STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

IN THE MATTER OF THE VERIFIED PETITION OF INDIANA MICHIGAN POWER COMPANY FOR APPROVAL OF: (1) DEMAND SIDE MANAGEMENT (DSM) PLAN, INCLUDING ENERGY EFFICIENCY (EE) PROGRAMS, DEMAND RESPONSE PROGRAMS, AND ENHANCED CONSERVATION VOLTAGE; AND (2) ASSOCIATED ACCOUNTING AND RATEMAKING TREATMENT, INCLUDING TIMELY RECOVERY THROUGH I&M'S DSM/EE PROGRAM COST RIDER OF ASSOCIATED COSTS, INCLUDING PROGRAM OPERATING COSTS, NET LOST REVENUE, AND FINANCIAL INCENTIVES.	)))))))))))))	**CAUSE NO.**

SUBMISSION OF DIRECT TESTIMONY OF
CHAD M. BURNETT

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

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing was served this 31st day of March, 2022, by email transmission, hand delivery or United States Mail, first class, postage prepaid to:

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I&M Exhibit: _____

INDIANA MICHIGAN POWER COMPANY

2023 – 2025 DSM PLAN

PRE-FILED VERIFIED DIRECT TESTIMONY

OF

CHAD M. BURNETT

Content

DIRECT TESTIMONY OF CHAD BURNETT
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

I. Introduction

Q1. Please state your name and business address.

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

Q2. By whom are you employed and in what capacity?

I am employed by American Electric Power Service Corporation (AEPSC) as the Managing Director of Economic and Supply Forecasting. AEPSC supplies engineering, 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).

Q3. Briefly describe your educational background and professional experience.

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 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

October 2021, I was promoted to my current position of Managing Director of Economic and Supply Forecasting.

I also work as an Adjunct Professor of Economics in the Graduate Business School at Southern Nazarene University where I have taught Managerial Economics, Health Care Economics, and the Survey of Economics since 2002.

Q4. What are your responsibilities as the Managing Director of Economic and Supply Forecasting?

I oversee the development of 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. I also oversee the development of the Company's fundamentals forecast as well as the development of the Company's generation and production cost forecasts for the AEP system. Furthermore, I am responsible for the weather normalization calculations and sales and revenue variance reports for each of the AEP operating companies, including I&M.

Q5. Have you previously testified before any regulatory commissions?

Yes. I filed testimony before the Indiana Utility Regulatory Commission (IURC or Commission) in Cause No. 44967 in 2017, Cause No. 45235 in 2019, Cause No. 45285 in 2020, and Cause No. 45576 in 2021. I have also testified before

regulatory commissions in the states of Arkansas[1], Kentucky[2], Michigan[3], Oklahoma[4], Tennessee[5], Texas[6], and Virginia[7].

II. Purpose of testimony

Q6. What is the purpose of your testimony?

The purpose of my testimony is to:

- Describe how the load forecast, provided as an input into the Market Potential Study (MPS) and Integrated Resource Plan (IRP), was developed.
- Explain how energy efficiency (EE) is accounted for in the load forecast and describe the adjustments that are necessary to align the MPS and IRP energy efficiency assumptions to avoid double counting the impacts of utility sponsored EE programs in the Company's load forecast.

Q7. How does the load forecast fit into the Company's 2023-2025 Demand Side Management Plan (DSM Plan) Filing?

In accordance with Commission rules, the Company's DSM Plan offering is consistent with the most recently filed 2021 IRP. The development of the IRP Preferred Portfolio is discussed by Company witness Soller. However, two key inputs used in the IRP optimization are 1) the load forecast and 2) the energy

[1] Docket No. 19-008-U in 2019 and Docket No. 21-070-U in 2021.

[2] Case No. 2019-00443 in 2020 and Case No. 2021-00481 in 2022.

[3] Cause No. U-20359 in 2019, Case No. U-20591 in 2020, and Case No. U-21189 in 2022.

