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NYSERDA Smart Grid R&D Program Update

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Central Hudson Gas & Electric Solar Summit
Locust Grove, Poughkeepsie NY
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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

Grid Modernization Program Guiding Principles

Accelerating adoption of an advanced, digitally enhanced and dynamically managed electric grid

Clean — Integrate clean sources, deliver renewable energy, reduce losses

Reliable — Avoid outages, restore faster, reduce impacts of severe weather

Affordable — Apply innovation to get better results at lower costs

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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

Grid Modernization Program (PON 4074)

Electric Power Transmission and Distribution (EPTD) High Performing Grid Program

Program Opportunity Notice (PON) 4074 ***Up to $30 Million Available***

Rolling submissions: until October 7th, 2020 for Concept Papers and November 18th, 2020 for Full Proposals

Examples of eligible technologies :

Advanced Monitoring / Measurement / Controls
Transmission and Distribution Automation / Management
Distributed Energy Resources Integration/ Interconnections
Advanced Power Electronics / Smart Inverters
Advanced Materials / Cabling / Conductors
Advanced System Modeling / Applications / Algorithms
Advanced Planning / Operations / Design / Forecasting Tools
Advanced Sensors / Devices / Systems
Innovative Cybersecurity / Data Analytics Advanced /
Adaptive Protection Systems / Controls

Category	Maximum NYSERDA Funding Per Award	Total Project Cost Share
Category A: Technology Feasibility Studies	$ 100,000	25%
Category B: Product Development	No limit	50%
Category C: Research Studies	$400,000	25%
Category D: Engineering Studies	$400,000	25%
Category E: Demonstration Projects	No limit	50%

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Future Grid Challenge (PON 4128)

Up to $15 Million Available - $3 Million per NYS IOU

Round 1: Closed 9Oct19

Consolidated Edison – DER Monitoring & Control, Data Analytics and Advanced Forecasting

Orange & Rockland – SI Functionality and Integration into Distribution System Planning and Operations

Round 2: Closed 11Dec19

National Grid – SI Functionality and Integration into Distribution System Planning and Operations

Central Hudson Gas & Electric – DERMS Logic for Coordinating DER Operating in a Transmission Load Pocket

Round 3: TBD

<u>Program Requirements:</u>

Product Development and Demonstration Projects

Cost share 25%

Up to $3 million of NYSERDA funding

Grid Modernization Program (PON 4094)

PON 4094 – DER Integration

- Awards focused on overcoming specific interconnection issues
  - Low Cost communication
  - Low Cost Monitoring & Control
  - Activating Smart Inverter Functions
  - DER Gateways
  - Reactive Power Dispatch

Sample Projects

Project	Category
Optimal Forecasting Solution for Overhead Line Operations	Demonstration Project
Advanced Solar and Load Forecasting (Phase 3)	Demonstration Project
Sub-Synchronous Oscillation Screening & Mitigation	Engineering Study
69 kV Optical Voltage/Current Sensor Platform for Sectionalizing Applications	Product Development
Low Cost Alternating to Direct Transfer Trip (Phase 2&3)	Product Development
Machine Learning Platform for Ratio Transformer Failure Predictions	Product Development
Negative Sequence Voltage Protection Method	Product Development
Underground Cable Advanced Monitoring and Diagnostic System	Product Development
On-board Power Line Detection, Avoidance, and Tracking for Aerial Drones	Product Development
Detection of Arbitrarily Located Single Phase Opens	Research Study
Acceptance Criteria and Screening tools for DER Driven Ground fault Overvoltage and Asynchronous Reclosure on Transmission System	Research Study
Advanced Modeling of Power System Dynamics Using Machine Learning	Research Study
Smart Inverter Setting Guidance	Research Study
Model Translation Tool	Research Study
Control System Forensic Capability Study	Research Study
Effective Grounding Methods for Inverter Based DER	Research Study
Learning Smart Inverter Study	Research Study
Mitigation and Modeling for Ground Fault Over Voltages of Inverter Based Systems	Research Study
Quantifying the Value of DERMS for New York State	Research Study
Control Testing for Behind-the-Meter Energy Storage Systems Grid Back-Feed Prevention	Research Study
Deep Learning Computing System for Grid Operations	Research Study
Control of Grid Interface Inverters for Distributed Power system Stabilization	Technology Feasibility Study
Real Time Analysis of Transformer Oil	Technology Feasibility Study
Low Frequency AC Transmission Study	Technology Feasibility Study
Integrating Smart Meters with Smart Inverters	Technology Feasibility Study

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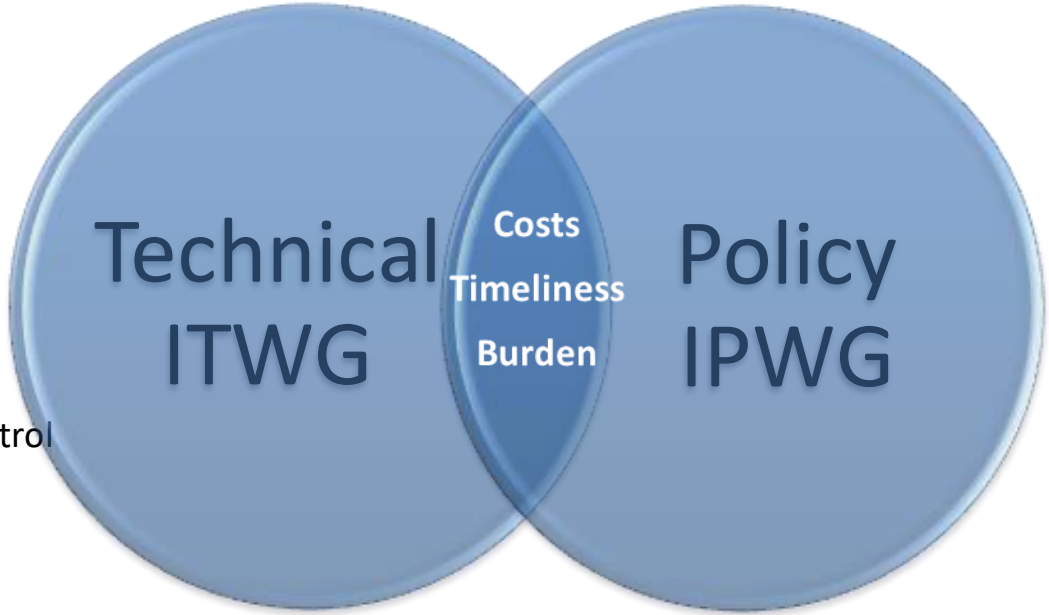
Interconnection Working Groups

Technical

- Technical barriers & new technologies
- Consultants
- SIR screening
- Islanding Protection
- Monitoring and Control
- Voltage Flicker
- Energy Storage
- Metering Configurations
- Smart Inverter Functionality



Policy

- Queue management
- Communication
- Federal/State queue coordination
- Material modifications
- Cost sharing

Technical Working Group (ITWG)

- Goal: identify, discuss, and resolve technical barriers and challenges affecting the interconnection of distributed generation.
- Includes representatives from State agencies, utilities, and DG developers
- Technical consultants to assist evaluation process and technical document development
- Initial Topics: Ground Fault Over Voltage (3Vo) / Anti-Islanding Protections (DTT) / Monitoring & Control
- Current Topics: Energy Storage Systems / Smart Inverter Functionality / Transient Over Voltage / Updated Screening
- More information on ITWG at http://www.dps.ny.gov

Questions?

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