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CHG&E Solar Summit

April 9, 2018

Clean Energy Fund (CEF)

The Clean Energy Fund is central to Reforming the Energy Vision (REV)

- Accelerate the use of clean energy and energy innovation
- Drive economic development
- Reduce ratepayer collections

Individual investment chapters including:

- Grid Modernization
- Energy Storage
- Smart Buildings
- Renewable Energy Optimization
- Clean Transportation

Smart Distribution & Transmission Systems – Objectives

- ✓ Increase system efficiency & asset utilization
- ✓ Integrate /enable large scale RE and DER
- ✓ Sync w/smart load, smart transportation and advanced clean power technologies(de-carbonize transportation)
- ✓ Support prediction of faults/quicken restoration
- ✓ Increase resiliency, reliability

Smart Distribution & Transmission Systems – Strategy

Invest in research that accelerates realization of an advanced, digitally enhanced and dynamically managed electric grid that results in more efficient asset utilization (e.g., reduced operating margins, reduced power demands, reduced energy losses) and improved reliability, and resiliency to climate change induced weather-events.

- ✓sensing, communications, diagnostics and controls
- ✓advanced/improved products and materials (physical asset protection and improved functionality
- ✓grid visualization, communication and control systems associated with the interoperability of DER
- ✓ modify regulatory paradigm to ***align incentives*** with goals

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Grid Modernization Program

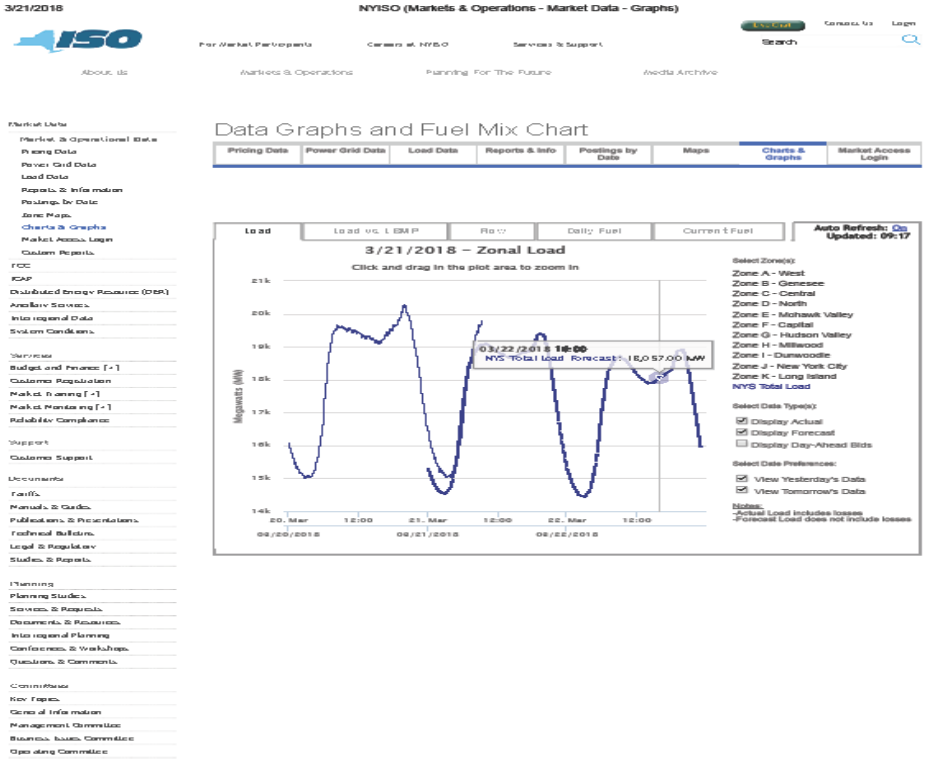
Commitment Budget		2017	2018	2019	2020	2021	2022	Total
DER Integration		$3 M	--	--	--	--	--	**$6 M**
High Performing Grid		$18 M	$16 M	$16 M	$16 M	$16 M	$16 M	**$110 M**

- Note: DER Integration rolls into High Performing Grid in 2018
- Grid Modernization Investment Chapter: https://www.nyserda.ny.gov/About/Clean-Energy-Fund

Recent funding opportunities

- PON 3404 – DER Integration (2017)
- PON 3397 – High Performing Grid (2017)

Grid Modernization Program



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Grid Modernization Program

PON 3397 – High Performing Grid

- 21 proposals selected for award
- Approximately $11.5M in total
- Awards focused on
  - Energy Storage
  - DER Integration
  - Transmission
  - Distribution

Grid Modernization Program

PON 3404 – DER Integration

- 11 proposals selected for award
- Approximately $2.5M in total
- Awards focused on overcoming specific interconnection issues
  - Neutral voltage shift (3V0)
  - Islanding
  - Active variable curtailment
  - Automation of interconnection studies

