S T A T E   O F   M I C H I G A N

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * *

In the matter of the application of	)	
CONSUMERS ENERGY COMPANY	)	
for authority to increase its rates for	)	Case No. U-20134
the generation and distribution of	)	
electricity and for other relief.	)	
	)	

QUALIFICATIONS AND DIRECT TESTIMONY OF

BRAD B. BANKS

MICHIGAN PUBLIC SERVICE COMMISSION

September 10, 2018

QUALIFICATIONS OF BRAD B. BANKS
CASE NUMBER U-20134
PART I

Q. Please state your name, business address, and occupation for the record.

A. My name is Brad B. Banks. My business address is 7109 W. Saginaw Highway, Lansing, MI 48917. I am employed by the Michigan Public Service Commission (MPSC or Commission) as a Departmental Analyst in the Energy Waste Reduction Section of the Energy Resources Division.

Q. Please describe your education background.

A. I earned a dual Bachelor's degree in History and English from Western Michigan University.

Q. What is your work experience?

A. I graduated from the Michigan State Police Academy in 1995, and worked as an enforcement officer in the Motor Carrier Division, obtaining the rank of Sergeant. I supervised the division investigation unit, worked as investigative liaison with state and federal enforcement agencies, worked in various capacities with the Training Division, and worked at the Michigan Intelligence Operations Center as part of the Federal Bureau of Investigation's Fusion Center initiative. I joined the MPSC in 2009, working in commercial vehicle licensing and regulation. I transferred to the Energy Optimization (EO) section in 2015, which has been renamed the Energy Waste Reduction (EWR) section. I have attended the Institute of Public Utilities Regulatory Studies Programs annually since 2015.

Q. What does your work at the MPSC consist of?

A. As a Departmental Analyst, I act as case coordinator for utility EWR plans (formerly known as Energy Optimization plans), reconciliations, and plan amendment filings. I am currently the MPSC Staff (Staff) lead on the EWR Low Income Workgroup and I currently sit on the Policy Advisory Council of the Department of Health and Human Services Weatherization Assistance Program. I am involved in projects with the Michigan Agency for Energy regarding low income, multi-family, and green building initiatives. I have also been involved in the demand response and distributed energy workgroups. I participate in the monthly EWR Collaborative meetings.

Q. Have you previously filed testimony in proceedings before the Commission?

A. I have filed written testimony in U-17771, U-18333, U-18263, and U-18268. All of my other testimony experience is in civil and criminal judicial court proceedings. I have orally testified in formal and informal hearings more than 200 times.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to support the conclusions made by Consumers Energy Company (the Company) witness Theodore Ykimoff regarding the achievement of the Company's energy savings goals.

Q. Are you sponsoring any exhibits?

A. No.

Q. Is the Company's estimate of 1.5% energy savings reasonable as proposed?

A. Yes. Staff finds the Company's estimate reasonable. The Company has consistently been able to achieve their projected savings, and Staff has no reservations to the Company's ability to achieve an increase in savings.

Q. Does Staff support the Company's findings for Energy Waste Reduction (EWR) savings of 1.5%?

A. Yes. Staff supports the Company's projected savings in the EWR plan.

Q. Does Staff agree with the Company that the Energy Waste Reduction Potential Study demonstrated that the Company could increase its energy savings?

A. Yes. The 2017 EWR Potential Study completed by Commission Staff and GDS outlined achievable opportunities for energy efficiency development in Michigan.

Q. Does staff have other comments regarding the Company's EWR plan?

A. Yes. As stated in witness Ykimoff's testimony, the EWR potential study supported the premise that 2.0% energy savings by the Company is achievable. Staff urges the Company to move forward in its EWR program and look for opportunities to achieve the full 2.0% in the coming years.

Q. Does this conclude your testimony?

A. Yes.

S T A T E O F M I C H I G A N

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * *

In the matter of the application of	)	
CONSUMERS ENERGY COMPANY	)	
for authority to increase its rates for	)	Case No. U-20134
the generation and distribution of	)	
electricity and for other relief.	)	
	)	

QUALIFICATIONS AND DIRECT TESTIMONY OF

KAREN M. GOULD

MICHIGAN PUBLIC SERVICE COMMISSION

September 10, 2018

QUALIFICATIONS OF KAREN M. GOULD
CASE NUMBER U-20134
PART I

Q. Please state your full name, business address and occupation.

A. My name is Karen M. Gould, and my business address is 7109 W. Saginaw, Lansing, MI 48917. I am employed by the Michigan Public Service Commission (MPSC or Commission) as an Auditor in the Energy Waste Reduction Section of the Energy Resources Division.

Q. Describe your education and professional background.

A. I graduated from Davenport University with a Bachelor of Science degree in Accounting. I commenced employment with the Commission in 2006. From 2006 until 2009 I was charged with auditing the expenditures of the Low-Income Energy Efficiency Fund (LIEEF). Projects included the selection of grantees, audits of each individual grantee who was awarded funding through the LIEEF program, and payment processing.

In 2009, I began my current position working for the Energy Waste Reduction section (formerly Energy Optimization or EO) as the financial auditor of the Energy Waste Reduction (EWR) program expenditures. In this position I was responsible for the auditing of rate regulated utilities annual reconciliation of their EWR program expenses and annual reports. I also worked on the review of utility plan filings for their Energy Waste Reduction biennial plans and amendments. In this position I have taken on several special projects such as grant administrator of the Michigan Saves Energy Efficiency Financing program. From 2009 through present I have annually attended the Institute of Public Utilities Regulatory Studies Program. The course work is designed specifically and exclusively to meet the needs of public-sector regulatory professionals. Also, in 2009, I spent a week in Nigeria with the Nigerian Electricity Regulatory Commission through NARUC where I prepared and presented sessions to the Nigerian Federal

Electricity Regulatory Commission Staff on the topics of 2008 Public Act 295 (PA 295) and other regulated energy issues. In September of 2009, I attended Building Financial Institute's Building Analyst Training. This was a comprehensive home energy assessment with coursework in building envelope evaluation, thermal and pressure boundaries, air sealing and building airflow standards and calculations. From 2009-2011, I was the Chair of the EO Evaluation Collaborative Workgroup. This Collaborative, created in Case No. U-15805 et al., consisted of all electric and natural gas utilities subject to the MPSC's jurisdiction under PA 295, as well as State-wide participation of non-profit organizations, environmental groups, and other State of Michigan government departments. In April of 2017, PA 295 was amended by Public Act 342 (PA 342) which continues the requirements for energy efficiency programs with specific savings targets by all electric and gas utilities in Michigan. In 2017 I was designated the Staff lead to address the plug-in electric vehicle effort. In that role, I spearhead the collaborative discussions in order to develop staff recommendations for testimony. In December of 2017, I was promoted to serve as Acting Manager of the EWR Section.

Q. Have you ever testified before the Michigan Public Service Commission?

A. Yes, I have testified in the following cases:

Case No. U-15806	DTE – Electric Plan Amendment
Case No. U-15890	DTE – Gas EO Plan Amendment
Case No. U-16412	Consumers Energy EO Plan Amendment
Case No. U-17049	DTE – Gas EO Plan Amendment
Case No. U-17050	DTE – Electric EO Plan Amendment
Case No. U-17138	Consumers Energy EO Plan Amendment

Case No. U-18261	Consumers Energy - EWR Plan Filing
Case No. U-18263	Indiana Michigan Electric Co. - EWR Plan Filing
Case No. U-18270	SEMCO Gas Company - EWR Plan Filing
Case No. U-18333	Indiana Michigan Electric Co. - EO Reconciliation
Case No. U-18262	DTE Electric – Electric EWR Plan Filing
Case No. U-18268	DTE Gas – Gas EWR Plan Filing
Case No. U-18419	DTE Electric – CON Case

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide an update on Staff engagement with stakeholders on the topic of EWR savings impact on sales forecasting in electric rate cases.

Q. Are you sponsoring any exhibits?

A. Yes, I am sponsoring the following exhibits which were prepared by me:

Exhibit S-13.1 (KMG-1):	Staff compilation of historical and projected EWR savings from 2009 – 2021.
Exhibit S-13.2 (KMG-2):	Agenda and materials from June 20, 2018 meeting between MPSC Staff and Company to discuss sales forecasting methodology and incorporation of EWR into sales forecast.
Exhibit S-13.3 (KMG-3):	Agenda and materials from August 21, 2018 meeting at Company offices to review forecasting model, including inputs and outputs.

Q. Did the Commission adopt Consumers Energy's (the Company) sales forecast in the prior electric rate case, U-18322, including the historical and projected energy efficiency savings included in that forecast?

