



R.I. DIVISION OF PUBLIC UTILITIES AND CARRIERS, R.I. OFFICE
OF ENERGY RESOURCES & PUBLIC UTILITIES COMMISSION

**GUIDING THE FUTURE OF RHODE ISLAND'S
ELECTRICAL GRID**

Outline

- **State Legislation, State Energy Plan, Regulatory Guidelines**
- **Docket 4600 - Regulatory Guidance**
- **RI Power Sector Transformation Initiative**
- **Outcome of Rate Case: Distribution System Planning and Performance Based Regulation**
- **Key Take-Aways**

State Clean Energy Goals & Statutory Guidelines

- Strong energy legislation provides framework: Least Cost Procurement; Revenue Decoupling; Feed-in Tariff for DG; Resilient RI Act
- State Energy Plan
- RI Greenhouse Gas Reduction Plan
- Executive Order – 1000 MW of renewable energy by 2020

Regulatory Framework: Shared Goals, Principles, Cost Benefit Framework

‘Docket 4600’ - Year long stakeholder process: “to investigate the modernization of rates in light of the changing distribution system”

Lead to Commission Guidance on Goals, Principles and Values that contribute to the standard of review for all proposals brought by any party.

- Goals for the Electric System
- Rate Design Principles
- Benefit Cost Framework



RI POWER SECTOR
TRANSFORMATION

THE JOURNEY

THE GRID WAS BUILT FOR A DIFFERENT ERA



TODAY'S GRID IS BECOMING A TWO-WAY SYSTEM



Existing Tech Can Be Deployed Now To Lead To A Cheaper, Cleaner, More Reliable System


