

*Economic Planning Process  
Manual – Congestion  
Assessment and Resource  
Integration Studies (CARIS)*

2016

DRAFT

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## Revision History

Version	Date	Revisions
2.1	//2016	
2.0	05/28/2014	<b>Global</b> <ul style="list-style-type: none"> <li>➤ Performed a reorganization of content</li> <li>➤ Implemented minor stylistic changes</li> <li>➤ Added additional language clarifying the CARIS process</li> </ul>
1.0	12/06/2012	<b>Initial Release</b>

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# 1. OVERVIEW

## 1.1 The Comprehensive System Planning Process

This Economic Planning Process Manual (Manual) describes the NYISO's economic planning process component of the Comprehensive System Planning Process (CSPP). The CSPP was approved by the Federal Energy Regulatory Commission (FERC) and its requirements are contained in Attachment Y of the NYISO's Open Access Transmission Tariff (OATT). One of the NYISO's responsibilities is to prepare for the impact of expected changes in supply and demand of power on the reliable operation of the New York transmission system over a ten year period. The analyses, evaluations and forecasts produced by the NYISO's system and resource planning activities assist Market Participants, regulators and policy makers as they plan for the future. One way the NYISO accomplishes this responsibility is through the reliability planning process component of the CSPP.

The CSPP is comprised of four components:

1. Local Transmission Planning Process (LTPP),
2. Reliability Planning Process (RPP),
3. Congestion Assessment and Resource Integration Study (CARIS), and
4. Public Policy Transmission Planning Process

The first component in the CSPP cycle is the LTPP. Under this process, the local Transmission Owners (TOs) perform transmission studies for their transmission areas according to all applicable criteria. This process produces the Local Transmission Owner Plan (LTP), which feeds into the NYISO's determination of system needs through the CSPP. This manual doesn't get into the details of the TOs processes for developing their LTPs, but rather discusses the communication interface with the NYISO process.

The second component in the CSPP cycle is the RPP, which requirements are described in this Manual and Attachment Y of the OATT. Under this biennial process, the reliability of the New York bulk power system is assessed, Reliability Needs if any are identified, solutions to identified needs are proposed and evaluated for their viability and sufficiency to satisfy the identified needs, and the more efficient or cost-effective transmission solution to the identified needs if any is selected by the NYISO. This process was originally developed and implemented in conjunction with stakeholders, was approved by FERC in December 2004 and was revised in 2014 to conform to FERC Order No. 1000.

The RPP consists of two studies:

1. The Reliability Needs Assessment (RNA). The NYISO performs a biennial study in which it evaluates the resource adequacy and transmission system adequacy and security of the New York bulk power system over a ten year Study Period. Through this evaluation, the NYISO identifies Reliability Needs in accordance with applicable Reliability Criteria. This report is reviewed by NYISO stakeholders and approved by the Board of Directors.
2. The Comprehensive Reliability Plan (CRP). After the RNA is complete, the NYISO requests the submission of market-based solutions to satisfy the Reliability

Need. The NYISO also identifies a Responsible TO and requests that the TO submit a regulated backstop solution and that any interested entities submit alternative regulated solutions to address the identified Reliability Needs. The NYISO evaluates the viability and sufficiency of the proposed solutions to satisfy the identified Reliability Needs and evaluates and selects the more efficient or cost-effective transmission solution to the identified need. In the event that market-based solutions do not materialize to meet a Reliability Need in a timely manner, the NYISO triggers regulated solution(s) to satisfy the need. The NYISO develops the CRP for the ten year Study Period that sets forth its findings regarding the proposed solutions. The CRP is reviewed by NYISO stakeholders and approved by the Board of Directors.

The third component of the CSPP is CARIS, the economic planning process based on the CRP. CARIS Phase 1 examines congestion on the New York bulk power system, and the costs and benefits of generic alternatives to alleviate that congestion. During CARIS Phase 2, the NYISO evaluates specific transmission project proposals for regulated cost recovery.

The fourth component of the CSPP is the Public Policy Transmission Planning Process. Under this process interested entities propose, and the New York State Public Service Commission (NYPSC) and New York State Department of Public Service (NYDPS) identify, transmission needs driven by Public Policy Requirements. The NYISO then requests that interested entities submit proposed solutions to the identified Public Policy Transmission Need. The NYISO evaluates the viability and sufficiency of the proposed solutions to satisfy the identified Public Policy Transmission Need. The NYISO then evaluates and may select the more efficient or cost-effective transmission solution to the identified need. The NYISO develops the Public Policy Transmission Planning Report that sets forth its findings regarding the proposed solutions. This report is reviewed by NYISO stakeholders and approved by the Board of Directors.

In concert with these four components, interregional planning is conducted with NYISO's neighboring control areas in the United States and Canada under the Northeastern ISO/RTO Planning Coordination Protocol. The NYISO participates in interregional planning and may consider Interregional Transmission Projects in its regional planning processes.

The NYISO CSPP is illustrated in [Figure 1-1](#).

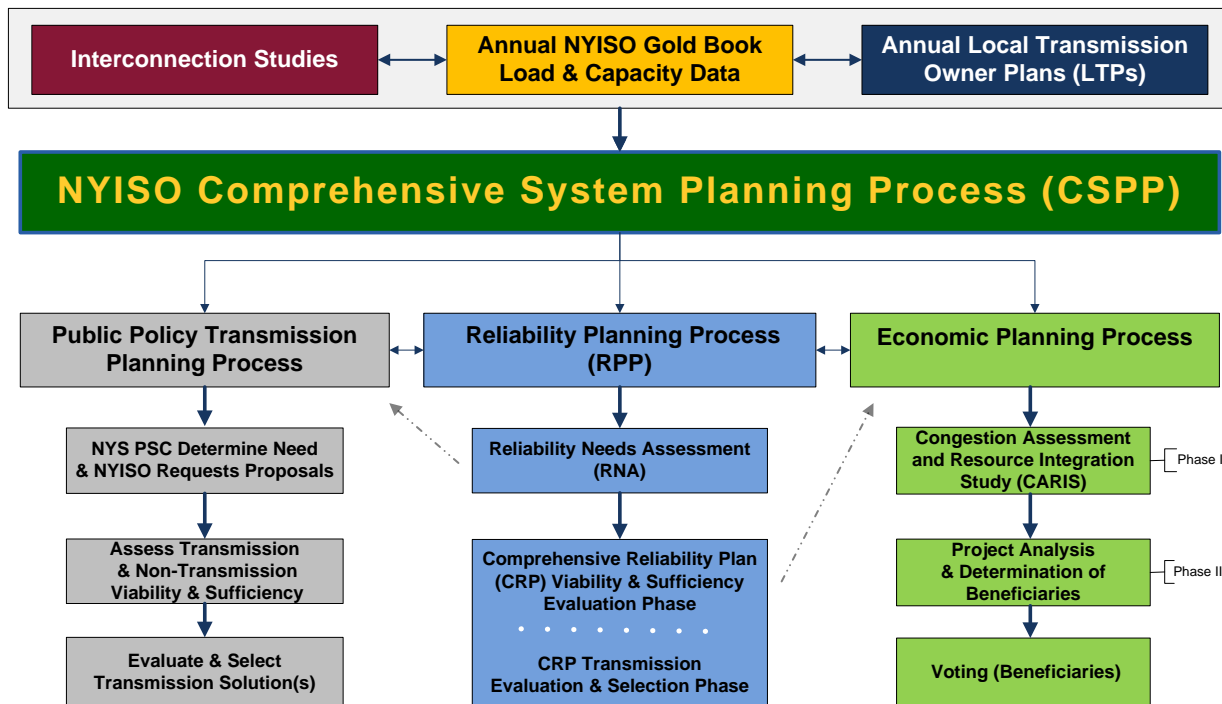


Figure 1-1 NYISO Comprehensive System Planning Process

Definitions

Unless otherwise defined in this document, capitalized terms used herein shall have the meanings ascribed to them in the NYISO OATT.

## 1.2 The Economic Planning Process (EPP)

### 1.2.1 Overview of the EPP

The NYISO’s economic planning process was first developed in 2007 in response to FERC Order No. 890 as a complement to the NYISO’s established reliability planning process. The economic planning process is consistent with the core principles identified in Order No. 890, specifically, stakeholder participation, transparency and clear cost allocation rules. The economic planning process is also consistent with the NYISO’s market-based philosophy. The process encourages stakeholders’ voluntary participation and the development of market-based solutions to reduce congestion, as the process does not mandate the construction or funding of economic-related transmission projects. The NYISO’s role is to serve as a neutral provider of information regarding potential remedies to congestion in response to Market Participants’ requests. Market Participants can use this information to determine whether they want to come forward with an economic proposal. In the event that a New York Transmission Owner or developer comes forward with an economic transmission proposal, the process provides a methodology under which the NYISO would determine the project’s initial eligibility for regulated funding under its

OATT, and for the identification of beneficiaries who would be allocated the costs of the project.

### **1.2.2 CARIS Phase 1**

The EPP requires that the NYISO biennially perform a Congestion Assessment and Resource Integration Study (“CARIS”) in alignment with the CSPP schedule. The NYISO actively engages with the ESPWG in vetting the CARIS assumptions, methodologies and results. The NYISO’s stakeholder committees must review the CARIS before it is forwarded to the NYISO’s Board of Directors for approval.

The CARIS uses the same 10-year planning horizon as the most recently conducted RNA and assumes a reliable system throughout the 10-year study period. The basecase system for the CARIS will first incorporate sufficient and viable market-based solutions and then, if necessary, reliability-backstop solutions to meet identified Reliability Needs. In responding to identified congestion, the NYISO will evaluate all resource types, including transmission, generation, energy efficiency and demand response on a comparable basis. As part of the CARIS Phase 1, the NYISO develops estimates of historic and projected system congestion, the impact on projected congestion and other metrics of various scenarios (e.g., higher fuel costs) and conducts an initial cost-benefit analysis of each potential solution identified to address system congestion. Based on these analyses, the CARIS provides stakeholders with a wide range of information to assist them in identifying and developing actual solutions to address congestion.

### **1.2.3 CARIS Phase 2**

If in response to the results of the CARIS Phase 1, a developer proposes an actual project to address specific congestion identified in the CARIS, the NYISO will process that project proposal in accordance with the beneficiary-based cost allocation principles and methodology described below.

The proposed cost allocation mechanism is based on a “beneficiaries pay” approach. Beneficiaries are those entities that economically benefit from the project, and the cost allocation among them will be based upon their relative economic benefit. While the initial eligibility for regulated cost recovery will be determined on the basis of a NYCA-wide production cost benefit, the beneficiary determination will be based upon the Load Serving Entities’ relative Locational Based marginal price (“LBMP”) load savings. Both production cost benefits and LBMP load savings will be measured over the first ten years of the proposed project’s life. The NYISO analysis of beneficiaries will provide information, where appropriate, regarding future uncertainties (e.g., load forecasts, fuel prices, environmental regulation) and potential benefits (e.g., system operation, environmental effects, and renewable integration).

The proposed cost allocation mechanism will apply only if a super majority of a project’s beneficiaries agree that an economic project should proceed. The super-majority required to proceed equals 80% of the beneficiaries associated with the project present at the time of the vote. If the proposed project meets the required vote in favor of implementing the

project, and the project is implemented, all designated beneficiaries, including those not voting to implement the project will pay their allocated share of the cost of the project.

#### **1.2.4 Other CARIS Studies**

The economic planning process also provides for individual Market Participants to request that the NYISO perform congestion and resource integration studies (with the costs to be paid for by the requesting party).

#### **1.2.5 Study Replication**

The economic planning process also provides for individual Market Participants or other interested parties to request that the NYISO replicate the CARIS Phase 1 or CARIS Phase 2 studies (with the study costs to be paid for by the requesting party).

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## 2. CARIS PHASE 1

In CARIS Phase 1, the NYISO, in collaboration with its stakeholders and other interested parties, develops a ten-year projection of congestion and together with historic congestion identifies, ranks, and groups the most congested elements on the New York bulk power system. For the top three congested elements or groupings, studies are performed which include: (a) the development of three types of generic solutions to mitigate the identified congestion; (b) a benefit/cost assessment of each solution based on projected NYCA-wide production cost savings and estimated project costs; and (c) presentation of additional metrics for informational purposes. The four types of generic solutions are transmission, generation, energy efficiency and demand response. Scenario analyses are also performed to help identify factors that increase, decrease or produce congestion in the CARIS base case.

