

Advanced Technology Working Group (ATWG) Summer Stakeholder Webinar

August 28, 2024

PREPARED FOR
Stakeholder Community



Welcome

Jason Pause, Department of Public Service

King Look, Con Edison

AGENDA



ATWG Background

2024 Call for Advanced Technology Concept Papers

- Advanced Conductors and Lines
- Distributed Energy Resource Management Systems
- Grid Monitoring and Management
- Hydrogen

ATWG Knowledge Management

Questions

WHO WE ARE AND WHAT WE DO

BACKGROUND

Following the Commission's Order on Power Grid Study Recommendations (Case 20-E-0197) issued on January 20, 2022, the ATWG was tasked with addressing "the challenge of identifying and removing barriers to the deployment of new technologies" in New York.

REPRESENTATIVES

- The Joint Utilities of New York
- NYSERDA
- New York Department of Public Service
- LIPA / PSEG Long Island
- NYPA
- NYISO

MISSION

Identify, discuss, and work to resolve technical barriers and challenges associated with developing and deploying cost-effective advanced technologies on the New York electric transmission and distribution systems.

ADVANCED TECHNOLOGY OBJECTIVES

- Provide functionality that increases the deliverability of renewable energy and increases the utilization of existing delivery capacity and rights-of-way.
- Enhance the reliability, security, and efficiency of the New York electricity grid.
- Manage affordability for consumers and stakeholders.

ACTIVITIES

ATWG

- Monthly meetings
- Stakeholder engagement sessions
- Spring Technical Conference
- Fall Program Planning Workshop

Task Forces

- T&D Energy Storage Task Force
- Dynamic Line Ratings Task Force
- Power Flow Control Task Force

Advanced Technology Concept Papers

King Look, Con Edison

Forrest Small, Concentric Energy Advisors

Marcus Kim, Concentric Energy Advisors

2024 ADVANCED TECHNOLOGY CONCEPT PAPERS

Earlier this year the ATWG issued a call for Advanced Technology Concept Papers aimed at increasing the pipeline of potential technologies to help New York achieve its clean energy goals.

2024 CALL FOR ADVANCED TECHNOLOGY PAPERS

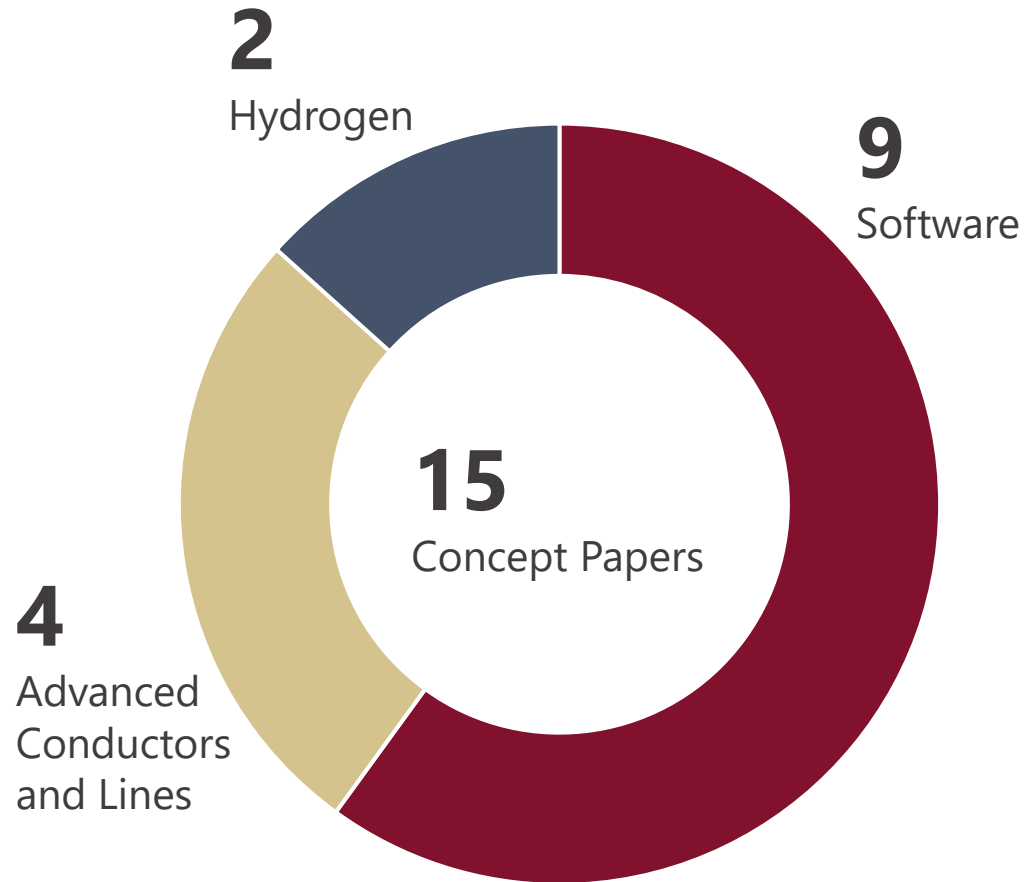
- In January 2024 the New York PSC directed the ATWG to broaden its range of technologies under review to inform the solutions available to utility planners engaged with the Coordinated Grid Planning Process.
- The ATWG was directed to conduct an open call for stakeholders to submit advanced technology concept papers.
- On July 1, 2024, the ATWG filed its Initial Assessment of the concept papers.

