Forecast Enhancements in the Buyer-side Mitigation Rules

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DRAFT – FOR DISCUSSION PURPOSES ONLY

Background and Objective

- **Stakeholder meetings:**
  - ***December 12, 2014, March 18, 2015, May 18, 2016, July 6, 2016***
- **Continue discussion on developing rules to enhance to forecasts used in the Buyer-Side Mitigation (BSM) determinations**
- **Today's presentation provides**
  - ***Framework and Concepts***
  - ***Numerical Examples***
    - **The Excel workbook posted with today's ICAPWG meeting materials includes illustrative calculations for Mothball and IIFO units**
- **Next steps**

Proposed Framework

- **The purpose is to make assumption on the resource mix for the purpose of BSM determinations:**
  - ***Currently operating units (i.e.,Gold Book)***
  - ***Minus***
    - **Retired**
    - **Relinquishing/Transferring CRIS**
    - **Other publicly available information definitively indicating a unit will not continue operation***
  - ***Plus:***
    - **Forced Outage and Inactive Reserve**
      - *unless there is publicly available information, definitively indicating a unit will not continue operation**
  - ***Plus (if there are "positive indicators", see Appendix)***
    - **ICAP Ineligible Forced Outage ("IIFO"), including Catastrophic Failure units**
    - **Mothball Outage and partial long-term derate**
  - ***Plus/Minus, based on outcome of the "inclusion test" for certain units, including:***
    - **Any of the above ***<u>without</u>* positive indicators of repair**
    - **RMR (RSSA) with an expiration date before or during Mitigation Study Period**