A. Yes. In the final order dated March 29, 2018, the Commission supported the Company's sales forecast, and by inference, adopted the historical energy efficiency savings and the forecast of projected energy efficiency savings. (The Company did not specifically provide an exhibit describing the energy efficiency savings incorporated into the sales forecast but referenced that energy savings projections used in the forecast, were obtained from Company EWR plan and reconciliation filings.)

Q. In the final order in U-18322, did the Commission make any requests for additional information on the sales forecasting methodology to be included in the next rate case filing?

A. Yes. The Commission recognized that having additional detail on the sales forecasting model would be helpful, as well as information describing how the Company evaluates the accuracy of the model in predicting the future. The final order had separate directions for the Company and Staff. The Commission directed the Company as follows:

> … [T]he Commission directs Consumers to provide additional information regarding its methodology and calculations in its next rate case. While Consumers' forecast was supported, the Commission finds more clarification on these calculations would be beneficial going forward. **Specifically, Consumers shall present further evidence to support justification of its modeling results, its energy efficiency projection, and regression results in its next rate case.**[1]

Q. How did the Company respond in this rate case?

A. In response to the commission's request, additional information was provided by two Company witnesses: Company witnesses Theodore Ykimoff and Eugene Bruering.

Company Witness Ykimoff provided an exhibit (TAY-1) listing all verified historical energy savings since the inception of the programs in 2009, and projected test year energy savings as provided in the Company reconciliation and plan proceedings.

Company Witness Bruering expanded upon his traditional explanation of the Company's six-step process to forecast electric sales, by including additional detail to describe the Company evaluation process used to demonstrate whether the model is satisfactory at predicting historical sales.

Q. Did Staff evaluate the accuracy of the historical and projected EWR savings as listed in Company exhibit TAY-1?

A. Yes. Staff compared the annual savings data provided in the Company exhibit and cross-matched these savings with those reviewed by Staff as part of the annual reconciliation

[1] U-18322, page 50.

process in annual MPSC EWR-reconciliation and annual report filings. Exhibit S-13.1 (KMG-1) shows the actual savings figures verified through the Company's annual reports and reconciliation filings from 2009 through 2017, lines 1-3. The projected increased savings goals which were stated in the Company's 2017 biennial plan filing, U-20028, can be found on line 4-6. The matching historical savings figures along with the again increased projected EWR savings goals laid out in this case are listed on my exhibit on lines 7-9. The Company's integrated resource plan (IRP) filing, Case No. U-20165, can be found on line 10 of the exhibit. Staff discovered one minor error in savings reported for 2010. This is noted in my exhibit. Also, for program year 2017, the savings reported by the Company in their exhibit were estimates as the actual verified savings were not available at the time of this filing. The amounts are noted in my exhibit and the savings reported in exhibit S-13.1 (KMG-1), on lines 1-3, are the correct verified savings reported in Case No. U-20028. These differences are not substantial and would have very little impact when used for forecasting future sales.

Q. Why are there 3 different total savings projections for Case Nos. U-20028 (EWR Annual Reconciliation Filing), U-20134 (CE current Rate Case), and U-20165 (CE IRP Filing)?

A. Case No. U-20028, which was filed in 2018, was the initial projections of EWR savings for 2017 (reported in U-18261 CE Biennial Plan Filing Amended) the Company believed they could achieve at that time. This projection was sufficient to meet and exceed the legislative energy savings requirements. In Case No. U-20134, Company witness Ykimoff states in his direct testimony, and supported by Staff witness Brad Banks, that the Company believes they could possibly, cost-effectively achieve up to 2% or more, possibly higher, annual energy savings for their customers. Subsequently, in the Company's IRP filing, Case No. U-20165, the Company committed to ramping up their annual savings to over 2% through 2031. These additional savings beyond the legislative requirement will support the Company's goal to meet their energy resource requirements with cleaner energy. These additional energy savings will help their customers, both residential and commercial/industrial, reduce their energy waste and lower their energy bills.

Q. What is the evaluation process described by witness Bruering used to support the accuracy of the Company's forecast model?

A. The Company described two statistical analyses to demonstrate the accuracy of the regression model in predicting historical results: adjusted coefficient of multiple determination and the Mean Absolute Percent Error (MAPE). These analyses have produced MAPE values between 0.2% and 2.1%, which are deemed below (better than) even acceptable differences.

Q. What information in final Order U-18322 did the Commission ask Staff to provide in the next rate case relative to the accuracy of the EWR savings in the energy sales forecast?

A. The Commission directed Staff to further explore CE's sales forecasting methodology and provided Staff the following directive.

> …although the Commission has consistently found that Consumers' evaluation, measurement, and verification methods for determining energy efficiency reductions are accurate, **the Attorney General's point about apparent offsets to decreases in energy use by residential customers is well-taken. Thus, the Commission looks to the Staff to engage with stakeholders on the topic of EWR, and sales forecasting through the EWR collaborative, or other forums in the future.** The topic of offsets to EWR savings is ripe for further analysis and discussions given the reliance on EWR as a resource and the importance of load forecasting accuracy to planning, reliability, and rate setting[2]. [Emphasis added.]

[2] U-18322, page 50

Q. Has Staff started the stakeholder engagement process in the EWR Collaborative to discuss EWR and sales forecasting?

A. Not yet. The stakeholder engagement process will come later. The preliminary step before that is for Staff to review and understand Company specific forecast methods. On June 20, 2018, Company representatives met with Staff and reviewed the forecasting methodology and described the incorporation of EWR savings into the energy sales forecast and the subsequent evaluation methodology used to gauge the accuracy of the forecasting models at predicting historic trends. (Exhibit KMG-2 S-13.2). On August 21, a small team of Staff visited the Company offices for purposes of reviewing the Company's proprietary forecasting model (Metrix ND and Metrix LT) to see the inputs to the model and outputs. (Exhibit KMG-3 S-13.3). Staff is conducting a similar review for DTE Electric as part of their current rate case filing in U-20162. Following the filing of testimony in both cases, Staff intends to place this topic on the agenda of the EWR Collaborative, specifically with respect to discussing the apparent offsets to decreases in energy use by residential customers, as specifically mentioned by the Commission.

Q. Does the Company account for residential EWR, Commercial EWR, and Industrial EWR separately or as a total savings figure?

A. The Company is using the correct historical actual EWR savings for residential separately from the C&I (combined) savings, and the correct projected savings for future EWR programming. They are accounting for the savings for residential customers separately for their sales forecasting purposes because their sales forecasting process produces separate forecasts for the three customer segments, residential, commercial, and industrial.

Q. Does Staff have an initial opinion regarding the reasonableness of the process in which the Company accounts for EWR within the sales forecasting methodology?

A. Yes. At this time, Staff believes the process the Company uses to account for EWR in developing sales forecasts seems reasonable. Staff is confident the inputs for historical and future EWR energy savings are the appropriate figures. Many states and other nationwide energy efficiency experts have weighed in on the challenge of modeling energy efficiency programs in forecasting. Different opinions show that different regions have found multiple methodologies to be fitting. Staff anticipates continued active discussions with utilities and subsequently the EWR Collaborative to discuss different methodologies and options available for accounting for EWR in sales forecasting. These discussions will help discern whether there is a best practice for Michigan utility providers or whether there may be multiple adequate options.

Q. Does that conclude your testimony?

A. Yes.

S T A T E O F M I C H I G A N
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * *

In the matter of the application of	)	
CONSUMERS ENERGY COMPANY	)	
for authority to increase its rates for	)	Case No. U-20134
the generation and distribution of	)	
electricity and for other relief.	)	
	)	

