AEG Clean Transportation Stakeholder Challenge

Boston Q4 2022
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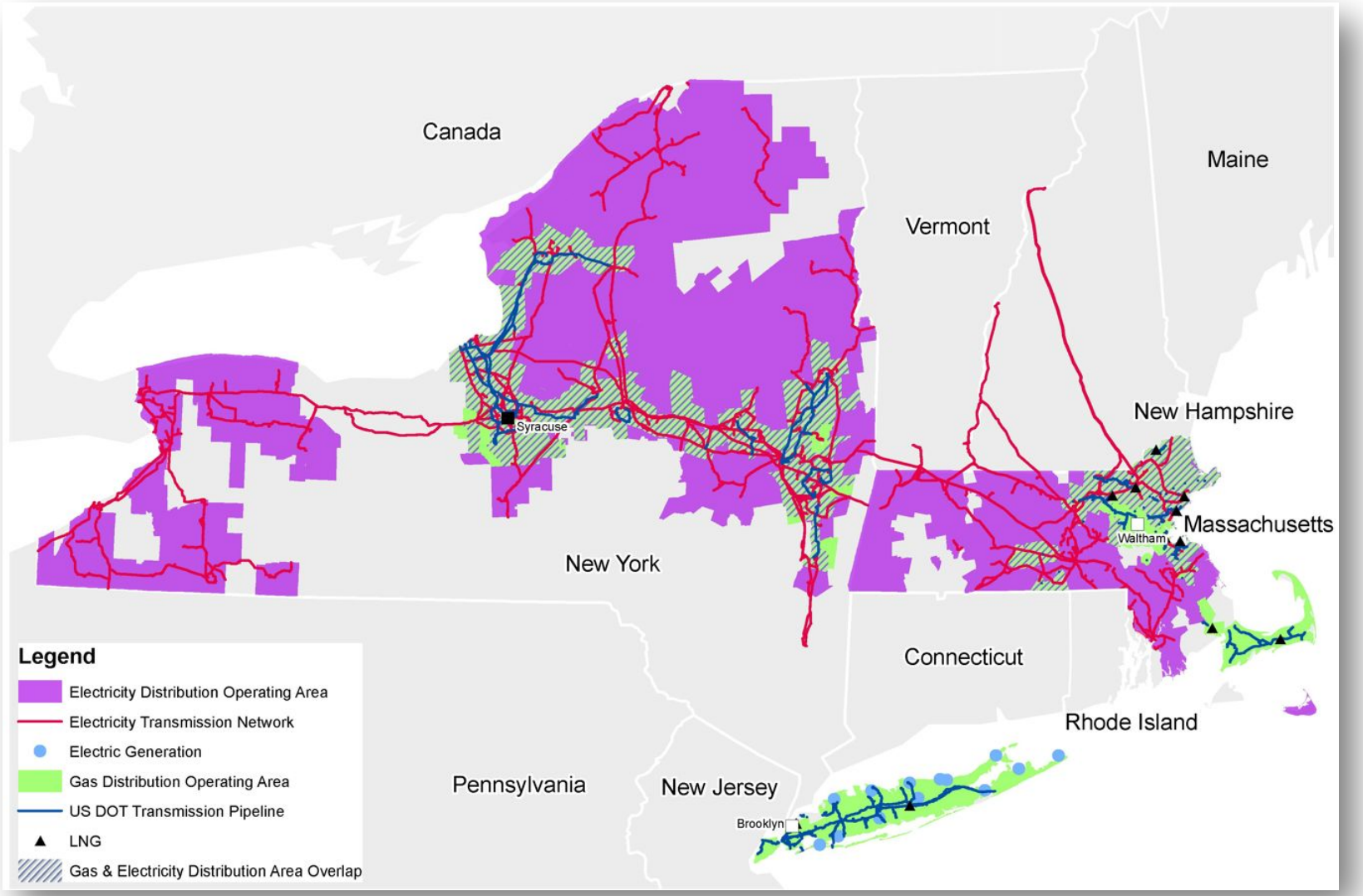
Introduction to National Grid



- **Electric, natural gas, and clean energy delivery company** serving more than 20 million people through our networks in New York and Massachusetts
- Make-Ready EV programs in New York and Massachusetts
- Over 4,600 charging ports installed, 49% in environmental justice and disadvantaged communities
- Electrify our entire internal light-duty fleet by 2030. **We plan to electrify 1,617 vehicles in the US by 2030**.

