

Installed Capacity Market

Going Forward Costs Input Template Instructions

Data Submission Template for Going Forward Cost and Physical Withholding Review

March 2014

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1. Overview

The Going Forward Cost Template is the tool used by the NYISO to collect data pertaining to avoidable costs and capital expenses. The NYISO requires this data to compute Going Forward Costs¹ (GFCs) and perform physical withholding evaluations pursuant to Market Administration and Control Area Services Tariff (MST), Attachment H, Sections 23.4.5.3 and 23.4.5.6, respectively.

If a Market Participant is requesting a GFC, or requests or is subject to a Physical Withholding evaluation, the Market Participant must submit a completed GFC Template and supporting documentation described below. The submittal shall also include a detailed plan outlining the purpose of the submittal and request and relevant plan timelines: permanent removal or retirement, mothball state, derate, Inactive Reserves state, Going Forward Costs, repair, or combination of the above. The accompanying data shall reflect costs in appropriate detail for the relevant time period, consistent with the plan.

Below are detailed instructions on how to fill out the template. The guide consists of definitions and instructions for each Section (designated by capital letters) and Line Item (designated by numbers).

Avoidable Costs are costs, net of anticipated energy and ancillary services revenues, of supplying Installed Capacity that could be avoided if an Installed Capacity Supplier were either (1) to cease supplying Installed Capacity and Energy for a period of one year or more while retaining the ability to re-enter such markets, or (2) to retire permanently from supplying Installed Capacity and Energy.²

To determine the Going Forward Costs of a unit, the NYISO calculates the Net Present Value of avoidable costs using a nominal pre-tax Weighted Average Cost of Capital, *i*.

$$NPV = \left(\sum_{t=1}^{N} \frac{Costs}{(1+i)^t}\right)$$

This Net Present Value is multiplied by avoidable share, % *Avoidable*, to find the Amount Avoidable. If there are multiple units at a site, the % *Avoidable* is the avoidable share of the costs attributable to that unit.

¹ Terms with initial capitalization not defined herein have the meaning set forth in the MST.

² "Going-Forward Costs" shall mean: either (a) the costs, including but not limited to mandatory capital expenditures necessary to comply with federal or state environmental, safety or reliability requirements that must be met in order to supply Installed Capacity, net of anticipated energy and ancillary services revenues, as determined by the ISO as specified in Section 23.4.5.3, for each of the following instances, as applicable, of supplying Installed Capacity that could be avoided if an Installed Capacity Supplier otherwise capable of supplying Installed Capacity were either (1) to cease supplying Installed Capacity and Energy for a period of one year or more while retaining the ability to re-enter such markets, or (2) to retire permanently from supplying Installed Capacity and Energy; or (b) the opportunity costs of foregone sales outside of a Mitigated Capacity Zone, net of costs that would have been incurred as a result of the foregone sale if it had taken place." *MST Section 23.4.5*

For the purposes of longer term or permanent removals, Amount Avoidable is annualized using an annuity formula and expressed in terms of cost per kW-year (ICAP).

$$Cost per kW year (ICAP) = \frac{NPV * \% Avoidable * \frac{i(1+i)^n}{(1+i)^n - 1}}{CRIS Adj DMNC * 1000}$$

For the purposes of the annuity formula, n is calculated as the minimum of the periodicity of expense or equipment replacement and the maximum of 6 years and 40 less the age of the plant.

 $n = MIN\{Periodicity of expense or replacement, MAX[6, 40 - Age of Plant]\}$

GFCs are calculated as the Cost per kW year less net energy and ancillary services revenues (net revenues). Net revenues are calculated by the NYISO. The NYISO's projections are informed by information including the unit's historic operating results and by the Market Participant's forward projections. The NYISO calculates historic net revenues. The Market Participant is to provide its most recent calendar year of historic data and six years of forward projections (or if six years of projects were not prepared, then the next longest amount that was prepared). The requested data pertain to revenues from energy and ancillary services, and variable operating costs. Data for variable and fixed operating costs must be submitted consistent with the guidelines in the NYISO's Reference Level Manual, as used in the generator's cost-based variable energy reference.³

The annual GFC value is shaped into summer and winter monthly UCAP values.