ENERGY STORAGE

- Grid Storage
- Mobile Storage



ADVANCED METERING

- Real time usage
- Demand mgmt



BIG DATA

- Voltage Mgmt
- Cybersecurity



INTERNET OF THINGS

- Grid Edge
- Dispatchable Appliances


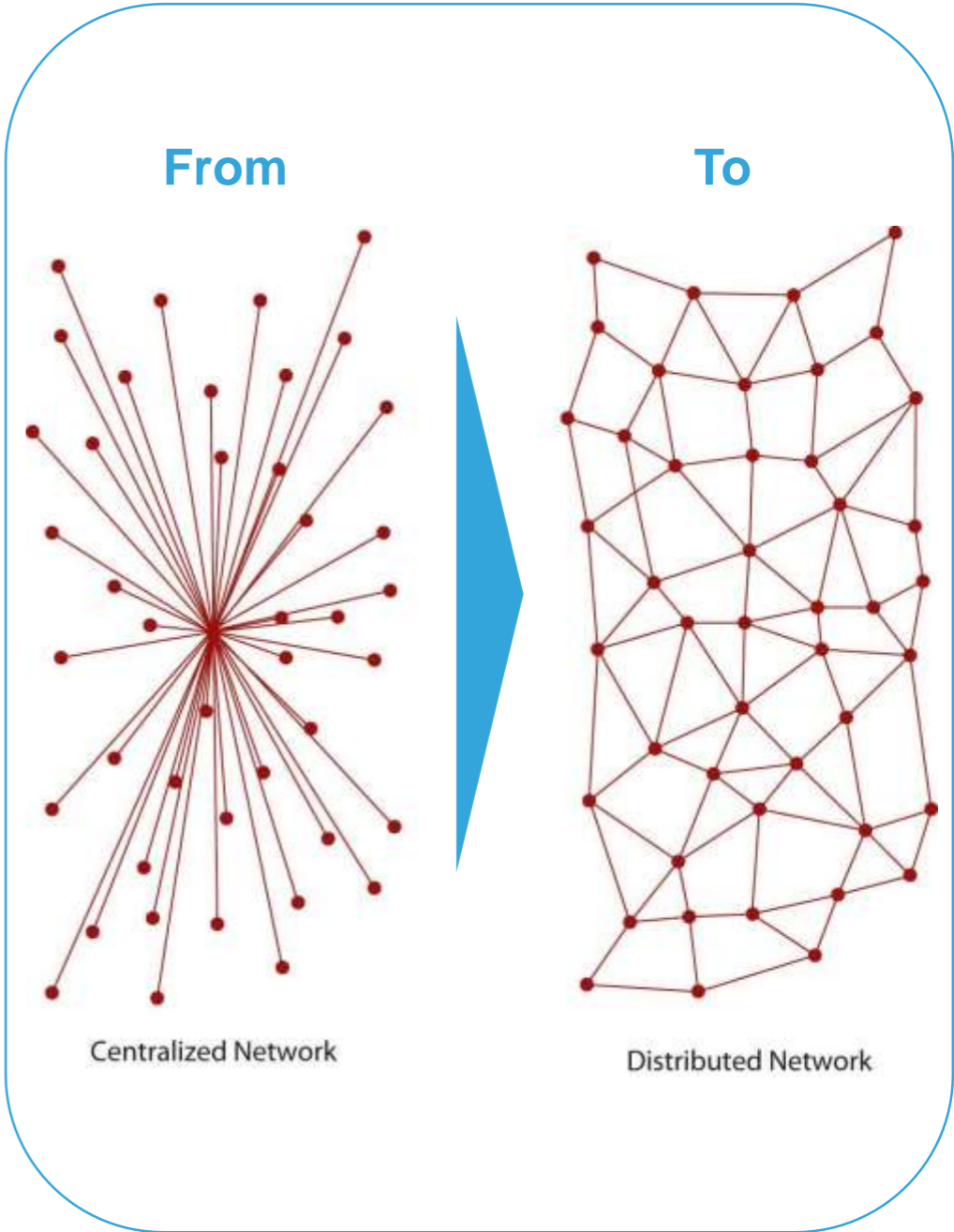


TIME VARYING RATES

- Low demand = cheap power
- High demand = more expensive

DISTRIBUTED GENERATION

- Solar/Wind buildout
- Cybersecurity

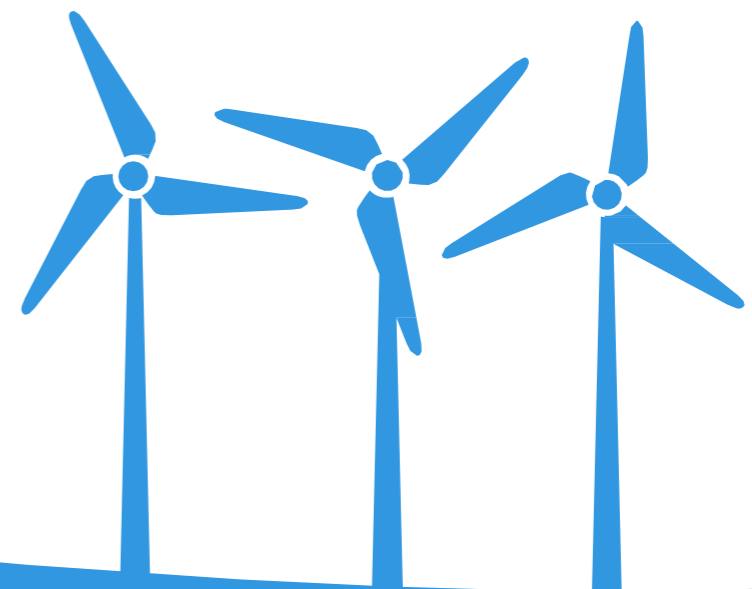
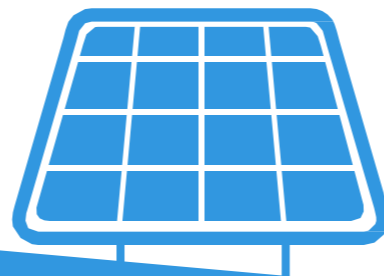
Control the long-term costs of the electric system.



Today's electric grid is built for peak usage. That's like constructing a **100-lane highway for Thanksgiving traffic.** New technology provides us with more ways to right-size the system to Rhode Islanders' needs.

Build a flexible grid to integrate more clean energy.

The Governor's goal of **1,000 megawatts of clean energy by 2020** will bolster our growing local clean jobs economy and help us meet state climate goals.





Give customers more energy choices.

Clean energy technologies are **more affordable now than ever**. Our utility rules should allow consumers to access and enjoy creative solutions to manage their energy production and use.