***The use of this provision will be accompanied by additional documentation & notice requirements**

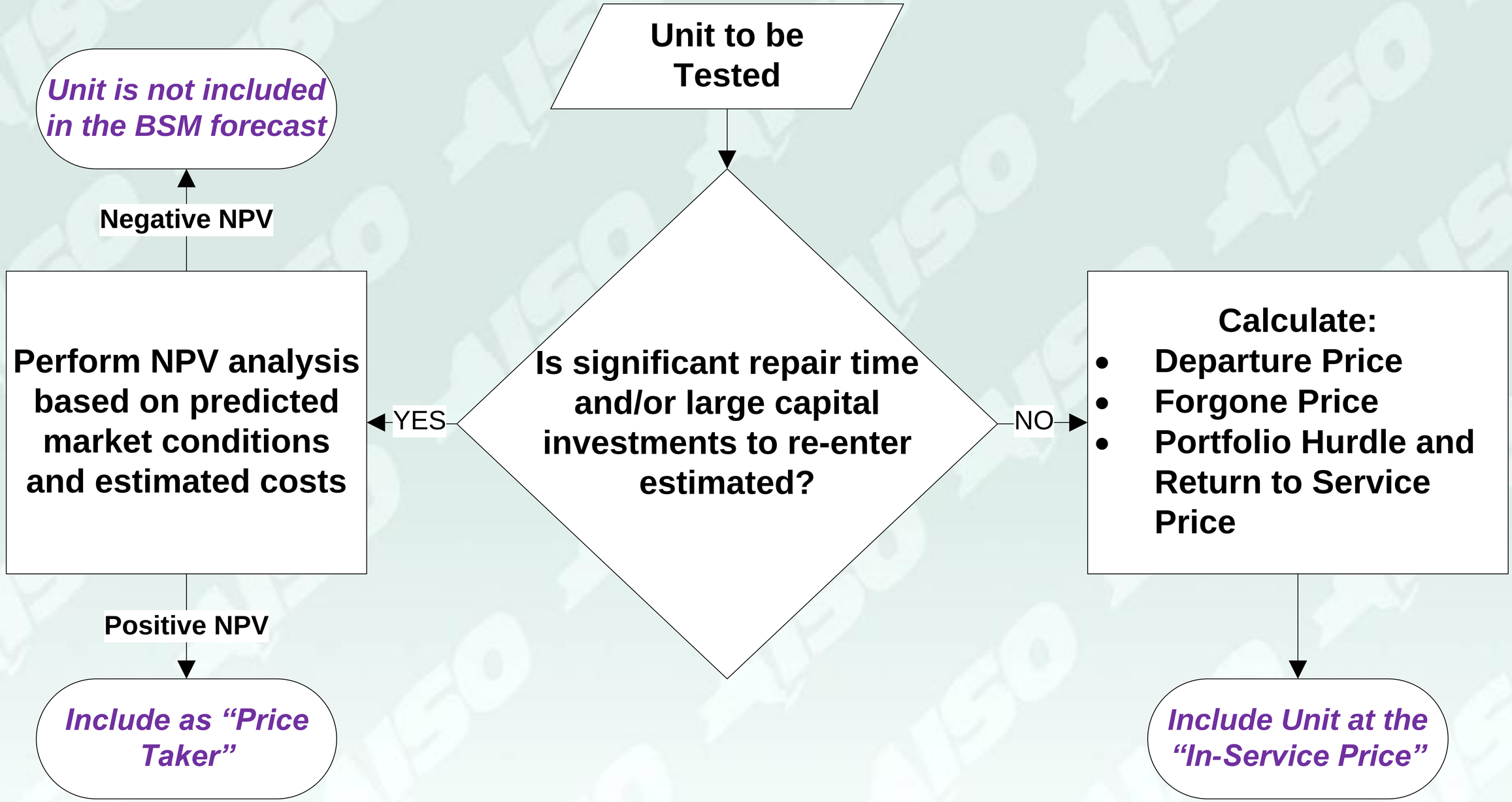
Inclusion Test

- **Performed for resources that have ability to re-enter the market, or remain in the market, under "favorable conditions"**
- **To evaluate whether a resource might return to service, or remain in service (as applicable), over a given time period (spans from the beginning of CY to the end of Mitigation Study Period**)**
  - ***At the time of the BSM determination the NYISO will determine solely for purposes of the BSM determination whether the resources examined in the inclusion test should be assumed "in-service"***
  - ***If forecasted market signals are favorable, such resource would be included in the BSM forecasts***

** In a separate proposal, the NYISO will be discussing enhancements to the MSP

Inclusion Test cont'd

- **For units requiring significant capital investment(s) and/or a long lead time to return:**
  - ***The analysis is based on the estimated net present value ("NPV") under predicted market conditions of***
    - **estimated costs to return and operate, including lost opportunity costs and lost revenues**
    - **projected net revenues associated with the production and sale of energy, capacity and Ancillary Services**
  - ***If NPV is positive, the unit is modeled as "in-service" in the forecasts for the purpose of the BSM evaluation***
  - ***Otherwise, the unit is excluded from the forecasts for the purpose of the BSM evaluation***
- **For units requiring small capital expenses and/or a short time to return, or if costs cannot be verified:**
  - ***include at (seasonally shaped) "in-service price"***
- **The analysis will be performed iteratively in order to efficiently account for competition with proposed new units (from both prior and current CY)**



Inclusion Test cont'd

- **For each unit, that requires *significant capital investment(s) and/or long lead time to return*, calculate NPV of:**
  - ***"estimated revenues needed to be recovered" required to support a return to service based on (NYISO will request updated cost information as it is required):***
    - **Projected unit-specific "costs-return-service"**
      - *Operating costs, including required capital expenditures*
      - *Mobilization costs (i.e., additional expenses needed to bring the unit back to service, including testing costs)*
      - *Costs associated with RMR contract (i.e., "claw-back" payment (anti-toggling provision))*
    - **Any other additional relevant lost opportunity costs based on publicly available and verifiable information**
  - ***estimated value of net revenues associated with the production and sale of energy, ancillary services and capacity***
    - **including expected lost revenue on the rest of the unit owner's portfolio due to reduction in ICAP prices**
  - ***analysis is performed for the period from the CY determination point through the end of the assumed investment horizon (or the end of the MSP, as appropriate)***

