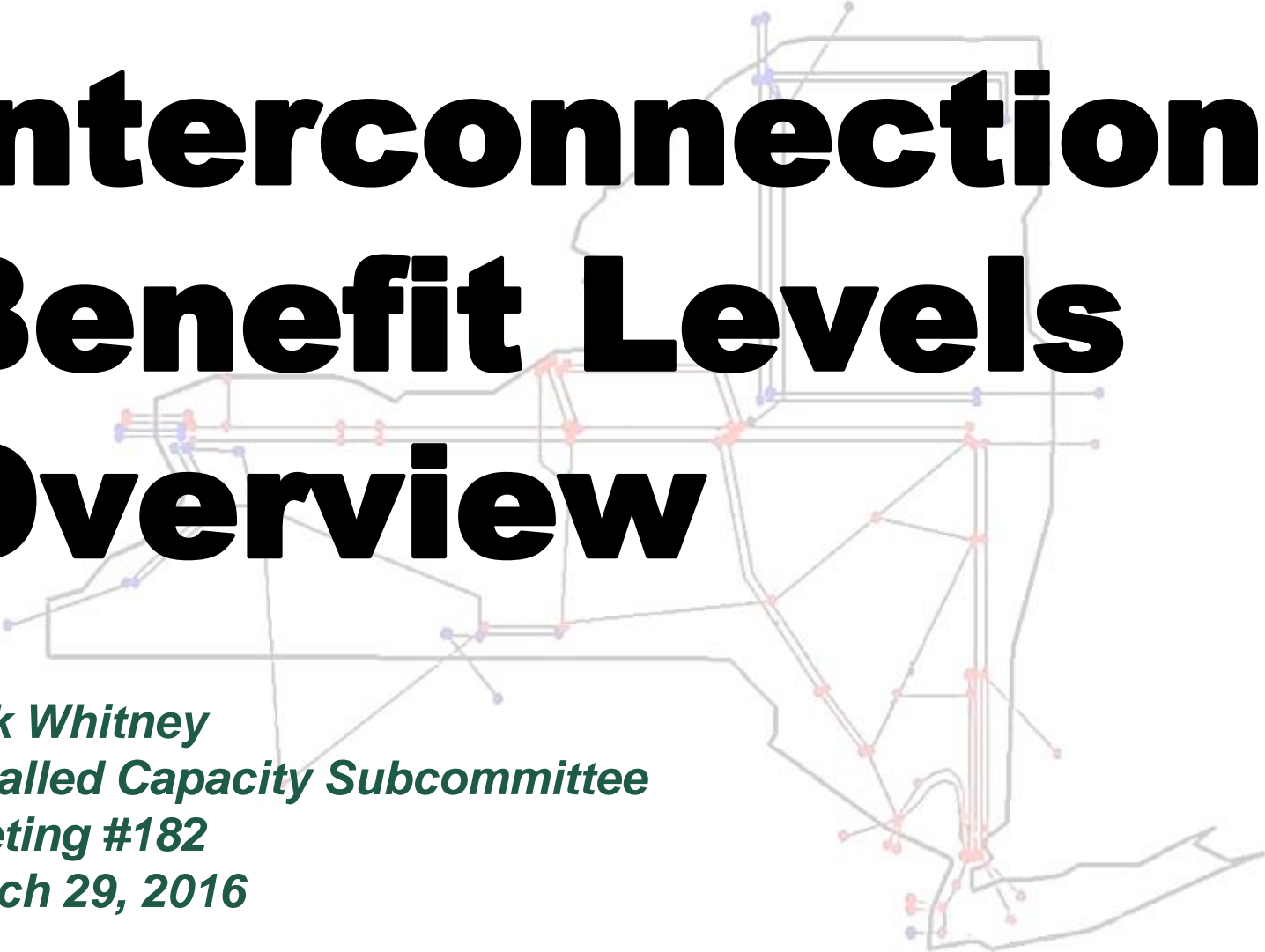


Interconnection Benefit Levels Overview

A faint background map of New York State is overlaid with a complex network of grey lines representing a power grid. Various nodes and connections are highlighted with small colored dots in shades of red, blue, and purple.

*Nick Whitney
Installed Capacity Subcommittee
Meeting #182
March 29, 2016*

Objectives

- ◆ **Simulated level of support relied upon by NYISO when setting its IRM**
- ◆ **Levels of support relied upon by NYISO's neighboring Control Areas when setting their IRM**
- ◆ **Review ISONE's tie benefit (TB) methodology**
- ◆ **Review PJM's capacity benefit of ties (CBOT) methodology**
- ◆ **Next Steps**