Historic congestion values are calculated using the Congestion Reporting for Off-Line SCUC (“CROS”) tool. With CROS, the NYISO can estimate for historic periods the demand congestion in the NYISO day-ahead market caused by system transmission constraints by re-running SCUC without the constraints. Projected congestion, production cost and other metrics are developed utilizing GE-MAPS, an industry-standard, production cost simulation tool that models a four-pool system, NYISO, PJM, IESO and ISO-NE.

### 2.1 Base Case Development

The first step in the EPP is the development of the Base Case for the GE-MAPS production cost model. This will entail the validation of the model utilizing historic actual data and the development of model inputs such as fuel and emission forecasts for the ten-year study period.

#### 2.1.1 Inclusion of Market-Based Solutions and Regulated Backstop Solutions

The inclusion of market-based solutions (MBS) and regulated backstop solutions (RBS) in CARIS base case, and the scaling back of MBS is governed by Attachment Y [http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf) Section 31.3.1.3.2

##### **Possible Outcomes**

There are four possible outcomes that may result from the CRPP process:

- More than sufficient MBS to meet the reliability needs
- Sufficient MBS to meet the needs
- Insufficient MBS to meet the needs
- RNA/CRP finds no reliability needs through the 10-year study period

**Methodology:**

The intent of this procedure is to produce a CARIS base case that is unbiased by resource type or in the selection or location of particular resources. The NYISO will implement this procedure for each CARIS cycle, in collaboration with stakeholders through the ESPWG.

**Base Assumptions:**

- In all cases, the base case resource additions (including updated TO Plans, if any) included in the current CRP shall be included in the CARIS base case—unless NYISO determines, based upon updated information, that such resource is no longer viable.
- All new projects that meet the base case inclusion rules in Section 3.1 of the Reliability Planning Process Manual at the time of finalizing the CARIS base case, shall be so included.
- Any regulated solution that has been selected and triggered in accordance with the NYISO’s Tariff shall be included in the CARIS base case.
- A gap solution that has previously been triggered shall be considered for inclusion in the CARIS base case consistent with the type and duration of that solution.
- If any such resource that was previously included in the CRP is determined by the NYISO to be no longer viable, the NYISO shall re-analyze the viable MBS solutions to determine whether they remain sufficient to meet the statewide LOLE of 0.1 throughout the study period
- The Statewide and LCR requirements shall be held constant over the ten-year Study Period
- Resources modeled in the CARIS base case are not evaluated as potential economic solutions
- Resources selected for inclusion in the CARIS base case under these assumptions shall not change during subsequent scaling of resources
  - Scenarios may be developed to include a resource mix that differs from the base case, but still meets applicable reliability criteria

**More Than Sufficient MBS**

- All viable MBS resources from the current CRP shall be considered for inclusion in the CARIS base case—unless the NYISO determines, based upon updated information, that such resource is no longer viable
- MBS resources shall be “scaled back” to a level which is the minimum to meet the Reliability Need (i.e. – to achieve a statewide LOLE of 0.1) by the following methodology:
  - Sort all MBS by size—from largest to smallest—regardless of resource type
  - Sequentially test each MBS, one at a time for potential removal, starting from the largest and ending with the smallest. Remove from the base case if:
    - There is a surplus in the actual locational reserve and removal would not result in the locational reserve falling below the LCR

- If the starting point is below a LCR, resources will not be added to meet that LCR. However, resources will not be removed that cause the locational reserve to fall to even lower levels.
- Statewide LOLE requirement is still met
- Any minimum requirements for a specific interconnection point for resources identified in the CRP to maintain transmission security requirements is met
- If either the Statewide LOLE or the LCR requirement is not met with the removal of a specific unit, then that unit is retained in the base case and the removal of the next unit is tested
- If both the Statewide LOLE and the LCR requirements are met with the removal of a unit, that unit is removed from the base case and subsequent units will be tested sequentially in the same manner
- The initial determination will be made for the horizon year (e.g. – year 10) of the analysis
- Considering each project’s in-service date, verify each year of the study period to assure that both the Statewide LOLE and the LCR reliability criteria will be met (subject to the caveat that resources will not be added to achieve an LCR that is not met at the starting point).
  - If more resources are needed, add back starting with the smallest resource removed and increment to the next largest until the above requirements are met
- Determine the minimum amount of MBS capacity needed to meet both the LCR and the statewide LOLE requirements

**Sufficient MBS**

- In the case that there are sufficient MBS to just meet the statewide LOLE of 0.1, all of the MBS contained in the current CRP will be included in the CARIS base case
- This situation will be determined if the removal of any single MBS will cause the statewide LOLE to exceed 0.1

**MBS & Regulated Solutions Required**

- In this situation, the combination of MBS and regulated solutions (whether or not yet triggered) designated in the current CRP as necessary for a reliable system over the 10-year planning horizon shall be included in the CARIS base case.

**No Reliability Needs**

- If the current RNA finds no reliability needs throughout the 10-year study period, the CARIS base case shall include all resources included in the current RNA base case— unless the NYISO determines, based upon updated information, that such resource is no longer viable.

### **2.1.2 Post-CRP Reliability Issues**

Given that the CARIS requires a reliable system to be in place through the study period, there may be bulk or local reliability needs that are identified in the CARIS process that were not identified in the RNA process, for example, due to updated load forecasts or newly-submitted retirement or mothball notices.

In these circumstances the NYISO will evaluate and review with the ESPWG the appropriate resource or resources to be included in the model to maintain reliability. This may entail the retention in the model of units which have submitted retirement or mothball notices, as well as the addition of generic units, transmission, and demand resources.

### **2.1.3 Categorical Parameter Updates**

The NYISO will update the CARIS production model database to reflect the most currently available data, including, but not limited to:

- The NYISO will update a number of inputs based on the most recent NYISO Load and Capacity Data report for the New York Control Area: peak load forecast, energy forecast, generating units (accounting for additions and retirements), and generating unit capacities. The NYISO will also develop and review with ESPWG updated fuel and emissions price forecasts for both the NYCA and the neighboring control areas (i.e., PJM, IESO and ISO-NE) as appropriate.
- The NYISO will also review the most recent data publicly available to update peak load and energy forecasts for PJM , IESO and ISO-NE. The NYISO will similarly update its models of its neighbors' systems to capture generator additions and retirements, and transmission system changes.

The NYISO will review its system model assumptions to verify that it is best capturing actual system operations to the extent feasible. Specific changes in modeling assumptions will be reviewed and discussed with the ESPWG.

Each of the key assumptions will be captured in the Assumptions Matrix (see Appendix A). The Assumptions Matrix will be reviewed and discussed with the ESPWG and modified as necessary to reflect any necessary changes or clarifications. The database will be locked down following the public posting of the NYISO Load and Capacity Data report for the current year.

### **2.1.4 Benchmarking**

In order to assess the performance of the production cost model, the NYISO will test the model on one or more historic years utilizing actual data to the extent feasible. The results of this benchmarking exercise will be reviewed and discussed with ESPWG including the rationale for any deviations between the modeled outputs and the historic actual. The benchmarking metrics will include demand congestion, zonal generation, inter-control flows, and LBMPs.

One key aspect of the benchmarking exercise is the tuning of the hurdle rates which are “cost adders” that capture economic and non-economic factors influencing inter-control transactions and flows. There are both commitment and dispatch hurdle rates for each of

the interfaces modeled in the production cost simulation. Through the benchmarking process, starting with historical market transaction rates, the hurdle rates are iteratively adjusted as feasible in order to best align the modeled flows with the historical actual, real-time flows.

## 2.2 Scenario Development<sup>1</sup>

The NYISO will seek input from ESPWG on potential scenarios and develop a draft list of scenarios for further consideration by ESPWG. The list will be reviewed with ESPWG and finalized based on comments from ESPWG. The final list of scenarios should generally not exceed ten and will be modified at the NYISO's discretion subject to schedule and resource considerations.

Scenarios could include: high / low load forecasts; high / low fuel forecasts; high / low emission cost forecasts; changes in resource mixes due to generator retirements and regulatory mandates; and alternative resource mixes to meet reliability needs. The NYISO will modify the Base Case data and perform production cost analyses for each of the identified scenarios. It will report back to ESPWG with the results of the analysis, specifically the projected production cost and demand congestion, and be prepared to provide the rationale for the direction and magnitude of differences between the Base Case and scenario results.

## 2.3 Selection of CARIS Studies

The NYISO, in conjunction with ESPWG, will select three congestion and resource integration studies to comprise each CARIS. The study selection criteria are governed by Attachment Y

[http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf)

Section 31.3.1.2.2.

NYISO shall assess and recommend groupings to ESPWG based on the individual rankings and proximity of congested elements. Selection of the three CARIS studies is a two-step process in which the top ranked constraints are identified and utilized for further assessment in order to identify potential for grouping of constraints. The resultant grouping of elements for each of the top ranked constraints is utilized to determine the three studies.

Step 1 of the process utilizes the historic and projected demand congestion value for each of the congested elements. The demand congestion value is calculated as the congestion component of the LBMP paid by NYCA load (sum of the total zonal loads). It is defined as the shadow price of each constrained element multiplied by the load affected.

In Step 1, the top three congested elements for the fifteen-year period (both historic (5 years) and projected (10 years)) are ranked in descending order based on the calculated present value of demand congestion for further assessment. (The discount rate to be used for the present value analysis shall be the current weighted average cost of capital for the NY Transmission Owners.) The top congested elements are then iteratively relieved independently by relaxing their limits. This is to determine if any of the congested elements

<sup>1</sup> Cite Tariff section addressing scenarios. (31.3.1.5)

need to be grouped with other elements, depending on whether new elements appear as limiting with significant congestion when a primary element is relieved.

Step 2 of the process utilizes the change in the production cost value, or production cost savings, that is attributable to the constraint or group of constraints being relieved. NYCA production cost is the total generation cost of producing power to serve NYCA load. The total cost includes the following components:

1. Fuel cost (fuel consumption mmBtu multiplied by fuel cost \$/mmBtu);
2. Variable O&M cost (VOM adder \$/MWh);
3. Emission cost (emission allowance price multiplied by total allowance);
4. Start-up Costs (number of starts multiplied by start-up cost); and
5. NYCA Imports and Exports evaluated at the solution case proxy bus LBMP values.

In Step 2, the assessed element groupings are then ranked based upon the highest change in production cost as shown with the top 3 groupings selected to be studied.

Note that, if future system changes (e.g., generation, transmission, energy efficiency or demand side additions) produce a significant declining trend in congestion over an identified congested element in later years of the study period, such element shall be excluded from the rankings.

The NYISO shall perform these computations for each CARIS cycle, and review them with ESPWG.

## 2.4 Potential Generic Solutions

The next step in the CARIS Phase 1 process is to identify the specific solutions that will be studied for each of the three congested transmission elements. These solutions are then integrated into the production cost models, and the models are re-run.

The procedures for developing potential generic solutions are governed by Attachment Y [http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf) Sections 31.3.1.3.3 and 31.3.1.4

### 2.4.1 Determining Potential Solutions

During each cycle, NYISO will develop with ESPWG specific project criteria for each resource type (generation, transmission, and demand response, and energy efficiency) including block size and construction assumptions. Following the identification of the three studies, each resource type shall be applied in year one of the planning horizon, in sufficient quantities of generic block sizes associated with each resource type and specific locations to alleviate a substantial and comparable portion of the identified congestion over the planning horizon.

One potential generic solution will be determined by NYISO for each resource type (generation, transmission, and demand response, and energy efficiency) for each of the three congestion studies. The NYISO will collaborate with the ESPWG to identify the most appropriate sizing of each solution to ensure that the solutions are evaluated on a comparable basis.

