



Operating Committee – Special Cold Weather Resource Improvement Final Proposal Report

September 4, 2014

Issue Summary

During the January 2014 “Polar Vortex,” PJM experienced extreme cold temperatures in its region that required the use of emergency procedures on multiple days to maintain adequate supply to meet the demand and reserve needs of the system. Coincident with the cold weather and high demand, generator forced outages and failures to start were significantly higher than expected; as high as 22% (~40,000 MW) during the January 6 – 8, 2014 operating days. PJM’s Emergency Operations Manual M13, Section 3.3 includes a chart of potential generation unavailability due to cold weather based on historical performance; however the forced outage rates in January 2014 exceeded these estimates by greater than 200%.

A Problem Statement was brought forward by PJM. PJM believes that improvements in the performance of resources during extreme cold weather events is necessary and some level of performance verification or testing of certain resources during cold weather should be implemented.

The Problem Statement/Issue Charge was approved by the OC on May 6, 2014.

Stakeholder Group Assignment

This issue was addressed by the Operating Committee as part of its existing chartered responsibilities related to the overall operating reliability of the PJM bulk power supply facilities. Several special WebEx Conference calls were initiated to address this issue specifically as well as part of the regular OC meeting agendas.

There were nine meetings conducted to address this topic.

Key Work Activities

1. Reviewed data on the PJM “Polar Vortex” event including items such as outage code analysis, fuel availability problems, effects on eFORd & eFORp, effects on energy market, etc.
2. Provided education on best practices for cold weather preparation and resource verification/testing requirements from other geographic areas such as ISO-NE, NYISO, and northern Midwestern states. Include a review of Southwest Cold Weather Event of February, 2011.
3. Reviewed prior requirements for generator winter capability testing and associated exemption programs.
4. Investigated the need to develop verification/testing requirements to ensure that resources such as traditional generation, variable generation, demand response and those that operate infrequently and/or have alternate fuel capability are prepared to operate during extreme cold weather conditions.
5. Considered guidelines for the use of a cold weather preparation checklist.
6. Drafted required Manual changes to implement new requirements for resource verification/testing under cold weather conditions.



Summary of Work

The group followed the expedited / focused application of the Consensus Based Issue Resolution (CBIR) process – referred to as CBIR Lite to manage its efforts. Through education, discussion and debate, PJM staff and stakeholders reached Tier 1 consensus on a single PJM proposal that addressed the issue.

Recommended Proposal

The two part proposal focuses on enhancing unit performance during cold weather conditions and adequately scheduling units to meet systems conditions reliability and economically. While there was only a single PJM proposal brought forward, the stakeholders debated, modified and proposed new tenants to strengthen the proposal. A summary of the final proposal follows:

1. Generation Resource Cold Weather Checklist to be added as Attachment N to Manual 14D. The checklist, or a similar one developed and maintained by the generation owner, should be used annually prior to the winter season to prepare generation resources for extreme cold weather operations. Section 7.5.2 of M14D details the procedures.
2. Generation Resource Operational Exercise. A new section 7.5 will be added to Manual 14D. The exercise will be conducted prior to the onset of cold weather with the purpose of identifying and correcting start-up, operational and fuel switching problems. Not every unit will be exercised. Nuclear, wind and hydro units are excluded. PJM will provide a list of units to resources owners that have not run recently on either the primary or backup fuels. Section 7.5.1 of M 14D details the procedures.

Standing Committee Results

[Replace with voting results for all options at standing committee or senior task force.]

Appendix I: Supplemental Documents

[Education and Presentations Reference Document](#)

Final Manual 14D Section 7.5 and Attachment N Changes will be added here.

Appendix II: Stakeholder Participation

Abbott	Tim	Duke Energy Business Services LLC
Ainspan	Malcolm	Energy Curtailment Specialists, Inc.
Anders	David	PJM Interconnection, LLC
Aslam	Omar	Federal Energy Regulatory Commission
Barker	Jason	Exelon Business Services Company, LLC
Benчек	Jim	FirstEnergy Solutions Corporation
Berlinski	Mike	Customized Energy Solutions, Inc.
Bloom	David	Baltimore Gas and Electric Company
Bolan	Martin	FirstEnergy Solutions Corporation



