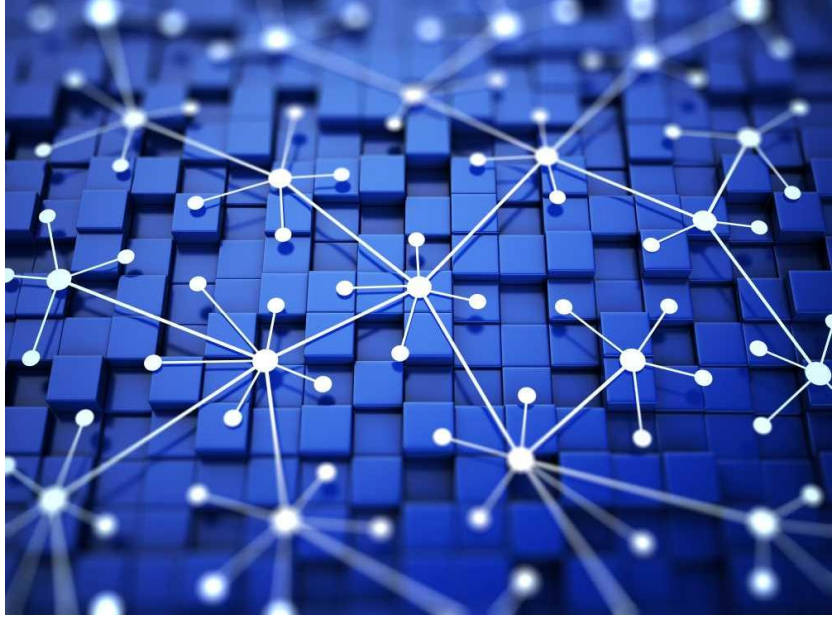




Advanced Technology Working Group (ATWG)

2025 October Webinar

October 21, 2025

JOINT UTILITIES
OF NEW YORK

Welcome

SERGIO RODRIGUEZ, Con Edison

AGENDA

1. Introduction
2. Recap of 2025 Activities
   i. 2024 Annual Report
   ii. ATWG-CGPP Coordination
3. CGPP Cycle 1 Stage 3 Development Process & Application of AT Screening Criteria
4. 2025 Call for Advanced Technology Concept Papers
5. Next Steps
6. Q&A

INTRODUCTION

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
- PSEG-LI / LIPA
- NYPA
- NYISO

ACTIVITIES

- Monthly meetings
- Work sessions with CGPP planners
- Call for Advanced Technology Concept Papers
- Stakeholder engagement sessions
- Annual report

SUBGROUPS

- Energy Storage Subcommittee
- Dynamic Line Ratings Task Force
- Power Flow Control Task Force

