

STARS Overview for TPAS

NYISO

April 4, 2011

Agenda

- Study Overview
- Phase II Economic Analyses
- Base Transmission Plan Modifications
- Proposed ICAP Analysis Process
- STARS Results input into EIPC process
- Next Steps

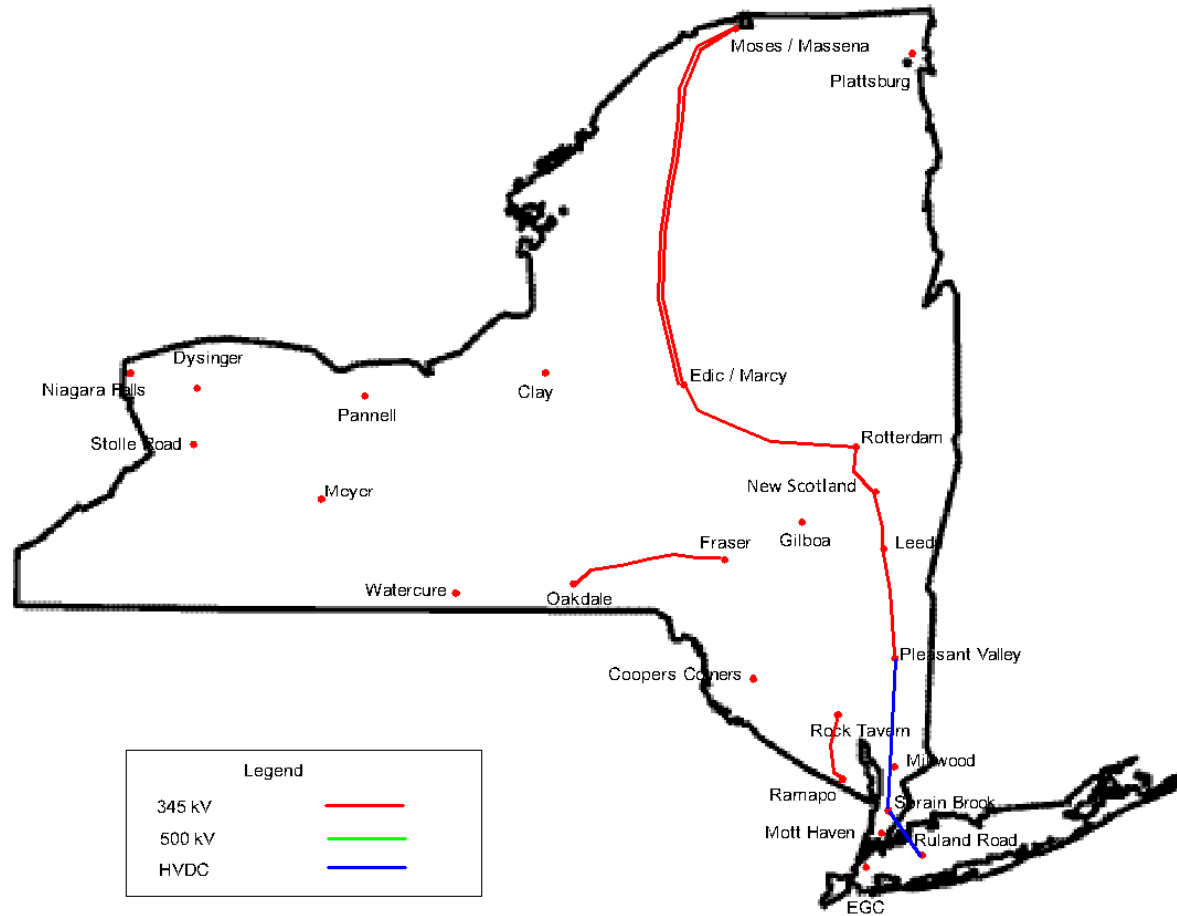
Study Overview

- Long range evaluation of the transmission system -- 20+ years
- Although well maintained, the Bulk Power System infrastructure is aging.
- The aging NY Bulk Power Transmission Facilities infrastructure must be rebuilt, rehabilitated, modernized, and expanded to reliably and economically meet the future energy and renewable needs of New York State.
- Due to the interconnected nature of the BPS, a jointly developed and executed assessment and long range rehabilitation plan is preferable.
- To the extent practicable, existing rights-of-way will be utilized.

