MAPS-GridView TOOL COMPARISON

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ESPWG
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NYISO
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Topics

- Objectives
- Status
- Schedule
- Comparison of 2013 MAPS-GridView Results

Objectives

- Evaluate MAPS & GV Performance

  (NYISO recommends that one year, the mid year, be sufficient in comparing MAPS&GV results)

  - *MAPS 2013 Base Case Results*
  - *MAPS 2013 Solutions Results*
  - *MAPS 2013 Scenario Results*

- Tool Recommendation
  - *Selection Criteria Summary Matrix*

Status

- Benchmarking efforts started in March 2009
- CARIS Phase 1 Database in MAPS format
  - *CARIS Phase 1 database developed using GridView*
  - *NYISO developed a GridView-MAPS converter tool*
  - *CARIS Phase 1 final database converted to MAPS format*
    - GV-MAPS converter tool converted 90% of database
    - Remaining input assumptions and simulation parameters manually converted (documented process)

Status Cont.

- Remaining input assumptions and simulation parameters manually converted
  - *Balancing the boundary conditions*
  - *Nomograms*
  - *Loss Model option*
  - *Pumped storage efficiency impact*
  - *Negative load treatment*
  - *Redundant Constraint*
  - *Spinning Reserve Treatment*
  - *Commitment Options*
  - *Must-Run Units*

Status Cont.

- GE and ABB support utilized to align both models
- Developed MAPS Results (2013 Base Case)
  - *Primary Metric*
  - *Additional Metrics*
  - *NYISO Interchange*

Schedule

- *April~May 2010 – Finalize Base Case, Solutions, and Scenario Results*
- *May~June 2010 – Draft Report*
- *June~July 2010 – Final Report*

Comparison of 2013 MAPS &GridView Results

- *Top Congested Elements*
- *Zonal Congestion Demand $*
- *Zonal Generation GWh*
- *Production Costs*
- *Zonal Average LBMP*
- *Generator Payments*
- *Load Payments*
- *SO_2, NOx, CO_2 Emissions in Tons*

Top Congested Elements

2013 Demand Congestion (m$)			
Top Constraints	**GV**	**MAPS**	**Diff**
LEEDS - PV	220	252	14.6%
CENTRAL EAST	67	65	-3.0%
GREENWOOD	37	32	-13.4%
WEST CENTRAL	(53)	(62)	17.8%

Zonal Congestion (m$)

2013 Zonal Demand Congestion (m$)				
Zone	GV	MAPS	Diff	Diff %
WEST	(34)	(36)	(2)	6%
GENESSEE	(23)	(24)	(1)	6%
CENTRAL	(0)	2	3	-
NORTH	0	(2)	(2)	-
MOHAWKVA	1	2	0	31%
CAPITAL	13	15	2	18%
HUDSONVA	33	37	4	12%
MILLWOOD	11	11	0	5%
DUNWOODI	24	25	1	2%
NYCITY	278	336	58	21%
LONGISLA	93	104	11	12%
NYISO Total	397	470	74	19%

Zonal Congestion demand trends are consistent.

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Zonal Generation GWh

Total Gen (GWh)				
Zone / Region	**GV**	**MAPS**	**Diff**	**Diff %**
WEST	27,695	28,204	508	1.8%
GENESSEE	4,764	4,818	55	1.2%
CENTRAL	33,055	33,770	715	**2.2%**
NORTH	9,850	9,905	55	0.6%
MOHAWKVA	3,484	3,582	98	2.8%
CAPITAL	20,869	21,926	1057	**5.1%**
HUDSONVA	4,404	5,159	755	**17.2%**
MILLWOOD	17,149	17,155	5	0.0%
DUNWOODI	6	6	(0)	0.0%
NYCITY	23,349	23,992	643	**2.8%**
LONGISLA	10,447	8,765	(1682)	**-16.1%**
NYISO Total	155,072	157,282	2,209	1.4%
PJM Total	757,826	752,873	(4,953)	-0.7%
ONTARIO Total	165,081	165,600	519	0.3%
New England Total	137,826	135,735	(2,091)	-1.5%
Quebec Total	4,445	4,438	(7)	-0.2%
System	**1,220,249**	**1,215,928**	**(4,322)**	**-0.4%**

System Generation values in MAPS and GV are within 0.5%

Hudson Valley and Long Island Delta Zonal generation are high. We are investigating.