Recap of 2025 Activities

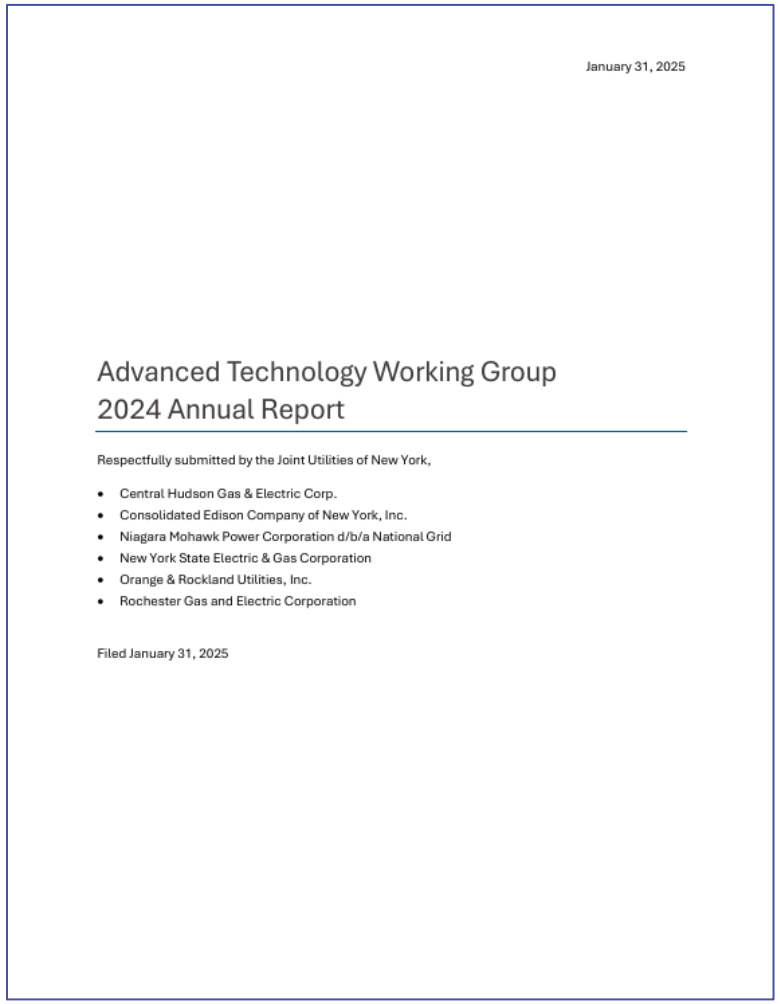
MARCUS KIM, Concentric Energy Advisors

MUSAAB ISLAM, Avangrid (NYSEG & RGE)

MARK CATTRELL, Concentric Energy Advisors

2024 ANNUAL REPORT

The 2024 Annual Report was filed in January 2025 and provides a summary of the ATWG's efforts over the year.



January 31, 2025

Advanced Technology Working Group
2024 Annual Report

Respectfully submitted by the Joint Utilities of New York,

- Central Hudson Gas & Electric Corp.
- Consolidated Edison Company of New York, Inc.
- Niagara Mohawk Power Corporation d/b/a National Grid
- New York State Electric & Gas Corporation
- Orange & Rockland Utilities, Inc.
- Rochester Gas and Electric Corporation

Filed January 31, 2025

- The 2024 Annual Report was the first area of focus for the ATWG in 2025 and was filed with the New York Public Service Commission on January 31, 2025.
- The report provides an overview of the activities that the ATWG and its subgroups undertook in 2024, as outlined below.
  - ATWG
    - 2024 Call for Advanced Technology Concept Papers
  - Dynamic Line Ratings Task Force
    - Evaluation of projects in New York
    - DLR Potential Study
  - Energy Storage Subcommittee
    - Unified Planning Guidelines
    - JU Study of Non-Market T&D Energy Storage Use Cases
  - Power Flow Control Task Force
    - Evaluation of projects in New York

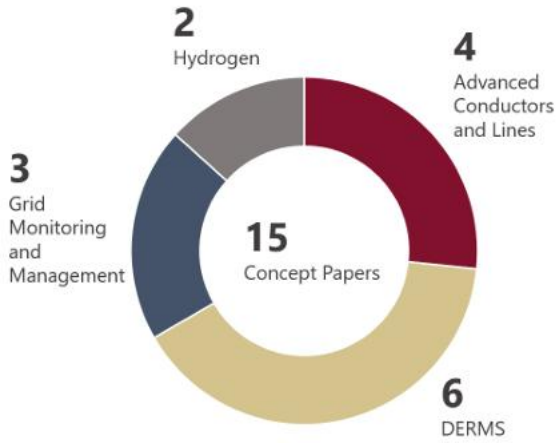
2024 ANNUAL REPORT – 2024 CALL FOR ADVANCED TECHNOLOGY CONCEPT PAPERS

In 2024, 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.

BACKGROUND

- 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 (CGPP).
- Among other things, 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.

2024 SUBMISSIONS



ADVANCED CONDUCTORS AND LINES

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

GRID MONITORING AND MANAGEMENT

- Real-time inertia measurement (1)
- Voltage optimization (1)
- Distribution system monitoring and management (1)

DER MANAGEMENT SYSTEMS (DERMS)

