STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF INDIANA MICHIGAN POWER COMPANY, AN INDIANA CORPORATION, FOR (1) AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR ELECTRIC UTILITY SERVICE THROUGH A PHASE IN RATE ADJUSTMENT; (2) APPROVAL OF: REVISED DEPRECIATION RATES; ACCOUNTING RELIEF; INCLUSION IN BASIC RATES AND CHARGES OF QUALIFIED POLLUTION CONTROL PROPERTY, CLEAN ENERGY PROJECTS AND COST OF BRINGING I&M'S SYSTEM TO ITS PRESENT STATE OF EFFICIENCY; RATE ADJUSTMENT MECHANISM PROPOSALS; COST DEFERRALS; MAJOR STORM DAMAGE RESTORATION RESERVE AND DISTRIBUTION VEGETATION MANAGEMENT PROGRAM RESERVE; AND AMORTIZATIONS; AND (3) FOR APPROVAL OF NEW SCHEDULES OF RATES, RULES AND REGULATIONS.	)	CAUSE NO. 44967-NONE

SUBMISSION OF DIRECT TESTIMONY OF
CHAD M. BURNETT

Petitioner, Indiana Michigan Power Company (I&M), by counsel, respectfully submits the direct testimony and attachments of Chad M. Burnett in this Cause.

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing was served upon the following via electronic email, hand delivery or First Class, or United States Mail, postage prepaid this 26th day of July, 2017 to:

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I&M Exhibit: _____

INDIANA MICHIGAN POWER COMPANY

PRE-FILED VERIFIED DIRECT TESTIMONY

OF

CHAD M. BURNETT

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PRE-FILED VERIFIED DIRECT TESTIMONY OF CHAD M. BURNETT
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

Q. Please state your name and business address.

A. My name is Chad M. Burnett, and my business address is 212 East 6th Street, Tulsa, Oklahoma 74119.

Q. By whom are you employed and in what capacity?

A. I am employed by American Electric Power Service Corporation (AEPSC) as the Director of Economic Forecasting. AEPSC supplies engineering, financing, accounting, planning, advisory, and other services to the subsidiaries of the American Electric Power (AEP) system, one of which is Indiana Michigan Power Company (I&M or the Company).

Q. Please briefly describe your educational background and professional experience.

A. I received a Bachelor of Science degree in Business Administration from the University of Tulsa in 1998 with emphasis in Economics and Finance. In 2002, I received a Master of Business Administration degree from the University of Tulsa. In 2005, I completed the Executive Strategic Leadership program at Ohio State University.

I have worked in the utility industry as an economist since 1997 when I was employed by Central and South West Service Corporation, which later merged with American Electric Power Company (AEP) in June 2000. I became the Manager of Economic Forecasting in June 2007. In October 2013, I was promoted

to Director of Economic Forecasting. In my current role, I am responsible for preparing customer, sales, peak demand, and revenue forecasts for each of the AEP operating companies in the eleven jurisdictions and three regional transmission organizations (RTOs) that cover the AEP service territory. In addition, I am responsible for the weather normalization calculations and sales and revenue variance reports for each of the AEP operating companies including I&M.

Q. Have you previously testified before any regulatory commissions?

Yes. I filed testimony before the Oklahoma Corporation Commission in 2008 in Cause No. 20080014 and before the Public Utility Commission of Texas in Docket No. 36966 in 2009, Docket No. 37364 in 2009, Docket No. 40443 in 2012, Docket No. 44701 in 2015, and Docket No. 46449 in 2016. I also filed testimony before the Tennessee Regulatory Authority in 2016 in Docket No. 16-00001.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present the kilowatt-hour (kWh or energy), customer, and kilowatt (kW or peak) forecasts used by the Company for Test Year billing determinants. In the course of this presentation, I will discuss the processes and methodology employed to forecast the Test Year period of January 2018 through December 2018.

Q. Are you sponsoring any attachments in this proceeding?

A. I am sponsoring the following attachments:

- Attachment CMB-1, which contains the summarized load forecast results used in the forward-looking twelve month period ending December 31, 2018 (Test Year). All of the input data, model equations, and statistical results for the various forecast models that were used to develop the Test Year load forecast are provided in the work papers discussed below.
- Attachment CMB-2, which contains the general form of the equations used in the long-term forecasting process for Industrial and Other Retail.