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Zonal Production Cost (m$)

2013 Zonal Production Cost (m$)				
Zone	GV	MAPS	Diff	Diff %
WEST	354	369	15	4%
GENESSEE	59	63	3	5%
CENTRAL	785	828	42	5%
NORTH	130	129	(1)	-1%
MOHAWKVA	34	35	1	4%
CAPITAL	1,108	1,138	30	3%
HUDSONVA	173	236	63	37%
MILLWOOD	210	210	(0)	0%
DUNWOODI	0	0	0	-
NYCITY	1,658	1,684	26	2%
LONGISLA	696	551	(145)	-21%
NYISO Total	5,208	5,244	36	1%

MAPS and GV Production cost values of NYISO generation is within 1%.

Hudson Valley and Long Island Delta Zonal production cost values are high and caused by the high delta generation of these Zones. We are investigating.

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Zonal Avg. LBMPs ($ / MWh)

2013 Zonal Avg. LBMP ($/MWh)				
Zone	GV	MAPS	Diff	Diff %
WEST	53.59	58.09	4.51	8%
GENESSEE	55.16	58.88	3.71	7%
CENTRAL	58.29	62.24	3.95	7%
NORTH	57.54	61.96	4.42	8%
MOHAWKVA	60.08	63.29	3.22	5%
CAPITAL	62.41	64.87	2.46	4%
HUDSONVA	65.98	68.03	2.05	3%
MILLWOOD	66.98	68.87	1.88	3%
DUNWOODI	67.41	68.91	1.50	2%
NYCITY	69.00	71.17	2.17	3%
LONGISLA	69.25	70.06	0.81	1%
NYISO Total	62.33	65.12	2.79	4%

MAPS Zonal LBMPs are 1% to 8% higher. LBMPs differences are smaller downstate. We are examining losses and congestion components.

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Zonal Payment to Generators (m$)

2013 Zonal Generation Payment (m$)				
Zone	GV	MAPS	Diff	Diff %
WEST	1,440	1,803	363	25%
GENESSEE	253	309	56	22%
CENTRAL	1,842	2,191	349	19%
NORTH	553	659	106	19%
MOHAWKVA	198	246	48	24%
CAPITAL	1,274	1,526	252	20%
HUDSONVA	303	435	132	44%
MILLWOOD	1,131	1,241	110	10%
DUNWOODI	0	0	0	-
NYCITY	1,594	1,950	356	22%
LONGISLA	747	763	17	2%
NYISO Total	9,335	11,124	1,789	19.2%

Higher generator payments in MAPS caused by higher LBMPs and different zonal generation values. Differences will be reduced after changes from the LBMP slide slides are implemented.

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Zonal Load Payment (m$)

2013 Zonal Load Payment (m$)				
Zone	GV	MAPS	Diff	Diff %
WEST	852	1,014	162	19%
GENESSEE	555	654	100	18%
CENTRAL	965	1,119	154	16%
NORTH	402	461	59	15%
MOHAWKVA	448	514	66	15%
CAPITAL	733	830	97	13%
HUDSONVA	743	835	91	12%
MILLWOOD	189	213	24	13%
DUNWOODI	446	499	53	-
NYCITY	4,100	4,598	498	12%
LONGISLA	1,585	1,752	167	11%
NYISO Total	11,019	12,489	1,470	13.3%

Higher generator payments in MAPS caused by higher LBMPs and different zonal generation values. Differences will be reduced after changes from the LBMP slide are implemented.

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Zonal SO_2 Emissions (Tons)

2013 Zonal SO_2 Emissions (Tons)				
Zone	GV	MAPS	Diff	Diff %
WEST	25,415	25,592	177	1%
GENESSEE	0	1	1	-
CENTRAL	20,769	20,988	220	1%
NORTH	1,629	1,866	237	15%
MOHAWKVA	2,085	2,082	(3)	0%
CAPITAL	82	79	(3)	-4%
HUDSONVA	14,335	14,880	545	4%
MILLWOOD	12	12	(0)	-2%
DUNWOODI	0	0	0	-
NYCITY	491	507	16	3%
LONGISLA	6,697	6,094	(604)	-9%
NYISO Total	71,517	72,102	585	0.8%

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Zonal NOx Emissions (Tons)

2013 Zonal NOx Emissions (Tons)				
Zone	GV	MAPS	Diff	Diff %
WEST	11,566	11,821	256	2%
GENESSEE	25	31	6	-
CENTRAL	9,701	9,830	129	1%
NORTH	263	243	(21)	-8%
MOHAWKVA	174	207	33	19%
CAPITAL	2,087	2,191	103	5%
HUDSONVA	5,231	6,182	951	18%
MILLWOOD	1,047	1,047	0	0%
DUNWOODI	0	0	0	-
NYCITY	2,354	3,745	1,391	59%
LONGISLA	6,596	5,982	(614)	-9%
NYISO Total	39,045	41,280	2,235	5.7%