Grid Modernization Program (PON 3026)

Company /Project #	Project	Project Type	Category
Bigwood Systems 64286	Online transfer Capability Improvements for NYISO	Engineering Study	Modelling & Software
Lockheed Martin 64287	Integrated Aerial Weather Damage Assessment – Phase 2	Product Development	Hardware & Devices
National Grid 64288	Network Distributed Generation Interconnection	Demonstration	Integration & Interconnection
EPRI 64289	Smart Grid Inverter Demonstration	Demonstration	Hardware & Devices
EPRI 78939	Roadmap for Modeling the Active Transmission System Operator / Distribution System Operator	Research Study	Integration & Interconnection
NYPA 78940	Cloud Data Sharing System	Engineering Study	Modelling & Software
Bigwood Systems 78941	On-line Validating & Calibrating Generator Dynamic and Electrical Parameters	Engineering Study	Modelling & Software
Orange & Rockland 78942	Distributed Energy Resources Interconnection Queue Management and Integrated Analysis	Demonstration	Modelling & Software
Micatu 78943	High Accuracy Distribution Smart Grid Medium Voltage & Current Sensor	Demonstration	Sensing & Controls

Grid Modernization Program (PON 3404)

Company /Project #	Project	Project Type	Category
O'Brien & Gere 111070	Islanding Protection	Research Study	Integration & Interconnection
EPRI 111071	Solution Methods for Increasing Hosting Capacity	Research Study	Integration & Interconnection
O'Brien & Gere 111072	Overvoltage Protection (3Vo)	Engineering Study	Integration & Interconnection
EPRI 111073	Computer Aided Unintentional Islanding Screening	Engineering Study	Modelling & Software
Northern Plains Power Technologies 111079	Dynamic Voltage Restorer for Risk of Islanding Mitigation, Single Phase Open & Voltage Variability Reduction	Research Study	Integration & Interconnection
Electrical Distribution Design (EDD) 111080	Automated Engineering of Interconnection Requests & Mitigation Options	Engineering Study	Modelling & Software
Pterra 111075	Hardware in the Loop Study for Islanding 3 Vo & 3 Io	Research Study	Integration & Interconnection
Pterra 111076	Alternative Mitigation & Design Options for 3 Vo Requirements	Research Study	Integration & Interconnection
ABB 111672	Low Cost Islanding Detection for DER Smart Inverters	Research Study	Hardware & Devices
Smarter Grid Solutions 111077	Cloud Based Active Network Management for DER Integration	Research Study	Modelling & Software

Grid Modernization Program (PON 3397 Rd 1)

Company /Project #	Project	Project Type	Category
Smarter Grid Solutions 112720	Research Challenges for Distribution State Estimation	Research Study	Modelling & Software
RPI 112721	Control Equipment Performance Monitoring utilizing PMUs	Research Study	Modelling & Software
NYU 112722	DER Centric Power System Operations & Planning	Research Study	Integration & Interconnection
EPRI 112723	Super Capacitor Energy Storage and PV Integration	Engineering Study	Hardware & Devices
NYPA 112759	Advanced Stability Controls	Engineering Study	Modelling & Software
Smarter Grid Solutions 112760	Flexible Interconnection Integration	Engineering Study	Modelling & Software
Tagup 113208	Transformer Monitoring Software	Product Development	Modelling & Software
Micatu 112761	Photonic Sensors for Underground Applications	Demonstration	Sensing & Controls
MTA 113791	Energy Storage System	Demonstration	Hardware & Devices
EPRI 112762	End Use Technologies	Demonstration	Hardware & Devices
Booz Allen Hamilton 112763	Sherburne Electric Operations Optimization Software	Demonstration	Modelling & Software

Grid Modernization Program (PON 3397 Rd 2)

Company /Project#	Project	Project Type	Category
EPRI 118218	Advanced Operational Solutions for DER	Research Study	Integration & Interconnection
JEM Engineering 118223	Reclose Blocking Impact Simulation	Research Study	Integration & Interconnection
CUNY City College 118420	Recuperation of Rail Regenerative Energy	Research Study	Hardware & Devices
Quanta Technology 118219	NY State Wide Area Protection Study	Research Study	Modelling & Software
SUNY Albany 118222	Development of a Extreme Wind Forecasting Tool	Research Study	Modelling & Software
SUNY Binghamton 118225	Development of a low-cost Active DER System	Research Study	Hardware & Devices
Quanta Technology 118220	Central Hudson Energy Storage Study	Research Study	Integration & Interconnection
Smarter Grid Solutions 118433	Dynamic Conservation Voltage Optimization	Engineering Study	Modelling & Software
EPRI 118224	Demonstration of a Hybrid Control System	Demonstration	Sensing & Controls
Switched Source 118425	Demonstration of a Power Electronic Tie Controller	Demonstration	Hardware & Devices