For the physical withholding evaluation NYISO calculates forecasted ICAP revenues. GFCs are compared to ICAP Forecast in the test for physical withholding.

By design, the template collects only avoidable costs. Therefore any materials, labor and other costs that are compensated for in the energy markets are deemed not avoidable. Furthermore, the template is designed to help the Market Participant to isolate the costs that are specific to a Unit (by PTID) and allocate an appropriate percentage of the shared avoidable costs to the Unit under evaluation.

Required fields are highlighted in an orange dotted formatting, which as information is entered will change formatting. Please input only numbers and not formulas. You will have an opportunity to attach methodology and assumption descriptions for any calculations in the Comment and Documentation fields. Please do not modify the template spreadsheet, other than to add lines to record additional capital costs or expenses. Please do not add any line items. You will have an opportunity to list expenses unspecified in the template under the Line Item "Other" and to attach documentation or comments corresponding to this Line Item.

All costs and revenues are to be provided in nominal dollars (i.e., not adjusted for inflation) for the respective years.

³ New York Independent System Operator. *Manual 34. Reference Level Manual*. Version 1.1, prepared <July 2013 by Market Mitigation and Analysis, available at:

http://www.nyiso.com/public/webdocs/markets_operations/documents/Manuals_and_Guides/Manuals/Op erations/M-34_Reference_Level_v1_1_Final.pdf>. ("NYISO Reference Level Manual").

2. Column Items Guide

Section (A). Input

This field requires an entry of data or information corresponding to the indexed line items. For more guidance on the individual inputs refer to indexed line item instructions below.

Section (B). Comment

The comment field is an opportunity to clarify or comment on information inserted in the Input field. Please include a description of any assumptions. Fields requiring substantial assumption or methodology descriptions should be documented with supplemental attachments.

Section (C). Documentation Reference

To fill out the Documentation Reference field, please name and list attachments on the "Documentation Organizer" tab of the Input Template which are to be submitted with the Template File. Figure 1 illustrates the tab.

| | | | Directions: Please utilize this documentation organizer to list attachments and descriptions. Use corresponding Attachment number to refer to documents in t Inputs" tab. | | | |
|---------------|--------------------|---------------|---|------------------------------|--|--|
| Attachment # | | Document Name | Document Description | | | |
| Attachment X | e.g., Payroll 2012 | | e.g., Detailed annu | al payroll data by position. | | |
| Attachment 1 | | | | | | |
| Attachment 2 | | | | | | |
| Attachment 3 | | | | | | |
| Attachment 4 | | | | | | |
| Attachment 5 | | | | | | |
| Attachment 6 | | | | | | |
| Attachment 7 | | | | | | |
| Attachment 8 | | | | | | |
| Attachment 9 | | | | | | |
| Attachment 10 | | | | | | |
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| Attack and OF | | | | | | |
| Attachment 25 | | | | | | |

As you fill out the Template File, please reference the Attachment number (e.g., Attachment 6) and the exact location of the required information (e.g., page 5, Cell C9, Tab "X", Table "Y"). You can reference more than one attachment for each line item; please be sure to indicate which date or field each attachment is documenting. Whenever possible, compile documentation spreadsheets for easier reference (*e.g.*, payroll data compiled into one spreadsheet with historical data tabs for each year).

Section (D). Historical

Section (D) requires historical data for up to six years before the analysis period. Enter the total annual values for each required field / line item. Revenues, Variable Costs and Fixed Costs line items require one year of historical data. If projected values for any line item differ significantly from historical data, provide historical data for additional years, as well as documentation and substantiation for the change. Capital Expense line items each require six years of historical data. Provide data in nominal dollars.

Section (E). Projected

Section (E) requires projected values for each line item. Enter the total annual values for each required line item. All cost line items require six years of projected data. Provide data in nominal dollars. If costs are escalated using escalation or inflation factors, specify the assumptions in the Comment section. Capital Cost line items must provide reasonably anticipated costs for six years after the analysis date based on verifiable historical data and condition assessments.