Q. Are you sponsoring any workpapers in this proceeding?

A. I am submitting the following workpapers:

- WP-CMB-1: Model Equations, Results of Statistical Tests and Input Data Sets, Pertaining to the 2016 Load Forecast
- WP-CMB-2: Short-Term Large Industrial Energy Models And Input Data
- WP-CMB-3: Long-Term Forecast Model Price Data
- WP-CMB-4: Wholesale Energy Models And Input Data
- WP-CMB-5: Itron Residential SAE Model documentation
- WP-CMB-6: Itron Commercial SAE Model documentation

Q. Were the attachments and workpapers that you are sponsoring prepared or assembled by you or under your direction and supervision?

A. Yes.

LOAD FORECAST BACKGROUND AND METHODOLOGY

Q. How often does I&M prepare a load forecast?

A. I&M generates a new load forecast once a year as part of the normal planning process. The load forecast is one of the first inputs used in the development of I&M's long-term financial forecast. Typically, the load forecast is completed in the summer months while the rest of I&M's work plans are still being developed.

Q. Is the load forecast monitored or updated during the year?

A. Yes. Since the load forecast is completed early in the planning process, we monitor its performance during the last half of the year to ensure that it is performing well relative to the most recent actual results. Updates to the load forecast may occur during this time period depending on the degree of the differences between the load forecast and the actual results.

Q. When was the load forecast used in this proceeding prepared?

A. The load forecast used in this proceeding was originally completed in July 2016 using actual data through December 2015. However, as part of our normal monitoring process, we noticed a slight forecast variance trend developing over the last half of 2016 that was the result of I&M's service territory experiencing a better near-term economic recovery than was previously assumed. We alerted I&M's management team of the trend and recommended an upward adjustment to the load forecast. The load forecast presented as the Test Year in this proceeding is the July 2016 forecast that includes the update that was made in November 2016.

Q. Why are forecasts of customers, energy (kWh), and hourly demand (kW) prepared?

A. Forecasts of customers, energy sales (kWh), and demand (kW) are prepared to provide planning information for a variety of business uses. These uses include financial, fuel, capacity, and rate planning.

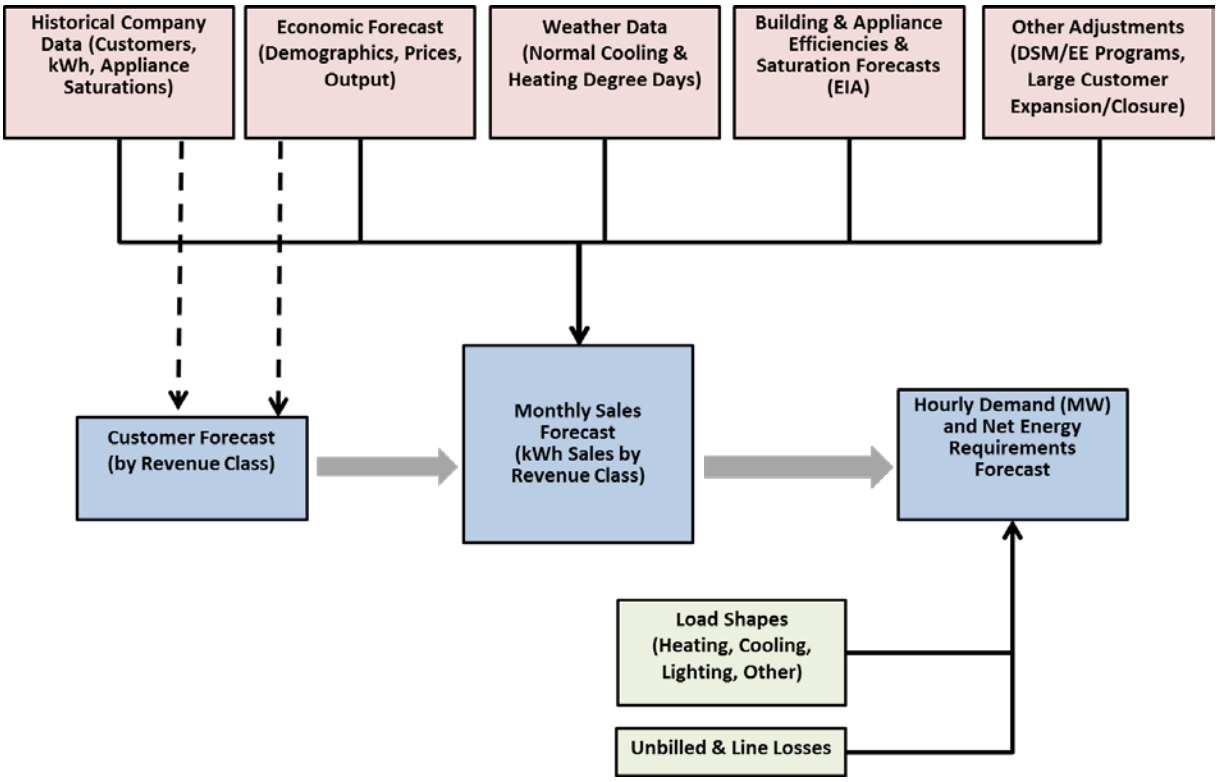
Q. What are the major objectives considered when determining how the Company will prepare its load forecast?