The Problem

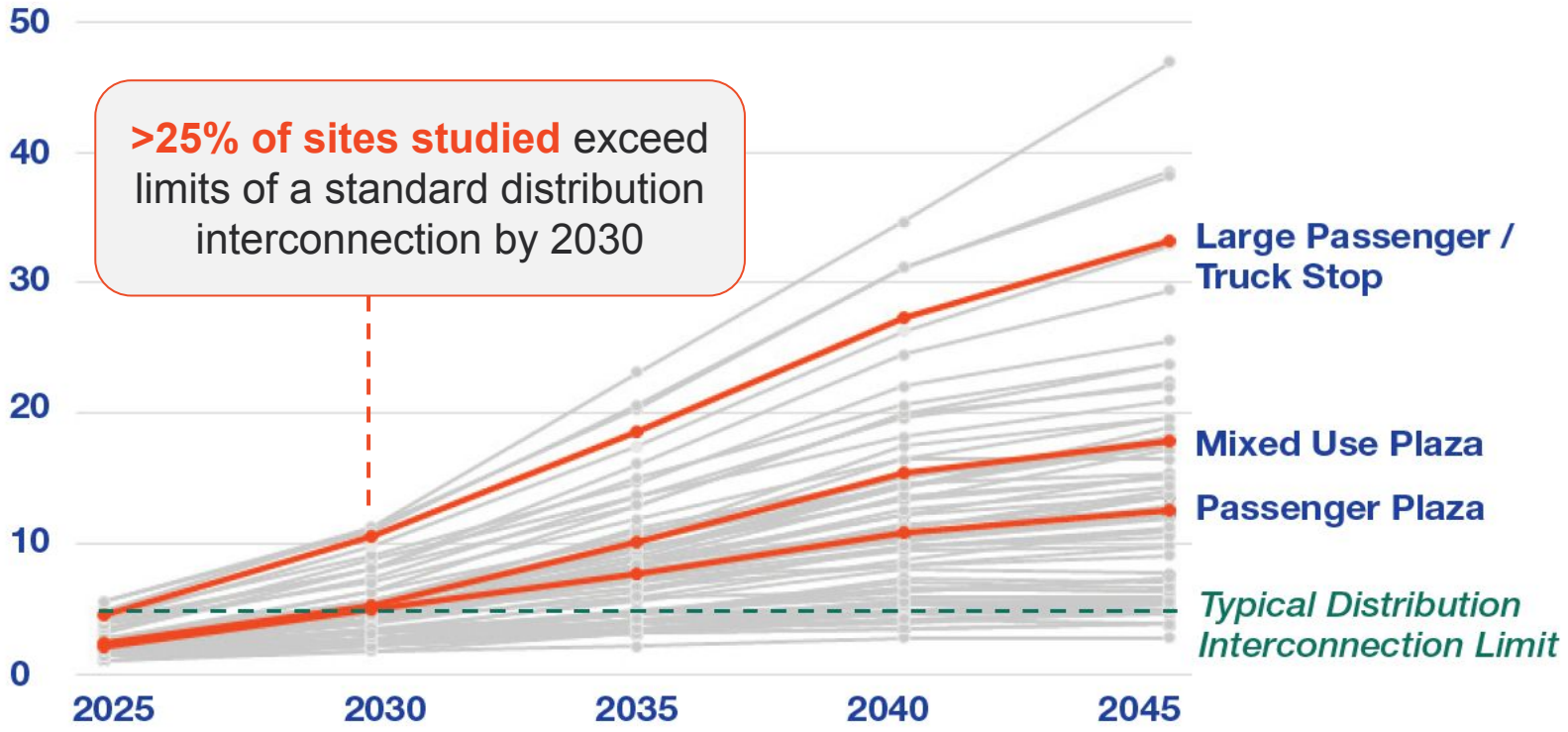
The forecasted demand for power from public highway charging will be significant even as soon as 2030.

Large Industrial Plant
(40+ Megawatts)

A Small Town
(20 Megawatts)

A Stadium
(5 Megawatts)

Projected charging capacity for 71 Northeastern highway sites
Megawatts of power to meet annual peak demand, over time



- Adoption of electric MHDV significantly increases the power demand after 2030.
- Delivering this amount of power will require upgrading a site's grid interconnection, potentially at transmission level.
- RMI analysis indicates that the IRA will bring EV trucks within cost parity with ICE vehicles sooner than in our study.

Note: Analysis seeks to match ZEV goals for New York + Massachusetts, makes simplifying assumption that all ZEVs are electric. See study for discussion of assumptions, including role of hydrogen fueling and impact on capacity.

The Key Obstacle/Challenge to Solving the Problem

We need to identify the most cost-effective sites and develop an interconnection process that is fit for purpose.

- **Site Identification –** State Energy Agencies, DOTs, and utilities should collaborate to identify the best sites
  - Long-term, collaborative planning which considers traffic patterns and electric infrastructure location and capacity will allow us to guide charging to the most cost-effective sites.
  - This approach will drive down costs, improve resilience, and accommodate the exponential EV growth.

- **Interconnection Process –** The current process is not well-suited for public highway fast charging
  - The magnitude of power demand will require T&D upgrades, and potentially transmission level interconnections.
  - EVSE developers will have trouble making a business case with the level of T&D interconnection costs expected.
  - T&D upgrades require much longer timelines than EVSE installation.
  - Anticipatory planning and investment in the T&D infrastructure is required to enable and facilitate market adoption.

Benefits

Coordinating deployment of highway charging and anticipatory grid investments can accelerate transportation electrification and help meet driver needs over time.

- **Reduce range anxiety** and encourage greater EV adoption.
- Achieve **climate goals and improved air quality** in Boston and across the state.
- **Lower total system costs** by planning long-term, eliminating duplicative investments, and identifying where large-scale charging infrastructure can be most easily deployed.
- **Avoid long wait times for drivers** by eliminating bottlenecks to charging deployment.
- **Seamlessly enable the EV transition** for passenger and commercial vehicles.

Final Statement

Regarding Clean Transportation, to achieve Boston's climate, health and equity goals, a critical obstacle to collectively overcome in 12 months is…….

Developing the approach to most efficiently and cost-effectively enable grid infrastructure to serve highway charging

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