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WORKSTREAMS



Utility Business Model

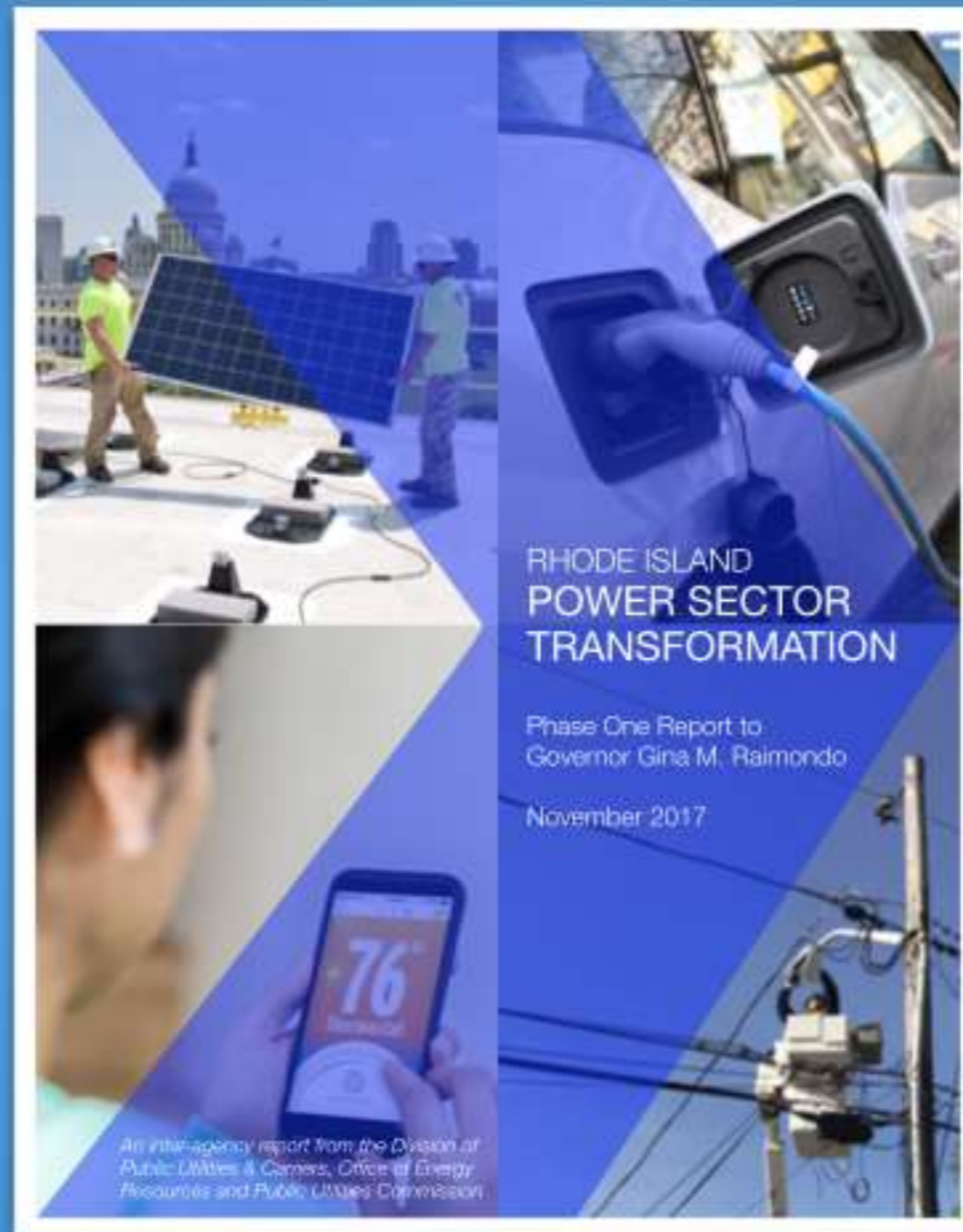
Distribution System
Planning

Grid Connectivity
Functionality

Beneficial Electrification of
Transportation & Heating

Power Sector Transformation Report

November, 2017



Utility Rate Case - November, 2017



Settlement: Integrated PST Elements into Multi-Year Rate Plan

- Negotiated settlement
- Included funding for PST in base rates in a 3 year rate plan
- PUC further revised: Final Settlement was accepted by all parties
- Approval granted in late August, 2018

DISTRIBUTION SYSTEM PLANNING

- ▶ What outcomes should distribution system planning promote?
- ▶ What aspects of utility operations should distribution system planning address?
- ▶ How accessible should distribution system planning be to third parties?