CONCEPT PAPER SUBMISSION REQUIREMENTS

- A detailed description of the technology or solution, including potential use cases and grid services that the technology may support.
- Specific examples of where the technology or solution has been deployed.
- An outline or preliminary plan for implementing the technology or solution within the New York electricity grid.
- To the extent possible, provide cost data that can facilitate comparisons with existing and alternative solutions.
- Specific benefits that the technology supports, either directly or indirectly.

CONCEPT PAPERS

We received fifteen Concept Papers covering a range of grid technologies.



SOFTWARE

- DER management and grid flexibility (6)
- Grid monitoring and management (3)

ADVANCED CONDUCTORS AND LINES

- Compact line design (1)
- Composite conductors (1)
- Superconductors (1)
- Electricity infrastructure cooling (1)

HYDROGEN

- Fuel cell electricity generation (1)
- Production, storage, and electricity generation (1)

ADVANCED CONDUCTORS AND LINES

DESCRIPTION

- Equipment and infrastructure designed to optimize transmission line capacity and rights-of-way and deliver more power from energy sources to loads.

FUNCTIONALITY AND CAPABILITY

- Decrease transmission line impedance to increase power flow and reduce losses
- Increase line capacity by decreasing sag under higher temperatures
- Reduce the physical space required for transmission rights-of-way
- Increase transmission equipment reliability by better managing heat

NEXT STEPS

- The ATWG will evaluate the process for exploring these technologies further.
- The ATWG may reach out to technology providers to discuss solutions.

CONCEPT PAPERS

1. *Low Impedance Compact Line Design*, BOLD Transmission LLC
2. *CTC Global ACCC Conductor Concept Paper*, CTC Global
3. *Superconducting Transmission Lines in New York*, VEIR
4. *Increasing Transformer Reliability and Longevity Through Passive Heat Dissipation*, Heat Inverse

DISTRIBUTED ENERGY RESOURCE MANAGEMENT SYSTEMS (DERMS)

DESCRIPTION

- Software to manage and optimize the operation of distributed energy resources like PV, energy storage, electric vehicles, and flexible loads.

FUNCTIONALITY AND CAPABILITY

- Provide DER visibility for utility operators.
- Forecast energy production and consumption of DERs to improve system efficiency and reliability.
- Coordinate and optimize DER operations to support grid services.

NEXT STEPS

- The ATWG is starting a new Task Force to explore DERMS technology for applications in New York.
- The DERMS Task Force may reach out to technology providers to discuss solutions.

CONCEPT PAPERS

1. *Increased Hosting Capacity through Flexible Interconnections*, Mitsubishi Electric Power Products (Smarter Grid Solutions)
2. *Optimizing The New York Power Grid: A Project For Sustainable Grid Management For Stability And Renewable Integration*, SMPnet
3. *Multi-tier Grid Optimization – Application to Cold Storage Facilities*, Energy One Solutions International
4. *Aggregate Demand Management*, Meltek
5. *Statewide DER-Enabled Market Platform for Grid Flexibility*, Piclo
6. *The Intelligent Energy Storage Network for the Built Environment*, Novele

GRID MONITORING AND MANAGEMENT

DESCRIPTION

- Improve situational awareness for grid operators to help ensure grid reliability, flexibility, and efficiency with more renewable energy and DERs.

