

2011 CARIS Results

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Topics

- ◆ **NYCA-Wide Cost Savings Methodology**
- ◆ **Relaxation Results**
- ◆ **Three CARIS Studies**
 - *Congestion*
 - *Solution Costs*
- ◆ **Scenarios Results (2015, 2020)**

Production Cost Savings Methodologies

Methodologies differ in the way changes in import/export transactions are valued

- 2009 CARIS Methodology

$$\text{NYCA Generator Production Cost Savings} + \sum_{\text{All External Areas}} \sum_{\text{All Hours}} \left[(\text{Import/Export Flow} \times \text{Proxy LMP})_{\text{Project}} - (\text{Import/Export Flow} \times \text{Proxy LMP})_{\text{Base}} \right]$$

- 2011 CARIS Proposed Methodology

$$\text{NYCA Generator Production Cost Savings} + \sum_{\text{All External Areas}} \sum_{\text{All Hours}} \left[(\text{Import/Export Flow})_{\text{Project}} - (\text{Import/Export Flow})_{\text{Base}} \right] \times (\text{Proxy LMP})_{\text{Project}}$$

Change in Value of Imports/ Exports

♦ 2009 CARIS Methodology:

- *Utilizes the total change in interchange transactions and re-prices the entire interchange using new LMP*
- *Creates an offset to internal NYCA production savings based on changed prices for all imports (these are not production costs)*

♦ 2011 Proposed CARIS Methodology

- *Utilizes incremental imports/exports due to a project, valued at project case proxy LMP (base level of imports not counted toward production cost increase of imports)*
- *By using the LMP-based cost of only the incremental imports/exports, a more appropriate proxy for production cost change of imports/exports is offset against the internal production cost savings*

Relaxation Results Nominal (\$M)

Update from 11/17/11 posting

Total Congestion Demand Payment (M\$)	Type	2015					2020				
		BASE CASE	Relax Leeds-Pleasant Valley	Relax Central East (CE)	Relax CE-New Scotland-LdsPV	Relax - New Scotland-LdsPV	BASE CASE	Relax Leeds-Pleasant Valley	Relax Central East (CE)	Relax CE-New Scotland-LdsPV	Relax - New Scotland-LdsPV
LEEDS-PLSNTVLY	Contingency	205	-	304	-	-	377	-	554	-	-
CENTRAL EAST	Interface	212	295	-	-	337	329	465	-	-	551
DUNWOODIE_SHORE RD_345	Contingency	57	66	56	78	68	80	90	77	109	95
GREENWOOD LINES	Contingency	13	12	12	14	12	19	19	19	20	18
WEST CENTRAL-OP*	Interface	2	3	8	13	2	9	10	18	29	10
GOTHLS A - GOWANUSS	Contingency	5	3	5	3	3	8	6	8	5	5
LEEDS3_NEW SCOTLAND_345	Contingency	-	53	5	-	-	-	138	7	-	-