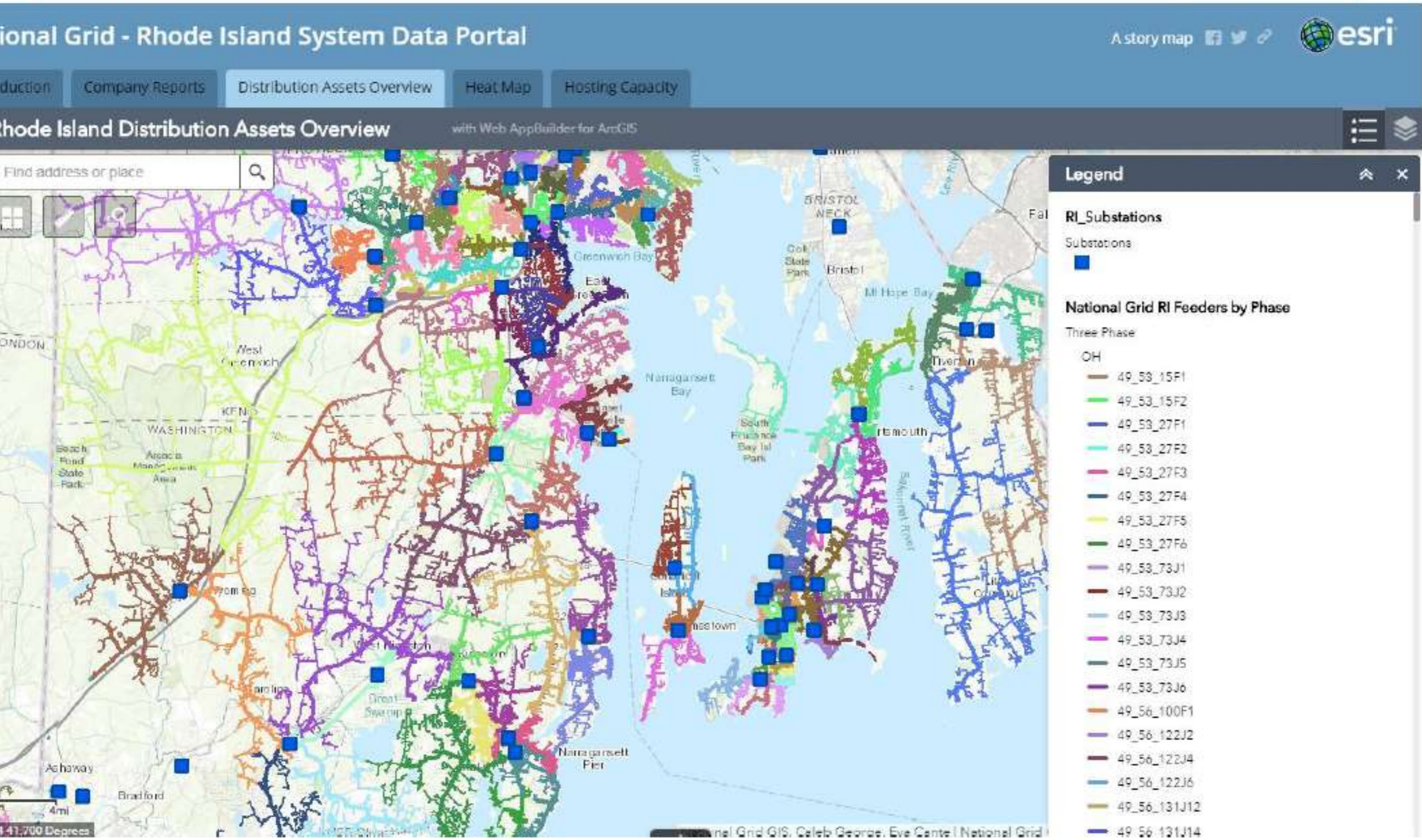
Long-Range Grid Modernization Plan Required Including Specific Elements:

- Objectives for the electric grid to advance the Goals for the Energy System; Rate Design Principles; and potential visibility requirements of the benefit cost framework.
- Plan should identify role of active programs.
- Include investments and technology deployments planned through the end of any proposed AMF implementation.
- Functionalities to achieve objectives.
- Review of options for candidate technologies to deliver those functionalities.
- Transparent, updated benefit cost analysis that fully incorporates Docket 4600 Framework.
- Prioritization, sequencing, and pace of investments.
- Plan for integration and leveraging of customer-side technologies and resources in near and long-term.
- Possible communications solutions that address current and future needs and support a wide array of potential grid modernization programs and activities.
- Congruency with New York and Massachusetts.
- Address risks of redundancy or obsolescence.

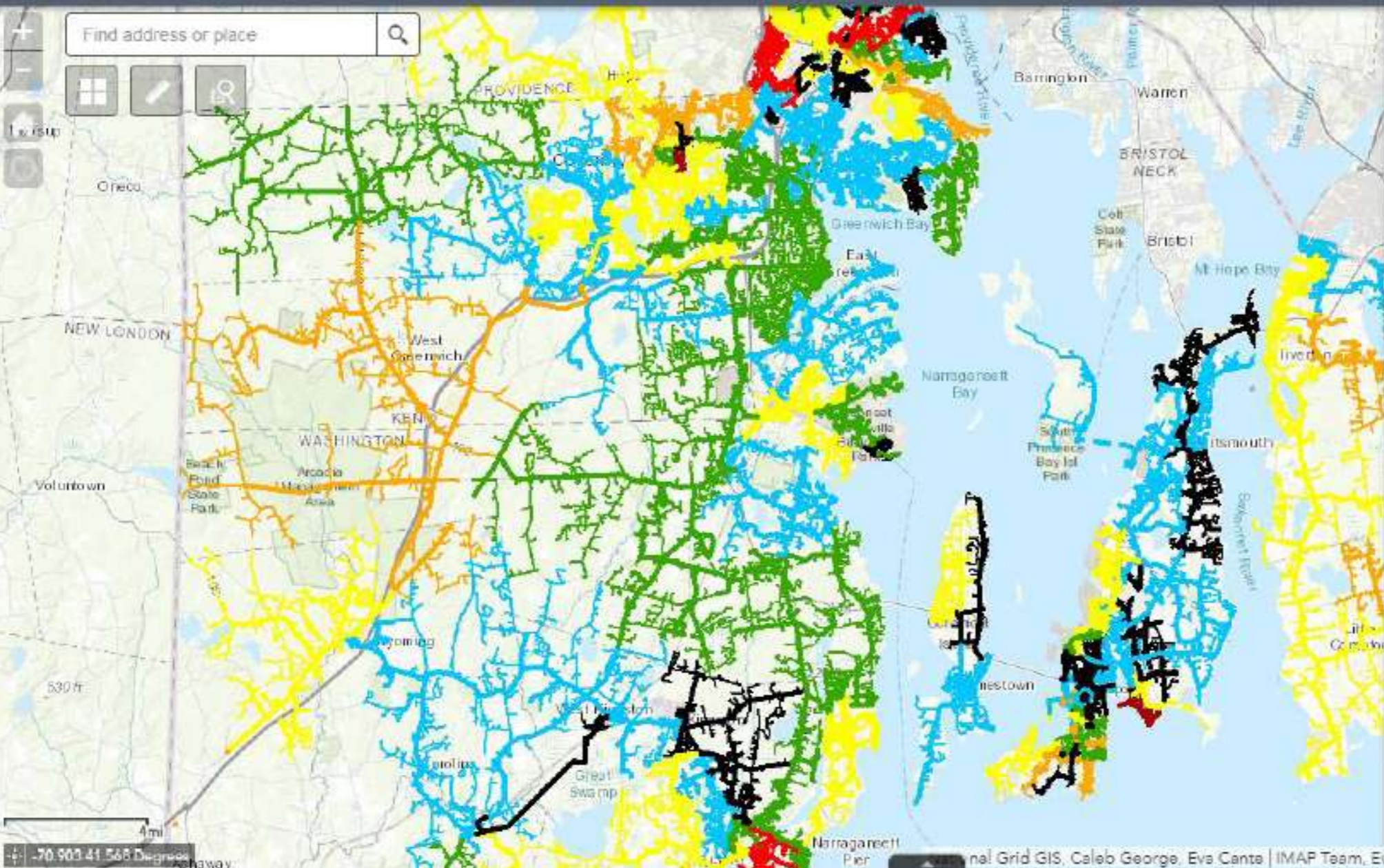
Distribution System Modernization – RY 1

