

2011 CARIS 1 Information NYCA Congestion, ICAP Metric, Present Values, Production Costs

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Topics

- ◆ **Effect of Transmission Solutions on Total NYCA Congestion**
- ◆ **ICAP Metric Methodology & Results**
- ◆ **Revised Table 5-17**
- ◆ **Annual NYCA-Wide Cost Savings Results – A Comparison of 2011 Methods**

Effect of CE-NS-PV Transmission Solution on Total NYCA Congestion

Study #1:

(Refer to Table 5-9) NYCA Total Demand\$ Congestion Comparison for Central East-New Scotland-Pleasant Valley Study (nominal \$ m)

	2015			2020		
Resource Type	Solution	Base Case	% Change	Solution	Base Case	% Change
Transmission	396	672	-41%	622	1,098	-43%
Generation - 1000 MW	553	672	-18%	899	1,098	-18%
Demand Response - 400 MW	659	672	-2%	1090	1,098	-1%

Effect of NS-PV Transmission Solution on Total NYCA Congestion

Study #2:

(Refer to Table 5-11) NYCA Demand\$ Congestion Comparison for New Scotland-Pleasant Valley Study (nominal \$ m)

	2015			2020		
Resource Type	Solution	Base Case	% Change	Solution	Base Case	% Change
Transmission	512	672	-24%	830	1,098	-24%
Generation - 1000 MW	553	672	-18%	899	1,098	-18%
Demand Response - 400 MW	643	672	-4%	1055	1,098	-4%

Effect of Leeds-PV Transmission Solution on Total NYCA Congestion

Study #3:

(Refer to Table 5-13) NYCA Demand\$ Congestion Comparison for Leeds-Pleasant Valley Study (nominal \$ m)

	2015			2020		
Resource Type	Solution	Base Case	% Change	Solution	Base Case	% Change
Transmission	578	672	-14%	952	1,098	-13%
Generation - 1000 MW	553	672	-18%	899	1,098	-18%
Demand Response - 400 MW	643	672	-4%	1055	1,098	-4%

ICAP Metric Formulation

- ◆ **NYISO OATT Attachment Y Section 31.3.1.3.5.6**

- ◆ **Previous ESPWG ICAP Presentation**

(http://www.nyiso.com/public/webdocs/committees/bic_espwg/meeting_materials/2010-03-05/CARIS_ICAP_Metric_ESPWG_Mar5.pdf)

