



# NE Electricity Restructuring Roundtable

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# Energy Efficiency

Energy Efficiency is evolving drastically

- Low hanging fruit is gone
- New focus on Demand Response, Storage, Customer Engagement, Heat Pump installations
- Demand Response for EVs in pilot phase
- Gas EE important but hasn't evolved

Massachusetts EE is the single largest driver to declining load

- ISO Rule changes could hurt EE's market performance



# Grid Modernization

This term means many things to many people

## Grid Facing

- Aging Infrastructure
- Distribution Automation
- Climate Hardening
- Two Way Power flow
- DER integration and support
- Flexible System Planning
- Cybersecurity

## Customer Facing

- Increased Visibility
- Consumer Market Access
- Access to dynamic pricing
- Third party data access issues

- We also know that it will mean increased investment into the system
- DPU will focus on what paths will lead to the most value to the system



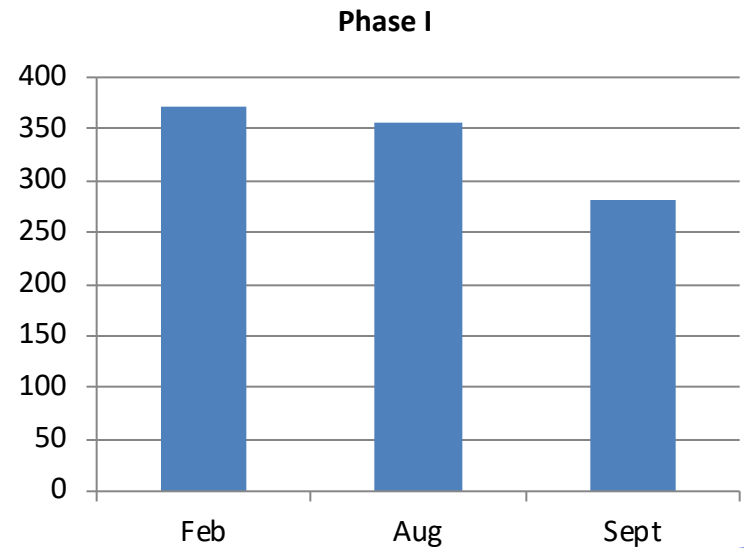
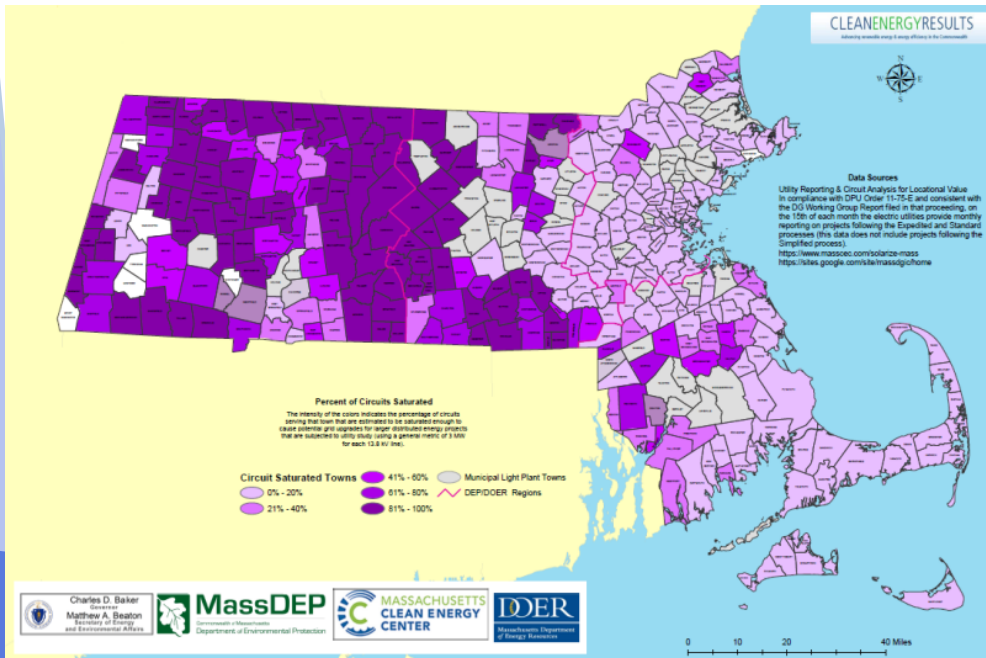
# Large Scale Renewables

- Solar, Offshore Wind, Hydro, and Storage coming online
  - Many of the larger projects still in approval stage
- ISO markets are in flux as we transition away from fossil fuels
  - CASPR allows a method to “swap” capacity
- Planning and Engagement are central
  - Need a transmission and distribution system to deliver the generation to the demand.