A. The primary objective when determining how to model the Company's load forecast is to utilize models that will accurately predict future electricity consumption. There are many different modeling techniques available, and the Company employs a balanced approach to modeling. In other words, we select models that are sophisticated enough to be able to produce accurate and reliable results, yet simple enough that they can be readily shared and understood by management, regulators, interveners, and other stakeholders.

Q. How did I&M prepare the kWh energy, customer, base revenue, and kW demand forecasts that were used in this case?

A. I&M uses a methodical approach to forecasting load. Figure CMB-1 below illustrates the various inputs and processes involved in the development of the load forecast. The final forecast is the culmination of a series of underlying forecasts that build on each other (i.e., customer forecast feeds the sales forecast which goes into the demand forecast).

Figure CMB-1
Inputs and Processes Used in I&M's Load Forecast



Q. What methods are used by I&M to develop the load forecast?

A. Two distinct methods were used for forecasting customers and kWh for the short-term (i.e., 0 to 24 months following the last actual data point utilized) and the long-term (0 to 30 years following the last actual data point utilized). The last actual data point utilized in the 2016 forecast in this proceeding was December 2015. Because the 2018 Test Year falls outside the short-term forecast period, the Test Year forecast uses data from the long-term process, and thus I will focus most of my description on the long-term forecast methodology. Nonetheless, the short-term forecast was used as a reference to confirm the accuracy of the long-term forecast.

To forecast long-term kWh sales, I&M used Itron's Statistically Adjusted End-use (SAE) models for forecasting Residential and Commercial kWh. SAE models are econometric models with features of end-use models included to specifically account for energy efficiency impacts, such as those included in the Energy Policy Act of 2005 (EPACT) and the Energy Independence and Security Act of 2007 (EISA), etc. SAE models start with the construction of structured end-use variables that capture underlying trends in end-use equipment saturation levels and efficiencies. Factors are also included to account for changes in energy prices, household size, home size, income, and weather conditions. Next, regression models are used to estimate the relationship between observed customer usage and the structured end-use variables. The result is a model that has implicit end-use structure, but is econometric in the final step.

The long-term process for forecasting Industrial and Other Retail kWh starts with an economic forecast provided by Moody's Analytics for the United States as a whole, each state, and regions within each state. These forecasts include forecasts of employment, population, industrial production, and income. The Industrial and Other Retail long-term kWh forecast uses econometric models incorporating the economic forecast to produce a forecast of annual kWh sales. Inputs such as regional and national economic and demographic conditions, energy prices, customer-specific information and informed judgment are all utilized in producing the forecasts. Attachment CMB-2 shows the general form of the equations used in the long-term forecasting process for Industrial and Other Retail.

The results of the kWh sales models, in turn, are inputs to the demand (or kW) models.