[4] Cause No. 20080014 in 2008, Cause No. 201800097 in 2019, and Cause No. 202100055 in 2021.

[5] Docket No. 16-00001 in 2016.

[6] Docket No. 36966 in 2009, Docket No. 37364 in 2009, Docket No. 40443 in 2012, Docket No. 44701 in 2015, Docket No. 46449 in 2016, Docket No. 49494 in 2019, and Docket No. 51415 in 2020.

[7] Case No. PUR-2017-00174 in 2018 and Case No. PUR-2018-00051 in 2018.

efficiency bundles from the MPS. Witness Huber discusses how the load forecast was also used by GDS as an input in the MPS to develop the bundles that were utilized in the IRP optimization.

III. Load Forecast Methodology

Q8. How often does I&M prepare a load forecast?

I&M generates a new load forecast once a year as part of its 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.

Q9. When was the load forecast used in this proceeding prepared?

The load forecast used by GDS in the development of the MPS was completed in September 2020 using actual data through July 2020. The load forecast used in the IRP was completed in June 2021 using actual data through January 2021.

Q10. Why are forecasts of customers, energy (kWh), and hourly demand (kW) prepared?

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

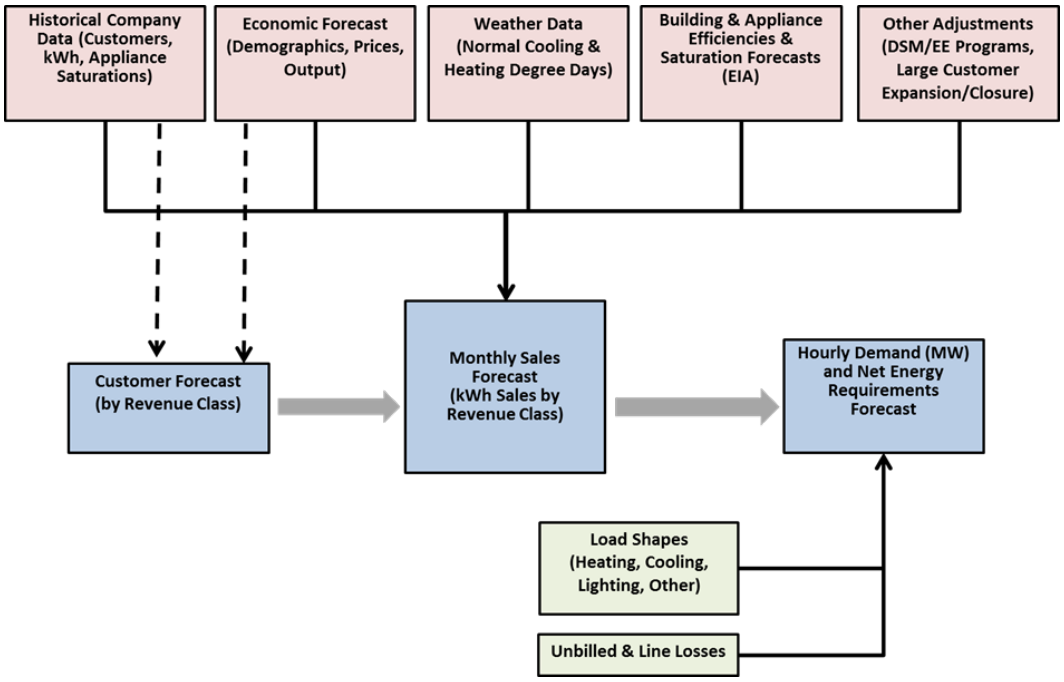
Q11. What are the major objectives considered when determining how the Company will prepare its load forecast?

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.

Q12. How is I&M's load forecast prepared?

I&M uses a methodical approach to forecasting load. *Figure CMB-1* 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



Q13. What methods does I&M use to develop the load forecast?

