MAPS-GridView TOOL COMPARISON

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ESPWG
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NYISO
DRAFT – For Discussion Purposes Only

Topics

- Benchmark Status
- Updated 2013 Base Case Results
- Selection Criteria Matrix
- Next Steps

MAPS Benchmark Status

2013 MAPS Base Case was modified

- Modifications showed no major impact on Long Island & Hudson Valley generation issue
  - Spinning Reserves
    - *Aligned with GridView modeling*
  - Ontario-Michigan Interface
    - *Aligned with GridView modeling*

"Unaffected flow = 0" simulation performed

- Resulted in no major impact on Long Island & Hudson Valley generation issue

MAPS Benchmark Status cont.

- **NYISO MAPS-GV Benchmark is considered to be <u>completed</u> due to:**
  - *Both tools showed comparable results in vast majority of cases when considering congestion, CARIS Metrics, Generic Solutions, and Scenarios results.*
  - *NYISO dedicated a considerable amount of time, with limited resources, in investigating major non-alignments between MAPS and GridView models*
    - *Nevertheless, in a couple of cases, such as non-alignment in Long Island & Hudson Valley generation, the cause hasn't been identified. The reason for non-alignment appears to be in the different modeling logic which is out of NYISO's control.*
  - *Time and resource restrictions*
    - *CARIS Phase 2 projects and RNA*

Updated 2013 Base Case Results

Modifications:

- *Spinning Reserves aligned with GridView modeling*
- *Ontario-Michigan interface aligned with GridView modeling*

Minor impact on results:

- NYCA congestion slightly higher (mostly in NYC)
  - *The order of top three congested elements stayed unchanged*
- MAPS Zonal Generation and Production Costs are slightly lower and more aligned with GridView values
- Load Payments, Generator Payments and LBMP values are lower and more aligned with GridView values

Updated 2013 Base Case Results

Top Congested Elements

Demand Congestion (m$)			
Top Constraints	**GV**	**MAPS**	**Diff**
ATHENS - PV	220	253	15%
CENTRAL EAST	67	76	13%
WEST CENTRAL	53	59	11%

Updated 2013 Base Case Results

Zonal Congestion (m$)

Zonal Congestion(m$)				
Zone	**GV**	**MAPS**	**Diff**	**Diff %**
West	34	34	0	-
Genessee	23	23	0	-
Central	0	0	0	-
North	0	2	2	-
Mohawk Valley	1	1	0	-
Capital	13	15	2	20%
Hudson Valley	33	38	5	14%
Millwood	11	12	1	12%
Dunwoodie	24	26	2	6%
NYCity	278	343	66	24%
Long Island	93	111	18	20%
NYCA Total	510	606	96	19%

Updated 2013 Base Case Results

Zonal Generation GWh

Total Generation (GWh)				
Zone	**GV**	**MAPS**	**Diff**	**Diff %**
West	27,695	28,161	466	1.7%
Genessee	4,764	4,809	46	1.0%
Central	33,055	33,667	611	1.8%
North	9,850	9,895	45	0.5%
Mohawk Valley	3,484	3,574	90	2.6%
Capital	20,869	21,852	983	4.7%
Hudson Valley	4,404	5,079	675	15.3%
Millwood	17,149	17,153	4	-
Dunwoodie	6	6	0	-
NYCity	23,349	23,744	394	1.7%
Long Island	10,447	8,858	(1589)	-15.2%
NYCA Total	155,072	156,797	1725	1.1%
PJM Total	757,826	753,523	(4303)	-0.6%
ONTARIO Total	165,081	165,895	814	0.5%
New England Total	137,826	135,460	(2366)	-1.7%
Quebeck Total	4,445	4,438	(7)	-0.2%
System	**1,220,250**	**1,216,113**	**(4137)**	**-0.3%**

Updated 2013 Base Case Results

Zonal Production Cost (m$)