Zonal CO_2 Emissions (Tons)

2013 Zonal CO_2 Emissions (Tons)				
Zone	GV	MAPS	Diff	Diff %
WEST	13,436	13,675	240	2%
GENESSEE	56	88	32	-
CENTRAL	8,753	9,093	340	4%
NORTH	1,040	1,052	12	1%
MOHAWKVA	726	769	43	6%
CAPITAL	8,784	9,029	246	3%
HUDSONVA	3,834	4,314	480	13%
MILLWOOD	440	440	(0)	0%
DUNWOODI	0	0	0	-
NYCITY	11,928	12,753	825	7%
LONGISLA	5,778	4,683	(1,094)	-19%
NYISO Total	54,775	55,898	1,123	2.0%

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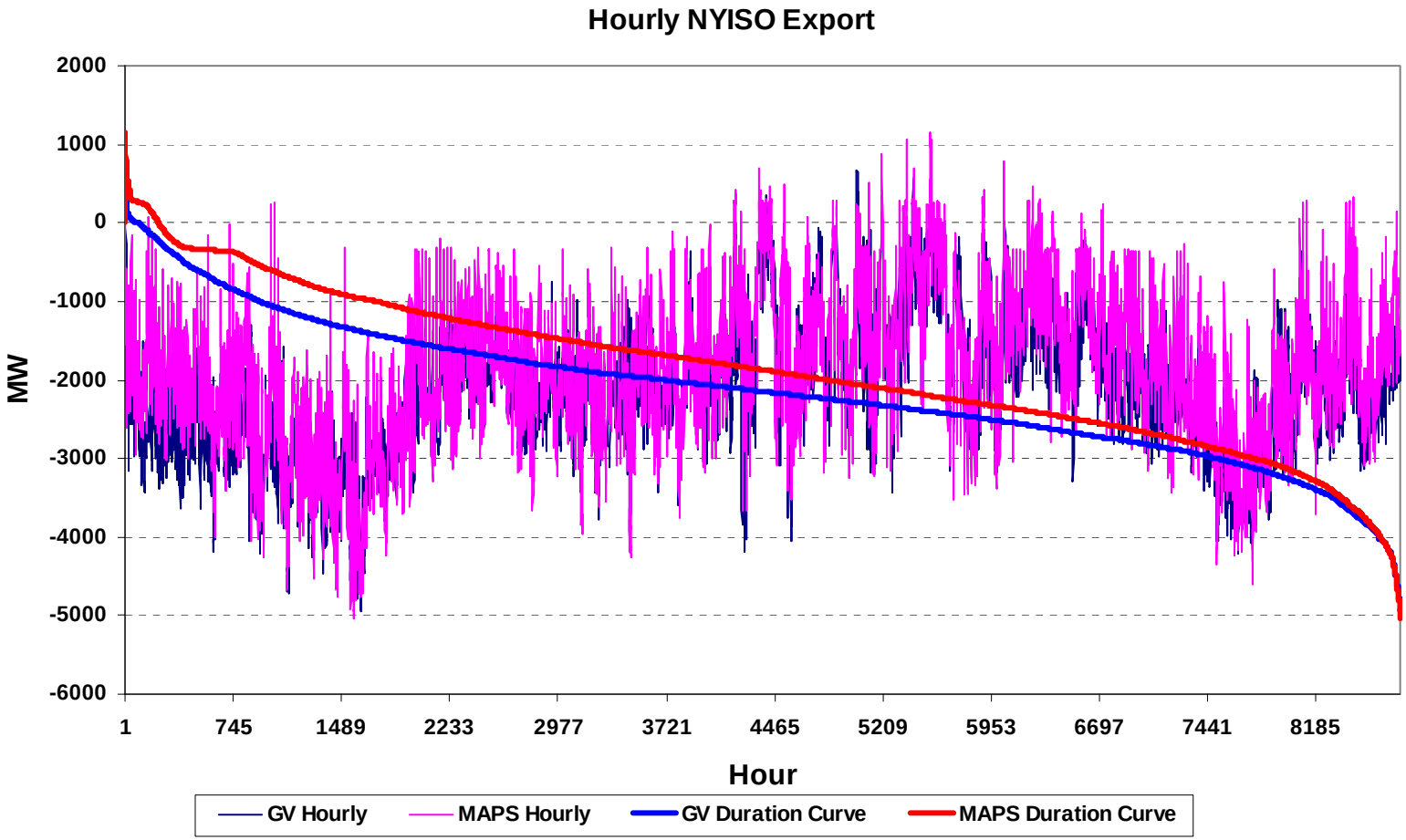
2013 NYISO Interchange



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