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 2020 vintage forecast presented in this proceeding was July 2020. Because the focus of the MPS and IRP optimization is largely outside of the short-term forecast period, 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 reasonableness 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 widely used across the industry for long-term planning; over 60 companies across North America utilize Itron's SAE models for forecasting including three Indiana utilities and the PJM load forecasting team.

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.

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.

The results of the kWh sales models, in turn, are inputs to the demand (or kW) models. As part of the forecast review process, the Company evaluates and validates the historical relationship between the energy (kWh) and peak demand (kW) based on the metered load factors.

Q14. Why does I&M use different methods for short-term and long-term kWh forecasting?

I&M uses processes that take advantage of the relative strengths of each methodology. The short-term process utilizes time-series regression models that capture patterns within the recent sales and weather data to represent the variation in kWh sales on a monthly basis for short-term applications like capital budgeting and resource allocation. Although 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.

Q15. How were class kWh level energy sales forecasts translated into an hourly load forecast?

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. In this case, the peak forecast is primarily used for determining the Company's capacity load obligation and to identify the impacts of the various DSM/Demand Response (DR) programs in the MPS.

Q16. What are the sources of the data used in the forecast?

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 (i.e. Ft. Wayne, IN and South Bend, IN).

The economic forecasts are based on data gathered by federal, state, and local authorities, as well as propriety sources of Moody's Analytics for the counties served by I&M. The appliance saturations and efficiencies come from company surveys and/or Itron's SAE models which are linked to the United States Energy Information Administration's (EIA) National Energy Modeling System (NEMS) by census region.

The DSM/EE assumptions come from Company reports filed with the IURC (e.g., EE Portfolio Plan and IRP). Large customer assumptions come from I&M's customer service engineers who have direct contact with our customers. To the extent the specific customer changes are material and not already included in the base forecast, we make an adjustment to account for the difference.

Q17. Does the forecast assume normal weather conditions, and if so, how is this accomplished?

Yes, the forecast assumes normal weather conditions throughout the entire forecast horizon. 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.

Q18. How does the Company account for energy efficiency in the load forecast?

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[8]. 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 DSM and EE programs that are approved by the Commission.

Q19. Is the methodology used to produce the load forecast reasonable?

Yes. I&M's load forecast methodology is proven to produce 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 EIA, Itron, and I&M's customer billing and accounting systems, etc.).

Q20. Is this the same load forecast methodology that was used in I&M's most recent base rate case, Cause No. 45576?

Yes. The load forecast methodology has not changed from what was filed in Cause No. 45576.

Q21. Is this the same load forecast methodology that is used in I&M's Fuel Adjustment Clause (FAC) filing?

Yes. The same methodology is used in every FAC filing where the Company's projection of kWh sales is used to set the rates.

[8] The Residential Appliance Saturation Survey (RASS) results used in the MPS and IRP are from I&M's 2019 RASS.

Q22. Is this also the same load forecast methodology that was used in the Company's most recently filed IRP?

Yes. The load forecast methodology has not changed from what was used in the 2021 IRP.

Q23. Did you present the Company's methodology for modeling energy efficiency in the load forecast at the recent IURC Contemporary Issues Technical Conference?

Yes. I was invited by the IURC staff to present the Company's approach to modeling energy efficiency in the load forecast at the Contemporary Issues Technical Conference on June 8, 2021.

