



Northeast Energy Efficiency Partnerships

# **The Role of Energy Efficiency in the Utility of the Future: Massachusetts' Grid Modernization Approach**

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Northeast Energy Efficiency Partnerships

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# About NEEP

## Mission

Accelerate energy efficiency as an essential part of demand-side solutions that enable a sustainable regional energy system

## Vision

Region embraces **next generation energy efficiency** as a core strategy to meet energy needs in a carbon-constrained world

## Approach

Overcome markets and transform markets via ***Collaboration, Education and Enterprise***



*One of six regional energy efficiency organizations (REEOs) funded by the US Department of Energy (US DOE) to link regions to US DOE guidance, products and programs*

# Massachusetts Grid Modernization Timeline and Engagement Process

- **July 2013** - Grid Modernization Stakeholder Working Group Report
- **December 2013** - DPU Straw Proposal and Electric Vehicle Investigation (DPU 13-182)
- **June 2014** - DPU Grid Modernization Order (DPU 12-76-A)
- **November 2014** - Time Varying Rates (TVR) Framework Order (DPU 14-04 )
- **August 2015** - Utilities File Grid Modernization Proposals
- **Pending** – Order on Electric Vehicles
- **Ongoing** - DPU Proceedings and Plan Approvals
  - October 2015 – Three-Year Statewide Energy Efficiency Plan
  - 2016 – Eversource & National Grid Rate Cases



# MA Grid Modernization Proceeding

October 2012: DPU 12-76 Order Opened Investigation on Modernization of the Electric Grid

**VISION** The modern electric system will:

- Be cleaner, more efficient and reliable
- Empower customers to manage and reduce their energy costs
- Advance the state's clean energy goals by maximizing integration of solar, wind, other local renewable sources
- Minimize outages by automatically re-routing power and alerting the utility when lines go down
- Provide customers with tools and information to respond to price signals to use less electricity when prices spike
- Be appropriately sized and less expensive

*Mass Grid Mod Homepage:*

<http://www.mass.gov/eea/energy-utilities-clean-tech/electric-power/grid-mod/grid-modernization.html>



# MA Grid Modernization Proceeding

October 2012: DPU 12-76 Order Opened Investigation on Modernization of the Electric Grid

## OBJECTIVES

1. Reduce the effect of outages
2. Optimize demand to reduce system and customer costs
3. Integrate distributed resources
4. Improve workforce and asset management

*“Grid modernization should be an integral component of electric distribution companies’ on-going and routine investment and operational plans”*

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# MA Grid Modernization Proceeding

June 2014: DPU 12-76-B Ordered Utilities to File 10-Year Grid Modernization Plans

