# DOE Electric Advisory Council:

# Utility Perspective on Accelerating Fleet Electrification

***March 9, 2022***

nationalgrid

# It Comes Down to Clean Air and Climate Change

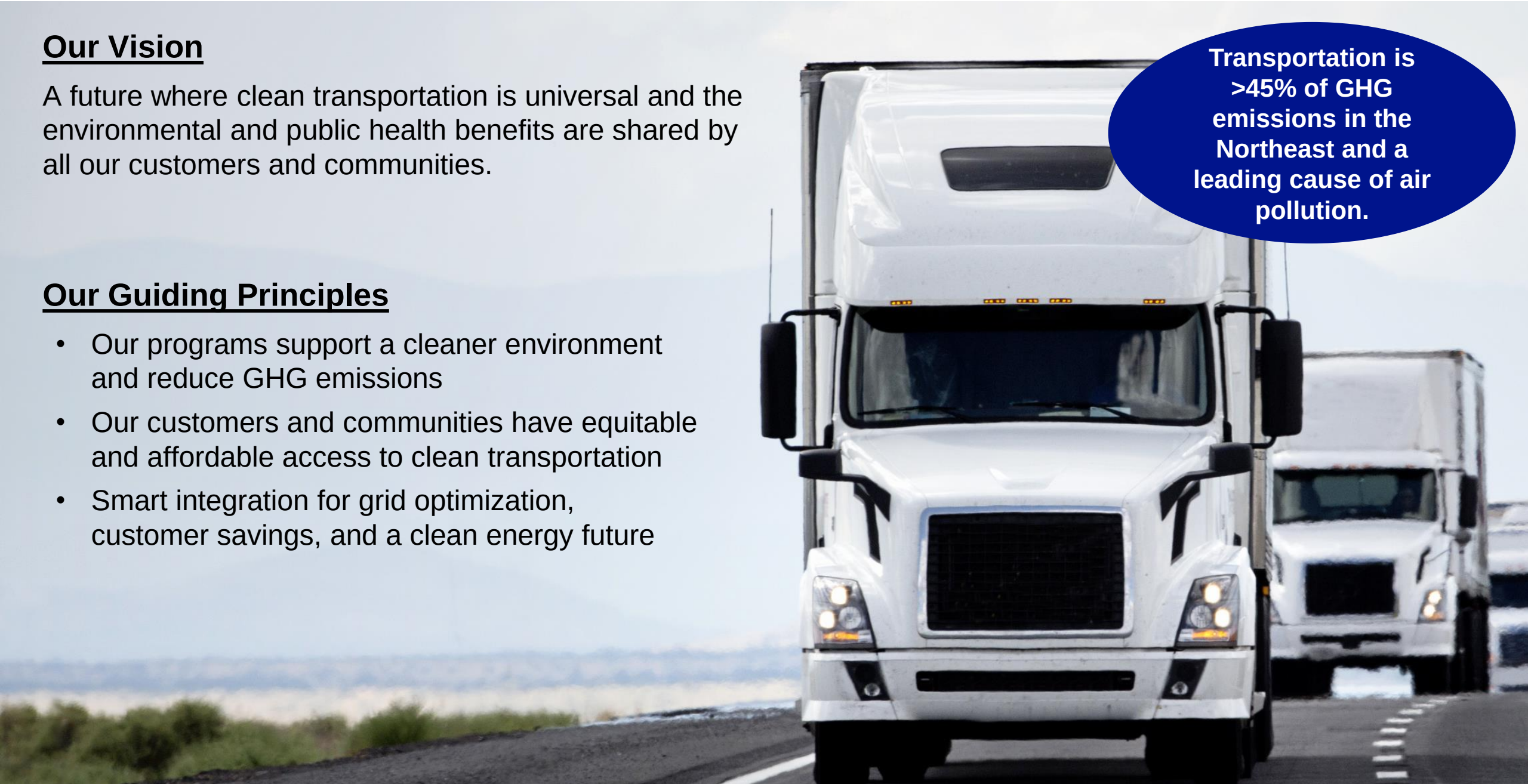
## Our Vision

A future where clean transportation is universal and the environmental and public health benefits are shared by all our customers and communities.