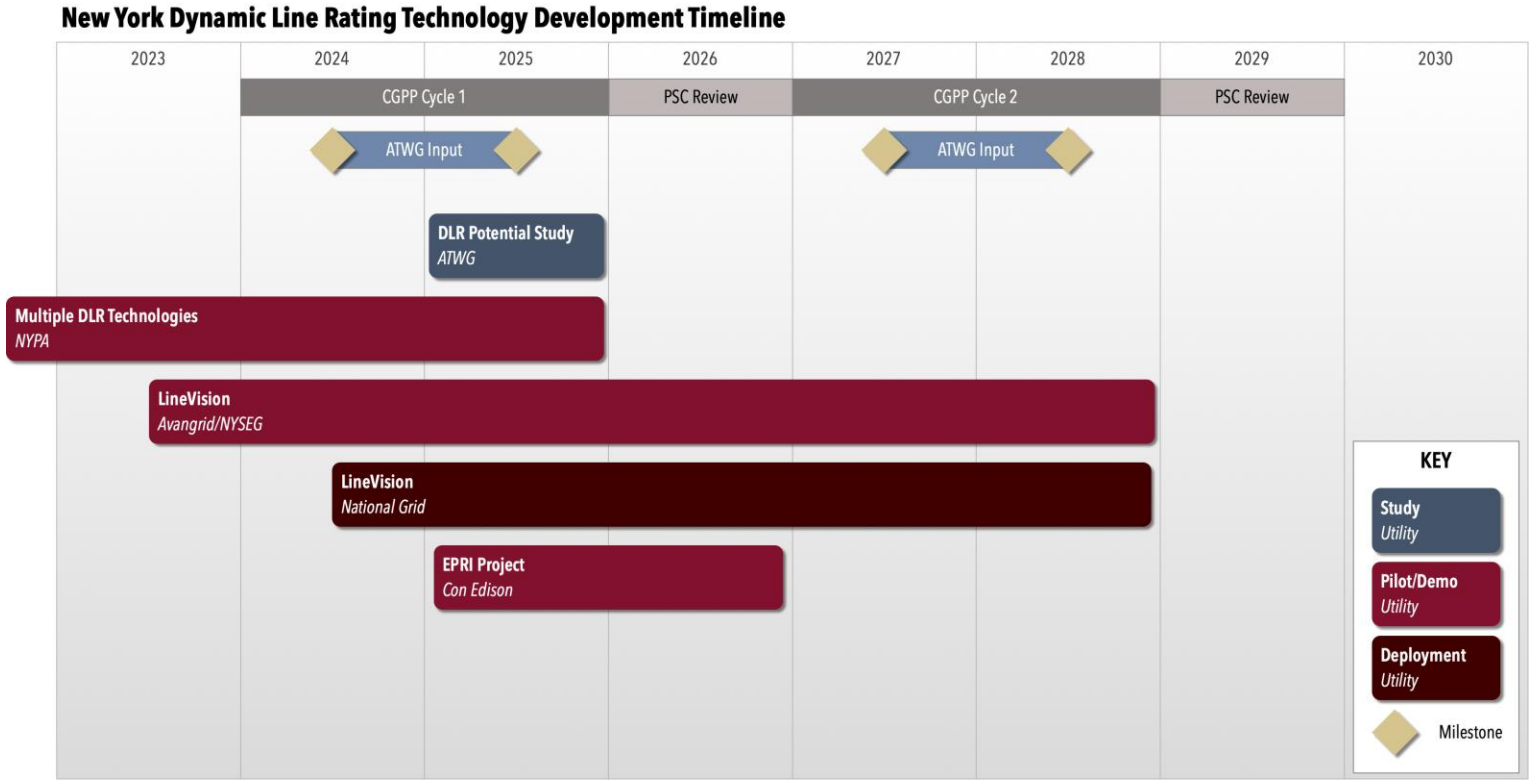
- Digital twin platform (2)
- Flexible interconnections (1)
- Aggregate demand management (1)
- Digital market platform (1)
- Distributed energy storage network (1)

HYDROGEN

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

2024 ANNUAL REPORT – DYNAMIC LINE RATINGS

Investigations into DLR are ongoing in New York, and the JU anticipate refined consideration of the advanced technology by CGPP Cycle 2.



INSIGHTS

- Multiple utilities in New York are investigating DLR. Over the next few years, the JU will have a clearer picture of its suitability for unlocking additional transmission capacity to deliver clean energy.
- In 2025, the ATWG is conducting a DLR Potential Study to develop an economic framework that the JU can use to evaluate the economics of DLR use cases and assess the potential for DLR on various transmission lines across different service territories.
- By CGPP Cycle 2, planning and economic evaluation criteria will have been refined for identifying opportunities for DLR as a solution.

