

Load Analysis Subcommittee
Teleconference / Web conference
Wednesday, May 27, 2015
9:30 a.m. – 12:00 p.m. EPT

Administration

1. Mr. Reynolds opened the meeting, reviewed the agenda, and asked for additional agenda items. Ms. Mooney performed roll call.
2. The Load Analysis Subcommittee reviewed and approved the draft minutes from the April 30, 2015 meeting. Minutes will be posted as final.

Load Forecast Model Development

3. Peak Load Model Enhancements

Mr. Gledhill outlined the impact of each of the three changes to PJM's proposed model. The three changes include incorporating usage and efficiency variables, re-specifying weather using seasonal splines, and including an autoregressive (AR) error term. The inclusion of the usage and efficiency variables accounts for about two thirds of the change in the 2018 forecast from the current model while the new weather specification and including an AR term made up the remaining one third of the change. The new weather specification and AR term lower the forecast starting point and the usage and efficiency variables both lower the starting point and lower the growth in the forecast.

Mr. Gledhill shared analysis of how PJM is accounting for energy efficiency (EE) in the model. A sensitivity was run, holding efficiency values from 2014 constant for the remainder of the forecast. This forecast run was compared to the forecast in which efficiency was not held constant to show the reduction in the forecast due to EE.

In response to a question regarding whether EE would be redundant, if it is fully in the load forecast, to allow EE resources to bid into RPM, PJM said this is being discussed internally and will likely be discussed at the Markets and Reliability Committee (MRC), not LAS.

Mr. Gledhill showed the subcommittee that the proposed model has similar forecast stability compared to the current model. The two areas that change in the forecast from year to year are the estimation period which has an extra year of load history and an updated economic data series. The proposed model adds end-use history and forecast as an additional item that will be updated each year. PJM ran sensitivities that increased and decreased efficiency projections by 1% and included and average efficiency for the forecast to show the forecast sensitivity to these changes.

PJM next discussed sensitivities that were run to address the model results of changing the estimation period. The models were estimated from 2000, 2002, and 2004 and compared to the model estimation starting in 1998. In all of the models the estimation period Mean Absolute Percent Error (MAPE) was the same, but the model with an estimation start of 2004 led to counterintuitive results with some coefficients having improper signs. It was noted that the incorporation of end-use variables helps to explain the

changing relationship of load and economics and eliminates the high sensitivity to the model estimation period.

PJM's forecast process produces a peak distribution so the current method and new method distributions were compared. There is some impact to the upper tail of the distribution using the new specification which produces slightly lower loads. These 90/10 peak loads are used in load deliverability tests.

Mr. Gledhill mentioned that an appendix with zonal forecast detail was posted with the meeting materials.

The next step is for PJM to meet with management to finalize proposed model changes and write up redline changes for Manual 19. If another LAS meeting is needed to review redlined manual it will be June 24th. Then the manual changes will be reviewed with the Planning Committee (PC) and MRC.

4. Distributed Generation

Ms. Cummings updated the subcommittee with zonal detail for distributed solar generation. The historical values were obtained from PJM's GATS system and future capacity was based on state mandates. PJM plans to investigate the development of a capacity factor for peak hours using cloud cover and insolation data from NOAA in order to develop hourly solar generation impacts.

Subcommittee members had questions about the granularity of the locational data in GATS. Currently PJM is using county data but may be able to obtain more specific latitude/longitude data from GATS. Others were concerned that state RPS plans change yearly and may not be consistent. PJM plans to look into other data sources for possible future solar impacts.

Future Meeting Dates

June 24, 2015

1:30p.m. – 2:30 p.m.

Webex

In Attendance

| | |
|-----------------|------------------------------------|
| Chad Burnett | American Electric Power |
| Mark Harris | American Electric Power |
| Randy Holliday | American Electric Power |
| David Bloom | Baltimore Gas and Electric Company |
| John McDaniel | Baltimore Gas and Electric Company |
| Sara Bishop | Calpine |
| Haibin Yu | Calpine |
| David Apostol | Commonwealth Edison Company |
| Robert Zacher | Commonwealth Edison Company |
| Rehan Gilani | ConEdison Energy, Inc. |
| Dan Griffiths | Consumer Advocates of PJM States |
| Guy Filomena | Customized Energy Solutions, Ltd |
| Jonathan Sasser | Customized Energy Solutions, Ltd |



Meeting Minutes - Draft

Mike Hurd
David Hastings
Billy Coyle
Leon Brunson
Sally Witt
Malcolm Ainspan
Rebecca Stadelmeyer
Jim Benchek
Derek Hagaman
David Pratzon
Ben Abing
Megan Wisersky
Dave Mabry
Allison Clements
Greg Carmean
Kimberly Golden
Kenneth Reif
Michele Greening
James Jablonski
Stephen Wreschnig
Debbie Gebolys
Tom Hoatson
Doug Hurley
Paul Peterson
James Wilson

Dayton Power and Light Company
DhastCo, LLC
Dominion Resources
Duke Energy Ohio, Inc.
East Kentucky Power Cooperative, Inc.
Energy Curtailment Specialists, Inc.
Exelon
FirstEnergy Solutions Corp.
GT Power Group
GT Power Group
ITC Transco
Madison Gas & Electric Company
McNees Wallace & Nurick LLC
NRDC
OPSI
PPL Electric Utilities Corp.
PPL Electric Utilities Corp.
PPL EnergyPlus, LLC
Public Power Authority of New Jersey
Public Service Electric & Gas Company
Public Utility Commission of Ohio
Riverside Generating, LLC
Synapse Energy Economics, Inc.
Synapse Energy Economics, Inc.
Wilson Energy Economics

PJM Staff

John Reynolds, Chairman
Bridgid Cummings
Tom Falin
Andrew Gledhill
Patricio Rocha Garrido
Molly Mooney, Secretary

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