**Transportation is >45% of GHG emissions in the Northeast and a leading cause of air pollution.**

## Our Guiding Principles

- Our programs support a cleaner environment and reduce GHG emissions
- Our customers and communities have equitable and affordable access to clean transportation
- Smart integration for grid optimization, customer savings, and a clean energy future

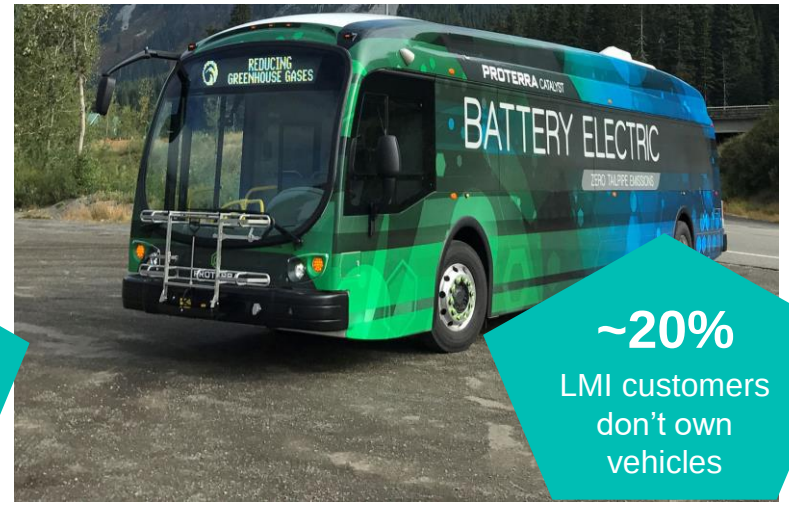


# Programs Offered Today

## We focus on three main customer segments

**>$10k**
Upfront cost prohibitive for most customers

**>80%**
of charging is at home




**~20%**
LMI customers don't own vehicles

### Public & Workplace Programs

Support customers to deploy publicly-available chargers and install & operate the stations more cost-effectively.

**Why?**
Limited public charging is one of the biggest barriers to EV adoption.

### Residential Programs

Provide grid-optimized charging access and enable EV ownership for all residential customers.

**Why?**
Necessary to enable EV adoption, but barriers exist for >40% of customers.

### Fleet Programs

Includes support for public & private fleets. Provides customers with a transition plan, guidance, & funding.

**Why?**
One MHDV EV truck or bus can reduce >8x more $CO_2$ and >30x $PM_{2.5}$ than a passenger vehicle.

# Fleet Electrification: Challenges and Opportunities

## Grid Constraints

- Distribution Line, >1.5 MW Avail. Capacity
- Distribution Line, 600 kW - 1.5 MW Avail. Capacity
- Distribution Line, <600 kW Avail. Capacity
- Distribution Substation

