

Congestion Assessment and Resource Integration Study (CARIS)

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CARIS Public Forum

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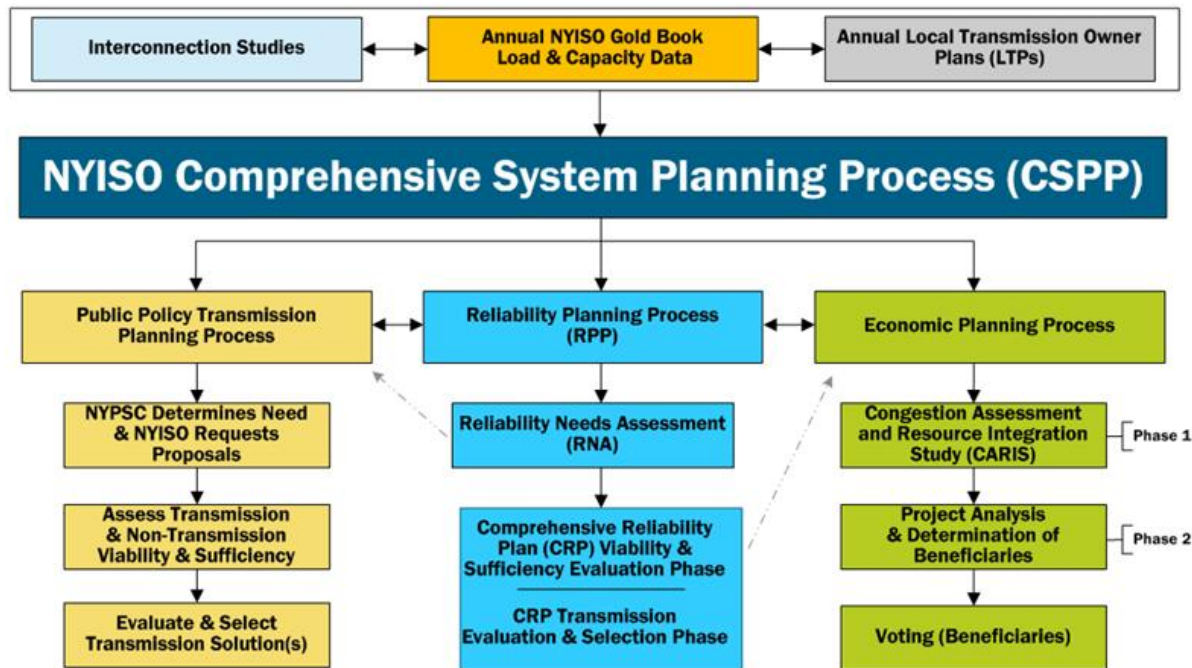
Agenda

- NYISO Planning
- CARIS Objectives
- CARIS Process
- 2017 CARIS Phase 1 Report
- Next Steps – Congestion Relief Solutions

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NYISO Planning



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NYISO Planning Activities

- Reliability Planning Studies (RNA/CRP)
- Economic Planning Studies (CARIS)
- Public Policy Transmission Planning Studies (PPTPP)
- Interregional Planning
- Interconnection Studies (Feasibility, System Reliability Impact and Class-Year Facilities studies)
- Transmission Expansion and Reinforcement Studies (System Impact Studies)

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What is CARIS?

- A process designed to evaluate transmission system efficiency in order to facilitate the development of cost-effective, economic transmission projects with cost-recovery through the NYISO's billing and settlement processes.
- One measure of “transmission system efficiency” is system congestion cost which is the cost of being unable to dispatch the lowest-priced generation available due to limitations on the transmission system

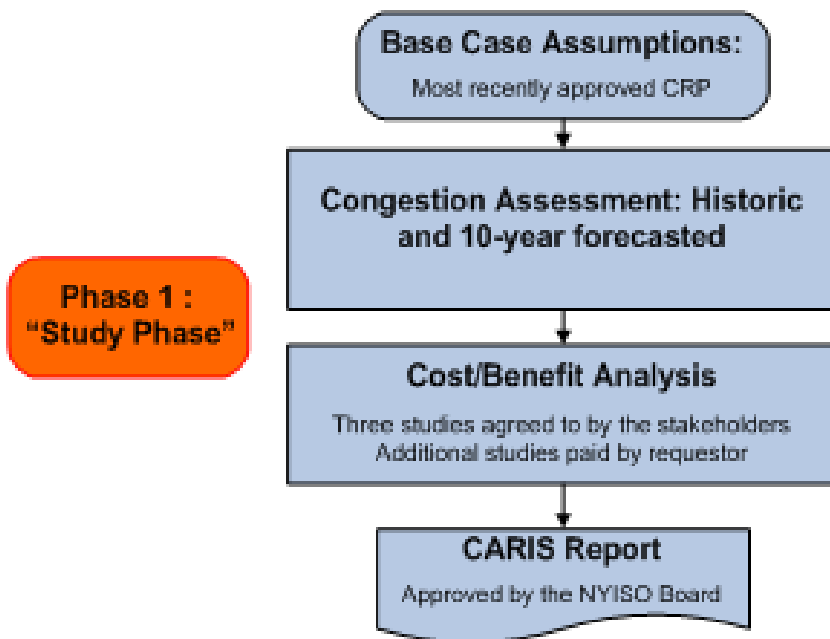
What does CARIS provide?