The NYISO will determine the transmission solutions for each of the studies based on its engineering judgment and in consultation with the appropriate transmission owners. The specific generation solutions will be developed based on relevant publicly available data such as engineering and cost data developed as part of the NYISO ICAP Demand Curve Reset process. These studies will inform the selection of the generic unit whose specific unit characteristics will be modeled in the production cost simulations. To determine the appropriate sizing or quantity of generic units to be sited, the NYISO will report to the ESPWG on the impact on demand congestion reduction, production cost savings and MWs (either the unit size or increase in transfer limitations across the constraint) for various unit sizes. These comparisons will inform the decision on the sizing of the generator solutions to ensure comparability with the transmission solution.

The demand response and energy efficiency solutions will be sized in total equivalent to the increase in transfer limitations for the transmission solution. Demand response and energy efficiency will be assigned on a zonal basis in block sizes of no greater than 200 MW of peak load reduction. In order to maintain reasonableness, the quantity of MWs of demand response and energy efficiency will be limited to the lesser of 200 MWs or 5% of the zonal peak load. The DR and EE solutions will be assigned first to the zone immediately downstream of the congested element. To the extent that the total MWs for the solution exceeds the size % limitation, the residual MWs will be assigned to zones further downstream. The energy efficiency solution will be reflected with a reduced zonal load forecast based on the peak MWs reduced and the zonal load shape; the demand response solution will be reflected with a reduced zonal load forecast for the 100 peak zonal hours.

Based on these analyses, the NYISO will then recommend to the ESPWG the MW block size of generation, transmission, and demand response, and energy efficiency capacity needed for each of the three congestion studies.

## **2.4.2 Cost Data for Potential Solutions**

The NYISO will provide recommended order of magnitude costs for each resource type. The costs will be developed for relevant geographic locations during each CARIS cycle. The order of magnitude costs will be provided to the ESPWG for their review and acceptance during each CARIS cycle as part of the Assumption Matrix approval process. The NYISO will utilize typical MW block size generic solutions and a standard set of assumptions in developing the costs for each resource type. The cost matrix will be developed during each CARIS cycle as part of the Assumptions Matrix.

If upon a cursory review of the location for the potential solution identifies unusual complexities, a contingency factor will be applied to the costs included in the matrix. These complexities may include but are not limited to right of way restrictions, terrain and/or permitting difficulties, etc. Field inspections will not be completed as part of the cursory review.

### ***Potential Solutions Assumptions***

The assumptions used to determine the order of magnitude costs included in the cost matrix will be stated as part of the Assumptions Matrix. These assumptions will address the following items:

#### Generation Resource

1. type of plant
2. length, type, voltage and ampacity of generator lead
3. step-up transformer (s)
4. substation interconnection
5. length of gas line
6. rights of way
7. permitting
8. system upgrade facilities
9. order of magnitude cost estimate.

#### Transmission Resource

1. type of construction (i.e. overhead or underground)
2. voltage and ampacity capability
3. substation interconnection
4. rights of way
5. permitting
6. system upgrade facilities
7. order of magnitude cost estimate.

#### Demand Response

1. order of magnitude cost estimate
2. zonal locations

#### Energy Efficiency

1. order of magnitude cost estimate
2. zonal locations

## 2.5 Benefit Metrics for CARIS Phase 1 Studies

The Benefit Metrics provide stakeholders key information on the impact of the generic solutions on the various outputs of the production cost model. These metrics can be utilized by stakeholders in determining the overall value of the project across multiple dimensions (e.g., load payments, supplier payments, environmental).

The NYISO Tariff does define the system production cost as the primary metric in the CARIS Phase 1 process, i.e., the metric utilized in determining the benefit-cost ratios for each of the generic solutions. There are additional metrics which are calculated and presented for stakeholder information. These metrics, while they are not utilized in the benefit-cost ratio, do provide stakeholders with a wider view of the benefits attributable to the generic projects under study. Attachment Y of the OATT provides a detailed discussion



of each of the CARIS metrics.

[http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf)

Section 31.3.1.3.5.

## 2.6 CARIS Phase 1 Report

The CARIS Phase 1 Report informs NYISO stakeholders, including its regulators and Market Participants as well as prospective project developers, on the opportunities for mitigating system congestion through the implementation of generic solutions (i.e., generation, transmission, energy efficiency and demand response). In doing so the Report also provides potential transmission developers information upon which to decide whether to pursue cost recovery for a regulated, economic transmission project under the NYISO's Tariff.

It provides for stakeholders a comprehensive record of the CARIS process and outcomes, describing modeling assumptions, the historic and projected system congestion, the identified constrained transmission elements to be studied, proposed generic solutions, and the projected system benefits. Report appendices also include detailed tables of non-confidential model outputs for each of the solution cases and scenarios.

NYISO Staff prepares an initial draft of the Report for review by ESPWG. Comments provided by ESPWG members are incorporated and reflected in subsequent drafts in an iterative process. A final draft of the CARIS Phase 1 Report is reviewed with ESPWG and TPAS ("Transmission Planning Advisory Subcommittee") for comment before it is submitted to the Business Issues Committee ('BIC') for approval. Following action by the BIC, the Report is submitted to the Management Committee ("MC") for its approval. Following MC action, the Report is submitted to the NYISO Board of Directors ("BOD") for its action. The BOD may opt to approve the Report as is, or provide comments to Staff requiring edits to the document. Any edits to the Report must be reviewed with the MC and any comments from the MC must be provided to the BOD prior to its final determination on the Report.

## 2.7 Public Information Session

Following the BOD's approval of the Report, the NYISO is to report on the CARIS in an open forum for all interested parties. The NYISO's presentation provides background on the CARIS process as well as a high-level discussion of the study methodology and findings. There is an opportunity for forum participants to ask questions and to engage in a dialogue with NYISO leadership on any aspect of the study.

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## 3. PHASE 2

Phase 2 of the CARIS process commences as soon as practicable following the approval of the CARIS Phase 1 report by the NYISO Board of Directors and the Public Information Session. Its intent is to process specific transmission projects that are seeking cost recovery through the NYISO tariff as regulated economic transmission projects. It requires the NYISO to update and extend the Base Case database to be utilized in the production cost modeling and associated evaluation of projects. It also provides for the determination of beneficiaries, the assignment of voting shares and the procedures by which the beneficiaries will vote on whether to approve the project as a regulated transmission project.

### 3.1 Phase 2 Base Case Development

This procedure describes the methodology to be used to develop the set of databases required for the NYISO to evaluate a regulated economic transmission project that seeks cost recovery pursuant to Section 31.5.4 of Attachment Y.

The methodology to extend the CARIS Phase 1 database for specific project in a Phase 2 Benefit/Cost Analysis is governed by Attachment Y Section 31.5.3.3.1

[http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf)

#### 3.1.1 Introduction

The NYISO will evaluate the benefits and costs of each regulated economic transmission project over the first ten years from the proposed commercial operation date for that project. The most recently approved CARIS Phase 1 databases and assumption matrix will be used as the starting point for developing the databases necessary to conduct this evaluation. Certain parameters of the CARIS Phase 1 databases and assumption matrix will be updated as agreed by the NYISO, upon consultation with ESPWG, to, for example, ensure the determination of the benefits of a regulated economic project is based on current information. In order to accommodate the maximum required time period to be studied for a proposed project, the NYISO will extend the updated set of CARIS Phase 1 databases in conjunction with the ESPWG for an additional ten years.

The creation of the database for analyzing specific projects as part of the CARIS Phase 2 cycle will follow the steps noted below:

- Prepare assumption matrix for ESPWG review and comment.
- Update the assumption parameters used in the CARIS Phase 1 databases for years 1-10 as described in Section 3.1.2.1 below.
- Extend the updated databases for years 11 through 20 as described in Section 3.1.2.2 below.
- If the target reserve proxy as defined in Section 3.1.2.3.2 is not met for any portion of the study period, add representative MWs as necessary as described in Section 3.1.2.3.2.
- Present the changes for both the updated and the extended databases to ESPWG for review, and comment.

- Upon completion of the ESPWG review, the Phase 2 base case will be presented to BIC for discussion and conceptual approval.

The same set of updated and extended databases will be used to analyze all proposed projects submitted within the same CARIS Phase 2 cycle. The NYISO will not change or modify the set of updated and extended databases to be used for the Phase 2 base case, except that the NYISO may modify the updated and extended databases when performing additional scenario analyses. The developer of the regulated economic transmission project being analyzed will not be able to modify the updated and extended database that has been presented by the NYISO to the ESPWG and BIC.

### **3.1.2 CARIS Phase 2 Assumption Matrix**

Each parameter included in the CARIS Phase 1 assumption matrix will be updated or extended depending on their classification into one of the following categories (See Appendix A for full list of assumption parameters):

- Trajectory Based (e.g., load forecasts and fuel forecasts)
- Discrete System Changes (e.g., installations and retirements)
- Fixed Parameters (e.g., EFORd , heat rates, and emission rates)
- Operating Rules/Criteria
- Calculated Value (e.g., transfer limits and nomograms)
- Factors impacting additional benefit metrics calculations listed in Attachment Y, Section 31.5.3.3.6 and other post processing requirements (e.g., TCC ownership, bilaterals, discount rates, emissions levels and costs)
- Other (e.g., long term contracts and program updates).

#### **3.1.2.1 Parameter Modifications**

The following CARIS Phase 1 assumption matrix parameters (Years 1-10) will be updated for the CARIS Phase 2 study:

##### **3.1.2.1.1 Trajectory Based**

- NYCA Load Forecast- based on the most recently NYISO issued Load and Capacity Data Report.
- External Areas Load Forecast- based on most recent publicly available data adopted by the external area.
- Fuel Forecast- based on the most current publicly available data. The fuel forecast for both NYCA and the external control areas will be updated.

##### **3.1.2.1.2 Discrete System Changes**

- Update the proposed in-service date for all new projects included in the database pursuant to the latest status report submitted by developers.
- Remove projects that have withdrawn from the NYISO queue.

- Add new projects to the database that meet the Reliability Needs Assessment inclusion rules as described in Section 3.1 of the Reliability Planning Process Manual
- Remove retired units and publicly announced scheduled retirements.
- Include any changes to external control areas that are expected to significantly impact NYCA congestion.
- Target reserve proxy, as described in Section V, will be maintained.

**3.1.2.1.3 Operating Rules and Criteria**

- Incorporate any operating rules or criteria that have been implemented since the completion of CARIS Phase 1.

**3.1.2.1.4 Calculated Values**

- Parameters will be revised that are significantly impacted due to the updated changes noted above in Items IV.A 1 through 3.

**3.1.2.1.5 Factors Impacting Additional Benefit Metrics**

- Incorporate any changes that have occurred since the completion of CARIS Phase 1.

**3.1.2.2 Data Extension**

The assumption matrix parameters for the NYCA system will be extended for ten (10) additional years beyond the CSPP study period (Years 11-20) using the methodology described below.

The external control areas representation will be fixed at year ten of CARIS Phase 1. Typical imports/exports between NYISO and its neighboring control areas will be maintained throughout the study period by adjustments to hurdle rates and area average heat rates.

**3.1.2.2.1 Trajectory Based**

- Parameters will be extended utilizing the same forecast procedure as used for the most recent CRP and CARIS Phase 1.
- If the data necessary to implement the required forecast procedure used for the most recent CRP and CARIS Phase 1 is not available for a portion of the database extension period, the NYISO will employ an escalation rate developed in conjunction with ESPWG.

**3.1.2.2.2 Discrete System Changes**

- Add new projects to the database that meet the Reliability Needs Assessment inclusion rules as described in Section 3.1 of the Reliability Planning Process Manual.
- Remove retired units and publicly announced scheduled retirements.
- Target reserve proxy, as described in Section V, will be maintained.

**3.1.2.2.3 Fixed Parameters**

- Fixed at the year ten value in the CARIS Phase 1 databases.

**3.1.2.2.4 Operating Rules/Criteria**

- Carry forward any rules/criteria changes implemented in the Year 1-10 update. However, parameters will not be extended beyond their expiration dates.

**3.1.2.2.5 Calculated Values**

- Fixed at the year ten value in the CARIS Phase 1 databases.

**3.1.2.2.6 Factors Impacting Additional Benefit Metrics**

- Carry forward any changes implemented in the Year 1-10 update. However, parameters will not be extended beyond their expiration dates.

