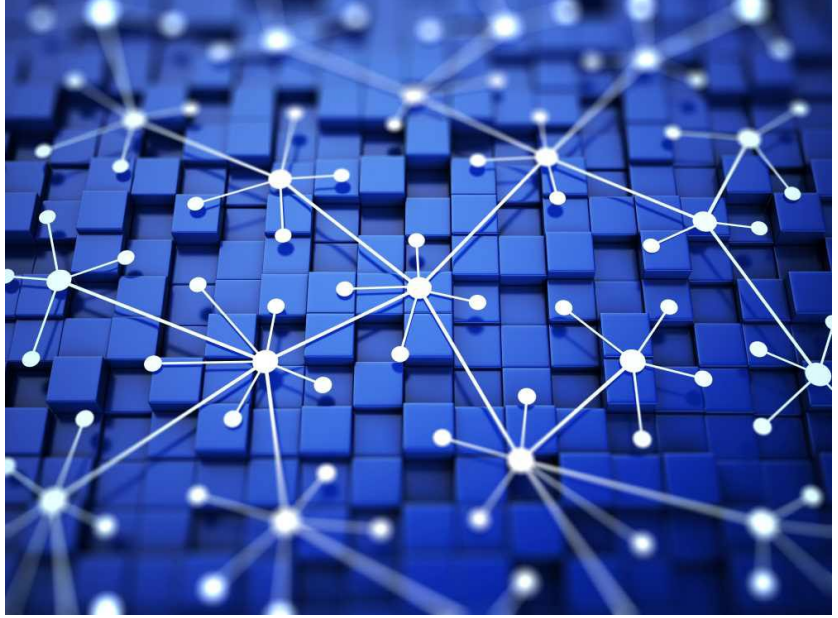


Advanced Technology Screening for CGPP Analysis - Summary

June 2, 2025

PREPARED FOR

EPPAC

DRAFT FOR DISCUSSION PURPOSES

CONCENTRIC ENERGY ADVISORS

© 2025 Concentric Energy Advisors, Inc. All Rights Reserved

INTRODUCTION

This document is intended to assist planners in considering advanced technologies as potential solutions to grid needs identified as part of the Coordinated Grid Planning Process (CGPP).

OBJECTIVES

The goal of the CGPP transmission and distribution (T&D) planning analysis is to evaluate the impact of clean energy resources that can achieve the objectives of the (Climate Leadership and Community Protection Act) CLCPA, characterize the associated grid needs, and identify potential cost-effective solutions that will ensure the reliability of the T&D system.

As part of the CGPP, planning engineers must develop solutions to address specific grid needs, which can be complex and time-intensive. This screening approach aims to reduce the scope of potential grid needs for which planners would evaluate advanced technology solutions.

The Advanced Technology Working Group (ATWG) focuses on accelerating the deployment of new and underutilized T&D technologies, developing standardized evaluation tools and techniques, and supporting the integration of advanced technology solutions within the CGPP.[1]

ADVANCED TECHNOLOGY SCREENING

This advanced technology screening approach is not meant to replace detailed planning analysis. Instead, it should complement it by identifying scenarios in which three types of advanced technologies could serve as viable alternatives to traditional infrastructure solutions.

This document looks at the three advanced technology areas specified by the Commission: dynamic line rating (DLR), energy storage in T&D applications, and advanced power flow control technologies (APFC).

As needs evolve and new capabilities emerge, additional technologies may be considered for evaluation in future iterations of this document.

This document should be considered a living document and will be updated from time to time based on new information that becomes available.

1. 20-E-0197, *2024 Annual Report*, Advanced Technology Working Group, January 31, 2025, p. 3.