EXHIBITS OF

KAREN M. GOULD

MICHIGAN PUBLIC SERVICE COMMISSION

September 10, 2018

CASE NO: U-20134
EXHIBIT: S-13 .1 (KMG-1)
WITNESS: KAREN M. GOULD

Accounting for EWR impacts in forecasting CE U-20134 Rate Case

		2009	*2010**	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017***	*2018*	*2019*	*2020*	*2021*
1	Actual Historical Savings Achieved***	137,178	241,604	332,841	385,331	431,227	385,082	258,048	332,771	514,280				
2	Residential Savings	45,814	86,816	147,475	144,782	184,740	155,720	103,834	144,087	178,265				
3	C&I Savings	91,364	154,788	185,366	240,549	246,487	229,362	154,214	188,684	336,015				
4	Projected Savings for 2018-2021 EWR Plan U-20028										541,518	512,699	515,625	516,404
5	Residential Savings										193,574	197,140	200,085	200,864
6	C&I Savings										347,944	315,559	315,540	315,540
7	Historical and Projected savings U-20134	137,178	232,295	332,841	385,331	431,227	385,082	258,048	332,771	478,407	513,605	486,274	489,046	489,785
8	Residential	45,814	86,816	147,475	144,782	184,740	155,720	103,834	144,087	176,269	183,596	186,978	189,771	190,510
9	Commercial	91,364	145,479	185,366	240,549	246,487	229,362	154,214	188,684	302,138	330,009	299,296	299,275	299,275
10	Historical and Projected savings U-20165	137,178	232,295	332,841	385,331	431,227	385,082	258,048	332,771	478,407	513,605	486,271	579,204	660,562
11	Costs Associated Annual Reconciliations/**Plan filing**	$22,157,415	$33,844,872	$48,544,467	$67,369,007	$69,097,040	$74,878,934	$76,173,581	$77,215,931	$113,482,306	**$118,790,481**	**$115,434,889**	**$116,688,987**	**$118,039,602**
12	Projected Costs U-20165 W/O FIM											$115,400,000	$138,700,000	$200,200,000

* The Company erred in the savings achieved for Commercial programming in 2010. Actual savings figure for Commercial programming is 154,788 MWh, total savings for 2010 is 241,604 MWh

** The values the Company states for residential programming, commercial programming and subsequent total were based on estimates as the evaluation of savings was still being processed. The actual total for residential programming, commercial programming and total savings for 2017 are 178,265, 336,015, and 514,280 MWh respectively.

*** Reported and reconciled in EWR reconciliation and annual report filings 2009-2017

2018 Electric Load Forecasting MPSC Staff Update

June 20, 2018

Consumers Energy
Count on Us®

Load Forecasting

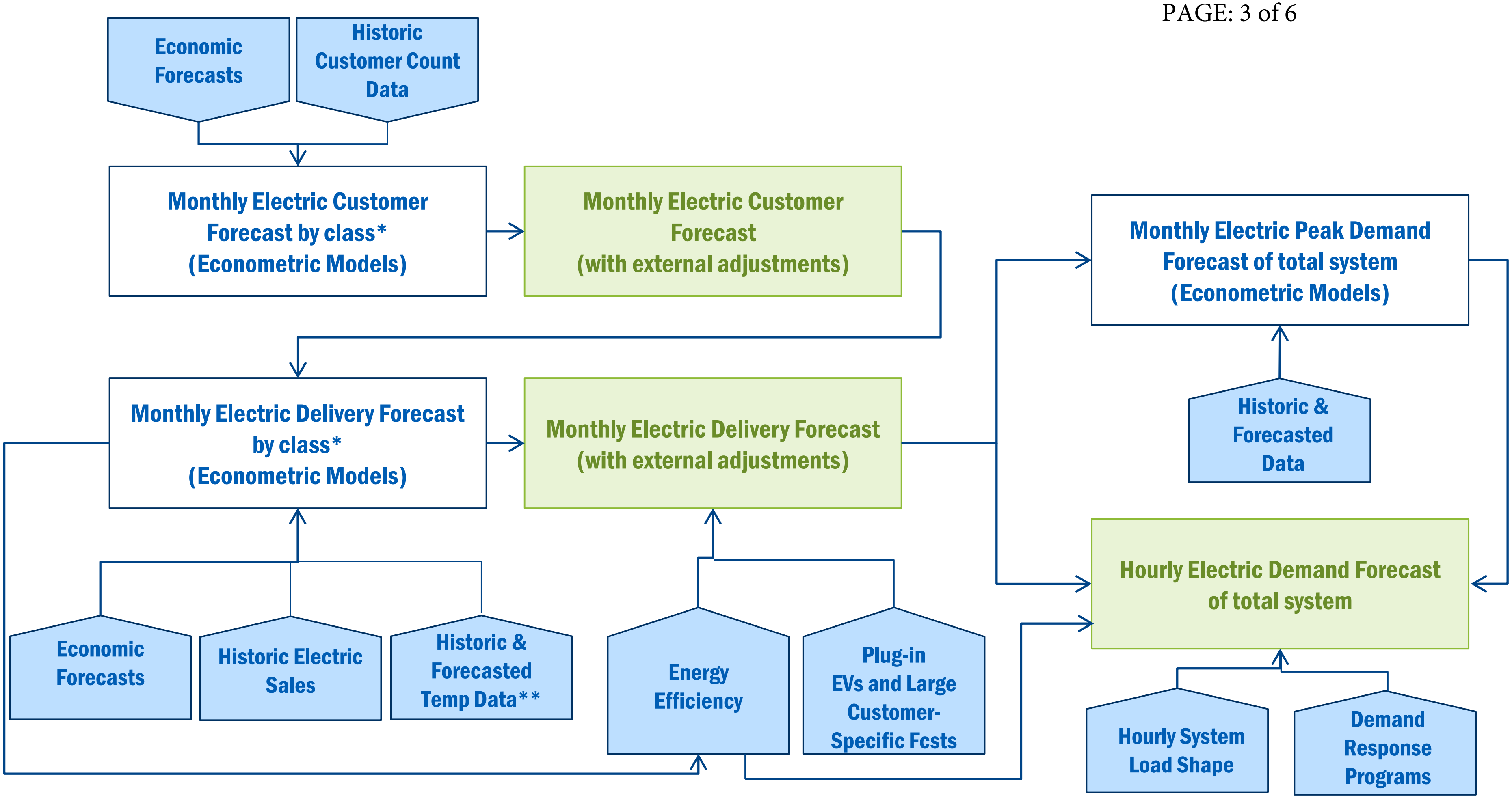
- Two "official" forecasts per year
  - Fall: Budget forecast for the next year
  - Spring: 5-year Strategic Plan

- Forecasts:
  - Customer Count
  - Deliveries
  - Peak Demand

- Key Variables
  - Weather (seasonal variations)
  - Economy (growth)
  - Demographics (long-term customer forecasts)

Load Forecast Process

CASE NO: U-20134
EXHIBIT: S-13.2 (KMG-2)
WITNESS: KAREN M. GOULD
PAGE: 3 of 6



*Residential, Commercial, Industrial, Interdepartmental, Streetlighting, & Wholesale
**15-Year average used for temperature forecast

Load Forecasting

- Forecast Process "In a Nutshell"

1. Gather Monthly Historic Data
2. Importing IHS Markit projections
3. Importing External Adjustments
4. Review Imported Observations
5. Executing Regression Models & Reviewing Statistical Metrics
6. Combining Regression Forecasts w/ External Forecasts

Variables – Economic data provided by IHS Markit

CASE NO: U-20134
EXHIBIT: S-13.2 (KMG-2)
WITNESS: KAREN M. GOULD
PAGE: 5 of 6

- Residential
  - Regional Economic Variable: Housing Starts
  - Population
  - Gross Regional Product
  - Heating & Cooling Degree Days
  - Prior Period kWh and Customer Count
- Commercial
  - Population
  - Prior Period kWh and Customer Count
  - Heating & Cooling Degree Days
  - Regional Economic Variable: Service Employment
  - Gross Regional Product
- Industrial
  - Prior Period Customer Count
  - Regional Economic Variable: Manufacturing Employment
  - Regional Economic Variable: Manufacturing Production
  - Heating & Cooling Degree Days
  - Gross Regional Product

Regression Model Evaluation

The evaluation process considers the performance of both overall model and separate independent variables

- Regression Model
  - Adjusted R-squared (R_a^2)
    - R_a^2 measures the ability of the regression model to explain variations in the data (good model = 90%+)
  - Mean Absolute Percent Error (MAPE)
    - MAPE measures the regression model errors (good model < 5%)

- Independent Variables (x-variables)
  X-variables are measured for statistical significance using two separate measures:
  - t-statistic (t-stat)
    - a fitting x-variable should have a t-stat of below 2
  - p-value
    - a fitting x-variable should have a p-value of greater than 5%

From: Karen L. Wienke
To: Poli, Patricia (LARA); Gould, Karen (LARA)
Subject: 8/21 Load Forecasting Overview
Date: Thursday, August 23, 2018 6:29:08 AM
Attachments: MPSC_Update_June 2018.pptx

Good morning.

On Tuesday afternoon, 8/21, six members of the MPSFC Staff received a Metrix ND and Metrix LT overview at One Energy Plaza. The meeting was requested by Staff to get a better understanding of Itron's Metrix system used to develop load forecasting.