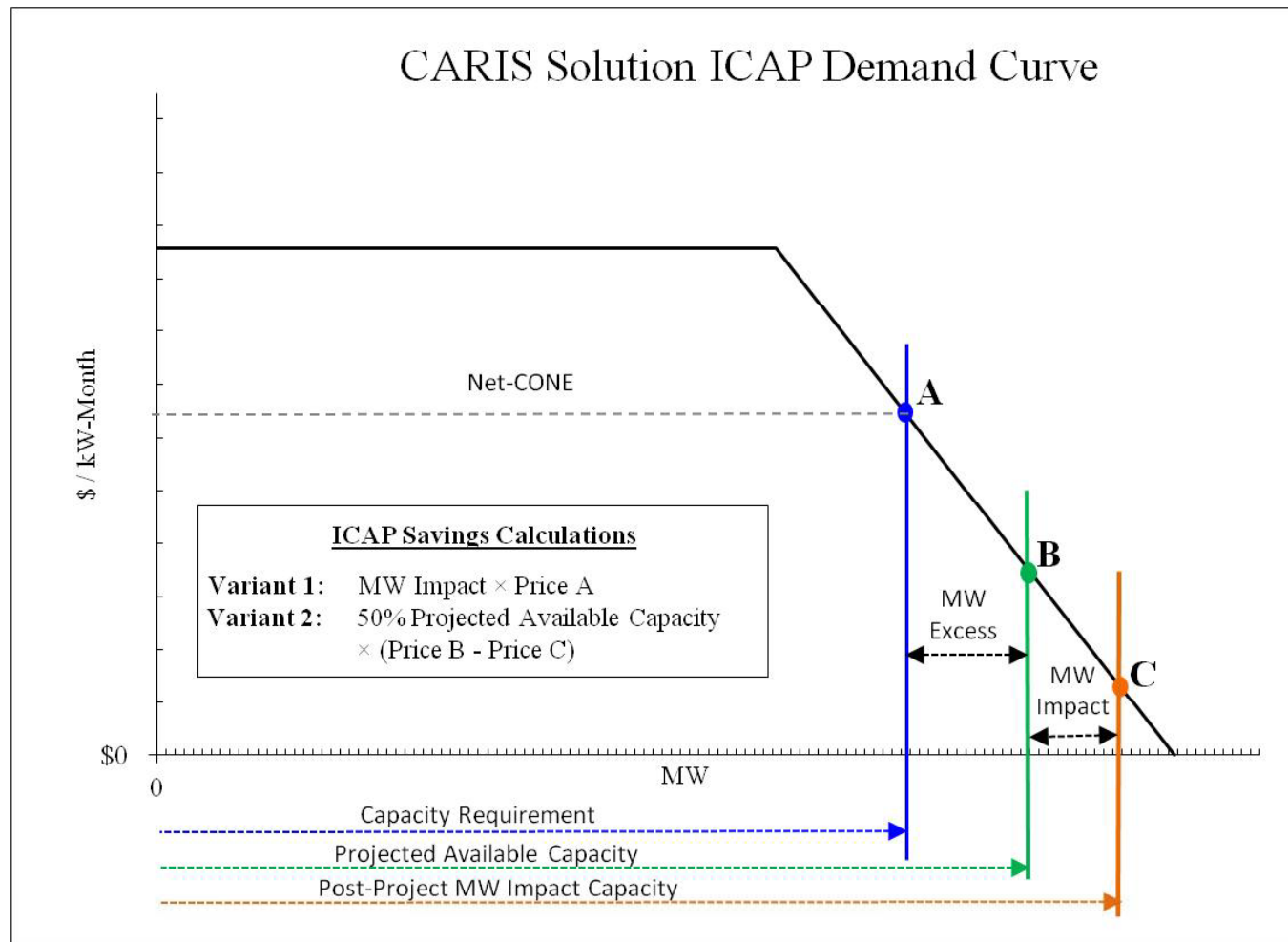
- ◆ **Input Data:**

- *NYISO Summer 2011 Capacity Demand Curves*
- *2011 NYISO Goldbook Load & Capacity Data*
- *2010 RNA Case w/ Generation Updates*

Procedure

- 1. Extend Demand Curves (1.7% Escalation)**
- 2. Calculate “MW Impact” Using MARS**
- 3. Calculate ICAP Savings Variant #1**
- 4. Determine Projected Capacity**
- 5. Calculate ICAP Savings Variant #2**

Use of Demand Curve for ICAP Metric



Demand Curves

- Summer 2011 Demand Curve**

	ICAP (\$/kW-Month)	UCAP Translation %	UCAP (\$/kW-Month)
NYCA	\$8.84	8.20%	\$9.63
NYC	\$19.19	5.30%	\$20.26
LI	\$9.98	8.41%	\$10.90

- Summer 2020 Projected Demand Curve***

	ICAP (\$/kW-Month)	UCAP Translation %	UCAP (\$/kW-Month)
NYCA	\$10.29	8.20%	\$11.21
NYC	\$22.33	5.30%	\$23.58
LI	\$11.61	8.41%	\$12.68

***Based on a 1.7% Escalation Factor**

MW Impact Calculation

- ◆ Utilized 2010 RNA GE-MARS Case
- ◆ Updates to Align with GE-MAPS Case:
 - *Load Forecast*
 - *Generator Additions & Retirements*
 - *HTP*
- ◆ Transfer Limits for Project Cases:

CARIS ICAP MARS Transfer Limits for Key Interfaces (MW)				
MARS Interface	Basecase	CE-NS-PV Solution	NS-PV Solution	LE-PV Solution
CENTRAL EAST	3350	3950*	3450**	3350
F TO G	3500	3900	3900	3900
UPNYSENY	5475	6275	6275	6275
TOTAL EAST	6925	7525	7025	6925
*600 MW Added to Nomogram Limits **100 MW Added to Nomogram Limits				

ICAP MW Impact Results

CARIS Solutions		Year 2020 MW Impact (MW)			
		ROS	NYC	LI	Total
<u>Study#1</u> Central East-New Scotland-Pleasant Valley	Transmission	443	161	96	700
	Generation	824	299	177	1300
	DR/EE (F & G)	222	80	48	350
<u>Study#2</u> New Scotland-Pleasant Valley	Transmission	443	161	96	700
	Generation	824	299	177	1300
	DR/EE (G & I)	348	126	75	550
<u>Study#3</u> Leeds-Pleasant Valley	Transmission	443	161	96	700
	Generation	824	299	177	1300
	DR/EE (G & I)	348	126	75	550

