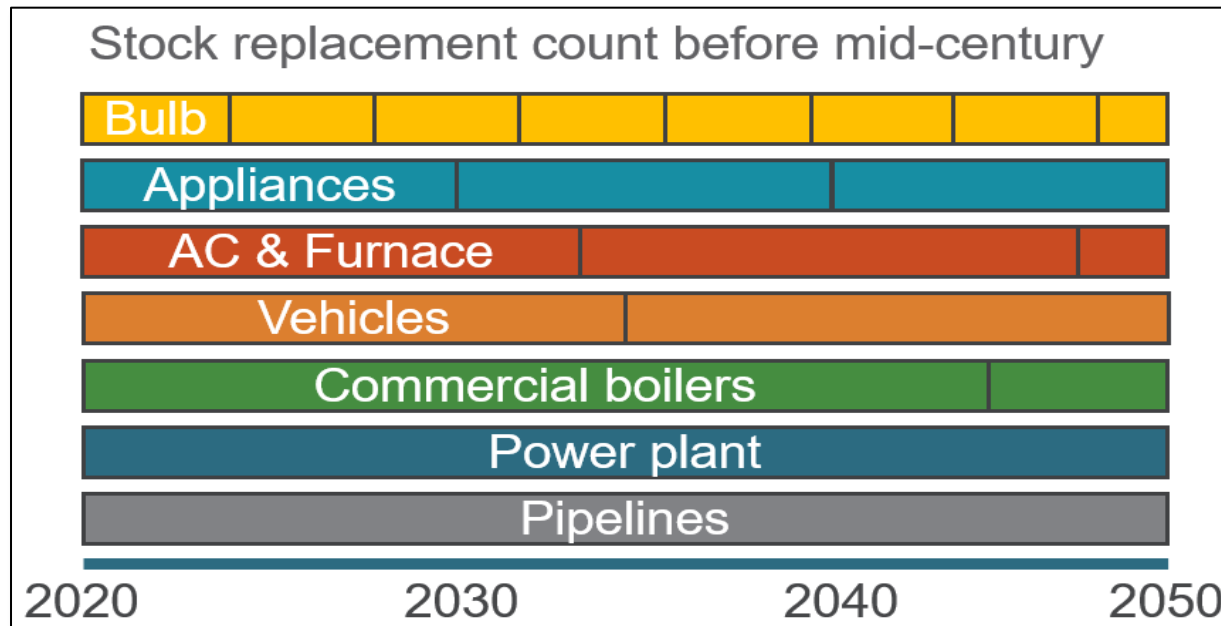
Observations About Pathways



Observations About Pathways

Least-Cost Pathways:

- Are dominated by offshore wind (≥ 25 GW) & require new transmission
- See electricity as dominant end-use fuel (all sectors) due to high efficiency gains
- Significantly invest in energy efficiency
- Leverage replacement capital by immediately starting to drive compliance as stock rolls over
- Produce carbon-neutral fuels (for transportation & industry) when renewable output is high
- Retain gas generators for reliability



2050 Roadmap – Sector Analysis

Electric



Transportation



Buildings



Sequestration

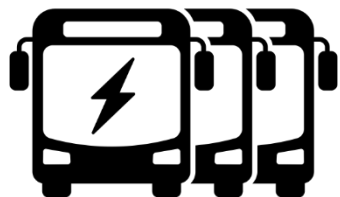


2050 Roadmap Analysis

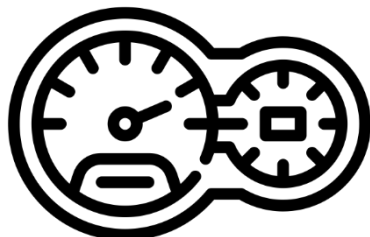
Key Transportation Metrics for 2030 Based on Long-Range 2050 Pathways Analysis



~1,000,000 BEV/ZEV On Road

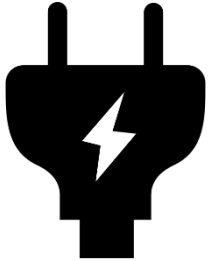


~2,500 Electric Medium & Heavy-Duty Vehicles on Road



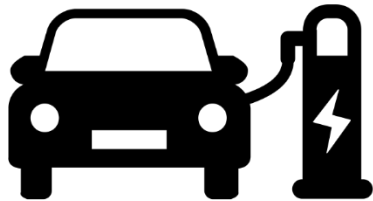
5% Reduction in Vehicle Miles Traveled

Likely Direction of Policies



Electricity

- Large amount of new clean resources will be needed



Transportation

- Major shift in vehicle fuel is necessary to reach Net Zero emissions.