**3.1.2.2.7 Other**

- Fixed at the year ten value in the CARIS Phase 1 databases or as appropriate depending on the parameter type

**3.1.2.3 Methodology for Maintaining a Representative System**

**3.1.2.3.1 Principles**

The process for updating and extending the databases may affect the capacity and load equilibrium, and/or may impact the system’s reliability. Therefore, the following guiding principles will be followed in order to maintain a representative system for economic study purposes throughout the study period:

- For security criteria, local problems will be assumed to be mitigated by local TOs.
- The NYCA and locational Installed Capacity Levels (ICL) <sup>2</sup> over the study term will on average reflect the excess capacity above minimum required capacity levels, as provided for in the NYISO Installed Capacity Demand Curve report.
- A representative generic combination of peakers and combined cycle units will be added as needed to maintain target ICL. Appropriate adjustments will be made in areas with a demonstrated favorability for renewable resources.
- Added generic capacity will be located at known bus locations where the model can dispatch energy without undue constraints.
- Added generic capacity block sizes will reflect typical known installation sizes.
- For adequacy criteria, transfer limits calculated for year ten of the CARIS Phase 1 database(s), adjusted to capture system changes (from Section 3.1.2.2.2), will be applied.

**3.1.2.3.2 Procedure**

The target reserve proxy will be the ICL for NYCA and the respective localities from the updated or extended CARIS load and capacity table for the year LOLE exceeds 0.1, plus

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<sup>2</sup> ICL is defined as the total installed capacity in the respective control area or locality divided by its respective peak demand

the recommended expected percentage excess capacity as stated in the most current NYISO Installed Capacity Demand Curve report. For example, if the year in which the LOLE exceeds 0.1 the NYCA ICL is 118% and the recommended excess capacity in NYCA is 2.8%, the NYCA target reserve proxy would be 120.8%. If for the same year in which the LOLE exceeds 0.1 the ICL in Zone J is 80% and the recommended excess capacity in Zone J is 4%, then the locational target reserve proxy would be 84%.

If after completion of the database updates and extensions the target NYCA or locational area reserve proxy over the study period is not met, add back market-based solutions in the reverse order in which they were removed during CARIS Phase 1, if any.

If the target reserve proxy for either the NYCA or the respective locality is still not met after adding back all market-based solutions, then add additional resources to the respective area utilizing the following priority:

- Regulated backstop solutions utilizing the smallest resources first
- Representative MW additions comprised of a combination of generic peakers and combined cycle units to achieve an expected mix of resources. Generic peakers will be modeled using representative data provided in the NYISO Installed Capacity Demand Curve report. Generic combined cycle units will be modeled based on the generic generation resource developed in CARIS Phase 1.

### **3.1.2.4 Phase 2 Base Case Database Review**

NYISO will update ESPWG on the changes incorporated to complete the update of Years 1-10 of the CARIS database(s) as well as the assumptions and changes to extend the database for Years 11-20. NYISO will post such modeling changes and assumptions on its website. Upon completion of the ESPWG review and comment, the Phase 2 base case will be presented to BIC for discussion and conceptual approval. Following action at the BIC, the Phase 2 base case will be deemed locked-down for the CARIS 2 cycle. However, the developer may elect to study alternate assumptions, as scenarios, in analyzing the benefits of specific proposed projects.

## **3.2 Developer Qualifications**

A Developer must be qualified pursuant to this section in order to be eligible to propose a regulated Economic Transmission Project. The NYISO must determine the qualifications of a Developer intending to propose a regulated Economic Transmission Project and to use the cost allocation and cost recovery mechanism in the ISO OATT. A Developer seeking to be qualified by the NYISO must submit to the NYISO Developer Qualification Mailbox ([DeveloperQualification@NYISO.com](mailto:DeveloperQualification@NYISO.com)) the qualification information described in Section 31.3.2.4.1 of Attachment Y, as set forth in the NYISO Developer Qualification Form in Attachment A of this Manual and all other related correspondence.

A Developer may submit its qualification information at any time. NYISO will notify the Developer of its qualification status within 30 days of receiving all the required information. If the NYISO determines that the Developer is qualified, the Developer can maintain its qualified status for a period of three years by annually submitting to the

NYISO its most recent audited financial statement, and informing the NYISO of any material change to information previously provided The NYISO may revoke the status at any time if it determines that there has been a material change in the Developer's qualifications and the Developer no longer meets the qualification requirement.

A Qualified Developer in any one of the Economic Transmission Planning, Reliability Planning and Public Policy Transmission Planning Processes is eligible to propose transmission-only projects for all of these Processes.

### 3.3 Project Eligibility

In order for a proposed project to be eligible for a vote by the project beneficiaries, it must meet two benefit-cost criteria; the first pertaining to NYCA-wide production cost savings and the second pertaining to the zonal load cost reductions.

#### 3.3.1 Project Costs

The project costs are supplied by the Developer. The parameters used in cost allocation will follow the parameters applicable to cost recovery of a project pursuant to a regulated rate. That is, if an applicable formula rate has been filed with FERC the parameters utilized in the formula rate such as the amortization period should be utilized in the NYISO's cost benefit calculation. Likewise, if there is no formula rate on file with FERC, the developer will provide the project-specific parameters to be used for the cost allocation analysis.

Once the cost benefit analysis is completed, the amortization period and other parameters used for cost allocation for the project should not be changed, unless so ordered by the Commission or a court of applicable jurisdiction, for cost recovery purposes to ensure the continued validity of the cost benefit analysis.

#### 3.3.2 Project Eligibility –NYCA Wide Production Cost Savings

The first benefit/cost ratio will be developed by evaluating the NYCA-wide production cost savings for the first ten-years of the project, beginning with the first year of the project's proposed Commercial Operation (CO) date. The specific benefit metric is the present value of the ten-year difference in the NYCA-wide production cost with and without the project installed. The project costs are those supplied by the Developer with the total project cost utilized in the benefit/cost ratio equal to the present value of the total annual revenue requirement for the first ten years of the project beginning with the project's proposed CO date.

Specifically, the NYCA-wide production cost savings are calculated using the following formula:

NYCA-wide Production Cost Savings = NYCA Generator Production Cost Savings –

$$\sum \sum [(Import/Export Flow)_{Solution} - (Import/Export Flow)_{Base}] \times ProxyLMP_{Solution}$$

Where:



$ProxyLMP_{Solution}$  is the LMP at one of the external proxy buses;  
 $(Import/Export Flow)_{Solution} - (Import/Export Flow)_{Base}$  represents incremental imports/exports with respect to one of the external systems; and the summations are made for each external area and all simulated hours

### 3.3.3 Project Eligibility – Zonal Load Cost Savings

The second benefit/cost ratio will be developed by evaluating the zonal load cost savings for the first ten-years of the project, beginning with the first year of the project’s proposed Commercial Operation (CO) date. The specific benefit metric is the present value of the ten-year difference in the net zonal LBMP load costs with and without the project installed. These LBMP load costs are net of any reduction in TCC payments and any bilateral contracts. The project costs are those supplied by the Developer with the total project cost utilized in the benefit/cost ratio equal to the present value of the total annual revenue requirement for the first ten years of the project beginning with the project’s proposed CO date. If the sum of the zonal LBMP load cost savings (for those zones with a positive savings) is in excess of the project costs, then the NYISO will develop the zonal cost allocation information to inform the beneficiary voting.

As presented in Section 31.5.3.4.2.5.4 of Attachment Y, the adjusted LBMP savings for each Load Zone is calculated as follows:

$AdjLBMP_{y,z}$ , the adjusted LBMP savings for each Load Zone  $z$  in each year  $y$ , shall be calculated using the following equation:

$$AdjLBMP_{y,z} = \max \left[ 0, TL_{y,z} - \sum_{b \in B_{y,z}} (BCL_{b,y,z} \cdot (1 - Ind_{b,y,z})) - SG_{y,z} \right] \cdot (LBMP1_{y,z} - LBMP2_{y,z})$$

**Where:**

- $TL_{y,z}$  is the total annual amount of Energy forecasted to be consumed by Load in year  $y$  in Load Zone  $z$ ;
- $B_{y,z}$  is the set of blocks of Energy to serve Load in Load Zone  $z$  in year  $y$  that are sold under bilateral contracts for which information has been provided to the ISO that meets the requirements set forth elsewhere in this Section 31.45.3.4.2.5;
- $BCL_{b,y,z}$  is the total annual amount of Energy sold into Load Zone  $z$  in year  $y$  under bilateral contract block  $b$ ;
- $Ind_{b,y,z}$  is the ratio of (1) the increase in the amount paid by the purchaser of Energy, under bilateral contract block  $b$ , as a result of an increase in the LBMP in Load Zone  $z$  in year  $y$  to (2) the increase in the amount that a purchaser of that amount of Energy would pay if the purchaser paid the LBMP for that Load Zone in that year for all of that Energy (this ratio shall be zero for any bilateral contract block of Energy that is sold at a fixed price or for which the cost of Energy purchased under that contract otherwise insensitive to the LBMP in Load Zone  $z$  in year  $y$ );
- $SG_{y,z}$  is the total annual amount of Energy in Load Zone  $z$  that is forecasted to be served by LSE-owned generation in that Zone in year  $y$ ;
- $LBMP1_{y,z}$  is the forecasted annual load-weighted average LBMP for Load Zone  $z$  in year  $y$ , calculated under the assumption that the project is not in place; and

$LBMP_{y,z}$  is the forecasted annual load-weighted average LBMP for Load Zone  $z$  in year  $y$ , calculated under the assumption that the project is in place.

$NZS_z$  the Net Zonal Savings for each Load Zone  $z$  resulting from a given project, shall be calculated using the following equation:

$$NZS_z = \max \left[ 0, \sum_{y=PS}^{PS+9} \left( (AdjLBMP_{y,z} - TCCRevImpact_{y,z}) \cdot DF_y \right) \right],$$

**Where:**

$PS$  is the year in which the project is expected to enter commercial operation;

$AdjLBMP_{y,z}$  is as calculated in Section 31.45.3.4.2.5;

$TCCRevImpact_{y,z}$  is the forecasted impact of TCC revenues allocated to Load Zone  $z$  in year  $y$ , calculated using the procedure described in Appendix B in Section 31.6 of this Attachment Y; and

$DF_y$  is the discount factor applied to cash flows in year  $y$  to determine the present value of that cash flow in year  $PS$ .

### 3.4 Cost Allocation for Regulated Economic Transmission Projects

This section describes the process to identify the beneficiaries and cost allocation for Regulated Economic Transmission Projects. Project Eligibility and Cost Allocation for Regulated Economic Transmission Projects is governed by Attachment Y [http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf) Sections 31.5.3.3 and 31.5.3.4. The cost allocation process described in this section is strictly for the purpose of determining the allocation of LSE voting shares utilized in the voting procedures described in section 3.3.5 below.

All benefits, expressed in this instance as net zonal LBMP cost savings, are denoted in present value terms over the first ten years of the project’s operation, i.e., ten years from the projects proposed CO date. Zones with a zonal benefit less than 0 are excluded from the cost allocation process. Costs are allocated to the Zones with positive benefit based on the ratio of the individual Zone’s benefit to the sum of positive zonal benefits. Zonal costs are allocated to the individual LSEs within the zones based on the ratio of each LSE’s zonal MWh (for the most twelve-month period for which actual metered data is available) to the total zonal MWh.

#### 3.4.1 Methodology to Adjust the LBMP Load Costs for Bilateral Contracts and LSE-Owned Generation

The LBMP load cost values utilized in the Zonal Benefit Metric are adjusted to account for the presence of bilateral contracts and LSE-owned generation which could for specific Load Serving Entities reduce the impact of the project on the cost of their energy purchases. The methodology to adjust the LBMP Load Cost savings for bilateral contracts and self-generation for purposes of identifying project beneficiaries is governed by Attachment Y [http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf) Section 31.4.3.4.2.5.4.

### **3.4.2 Methodology to Estimate the TCC Revenue Changes That Would Result From a Proposed Project**

The methodology to estimate the TCC revenue changes that would result from a proposed project is governed by Attachment Y

[http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf)

Section 31.5.3.4.2.3 and set forth in Appendix B.