Q. How were class kWh level energy sales forecasts translated into an hourly load forecast?

A. Historical load and temperature data was used to develop hourly load representations (load shapes) for specific temperature increments by revenue class and load type (e.g., Residential cooling shape, Commercial heating shape, etc.). These load shapes are then applied with the sales forecasts and normal weather file to generate hourly load forecasts. The aggregate of the load shapes for each of the classes is the system load profile. If necessary, the system load profile is calibrated based on the load factor trend to produce an hourly load and peak kW forecast.

Q. Why are different methods used for short-term and long-term kWh forecasting?

A. I&M uses processes that take advantage of the relative strengths of each methodology. The short-term process utilizes regression models with time series error terms that use the latest available sales and weather information to represent the variation in kWh sales on a monthly basis for short-term applications like capital budgeting and resource allocation. While these models can produce accurate forecasts in the short run, without logical ties to economic factors, they are less capable of capturing the structural trends in electricity consumption that are important for longer term planning. The long-term process, with its explicit ties to

economics and demographics, as well as efficiency and saturation trends, is more appropriate for longer term decisions such as capacity planning and distribution planning issues. In some cases the long-term process may be used for short-term forecasting if the results are determined to be more reasonable and reliable than those produced from the short-term process during the internal review process.

Q. What data sources are used in the forecast?

A. All kWh sales, customer, and peak load data are taken from Company billing and operational records. The weather data is provided by the National Oceanic and Atmospheric Administration from weather stations in I&M's service territory. The economic forecasts are based on data gathered by federal, state, and local authorities, as well as propriety sources of Moody's Analytics.

Q. Does the Test Year forecast assume normal weather conditions, and if so, how is this accomplished?

A. Yes, the forecast assumes normal weather conditions throughout the entire forecast horizon including the Test Year. It is appropriate to utilize weather normalized billing determinants when setting customer rates since it represents the most likely outcome (i.e., highest probability of occurrence) that minimizes the possibility that the Company will under or over collect the intended revenue requirement set by the Commission. The Company uses a rolling 30-year average of heating and cooling degree days to compute the projected normal degree days that are used in the forecast models.

Q. How does the Company account for energy efficiency in the long-term load forecast?

A. As mentioned earlier, the SAE model integrates end-use saturation and efficiency information into the forecast modeling that already incorporates the impact of federal energy standards and other relevant energy efficiency factors. The appliance saturation statistics are calibrated with the Company's periodic Residential Appliance Saturation Survey results which are conducted every 3-4 years. In addition to the energy efficiency impacts that are included in the base SAE model framework, I&M also adjusts the load forecast for the impacts of its Demand Side Management (DSM) and Energy Efficiency programs that are approved by the Commission or for the longer term, prescribed in the Company's Integrated Resource Plan.

Q. What DSM program assumptions were used to adjust the load forecast?

A. The Company adjusted the load forecast for the DSM programs that had been approved prior to 2016 in addition to the estimated impact of programs that were approved in I&M's 2016 DSM portfolio. For the long-term DSM assumptions, I&M assumed DSM program savings reductions consistent with the Company's 2015 Integrated Resource Plan (IRP) filing.

Q. How does the Company account for changes in specific large customer loads (i.e., a major expansion or closure) in the load forecast?

A. As part of the normal forecast routine, we work with the customer service engineers to ask about any significant load additions or closures that are expected

during the forecast horizon. Once we compile the list of expansions or closures, we then compare the list with the base forecast to see if these known expansions are implicitly accounted for in the base economic forecast. To the extent the specific customer changes are material and not already included in the base forecast, an adjustment is made to account for the difference.

