LOAD FORECASTING: METHODOLOGY REVIEW AND WORK PLAN

Recommendations and Action Plan

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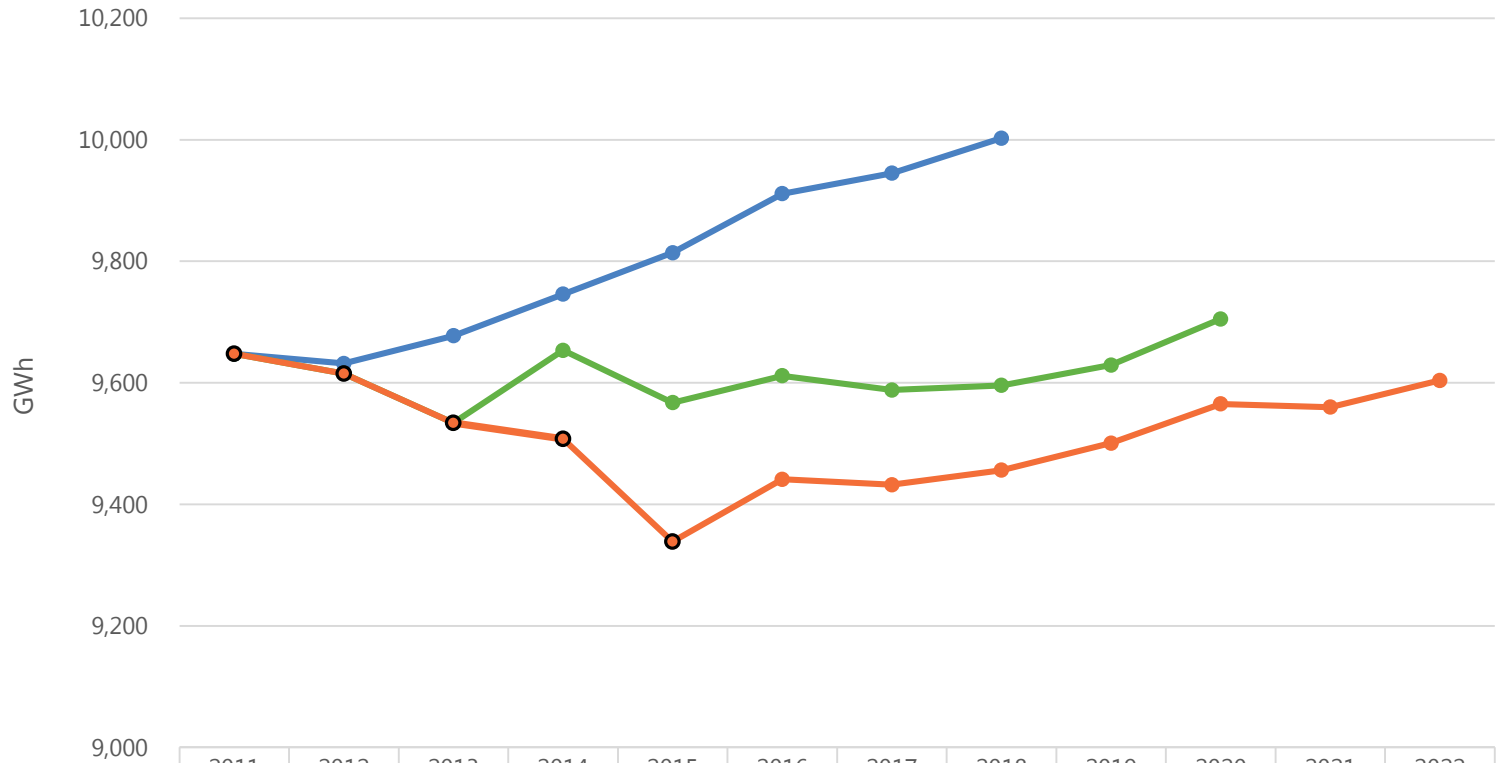
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BACKGROUND