- Funding beginning in Rate Year 1 of 3-Year Multiyear Rate Plan:
 - System Data Portal (heat map & capacity map)
 - GIS system and data enhancement
 - Separation of Transmission and Distribution remote terminal units to allow for creation of a separate distribution SCADA (DSCADA)
 - Advanced Metering business case
 - Required, but no additional funding for coordinated long-range Grid Modernization Plan

Distribution Assets Overview



Heat Map



Legend

National Grid Rhode Island Circuits Separated by Phase and Loading

Three Phase

OH: % based on 2018 Loads

- 0 - 50
- 50 - 70
- 70 - 80
- 80 - 90
- 90 - 95
- 95 - 100
- 100 - 99999

UG: % based on 2018 Loads

- 0 - 50
- 50 - 70
- 70 - 80
- 80 - 90
- 90 - 95
- 95 - 100
- 100 - 99999

Single Phase

OH: % based on 2018 Loads

- 0 - 50
- 50 - 70
- 70 - 80
- 80 - 90
- 90 - 95

Hosting Capacity

National Grid - Rhode Island System Data Portal

Introduction Company Reports Distribution Assets Overview Heat Map **Hosting Capacity**

Rhode Island Hosting Capacity with Web AppBuilder for ArcGIS

Find address or place

Planning Area	South County West
Feeder	49_56_68F3
Substation	KENYON
Operating Voltage (kV)	12.47
Interconnected DG	367.465
Pending DG	135.80
Zoom to ...	

Planning Area	South County East
Substation Name	LAFAYETTE
Voltage	12.47
3V0 Installed? Yes/No	Pending
3V0 Notes	Complete 2023
Zoom to ...	

Distribution System Modernization – RY 2 & 3

- Funding in Years 2 & 3 in Rate Plan, but pending acceptable GMP filing
 - Initial funding for DSCADA & ADMS Project Requirements and Definitions
 - Enterprise Service Bus
 - Large data collection, storage, and retrieval systems
 - Advanced analytics
 - Telecommunications
 - Cybersecurity



UTILITY BUSINESS MODEL



- ▶ What functions should the utility perform?
- ▶ How should the utility be compensated for each of the functions it performs?
- ▶ What is the appropriate role of performance metrics in utility compensation and which metrics should drive it?

Performance Incentives

- Does incentive incentivize behavior the utility would not otherwise undertake?
- Is the incentive designed so that customers receive most of the benefits?
- Are the incentives designed so that the utility receives higher rewards for higher levels of performance?
- Will the design and the implementation of the incentives be transparent and well documented to ensure no duplication of incentives across programs?

Performance Incentives

- Only 1 Performance Incentive with a financial component was approved
- 8 metrics were approved for tracking only with opportunity to reevaluate after 1 year
- The PUC also included set of reporting requirements for low income programs - first step to a more dynamic low income rate design

Key Takeaway: Successful Power Sector Transformation Requires A Confluence Of Conditions

- Grand vision and inspirational leadership
- Fast follow-don't reinvent the wheel
- Cross agency team alignment
- Open stakeholder process
- Informal transparent public exchange of views in advance of docketed processes
- Enthusiastic utility

Key Takeaway: Regulatory Process

- For energy offices: recognize the power of the regulatory arena as a tool to move policy into practice
- Relationships are important
 - Good communications
 - Mutual respect for roles of respective agencies
 - For public entities - opportunity to be 'force multipliers'
- Look for opportunities to collaborate outside of litigated settings

Challenges

- Regulatory process is slow
- Formal intervention can be costly – pick involvement carefully
- Complex – economics, engineering, law, accounting, finance
- Regulatory process can be contentious

**Thank You - Questions:
Marion.Gold@puc.ri.gov**