2024 ANNUAL REPORT – DYNAMIC LINE RATINGS

In 2025, the DLR Task Force continued to monitor the progress of the DLR Potential Study and coordinated a detailed review of initial results with the CGPP planners to inform next steps.

DLR Potential Study Planned Schedule

- In April 2025, the Dynamic Line Rating (DLR) Task Force launched the DLR Potential Study with NYSERDA and Siemens to evaluate the feasibility and benefits of DLR technologies for New York's transmission systems by 2030 and 2040. The study, initiated through an RFP and managed by NYSERDA, includes four core tasks:
    - Task 1 – Document Landscape for Dynamic Line Rating Systems for the Transmission System
    - Task 2 – Develop a Transmission Dynamic Line Rating Systems Potential Framework
    - Task 3 – Apply Framework to each Utilities' Transmission Systems
    - Task 4 – Final Written Documentation
- Siemens presented initial findings in June and delivered a draft report for Task 1 in late July. The DLRTF coordinated a detailed review with the CGPP planners and facilitated additional feedback to help inform and refine the study's next steps.
- The DLRTF will continue to monitor the progress and results of the potential study and provide support as needed.

2024 ANNUAL REPORT – T&D ENERGY STORAGE

The Energy Storage Subcommittee (ESSC) is a subgroup of the Advanced Technology Working Group (ATWG) tasked with monitoring activities related to energy storage and providing relevant analysis and recommendations.

Unified Planning Guidelines for Energy Storage Resources Supporting Electric T&D in New York

BACKGROUND

In 2023, the ESSC began working on the Unified Planning Guidelines. The original goals were to provide CGPP planners with a framework for modeling energy storage in power flow models, characterizing grid needs, and understanding the economic and cost assumptions to assess the suitability of energy storage as a potential T&D solution.

The ESSC completed developing the first version of the UPG in August 2024 and anticipates refreshing the document to incorporate changes in the energy storage and planning landscapes in New York.

CONTENTS

- Objectives and Introduction
- Methodology
  - Modeling Energy Storage
  - Grid Needs and ESR Suitability
  - Economic and Cost Assumptions
- Appendix

JU Study of Non-Market T&D Energy Storage Use Cases

REGULATORY PROCESS AND STATUS

In June 2024, the New York Public Service Commission (PSC) issued an order[1] that directed the JU to conduct a study of the non-market transmission and distribution (T&D) services that energy storage can provide.

On October 29, the JU filed a study that addresses the requirements set out in the order.

To date, the Commission has not yet issued an order regarding the study, and the JU are awaiting regulatory feedback.

CONTENTS

- T&D Energy Storage Applications
- Planning and Economic Considerations
- Operational and Future Considerations
- Project Approval Process and Cost Recovery