© 2025 Concentric Energy Advisors, Inc. All Rights Reserved

GENERAL FRAMEWORK

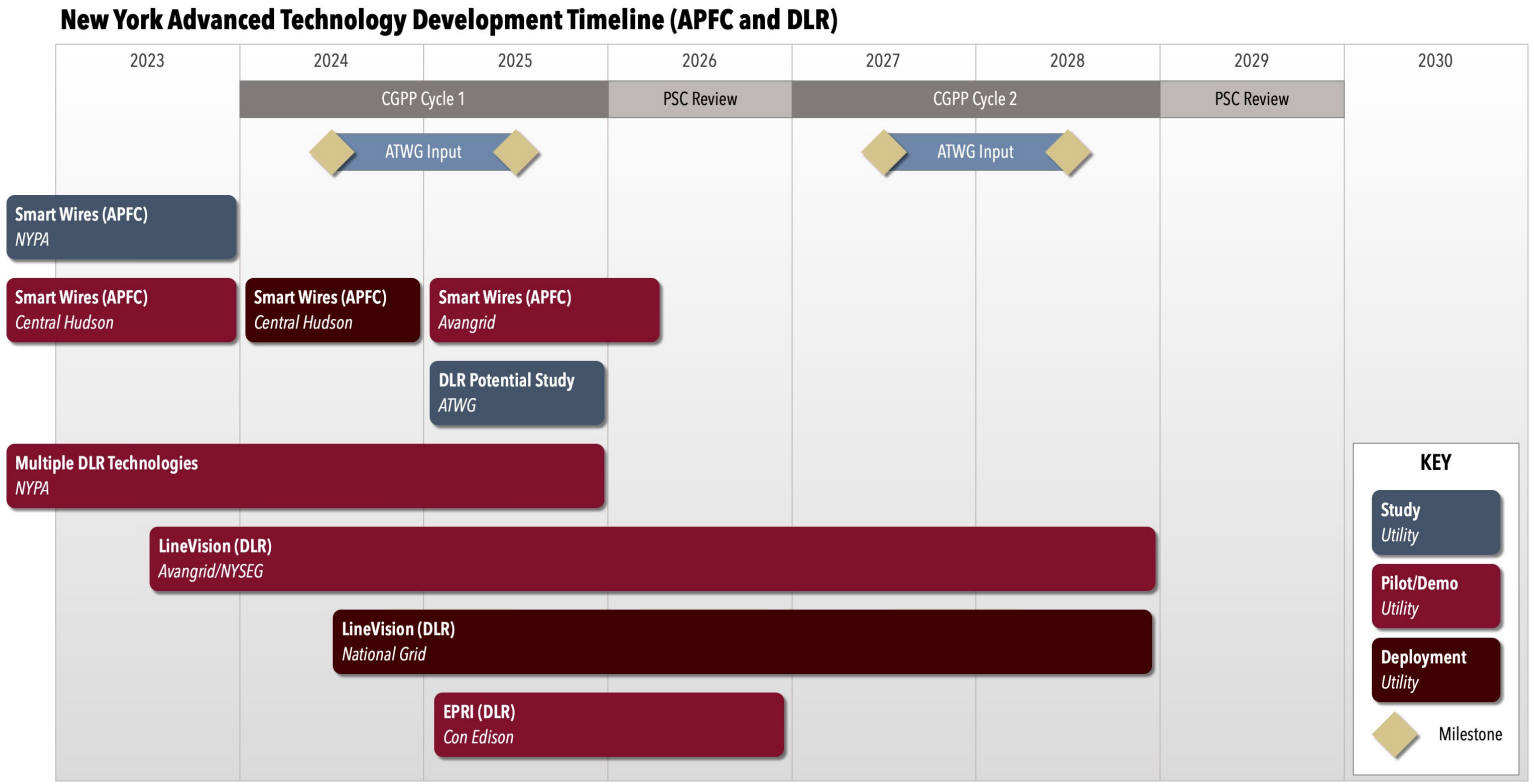
This framework provides information for planners conducting CGPP analysis for potential solutions to grid needs.

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

© 2025 Concentric Energy Advisors, Inc. All Rights Reserved

NEW YORK APFC AND DLR TECHNOLOGY DEVELOPMENT TIMELINE

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 its 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.

© 2025 Concentric Energy Advisors, Inc. All Rights Reserved

Contact

FORREST SMALL
Senior Vice President

fsmall@ceadvisors.com
603-475-4460

Marlborough, MA

MARCUS KIM
Consultant

mkim@ceadvisors.com

Washington, DC

© 2025 Concentric Energy Advisors, Inc. All Rights Reserved