

Eversource's Grid Modernization Plan: Does It Lay the Foundation We Need For Our Communities' Energy Future?

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Working Together Toward A Smarter Energy Future

Grid Modernization: What and why?



- What is “the grid”?
 - The electric grid is an infrastructure network designed to deliver electricity from suppliers to end users. Our grid was designed and built in an era when this simply meant delivering power from large, centralized generating plants to customers’ homes and businesses.
- Grid modernization is the process by which digital intelligence is incorporated in to our electric power grid to allow power to flow in two directions—to and from the consumer—transforming it into an interactive delivery network. This is being done in states all across the U.S. - Massachusetts is not leading the curve on this.

Grid Modernization

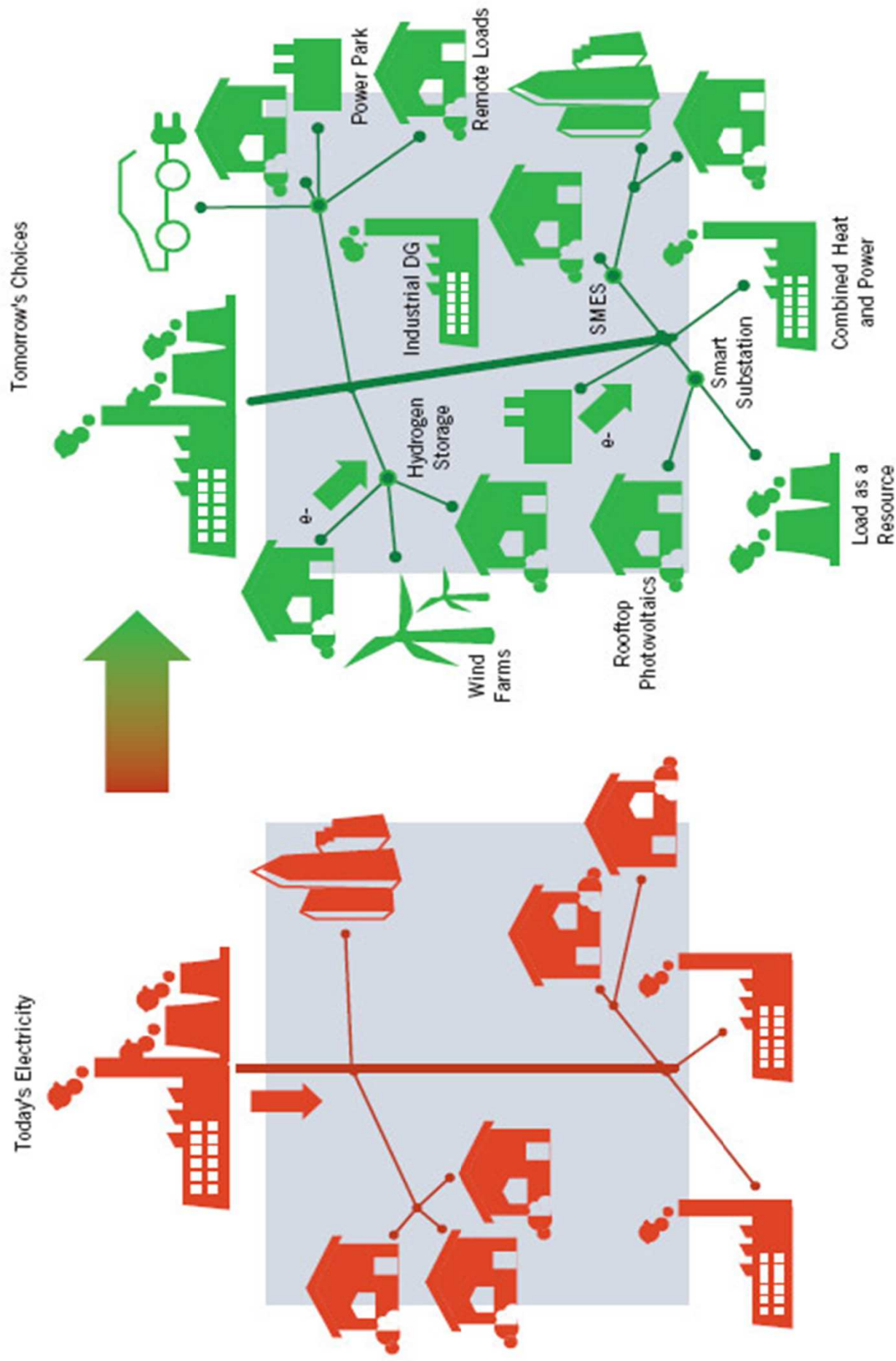


Fig. 1. The IEEE's version of the Smart Grid involves distributed generation, information networks, and system coordination, a drastic change from the existing utility configurations.

Why should you care?



- This is the first time that the DPU has mandated that the electric distribution companies (EDCs) like Eversource modernize our antiquated grid
- Choices made today will have dramatic impacts on Distributed Energy Resources, storage, energy efficiency for many years to come
- This is an opportunity for consumer empowerment
 - Could allow consumers to better understand their usage and make informed energy decisions
 - Could allow consumers to play in a role in stabilizing the grid and reducing infrastructure costs
 - Could better enable consumers to play a role in reducing emissions and mitigating climate change impacts
- ***You're paying for it!***

What could it do for us?