Buildings

- Extremely challenging



TRANSPORTATION & CLIMATE INITIATIVE

Of the Northeast and Mid-Atlantic States

TCI is a regional **collaboration of 12 Northeast and Mid-Atlantic states and the District of Columbia**

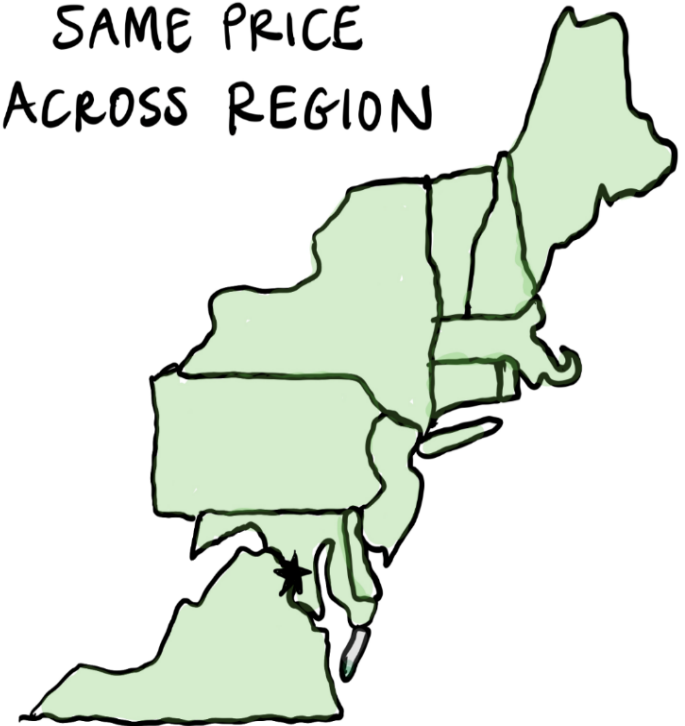
72 Million Population

\$5.3 Trillion GDP

52 Million vehicles

- Transportation represents 43% of emissions in the TCI region
- Transportation-related CO₂ emissions from on-road sources in the TCI region (254 MMT) is nearly twice as large as in California (151 MMT)
- A cap on emissions from these sources under TCI would be nearly three times the size of the RGGI cap (including NJ & VA), in 2020 (102 MMT)

SAME PRICE
ACROSS REGION



POINT OF REGULATION

WHOLESALEERS

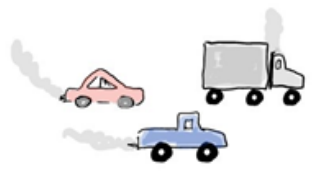
DISTRIBUTORS

RETAILERS

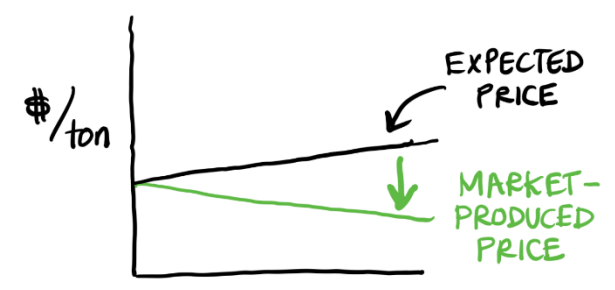


POINT OF POLLUTION

CONSUMERS



THE MARKET SETS THE CARBON PRICE IN A CAP-AND-INVEST SYSTEM



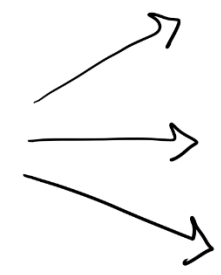
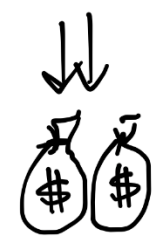
HISTORICALLY, THESE KINDS OF MARKETS HAVE DELIVERED LOWER-THAN-EXPECTED PRICES

CAP AND INVEST OFFERS FLEXIBLE COMPLIANCE



- o LOWER-CARBON FUELS require fewer allowances
- o Time flexibility, including unlimited banking of allowances & multi-year compliance