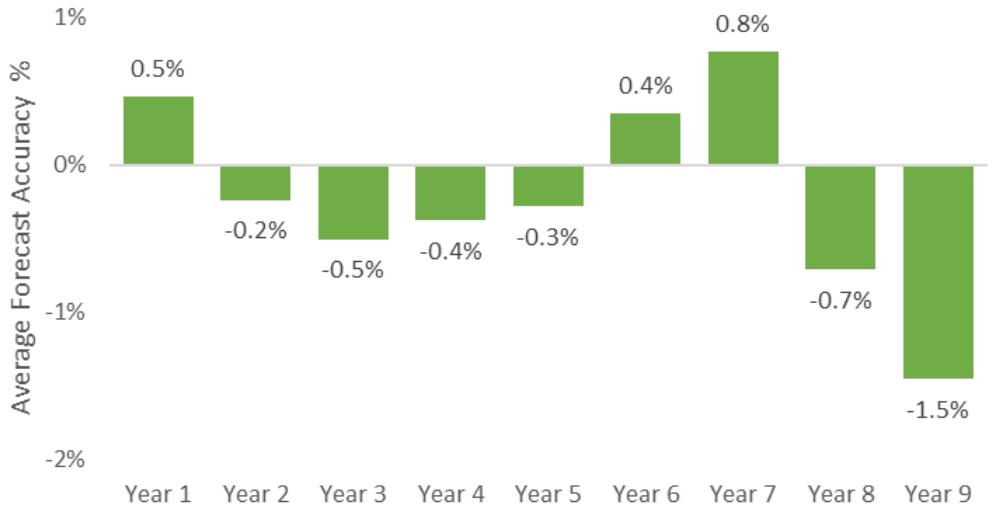
Q24. Do you know how accurate the Company's forecasts have been using the methodology described above?

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.

Figure CMB-2 below shows the average accuracy of the load forecasts by year for all I&M load forecasts produced since 2011, when the Company started explicitly modeling the impact of I&M's EE programs in the load forecast. For the first year of the forecast (which is typically the Budget year), the weather normalized actual sales have been within 0.5% of the forecast since 2011. For

the longer term, the load forecast has been within 1.5% of the weather-normalized results over the forecast horizon[9].

Figure CMB-2. Average accuracy of I&M's load forecast since 2011



The historical accuracy of I&M's load forecast methodology provides confidence that I&M's load forecast is reasonable and useful for planning purposes, including DSM/EE resource planning analysis.

IV. Modeling Energy Efficiency Program Impacts in the Load Forecast

Q25. Please provide a brief summary of the Company's approach to modeling the impact of DSM/EE programs in the load forecast.

Since the Company's SAE load forecast models already account for the impacts of future energy efficiency savings, a Supplemental Efficiency Adjustment (SEA) is made to the reported DSM savings before the impacts are included in the load

[9] Since the methodology was implemented with the 2011 forecast cycle, the Company is only able to compute the accuracy estimates for the first nine years at this time.

forecast. This is done to prevent double counting the total efficiency savings impacts in the forecast.

Q26. How do Itron's SAE models account for the impacts of future energy efficiency savings?

Itron works with the EIA to incorporate the results of the latest Annual Energy Outlook into their SAE updates. Specifically, Itron's SAE models capture the census region level data from the EIA NEMS. Furthermore, EIA specifically states in the assumption documentation for the Annual Energy Outlook[10] that, "The RDM [Residential Demand Model] accounts for the effects of utility-level energy efficiency programs designed to stimulate investment in more efficient equipment for space heating, air conditioning, lighting, and other select appliances."

Q27. If the SAE model already accounts for the effects of utility sponsored EE programs, what would be the result of not making an adjustment to the DSM savings assumptions and subtracting it from the load forecast?

It would double count the impact of the Company's DSM programs in determining the Company's load obligation for the IRP optimization.

Q28. How long has the Company utilized the Supplemental Efficiency Adjustment matrix as part of its load forecast methodology?

I&M has used the Supplemental Efficiency Adjustment matrix (formerly referred to as the degradation matrix) to adjust the impacts of DSM/EE programs since 2014. Prior to 2014, the Company used degradation factors that were provided by Itron that originated from a study that was developed before the Company began its DSM/EE programs in Indiana and Michigan.