# Distributed Generation

- Massachusetts is highly saturated with DG → resulting in the need for studies to determine distribution and transmission infrastructure upgrades
- Starting in 2018 → “Cluster Study” in central and western Massachusetts
- Since February → study has progressed and 90 MW have been cleared for interconnection. Phase I results will be released in November.
- Phase I = 282 MW; Phase II = 490 MW





# DG and Interconnection

## Challenges Remain:

- Future affected system operator studies
- High volume interconnection queues and application processing delays
- Planning for infrastructure upgrades
- Application standards and metering of energy storage systems
- Providing access for low income customers

## What the DPU is doing:

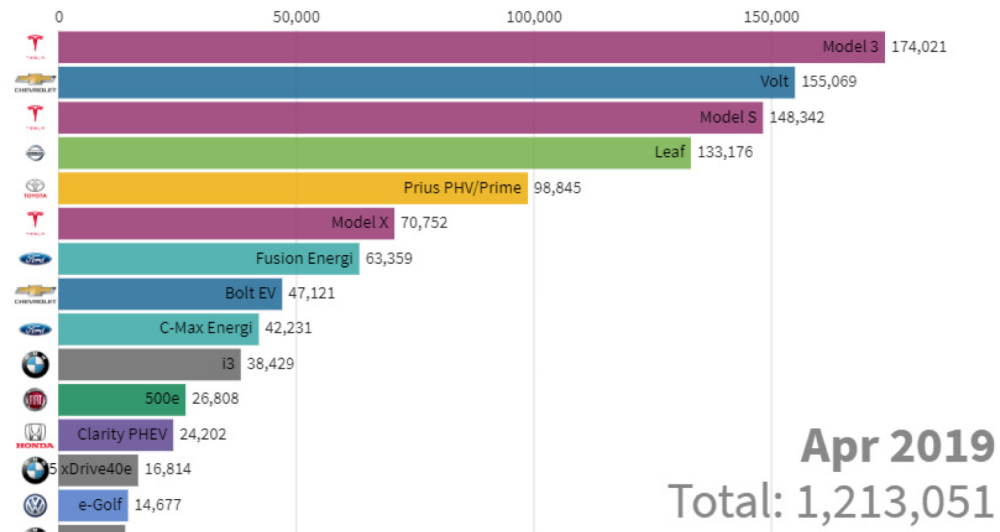
- D.P.U. 19-55 - Inquiry into DG Interconnection
- Implementation/oversight of qualifying facilities ("QF"), net metering, DG interconnection, and SMART program tariff
- Coordinating with EDCs, AGO, DOER, Stakeholders, ISO-NE, TSRG
- Other relevant dockets: D.P.U. 17-22 (net metering inquiry), 17-54 (QF rulemaking), 17-146 (net metering inquiry), 17-164 (interconnection group study)





# Electric Vehicles are here

- Manufacturers are switching R&D money
- Electric Cars are far superior to gas cars
  - Lower maintenance & fuel costs
  - Gas stations are objectively awful
  - Range is good, engine is fast



- EV market is going to develop more rapidly
  - Are we ready for fleet charging?
  - Are we prepared to shift charging?
  - Massive shift in traditional auto channels.



# Electrification

What do consumers think Electrification is?

- When you provide electricity to places that don't have it yet?
- I have no idea, I don't take physics!
- Isn't that what they do to criminals in Texas?

Source: Information taken from Bill LeBlanc of ESource





# Is the System ready for Heating and Transportation?

- EV market – rapidly developing
- Home Heating Market –
  - Mini-split systems cannot heat most homes
  - Weather conditions remain a concern for Air-Source Heat Pumps
- Infrastructure –
  - Not designed for EV or Home heating load
  - Currently massive challenges in siting infrastructure
- System planning is way behind
  - Oil & Natural Gas remain critical to generation



# Gas Clean Energy Goals

- We haven't done anything and we're all out of ideas.
  - Renewable Gas
    - Some promise, but scope is limited
    - Is it cost effective?
  - Gas Demand Response
    - Something that needs to be explored – but what is the goal?
  - Geothermal Heating
    - Scale, Scope, and Safety