NY Prize Award Process

All communities enter/apply to competition and are evaluated at each stage by external judges

Critical project partners: Municipalities and Utilities

Evaluation Panel(s)

Threshold Qualitative Criteria	Stage 1 Awards to Conduct Feasibility Assessments	83 awards for studies (up to $100K)	$8 m
Threshold Audit Grade Design Criteria	Stage 2 Feasibility Evaluated Awards for Audit Grade Design	11 Awards (up to $1M)	$11 m
Audit Grade Design Review	Stage 3 Designs Evaluated Awards for Build-out/ Operation	Up to 5 Awards (Up to $5M)	$20m

Allocations

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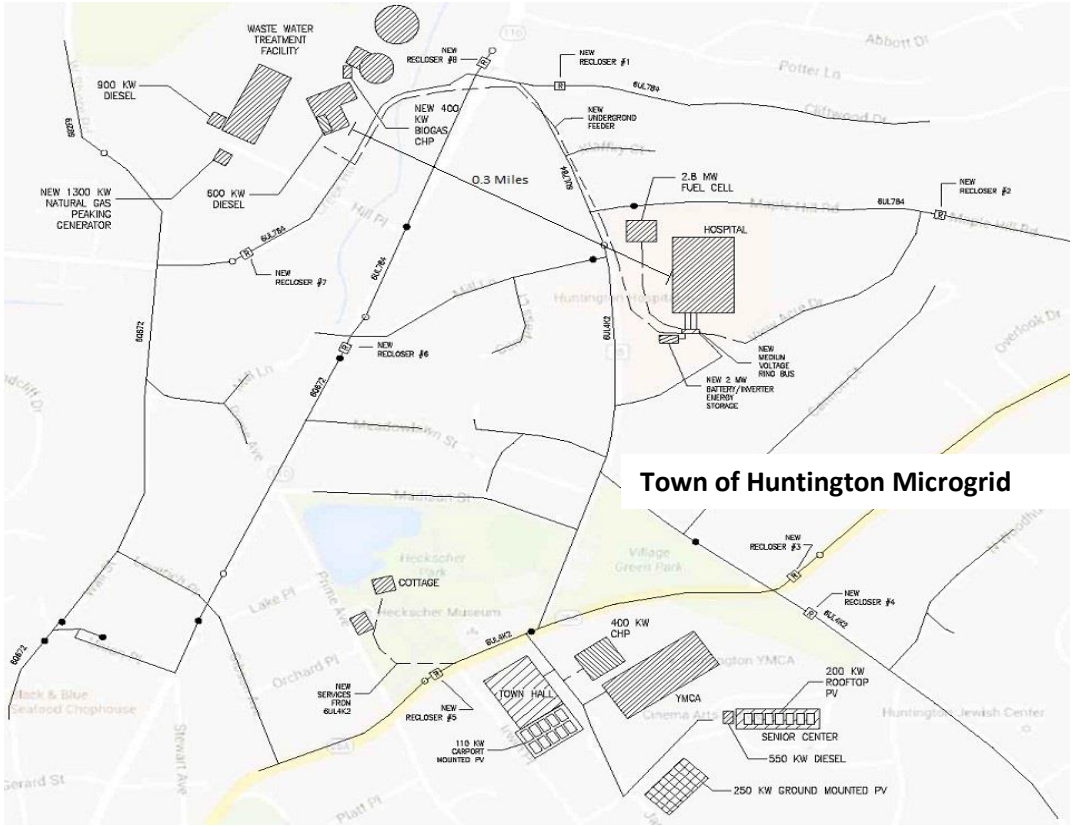
Stage 2 Awardees

- Empire State Plaza (Albany)
- University Heights (Albany)
- City of Syracuse
- Town of Huntington (Long Island)
- Village of Rockville Centre (Long Island)
- Village of Freeport (Long Island)
- East Bronx Healthcare (Bronx)
- Clarkson Avenue (Brooklyn)
- Sunnyside Yard (Queens)
- City of Binghamton
- Buffalo-Niagara Medical Campus (Buffalo)



Town of Huntington Microgrid

almost $200 million in capital investments
Project descriptions can be found @:

https://www.nyserda.ny.gov/-/media/Files/Programs/NYPrize/ny-prize-stage-2-awarded-projects.pdf