Inclusion Test cont'd

- **For all other units calculate "In-Service Price" based on:**
  - ***"Departure price"***
    - **market revenues at the time the unit had exited or signaled its intent to exit (which were not enough to support continue operation)**
  - ***"Forgone price*"***
    - **market revenues that the unit could have been earning if it have stayed in the market (which were not enough to trigger its return)**
  - ***"Return to service price"***
    - **Projected unit-specific "costs-return-service"**
      - *including needed expenses such that mobilization/testing, avoidable costs, and costs associated with RMR contract (aka "claw-back" payments (anti-toggling cost provision))*
      - *any other additional relevant lost opportunity based on publicly available and verifiable information*
    - **Net of estimated value of net revenues associated with the production and sale of energy and ancillary services**
      - *including Portfolio Effect** ("portfolio hurdle price") that is expected lost revenue on the rest of the unit owner's portfolio due to reduction in ICAP prices*

**** most relevant to units requiring relatively lower amount of capital investment(s)***

***** applicable to units that are not currently in the market***

Illustrative examples

- **These examples are not an attempt to provide:**
  - ***forecasts of capacity and energy prices and/or revenues for future and past periods***
  - ***estimates of any CapEx, avoidable costs, repair and mobilization costs***
  - ***projections of operating characteristics of any NYCA generating unit that might be in IIFO or Mothball status***
  - ***financing parameters that represent any Market Participant***
  - ***analysis of portfolio composition***
- **Rather, the only focus is to illustrate the mechanics of the Inclusion Test, based on stakeholder requests**
  - ***A "live" Excel workbook to support these examples is posted with today's presentation materials***
- **The analysis illustrate two cases:**
  - ***Mothball Outage unit that has up to 36 months to re-enter the market, which ends before or during the very beginning of the MSP***
  - ***IIFO unit with its CRIS expiring in next 12-18 months and with no positive indicators of return***

Example: Mothball

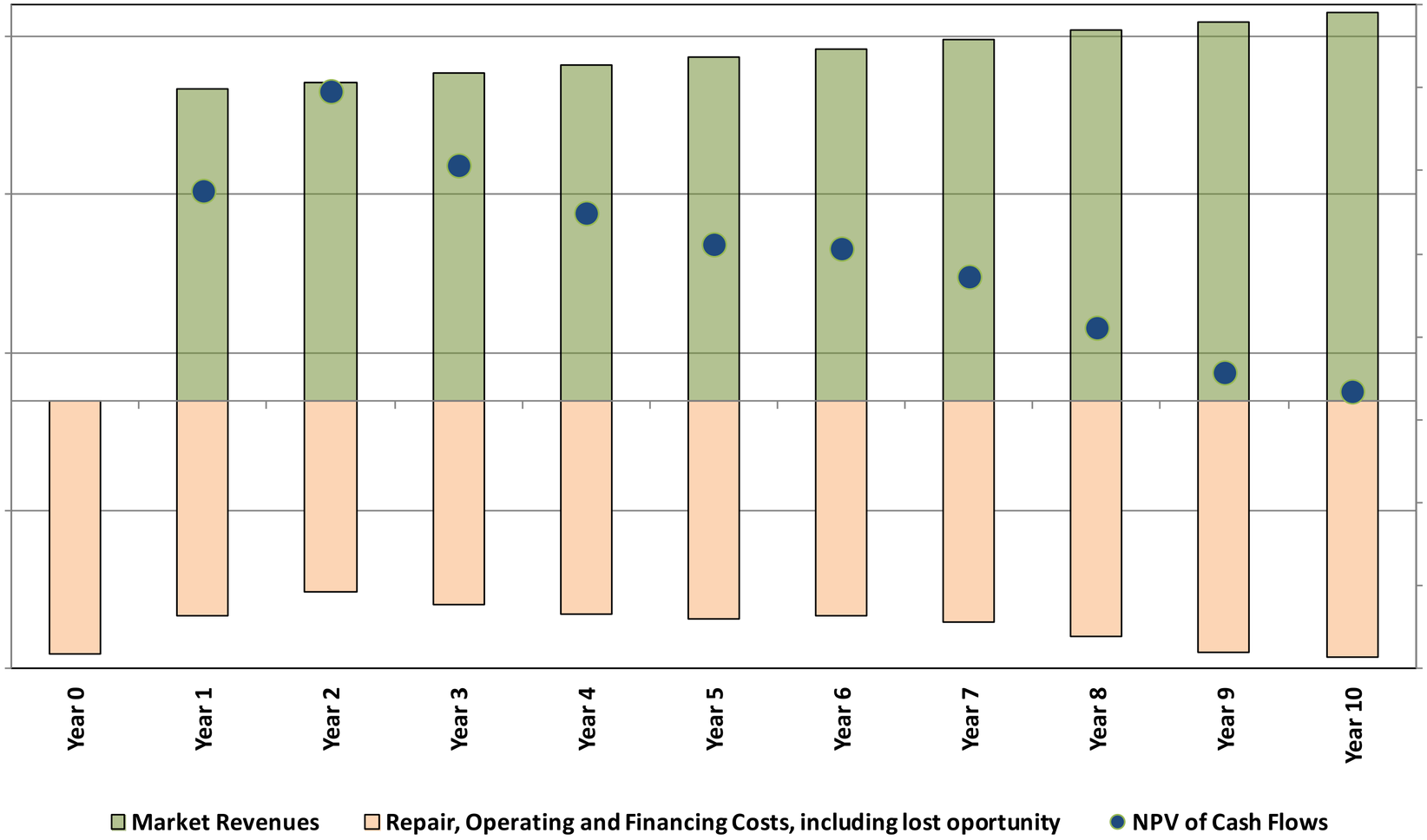
- **Changes its status to Mothball Outage right before the BSM determination/Class Year Initial Decision Periods commences**
- **Depending on market outlook, the unit may return to service any time during next three years**
- **Perform analysis based on the historic and predicted market conditions:**
  - ***Calculate the departure price based on historic estimates of the market net revenues***
  - ***Estimate the forgone price based on the current market conditions assuming the unit had been participating***
  - ***Estimated the costs to bring the unit to service***
  - ***Estimate the forgone portfolio revenues and other lost opportunity costs***
  - ***Include the unit in the BSM forecast at the seasonally shaped "in-Service Price"***