MPSC Attendees: Rob Ozar, Karen Gould, Ethyan Kramer, Roger Doherty, Lumi Makinde and Jing Shi

CE Attendees: Gene Breuring, Eric Keaton, Ted Ykimoff, Hubert Miller and Karen Wienke

Before the overview, a number of questions were asked by Staff and answered. Many were associated to how energy efficiency was handled when load forecasting. Once this was complete, the load forecast process was reviewed, followed by an overview of Metrix ND and LT. Items in each aspect of the two systems were walked through. In 2017, our annual load forecast was within 2 GW of actual load, an impressive feat.

Metrix ND

1. Data Tables
   a. Deliveries – monthly by class. CYC is cycle billed and we convert to calendar basis CAL
   b. Customers – monthly by class
   c. External Adjustments
   d. Degree Days – heating and cooling degree days, 15 years of history
   e. Billing Days
   f. Monthly binaries
   g. Energy Efficiency – measured life. Information comes from the energy efficiency team
   h. Economic Indicators – there are several from IHS Markit We do not use them all
2. Transformation Tables – contains the logic/calculations used
3. Models
   a. 3 models for Residential – usage and customer count
   b. 3 models for Commercial – usage and delivery, and customer count
   c. 3 models for Industrial – deliveries and exponential smoothing (customer count)
4. Reports – use for analysis and review purposes

Metrix LT – used for load shapes

1. Forecast before adjustment
2. Energy Efficiency
3. ROA
4. Smart Energy

Karen L. Wienke

Consumers Energy
Regulatory Affairs Manager
Office: (517) 393-2465. Ext 2 | 910 Center St, Lansing
Mobile: (517) 643-1793
E-mail: Karen.Wienke@cmsenergy.com

S T A T E   O F   M I C H I G A N

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * *

In the matter of the application of CONSUMERS ENERGY COMPANY for authority to increase its rates for the generation and distribution of electricity and for other relief.	))))))	Case No. U-20134

QUALIFICATIONS AND DIRECT TESTIMONY OF

ROBERT G. OZAR, P.E.

MICHIGAN PUBLIC SERVICE COMMISSION

September 10, 2018

QUALIFICATIONS OF ROBERT G. OZAR, P.E.
CASE NUMBER U-20134
PART I

Q. Please state your name and business address.

A. My name is Robert G. Ozar, and my address is 7109 W. Saginaw Highway, Lansing, Michigan, 48917.

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

A. I am employed by the Michigan Public Service Commission (MPSC or the Commission) as the Assistant Director, Energy Resources Division.

Q. Please describe your educational background.

A. I received a Bachelor's degree in Chemical Engineering, with Honors, from Michigan State University, and a Master of Science degree in Chemical Engineering, also from Michigan State University. During my tenure at the university, I was inducted into the national engineering honor societies Tau Beta Pi and Omega Chi Epsilon and was the recipient of the Schlumberger Scholarship in Chemical Engineering.

Q. Are you a registered professional engineer?

A. Yes. I have been continuously licensed for nearly 30 years, in the State of Michigan, as a Professional Engineer.

Q. Please describe your work experience.

A. I joined the Michigan Public Service Commission in 1979, as a Public Utilities Engineer, progressively serving as Manager of the Electric Reliability Section, Manager of the Energy Efficiency Section, and my current position. During my employment with the MPSC, I have been responsible for a broad array of regulatory issues impacted by engineering, economics, and regulatory theory, policy, and practice. I have testified in numerous contested proceedings over the course of nearly four decades. I have spoken as an energy expert in both national and international industry conferences.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to present the MPSC Staff's (Staff) position on Consumers Energy's (Consumers or the Company) request to implement an electric vehicle (EV) charging pilot called PowerMIDrive.

Q. Regarding the Staff's evaluation of Consumers' proposal, has the Commission provided policy direction with respect to transportation electrification issues in a prior proceeding?

A. Yes, the Commission has provided policy direction in it orders in Case No. U-18368 entitled: "The Commission's own motion to open a docket that will be used to collaboratively consider issues related to both the deployment of plug-in electric vehicle charging facilities and to examine issues germane to the use of compressed natural gas as a motor vehicle transportation fuel in Michigan". Through this docket, the Commission held two collaborative technical conferences with a wide range of stakeholders that included both Michigan and national experts. In addition, the Commission received written comments that explored the technical and policy implications of transportation electrification. The Commission issued two orders under such docket.

Q. What policy direction was provided by the Commission in U-18368?

A. In its March 29, 2018 Order, the Commission noted that (during the second technical conference) DTE and Consumers Energy presented information on future pilots that they were developing and expressed that: "The experimental nature of these pilots will test technology innovations, rate design, customer response, and other factors, and should position the utilities and the Commission to make more informed decisions over the long term." The Commission made it clear in its orders that it views utility vehicle-electrification pilots as necessary to prudent planning by utilities.

Q. Are pilots distinct from EV-charging infrastructure-development programs?

A. Yes. The piloting phase is separate and distinct from infrastructure-deployment programs.

Q. Please explain.

A. In Staff's view, there are two core objectives that must be achieved in an experimental piloting phase, and such achievement must precede any substantial EV charging infrastructure build-out by electric utilities.

Q. What are those two core objectives?

A. First, utilities must determine if, and how, load associated with EV charging can be actively managed in a way that mitigates negative impact to the electrical grid and on the utilities load profile (in particular on peak-demands). Active management would result in controlled charging by customers. Secondly, utilities must verify that controlled charging of additional EVs does in fact provide a net economic benefit to the grid, and if so, to accurately quantify such benefits (e.g. $/vehicle over the service life of the vehicle).

Q. In meeting those two objectives, what are the foundational components that should be included in a prudent utility EV pilot?

A. A prudent plan should address the following: (1) grid impact, (2) rate design, (3) education/awareness, and (4) foundational infrastructure. All of these components either directly or indirectly relate to the ability of a utility to actively manage the charging of EVs connected to the grid, and thus mitigate uncontrolled charging by EVs. Along these lines, it is relevant that on August 27, 2018, the California State Legislature introduced a bill (AB 2121) to assess EV charging infrastructure in California that explicitly connects state goals for expanding charging infrastructure with the mitigation of uncontrolled charging via smart/connected technologies: "Electric vehicles and charging infrastructure with the ability to record consumption and connect by remote communication technology could assist in grid management and the integration of eligible renewable energy resources."

Q. Does Staff's review of Consumers' proposed pilot indicate that its purpose, and thus focus, is on data and information gathering via smart/connected charging infrastructure?

A. Yes. Consumers' pilot design-goals have a significant and direct connection with advanced communication technologies. Accordingly, the Company proposes to require participating customers to install and maintain smart/connected EV supply infrastructure and agree to participate in load control and demand response pilots, as a pre-condition to receiving equipment/installation rebates.

Q. Mr. Ozar, you stated that the pilot phase should precede any potential EV charging infrastructure build-out, especially a substantial build-out, by electric utilities. Is it reasonable to include a nominal charging station deployment within a pilot at this time?

A. Yes. A critical mass of smart/connected charging infrastructure must be deployed to facilitate the extensive data collection and information gathering requirements of a vehicle electrification pilot. In addition, these deployments can serve double-duty in mitigating market failures that are currently and severely limiting the of adoption of EVs in Michigan. As a result, a nominal level of infrastructure build-out is reasonable to be included in the piloting phase, but this should not be the pre-eminent reason for undertaking a pilot at this stage in Michigan's response to the transportation-electrification revolution.

Q. Regarding the second point, is it reasonable for a regulated electric utility to be involved in mitigating market failure in what is ostensibly a competitive EV-charging industry?

A. Yes, if the deployment enables electric utilities to lead the nascent EV industry and resulting consumer behavior toward controlled charging as a foundation of vehicle electrification. There is already a strong indication that controlled charging by plug-in electric vehicles can provide system-wide benefits to the grid. Consumers itself has initially estimated such benefits at between $1,900 and $2,300 per vehicle. Final confirmation and quantification of such benefits will, of course, occur in the proposed pilot, but the fact that net benefits are highly likely justifies the risk of accelerating the deployment of some foundational charging infrastructure via utility investment during the pilot phase. Although it is not certain that a future expansion of EV charging infrastructure will require direct investment by utilities in Michigan, a build-out of critically located publicly available charging stations, at this time, should meaningfully resolve the range-anxiety issue currently crippling adoption of electric vehicles. Staff would note that utility efforts in this direction will require strong partnerships with stakeholders.