Q. Is the methodology used to produce the load forecast reasonable?

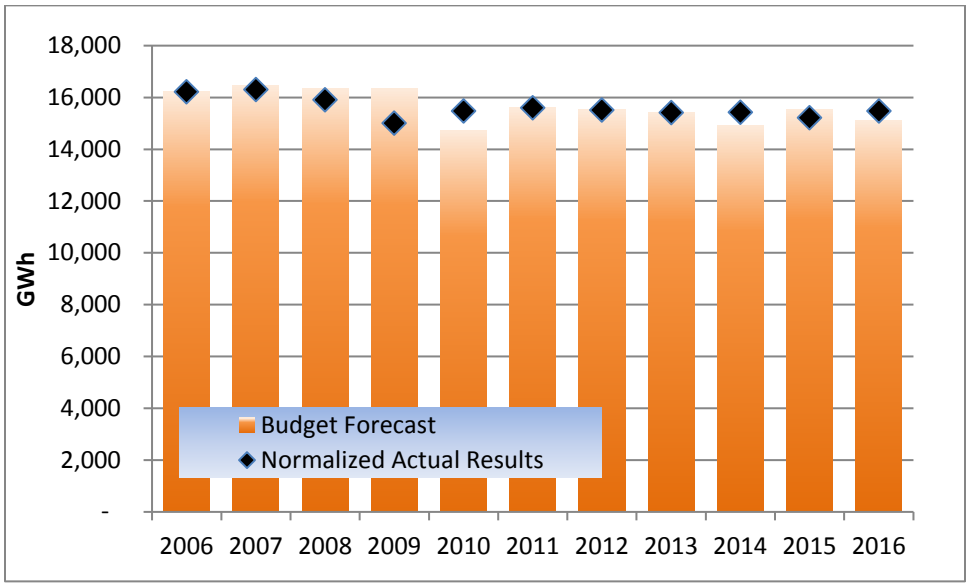
A. Yes. I&M's load forecast methodology is proven to produce accurate and reliable projections that are useful for planning and setting rates. The forecast techniques utilized by the Company are widely accepted across the electric utility industry. Furthermore, the necessary input data comes from reliable sources (i.e., National Oceanic and Atmospheric Administration (NOAA), Moody's Analytics, the U.S. Energy Information Administration (EIA), Itron, and I&M's customer billing and accounting systems, etc.).

Q. Do you know how accurate the Company's forecasts have been using the methodology described above?

A. Yes. As described earlier, part of my job is to monitor the performance of our load forecast on a routine basis. In the analysis, we identify the forecast variance that is caused by weather (deviations from normal weather). Since our forecast is based on normal weather, we focus most of our attention on the weather normalized variances to determine how well the forecast is performing. The average accuracy of our budget load forecasts (GWh) for I&M over the past

decade has been within 0.3% on a weather normalized basis as shown in Figure CMB-2 below.

Figure CMB-2
I&M Normalized Budget Variance (GWh)



TEST YEAR FORECAST RESULTS

Q. What is the purpose of this section of your testimony?

A. The purpose of this section of my testimony is to present the forecast for I&M's Indiana jurisdiction over the Test Year using the procedures described above while providing historical context and explanation for some of the underlying trends that are influencing the forecast results.

Q. Please summarize the results of the economic forecast for I&M's Indiana service territory.

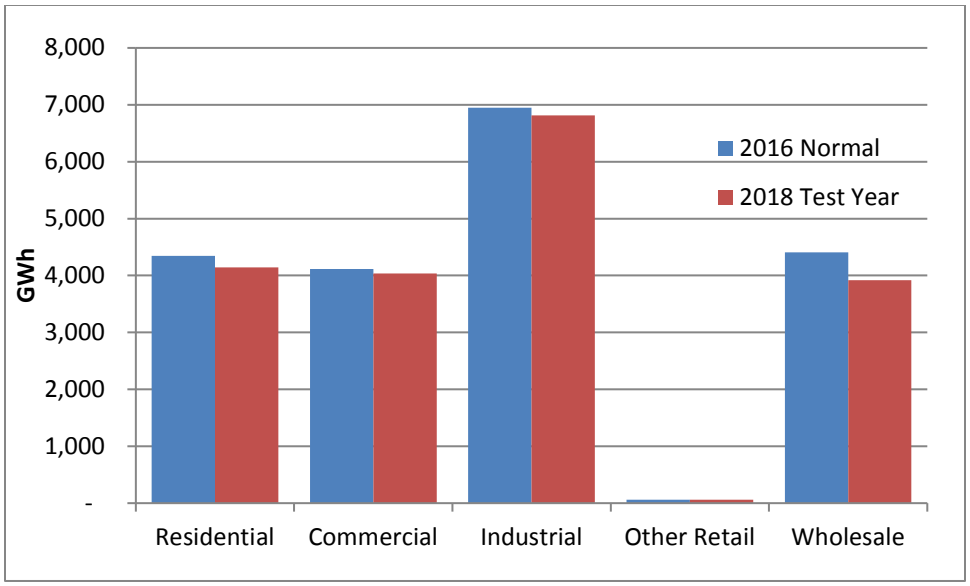
A. Moody's Analytics projects I&M's Indiana service territory population will grow at an average annual rate of 0.3% per year from 2016 to 2018, which is only slightly higher than the 0.2% per year growth over the past decade (2005-2015). Over the