Zonal Production Cost (m$)				
Zone	**GV**	**MAPS**	**Diff**	**Diff %**
West	354	366	12	3%
Genessee	59	62	3	4%
Central	785	820	35	0%
North	130	128	(2)	0%
Mohawk Valley	34	35	1	2%
Capital	1108	1134	26	2%
Hudson Valley	173	229	56	32%
Millwood	210	210	(0)	0%
Dunwoodie	0	0	0	0%
NYCity	1658	1674	16	1%
Long Island	696	553	(143)	-21%
NYISO Total	5208	5211	3	0.1%

Updated 2013 Base Case Results

Zonal Avg. LBMPs ($ per MWh)

Zonal Avg. LBMP ($/MWh)				
Zone	**GV**	**MAPS**	**Diff**	**Diff %**
West	53.59	56.64	3.05	5.7%
Genessee	55.16	57.48	2.32	4.2%
Central	58.29	60.45	2.16	3.7%
North	57.54	60.25	2.71	4.7%
Mohawk Valley	60.08	61.52	1.45	2.4%
Capital	62.41	63.09	0.68	1.1%
Hudson Valley	65.98	66.16	0.19	0.3%
Millwood	66.98	66.98	0	-
Dunwoodie	67.41	67.02	(0.39)	-0.6%
NYCity	69.00	69.10	0.10	0.1%
Long Island	69.25	68.43	(0.82)	-1.2%
NYISO Total	62.33	63.37	1.04	1.7%

Updated 2013 Base Case Results

Zonal Load Payments (m$)

2013 Zonal Load Payment (m$)				
Zone	GV	MAPS	Diff	Diff %
WEST	852	909	57	6.6%
GENESSEE	555	585	30	5.4%
CENTRAL	965	1,009	44	4.5%
NORTH	402	421	19	4.8%
MOHAWKVA	448	463	15	3.4%
CAPITAL	733	748	15	2.1%
HUDSONVA	743	752	9	1.2%
MILLWOOD	189	192	2	1.3%
DUNWOODI	446	448	2	0.4%
NYCITY	4,100	4,156	56	1.4%
LONGISLA	1,585	1,582	(4)	-0.2%
NYISO Total	11,019	11,264	245	2.2%

Updated 2013 Base Case Results

Zonal Payments to Generators (m$)

2013 Zonal Generation Payment (m$)				
Zone	GV	MAPS	Diff	Diff %
WEST	1,440	1,602	162	11%
GENESSEE	253	275	21	8%
CENTRAL	1,842	1,972	131	7%
NORTH	553	595	42	8%
MOHAWKVA	198	219	20	10%
CAPITAL	1,274	1,366	93	7%
HUDSONVA	303	361	59	19%
MILLWOOD	1,131	1,140	10	1%
DUNWOODI	0	0	0	-
NYCITY	1,594	1,659	65	4%
LONGISLA	747	651	(95)	-13%
NYISO Total	9,335	9,842	507	5.4%

Selection Criteria Matrix - First Draft

Selection Criteria	Weighting Factor	MAPS	GridView
NYISO Tariff Requirements			
CARIS Metrics		√	√
Technical Features			
Co-optimization of Energy & Reserves			√
Monte Carlo Simulation			√
Modeling of Generator Ramps			√
Algorithm Convergence			√
Multi-pass Commitment		√	
Hourly Transmission Maintenance			√
More User Options		√	
Compatibility with PSSE			√
User Interface			
Ease of Use			√
Prep Time			√
Run Time		√	√
Flexible Database Management			√
Efficient Results Reporting		√	√
Other			
Parallel Computing Capability		√	
User & Application Manual		√	
Software costs			
New York MP Familiarity		√	
Time to train a new Employee			√

Next Steps

- **May – June 2010**
  - *Draft Report*
- **June – July 2010**
  - *Final Report*

NEW YORK INDEPENDENT SYSTEM OPERATOR

The New York Independent System Operator (NYISO) is a not-for-profit corporation that began operations in 1999. The NYISO operates New York's bulk electricity grid, administers the state's wholesale electricity markets, and provides comprehensive reliability planning for state's bulk electricity system.

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