Q. Does Staff have any observations and associated recommendations regarding the design of the pilot?

A. Yes. Overall, the pilot has a solid framework, appears innovative, and is well thought out, meeting the criteria set by the Commission in U-18368. However, the proposed pilot has a significant lack of specificity. This lack of detail - yet to be established - precludes a meaningful estimate of the costs of implementation. In addition, much of the cost of the pilot is associated with rebates that are dependent upon pilot participation rates. Although Consumers has established goals, realized participation rates are essentially unknown at this time, given that the expanded scope (residential, publicly available Level 2, and DCFC market segments). Additionally, rebate structures, participation obligations (e.g. maintenance requirements and demand response/load control obligations), and advanced equipment requirements differ fundamentally from the prior residential-only Level 2 rebate program (that might otherwise be used as a benchmark to refine the cost structure of the pilot). As the design of the pilot has a significant level of detail yet to be established, and actual expenditures will be highly dependent upon customer participation rates, it is reasonable that recovery of program costs be deferred via regulatory asset accounting, as addressed in detail by Staff witness Chuck Putman, and that the pilot move forward expeditiously with Commission approval in this case.

Q. Is the Staff recommending any modifications to the proposed PowerMIDrive pilot?

A. Yes. Consumers proposed pilot, implemented over a 3-year period, is a prudent course of action and should be approved, with spending capped at $7,500,000 as requested by the Company, plus an additional $2,500,000 dedicated toward new or modified service connections and associated equipment, as discussed below.

Q. Are there any issues with the approach requested by the Company to provide a partial rebate toward the full installed cost of the EV charging site?

A. Yes. With respect to publicly-available AC Level 2 and DCFC installations, the Company is proposing a form of the 'make-ready' model that provides a partial rebate toward the full installed cost of the EV charging site. Depending on the site, the full installed cost may include a new or modified service connection, the EV supply infrastructure (downstream of the meter), and the charging station itself. Per Consumers' pilot, DCFC stations will have a capacity of at least 120 kW and will almost certainly require a new or modified service connection. For those sites requiring a new service connection, the total site-cost is likely to exceed the level of rebates provided by the pilot, resulting in the need for contributions-in-aid-of-construction (CIAC) to cover service-connection costs not provided by the company pursuant to its standard connection fees. Because the PowerMIDrive program is a critical information gathering pilot, it is reasonable and in the public interest for utility grid infrastructure needed to implement the pilot to be fully funded by the utility. This would make a more complete 'make ready' model for the pilot.

Q. What is the principal advantage to expanding funding for utility interconnection assets?

A. Provision of service connection assets needed for publicly available charging stations – at no cost to pilot participants (i.e. no CIAC) – will provide Consumers with the additional flexibility to future-proof the 'make ready' infrastructure in anticipation of the next wave of ultra-fast charging anticipated for both DCFC and AC Level 2 systems.

Q. Please continue.

A. The Staff is aware that charging technology is rapidly accelerating and so presents a high risk of technological obsolescence. It would be prudent to ensure that 'make ready' infrastructure investments related to this pilot be capable of next generation upgrades. With 'make ready' infrastructure capable of interconnecting new technology charging stations at a future date, data collection related to pilot investments can continue to provide critical information related to rapidly increasing EV battery charge rates being introduced by manufacturers. Upgradeability will provide additional value to Consumers' customers who are ultimately covering the cost of the PowerMIDrive pilot, as it is near certain that additional data collection will be needed beyond the term of the PowerMIDrive pilot to assess the impact of ultra-fast charging on the utility's grid.

Q. Are there currently charging industry investments in DCFC stations that can provide guidance in this matter?

A. Yes. As Consumers has noted in the testimony of its witness Mr. Delaney, Electrify America is making a near simultaneous rollout of DCFC stations across the US, that includes Michigan. Electrify America's rollout was noted by Consumers as apropos to determining the proper DCFC locations for the pilot. However, Consumers would be well advised to also consider the core technology specifications of the Electrify America rollout. For example, Electrify America has determined that all DCFC sites along highway corridors will be 150 kW capable with at least two chargers at each site capable of a 350 kW charge rate (https://chargedevs.com/features/electrify-america-begins-building-a-nationwide-network-of-metro-highway-workplace-and-community-chargers/). Seeing that Electrify America made the decision with considerable input from stakeholders to "future proof" its investment in DCFC sites, it is recommended that Consumers likewise address the upgradability issue in its upcoming stakeholder meetings prior to committing capital to DCFC site hosts.

Q. Why is the future upgradability of 'make-ready' infrastructure associated with AC Level 2 charging a relevant matter to the PowerMIDrive pilot?

A. Similar to the upgradeability of 'make ready' DCFC investments, upgradeability of 'make ready' infrastructure for AC Level 2 charge sites may preclude stranded investment caused by a rapidly accelerating vehicle electrification industry. For example, over the near term, the introduction of AC Level 2 (80A) charging at publicly-available charging sites may develop into a more significant industry trend than ultrafast DC charging, as it does not present the battery degradation issues associated with the high charge rates of ultra-fast DC charging, will have much higher usage patterns vis-à-vis corridor DC fast-charging, and allows for a significantly improved customer experience associated with the shorter charge times at the more widely used Level 2 commercial charging destinations [Michael Farkas, CEO Blink Charging, personal communication]. As more vehicles having an on-board AC Level 2 (80A) capability are introduced into the market, a commensurately increasing segment of commercially available Level 2 charge sites are likely to move from the traditional 7.2 kW (30A) charge rate toward 19.2 kW (80A), thus making future-proofing of utility funded 'make ready' infrastructure (e.g. service connection, transformer, meter, and EV supply infrastructure) prudent. Of course, this industry move is dependent on how fast 80A capable vehicles are introduced into the market and presents the traditional "chicken or egg" issue as to who goes first. As to a specific industry example of the charging industry going first, Blink Charging is currently rolling out an AC Level 2 – (80A) pilot [Michael Lew, Blink Charging, personal communication].

Q. Does Staff have a specific recommendation regarding creating a closer tie between the 'make ready' model and the pilot's rebate structure?

A. Yes. Staff recommends that utility investment in new or modified service connections associated with 'make-ready' charging infrastructure be excluded from the rebate program as they would be provided at no cost to site hosts participating in the pilot. This will require suspension of CIAC at publicly available EV charging sites included in the pilot, for the term of the pilot (three years from the date of the Commission Order approving the PowerMIDrive pilot).

Q. Will Consumers have the right to determine which sites will be included in the pilot, and thus qualify for interconnections at no cost to the site host?

A. Yes. As it is necessary for the utility to: (1) actively manage site locations and (2) control pilot expenditures, Consumers would have the unilateral right to suspend CIAC at any particular Level-2 or DCFC site included in the pilot, and thus fully fund the cost of interconnection. On the other hand, if interconnection cost is the deciding factor for not including a site in the pilot, and the site host is willing to cover any CIAC, there is no reason that such site could not be included in the pilot (assuming the site meets all other requirements established by Consumers).

Q. What Rules and Regulations within Consumers Rate Book address CIAC for new or modified service connections?

A. Two Rules are relevant. Rule C1.4 entitled: "Extraordinary Facility Requirements and Charges" and Rule C6. entitled: "Distribution Systems, Line Extensions and Service Connections". Rule C1.4 relates to grid assets required for connections having a load exceeding 1 MW, grid investments not normally provided by the Company, or facilities needed to avoid interrupting or impacting the service to other customers: all of which may be relevant for publicly available Level 2 or DCFC sites. Such Rule provides for a CIAC where extraordinary facilities are determined (by the Company) to be needed. Rule C-6 relates to both overhead and underground line extensions and service connections.

Q. Does Rule C1.4 and/or Rule C6. need to be modified to accommodate the suspension of CIAC for the PowerMIDrive pilot?

A. Yes. Both rules should have language added that: "*Contributions in Aid of Construction otherwise required by the Company may be suspended for publicly available AC Level 2 or DC Fast Charge sites participating in the PowerMIDrive pilot. Suspension is at the*

Company's sole discretion, for a term of three years from the date of Commission approval of the PowerMIDrive pilot."

Q. How would Consumers recover the cost of EV pilot-related service connections, considering that the utility did not include any pilot expenses in the calculation of its revenue requirements in this rate case?

A. Recovery would be pursuant to standard regulatory practice (i.e. included in rate-base in future general rate cases). Such utility assets include the installed cost of the service, transformer, meters, and associated equipment upstream of the EV supply infrastructure.

Q. Are 'make ready' capital expenditures related to new or modified service connections included in the $7.5 million expenditure cap?

A. No. Staff recommends that the $7.5 million expenditure cap be limited to rebates for EV supply infrastructure and smart/connected charging stations, technical development, IT, and other pilot related O&M. Staff is recommending that the Commission set a separate spending cap on 'make ready' capital expenditures associated with service connections at $2.5 million (equal to an increase of 1/3), for a total PowerMIDrive pilot cap of $10 million. The additional funding for 'make ready' interconnection costs should make the PowerMIDrive pilot a stronger pilot and more likely of achieving intended goals.