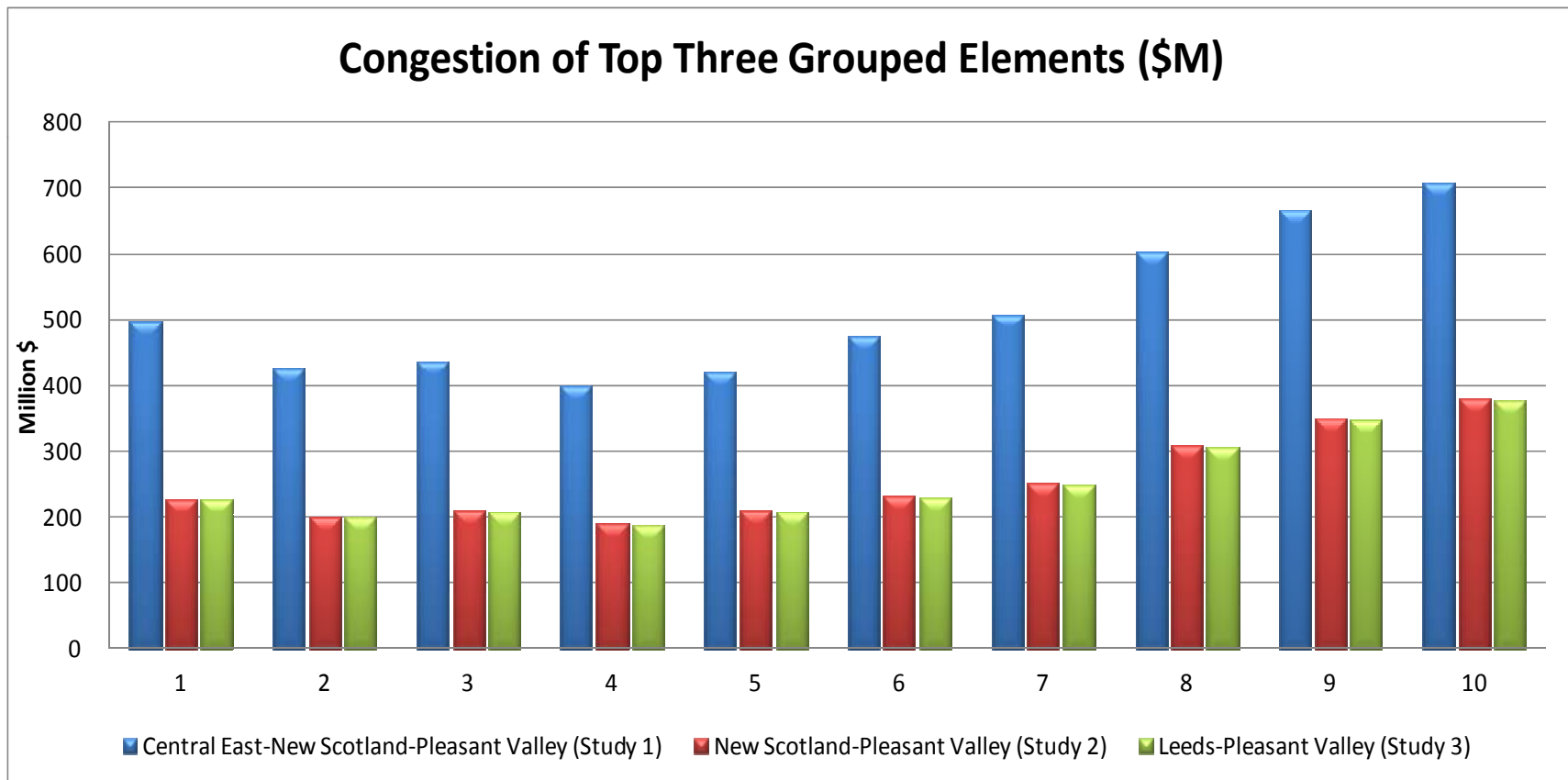
*The absolute value of congestion is reported.

Base Case Congestion of the three CARIS Studies (\$M)

Study	Ten-Year Congestion (\$M)	
	Nominal	Present Value (2011 \$)
Study 1: Central East-New Scotland-Pleasant Valley	5,133	3,560
Study 2: New Scotland-Pleasant Valley	2,548	1,749
Study 3: Leeds-Pleasant Valley	2,535	1,741