Section (F). Periodicity

The periodicity of the expense is required to calculate an annualized (annuity) value of the expense. For each expense incurred (historical data) or projected to be incurred, please enter the frequency and/or life of the expense in years. For example, periodicity of equipment would be life of the equipment expressed in years. Periodicity of an upgrade or an outage is the frequency, in years, of the event. Annual expenses have a periodicity of 1. Expenses that are incurred once in a lifetime of the unit should list the period over which the expense is amortized. NYISO will calculate the periodicity for each cost based on this data and age of the plant, as described in the Overview.

Section (G). % Avoidable

Avoidable Costs are costs of supplying Installed Capacity that could be avoided if an Installed Capacity Supplier was to either (1) cease supplying Installed Capacity and Energy for a period of one year or more, while retaining the ability to re-enter such markets, or (2) to retire permanently from supplying Installed Capacity and Energy.

Avoidable cost share can constitute either the unit's share of costs common to the plant, in the case of multi-unit plants, or other share, in cases where only a portion of a unit-specific cost is avoidable.

Please indicate what percentage that could be avoided under either scenario. If the avoidable amount is based on a cost allocation methodology for a unit, indicate and document the methodology for allocating expenses among units as avoidable (*e.g.*, cost allocation based on MW or MWh). Show that percentage avoidable of all generators sums to 100%.

3. Line Items Guide

Complete each line items specified in the template and defined below. Do not add lines. If a specific line item is not designated in the template, include the cost in the Line Item "Other" and provide Comments and appropriate Documentation.

General Unit Information

1. Owner Operator:

Name of the company owning the plant or submitting the data.

- 2. *Station Unit:* Unit name as it appears in the MIS, if known.
- *3. PTID:* PTID from the MIS relating to the unit.
- Installed Date: Installation year as indicated in the most recently-published NYISO Load and Capacity Report (Gold Book).
- 5. Unit Summer ICAP Capability (MW): Most recent Summer DMNC MW value.
- 6. Unit Winter ICAP Capability (MW): Most recent Winter DMNC MW value.
- CRIS Adjusted DMNC: The unit's Capacity Resource Interconnection Service (CRIS) MW value for the Summer Capability Period.
- 8. Date of the Analysis (MM/DD/YYYY) Date of the data submission. Final and complete data submission marks the beginning of the period for which analysis is conducted.

Energy Model Inputs/ Physical Parameters

All ambient condition dependent line items in this section should be at International Standards Organization conditions⁴ unless otherwise noted. Note that, for your convenience, the inputs in this section do not represent a complete list of operating parameters required. Please ensure that all the operating parameters required for Attachment 4 are submitted in the supporting documentation of your submittal.

- 9. Net Plant Heat Rate (BTUs/ kWh)(HHV): Operating Net Heat Rate.
- 10. Fuel Required to Start:

Fuel in MMBtu required, on average, to reach the plant's minimum generation (mingen) level. For a Combined Cycle Unit it is the fuel required, on average, to be in compliance with air permits (*e.g.*, Mode 6 on a GE unit). For a steam unit, it is the fuel required, on average, to reach mingen and be in compliance with air permits.

11. Mingen:

Minimum operating limit, in MW.

12. EFORd:

EFORd from the most recent Capability Period, as calculated by the NYISO.

13. Primary Fuel:

Primary fuel used in operation. (e.g., if gas is 51% and oil 49%, then gas is your primary fuel.)

14. Secondary Fuel, if applicable:

Secondary fuel used in operation. (e.g., if gas is 51% and oil 49%, then oil is your secondary fuel.)

- 15. NO_x Rate (pounds/MMBtu): NO_x emissions rate in pounds/MMBtu. If the unit has duct firing, provide the NO_x emissions rate in the comment section of the line item.
- 16. CO₂ Emissions Rate (pounds/MMBtu):

 CO_2 emissions rate in pounds/MMBtu. If the unit has duct firing, provide the CO_2 emissions rate in the comment section of the line item.