- Greater system stability and resiliency
- Expand renewable energy integration
- More opportunities for energy efficiency and demand management
- Encourage development of microgrids

Overall, more local control and a central role for consumers... *depending on what is put in place.*

DPU's Grid Modernization Goals:



The DPU set forth four primary goals in its order for all Massachusetts utilities to submit plans for grid modernization:

1. Reducing effects of outages
 - *Number of outages, length of outages, number of customers affected, including weather-related*
2. Optimizing demand, including reducing system and customer costs
 - *Don't pay lots of money for infrastructure you only need a few hours per year*
 - *Deploy technology that enables customers to optimize their demand*
3. Integrating distributed energy resources
 - *Allow customers with solar and/or storage (including EVs) to contribute to grid reliability and renewable energy goals*
4. Improving workforce and asset management
 - *Make our utilities operate more efficiently and reduce customer costs*

Smart metering



In its order on grid modernization, the DPU mandated that utilities achieve Advanced Metering Functionality (AMF) within 5 years of plan approval, or make a business case demonstrating that a longer timeframe is a superior approach.

AMF* (smart metering) includes four elements:

1. Collection of customers' interval usage data, in near real time, usable for settlement in the ISO-NE energy and ancillary services markets
2. Automated outage and restoration notification
3. Two-way communication between customers and the utility
4. Communication with and control of household appliances (with customers' permission)

*AMF is a specific set of functions. AMI (Advanced Metering Infrastructure) is a specific technology to achieve AMF

Eversource's proposal



- In August 2015, Eversource filed its five-year, \$496 million Grid Modernization Plan
- Claims consumers are at the center of the plan
- Conservative, grid-facing approach
 - Emphasizes incremental investments
 - “...a flexible foundation for the future”
 - Heavily focused on improving reliability & resiliency
- Downplays benefits of giving consumers greater access to information and pricing transparency
 - Most apparent through opt-in approach to advanced metering and time-varying rates
 - Takes position that customers are uninterested in TVR

Eversource spending proposals



Investment Category	5-year Capital + O&M (million)
Smart & Integrated Grid	\$171.9
Resilient Grid	\$150
Customer Engagement	\$108.2
Enabling Investments	\$66.3
TOTAL:	\$496.4

In summary...



Potential Benefits:

- Will provide system operators with much greater visibility in to real-time status of system
 - Leads to greater operation and, in theory, planning efficiencies
- Will improve reliability and resiliency of the grid
 - Less customer outages, shorter outages
- Concerns
 - Utility-centric
 - No universal AMI = limited customer engagement
 - No cost allocation according to benefits
 - Inclusion of core utility functions
 - Limits potential for smart metering and associated benefits
 - TVR program design does not appear to meet DPU requirements

A high-level comparison...



National Grid also filed a ~\$1 billion GMP that proposed a full deployment of advanced meters on an opt-out basis throughout their service territory

Eversource

- Focused on grid-facing technologies
- Emphasizes reliability
- Not convinced residential/small business customers will benefit from TOU/advanced metering

National Grid

- Says their plan is for the “utility of the future”
- More of an “all of the above” approach to technology deployment
- Used AMI deployment experience in Worcester to inform GMP
- Exploring battery storage

As the GMPs are currently proposed, five years from now:



A customer on Cape Cod or Martha's Vineyard...	A customer in National Grid service territory...
...may have increased grid reliability from grid fortification	...will have a more stable, demand-optimized grid and benefit from real-time outage and restoration notification to their utility through their meter
...will have minimal/no insight in to real-time energy usage patterns, seeing only their total usage on the monthly bill, like they do now	...will have deeper insight in to their usage patterns, enabling informed energy decisions
...will be unable to receive or respond to real-time pricing signals	...will receive real-time pricing and can adjust usage accordingly, with the help of smart/connected appliances
...will have few or no opportunities to reduce costs by shifting usage	...will be able to benefit from time-of-use pricing by shifting their usage to lower-priced periods of the day (possibly automatically, with the help of smart/connected appliances)

Smart grid in other states



- MA is not leading the curve – across the U.S. there are about 60 million smart meters already installed
- Baltimore Gas & Electric:
 - Began installing smart meters in 2012
 - \$2.50 in benefits for every \$1 spent
 - Have “Energy Savings Days,” ~700,000 participants, \$7.26 average bill credit
- Commonwealth Edison (Chicago)
 - 2.5 million smart meters installed
 - 2015 was best reliability year ever, largely due to automatic outage notification
 - Smart meters saved \$3 million in truck-rolls

As consumers...



Do we want to continue to interact with our utility only once-a-month, in the form of a bill?

Or do we want to have a more thorough understanding of our individual energy usage and be able to interact with our grid in real-time by:

- Managing our usage and demand
- Being incentivized (\$\$) to contribute to grid stability and lowering infrastructure costs
 - Example: charging your EV when real-time prices are low, then discharging (selling power back to the grid) when real-time prices are high
 - Example: Set your smart thermostat to pre-cool your house when demand/real-time prices are low in the morning, but then cut off during peak demand/price hours in the afternoon

Timeline Snapshot



- August 2015 – Utilities Filed GMPs
 - CLC and other parties began review
- May 2016
 - CLC Granted Intervenor Status
 - Procedural Schedule Issued
 - DPU Ruled Rate Design is Outside Grid Mod Scope
- June 2016
 - Utilities filed GMP updates
 - CLC filed first of 5 IR sets
- August 2016 – Procedural schedule suspended

Next Steps



- Continue to get information from Eversource through Information Requests
- Continue to inform and engage consumers and communities on issues of concern
- Develop positions based on information received and consumer input
- Communicate consumer and community concerns to DPU
- Take our survey on Grid Modernization/Smart Grid:
www.surveymonkey.com/r/gridmodsurvey



Questions?

For more information:

- Visit our webpage on Grid Modernization at www.capelightcompact.org/smartgrid
- Contact us with questions:
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