2016 EFG Meeting Summary

On May 18th through 20th, over 62 energy forecasters representing 42 companies gathered at the W Hotel in Scottsdale, Arizona for the 14th annual Energy Forecasters. The meeting included two pre-conference workshops, seventeen (17) industry presentations, two (2) roundtable discussions, and previews of Itron’s MetrixND software update.

The pre-conference workshops included two courses on Statistically Adjusted End-Use modeling techniques – Introduction to SAE Modeling and Advanced SAE Modeling. Thirty-four (34) forecasters attended these meetings which covered SAE theory, calibration techniques, and applications of the SAE model for peak and system-level forecasts.

This summary presents short synopses on each presentation, highlights the round table discussions, and encapsulates Itron’s MetrixND sessions.

Conference Speakers

Seventeen (17) industry speakers from across North America offered technical presentations covering the state of the economy, load growth, weather normalization, photovoltaic impacts, peak forecasting models, and forecasting model challenges. A brief summary of each presentation is listed below.

Jordan Prassinos, Arizona Public Service
Jordan opened the meeting with an introduction to the APS service territory and key forecast characteristics. In a dramatic turnaround from the recent period of slow growth, Phoenix and APS have shown a strong recovery. Vacancy rates are back to pre-recession levels, job growth is above the US growth rates, and single-family housing permits are near five year highs. The economic factors indicate a bright future with expected growth rates close to 1.5%.

Adam Kamins, Moody’s
Adam provided the economic outlook for the United States and Canada. The U.S. economy is experiencing strong growth due to tightening employment and housing. Additionally, Moody’s business survey confirms that business conditions are improving. The relative strength of the U.S. economy will allow policy makers to remain hawkish and rising inflation will cause the Federal Reserve to continue managing interest rates. In contrast, low energy prices have dampened Canada’s growth and will continue to be a challenge.

Erin Boedecker, Energy Information Administration
In an unplanned turn of events, Erin’s planned presentation was replaced by a quick overview of the 2016 Annual Energy Outlook which was published on May 17 (the day before the EFG meeting). The AEO includes two cases. The Reference case includes the Clean Power Plan
regulations which are still in litigation, but are expected to be adopted. The second case excludes the Clean Power Plan. Additional alternative cases will be published at a later date. The base case shows residential electric growth of 0.3%/year and commercial electric growth of 0.8%/year between 2015 to 2040.

**Mark Quan and Mike Russo, Itron**

Each year, Itron conducts a load growth and accuracy benchmarking survey. In this presentation, Mark and Mike showed preliminary results from the 60 survey respondents. Unlike previous years, the preliminary results show a slightly negative growth for 2015 system-level weather adjusted electric sales. In addition to the survey results, Mark and Mike presented Itron’s weather normalization conducted at the state-level. These results allow for regional and national-level comparisons and confirm the survey results.

**Carrie White, Entergy**

Carrie updated the participants on Entergy’s proposed weather normalization method. The method uses degree-hours instead of the traditional degree-day calculations and allows for manual adjustments to the weather normalized results. Manual adjustments are applied when the weather normalization results exceed a specified tolerance band. After presenting the method, Carrie opened the discussion to solicit advice for improvements and inquire about whether other companies use manual adjustments in the weather normalization process. The discussion revealed that several companies make manual adjustments.

**Arthur Maniaci, New York Independent System Operator.**

Arthur moved the discussion to weather normalized trends. His analysis showed a decomposition method which allows uses to identify base load, heating, and cooling trends. Once the loads are decomposed, the trends reveal a decline a base load intensity, but increases in heating and cooling intensities. Arthur’s analysis clarifies the difference between weather sensitive and non-weather sensitive load trends. The analysis is performed using daily data and applied to energy and peaks.

**Joanna Cucchi, Roseville Electric,**

Joanna displayed the impacts of California energy policy on her city’s SAE forecast. California policies for Net Zero Homes, commercial energy efficiency mandates (SB350), and solar adoption demonstrate dramatic reductions in average-use for both the commercial and residential sectors.

**Kristen Larson, Global Weather Corporation**

Kristen introduced the Global Weather Corporation and their collaborative work to identify the state-of-the-art methods for solar forecasting. Additionally, Kristen provided a valuable resource which provides historic solar radiation and solar load profiles (based on the historic radiation). The NREL (National Renewable Energy Laboratory) website contains tools for downloading historic solar radiation data and average profiles by location.