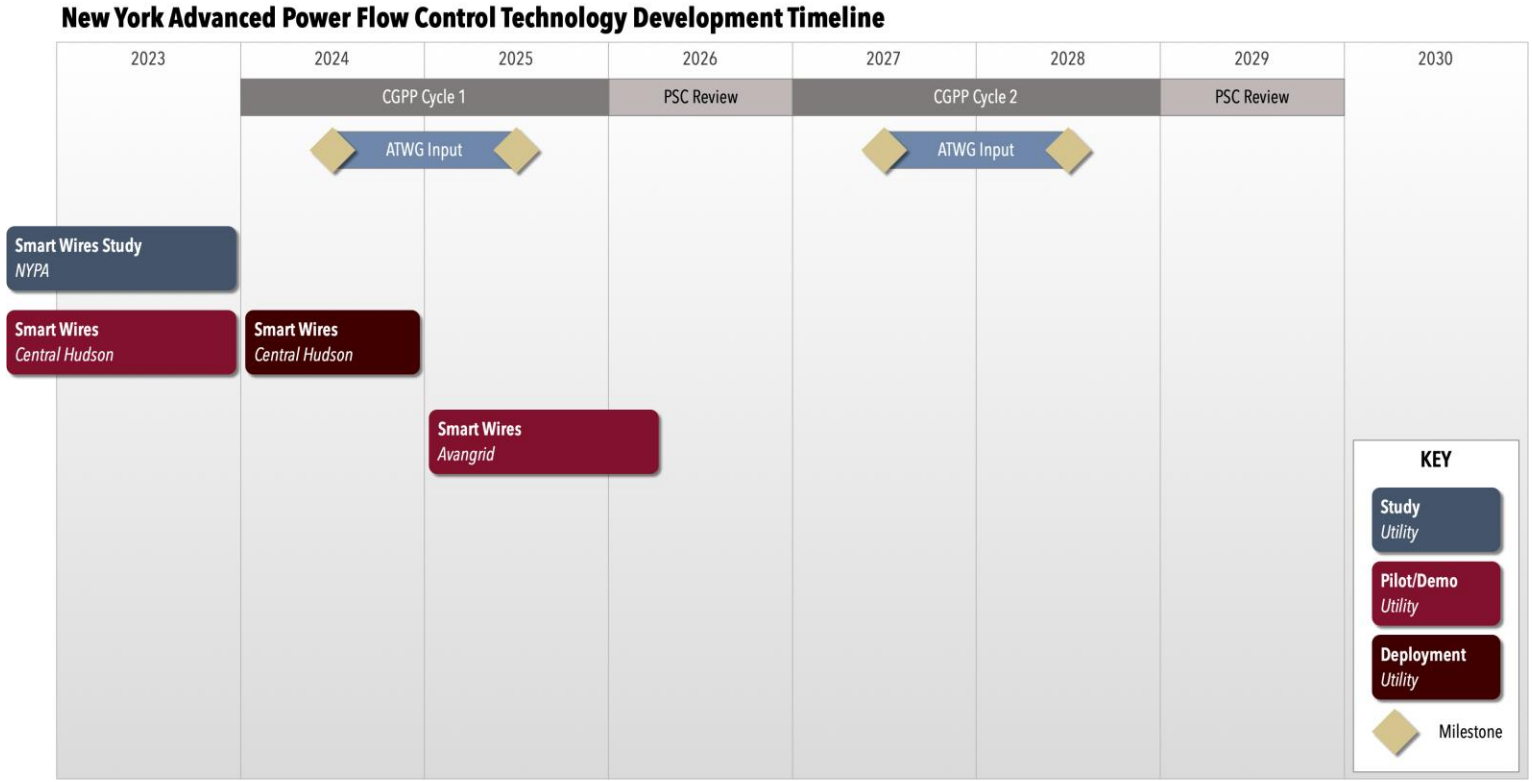
T&D Energy Storage Applications

- Flexible Transmission Capacity
- Flexible Distribution Area Capacity
- Distribution Resiliency and Reliability
- Bridge-to-Wires (BTW)
- Large-Scale Renewable Enablement
- DER Integration and Hosting Capacity on Distribution Network

[1] Case 18-E-0130, In the Matter of Energy Storage Deployment Program (Storage Proceeding), Order Establishing Updated Energy Storage Goal and Deployment Policy (issued June 20, 2024)

2024 ANNUAL REPORT – POWER FLOW CONTROL

Experience with modular Advanced PFC is increasing in New York, and the JU anticipate broader consideration of the advanced technology by CGPP Cycle 2.