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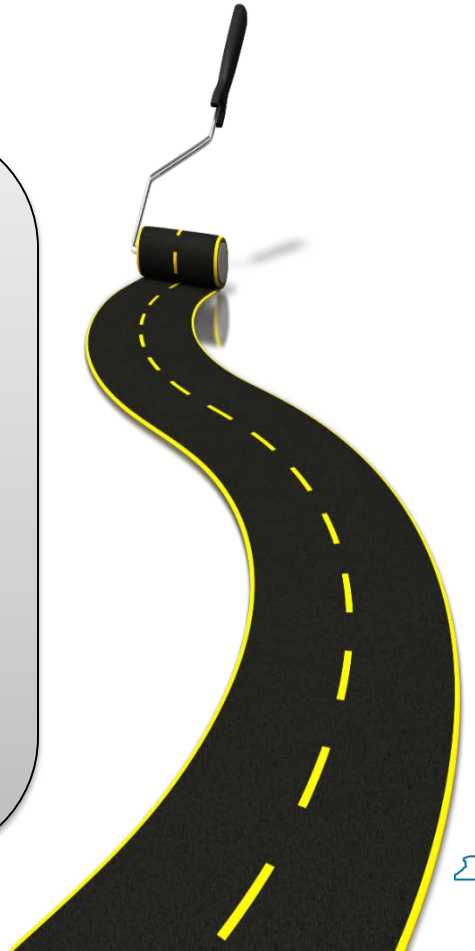
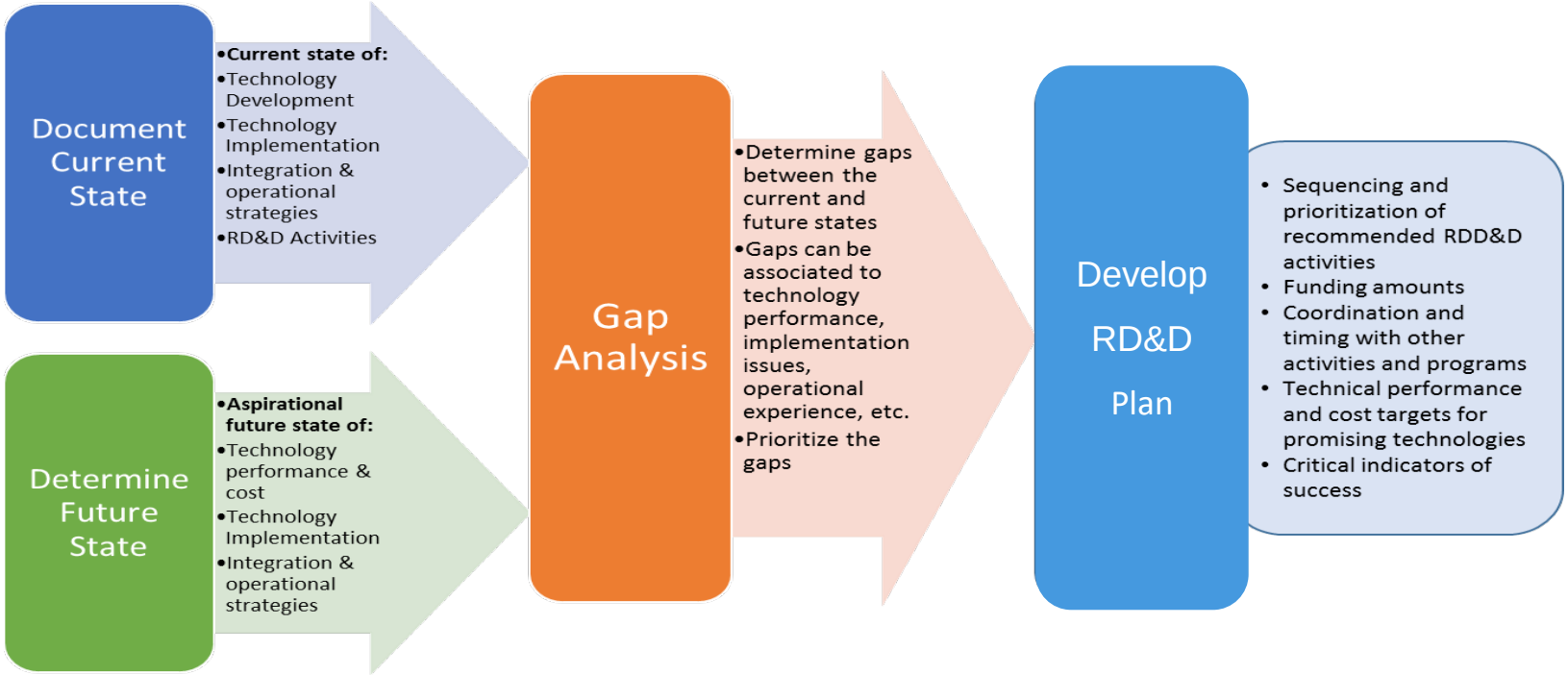
Grid Modernization Roadmap

Build a Roadmap for the development of models, methods, and technologies needed to plan, deploy and operate an advanced electric distribution system.

Outcome will provide guidance to NYSERDA research, development, and demonstrations (RD&D) supporting the modernization of the NY electric distribution system.



Grid Modernization Roadmap



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Questions?

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