#### **3.4.2.1 Forecasting the Net Reductions in TCC Revenues Resulting from a Proposed Project**

For the purpose of determining the allocation of costs associated with a proposed project as described in Section 31.5.3.4.2 of Attachment Y, the ISO shall use the procedure described herein to forecast the net reductions in TCC revenues allocated to Load in each Load Zone as a result of a proposed project.

##### **3.4.2.1.1 Definitions**

The following definitions will apply to this procedure:

**Pre-CARIS Centralized TCC Auction:** The last Centralized TCC Auction that had been completed as of the date the input assumptions were determined for the CARIS in which the Project was identified as a candidate for development under the provisions of this Attachment Y.

**Project:** The proposed transmission project for which the evaluation of the net benefits forecasted for Load in each Load Zone, as described in Section 31.5.3.4.2 of this Attachment Y, is being performed.

**TCC Revenue Factor:** A factor that is intended to reflect the expected ratio of (1) revenue realized in the TCC auction from the sale of a TCC to (2) the Congestion Rents that a purchaser of that TCC would expect to realize. The value to be used for the TCC Revenue Factor shall be stated in the ISO Procedures.

##### **3.4.2.1.2 Steps 1 through 6 of the Procedure**

For each Project, the ISO will perform Steps 1 through 6 of this procedure twice for each of the ten (10) years following the proposed commercial operation date of the Project: once under the assumption that the Project is in place in each of those years, and once under the assumption that the Project is not in place in each of those years.

##### **3.4.2.1.2.1 Forecasting the Value of Grandfathered Rights, Grandfathered TCCs, Incremental TCCs and TCC Auction Revenue**

**Step 1.** The ISO shall forecast Congestion Rents collected on the New York electricity system in each year, which shall be equal to:

- a. the product of:
  - (i) the forecasted Congestion Component of the Day-Ahead LBMP for each hour at each Load Zone or Proxy Generator Bus and

- (ii) forecasted withdrawals scheduled in that hour in that Load Zone or Proxy Generator bus, summed over all locations and over all hours in that year, minus:
- b. the product of:
  - (i) the forecasted Congestion Component of the Day-Ahead LBMP for each hour at each Generator bus or Proxy Generator Bus and
  - (ii) forecasted injections scheduled in that hour at that Generator bus or Proxy Generator Bus, summed over all locations and over all hours in that year.

**Step 2.** The ISO shall forecast:

- a. payments in each year associated with any Incremental TCCs that the ISO projects would be awarded in conjunction with that Project (which will be zero for the calculation that is performed under the assumption that the Project is not in place);
- b. payments in each year associated with any Incremental TCCs that the ISO has awarded, or that the ISO projects it would award, in conjunction with other projects that have entered commercial operation or are expected to enter commercial operation before the Project enters commercial operation; and
- c. payments that would be made to holders of Grandfathered Rights and imputed payments that would be made to the Primary Holders of Grandfathered TCCs that would be in effect in each year, under the following assumptions:
  - (i) all Grandfathered Rights and Grandfathered TCCs expire at their stated expiration dates;
  - (ii) imputed payments to holders of Grandfathered Rights are equal to the payments that would be made to the Primary Holder of a TCC with the same Point of Injection and Point of Withdrawal as that Grandfathered Right; and
  - (iii) in cases where a Grandfathered TCC is listed in Table 1 of Attachment M of the OATT, the number of those TCCs held by their Primary Holders shall be set to the number of such TCCs remaining at the conclusion of the ETCNL reduction procedure conducted before the Pre-CARIS Centralized TCC Auction.

**Step 3.** The ISO shall forecast TCC auction revenues for each year by subtracting:

- a. the forecasted payments calculated for that year in Steps 2(a), 2(b) and 2(c) of this procedure

from:

- b. the forecasted Congestion Rents calculated for that year in Step 1 of this procedure,

and multiplying the difference by the TCC Revenue Factor.

**3.4.2.1.2.2 Forecasting the Allocation of TCC Auction Revenues Among the Transmission Owners**

**Step 4.** The ISO shall forecast the following:

- a. payments in each year to the Primary Holders of Original Residual TCCs and
- b. payments in each year to the Primary Holders of TCCs that correspond to the amount of ETCNL remaining at the conclusion of the ETCNL reduction procedure conducted before the Pre-CARIS Centralized TCC Auction,

and multiply each by the TCC Revenue Factor to determine the forecasted payments to the Primary Holders of Original Residual TCCs and the Transmission Owners that have been allocated ETCNL.

**Step 5.** The ISO shall forecast residual auction revenues for each year by subtracting:

- a. the sum of the forecasted payments for each year to the Primary Holders of Original Residual TCCs and the Transmission Owners that have been allocated ETCNL, calculated in Step 4 of this procedure

from:

- b. forecasted TCC auction revenues for that year calculated in Step 3 of this procedure.

**Step 6.** The ISO shall forecast each Transmission Owner’s share of residual auction revenue for each year by multiplying:

- a. the forecast of residual auction revenue calculated in Step 5 of this procedure and
- b. the ratio of:
  - (i) the amount of residual auction revenue allocated to that Transmission Owner in the Pre-CARIS Centralized TCC Auction to
  - (ii) the total amount of residual auction revenue allocated in the Pre-CARIS Centralized TCC Auction.

### **3.4.2.1.3 Steps 7 through 10 of the Procedure**

The ISO will perform Steps 7 through 10 of this procedure once for each of the ten (10) years following the proposed commercial operation date of the Project, using the results of the preceding calculations performed both under the assumption that the Project is in place in each of those years, and under the assumption that the Project is not in place in each of those years.

#### **3.4.2.1.3.1 Forecasting the Impact of the Project on TSC Offsets and the NTAC Offset**

**Step 7.** The ISO shall calculate the forecasted net impact of the Project on the TSC offset for each megawatt-hour of electricity consumed by Load in each Transmission District (other than the NYPA Transmission District) in each year by:

- a. summing the following, each forecasted for that Transmission District for that year under the assumption that the Project is in place:
  - (i) forecasted Congestion Rents associated with any Incremental TCCs that the ISO has awarded, or that the ISO projects it would award, as calculated in Step 2(b) of this procedure, in conjunction with other projects that have entered commercial operation or are expected to enter commercial operation

before the Project enters commercial operation, if those Congestion Rents would affect the TSC for that Transmission District;

- (ii) forecasted Congestion Rents associated with any Grandfathered TCCs and forecasted imputed Congestion Rents associated with any Grandfathered Rights held by the Transmission Owner serving that Transmission District that would be paid to that Transmission Owner for that year, as calculated in Step 2(c) of this procedure, if those Congestion Rents would affect the TSC for that Transmission District;
  - (iii) the payments that are forecasted to be made for that year to the Primary Holders of Original Residual TCCs and ETCNL that have been allocated to the Transmission Owner serving that Transmission District, as calculated in Step 4 of this procedure; and
  - (iv) that Transmission District's forecasted share of residual auction revenues for that year, as calculated in Step 6 of this procedure for the Transmission Owner serving that Transmission District;
- b. subtracting the sum of items (i) through (iv) above, each forecasted for that Transmission District for that year under the assumption that the Project is not in place; and
  - c. dividing this difference by the amount of Load forecasted to be served in that Transmission District in that year, stated in terms of megawatt-hours, net of any Load served by municipally owned utilities that is not subject to the TSC.

**Step 8.** The ISO shall calculate the forecasted net impact of the Project on the NTAC offset for each megawatt-hour of electricity consumed by Load in each year by:

- a. summing the following, each forecasted for that year under the assumption that the Project is in place:
  - (i) forecasted Congestion Rents associated with any Incremental TCCs that the ISO has awarded, or that the ISO projects it would award, as calculated in Step 2(b) of this procedure, in conjunction with other projects that have entered commercial operation or are expected to enter commercial operation before the Project enters commercial operation, if those Congestion Rents would affect the NTAC;
  - (ii) forecasted Congestion Rents associated with any Grandfathered TCCs and forecasted imputed Congestion Rents associated with any Grandfathered Rights held by NYPA that would be paid to NYPA would for that year, as calculated in Step 2(c) of this procedure, if those Congestion Rents would affect the NTAC;
  - (iii) the payments that are forecasted to be made for that year to NYPA in association with Original Residual TCCs allocated to NYPA, as calculated in Step 4 of this procedure; and
  - (iv) NYPA's forecasted share of residual auction revenues for that year, as calculated in Step 6 of this procedure;
- b. subtracting the sum of items (i) through (iv) above, each forecasted for that year under the assumption that the Project is not in place; and

- c. dividing this difference by the amount of Load expected to be served in the NYCA in that year, stated in terms of megawatt-hours, net of any Load served by municipally owned utilities that is not subject to the NTAC.

**3.4.2.1.4 Forecasting the Net Impact of the Project on TCC Revenues Allocated to Load in Each Zone**

**Step 9.** The ISO shall calculate the forecasted net impact of the Project in each year in each Load Zone on payments made in conjunction with TCCs and Grandfathered Rights that benefit Load but which do not affect TSCs or the NTAC, which shall be the sum of:

- a. Forecasted Congestion Rents paid or imputed to municipally owned utilities serving Load in that Load Zone that own Grandfathered Rights or Grandfathered TCCs that were not included in the calculation of the TSC offset in Step 7(a)(ii) of this procedure or the NTAC offset in Step 8(a)(ii) of this procedure, which the ISO shall calculate by:
  - (i) summing forecasted Congestion Rents that any such municipally owned utilities serving Load in that Load Zone would be paid for that year in association with any such Grandfathered TCCs and any forecasted imputed Congestion Rents that such a municipally owned utility would be paid for that year in association with any such Grandfathered Rights, as calculated in Step 2(c) of this procedure under the assumption that the Project is in place; and
  - (ii) subtracting forecasted Congestion Rents that any such municipally owned utilities would be paid for that year in association with any such Grandfathered TCCs, and any forecasted imputed Congestion Rents that such a municipally owned utility would be paid for that year in association with any such Grandfathered Rights, as calculated in Step 2(c) of this procedure under the assumption that the Project is not in place; and
- b. Forecasted Congestion Rents collected from Incremental TCCs awarded in conjunction with projects that were previously funded through this procedure, if those Congestion Rents are used to reduce the amount that Load in that Load Zone must pay to fund such projects, which the ISO shall calculate by:
  - (i) summing forecasted Congestion Rents that would be collected for that year in association with any such Incremental TCCs, as calculated in Step 2(b) of this procedure under the assumption that the Project is in place; and
  - (ii) subtracting forecasted Congestion Rents that would be collected for that year in association with any such Incremental TCCs, as calculated in Step 2(b) of this procedure under the assumption that the Project is not in place.

**Step 10.** The ISO shall calculate the forecasted net reductions in TCC revenues allocated to Load in each Load Zone as a result of a proposed Project by summing the following:

- a. the product of:
  - (i) the forecasted net impact of the Project on the TSC offset for each megawatt-hour of electricity consumed by Load, as calculated for each Transmission District (other than the NYPA Transmission District) in Step 7 of this procedure; and

- (ii) the number of megawatt-hours of energy that are forecasted to be consumed by Load in that year, in the portion of that Transmission District that is in that Load Zone, for Load that is subject to the TSC;

summed over all Transmission Districts;

b. the product of:

- (i) the forecasted net impact of the Project on the NTAC offset for each megawatt-hour of electricity consumed by Load, as calculated in Step 8 of this procedure; and

- (ii) the number of megawatt-hours of energy that are forecasted to be consumed by Load in that year in that Load Zone, for Load that is subject to the NTAC; and

c. the forecasted net impact of the Project on payments and imputed payments made in conjunction with TCCs and Grandfathered Rights that benefit Load but which do not affect TSCs or the NTAC, as calculated in Step 9 of this procedure.