Return		in Year 1	in Year 2	in Year 3
Return-to-Service with Portfolio Hurdle Effect				
Price/kW-yr		$ 10.77	$ 10.11	$ 9.50
Departure price/kW-yr		$ 144.00	$ 144.00	$ 144.00
Forgone price/kW-yr		$ 98.15	$ 98.02	$ 98.82
In-Service Price, $/kW-yr		**$ 154.77**	**$ 154.11**	**$ 153.50**

Example: IIFO with CapEx

- **Unit Requires significant Capital Expenditure**
- **There are no "positive indicators" at the time of the determination/Class Year Initial Decision Period commences**
- **Perform Net Present Value analysis based on the predicted market conditions and unit specific characteristics:**
  - ***Estimate the future market net revenues cash flows***
    - **Energy and Capacity markets revenues**
    - **Operating and maintenance costs, including lost opportunity and forgone portfolio revenue**
  - ***Estimate the needed CapEx expenditure and its financing costs***
    - **Repair time and investment horizon**
    - **Financing parameters**
  - ***Calculate net present value of uneven net cash flows***
    - **If NPV is positive than include the unit in the BSM forecast**

Net Present Value of theoretical Cash Flows of a Hypothetical IIFO unit in NYC



Next Steps

- The NYISO will consider input received during today's ICAPWG meeting
- Stakeholders can also provide additional comments in writing to deckels@nyiso.com by Aug. 31, 2016
- Further review of the proposal at a future ICAPWG meeting

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

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

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Appendix

- **Positive indicators that a unit will be returning to service may include**
  - ***(A) indications of repair evidenced by items such as:***
    - ***A repair plan including schedule (e.g., "Credible Repair Plan")***
    - ***Steps that it has commenced repair(s)***
  - ***Or (B) indications of return-to-service including such items as:***
    - ***visible site activity***
    - ***labor arrangements***
    - ***fuel supply arrangements***
    - ***unit testing***