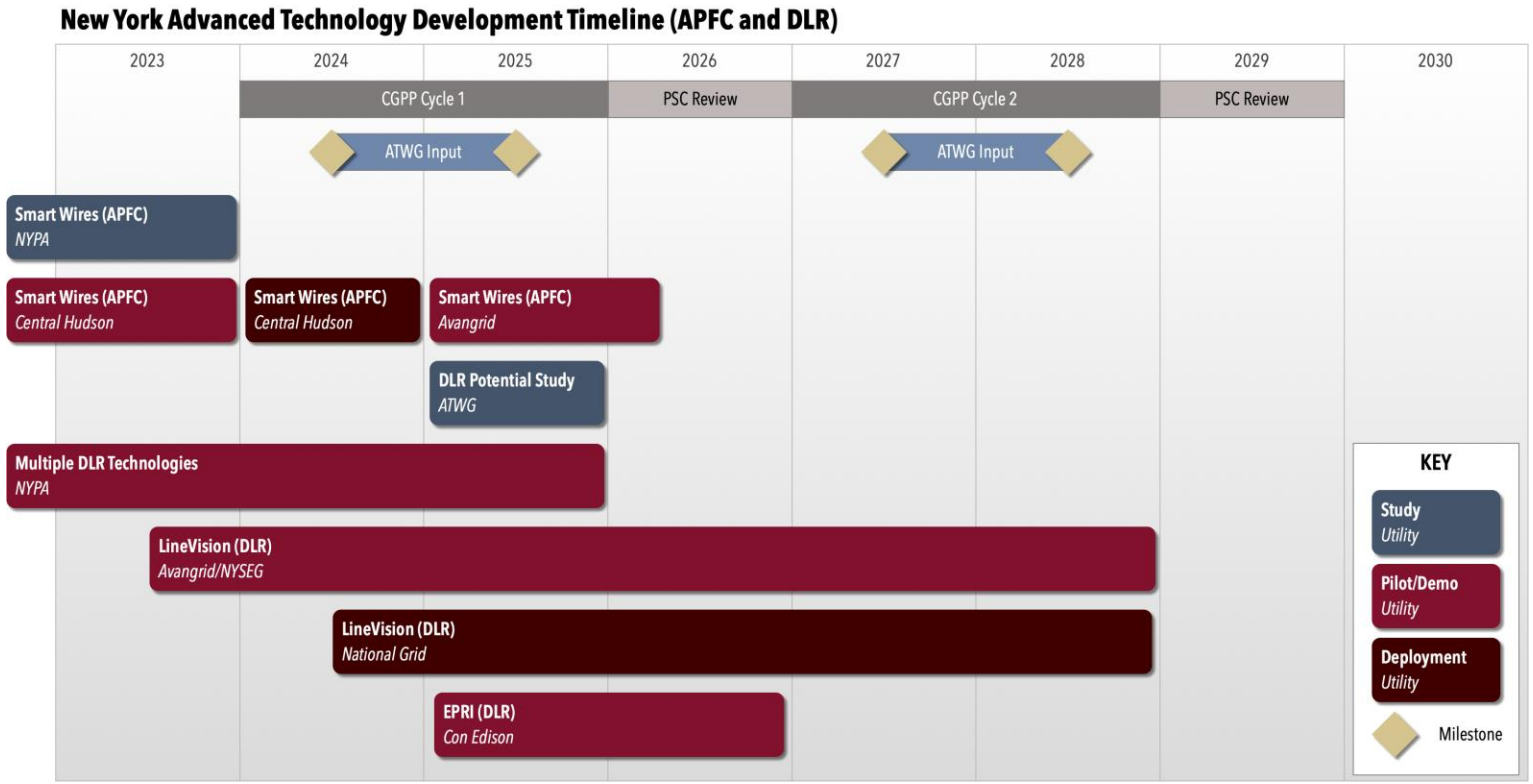


INSIGHTS

- Multiple utilities in New York have investigating APFC. Over the next few years, the JU will have a clearer picture of its suitability for unlocking additional transmission capacity to deliver clean energy.
- By CGPP Cycle 2, planning and economic evaluation criteria will have been refined for identifying opportunities for DLR as a solution.

2024 ANNUAL REPORT – UTILITY PROJECT OVERVIEW

The JU are conducting pilot and demonstration projects that will support broader application of advanced technology solution options.



INSIGHTS

- Multiple utilities in New York are investigating APFC and DLR technologies. Over the next few years, the JU will have a clearer picture of their suitability for unlocking additional transmission capacity to deliver clean energy.
- The ATWG is working with the CGPP team to evaluate advanced technology solutions to address various grid needs.
- By CGPP Cycle 2, planning and economic evaluation criteria will have been refined for comparing various solution options.

ATWG-CGPP COORDINATION

The JU subgroup of the ATWG discussed revisions to align the ATWG's activities more closely with the CGPP.

KEY THEMES FROM JANUARY 2024 ORDER

- ATWG can help find cost-effective solutions to transmission needs.
- ATWG should expand its focus beyond the initial three technologies (DLR, PFC, Storage) in a time frame that would inform the solutions available to utility planners engaged with the CGPP.
- The PSC is concerned that the ATWG's work be organized to support the next CGPP cycle, as well as future cycles.
- JU should work with Staff to support alignment between the two proceedings processes and regarding information requirements and guidance for technology proposers.

