

# AEG Boston Grid Modernization Challenge

Surya Panditi, CEO & President, Enel X North America



# Enel X

## Our Mission

The mission of Enel X is to **provide innovative technological solutions to help businesses, cities and people around the world to create New Value** by changing the paradigms of the energy industry.

Enel X wants to accelerate the transition to **sustainable mobility, conscious and efficient consumption, and the generation of electricity from renewable sources**, helping companies, cities and individuals to live, work and grow.

**Enel X was born to create the new power economy transforming energy into power for everyone**



# Enel X Global



Subsidiary of the Enel Group, the #1 Renewable Operator



**230k**

CHARGING PORTS  
DEPLOYED GLOBALLY



**1,500+**

EVs IN FLEET  
MANAGED GLOBALLY  
100% ELECTRIC BY 2030 with 14K  
FLEET VEHICLES



**6.3 GW**

DEMAND RESPONSE  
CAPACITY GLOBALLY



**110 MW**

INSTALLED STORAGE  
CAPACITY GLOBALLY

# The Challenge



## Electrify the Public Transit System

2050

The year that Massachusetts has committed to achieving net-zero GHG emissions

43%

of Massachusetts' total emissions come from the transportation sector

+1,000

MBTA buses operating across the Commonwealth from nine bus maintenance facilities

137

Massachusetts cities and towns with Environmental Justice communities and populations

**The challenge:** Electrify a the Massachusetts Public transit system in a way that will maximize investments, meet operational requirements, and eliminate any adverse impact on the electrical network that will also deliver continued reliable service with reduced emissions and noise pollution to environmental justice communities.

# Key Obstacles and Opportunities



## Complexity



### Project design & implementation

- e-fleet and routes advisory and supply
- Charging infrastructure & digital platform
- Smart services

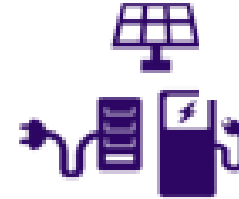
## Cost



### Overall Investment

- Capital investment and up-front costs.
- Availability of financing options

## Grid Impact



### Optimize energy costs

- Smart charging
- PV balancing and/or optimization
- Demand Charge Management
- Load Balancing

## Lack of Utility Programs



### EV Make Ready Programs

- Limited availability of EVMRPs for bus fleet electrification

# Benefits & Consequences of Addressing or Not Addressing This Challenge



## BENEFITS

- ✓ **Reliability:** Improve bus service and the system as a whole for the 400,000 daily MBTA riders.
- ✓ **Equity:** Upgraded facilities and services with routes serving high percentages of households of color and low income households or environmental justice communities.
- ✓ **Cost Savings:** Reduce capital, maintenance, and operations costs.
- ✓ **Sustainability:** Help Massachusetts meet its 2050 decarbonization goal by improving air quality and reducing CO2 emissions;

## CONSEQUENCES

- ✗ **Reliability:** reduced reliability could lead to a decline in overall ridership and increase in traffic congestion.
- ✗ **Equity:** Failure to address climate inequity and reducing emissions in environmental justice communities which often have high ridership numbers.
- ✗ **Cost:** Higher total cost of ownership
- ✗ **Sustainability:** Risk lagging behind statewide decarbonization targets

# Final Statement



**Regarding Grid Modernization and the electrification of public transit fleets, to achieve Boston's Carbon & Equity goals, a critical obstacle to overcome is the need for increased adoption of holistic turn-key planning solutions, more public-private partnerships and better utility coordination**

## Quincy Bus Depot



Capable of housing

**120**

eBuses

**17**

Routes Served

Expected to open in

**2024**

## Santiago de Chile



**435**

eBuses

**40**

Smart Bus Stops

**5**

Charging terminals

**245**  
Chargers  
for overnight  
recharging

**100%**  
Green energy

**40%**  
Reduction in  
consumption  
peaks

Public-private partnership among MassCEC, MBTA, Microgrid Labs and Enel X to develop a new fleet electrification planning tool that will enable the MBTA to understand electrification options at the new Quincy bus depot. Enel X is also creating an energy supply management strategy including evaluation of onsite distributed energy resources (DERs) like battery storage and enrolling the electric fleet and DERs in local managed charging and demand response programs.