#### **3.4.2.1.5 Additional Notes Concerning the Procedure**

- For the purposes of Steps 2(c) and 4(b) of this procedure, the NYISO will utilize the currently effective version of Attachment L of the OATT to identify Existing Transmission Agreements and Existing Transmission Capacity for Native Load.
- Each Transmission Owner, other than NYPA, will inform the NYISO of any Grandfathered Rights and Grandfathered TCCs it holds whose Congestion Rents should be taken into account in Step 7 of this procedure because those Congestion Rents affect its TSC.
- NYPA will inform the NYISO of any Grandfathered Rights and Grandfathered TCCs it holds whose Congestion Rents should be taken into account in Step 8 of this procedure because those Congestion Rents affect the NTAC.

#### **3.4.2.1.6 Procedure for Setting TCC Revenue Factor**

The TCC Revenue Factor will initially be set at 0.9. In the event that there is evidence that the ratio of the price for which a TCC sells in the Centralized TCC Auction to the Congestion Rents that the Primary Holder expects to receive from that TCC is generally significantly different from 0.9, the TCC Revenue Factor will be revised.

### **3.4.3 Procedure for Regulated Economic Projects - Specific Projects Submittals**

This procedure describes the eligibility and informational requirements for submitting to the NYISO for evaluation a regulated economic transmission project that seeks cost recovery pursuant to Section 31.5.4 of Attachment Y. This procedure does not apply to developers or any other interested parties requesting and funding the NYISO to conduct additional congestion and resources integration studies pursuant to Section 31.3.1.2.3 of Attachment Y. The requirements regarding requesting additional congestion and resource integration studies are provided in Section 4 of this manual. The procedure for specific regulated economic project submittals is governed by Attachment Y



[http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf)

Section 31.3.2.4 and 31.5.3.3

### **3.4.3.1 Eligibility**

Any developer of a regulated economic transmission project that will interconnect with or be integrated into the existing New York State Bulk Power Transmission Facilities, who is seeking cost recovery pursuant to Section 31.5.4 of Attachment Y, may submit such proposed project for an evaluation pursuant to Section 31.5.3.3 of Attachment Y, of the project's benefits and costs over a ten-year period commencing with the commercial operation date ("Benefit/Cost Analysis"). A regulated economic transmission project may include the construction of a new line, rebuild or re-conductoring of an existing line and/or addition of transmission equipment (such as, but not limited to, static var compensators, phase angle regulators, capacitor banks, power transformers).

The developer is responsible for all reasonable actual costs incurred by the NYISO for the Benefit/Cost Analysis. Such costs may include the use by NYISO, at its discretion, of contractors/consultants and costs that Transmission Owners may incur to supply project-related data when requested to do so by the NYISO.

### **3.4.3.2 Timing of Requests for Benefit/Cost Analysis**

The NYISO shall, upon request and subject to resource limits, conduct a Benefit/Cost Analysis at any time during the current CARIS cycle. The NYISO will accommodate all requests to the extent reasonable and practicable, subject to resource limitations. If the developer wishes to have its project voted on, pursuant to Section 31.5.3.6 of Attachment Y, during the current CARIS study cycle, then the developer must submit a complete "Benefit /Cost Analysis Request" and the required deposit to the NYISO.

### **3.4.3.3 Request for Benefit/Cost Analysis**

Each Benefit/Cost Analysis Request submitted to the NYISO (on a request form developed by the NYISO) shall be accompanied by a refundable deposit of \$25,000. Such deposit shall be applied toward the reasonable actual costs incurred by the NYISO and its contractors/consultants, and by Transmission Owners supplying project-related data, in the performance of the Benefit/Cost Analysis.

The developer shall also submit to the NYISO a Project Conceptual Package ("PCP") in its Benefit/Cost Analysis request. A developer submitting multiple Benefit/Cost Analysis requests, must submit a separate PCP and separate deposit for each project. The Benefit/Cost Analysis Request and the PCP should be submitted to the NYISO utilizing the e-mail address: <mailto:CARISspecificProject@nyiso.com>

The type of information required in the PCP and how that information will be used is included in Table 1. This information is required in order to serve the needs of the following three entities:

1. NYISO: In order to perform the Benefit/Cost analysis
2. ESPWG: In order to determine scenarios that should be analyzed as part of the Benefit/Cost analysis

3. Benefiting LSE’s: In order to have sufficient information to make an informed vote.

Project Conceptual Package Information	Required for NYISO to Perform Analysis	Required for ESPWG to Identify Scenarios	Required for ESPWG Review	Required for Benefiting LSEs to Vote
Developer's Contact Information	X			
Project Description	X	X		X
Project Drawings	X	X		X
Project Capital Costs	X		X	X
Risk Profile				X
Annual Revenue Requirements	X			X
Developer's Business Information				X

**Table 3-1 PCP Information Matrix**

The PCP shall include, but not be limited to, the following:

1. Developer’s Contact Information
  - Developer’s Name and Title
  - Developer’s Company Address
  - Developer’s Telephone Number, Fax Number and E-mail
  - Address of the Developer’s Contact Person.
2. Project Description
 

The developer will submit a written description of the regulated economic transmission project to NYISO, which will include, but not be limited to, the following:

  - A description of how the project will interconnect with or be integrated into the existing New York State Bulk Power Transmission Facilities
  - A description of the right of way to be used or acquired
  - A description of the property that would need to be acquired or condemned for the project
  - Transmission project construction type
  - The thermal capacity and impedance ratings of the line
  - The required substation and protection additions or modifications required including a list of major equipment and their ratings

- Description of project assumptions used for the basis of the Project Capital Costs and Annual Revenue Requirements
  - A description of the project management team
  - A project implementation plan
  - A list of anticipated System Upgrade Facilities
  - Status of the project in the NYISO's Interconnection Queue
  - A list of all regulatory approvals required from state, federal and local licensing and environmental regulatory agencies, and a schedule for applications and expected regulatory approvals
  - A major milestone schedule.
3. Project Drawings
- The developer will submit the following drawings to the NYISO:
- Site plan
  - System area one-line
  - Detailed substation one-lines
  - Substation plot plans
  - Transmission route plan.
4. Project Capital Costs
- The developer will submit detailed capital cost estimates for each segment of the project (e.g., each substation, protection/communication systems, transmission line, system upgrades and other interconnection costs to the extent identified, etc). The developer will also submit a quarterly cash flow from the start of the project until the Commercial Operation Date. A cost estimate breakdown will be provided that includes, at a minimum, the following items:
- Licensing/permitting
  - Engineering
  - Construction labor
  - Major equipment
  - Real estate acquisitions and rights of ways
  - Overheads
  - Contingencies.
5. Risk Profile
- As described in procedures on cost overruns, the developer will submit a risk profile. The risk profile will address, at a minimum, the following areas:
- The stage of project development and the level of accuracy of the project cost estimate;
  - Required cost overruns sharing, if any, between the Developer and the LSEs benefiting from the project;
  - Required project cost increase sharing, if any, due to a force majeure between the Developer and the LSEs benefiting from the project;

- Identification of conditions, if any, for canceling the project by the Developer including terms and conditions for allocating sunk costs and lost benefits.

The Developer may submit multiple risk profiles for the project up to a maximum of three. The project and each of its risk profiles will be voted on individually by the LSE's benefiting from the project as if it was a separate project.

6. Annual Revenue Requirements for Years 1-30

The developer will provide their Annual Revenue Requirements starting in the first year of the Commercial Operation Date and the subsequent 29 years. A list of assumptions used in calculating the Annual Revenue Requirements will be provided, which shall include but not be limited to:

- Cost of capital
- Annual operations and maintenance costs
- Property Taxes
- Escalation rate
- Revenue rate of return.

7. Developer's Business Information

- Development Experience
  - Provide a list of all transmission projects that have been under development or brought into-service during the past 5 years, and provide a list of other relevant development projects that are located in New York.
- Pending Litigation
  - List all ongoing litigation and past lawsuits related to the developer's performance regarding the development projects listed above
- Credit Worthiness
  - List current rating from at least three rating agencies.
- Developer Size
  - List revenues for the last three years for the entity that is developing the project.
- Technical Expertise
  - Provide names and experience of the key technical personnel assigned to the project.

8. Any other reasonably required information to aid NYISO in understanding the scope of the project and the developer's capabilities.

**3.4.3.4 PCP Review and Scoping Meeting**

The NYISO shall review the developer's PCP to ensure its completeness and clear description of the project scope and costs and acknowledge receipt of the Benefit/Cost Analysis Request within ten (10) business days of receipt. If, in its sole discretion, the NYISO finds the PCP to be deficient in content, the NYISO will request the developer to provide the missing data. No analysis will be performed by NYISO until an acceptable PCP is received.

Following the receipt of a complete PCP and the required deposit, the NYISO will post the request on their website and establish with developer a mutually agreeable time for a scoping meeting (“Scoping Meeting”) for the Benefit/Cost Analysis. The Scoping Meeting shall be used to address any questions regarding the project description to ensure that all the technical parameters needed by the NYISO to perform the Benefit/Cost Analysis are understood. The base case applicable to economic projects seeking tariff recovery will be established pursuant to the procedure to update and extend the database for specific project benefit cost analysis.

Following the Scoping Meeting, the NYISO will forward the information identified in Table 1 to the ESPWG for review and determination of the scenarios to be analyzed for the proposed project. The ESPWG will have the opportunity to provide feedback to the Developer on the completeness of the submitted Project Capital Costs.

Following the ESPWG meeting, the NYISO will (i) memorialize the results in writing as part of an agreement for a Benefit/Cost Analysis (“Project Analysis Agreement” developed by the NYISO) and (ii) provide the developer with the Project Analysis Agreement and a non-binding estimate of the total costs. The Project Analysis Agreement will include the scope of work and will define the deliverables to be provided by the NYISO at the completion of the studies. The Project Analysis Agreement will also contain payment terms and conditions. The Project Analysis Agreement must be executed by the developer before the NYISO conducts any analysis.

If the NYISO determines that a material change occurs in the project for any reason, the NYISO may require the developer to pay an additional deposit to reflect that cost increase, which the NYISO shall also apply to the actual cost of the Benefit/Cost Analysis. No analysis will be performed by the NYISO on the revised project until the additional deposit is received and an agreed to revised target completion date is determined.

#### **3.4.3.5 Completion and Delivery of Results**

The NYISO will process the Benefit/Cost Analysis requests in the order in which they are received. A Benefit/Cost Analysis Request will be deemed received by the NYISO on the date the NYISO receives an acceptable PCP and the required deposit. The NYISO will use reasonable efforts to complete each Benefit/Cost Analysis by a date mutually agreed to with the developer. If the NYISO determines this target date will not be met, the NYISO will promptly inform the developer and provide the developer with an updated estimate of the new date by which the Benefit/Cost Analysis will be completed.

Upon completion of the analysis, the NYISO will provide the Benefit/Cost Analysis results to the developer. Upon request, the NYISO will schedule a meeting to review the results with the developer. The developer shall be responsible for all reasonable and actual costs incurred by the NYISO that result from the meeting to review the Benefit/Cost Analysis and from any requested modifications to the Benefit/Cost Analysis.

The NYISO will provide the “Final Invoice” to the developer to cover all reasonable costs the NYISO incurred in the performance of the Benefit/Cost Analysis that have not yet been paid by the developer.

### **3.4.3.6 Withdrawal of Request**

The developer may withdraw its Benefit/Cost Analysis Request at any time by written notice to the NYISO. Upon receipt of such request, the NYISO will immediately terminate any further work on the applicable Benefit/Cost Analysis.

The developer shall reimburse the NYISO for all reasonable expenses incurred prior to the receipt of the withdrawal notice. NYISO will refund any portion of the deposit that has not been used for the Benefit/Cost Analysis prior to receipt of the withdrawal notice to the developer, if applicable.

Following reimbursement (refund), the NYISO will forward the completed results, if any, of the Benefit/Cost Analysis work completed prior to the withdrawal date to the developer.

### **3.4.3.7 Disclosure of Benefit/Cost Results**

In the event that the Benefit/Cost Analysis finds that a project is eligible for cost allocation and recovery under Section 31.5.4 of Attachment Y (i.e., the benefit of the proposed project exceeds its cost measured over the first ten years from the proposed commercial operation date for the project, and the total capital cost of the project exceeds \$25 million), the developer may then seek acceptance of its project by the project beneficiaries according to the voting procedures outlined below and 31.4.2.6 of Attachment Y through a request in writing to the NYISO. Once such a request is received by the NYISO, the results of the Benefit/Cost Analysis shall be posted on the NYISO website.