- Information to interested parties, *e.g.*, transmission developers, policymakers
 - On where constraints exist on the New York State bulk power system leading to congestion
 - On the potential benefits and costs to alleviating congestion through investments in transmission, generation, demand response or energy efficiency
- A means for Developers to propose and for benefitting entities to approve *specific* transmission projects to relieve congestion

Current CARIS Process Limitations

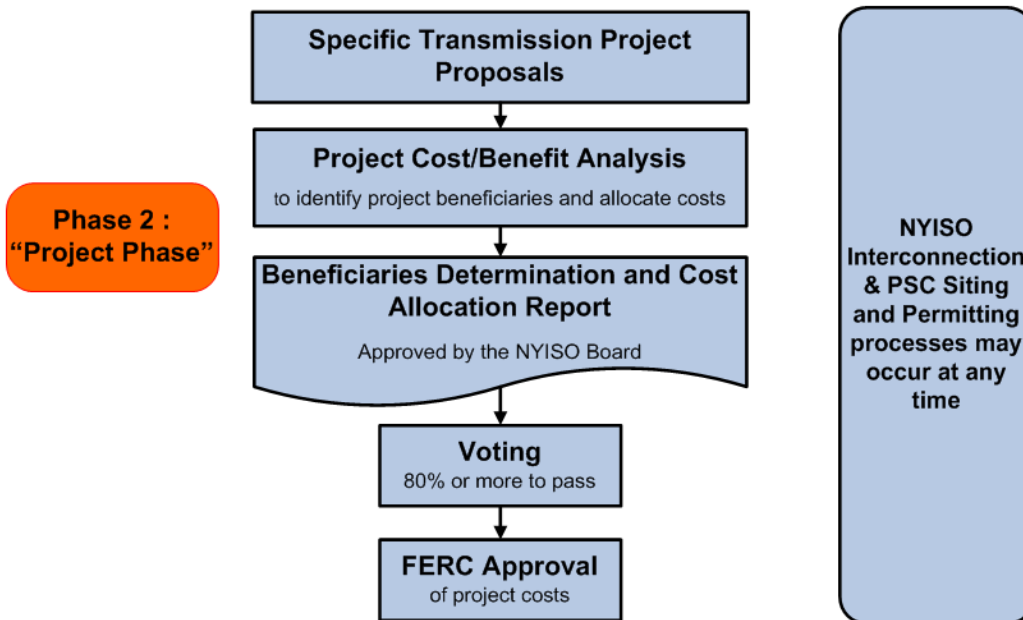
- Project benefits utilized in determining eligibility for regulated cost recovery are restricted to Production Cost Savings
- Other benefits, *e.g.*, reduced energy and capacity payments, reduced emission levels, lower transmission losses, are calculated and reported but not included as in the benefits/costs ratio for cost recovery.
- Other quantifiable benefits, *e.g.*, avoided transmission refurbishment costs, increased tax revenues and employment impacts, and non-quantifiable benefits, *e.g.*, enhanced system operability and flexibility, are not considered as well