Economic Analyses

- Energy Costs – these represent a range of potential benefits/ savings
 - Production Costs
 - Cost of fuel & O&M
 - Equivalent environmental costs included
 - May not reflect what a producer would actually get paid, i.e. contracts, etc.
 - LBMP
 - Payments based on clearing price, may not reflect what customers would pay, i.e. contracts, TCCs, etc.
- Capacity payments (ICAP) – reflects fixed costs of generation assets
 - Two calculation methods identified in CARIS
 - Currently used for information only in the CARIS process

Initial Base Transmission Plan



Base Transmission Plan Modifications

- Results of Economic Analysis and Element Utilization warrant evaluation of modifications to the initial Base Transmission Plan
 - Modifications to initial Base Transmission Plan were made utilizing Engineering judgment
 - Iterations (trials) yielded Alternative Plan
 - Projects in the initial plan have been removed, modified and/or some projects have been added
 - Phase III – sensitivities will further refine Base Transmission Plan

Base Transmission Plan Modifications

Trial	Pleasant Valley - Sprainbrook HVDC Line	Pleasant Valley - Ruland Road HVDC Line	Sprainbrook-Ruland Road HVDC Line	Marcy - Moses Lines	Oakdale - Fraser Line	Marcy - Princetown - New Scotland	Rock Tavern - Ramapo	New Scotland - Leeds	Leeds - Pleasant Valley	115kV Upgrades
Initial	X	X		X	X	X	X	X	X	X
T1		X		X	X	X	X	X	X	X
T2	X			X	X	X	X	X	X	X
T3				X	X	X	X	X	X	X
T4					X	X	X	X	X	X
T5			X	X	X	X	X	X	X	X
T6						X	X	X	X	X
T7							X	X	X	X
T8								X	X	X
T9								X	X	
T10					X		X	X	X	X
T12						X		X	X	X
T14						X			X	X

Note: "X" indicates that the line(s) is included in the Trial.

Base Transmission Plan Trial Cost/Benefit Analysis

(Production Cost Benefits Only)

BTP Trial	<u>Benefit</u> Annual NYISO Production Cost Savings (M\$)	<u>Cost</u> Annual Transmission Plan Carrying Charge (M\$)	Benefit/Cost Ratio
Initial	199	501	0.4
T1	197	360	0.6
T2	176	306	0.6
T3	175	165	1.1
T4	176	117	1.5
T5	192	297	0.7
T6	144	74	2.0
T7	126	92	1.4
T8	94	67	1.4
T9	75	36	2.1
T10	162	136	1.2
T12	117	48	2.4
T14	87	24	3.6

Preliminary

STARS Base Transmission Plan Trials Results

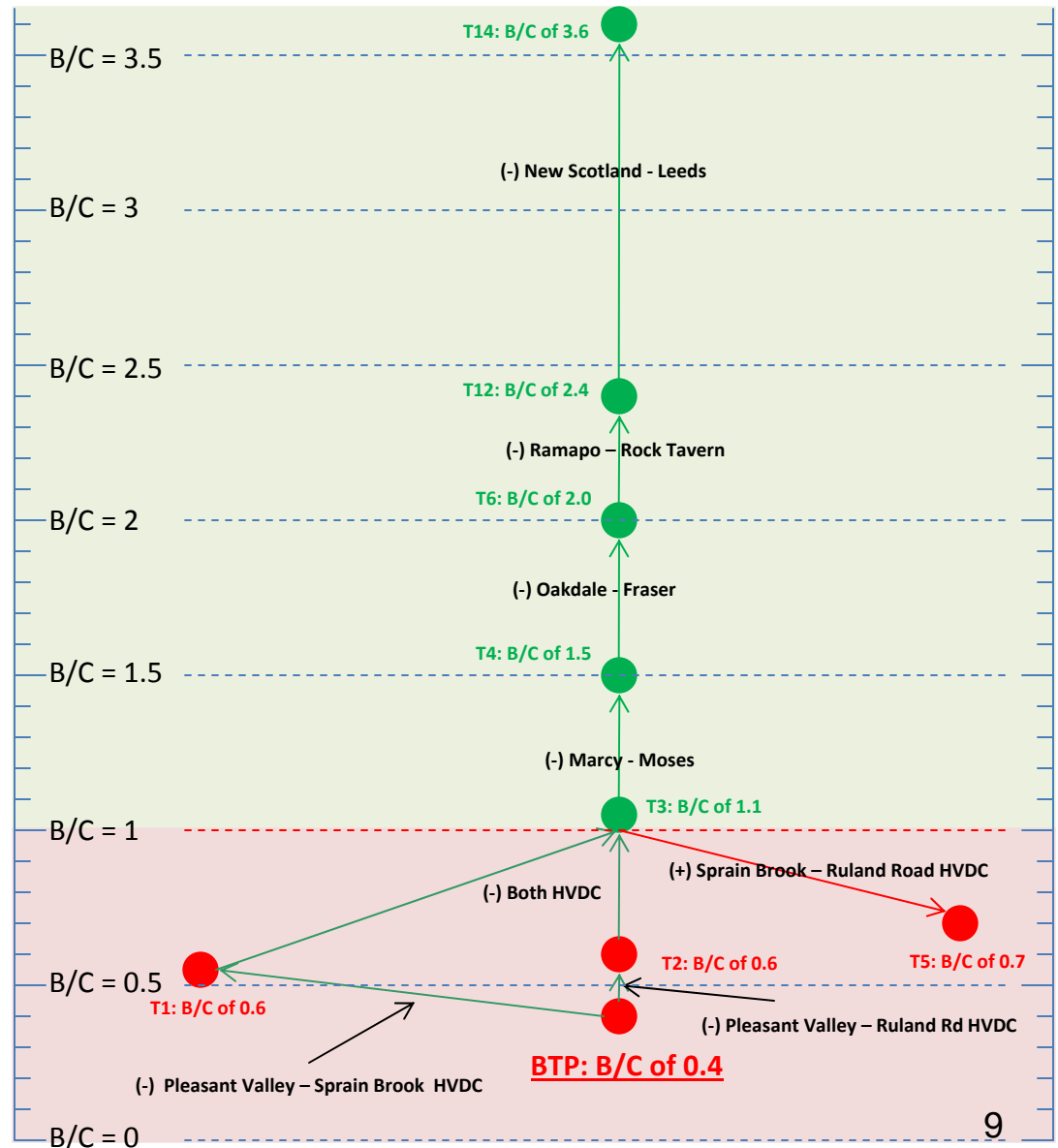
(B/C: Benefit to Cost Ratio – Total Production Cost Savings* Only)