In the event that the NYISO finds, through the Benefit/Cost Analysis, finds that a project is not eligible for cost allocation and recovery under Section 3.5.4 of Attachment Y (i.e., the benefit of the proposed project exceeds its cost measured over the first ten years from the proposed commercial operation date for the project, and the total capital cost of the project exceeds \$25 million), then the NYISO shall provide the developer's written notification of the results and that the Benefit/Cost Analysis Request has been deemed withdrawn.

In the event that the developer either (1) withdraws its Benefit/Cost Analysis Request in accordance with the foregoing section or (2) the developer's Benefit/Cost Analysis Request is deemed withdrawn pursuant to this section, then the results of the Benefit/Cost Analysis shall not be disclosed or posted on the NYISO website.

## **3.4.4 Procedure for Project Cost Overruns**

The Developer is required to provide as part of the project proposal, a firm price, as well as a risk profile to address project cost overruns. The risk profile will address at a minimum the following areas:

- The stage of project development and the level of accuracy of the project cost estimate;
- Required cost overruns sharing, if any, between the Developer and the LSEs benefiting from the project;
- Required project cost increase sharing, if any, between the Developer and the LSEs benefiting from the project due to a force majeure; and

- Identification of conditions, if any, for canceling the project by the Developer including terms and conditions for allocating sunk costs and lost benefits.

The Developer may submit multiple risk profiles for the project. The project and each of its risk profiles will be voted on individually by the LSE's benefiting from the project as if it was a separate project.

The procedure for project cost overruns is governed by Attachment Y

[http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf)

Section 31.5.3.4.5.3

#### **3.4.4.1 Quarterly Reporting**

Upon acceptance of the project and an associated risk profile by the LSEs benefiting from the project, the Developer will provide to the LSEs benefiting from the project with quarterly project updates to include but not be limited to the following:

- project's current status
- updated milestone schedule
- updated cash flow
- a project cost analysis, and
- an explanation for any schedule or cost changes.

Simultaneously, the developer will provide a copy of the report to the NYISO which the NYISO will post on its website.

The project cost analysis will include the original estimated costs, the actual costs spent to date, the estimated cost to complete and the percent change. A change which results in an increase in the project cost will be provided by the Developer to the LSEs benefiting from the project with a copy to the NYISO as soon as the change is discovered (The Developer is not to wait until the next quarterly report to notify the LSEs benefiting from the project and the NYISO of the change).

### **3.4.5 Voting Procedure for Regulated Economic Transmission Projects**

This section describes the process by which the potential transmission project's beneficiaries are drafted and finalized and the vote is administered. The voting procedure for regulated economic transmission projects is governed by Attachment Y

[http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf)

Sections 31.5.3.5 and 31.5.3.6

#### **3.4.5.1 Identification of Beneficiaries and Voting Shares**

The NYISO staff will develop the specific list of voting entities pursuant to Section 31.5.3.4 of Attachment Y and deliver them to the ESPWG for comment. Voting beneficiaries will be Load Serving Entities (LSEs) in those load zones which will experience net benefits measured over the first ten years from the project's proposed commercial operation date. The ESPWG will, at its first meeting following the receipt of the list, begin reviewing and commenting on the list as presented. Following review and

comment by the ESPWG, the final beneficiary list shall be submitted to the BIC and subsequently to the MC for review and comment by Market Participants. Finally, the beneficiary list, the project benefit/cost analysis, and the comments made by Market Participants at the BIC and the MC shall be submitted to the NYISO Board when this matter is brought to the Board for its consideration and approval.

Upon the ESPWG review of the beneficiary list and the benefit/cost analysis, the NYISO will provide each voting beneficiary with the information on its own voting shares, project benefit/cost analysis, and the Project Conceptual Package, as defined in Regulated Economic Projects Specific Project Submittals Procedure. The NYISO will not provide an LSE's voting share information to other voting beneficiaries and will treat that information as Confidential Information under the NYISO Code of Conduct (OATT Attachment F, Services Tariff Article 6).

The NYISO will hold an informational session for voting beneficiaries soon after the results of the project benefit/cost analysis and beneficiary determination are reviewed by the ESPWG and delivered to voting beneficiaries, and prior to the BIC meeting.

Following the review and comment on the beneficiary list by Market Participants at the BIC and MC meetings, the LSEs may submit comments on their respective voting shares directly to the NYISO Board of Directors. In addition, any Market Participant or interested party may submit comments on the final beneficiary list and the project benefit/cost analysis to the Board. The Board will review such comments, including requests for oral arguments, prior to Board approval of the voting shares which will take place prior to the beneficiary vote on the specific project.

The Board may approve the benefit/cost analysis and beneficiary designations as submitted or propose modifications on its own motion. If any changes are proposed by the Board, the revised benefit/cost analysis and beneficiary designations shall be returned for comment by Market Participants at the Management Committee and by affected LSEs. The Board shall not make a final determination on the project benefit/cost analysis and beneficiary designation until it has reviewed the comments made by Market Participants at the Management Committee and by affected LSEs. Upon final approval of the Board, the project benefit/cost analysis and the beneficiary list shall be posted by the NYISO on its website and shall form the basis of the beneficiary voting described in Section 31.5.3.6 of Attachment Y.

#### **3.4.5.1.1 Procedural Details**

- For purposes of this procedure, the Notice Date shall be defined as the date the required voting material is sent to the voting entities for the special voting meeting.
- For purposes of this procedure, LSEs shall be defined in accordance with the tariff as those LSEs that benefit from a project pursuant to Section 31.5.3.4.2.
- Zonal benefit, zonal cost allocation, and other terms and formulas related to this procedure are discussed in the procedures for Sections 31.5.3.4.2 (calculation of Zonal Benefit), 31.5.3.4.3 (addressing load zones not benefiting from a proposed project) and 31.5.3.4.4 (allocation of project costs to the load).
- Weighted zonal voting share of each LSE = (Zonal Benefits / Total Zonal Benefits for zones with positive net benefits) \* (LSE Zonal MWh/Total Zonal MWh).



- If a Load Serving Entity benefits in more than one zone, the formula will be calculated for each zone of benefit and the total voting share of the Load Serving Entity will be the sum of such calculations.
  - The total voting share of each LSE = sum of the weighted zonal voting shares for each LSE.
  - The total voting share of each LSE will be calculated to seven decimal places with rounding.
  - The sum of all total LSE voting shares must equal 1.

#### **3.4.5.1.2 Methodology for Calculation of LSE Zonal MWh Load Data**

For purposes of this calculation, the NYISO will use the most recent rolling 12-month settlement data (Hourly Billing Metered Load MWh data) calculated using the most recent month for which actual metered load data is available pursuant to the metering timelines in Section 2.7.4.2 of the OATT and Section 7.4.1 of the MST (90 day true-up). The LSEs' MWh data used for this calculation will be from the first available actual metered month at the time of the study and the prior 11 months.

Each LSE's load share will be calculated as the ratio of that LSE's MWh to total load MWh (in zones that will benefit from the project), for the rolling 12-month period data being used.

LSE load shifts that occur within the rolling 12-month period data being used shall be treated as follows;

- If an LSE has no billing metered data in the last billing month of the rolling 12-month period data being used, that LSE's load and voting weight will be removed from the calculation.
- If a new LSE joins a zone anytime during the rolling 12-month period data being used, that LSE's load share will be calculated as the ratio of that LSE's MWh to total 12-month zonal load MWh.

Voting shares will be assigned to the LSEs. The billing organization may be a proxy for an LSE within that billing organization if that LSE decides to be represented by its billing organization to cast the vote. As such, that billing organization will be responsible for collecting and forwarding to the NYISO proper authorization for that LSE's load.

#### **3.4.5.1.2.1 Changes in LSE Loads**

After the Board approval of the beneficiary determination, the NYISO will examine its billing data to determine if changes have occurred in LSE registrations and load served in the NYCA. At least thirty days before the vote, the NYISO will re-run the calculation to determine if any LSE load has been changed by 10% or more (of its own load). If a change in any LSE load of 10% or more for an individual LSE occurs after the Board approval and before the Notice Date, the NYISO will update the calculation before the date of the actual vote and will notify each LSE in accordance with NYISO notification procedure provided herein of their updated voting shares at least five business days before the date of the vote.

### **3.4.5.1.2.2 LSE Education**

The NYISO will reach out to LSEs or, if they so designate, their designated proxy Billing Organizations, sufficiently in advance of the scheduled voting date in order to inform them and educate them about the CARIS voting process.

### **3.4.5.1.3 Beneficiary Voting Procedure**

For a regulated economic transmission project to have its cost allocated under Section 31.5.3.6.3, eighty (80) percent or more of the actual votes cast on a weighted basis must be cast in favor of implementing the project. If less than 80% of the LSE votes are cast in favor of implementing the project, the project will be deemed to be rejected. Abstentions and absentees will not be counted as votes cast. If no LSE votes are cast on a proposed project, the project will be deemed to be rejected.

For regulated economic projects, the procedure for tallying the vote is governed by Section 31.5.3.6.5.

#### **3.4.5.1.3.1 Details**

- Voting will occur at a special voting meeting chaired by the BIC Chair. The BIC Chair will oversee the voting.
- Upon finalization of the specific list of voting beneficiaries, the BIC Chair, supported by NYISO staff, will send voting materials related to the particular project by electronic mail directed to the Member Relations main contact, billing contact (as applicable) and the MC representative (as applicable) of each voting entity of the related specific list. Voting materials related to a particular project will include the time, date, location and telephone dial-in information of the voting session, as well as the Project Conceptual Package, as defined in Regulated Economic Projects Specific Project Submittals Procedure, to be voted on, the Board-approved project benefit/cost analysis and specific list of voting beneficiaries, and for that particular LSE, the calculations of the weighted voting share.
- No voting session shall take place earlier than five business days following the distribution by the BIC Chair, supported by NYISO staff, of voting materials related to the project to be voted on.
- If multiple projects are presented for voting at the same voting session, projects will be voted upon in descending order based on their benefit/cost ratio; the project with the largest benefit/cost ratio will be voted on first:
  - The LSEs voting on each project will vote beginning at that point in the alphabetical order determined by lottery conducted prior to each project vote.
  - The voting results of each project will be announced directly after the voting of each project.
- Prior to each vote, the NYISO staff will present the project and voting materials.
- Votes will be taken by roll call from the specific list of voting beneficiaries.
- Voice votes can be cast in person or by telephone during the voting session.
- LSEs voting against the project must submit in writing to the NYISO their rationale for their vote within 30 days of the date the vote is taken. LSEs must state the

specific reasons for a vote against a project, including the metrics used in making their decision to oppose a project and how those metrics were used.

- NYISO staff will record the vote, and will calculate and report the results of the vote. The Chair of the BIC will announce the results of the vote.
- The results of the vote shall be posted on the NYISO's website.



## 4. ADDITIONAL CARIS STUDIES

The process for Additional CARIS Studies is governed by Attachment Y

[http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf)

Sections 31.3.1.2.3 and 31.3.1.2.4

### Applicability

- To requests for additional congestion and resource integration studies (“Additional CARIS Studies”) pursuant to Attachment Y of the NYISO OATT
- Not Applicable to:
  - Requests for firm point-to-point transmission service under Section 3.7 of the NYISO OATT;
  - Requests for firm Network Integration Transmission Service pursuant to Section 4.5 of the NYISO OATT;
  - Interconnection requests under Attachment X, Z or S of the NYISO OATT;
  - Requests for evaluation of projects as potential reliability solutions to an identified Reliability Need.

### Eligibility

- Any NYISO Market Participant or other interested party (“Requestor”) is eligible to request Additional CARIS Studies.
- Requestor is responsible for all reasonable actual costs incurred by the NYISO for Additional CARIS Studies. Such costs may include the use of contractors/consultants assistance at the NYISO’s discretion, and costs that TOs may incur to supply study-related data when requested to do so by the NYISO.