Q. With full recovery of capital expenditures associated with EV pilot-related service connections, up to $2.5 million, will the utility have an incentive to control costs?

A. Yes, service connections costs will be reviewed for reasonableness in Consumers' future general rate cases. Staff notes that the Company stated that it intends to "be proactive in identifying and encouraging sites for this program that require minimal service connection investment." (Delaney Direct, p. 14). The combination of Consumers' commitment and a prudency review before service connection costs are included in future rates should constrain such costs.

Q. How will prudency be determined?

A. Staff recognizes that locating publicly-available EV charging stations, particularly a core set of DCFC stations, will involve trade-offs related to balancing three core attributes: sites potentially having high utilization rates (e.g. prime charging locations), low service-connection and EV supply infrastructure costs, and optimal geo-spatial interconnections to the electric grid. Thus, Staff recognizes that low-cost will not be the only criterion establishing reasonableness.

Q. Should the Commission approve, in this proceeding, specific rebate amounts for the residential, publicly available AC Level 2, and DCFC segments of the pilot?

A. No. The utility should have considerable flexibility to adjust those amounts, over the course of the pilot, in response to strong pilot-implementation evaluation by the Company and input from stakeholders including site-hosts. It is recommended that Consumers file in the U-20162 docket an initial rebate schedule for all pilot segments immediately prior to pilot implementation, and revisions as necessary over the course of the pilot.

Q. Does Staff have any other recommendations related to the uncertainty issues surrounding the proposed pilot?

A. Yes. It is recommended that Consumers file an annual report detailing the progress and development of the pilot. The report should be filed in this case docket (U-20134). Additionally, subsequent to each such filing, Staff intends to schedule an informal technical conference to discuss the results. Intervenors to the rate case and other stakeholders will be invited to participate.

Q. Does this conclude your testimony at this time?

A. Yes.

S T A T E O F M I C H I G A N

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * *

In the matter of the application of	)	
CONSUMERS ENERGY COMPANY	)	
for authority to increase its rates for	)	Case No. U-20134
the generation and distribution of	)	
electricity and for other relief.	)	
	)	

QUALIFICATIONS AND DIRECT TESTIMONY OF

NAOMI J. SIMPSON

MICHIGAN PUBLIC SERVICE COMMISSION

September 10, 2018

QUALIFICATIONS OF NAOMI J. SIMPSON
CASE NUMBER U-20134
PART I

Q. Please state your full name and business address for the record.

A. My name is Naomi J. Simpson. My business address is the Michigan Public Service Commission's (Commission) work site at 7109 West Saginaw Highway, Lansing, Michigan 48917.

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

A. I am employed in the Energy Resources Division of the Michigan Public Service Commission. I am a Public Utilities Engineer in the Generation and Certificate of Need Section, which is responsible for assisting in the implementation of Public Act 341 of 2016 and evaluating applications for transmission siting pursuant to Public Act 30 of 1995.

Q. Please outline your educational background.

A. I earned a Bachelor of Science degree in Engineering with a major in Industrial Design from Michigan State University in 1997 and a Master of Arts degree in Education with a major in Secondary Education from the University of Phoenix in 2010. Since joining the Commission, I have also attended several training programs sponsored by the National Association of Regulatory Utility Commissioners and Michigan State University, including the Annual Regulatory Studies Program (August 2011, 2012, 2013), the Advanced Regulatory Studies Program (October 2011, 2012, 2013, 2014), and Introduction to Public Utility Regulation and Ratemaking (May 2012). In addition, I have attended the Distribution Efficiency Planning and Voltage Optimization conference sponsored by Electric Utility Consultants, Inc. (June 2012), the annual Energy, Utility & Environment Conference (January 2013), the National Energy Risk Lab (February 2014), multiple Electric Generation Expansion Analysis System (EGEAS) modeling training sessions at various Midcontinent Independent System Operator (MISO) locations (2015, 2016, 2017, 2018), and the Peak Load Management Alliance (2016).

Q. Would you please outline your professional experience?

A. In September 1994, I began working at General Motors Corporation as a student engineer, where I worked with staff engineers to evaluate vehicle calibrations and components related to meeting vehicle emissions standards and fuel efficiency.

In February 1998, I began working as a staff Design and Release Engineer with responsibility for vehicle platform exhaust systems in Delphi Automotive Systems, a subsidiary of General Motors, which later became a fully independent corporation in 1999. My duties as a Design and Release Engineer included design team management, durability test validation, production approval, and lean manufacturing implementation. In August 2000, I became the Engineering Change Management Coordinator for Delphi Lansing Cockpit Assembly Plant, where I was responsible for model year program management, mid-cycle engineering change management, and designated engineering liaison to General Motors staff product engineers, manufacturing engineers, and quality engineers associated with cockpit production. In 2002, I became the on-site Systems, Applications & Products in Data Processing project manager for the Delphi Lansing Cockpit Assembly Plant in addition to my previous responsibilities. In November 2004, I was assigned the duties of Quality Manager with responsibility for plant-wide first-time quality goals, root cause analysis, supplier quality standards, and statistical defect analysis.

In 2007, I accepted a position at Barnard Manufacturing, Inc. as a commodity buyer of steel and aluminum raw material. My responsibilities included negotiation of commodity contracts to create the most efficient pricing structure while ensuring timely delivery, creating material quality specifications, initiating build schedules based on customer-desired completion dates, and maintaining a material pricing database for all manufactured components.

In March of 2011, I accepted a position as a Public Utilities Engineer in the Smart Grid Section of the Michigan Public Service Commission. I was a member of the Smart Grid Collaborative as the co-chair of the Customer Programs and Communication workgroup. I supported Staff witnesses with the analysis of Consumers Energy Company's Advanced Metering Infrastructure/Smart Grid proposal and request for recovery in Case No. U-16794. I assisted with writing the Staff report to the Commission in Case No. U-17000. Upon transfer to the Generation and Certificate of Need Section in May of 2012, I began testifying as an expert witness in utility generation certificate of necessity application filings and utility transmission certificate of public convenience and necessity application filings. In 2015, the Commission established a Demand Response work group of which I remain a member.

Q. Have you previously presented testimony before the Commission?

A. Yes. I prepared and filed testimony for the following cases:

1. Case No. U-16801, Indiana Michigan Power Company electric rate case.
2. Case No. U-17041, Michigan Electric Transmission Company, LLC application for a certificate of public convenience and necessity for the construction of a transmission line.
3. Case No. U-17272, ATC Management Inc. and American Transmission Co., LLC application for a certificate of public convenience and necessity for the construction of a transmission line.

4. Case No. U-17429, Consumers Energy Company application for a certificate of necessity for the Thetford Generating Plant.

5. Case No. U-17767, DTE Electric Company electric rate case.

6. Case No. U-18014, DTE Electric Company electric rate case.

7. Case No. U-18224, Upper Michigan Energy Resources Corporation application for a certificate of necessity for two reciprocating internal combustion engine electric generation facilities.

8. Case No. U-18322, Consumers Energy Company electric rate case.

9. Case No. U-18255, DTE Electric Company electric rate case.

10. Case No. U-18419, DTE Electric Company application for a certificate of necessity for an 1,100 megawatt (MW) combined cycle electric generation facility.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to present the Michigan Public Service Commission Staff's (Staff) recommendations regarding the Consumers Energy Company's (CE or Company) commercial and industrial (C&I) demand response program and residential demand response programs. In addition, I will provide an overview of the Demand Response Framework order in Case No. U-18369 and how it applies to the instant case, including a detailed diagram illustrating Staff's recommendations for the evaluation of demand response programs and associated costs. Finally, I will discuss the Company's progress toward providing customers with access to a proxy bill in order to make educated comparisons about DR programs.

Q. Are you sponsoring any exhibits in this proceeding?

A. Yes, I am sponsoring the following exhibits:

Exhibit S-12.1, Summary of demand reduction achievable through demand response programs

Exhibit S-12.2, Residential demand response capital and operations and maintenance (O&M) by year

Exhibit S-12.3, Air conditioning (A/C) switch installation

Q. Were these exhibits prepared by you or under your supervision?

A. Yes.

<u>Commercial and Industrial Demand Response</u>

Q: What C&I demand response (DR) and interruptible rate programs are available to C&I customers?

A: The Company has three C&I programs that are categorized as either demand response or interruptible tariffs.[1] These programs are the C&I Emergency DR program, the Rate EIP and the Rate GI.