DESIRED OUTCOMES OF ATWG ACTIVITIES

1. Closer CGPP Alignment

Utility Planners performing CGPP analysis have clear, actionable guidance for evaluating the suitability and application of advanced technology solutions for addressing grid needs.

2. Streamlined Technology Assessment

The ATWG maintains an actionable roadmap for advanced grid technologies and the necessary steps to facilitate their application in addressing grid needs in New York.

3. Targeted Stakeholder Engagement

The ATWG facilitates an ongoing dialog between the JU and the technology development community in New York.

ATWG-CGPP COORDINATION

LEARNINGS

Better guidance from the planners, based on learnings from Cycle 1, can help prioritize technologies and scope projects that are most impactful and actionable for Cycle 2.

Annual calendar of ATWG activities can be better organized around each stage of the CGPP.

Future projects can help develop more robust screening criteria (for new and existing tech) but also demonstrate real-world operations and integration with utility systems.

CGPP Cycle 1
Stage 3 Development Process & Application of AT Screening Criteria

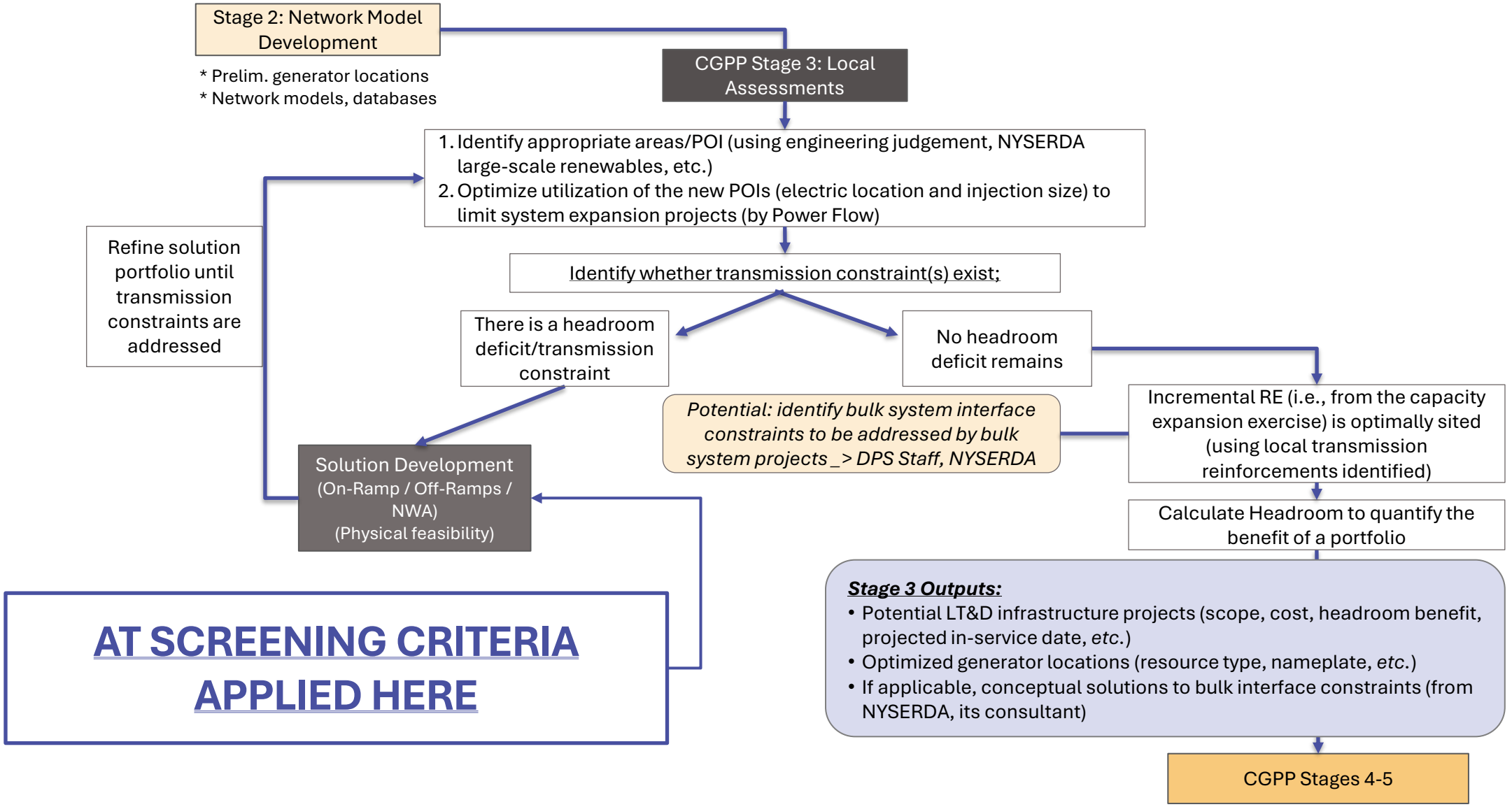
HARPER GAY, National Grid

CGPP STAGE 3 DEVELOPMENT PROCESS & APPLICATION OF SCREENING CRITERIA

This general framework provides information for planners conducting CGPP analysis for potential solutions to grid needs.

Information for CGPP Analysis	Dynamic Line Rating	T&D Energy Storage	Advanced Power Flow Control
Grid Needs and AT Suitability	• Transmission line overload caused by peak renewable energy output • Underground cable overload caused by peak demand	• Infrastructure overload or voltage violation caused by peak renewable energy overload • Infrastructure overload or voltage violation caused by peak demand	• Transmission congestion caused by peak renewable energy output or peak demand.
Primary Use Cases	Increase overhead transmission line capability to avoid overloading during periods of peak renewable energy output.	• Flexible Capacity • Large-Scale Renewable Enablement • Bridge-to-Wires	Shift power flow between parallel transmission paths to alleviate congestion and unlock additional capability.
Capacity Increase	• 10% to 25% of the existing line rating • Increases are applicable to normal and emergency ratings	100 MW to 400 MW for four hours	Up to 200 MW between two locations (e.g., substations)