## AUGUST 2015 - GRID MODERNIZATION PLAN ELEMENTS

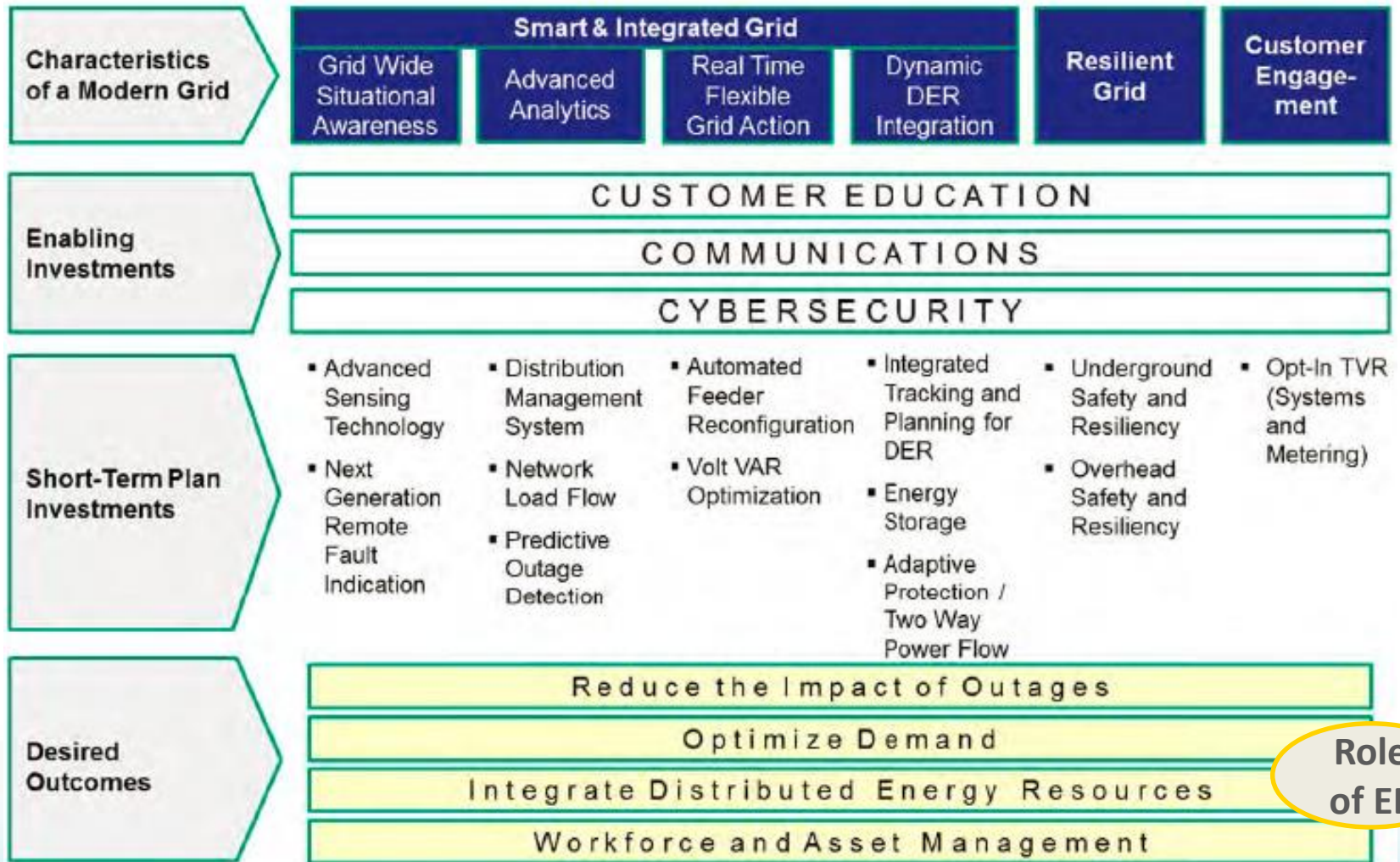
1. 10-year Strategic Grid Investment Plan to Meet Objectives
2. 5-Year Implementation Plan – Investments & Cost Recovery
3. Comprehensive Advanced Metering Plan
4. Customer Marketing & Education
  - Time Varying Rates
  - **Load Management Devices and Programs (EE)**
  - **Marketing and Outreach**
5. Progress Metrics
6. R&D - Technology Assessment Process