Q. Please summarize the Company's C&I Emergency DR program.

A. The Company's C&I Emergency DR is expected to total 70MW (78.5 zonal resource credits (ZRCs)) by the end of 2018 and 120 MW (134.5 ZRCs) by the end of 2019.[2] Customers enrolled in the C&I Emergency DR program work with the Company to establish a contracted demand reduction plan for a specified compensation amount. The customer is then expected to implement the predetermined demand reduction amount when the Company declares a demand response event day between June 1st and September 30th as described by Company witness Miller.[3] If a C&I customer fails to deliver 100% total nominated kilowatt (kW) reduction for a demand response event, the customer shall forego the contracted compensation amount if the average delivered capacity is less than 70% of the contracted amount and the customer would be assessed the real time commodity price ($/megawatt hour) for the amount of underperformed curtailment.

The Company is requesting $0.666 million for the 12 months ending 12/31/2018 and an additional $438 million for the 12 months ending 12/31/2019 for capital expenditures for this program.[4] Additionally, the Company is requesting $4.355 million for the 12 months ending 12/31/2018 and $5.755 million for the 12 months ending 12/31/2019 in operation and maintenance (O&M) expenses for this program.[5]

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[1] Prefiled direct testimony and exhibits of Richard T.Blumenstock, pp 16-17.
[2] Exhibit S-12.1.
[3] Prefiled direct testimony and exhibits of Hubert W. Miller, III pp 20-22.
[4] Prefiled direct testimony and exhibits of Hubert W. Miller, III, Exhibit A-12 (HWM-1).
[5] Prefiled direct testimony and exhibits of Hubert W. Miller, III, Exhibit A-106 (HWM-2), p 1.

Q. Please summarize the Company's Rate EIP and Rate GI.

A. The Company's Rate EIP and Rate GI are existing primary service rates that are Cost-of-Service Study based rates addressed further by Staff witness David W. Isakson. The Rate EIP and Rate GI are expected to remain at 48 MW (54 ZRCs) and 137 MW (154 ZRCs) respectively for both the 12 months ending 12/31/2018 and 12/31/2019.[6]

Q. Is Staff recommending any adjustments to the Company's projected C&I demand response program expenditures?

A. No, Staff is not recommending any adjustments to the Company's C&I demand response program expenditures.

<u>Residential Demand Response</u>

Q. What residential demand response programs are available to residential customers?

A. The Company currently offers a residential A/C cycling program and residential dynamic pricing programs.

Q. Please summarize residential A/C cycling program.

A: The Company's A/C cycling program is when residential customers allow the Company to install a load control switch on the customer's A/C unit which enables the Company to administer and directly control a residential customer's A/C unit. During peak event days, the Company activates the switch to cycle the A/C unit on and off at 15-minute intervals resulting in a 50% load reduction. The Company stops the cycling process at the end of the peak event. The customer receives a $25 incentive for signing up and a monthly bill credit of $7.84 from June 1st through Sept 30th.[7] The Company is also proposing an A/C Cycling

[6] Exhibit S-12.1.
[7] Prefiled direct testimony and exhibits of Hubert W. Miller, III pp 23-25.

Bring-Your-Own-Thermostat (BYOT) pilot program to augment its current A/C cycling program.[8]

The Company is requesting $6.138 million for capital expenditures for the 12 months ending 12/31/2018 and $8.436 million for the 12 months ending 12/31/2019.[9] The requested O&M expenditures total $3.390 million for the 12 months ending 12/31/2018 and $3.437 million for the 12 months ending 12/31/2019.[10] The Company is also requesting $2.209 million for O&M expenditures for the BYOT pilot program for the 12 months ending 12/31/2019.[11] The A/C Cycling program is expected to achieve 31.7 MW (33.0 ZRCs) by 2018 and 50.0 MW (52.1 ZRCs) by 2019.[12]

Q. Has the Company met the target amount of A/C switch installations that was anticipated to reach 42 MW of A/C cycling DR by May 2018 as directed by the Commission order in Case No. U-18322?

A. Staff recommends that the Commission find that the Company has met its obligation as set forth by the Commission order issued on March 29, 2018 in Case No. U-18322.[13] The 42 MW target amount was originally calculated using an assumption of 1.12 kW of demand savings per switch installation.[14] Therefore, the 42 MW target would have correlated to approximately 37,500 switch installations. Through Staff audit, the Company has indicated that it reached 37,500 switches on May 21, 2018.[15]

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[8] Prefiled direct testimony and exhibits of Hubert W. Miller, III p 25.
[9] Exhibit S-12.2.
[10] Exhibit S-12.2.
[11] Exhibit S-12.2.
[12] Exhibit S-12.1.
[13] Order in Case No. U-18322, p 27.
[14] Prefiled direct testimony and exhibits of Hubert W. Miller, III, p 24.
[15] Exhibit S-12.3.

Q. Is the Company achieving a full 42 MW of demand reduction through its installation of 37,500 A/C switches?

A. No, the Company has not observed the expected results from the A/C switch program. The Company has adjusted its projected demand reduction per A/C switch to an estimated 0.58 kW per installation based upon observations made in 2017.[16] The Company plans to continue to monitor the results of the A/C switch installations and is testing the use of smart thermostats under a BYOT Pilot program.[17]

Staff supports the continued monitoring of the residential A/C cycling DR program and supports the BYOT Pilot program as an alternative A/C cycling program. The information gained through both programs will inform the Company's decisions about the costs and benefits of these programs into the future.

Q. Please summarize the residential dynamic peak pricing (DPP) programs also known as behavioral DR.

A. The Company currently offers two types of DPP programs. The first is critical peak pricing (CPP) which replaces the standard on-peak energy charge with a much higher critical peak energy charge during a limited number of peak events per year. The second is Peak Rewards which offers a payment for reducing energy usage during peak events. The Company determines the amount of energy reduction achieved by calculating a baseline energy use and comparing it to the energy used during a peak event day. These programs are expected to provide a total demand reduction of 14MW (14.4 ZRCs) by year-end 2018 and 17.1 MW (17.7 ZRCs) by year-end 2019.[18]

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[16] Prefiled direct testimony and exhibits of Hubert W. Miller, III p 25.
[17] Prefiled direct testimony and exhibits of Hubert W. Miller, III p 25.
[18] Exhibit S-12.1.

Q. Is the Company proposing a change to its existing residential DPP program?

A. Yes. The Company is proposing to replace both DPP programs (e.g. CPP and Peak Rewards) with a Universal Peak Rewards program.[19] The Company proposes to enroll all customers in the Universal Peak Reward provision with the ability to opt-out of communications associated with the provision. The program would operate similarly to the current Peak Reward programs by calculating an energy savings using a customer baseline calculation for comparison to actual peak event usage. The Universal Peak Reward provision can be combined with the A/C cycling DR program. If a customer is enrolled in both programs simultaneously, the customer would receive the greater of the two credits on their bill.[20] The Company proposes to phase in this program over a period of two years and estimates the program to be fully implemented by 2021 as described by Company witness Miller.[21]

The Company is not projecting any capital expenditures in 2018 and $10.068 million in 2019 for capital expenditures to implement the changes to its DPP program. This capital cost is the total of Dynamic Pricing and Universal Peak Rewards on Exhibit S-12.2. The Company is also projecting to spend $1.820 million in 2018 and $1.074 million in 2019 for O&M expenses associated with the DPP programs inclusive of the Universal Peak Rewards provision.[22] These costs include providing education and marketing materials to build rate awareness, addressing customer questions through the call center, additional customer invoice review, and providing rate comparison through the Company's customer

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[19] Prefiled direct testimony and exhibits of Hubert W. Miller, III p 27.
[20] Prefiled direct testimony and exhibits of Rachel L. Brege, p 5.
[21] Prefiled direct testimony and exhibits of Hubert W. Miller, III, p 28.
[22] Exhibit S-12.2.

experience programs. Staff witness Lauren Fromm addresses the Company's customer experience programs further.

Q. Does Staff recommend any changes to the Company's transition from the current CPP program and Peak Reward program to a single Universal Peak Reward provision?

A. Yes. Although Staff understands that the Company is working to align its different rate options for residential demand response rate offerings, Staff does not support the Universal Peak Rewards provision as presented by the Company. Staff's concerns with the Company's proposal and recommended changes are discussed in detail by Staff witness Isakson.

Q. Does Staff have specific concerns with the proposed transition to the Universal Peak Rewards provision beyond those presented by Staff witness Isakson?