Strategic Plan Load Forecasts

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Adopted 2012 SP	9,648	9,632	9,677	9,746	9,814	9,911	9,945	10,003				
2014 Adopted Plan (2013 LF)	9,648	9,615	9,534	9,653	9,567	9,611	9,588	9,596	9,629	9,705		
2016 Plan Update (2015 LF)	9,648	9,615	9,534	9,507	9,339	9,441	9,432	9,456	9,501	9,565	9,560	9,604

PROJECT OVERVIEW

- Load Forecast Steering Committee established
  - Co-sponsors Paula Laschober and Mike Jones
  - Cross-functional representation: Finance, Power Supply, Risk, Energy Delivery Engineering, System Planning, Customer Energy Solutions

- Consultants Applied Energy Group/Integral Analytics, LLC provide methodology review and best practices
  - November 2016: vendor engagement began
  - March 2017: Final report delivered

LOAD FORECASTING HIGH-LEVEL GOALS

General	Move away from simple "point forecasting" by using more than one approach / model to develop "official" load forecast. Improve the accuracy of the load forecast (by Q3). Perform sensitivity and scenario analysis. Promote collaboration in the preparation of the forecast
Energy forecast	Develop an econometric energy forecasting model that is in line with current industry best practices and includes demand-side resources (DSR) and codes and standards (C&S). Use alternative approaches as well.
Peak forecast	Develop a system peak forecast that is in line with industry best practices.
Cross-cutting	Revisit current approaches to weather normalization, normal weather year development, and calendarization of billing data.

FORECASTING BEST PRACTICES

Use multiple approaches

- Use a variety of methods for energy and peak load forecasts
- Compare and contrast forecasts and use judgment to develop "final" forecasts

Establish Forecast Review Committee

- A small team that reviews the key forecast assumptions and results
- It guides the development of the "final" forecast
- It vets the forecast prior to presentation to executives

Perform scenario and sensitivity analyses

- Triangulate or align forecasts based on best available data
- Identify sensitivity to key forecast drivers
- Develop and analyze scenarios

RECOMMENDATIONS: FORECAST PROCESS

- Establish a multidisciplinary load forecast team
  - Finance, Risk, Power Supply, Distribution Planning and CES
  - Team vets forecast assumptions and results

- Conduct robust sensitivity analysis to highlight uncertainty

- Make improvements gradually over time
  - Build up internal expertise

RECOMMENDATIONS: ENERGY FORECAST

Develop new econometric models

- Phase 1
  - Acquire economic forecast from 3rd party
  - Develop customer forecast
  - Identify new weather variables
- Phase 2
  - Build end-use indices and develop a hybrid model
  - Transition to monthly model

Leverage end-use model

- Use model from CPA to develop annual end-use model by rate class
- Isolate impacts from C&S and DSR and provide to econometric model

Use geographic load forecasting tool for T&D planning

- Feeder-level forecast can be rolled up to system level
- Recommend interaction among Engineering, CES and Load Forecasting

Official Load Forecast

RECOMMENDATIONS: PEAK DEMAND FORECAST

Develop new econometric models

- Develop seasonal peak model in 2017
- Develop hourly or daily model in 2018

Utilize end-use model to obtain end-use breakout

- Using end-use "peak factors," City Light can see implied end-use breakdown

Use LoadSEER

- Feeder-level forecast can be rolled up to system level
- Recommend interaction among Engineering, CES and Load Forecasting

Official Load Forecast

PRIORITIZATION AND WORK PLAN: 2017

- Assemble Technical Load Forecast Team

- Build Phase 1 Energy Econometric Model (rebuild)
  - o Convert to monthly model
  - o Purchase Third-Party Economic Forecast (IHS)
  - o Explicitly account for DSR and C&S
  - o Explore how to best account for weather impacts
  - o Start building customer information database

- Use multiple approaches, leverage CPA and LoadSEER

- Forecast completed by end of year

PRIORITIZATION AND WORK PLAN: 2018

- Phase 2 Econometric Energy Model
  - Build end use indices and include in the econometric model (hybrid model)

- Peak Demand Model
  - Build Peak Demand Model
    - Monthly or Daily (TBD)
    - Develop method to allocate to customer classes

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Excellence, Accountability, Trust and Stewardship.

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