**Mike Russo and Eric Fox, Itron**

Mike and Eric presented a long-term solar penetration model that correlates solar saturation with the customer payback periods (number of years) based on local photovoltaic costs and savings.
The model has been applied in various service territories and correlates well with historic penetrations while providing options for forward-looking price scenarios.

**Terry Baxter, NV Energy,**
Terry extended the solar discussion with the specific case of solar adoption in the NV Energy service territory. Terry discussed the factors leading to the fast adoption and the abrupt slow down based on changing laws. These factors impact the photovoltaic savings and the payback period which flow through the solar penetration model.

**Matt Owens. STEM Inc.**
Matt provided an overview of the current energy storage market including the penetration of systems, barriers to the technology, and potential for change. While the recent adoption of storage is primarily driven by policy incentives, opportunities to extract value for storage from demand charges, demand response, and grid control will likely propel the market forward.

**Jerry Cui, Southern California Edison**
Jerry presented SCE’s proposed method to forecast peak demands. A new method is needed due to a recent shift in the peak hour. The method includes obtaining a weather response coefficient from a daily peak regression model, then forecasting the base load and weather response loads separately. The aggregation of the base and weather responsive loads allows for post model adjustments such as photovoltaic load and other demand response forecasts to forecast the time and level of future peaks.

**Andrew Gledhill, PJM**
After moving from a pure econometric peak model to an SAE peak model, Andrew identified a problem with the capturing cooling trends using SEER values as the measure of efficiency. SEER values are measured over a season while EER values are measured at 95 degrees (closer to peak conditions). Andrew converted the SAE SEER trend to an EER trend and demonstrated an improved peak forecast.

**Stuart McMenamin, Itron**
In an unscheduled presentation, Stuart provided a short discussion of the pitfalls of poor model design. In the model shown, Stuart showed an ill specified quantile regression model and explained how a correctly specified linear regression or quantile model would produce similar results.

**Leo Laramee, Manitoba Hydro.**
Leo showed a different method of weather normalization which relies on multiple regressions, each estimated over overlapping two-year periods. The series of heating and cooling coefficients show changing responses over time and are used to understand the weather response.

**Al Bass, KCPL**
The Big Commercial class in KCPL’s service territory showed tremendous growth from 2005 through 2007, but slow growth since 2008. Al led a discussion on the challenges of accounting for fast, then slow, growth and alternative drivers which may improve the model fit and forecast.

**Abdul Razack, NV Energy**
Abdul finished our industry presentations with a discussion of how alternative graphics may be used to better communicate forecast results to management. The presentation included examples of “bad” graphics, and “effective” graphics as well as resources for obtaining new ideas.

**Roundtables**

Itron Staff led two roundtable sessions. These sessions allowed participants to explore issues and elicit feedback from all conference participants.

**Eric Fox, Issues Facing Forecasters**

Eric led the discussion which identified the “hot” issues facing load forecasters. The following is a list of identified issues.

- Solar Forecasting
  - Adoption Forecasts
  - Peak shifting effects
  - Reserve Margin Impacts
  - Load Shape Impact
- Management Concerns
  - Flat Sales
  - Variance accounting and accuracy
  - Granularity – end uses and geographic levels
  - Managing the message
- Changing Responses
  - Weather responsive loads
  - Economic drivers
  - Price response from rate changes and time-of-use rates
- Capturing End-Use Changes
  - Including DSM and EE impacts
  - Fielding Saturation Surveys
  - Modeling Lighting impacts
  - Capturing Electric Vehicle Impacts
  - Battery/Storage technology emergence
- Forecast Areas
  - Changing peak forecasts to align with changes in the industry
  - Distribution Level forecasts
  - Open Access adjustment
- Applications of AMI data on forecasting

**Andy Sukenik, Peak Trends**

Andy led the roundtable discussion on peak forecasting and weather normalization methods. The discussion focused on identifying the issues which impact peak forecasting accuracy.
different methods and variables were identified, the challenge of peak forecasting extended to the conservative nature of variables and assumptions.

**MetrixND Updates**
In two sessions, Mark Quan, Stuart McMenamin, and David Simons discussed the uses of MetrixND and the software update plan. Mark showed the current release of MetrixND through useful tips and best practice advices. Stuart and David showed the next version of MetrixND and presented the software enhancements and new features. MetrixND version 4.7 is expected to be released later this year.