Availability	70% to 90%+ based on case study reports	• Duration (i.e., stored energy) of the solution • Sufficient power must be available to charge the ESR when not in use	Need excess capacity over a parallel path with which to shift flow
Proposed Power Flow Modeling	New rating applied to line segment	Simplified generator model for the energy storage resource (ESR)	Modified impedance on a line segment
Economic and Cost Assumptions	Approximately $50,000 per mile of line	• $1,777 - $1,888 per kW (except Zone J)	$8 million to $20 million per project

CGPP STAGE 3 DEVELOPMENT PROCESS & APPLICATION OF SCREENING CRITERIA



2025 Call for Advanced Technology Concept Papers

MARCUS KIM, Concentric Energy Advisors

2025 CALL FOR ADVANCED TECHNOLOGY CONCEPT PAPERS

The ATWG is issuing a call for Concept Papers to expand the pipeline for advanced technologies that could support the CLCPA and CGPP.

Commission Order

On January 19, 2024, the Commission issued its Order directing the Advanced Transmission Technologies Working Group (ATWG) to broaden the range of technologies under review that would inform the solutions available to utility planners engaged with the Coordinated Grid Planning Process (CGPP).

Among other things, the ATWG was directed to conduct an open call for stakeholders to submit advanced technology Concept Papers on an annual basis.

Scope

This call is specifically targeted towards:

- Technologies with the potential to enhance transmission grid performance broadly.
- Technologies that can alleviate or address large-scale grid needs arising from substantial capacity additions.
- Technologies that can be paired with traditional grid solutions to flexibly and incrementally add system capacity.
- Technologies with a demonstrable deployment record and real operating data.
- Technologies for which a reasonable amount of cost data exists.

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.
- A description of how the technology is typically modeled in power system tools.

Submissions must be made electronically to ATWG@ceadvisors.com by November 25, 2025, at 5:00 p.m. ET.

Next Steps

MARK CATTRELL, Concentric Energy Advisors

NEXT STEPS

The ATWG will wrap up 2025 with the Call for Papers and a related webinar. In early 2026, the ATWG will file its 2025 Annual Report.

Call for Papers deadline: November 25, 2025

December webinar to provide update on initial assessment of concept papers received through solicitation (to be scheduled).

2025 Annual Report, to be filed on January 31, 2026.

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