Bowe	Tom	PJM Interconnection, LLC
Bonner (ES)	Charles	Dominion Virginia Power
Borgatti	Michael	Gable and Associates
Boyle	Glen	PJM Interconnection, LLC
Brodbeck	John	Potomac Electric Power Company
Bryson	Mike	PJM Interconnection, LLC
Campbell	Bruce	EnergyConnect, Inc.
Carro (ES)	Dan	Dominion Virginia Power
Carroll	Rebecca	PJM Interconnection, LLC
Ciabattoni	Joe	PJM Interconnection, LLC
Citrolo	John	PSEG Energy Resources and Trade LLC
Dantonio	Phil	PJM Interconnection, LLC
Davis	Elizabeth	PPL EnergyPlus, L.L.C.
De Geeter	Ralph	Maryland Public Service Commission
Dean	Evan	FirstEnergy Solutions Corporation
Dugan	Bill	Customized Energy Solutions, Ltd.*
Dugan	Chuck	East Kentucky Power Cooperative, Inc.
Erickson	Bruce	Allegheny Electric Cooperative, Inc.
Erickson	David	Appalachian Power Company
Esposito	Patricia	Atlantic Grid Operations A, LLC
Esterly	Theresa	PJM Interconnection, LLC
Farber	John	DE Public Service Commission
Filomena	Guy	Customized Energy Solutions, Ltd.*
Fitch	Neal	NRG Power Marketing LLC
Frelich	Jessica	Integrays Energy Services, Inc.
Fusek	David	Appalachian Power Company (IM Dedicated)
Garavaglia	John	Commonwealth Edison Company
Gates	Terry	Appalachian Power Company
Gebolys	Debbie	Other
Gordon	Brad	PJM Interconnection, LLC
Graff	Ronald	PJM Interconnection, LLC
Griffiths	Dan	Consumer Advocates of PJM States
Hagaman	Derek	GT Power Group
Hanebuth	Michele	Consolidated Edison Company of NY, Inc. (CE to PS Wheel)
Hauske	Thomas	PJM Interconnection, LLC
Heidorn	Rich	RTO Insider
Heimbach	Mark	PJM Interconnection, LLC
Heizer	Fred	Ohio PUC
Hendrzak	Chantal	PJM Interconnection, LLC
Hils	Doug	Duke Energy Ohio, Inc.



Hoatson	Tom	Riverside Generating, LLC
Horstmann	John	Dayton Power & Light Company (The)
Hostetler	Tim	AEP
Hsia	Dric	PJM Interconnection, LLC
Hugee	Jacquelynn	PJM Interconnection, LLC
Hunter	Andrew	Metropolitan Edison Company
Jani	Alpa	PJM Interconnection, LLC
Jennings	Kenneth	Duke Energy Business Services LLC
Johnson	Carl	Customized Energy Solutions, Ltd.*
Josyula	Siva	Monitoring Analytics, LLC
Kazerooni	Hamid	PPL EnergyPlus, L.L.C.
Kelly	Stephen	Brookfield Energy Marketing LP
Kenney	Susan	PJM Interconnection, LLC
Kimmish	Steven	PSEG Energy Resources and Trade LLC
Knies	Heather	EDF Trading North America, LLC
Kogut	George	New York Power Authority
Lacy	Catharine	Dominion Virginia Power
Lee	Ray	PJM Interconnection, LLC
Lieberman	Steven	Old Dominion Electric Cooperative
Luna	Joel	Monitoring Analytics, LLC
Mabry	David	McNees Wallace & Nurick LLC
Mahoney	Julieanne	New York State Electric & Gas Corporation
Manion	Evelyn	PJM Interconnection, LLC
Marton	David	FirstEnergy Solutions Corporation
Mason	Ray	ReliabilityFirst Corporation
Mathew	Lagy	PJM Interconnection
Mazari	Shailabh	Duke Energy Ohio, Inc.
McAlister	Lisa	American Municipal Power, Inc.
Metzler	Jakob	Castleton Commodities Merchant Trading L.P.
Mitra	Sunit	Pepco Holdings Inc.
Moraski	John	Baltimore Gas and Electric Company (TO)
Murphy	Shaun	PJM Connect
Norton	Chris	American Municipal Power, Inc.
O'Connell	Robert	JPMorgan Ventures Energy Corporation
Olaleye	Michael	PJM Interconnection, LLC
O'Leary	Christopher	PSEG Energy Resources and Trade LLC
Ondayko	Brock	Appalachain Power Company
Patten	Kevin	Appalachain Power Company
Pratzon	David	GT Power Group
Pilong	Chris	PJM Interconnection, LLC



Quinlan	Paul	Rockland Electric Company
Reiter	Heather	PJM Interconnection, LLC
Riding	M.Q.	Essential Power OPP, LLC
Santarelli	Paul	PPL Electric Utilities Corp. dba PPL Utilities
Scarpignato	David	Direct Energy Business, LLC
Schweizer	David	PJM Interconnection, LLC
Scott	Charles	DC Energy LLC
Sillin	John	The Federal Energy Regulatory Commission
Slade	Louis	Virginia Electric & Power Company
Shparber	Steven	PJM Interconnection, LLC
Smith	Melissa	PJM Interconnection, LLC
Smith	Jacque	ReliabilityFirst Corporation
Souder	Dave	PJM Interconnection, LLC
Stadlmeyer	Rebecca	Exelon Business Services Company, LLC
Stefanowicz	Vince	PPL EnergyPlus, L.L.C.
Summers	Jim	Delmarva Power & Light Company
Tam	Simon	PJM Interconnection, LLC
Trayers	Barry	Citigroup Energy, Inc.
Walter	Laura	PJM Interconnection, LLC
Warshel	Kim	PJM Interconnection, LLC
Weaver	David	PECO Energy Company
Weiss	Glenn	PJM Interconnection, LLC
Wharton	Ronald	Public Service Electric & Gas Company
White	Doug	North Carolina Electric Membership Corporation
Whooley	Jerry	PJM Interconnection, LLC
Wozniak	Caroline	Federal Energy Regulatory Commission

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