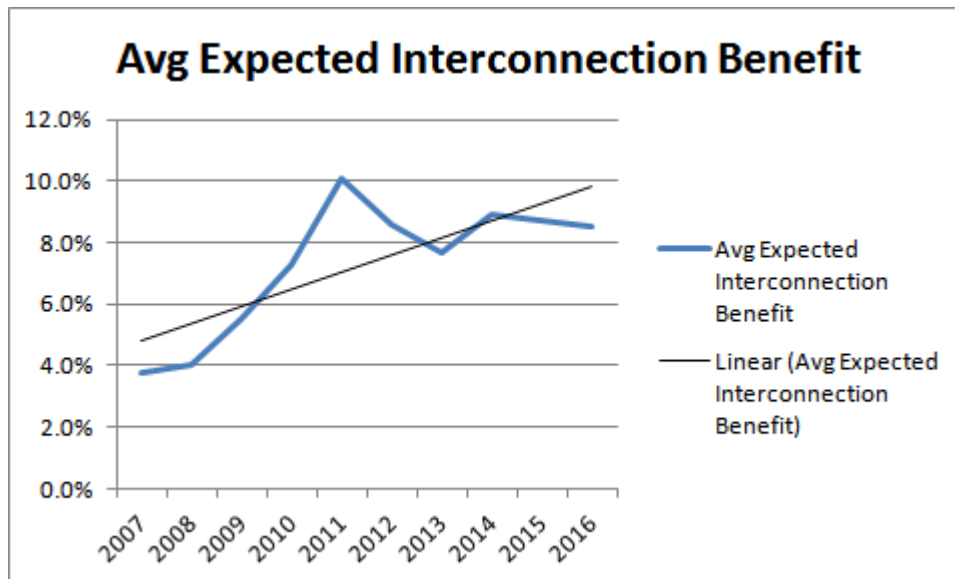
NYISO's Interconnection Benefit Levels

- ◆ **Figures on the next slide show that the difference between the IRM in an interconnected state and an isolated state has more than doubled from 2007 to 2016 as a percentage of forecast peak load (FPL).**
- ◆ **The interconnection benefit increased at its fastest pace from 2007 to 2011, going from 3.8% to 10.1% of FPL.**
- ◆ **Since 2011 the interconnection benefit has stabilized at an average of 8.5% of FPL.**

NYISO's Interconnection Benefit Levels

NYISO IRM Technical Results										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
IRM FPL	33,544	33,730	33,843	32,886	32,872	33,335	33,278	33,655	33,587	33,378
IRM % if Interconnected	16.0%	15.0%	16.2%	17.9%	15.5%	16.1%	17.1%	17.0%	17.3%	17.4%
IRM % if Isolated	19.8%	19.0%	21.7%	25.2%	25.6%	24.7%	24.8%	25.9%	26.0%	25.9%
Average Expected Interconnection Benefit*	3.8%	4.0%	5.5%	7.3%	10.1%	8.6%	7.7%	8.9%	8.7%	8.5%
Delta MW*	1,275	1,349	1,861	2,401	3,320	2,867	2,562	2,995	2,922	2,837

*This value represents an average over multiple draws, actual interconnection benefits can be higher or lower.



Neighboring CA's Historical Levels of Support

- ◆ **ISONE tie benefit levels range from 5.2% to 6.6% of their FPL as per the studies available.**
- ◆ **PJM capacity benefit of tie levels range from 2.6% to 5.0% of their FPL as per the studies available.**

Neighboring CA's Historical Levels of Support

NE Historical Tie Benefits									
	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Total Tie Benefits (FCA)	1,800	1,665	1,700	1,673	1,676	1,870	1,870	1,970	1,990
Summer FPL	27,550	26,462	29,365	32,208	29,380	29,400	29,790	30,005	30,230
TB / Summer FPL	6.5%	6.3%	5.8%	5.2%	5.7%	6.4%	6.3%	6.6%	6.6%

PJM Historical CBOTs								
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Capacit Benefit Margin Cap	3500	3500	3500	3500	3500	3500	3500	3500
Capacity Benefit Of Ties	1,700	2,830	3,007	3,007	3,093	2,675	3,144	2,765
PJM Mid-Atlantic FPL	64,748	64,706	65,580	64,347	63,948	63,767	62,985	59,399
CBOT / Mid-Atlantic FPL	2.6%	4.4%	4.6%	4.7%	4.8%	4.2%	5.0%	4.7%
PJM RTO FPL	147,183	147,442	163,093	166,506	165,691	167,211	165,479	162,618
CBOT / RTO FPL	1.2%	1.9%	1.8%	1.8%	1.9%	1.6%	1.9%	1.7%

Comparison of Interconnection Benefits					
	2012/13	2013/14	2014/15	2015/16	2016/17
ISONE (TB)	6.3%	5.8%	5.2%	5.7%	6.4%
PJM (CBOT)	2.6%	4.4%	4.6%	4.7%	4.8%
NYISO	8.6%	7.7%	8.9%	8.7%	8.5%

ISONE Tie Benefit Methodology

- ◆ **ISONE brings their system and neighboring systems to 0.1 LOLE**
- ◆ **Calculate an initial TB value for ISONE in a fully interconnected state (1,990 MW in FCA10)**
- ◆ **Calculate TB values for all possible interconnection states**
- ◆ **Calculate the initial TB values for each individual/group of interconnections**
- ◆ **Adjust TB value to ensure it is not greater than capacity imports and prorate if necessary**
- ◆ **See Appendix for link to detailed method and results**

PJM Capacity Benefit of Ties Methodology

- ◆ **Perform a reserve requirement study (RRS) with capacity benefit margin (CBM) at 0 MW and at 3,500 MW**
- ◆ **The resulting change in required reserves on a % basis is multiplied by the PJM-RTO FPL to arrive at the capacity benefit of ties expressed in MW (2,765 MW in 2015 RRS)**
- ◆ **The CBM value is set to 3,500 MW as per PJM's Reliability Assurance Agreement**
- ◆ **See Appendix for link to detailed method and results**

Next Steps

- ◆ **NYISO would like to provide additional analysis at the next ICS meeting (May 4, 2016) and allow stakeholders an opportunity to comment.**
- ◆ **Bring a proposal for limiting interconnection benefits in the IRM study to the June 1, 2016 ICS meeting.**
- ◆ **Implement a limit for interconnection benefits in the 2017 IRM study.**

Appendix

- ◆ **2019/20 FCA Tie Benefit Study – ISO New England**
 - http://www.iso-ne.com/static-assets/documents/2015/09/a9_tie_benefits_results.pdf

- ◆ **2015 PJM Reserve Requirement Study**
 - <http://www.pjm.com/~media/committees-groups/subcommittees/raas/20150930/20150930-pjm-reserve-requirement-study.ashx>

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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