ICAP Costs Savings (\$M)

Variant 1

2011 CARIS ICAP Variant #1 Savings Calculations (Nominal M\$)													
Study	Solution	Capacity Zone	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	10-Year Total
Study #1 Central East-New Scotland-Pleasant Valley	Transmission	ROS:	2	0	4	6	7	9	11	15	21	26	101
		NYC:	16	9	11	12	13	14	17	20	24	28	163
		LI:	8	10	10	11	11	12	13	14	15	16	119
		Total:	26	19	25	29	32	35	40	49	59	69	383
	Generation	ROS:	0	0	0	0	0	0	0	6	15	23	43
		NYC:	0	0	0	0	0	0	0	1	7	12	20
		LI:	0	0	0	0	0	1	1	3	4	6	14
		Total:	0	0	0	0	0	1	1	9	25	41	77
	DR/EE (F & G)	ROS:	0	0	0	1	1	2	3	5	7	9	26
		NYC:	7	4	5	5	6	6	7	9	11	12	71
		LI:	4	4	5	5	5	6	6	6	6	7	52
		Total:	11	8	9	11	12	13	15	19	24	28	150
Study #2 New Scotland-Pleasant Valley	Transmission	ROS:	2	0	3	6	7	8	10	14	19	24	95
		NYC:	15	8	10	11	12	13	16	19	23	26	152
		LI:	8	9	10	10	11	11	12	13	14	15	112
		Total:	24	17	23	27	30	33	38	46	56	65	359
	Generation	ROS:	0	0	0	0	0	0	0	6	15	23	43
		NYC:	0	0	0	0	0	0	0	1	7	12	20
		LI:	0	0	0	0	0	1	1	3	4	6	14
		Total:	0	0	0	0	0	1	1	9	25	41	77
	DR/EE (G & I)	ROS:	0	0	0	1	2	2	4	7	11	14	41
		NYC:	11	6	7	8	9	10	11	14	17	19	112
		LI:	6	7	7	7	8	8	9	9	10	11	82
		Total:	17	13	14	17	18	20	24	30	37	44	235
Study #3 Leeds-Pleasant Valley	Transmission	ROS:	2	0	3	5	6	7	10	13	18	23	88
		NYC:	14	8	9	10	11	12	15	18	21	24	142
		LI:	7	8	9	9	10	11	11	12	13	14	104
		Total:	23	16	22	25	28	30	35	43	52	61	335
	Generation	ROS:	0	0	0	0	0	0	0	6	15	23	43
		NYC:	0	0	0	0	0	0	0	1	7	12	20
		LI:	0	0	0	0	0	1	1	3	4	6	14
		Total:	0	0	0	0	0	1	1	9	25	41	77
	DR/EE (G & I)	ROS:	0	0	0	1	2	2	4	7	11	14	41
		NYC:	11	6	7	8	9	10	11	14	17	19	112
		LI:	6	7	7	7	8	8	9	9	10	11	82
		Total:	17	13	14	17	18	20	24	30	37	44	235

ICAP Costs Savings (\$M)