Trial	Benefit (M\$)	Cost (M\$)	B/C Ratio (M\$)	Benefit - Cost (M\$)
Initial	199	501	0.4	-302
T1	197	360	0.6	-163
T2	176	306	0.6	-130
T3	175	165	1.1	10
T4	176	117	1.5	59
T5	192	297	0.7	-105
T6	144	74	2.0	70
T12	117	48	2.4	69
T14	87	24	3.6	63

Notes:

- Each trial is depicted as a node with red nodes denoting trials with B/C < 1, and green with B/C > 1.
- A red arrow denotes that the B/C ratio decreased implying that more benefit than cost was removed, not a good outcome. A green arrow denotes the reverse, that more cost than benefit was removed, a good outcome.
- The cost estimate for the installation of a new 345 kV Marcy - Princetown - New Scotland line is less than the cost estimate for the replacement in kind of the two existing 230kV lines from Porter to Rotterdam. In Trials T7, T8, T9 and T10, the cost / benefit ratio decreases reflecting the higher cost of replacement in kind and the lower benefits on not including the installation of the new 345 kV line in the plan.

Preliminary



* Total Production Cost Savings includes Production Cost Savings, Import Cost Savings, and Emissions Cost Savings

Phase II: Sensitivity Work

- To be performed on the Reference, T3, T4, T6, T12 and T14
- Perform production cost calculations for the following sensitivities:
 - **High Fuel Scenario**
 - **8000 MW wind**
 - **Meet 30X15 RPS goals (4250 MW wind)**
 - **1000 MW generation shift upstate**
 - **1000 MW generation shift downstate**
 - **High Environmental Costs**
 - **Low Fuel Scenario**
 - **Low Environmental Costs**

Phase II: ICAP Analysis Work

- To be performed on the Reference and up to two more Trials (to be selected)
 - Perform contingency analysis for the peak load case
 - Compute New Transfer limits for the Horizon Year
 - Thermal with only a limited number of voltage limits (4 weeks)
 - Compute new LOLE with New Transfer Limits
 - Compute “MW Excess” in Base Transmission Plan (3 weeks)
- This will allow for final calculation of ICAP and production cost results
 - ICAP and production cost benefits will be presented separately

STARS Results input into EIPC

- EIPC process calls for developing three final futures (Sept. – Oct. time frame)
- STARS results will be introduced for consideration at that time.

Next Steps

- April / May 2011
 - Complete Economic Study and Phase II sensitivities including modifications to the Base Transmission Plan
 - Complete Base Transmission Plan system reliability adequacy and ICAP analysis
 - Develop Low Carbon Scenario (40x30)
 - STARS Phase II Complete
 - Reach Agreement - Scope of Phase III
 - Define Phase III sensitivity analyses