same forecast period, the gross regional product for the Indiana jurisdiction of I&M's service territory is expected to grow at an average rate of 3.5% per year through 2018, which is significantly stronger than the 0.6% per year growth from the past decade. Finally, non-farm employment is expected to increase at an average annual rate of 1.6% per year compared to the 0.3% per year decline over the past decade.

Q. How do the forecasted energy sales for the Test Year compare to actuals in 2016?

A. Figure CMB-3 below shows I&M's Indiana kWh sales forecast over the projected period. In summary, the Test Year kWh are approximately 911 GWh below the weather normalized 2016 actual sales for the Indiana jurisdiction. The majority of the decrease in the Test Year sales is coming from the reduction in the Wholesale class load starting January 2018. Company witness Williamson discusses this reduction in wholesale load.

Figure CMB-3
Comparison of 2016 Weather Normalized Actuals to Forecasted Test Year
(GWh by Class – Indiana)



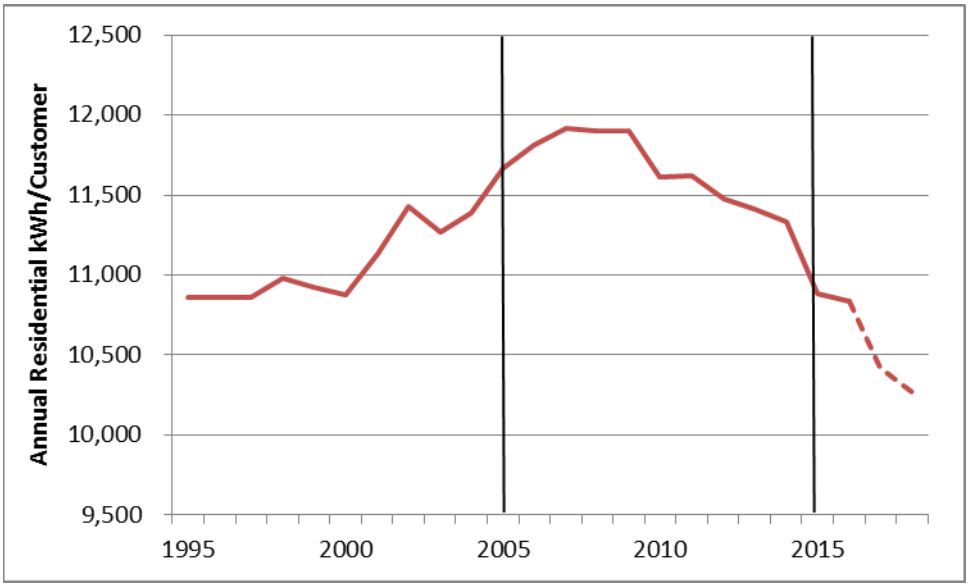
The Residential class is also down approximately 207 GWh in the Test Year compared to the 2016 weather normalized actuals. This is largely the continuation of the more recent downward trend in Residential usage over the past decade that accounts for increasing saturation of energy efficient technology.

Residential customer counts in the test year are expected to be up by 464 customers compared to 2016, which is the equivalent of 0.1% per year growth in customer counts and is in line with the expected population growth from Moody's Analytics.

Q. If forecasted residential customer counts are increasing while residential sales are down compared to the base period, this implies the forecasted usage per customer is expected to decline during the forecast horizon. Can you explain why the residential usage forecast is declining?