- 17. SO_x Emission Rate (pounds/MMBtu):
 SO_x emissions rate in pounds/MMBtu. If the unit has duct firing, provide the SO_x emissions rate in the comment section of the line item.
- 18. Variable O&M (\$/MWh):

Annually recurring costs that are directly proportional to generating output. Variable O&M costs, along with fuel costs, are used to develop net energy and ancillary services revenues. Base the indicated variable O&M costs on pricing information from any long-term service agreements for major maintenance parts and labor, along with current local pricing and material balances for consumable items such as ammonia, water and sewer, and water treatment chemicals. Also include other variable O&M costs related to unscheduled maintenance, the SCR catalyst, ammonia, the CO oxidation catalyst, water and other chemicals and consumables. These items are to be expressed in \$/MWh, regardless of whether the maintenance component is hours-based or starts-based. The values should be consistent with the methodology in the *NYISO Reference Level Manual*.

19. WACC or Weighted Average Cost of Capital:

Parent organization WACC. In the comment section provide a project-specific WACC, if available. In the comments section, identify the components of the WACC: the debt-to-equity ratio, debt cost, return on equity, and applicable federal, state, and city income tax rates. Provide documentation to support each of the inputs.

20. Age of plant:

Value, in years, calculated as the difference between *Date of the Analysis* (line item 8) *Installed Date* (line item 4).

Revenues

Please provide historical revenues and projected revenues, if available.

- 21. Energy
- 22. Ancillary Spinning and Non-Spinning Reserves
- 23. Ancillary Regulation
- 24. Ancillary Voltage Support Service
- 25. Ancillary Black Start Service
- 26. Other:

Sum other revenues not included in line items above and include comments and documentation.

Variable Costs

- 27. Fuel
- 28. NO_x
- 29. SO_x
- *30. CO*₂
- 31. Startup/ Shutdown Gas/ Station Light and Power
- 32. Balance of Plant Maintenance, Materials, Services and Consumables
- 33. Long Term Service Agreement (LTSA) Variable
- 34. Other:

Sum other variable costs not included in line items above and include comments and documentation.

Fixed Costs

35. Plant Labor:

Routine O&M labor expense includes full-time equivalent staffing costs for plant management, operation, and maintenance, including salaries and benefits. If projecting labor expense based on escalating historic data, please clearly list any assumptions. Substantiate labor expense with appropriate attachments.

- *36. Plant Labor Overtime:* Overtime labor expenses.
- *37. Contract Labor/ Services:* Fixed annual costs of contract services.
- 38. Labor Benefits: Labor benefits expenses.
- 39. Maintenance
- 40. Long Term Service Agreement (LTSA) Fixed
- 41. Balance of Plant
- 42. Environmental/ Security/ Safety
- 43. Plant Utilities and Aux Load
- 44. Administrative Expense:

Administrative and general costs include on-site and off-site and home office costs not covered above under routine labor or contract services.

45. Property Tax Expense:

Property valuation, assessment ratios and tax rates applicable to the specific project and site. Indicate the full value, unadjusted for depreciation or any eligible property tax exemptions. State any payments in lieu of taxes (PILOT) and the term thereof, if applicable.

- 46. Employee Expenses
- 47. Travel & Entertainment
- 48. Office Expense
- 49. Training
- 50. Information Technology
- 51. Insurance:

All applicable annual premiums during the plant operating life, unadjusted for depreciation. Include any actual or anticipated lump-sum insurance proceeds in the *Other* field (line 55) and indicate whether the proceeds are contingent upon repair.

- 52. Lease payments
- 53. Legal

- 54. Procurement
- *55. Other:*

Sum other fixed costs not included in line items above and include comments and documentation.

Capital Expense

List six years of historical and six years of projected capital expenses, utilizing one line item per expense. Include repair costs in the submission. Lines may be added to accommodate all capital expenses. Please fill in 0 for cells that do not contain data.

Include in the Comment Section and document whether the capital expense is deferrable, and the time for which it could be deferred, consistent with good utility practice.