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# Grid Modernization

## Eversource Short-Term Investment Plan

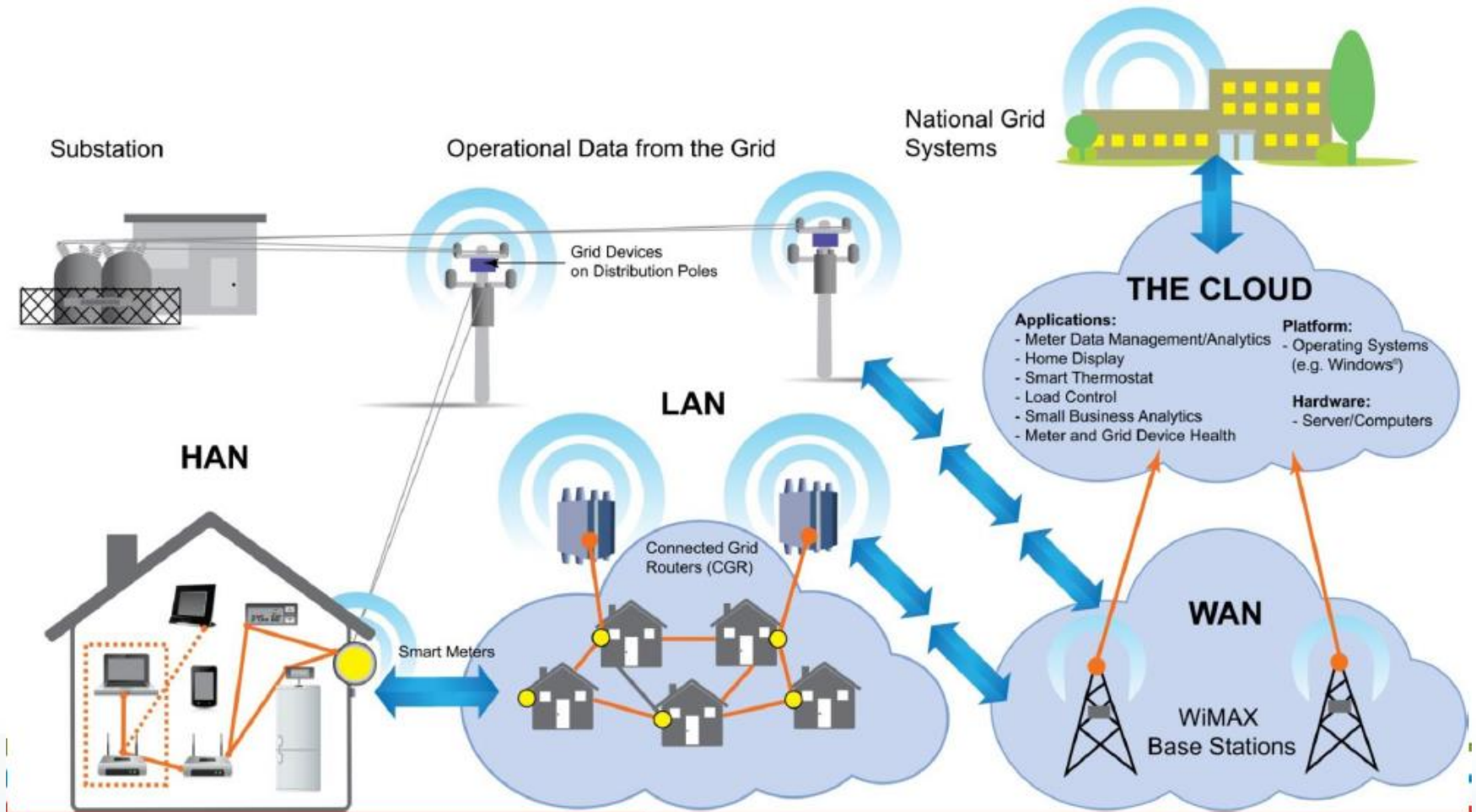


Role of EE



# Grid Modernization

## National Grid – Four Options





# Grid Modernization

## Unitil - Enabling Platform Model, Utilizing DERMS



# Energy Efficiency Program Impacts

- **Expanded efficiency program purposes and scope** – energy savings, peak reduction/response, distributed generation, energy storage, grid resiliency & reliability, customer education and satisfaction
- **Deploying new technologies, rate structures and programs** - engaging customers to manage energy use in response to price signals
- **Grid Mod Cost Recovery** - Customer-side devices included in utility EE program plans, part of “Customer Load Management”

## CHALLENGES

- integration of all fuels customer-side solutions
- Role of third-party service providers

# ADVANCED METERING FUNCTIONALITY (AMF) AND ENERGY EFFICIENCY PROGRAM SYNERGIES



## Opportunities for Home Energy Management Systems (HEMS) in Advancing Residential Energy Efficiency Programs

August 2015



May 11, 2015

REPORT #E15-288

## Baseline Energy Modeling Approach for Residential M&V Applications

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