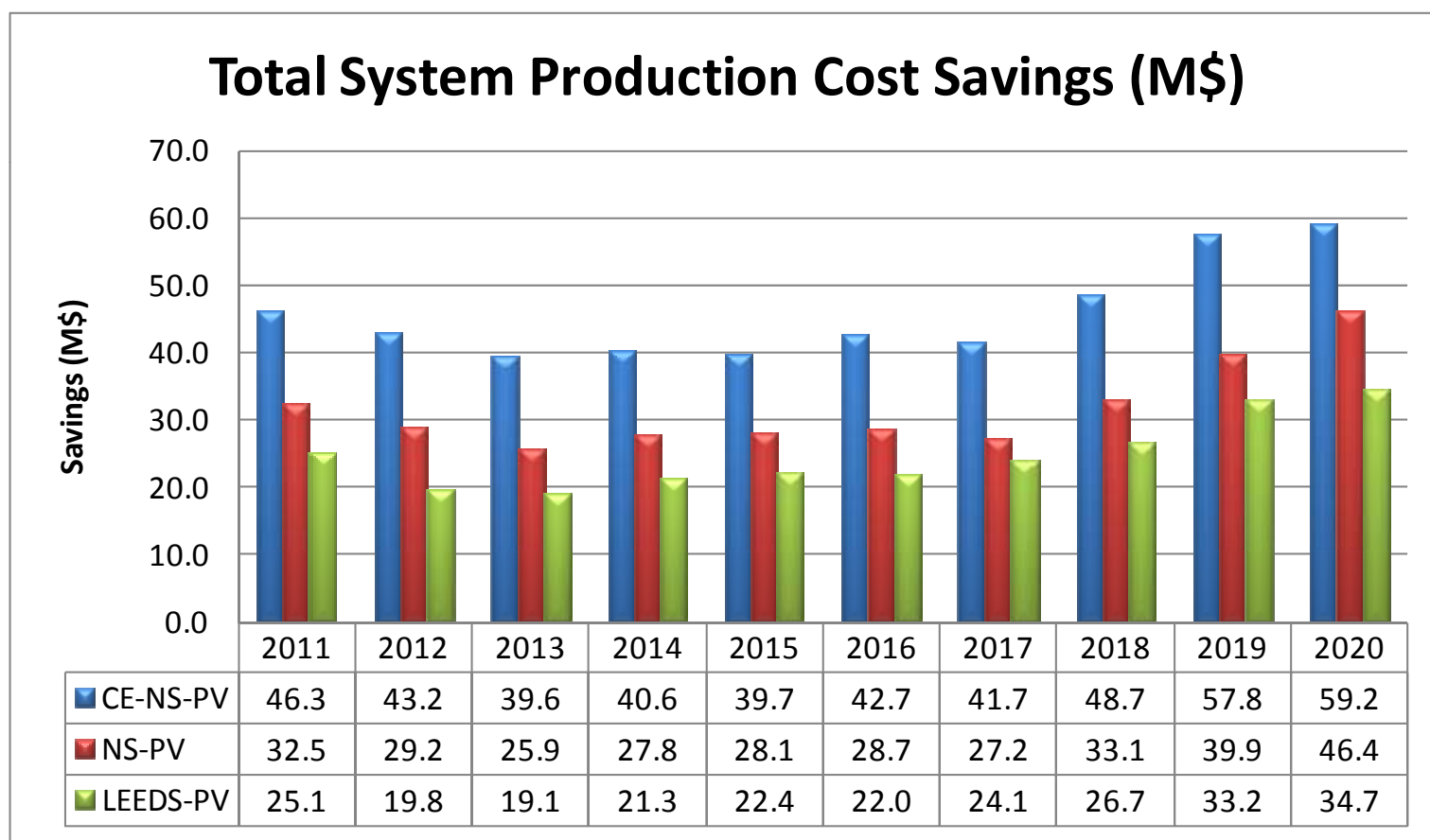
Variant 2

2011 CARIS ICAP Variant #2 Savings Calculations (Nominal M\$)													
Study	Solution	Capacity Zone	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	10-Year Total
Study #1 Central East-New Scotland-Pleasant Valley	Transmission	ROS:	66	3	144	240	243	247	250	252	254	256	1,955
		NYC:	95	100	101	102	103	105	105	105	105	106	1,027
		LI:	33	33	33	33	34	34	34	34	35	35	337
		Total:	193	135	278	375	380	386	389	392	394	396	3,319
	Generation	ROS:	0	0	0	0	0	0	0	146	356	425	927
		NYC:	0	0	0	0	0	0	0	10	127	188	325
		LI:	0	0	0	0	0	10	19	46	66	67	208
		Total:	0	0	0	0	0	10	19	202	549	680	1,460
	DR/EE (F & G)	ROS:	0	0	0	55	95	109	110	111	112	113	706
		NYC:	41	44	44	45	45	46	46	46	46	46	449
		LI:	14	14	14	15	15	15	15	15	15	15	148
		Total:	56	58	58	114	155	170	171	173	174	175	1,303
Study #2 New Scotland-Pleasant Valley	Transmission	ROS:	66	3	144	225	228	232	234	237	238	240	1,846
		NYC:	89	94	95	96	97	98	99	99	99	99	963
		LI:	31	31	31	31	32	32	32	32	33	33	316
		Total:	185	127	270	352	357	362	365	368	369	372	3,125
	Generation	ROS:	0	0	0	0	0	0	0	146	356	425	927
		NYC:	0	0	0	0	0	0	0	10	127	188	325
		LI:	0	0	0	0	0	10	19	46	66	67	208
		Total:	0	0	0	0	0	10	19	202	549	680	1,460
	DR/EE (G & I)	ROS:	0	0	0	55	95	138	174	175	176	178	991
		NYC:	65	69	69	70	71	72	72	72	72	73	706
		LI:	22	22	23	23	23	23	24	24	24	24	232
		Total:	88	91	92	148	189	233	269	271	273	274	1,929
Study #3 Leeds-Pleasant Valley	Transmission	ROS:	66	3	144	210	213	216	219	221	222	224	1,737
		NYC:	83	87	88	89	90	92	92	92	92	92	899
		LI:	29	29	29	29	29	30	30	30	30	31	295
		Total:	177	119	261	328	333	337	341	343	345	347	2,931
	Generation	ROS:	0	0	0	0	0	0	0	146	356	425	927
		NYC:	0	0	0	0	0	0	0	10	127	188	325
		LI:	0	0	0	0	0	10	19	46	66	67	208
		Total:	0	0	0	0	0	10	19	202	549	680	1,460
	DR/EE (G & I)	ROS:	0	0	0	55	95	138	174	175	176	178	991
		NYC:	65	69	69	70	71	72	72	72	72	73	706
		LI:	22	22	23	23	23	23	24	24	24	24	232
		Total:	88	91	92	148	189	233	269	271	273	274	1,929