A. Yes. There has been a dramatic decline in Residential usage per customer over the past decade as illustrated in Figure CMB-4 below. From 1995 to 2005, normalized Residential usage in I&M's Indiana jurisdiction grew by an average of 0.7% per year. From 2005 to 2015, however, normalized residential usage actually declined by 0.7% per year. During this time, I&M faced adverse impacts from the recession and historically weak recovery, in addition to an aggressive promotion of energy efficient technologies from federal legislation (e.g., EPACT 2006, EISA 2007, etc.) and the promotion of Company-sponsored DSM programs. Finally, as shown in Figure CMB-4, the forecast is projecting a continued decline in normalized usage as a result of higher energy efficiency as discussed earlier.

Figure CMB-4
I&M Normalized Usage Trends in Indiana



Q. Please summarize I&M's peak forecast.

A. I&M's forecasted peak demand for the Test Year is 4,387 MW in July of 2018. By comparison, I&M's actual peak demand in 2016 was 4,547 MW on August 11, 2016. The weather normalized peak estimate for 2016 was 4,580 MW. A weather normalized peak represents what the peak value would have been if the temperature on the peak day had been normal for a peak day. In 2016, the temperatures were mild on the peak day, so the actual peak came in lower than it would have been under normal peak day conditions.

The forecasted peak in the Test Year is expected to be below the normalized peak in the base period for the similar reasons provided in the energy forecasts.

CONCLUSION

Q. How would you describe I&M's load forecast that was used in the Test Year?

A. The Test Year forecast for January 2018 through December 2018 is reasonable. The load forecast is essentially flat from 2016 through the forecasted Test Year for the Indiana retail classes. There is slight growth in the Commercial and Other Retail classes that is offset by lower Residential and Industrial sales. The biggest change to I&M's total Company load is in the Wholesale class, where there is a change in one of the wholesale contracts starting January 2018. The forecast was derived using widely accepted modeling techniques and is based off of the best information that was available at the time it was completed.

Q. Does this conclude your pre-filed verified direct testimony?

A. Yes.

VERIFICATION

I, Chad M. Burnett, Director of Economic Forecasting for American Electric Power Service Corporation, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information, and belief.

Date: 7/12/17

Chad Burnett

Chad M. Burnett

Attachment CMB-1

I&M- Indiana Jurisdiction
Forward Looking Test Year Ending December 2018
Energy Sales (MWh)

	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	**Total**
Residential	500,106	380,710	348,463	255,903	272,881	317,117	419,266	413,081	291,426	266,765	286,865	387,975	**4,140,558**
Commercial	361,415	308,934	315,030	288,384	334,206	364,963	385,532	376,872	331,520	343,642	307,316	318,943	**4,036,757**
Industrial	558,288	556,636	568,563	553,507	594,379	575,157	573,409	579,799	540,373	591,908	572,283	549,817	**6,814,119**
Other Retail	6,438	5,232	5,179	4,551	4,310	4,075	4,184	4,513	4,721	5,546	5,916	6,170	**60,835**
Total IN Retail	*1,469,348*	*1,294,644*	*1,280,395*	*1,145,536*	*1,248,997*	*1,304,564*	*1,425,673*	*1,417,578*	*1,211,384*	*1,251,235*	*1,215,785*	*1,306,340*	***15,052,269***
Wholesale (IN)	*341,984*	*313,246*	*322,590*	*306,910*	*314,368*	*326,671*	*351,483*	*355,970*	*319,378*	*316,383*	*312,312*	*337,746*	**3,919,041**
Total I&M Indiana	*1,811,332*	*1,607,890*	*1,602,985*	*1,452,446*	*1,563,365*	*1,631,235*	*1,777,156*	*1,773,548*	*1,530,762*	*1,567,618*	*1,528,097*	*1,644,086*	***18,971,310***

**Long-Term Forecasting Models for
Industrial and Other Retail kWh,
Customer Count**

(Generalized Equations)

Industrial KWH Sales = f (Industrial Production, Energy Prices)

Other Retail KWH Sales = f (Employment)

Customers = f (Employment)

Prepared by: Reid Newman
Sponsored by: Chad Burnett