4. Supporting Documentation Requirements

In addition to the completed Input Template, please prepare the following required documents:

Attachment 1: Capacity Removal Plan and/or Offering Plan Attachment 2: Equipment Performance and Maintenance Attachment 3: Historical Operating Data Attachment 4: Plant Performance Model Attachment 5: Plant Financial Attributes Attachment 6: Repair Plan (if applicable)

To ensure that all required documentation and documentation referred to in the template is uploaded, complete the Documentation Organizer. In addition to the required documents listed above, attach any other supporting documents to substantiate the modeled figures.

List the document names and their descriptions in the appropriate columns. When referring to documents, please use the corresponding Attachment # in the Document Organizer (i.e. Attachment 2, p. 101). You may add lines to the Documentation Organizer Tab.

The NYISO may conduct a site visit to verify information submitted by the Market Participant. The site visit might include the following, among other requests:

- i. Station-specific walk-downs
- ii. Field interviews with station management, operations, maintenance, planning and scheduling personnel, reliability engineers, and stores personnel.
- iii. A review of the basic mechanical and electrical systems of the power stations and evaluate the impacts of age, operational scheme, and environmental compliance impacts on the equipment.

Attachment 1: Capacity Removal and/or Offering Plan

- i. Intent of the capacity removal with expected sequence, timing and contingencies.
 - For example, data is submitted for the purposes of computing Going Forward Costs for six months; if the unit does not clear for at least four of those months, the generation owner intends to put the unit in a mothball status and subsequently retire it unless capacity prices are at least X% above the GFC.
- ii. Submit costs relevant to the intent. If submitting data for multiple stages of removal and/or offering of GFCs, provide costs and documentation in relevant granularity.
 - For example, costs submitted for calculation of GFCs for use in ICAP Spot Market Auctions should contain monthly granularity and be accompanied by invoices, receipts and other relevant documentation. Costs submitted for the purposes of physical withholding evaluation of a permanent removal of capacity should include six years of avoidable cost data and documented by EPC quotes, capital expenditure estimates, condition assessments, and other relevant documentation.

Attachment 2: Equipment Performance and Maintenance

- i. Equipment performance and maintenance records.
- ii. Available inspection and test reports and previous condition assessment/life assessment and insurance inspection reports associated with critical structures, systems, and components (SSCs). (See Appendix 1).
- iii. Assessment of significant issues and negative trends for each critical SSC based on the document and data reviews.
- iv. For each of the critical SSCs, histories of major maintenance, replacement and capital work, both in terms of scope and budget performance.
- v. Description of O&M organization including O&M agreements, long-term service agreements, payment structures, and current status.
- vi. Description of property tax assumptions, including applicable assessment ratios, tax rates, and payments in lieu of taxes (PILOT).
- vii. Description and status of fuel supply agreements and other operational agreements.

Attachment 3: Historical Operating Data

- i. Unit deratings, forced outages, maintenance outages, or other major losses of production that have been caused by the SSC based on Generating Availability Data System (GADS) Event Report data.
- ii. OEM technical correspondence, bulletins and advisories (*e.g.*, e.g., technical information letter (TIL) and bulletins, operations & maintenance memo (OMM) and availability improvement bulletin (AIB)).
- iii. Emissions requirements and performance notes monthly/YTD station reports.

Attachment 4: Plant Performance Model

Provide an Excel model (or similar documentation) containing the following:

i. A representation of projected operating performance over the facility's operating life (stating the operating life and the basis for that number of years), including assumed annual operating hours, annual starts, MMBtu required and incremental energy produced per start for each hour the plant has been off (up to the maximum required for a cold start); curves delineating maximum and minimum combustion turbine load, with the associated steam turbine loads, net plant heat rates and auxiliary power usage, and with respect to ambient conditions. Include the ramp rate, minimum runtime and downtime, the amount of megawatts available for each ancillary service (*i.e.*, 10 minute spinning/non-spinning reserves), other part load operation parameters, assumed forced outage hours, planned outage hours, major maintenance expenditures, and cost escalation assumptions as necessary or appropriate.