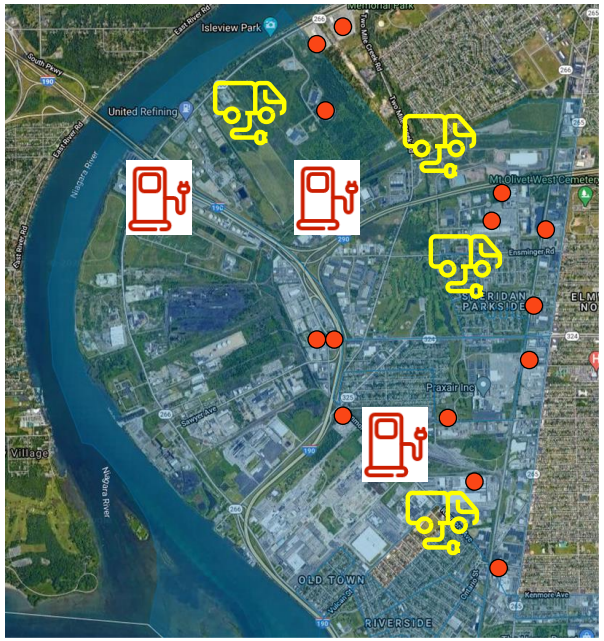
+

## DAC Geographies


- Disadvantaged Community

+

## Fleet & Site Info





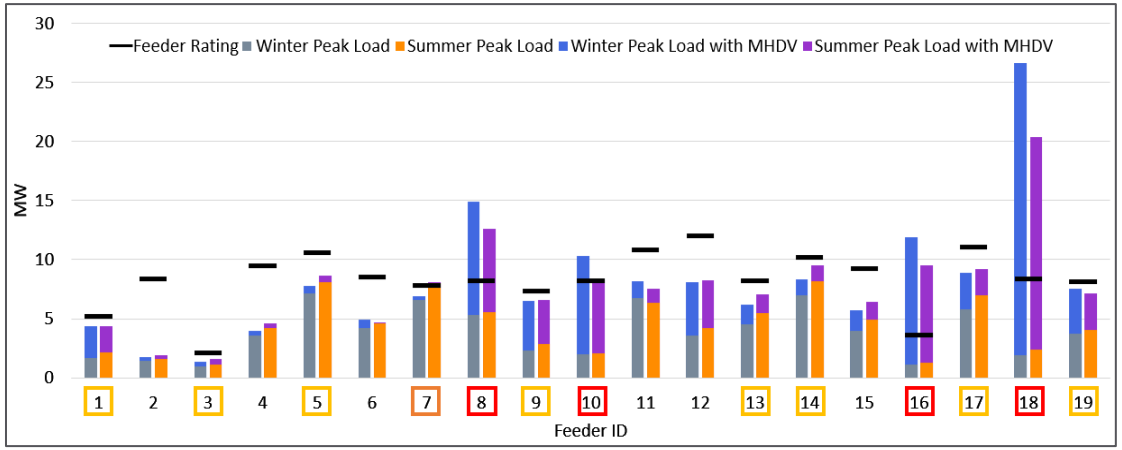

Note: Sites based on a first review and subject to change

# Assessing impacts of clustered fleets: *100% electrification area study example*

**Area Study:**
**Clustered Fleets Example**

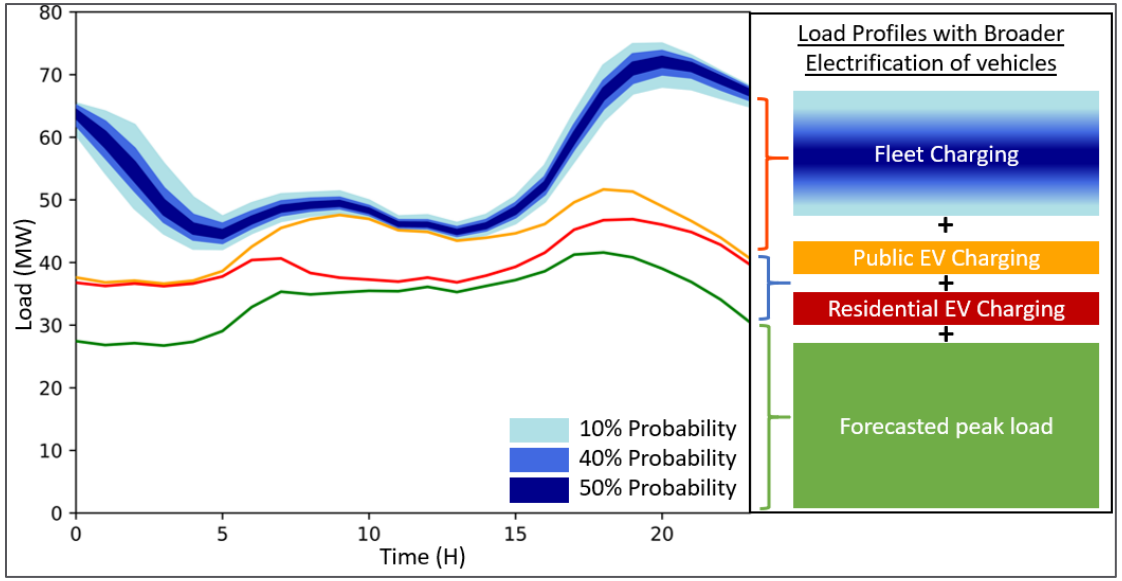
Fleets (Circles), Distribution Grid (Light Blue), and Transmission (Dark Blue)