ALLOWANCE AUCTION



INVEST IN

LOW-CARBON TRANSPORTATION PROGRAMS



TRANSPORTATION & CLIMATE INITIATIVE

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Preliminary Public Health Benefits



- Fewer asthma symptoms
- Fewer premature deaths
- Fewer traffic-related injuries
- Total estimated public health benefits:
\$3 billion to \$10 billion



- **September 2020:** Public Engagement Webinars
 - **September 16:** “Program design, modeling, and the implications of COVID-19” - NOW inviting public input through the TCI input portal by Wednesday, September 30, 2020.
 - ➔ • **September 29:** “Ensuring environmental justice and equity in a regional low-carbon transportation program”
- **Fall 2020** – Jurisdictions release a final Memorandum of Understanding.
- **Fall/Winter 2020-2021** – Participating jurisdictions develop a “model rule.”
- **2021** – Participating jurisdictions take any legislative steps needed to implement the regional program and conduct rulemaking processes to adopt regulations.
- **As early as 2022** – Program implementation begins.



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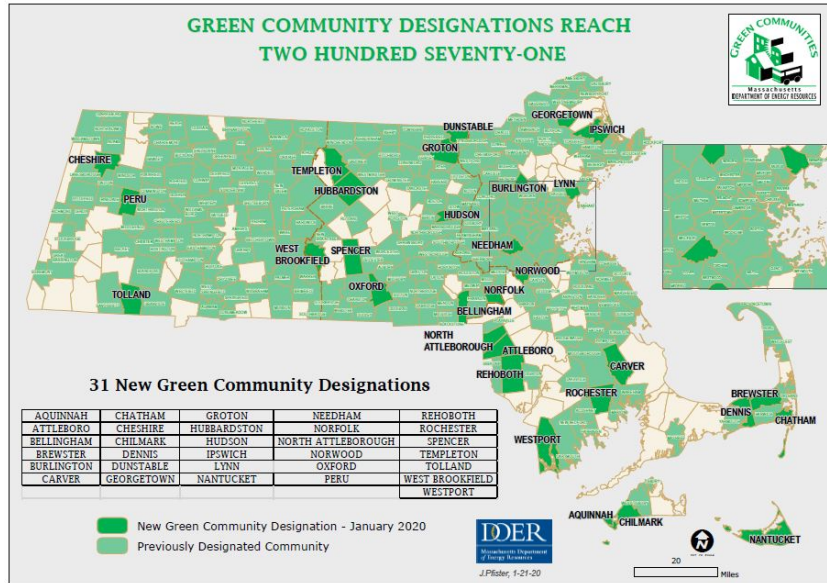
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Register Now: TCI webinar on ensuring environmental justice and equity in a regional low-carbon transportation program

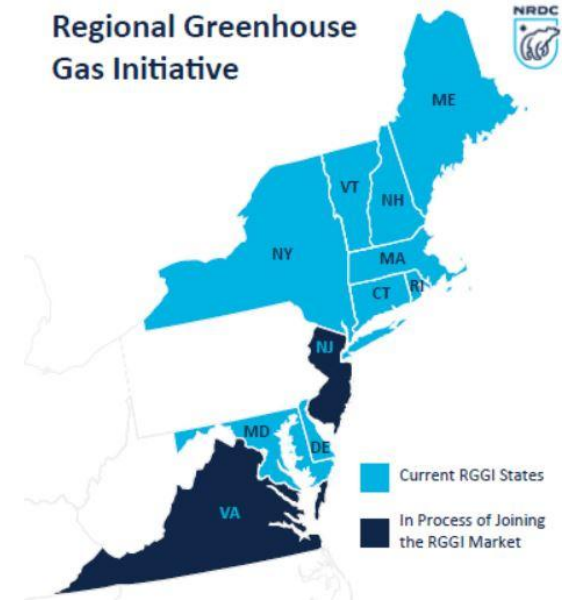
Tuesday, September 29, 2020, 4 - 6 PM

<https://www.transportationandclimate.org/main-menu/tcis-regional-policy-design-process-2019>

Spheres of Action and Opportunity



Regional Greenhouse Gas Initiative



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Of the Northeast and Mid-Atlantic States

**UNITED STATES
CLIMATE ALLIANCE**

STATES UNITED FOR CLIMATE ACTION