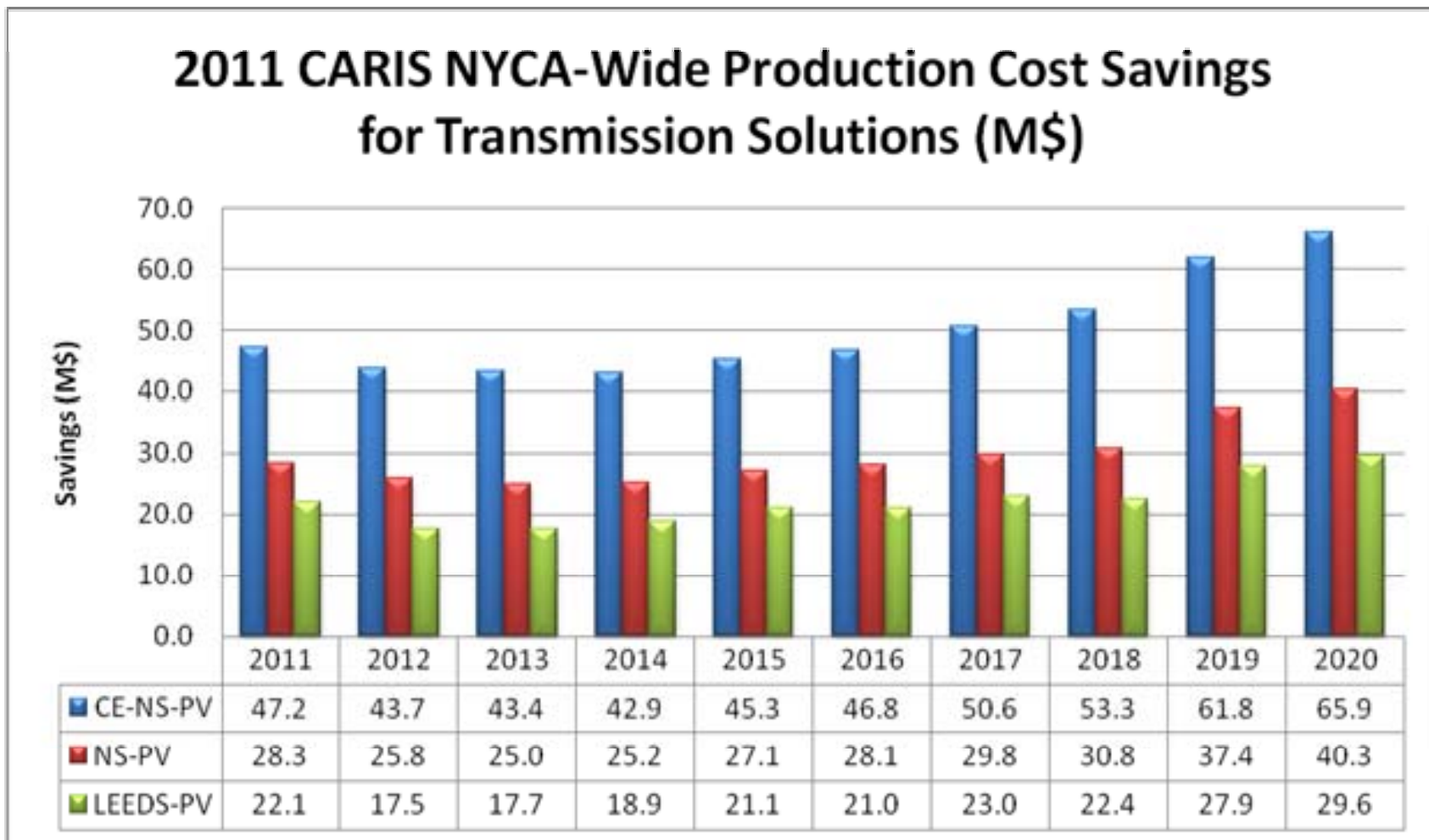
Table 5-17 With Present Values

		Generator Payments	Load Payments	Congestion Rents*	Losses Costs	ICAP Costs Variant 1	ICAP Costs Variant 2
Study	Solution	Change: Present Value \$M				Savings: Present Value \$M	
	Transmission						
Study 1: CE-NS-PV	Edic-New Scotland-Pleasant Valley	358	93	(823)	(355)	253	2263
Study 2: NS-PV	New Scotland-Pleasant Valley	204	13	(663)	(149)	238	2134
Study 3: Leeds-PV	Leeds – Pleasant Valley	288	116	(511)	(87)	222	2004
	Generation						
Study 1: CE-NS-PV	Pleasant Valley	523	(906)	(251)	28	41	784
Study 2: NS-PV	Pleasant Valley	523	(906)	(251)	28	41	784
Study 3: Leeds-PV	Pleasant Valley	523	(906)	(251)	28	41	784
	DR & EE						
Study 1: CE-NS-PV	Zone F&G	(400)	(624)	13	(21)	99	864
Study 2: NS-PV	Zone G & I	(358)	(615)	(49)	(41)	155	1272
Study 3: Leeds-PV	Zone G & I	(358)	(615)	(49)	(41)	155	1272

Total System Production Cost Savings for Transmission Solutions by Study (M\$)