**Impact of Fleet Electrification on Feeders:** Full Charging Strategy




**Distribution Grid:**
13 of 19 feeders would eventually be overloaded or at risk

**Impact at One "Fleet Cluster" Substation:** Winter – Full Charging Strategy




**Substation:**
100% fleet electrification can substantially increase loads

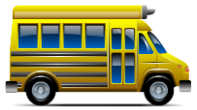


**Source:** National Grid and Hitachi ABB Power Grids, *The Road to Transportation Decarbonization: Understanding Grid Impacts of Electric Fleets*, July 2021. Available soon at National Grid's EV **Fleet Hub:** **https://www.nationalgridus.com/ev-fleet-hub/**

# Fleet Customer Support: *Utilities Can Support the Electrification Journey*







| NAVIGATING THE UTILITY | PLANNING EV ADOPTION | UTILITY INFRA. | CUSTOMER INFRA. | EV CHARGER (EVSE) | VEHICLE COSTS | OTHER SOFT COSTS | BILL IMPACT |
|---|---|---|---|---|---|---|---|
| • Finding POC<br>• New tech. for fleet managers | • Site analysis<br>• Bill impact<br>• Business operations impact | • Distribution Network<br>• Transformer<br>• Meter<br>• Conductor | • Panel<br>• Conductor<br>• Boring<br>• Trenching<br>• Conduit | • Charging station | • EV option can be >2x more than ICE option | • Signs<br>• Landscaping<br>• Maintenance<br>• Networking | • Uncertain costs<br>• Managed charging |
| Single Points of Contact (SPOC) | Fleet Assessment Services | Infrastructure Make-Ready Programs | | State, Federal, and Utility Rebates | State, Federal, and Utility Funding Available | Fleet Operator Responsible | Fleet Operator Responsible, Utility Designs Rates and Advises |

**Utility can directly support with planning, infrastructure, and funding**

**Utility can support journey with Single Point of Contact (SPOC)**



**Note:** Graphic for example purposes only – utility support models can vary significantly nationally. Graphic is not to scale nor exhaustive and contents are subject to change.

# Case Studies: *Accelerating fleet conversions with dedicated resources and support*


**>70%** GHG emissions savings


**>150** buses electrified by '25

**>100** Fleets assessed through '24


**>10** NG-enabled DCFC

## MA: Electric School Buses

Highland Electric, Proterra and National Grid partnering to bring electric school buses to Beverly, MA

**Goals:**
Showcasing bus capabilities in 1st year, V2G testing in 2nd year

## NY: Transit Buses & MHDV

Make-ready infrastructure and fleet assessments for heavy-duty public transit and fleets in upstate NY

**Goals:**
Electrify 25% of transit fleets by '25, and 30% of MHDV sales by '30

## Fleet Assessments

100 fleet program in MA to provide customers with an electric transition plan

**Goals:**
Accelerate transition to electric for all fleets (muni, private, non-profits)

## Highway Charging

Charging corridors across JDx alongside highways – electric road trip is possible

**Goals:**
Provide "gas station/rest stop" experience for EV drivers and alleviate range anxiety

# Three Potential Opportunities

1. A nationwide data source for fleet electrification roadmaps

2. National standards for granularity/accuracy of the data charging companies are able to provide

3. Centralized planning/info-sharing for highway/fleet EV charging locations

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