Attachment 5: Plant Financial Attributes (if applicable)

- i. Cost allocation methodology for shared costs in cases where there are multiple units at a site, *e.g.* per MWh or MW, explaining the percentages submitted in *Section* (G). % Avoidable.
- ii. Description of forecasted amounts of revenue, the sources of those revenues (power purchase agreements, merchant revenues, ancillary services, etc.), and basis for forecasted revenues.
- iii. If financing is required for capital expenditures associated with repairs and/or maintenance, provide documentation of the relevant financial parameters, *i.e.* the

debt-to-equity ratio, debt cost, return on equity, and applicable federal, state, and local income tax rates.

Attachment 6: Repair Plan (if applicable)

If the unit is in a Forced Outage state during the time of the analysis, compile the following:

i. A report detailing all necessary actions and associated costs necessary to repair the unit and the corresponding timeframe in which the actions would be taken and associated costs would be incurred, including the projected return to service.

| Appendix 1: Critical Structures, Systems, and Components (SSC) | | | | | | | | | |
|--|--|---|--|---|---|---|--|--|--|
| Gas-fired Combustion Turbine – simple cycle | Gas-fired Combustion Turbine – combined cycle / cogeneration | Coal-fired Steam Turbine | Reciprocating Engine | Nuclear-powered Steam Turbine (PWR / BWR) | Hydroelectric (Conventional / Pumped Storage) | Wind Turbine Generator Plant | | | |
| Combustion Turbine | Combustion Turbine | Boiler | Engine | Reactor & Nuclear Steam Supply System (NSSS) | Turbine | Wind Turbine Structure | | | |
| Generator | Generator | Steam Turbine | Generator | Steam Turbine | Generator | Wind Turbine | | | |
| Cooling water system | Boiler/Steam Generator | Generator | Cooling water system | Generator | Main transformer | Generator | | | |
| Water treatment | Cooling water system | Cooling water system | Water treatment | Primary Cooling water system / Reactor Recirculator | Electrical distribution | Turbine Foundation | | | |
| Main transformer | Water treatment | Water treatment | Main transformer | Secondary Cooling water system | Instrumentation and controls | Collection System | | | |
| Electrical distribution | Condensate and feedwater system | Condensate and feedwater system | Electrical distribution | Emergency cooling water system | Buildings and structures | Main transformer / substation | | | |
| Instrumentation and controls | High energy piping | High energy piping | Instrumentation and controls | Primary Containment system | Equipment & personnel protection systems | Electrical distribution | | | |
| Fuel delivery and handling | Main transformer | Main transformer | Fuel delivery and handling | Containment Isolation System | | Instrumentation and controls | | | |
| Selective Catalytic Reduction (SCR) systems | Electrical distribution | Electrical distribution | SCR systems | Chemical Injection System | | Waste disposal & storage | | | |
| Waste disposal & storage | Instrumentation and controls | Instrumentation and controls | Waste disposal & storage | Water treatment | | Buildings and structures | | | |
| Buildings and structures | Fuel delivery and handling | Fuel delivery and handling | Buildings and structures | Condensate and feedwater system | | Equipment & personnel protection systems | | | |
| Equipment & personnel protection systems | SCR systems | Ash handling | Equipment and personnel protection systems | High energy piping (main steam) | | | | | |
| | Waste disposal & storage | Precipitators | | Reactor protection system | | | | | |
| | Buildings and structures | Fluidized Gas Desulphurization systems | | Heater drain system | | | | | |
| | Equipment & personnel protection systems | SCR systems | | Main transformer | | | | | |
| | | Waste disposal & storage | | Generator Stator water cooling | | | | | |
| | | Buildings and structures | | Generator hydrogen cooling system | | | | | |
| | | Equipment & personnel protection systems | | Electrical distribution | | | | | |
| | | | | Instrumentation and controls | | | | | |
| | | | | Fuel delivery and handling | | | | | |
| | | | | Low level waste disposal & storage system | | | | | |
| | | | | Spent fuel disposal and storage system | | | | | |
| | | | | Buildings and structures | | | | | |
| | | | | Equipment & personnel protection systems | | | | | |