### Posting of Requests for Additional CARIS Studies

- NYISO will post the requests for Additional CARIS Studies on its Website.
- Postings shall include a general description of the study requests, the date of receipt, and the identity of the Requestor.
- Provision shall be made to allow combination/cost sharing of identical/similar or overlapping study requests from different parties if the parties agree.
- Results of these Additional CARIS Studies will be treated as Confidential Information under Attachment F to the OATT;
  - However, if a Requestor should seek regulated cost recovery under the NYISO OATT, Attachment Y, Section 31.4.3.3 and the approved procedures for Regulated Economic Projects – Specific Project Submittals, the Requestor may elect to post results of its Additional CARIS Studies on the NYISO website at that time;
  - If the Requestor elects to post the results of Additional CARIS Studies, the posting will note whether the database and base case assumptions (collectively “Study Assumptions”) used in the study are different from the Study Assumptions that are required for seeking regulated cost recovery under the CARIS Phase 2.

**Timing of Requests for Additional CARIS Studies**

- The NYISO shall, upon request, subject to resource limits, conduct an Additional CARIS Study at any time during the year.
  - The NYISO will accommodate all study requests to the extent reasonable and practicable, subject to resource limitations.
- The Additional CARIS Study shall use the database and base case assumptions in the scope agreed upon by the Requestor and the NYISO.

**Request for Additional CARIS Studies**

- Requestor shall submit a “Request for Additional CARIS Study” using a form developed by the NYISO which requires specific information needed to conduct the study.
- Each study request must be accompanied by a refundable deposit of \$25,000, which deposit shall be applied toward the reasonable actual costs incurred by the NYISO, and its contractors, in the performance of the study.
- Multiple study requests involving diverse locations system shall each be required to submit a separate request and a separate deposit.

**Scoping Meeting**

- NYISO shall acknowledge receipt of the Request for Additional CARIS Study within ten (10) business days of receipt and shall inform Requestor whether its request is complete in the judgment of the NYISO. If not complete, the NYISO will request additional information.
- Following the receipt of a complete Request for Additional CARIS Study, the NYISO shall establish with Requestor a mutually agreeable time for a Scoping Meeting.
- The Scoping Meeting shall be used to determine the nature of the study to be conducted, including any customization that the Requestor may desire for its study, such as:
  - Additional metrics for measuring congestion and the benefits of relieving that congestion.
  - Additional scenarios and the assumptions to be used for each.
  - Whether the Requestor wants the NYISO to analyze potential transmission, generation and/or demand response solutions, and the characteristics of those solutions.
  - Degree of certainty requested for the solution cost estimates.
- Following the Scoping Meeting, the NYISO will memorialize the results in writing as part of a Study Agreement for an Additional CARIS Study (developed by the NYISO) to be provided to the Requestor along with a non-binding estimate of the total study costs.
  - The Study Agreement will include the scope of work and will define the deliverables to be provided by the NYISO at the completion of the studies.
  - The Study Agreement will also contain payment terms and conditions.

- Additional deposits shall be required to cover the NYISO’s estimate of the total study costs (after credit for the initial deposit).
- The Study Agreement must be executed by the Requestor before the NYISO conducts any study work.
- If Requestor modifies the scope of the Additional CARIS Study as initially specified, and does so in such a way as to increase the estimated total cost of the Additional CARIS Study, the NYISO may request, and the Requestor shall pay, an additional deposit to reflect that cost increase, which the NYISO shall also apply to the actual cost of the Additional CARIS Study.

**Completion and Delivery of Study Results**

- The NYISO will process the Additional CARIS Studies in the order in which they are received. A study will be deemed received by the NYISO on the date the NYISO receives the completed study request form and acceptable deposit.
- The NYISO will use reasonable efforts to complete each Additional CARIS Study by a date mutually agreed to with the Requestor. If the NYISO determines this target date will not be met, the NYISO will promptly inform the Requestor and provide the Requestor with an updated estimate of the new date by which the Additional CARIS Study will be completed.
- Upon completion of the study, the NYISO will provide a final invoice to the Requestor to cover all reasonable costs it has incurred in the performance of the study.
- Within 30 days of the final invoice, there shall be a final payment (refund) to true up any study deposits to the final study cost.
- Following final payment (refund), the NYISO will provide the study results to the Requestor.
- Upon request, the NYISO will schedule a meeting to review the study results with the Requestor.

**Withdrawal of Request**

- Requestor may withdraw its study request at any time by written notice to the NYISO.
- Upon receipt of such request, the NYISO will immediately terminate any further study work.
- Requestor shall reimburse the NYISO for all reasonable expenses incurred prior to the receipt of the withdrawal notice. NYISO will refund any unpaid deposit funds to the Requestor, if applicable.
- Following reimbursement (refund), the NYISO will forward the results of any study work completed prior to the withdrawal date to the Requestor.
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## 5. PROCEDURE FOR STUDY REPLICATION

The procedure for study replication is governed by Attachment Y

[http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt\\_attachments/att\\_y.pdf](http://www.nyiso.com/public/webdocs/documents/tariffs/oatt/oatt_attachments/att_y.pdf)

Sections 31.2.3.1, 31.2.6.1, 31.3.2.1, and 31.5.3.5.1

### PROCEDURE

#### **Applicability and Eligibility**

- Any NYISO Market Participant or other interested party (“Requestor”) is eligible to request replication of the following studies: (1) the Reliability Needs Assessment, (2) Comprehensive Reliability Plan, (3) CARIS Phase 1, and (4) CARIS Phase 2.
- Requestor is responsible for all reasonable costs incurred by the NYISO for Study Replication. Such costs may include, at the NYISO’s discretion, the costs for use of contractors/consultants to assist in the completion of the Study Replication, and the reasonable costs that New York Transmission Owners may incur to supply study-related data when requested to do so by the NYISO.

#### **Confidentiality**

- NYISO will treat a request for Study Replication as Confidential Information under Attachment F to the OATT.
- Results of Study Replication will be treated as Confidential Information under Attachment F to the OATT.
- NYISO will ensure that the Scope of Study Replication is not designed in a way which will produce results that could be used to divulge confidential information.

#### **Timing of Requests for Study Replication**

- The NYISO shall, upon request, and subject to resource limits, promptly respond to study requests.
  - The NYISO will accommodate all Requests for Study Replication subject to resource limitations.

#### **Request for Study Replication**

- Requestor shall submit a “Request for Study Replication” using a form developed by the NYISO which requires specific information needed to conduct the study.
- Each request must be accompanied by a refundable deposit of \$25,000, which deposit shall be applied toward the reasonable costs incurred by the NYISO.
- NYISO will post the requests for Study Replication on its website.
- Postings shall include a general description of the study requests, the date of receipt, and the identity of the Requestor.

#### **Scoping Meeting**

- NYISO shall acknowledge receipt of the Request for Study Replication within ten (10) business days of receipt and shall inform Requestor whether, in the judgment of the NYISO, the request is complete. If not complete, the NYISO will request additional information.
- Following the receipt of a complete Request for Study Replication, the NYISO shall establish with Requestor a mutually agreeable time for a Scoping Meeting at which the Study Replication scope will be determined.
- Following the Scoping Meeting, the NYISO will prepare a Scope of Study Replication to become part of a Study Agreement for a Study Replication (developed by the NYISO) that will be provided to the Requestor along with a non-binding estimate of the total study costs.
  - The Scope of Study Replication will define the deliverables to be provided by the NYISO at the completion of the studies and will include identification of the study to be replicated as specified in applicable Section(s) 31.2.3.1, 31.2.6.1, 31.3.2.1 and/or 31.5.3.5 of Attachment Y, and data to be analyzed.
  - The Study Agreement will also contain payment terms and conditions.
  - Additional deposits shall be required to cover the NYISO's estimate of the total study costs (after credit for the initial deposit).
  - The Study Agreement must be executed by the Requestor and the NYISO before the NYISO conducts any study work.
  - If Requestor modifies the scope of the Study Replication as initially specified, and does so in such a way as to increase the estimated total cost of the Study Replication, the NYISO may request, and the Requestor shall pay, an additional deposit.

**Completion and Delivery of Study Results**

- The NYISO will conduct the Study Replication in the order in which requests for Study Replication are received. A request will be deemed received by the NYISO on the date the NYISO receives all necessary components of a complete request, including the deposit.
- The NYISO will use reasonable efforts to complete each Study Replication by a date mutually agreed to with the Requestor. If the NYISO determines this target date will not be met, the NYISO will promptly inform the Requestor and provide the Requestor with an updated estimate of the new date by which the Study Replication will be completed.
- Upon completion of the study, the NYISO will provide a final invoice to the Requestor to cover all reasonable costs it has incurred in the performance of the study.
- Within 30 days of the final invoice, there shall be a final payment (refund) to true up any study deposits to the final study cost.
- Following final payment (refund), the NYISO will provide the study results to the Requestor.

- Upon request, the NYISO will schedule a meeting to review the study results with the Requestor.
- The NYISO will review the results of the Study Replications to determine whether the results reveal Confidential Information that is not subject to disclosure under the NYISO's Code of Conduct. Confidential Information will be removed or the results aggregated or masked sufficiently to avoid the disclosure of Confidential Information.

**Withdrawal of Request**

- Requestor may withdraw its study request at any time by written notice to the NYISO.
- Upon receipt of such request, the NYISO will terminate any further study work.
- Requestor shall reimburse the NYISO for all reasonable expenses incurred prior to the receipt of the withdrawal notice. NYISO will refund any unpaid deposit funds to the Requestor, if applicable.

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## Appendix A. **Typical CARIS Base Case Assumptions Matrix**

The Typical CARIS Base Case Assumptions Matrix is available under the *Economic Planning Process Manual* which is located in the Manuals>Planning folder on the NYISO Manuals & Guides Web site:

[http://www.nyiso.com/public/markets\\_operations/documents/manuals\\_guides/index.jsp](http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp))

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## Appendix B. **Additional CARIS Study Request Form**

The Additional CARIS Study Request Form is available under the *Economic Planning Process Manual* which is located in the Manuals>Planning folder on the NYISO Manuals & Guides Web site:

[http://www.nyiso.com/public/markets\\_operations/documents/manuals\\_guides/index.jsp](http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp))

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## Appendix C. **Additional CARIS Study Agreement Form**

The Additional CARIS Study Agreement Form is available under the *Economic Planning Process Manual* which is located in the Manuals>Planning folder on the NYISO Manuals & Guides Web site:

[http://www.nyiso.com/public/markets\\_operations/documents/manuals\\_guides/index.jsp](http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp))

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## Appendix D. **Specific Project Submittal Request Form**

The Specific Project Submittal Request Form is available under the *Economic Planning Process Manual* which is located in the Manuals>Planning folder on the NYISO Manuals & Guides Web site:

[http://www.nyiso.com/public/markets\\_operations/documents/manuals\\_guides/index.jsp](http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp))

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## Appendix E. **Specific Project Submittal Agreement Form**

The Specific Project Submittal Agreement Form is available under the *Economic Planning Process Manual* which is located in the Manuals>Planning folder on the NYISO Manuals & Guides Web site:

[http://www.nyiso.com/public/markets\\_operations/documents/manuals\\_guides/index.jsp](http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp))

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## Appendix F.      **Study Replication Request Form**

The Study Replication Request Form is available under the *Economic Reliability Planning Process Manual* which is located in the Manuals>Planning folder on the NYISO Manuals & Guides Web site:

[http://www.nyiso.com/public/markets\\_operations/documents/manuals\\_guides/index.jsp](http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp))

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## Appendix G.      **Study Replication Agreement Form**

The Study Replication Agreement Form is available under the *Economic Reliability Planning Process Manual* which is located in the Manuals>Planning folder on the NYISO Manuals & Guides Web site:

[http://www.nyiso.com/public/markets\\_operations/documents/manuals\\_guides/index.jsp](http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp))



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## Appendix H. **NYISO Developer Qualification Form**

The NYISO Developer Qualification Form is available under the *Reliability Planning Process Manual* which is located in the Manuals > Planning folder on the NYISO Manuals & Guides Web site:

[http://www.nyiso.com/public/markets\\_operations/documents/manuals\\_guides/index.jsp](http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp)

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