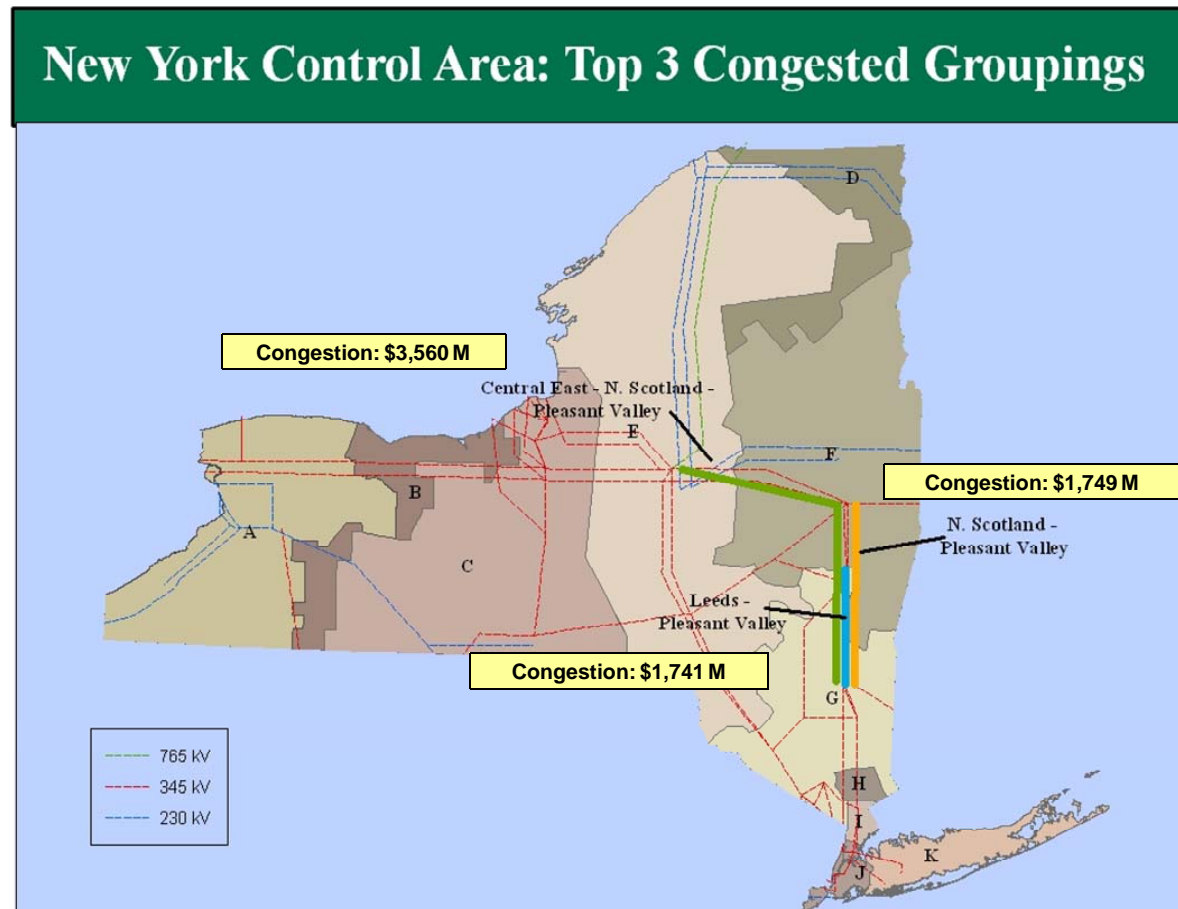
Congestion of CARIS Studies

Nominal \$M



Three CARIS Studies

Congestion – Present Value (\$M)



Generic Solution Costs (\$M)

Generic Solution Cost Summary (\$M)			
	Study 1:	Study 2:	Study 3:
Studies	Central East-New Scotland-Pleasant Valley	New Scotland- Pleasant Valley	Leeds - Pleasant Valley
Transmission			
Substation Terminals	Edic to New Scotland to Pleasant Valley	New Scotland to Pleasant Valley	Leeds to Pleasant Valley
Miles (# of terminals)	155 (3)	65 (2)	39 (2)
High	\$1,168	\$502	\$312
Mid	\$799	\$343	\$213
Low	\$322	\$139	\$87
Generation			
Substation Terminal	Pleasant Valley	Pleasant Valley	Pleasant Valley
# of 500 MW Blocks	2	2	2
High	\$1,988	\$1,988	\$1,988
Mid	\$1,622	\$1,622	\$1,622
Low	\$1,256	\$1,256	\$1,256
Demand Response			
Zone	F & G	G&I	G&I
# of 200 MW Blocks	2	2	2
High	\$672	\$754	\$754
Mid	\$540	\$605	\$605
Low	\$406	\$454	\$454