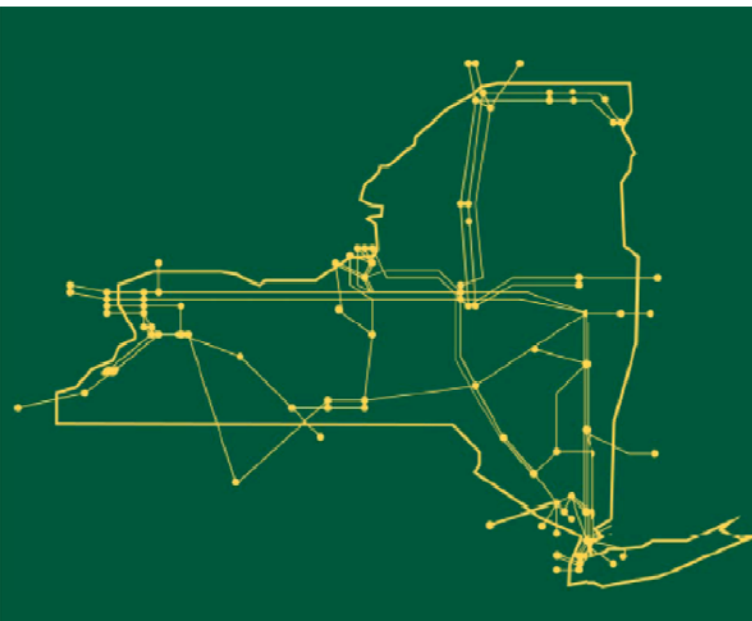
NYCA-Wide Cost Savings for Transmission Solutions by Study (M\$)



CARIS 1 Schedule

- ESPWG discuss CARIS Report 12/22/2011
- 2nd Draft Report plus Appendices Posted 12/28/2011
- Executive Summary to be provided by or before December 30
- Comments and discussion on revised draft CARIS Report 1/3/2011
- ESPWG to discuss 1st draft of the Appendices and Executive Summary 1/3/2012
- Written comments due on the 1st draft of the Appendices and Executive Summary 1/10/2012
- 3rd Draft of Report (including the Exec Summary) and Appendices posted 1/23/2012
- ESPWG to discuss 3rd draft of the Report and Appendices 1/26/2012 before sending to BIC
- Post final report for BIC 2/8/2012
- BIC for review and approval on 2/15/2012 to send to MC
- MC 2/23/2012
- Board of Directors 3/19/2012

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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