FUNCTIONALITY AND CAPABILITY

- Provide better monitoring and visibility to grid resources and infrastructure.
- Analyze grid performance to gain operational insights into system dynamics, reliability, and security.
- Support better grid performance.

NEXT STEPS

- The DLR Task Force will evaluate the process for exploring these technologies further.
- The DLR Task Force may reach out to technology providers to discuss solutions.

CONCEPT PAPERS

1. *Real Time Inertia Measurement Services, Reactive Technologies*
2. *Voltage Optimization for the Distribution Grid, DVI*
3. *State Estimation and Forecasting With Dynamic Relay Settings for Distribution Protection and Control, Acelerex*

HYDROGEN

DESCRIPTION

- Leverage hydrogen to support a more flexible, efficient, and reliable grid.

FUNCTIONALITY AND CAPABILITY

- Support dispatchable emission-free resources (DEFERs).
- Improve grid flexibility and reliability as an energy storage medium.

NEXT STEPS

- The ATWG will determine how hydrogen technologies fit within its mission.
- The ATWG may reach out to technology providers to discuss solutions.

CONCEPT PAPERS

1. *Hydrogen Fuel Cell Technology Providing Dispatchable Zero-Emissions Electricity, Plug Power*
2. *Advancing Grid Modernization & Clean Energy with HYDRO-GEN™, Vivacity Power Inc.*

Knowledge Management

Marcus Kim, Concentric Energy Advisors

KNOWLEDGE MANAGEMENT

The ATWG is developing a knowledge base that will serve as a repository of detailed information of technologies evaluated through three main channels.

Regulatory Process-driven Evaluations

R&D Plan

- Identification of new technology areas through 2023 Fall Planning Workshop
 - Advanced System Planning Tools
 - Improved Operator Situational Awareness
 - Compact Line Designs
 - Advanced Conductors
 - DERMS
 - Advanced Protection for Inverter Based Resources
 - Dispatchable Emissions Free Resources

Call for Advanced Technology Concept Papers

- Advanced Conductors and Lines
- DERMS
- Grid Monitoring & Management
- Hydrogen

ATWG-led Evaluations

ATWG Website Input Form

- Energy Storage
- Topology Optimization
- Power Flow Control
- Reactive Load Correction
- Advanced VPP / Multi Tier Grid Optimization
- Real-Time Inertia Measurement
- Dynamic Contingency Manager
- Dynamic Line Ratings

ATWG Email Inbox (ATWG@ceadvisors.com)

Task Force Specific Evaluations

Dynamic Line Rating TF

- Line-Mounted Sensor
- LiDAR / Camera Monitoring
- Data Processing, Analytics, and Forecasting
- Thermal Resistivity/Temperature Sensors and Data Processing

Power Flow Control TF

- Phase Shifting Transformers
- Distributed Series Compensator / Modular SSSC
- Series Reactors
- Fixed and Variable Series Capacitors (TCSC)
- Unified Power Flow Controller
- Back-to-Back HVDC
- SEN Transformer

KNOWLEDGE MANAGEMENT

The knowledge base will also provide a dashboard that will track the progress of our task forces, which are formed based on the evaluation of priority technology areas.

Technology Area	Stage 1 Technology Survey and Screening		Stage 2 Technical and Economic Assessments		Stage 3 Identify Locations for Deployment	
	Identify Use Cases	Potential / Barriers Study	Technical Assessment	Economic Assessment	Coordinate with CGPP	Identify Best Opportunities
Dynamic Line Rating	✓	⋯	⋯	⋯	○	○
Energy Storage (T&D Support)	✓	⋯	⋯	⋯	○	○
Power Flow Control	✓			⏸		
Advanced Conductors and Lines	○					
DERMS	○					
Grid Monitoring and Management	○					
Hydrogen	○					

○ Planned

⋯ In Progress

⏸ On Hold

✓ Completed

QUESTIONS



Contact

KING LOOK
ATWG Chair, Con Edison

klook@coned.com

FORREST SMALL
ATWG Secretary, Concentric Energy Advisors

fsmall@ceadvisors.com