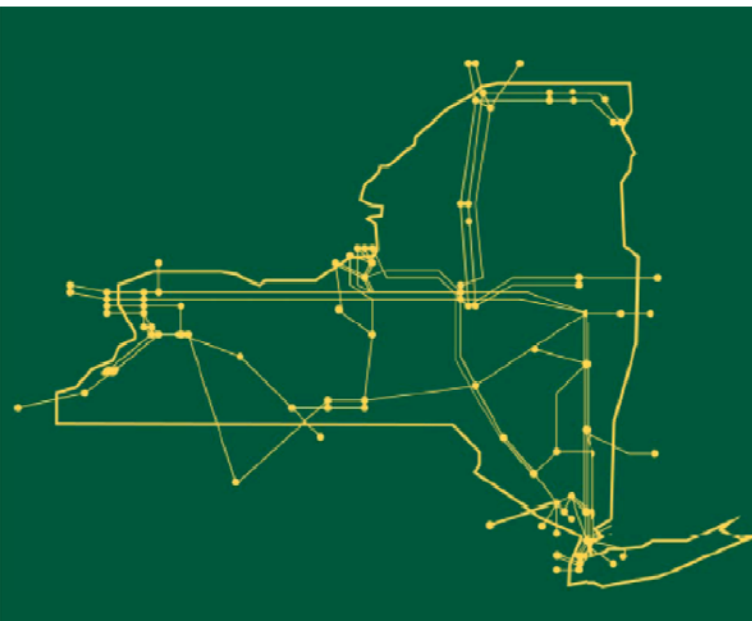
Scenario Results - 2015

			2015 Scenarios: Base Case Demand\$ Congestion (\$M)							
Scenario #			1	2	3	4	5	6	7	8
CONSTRAINTS	TYPE	BASE CASE	EPA projected NOx and SO2 Costs	Higher load forecast	Higher Natural Gas Prices	Full RPS and Full EEPs goals achievement	Athens SPS continued in service	Lower Load Forecast	Lower Carbon Emission Costs	Lower Natural Gas Prices
LEEDS-PLSNTVLY	Contingency	205	177	244	228	221	130	138	170	173
CENTRAL EAST	Interface	212	253	219	272	563	232	268	171	110
DUNWOODIE_SHORE RD_345	Contingency	57	75	61	64	61	61	56	58	46
GREENWOOD LINES	Contingency	12	11	15	13	11	12	8	12	12
WEST CENTRAL-OP	Interface	2	(3)	(2)	(4)	(1)	(3)	(2)	(0)	(2)
GOTHLS A - GOWANUSS	Contingency	5	6	6	5	4	4	3	4	4
LEEDS3_NEW SCOTLAND_345	Contingency	0	0	0	2	2	2	3	0	1
RAINY8W138_VERNW_138	Contingency	2	3	2	3	2	2	2	3	1
ASTORIAW138_HG5_138	Contingency	(0)	(0)	(0)	(0)	(1)	0	(0)	0	(0)

Scenario Results - 2020

			2020 Scenarios: Base Case Demand\$ Congestion (\$M)							
Scenario #			1	2	3	4	5	6	7	8
CONSTRAINTS	TYPE	BASE CASE	EPA projected NOx and SO2 Costs	Higher load forecast	Higher Natural Gas Prices	Full RPS and Full EEPS goals achievement	Athens SPS continued in service	Lower Load Forecast	Lower Carbon Emission Costs	Lower Natural Gas Prices
LEEDS-PLSNTVLY	Contingency	377	419	440	412	399	253	269	330	337
CENTRAL EAST	Interface	329	261	317	389	817	369	428	312	207
DUNWOODIE_SHORE RD_345	Contingency	80	109	85	87	84	85	76	83	66
GREENWOOD LINES	Contingency	19	19	24	20	17	19	13	20	18
WEST CENTRAL-OP	Interface	9	(5)	(8)	(11)	(6)	(10)	(9)	(2)	(7)
GOTHLS A - GOWANUSS	Contingency	8	8	11	8	7	7	5	8	7
LEEDS3_NEW SCOTLAND_345	Contingency	0	5	2	2	3	5	2	0	3
RAINY8W138_VERNW_138	Contingency	2	1	2	3	2	2	2	3	1
ASTORIAW138_HG5_138	Contingency	(1)	(1)	(1)	(1)	(1)	0	(1)	0	(1)

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