[10] Assumptions to the Annual Energy Outlook 2021: Residential Demand Module, section labeled Energy Efficiency Rebates on pg 6 of 12 https://www.eia.gov/outlooks/aeo/assumptions/pdf/residential.pdf

Q29. Was the Company's approach to modeling DSM program impacts in the load forecast reviewed as part of the stakeholder engagement workshops?[11]

Yes. On April 14, 2021, I&M held a stakeholder workshop focused on DSM/EE and accounting for DSM/EE in the load forecast.

Q30. How does the Company's approach to modeling DSM savings compare to other utilities operating in Indiana and Michigan?

It is consistent with what is used by most utilities that utilize Itron's SAE models for load forecasting. Even though the Company has been using its SEA approach for nearly a decade, the impact and rationale remains consistent with newer approaches that other utilities have adopted.

In fact, in response to stakeholder feedback from the second IRP workshop, I&M reached out to multiple utilities in the states of Indiana and Michigan to see how they were accounting for energy efficiency in their IRPs and load forecast models. The results from these discussions were presented in Stakeholder Workshop 3a and can be found in the IRP Appendix Volume 4.[12] It showed that a majority of utilities using Itron's SAE model are modeling the DSM series as an independent variable in the regression.

The approach of using DSM as an independent variable in the forecast regression model has the same effect as the Company's SEA approach in that both are determining how much the DSM/EE savings should be adjusted to prevent double counting the energy efficiency impacts when combined with the Company's load forecast.

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[11] Slides 56-65 of the April 14, 2021 *Indiana Michigan Power 2021 Integrated Resource Plan Public Stakeholder Meeting #2.* The referenced presentation is contained in the IRP Report Appendix Volume 4, Exhibit C.

[12] Slides 56-60 of the July 27, *2021 Indiana Michigan Power 2021 Integrated Resource Plan Public Stakeholder Meeting #3A*. The referenced presentation is contained in the IRP Report Appendix Volume 4, Exhibit D.

When I&M tested the DSM as an independent variable approach, it found that the Company's SEA approach was producing very similar results over the lifetime of the program.[13] This provides further assurance that the Company's approach, which has proven to be effective over the past decade, is producing results that are consistent with what others in the industry are doing to develop a reasonable and rational load forecast for use as previously described.

Q31. Did GDS make any adjustments to the load forecast in the development of the MPS?

Yes. Witness Huber provides a complete description of the process used in the MPS, but generally, GDS adjusted the load forecast I provided to remove the effect of future energy efficiency that is embedded in the SAE model framework. In other words, GDS developed a frozen efficiency scenario that does not assume any future energy efficiency so that the MPS could identify some of the "utility sponsored energy efficiency savings" that are already included in the Itron SAE models.

Q32. If the results of the MPS were based off an adjusted load forecast that assumed a "frozen efficiencies" scenario going forward, what would be the implications of relying on those numbers in the IRP analysis without making an adjustment like the SEA?

Company witness Soller describes in more detail how the IRP utilized the results from the MPS, but clearly there would be a disconnect of combining the energy efficiency savings from the MPS that assumed static efficiencies, with a load forecast that already accounted for the impact of future energy efficiency savings, including utility sponsored programs. This is exactly why the Company

[13] Slide 59 of Stakeholder Meeting 3a presentation shows the comparison of the SEA approach vs the DSM/EE as an independent variable in the regression equation. For a sample 10 year DSM/EE program, the impact of the SEA adjustment was 46% compared to the average adjustment factor from the regression models of 47%.

uses the SEA adjustment to avoid double counting the total energy efficiency savings in the load forecast used in the IRP optimization.

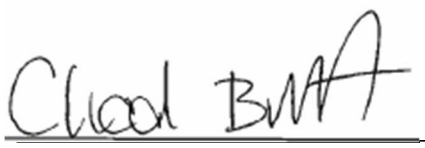
Q33. Does this conclude your pre-filed verified direct testimony?

Yes.

VERIFICATION

I, Chad M. Burnett, Managing Director of Economic and Supply Forecasting of 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: 3/30/2022



Chad M. Burnett