CARIS Process Phase 1



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CARIS Process Phase 2



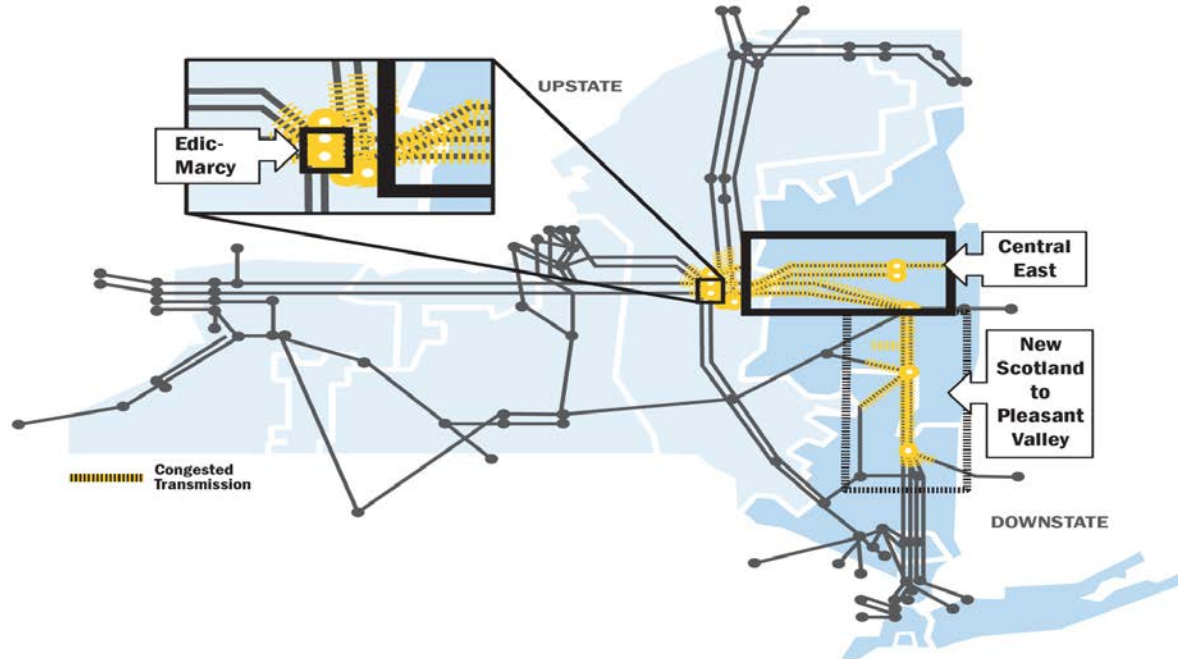
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CARIS Phase 1

- **Data provided:**
 - Historic and projected congestion
 - Key drivers of system congestion
 - Top congested elements or groupings of elements
 - Estimated cost-effectiveness of generic solutions (i.e., transmission generation, demand response, energy efficiency), based on production cost savings and generic solution costs
 - Other benefits of resolving top constraints
- **Top congested corridors identified based on an analysis of historic and projected congestion and projected potential for production cost savings**

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2017 CARIS Groupings



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Key Cases Studied

- **“Business as Usual” BAU Case**
 - Reflects only near-term updates known at the onset of the study
 - Indian Point, Fitzpatrick and Ginna in-service
 - CPV Valley (2018), Bayonne Expansion (2018) and Cricket Valley (2019) in-service
- **“System Resource Shift” Case**
 - Indian Point units retired (2020/2021)
 - All New York coal units retired (2020)
 - Resource mix and energy efficiency impacts consistent with Clean Energy Standard attainment by 2026
- **“System Resource Shift”/“Public Policy” Scenario**
 - SRS Assumptions
 - Western and AC Transmission Public Policy transmission projects in-service

Key Findings

- **“Business as Usual” (BAU) Case**
 - The results are consistent with prior CARIS studies
 - Solutions studied offered a measure of congestion relief and production cost savings
 - Transmission projects studied did not result in B/C ratios in excess of 1.0, based on generic cost estimates and production cost savings only.
- **“System Resource Shift” (SRS) Case**
 - Congestion across New York increases by \$450M relative to the BAU Case
 - Generic transmission lines built across Central NY produced higher production cost savings (by 61%) and higher Demand\$ Congestion savings (by 79%) than in BAU Case
 - Projected shift towards greater renewable resources materially enhances the value of new transmission
- **“System Resource Shift”/“Public Policy” Scenario**
 - Projects built to meet Western and AC Transmission Public Policy Needs will reduce congestion by \$284 across Central NY
 - Transmission built will mitigate congestion impacts associated with large-scale build-out of renewables upstate; enabling more lower-cost resources to be dispatched to meet New York loads

Next Steps

- **NYISO is engaging its stakeholders in identifying opportunities for improving the CARIS process in conjunction with its broader review of its overall planning processes**
- **NYISO is preparing its software databases for specific project evaluations and studies**
- **NYISO will then perform upon request:**
 - Additional CARIS Studies
 - Project-Specific CARIS Phase 2 studies for NYISO tariff-based cost recovery

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The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system



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