A. Yes. In a separate proceeding, the Company's demand response reconciliation case Case No. U-20164, the Company is proposing to earn a financial incentive on spending associated with demand response programs. The Universal Peak Reward provision seems designed to align with (i.e. maximize) the Company's proposed incentive. By focusing on spending rather than demand reduction results, under the Company's proposed incentive, the Company may be inclined to abandon successful programs with strong potential for future growth, potentially focusing instead on less successful programs with more spending.

Staff has not yet filed its position in Case No. U-20164 nor has the Commission decided upon an appropriate incentive approach. These decisions may also influence the types of programs the Company chooses to implement.

Q. Is the Staff recommending adjustments to the Company's projected expenditures for its residential demand response programs?

A. No, Staff is not recommending any adjustments to the Company's projected demand response expenditures.

Q. Please explain why Staff is not recommending any adjustments to the Company's projected demand response expenditures even though it is not supporting the proposed Universal Peak Reward provision.

A. Staff is not proposing any adjustments for two reasons. First, Staff supports the continued implementation of demand response programs. Demand response provides a resource that is beneficial to the grid and its customers. It provides operational flexibility, peak demand reduction, additional capacity resources to help meet the MISO resource adequacy requirements, reduced line losses during peak events, and adds diversity to the resource portfolio. Staff believes that the Company can achieve its DPP program goals with a more effective program as explained by Staff witness Isakson. Second, the Commission has provided a framework for demand response that includes a reconciliation process, and so recommendations for expenditure adjustments will be made in the Company's demand response reconciliation proceeding.

<u>Demand Response Framework Overview and How it Applies to the Instant Case</u>

Q. Please summarize your understanding of the demand response framework approved by the Commission in Case No. U-18369.

A. The demand response framework was set forth by the Commission in the September 15, 2017 order in Case No. U-18369. The framework recommends a three-phase approach. The first directs that demand response program plans be approved in a company's general rate case in the short term. The short-term is the period prior to a company having a Commission approved integrated resource plan (IRP). Going forward, the high-level plan approval and associated capital costs would be sought in an IRP case. Second, once a demand response program plan is approved, capital costs for the approved plan would be placed into rates during a general rate case. O&M costs would be approved and placed into rates through the rate case process as they are today. Third, companies are expected to file annual reconciliation cases to reconcile the capital and O&M amounts that have been placed into rates to the actual spending that occurred.

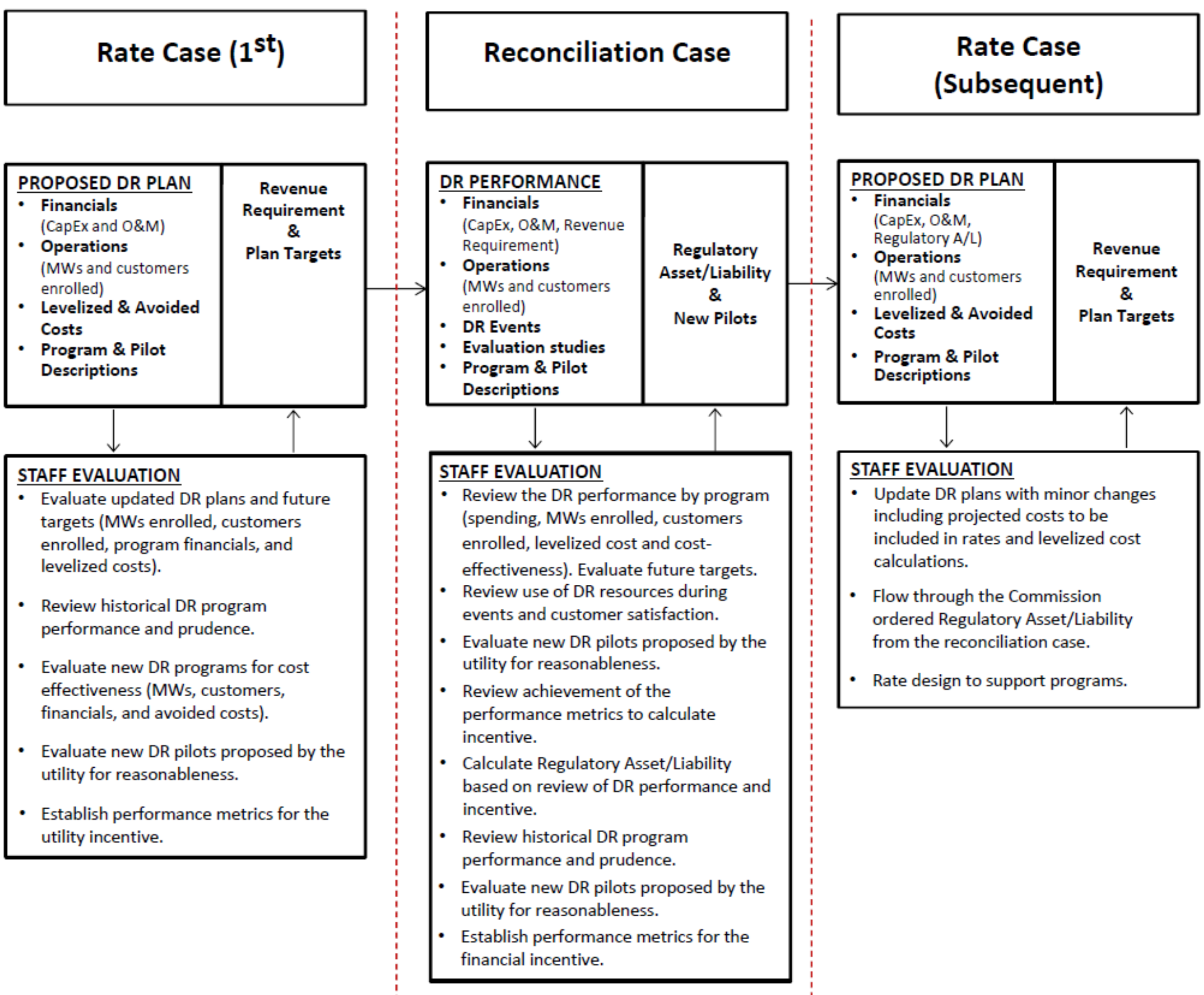
Q. Does Staff have any recommendations for revisions to this process?

A. Yes. Staff recommends that minor revisions to the Company's demand response plan be proposed and evaluated in its annual reconciliation case during interim periods between IRP cases. Staff opines that the evaluation of detailed demand response program characteristics and expected costs is best done in a focused demand response case, therefore recommends that demand response reconciliation cases are the most appropriate case to review and evaluate specific programs in granular detail on an annual basis. However, major revisions to the Company's overall demand response plan should be proposed and evaluated in IRP cases as is suggested by the demand response framework order.

Q. Please summarize how the demand response framework applies to the Company in this instant case.

A. Any demand response projected costs that have been approved in a rate case will be placed into rates. The actual expenditures will be reconciled in an annual reconciliation case. As reconciliation cases continue to occur annually, under-spent amounts would be returned to the ratepayers, while prudently spent over-expenditures would be recoverable. The under-spent or over-spent amounts would flow into the next rate case following an order in a reconciliation case. Specifically, projected costs that are not spent will be tracked and returned to ratepayers through the reconciliation process. Likewise, any actual costs exceeding the projected costs that are found to have been prudently spent will be tracked and recovered in accordance with the reconciliation process as well. The final prudency review on project spending would occur in the reconciliation case. The diagram below illustrates Staff's proposal for evaluating and reconciling demand response expenditures.

Diagram – Demand Response Reconciliation Process



Q. Does Staff support performance goals for specific demand response programs to be included in future IRP cases?

A. Yes. Staff recommends that performance goals for demand response be included as an essential element of a demand response plan. Performance goals may include goals such as expected MW of demand reduction from each demand response program, capital and O&M costs to implement and maintain each demand response program, and the number of installations or participants if applicable, to each demand response program. As companies learn more about demand response programs, the goals may need to be reviewed and adjusted on an on-going basis through the reconciliation process.

Q. Is Staff recommending specific performance goals for demand response programs in this case?

A. Staff is recommending that the Company's performance goals for the test year be based upon the Company's own expected spending and MW goals for its C&I demand response program, residential A/C cycling program, and residential DPP programs, identified earlier in my testimony. Although actual performance may differ from the original expectation, it is helpful to establish program expectations up front to help determine how a program might fit into a company's overall resource mix and understand the expected versus actual value of a program.

<u>Shadow Billing and Trial Period for Demand Response</u>

Q. Briefly describe shadow billing and a trial period in the context of demand response.

A. Shadow billing is an analysis tool that compares a customer's monthly bill to what they would have paid if enrolled in residential demand response programs. Current web tools could utilize advanced metering infrastructure (AMI) meter data to compare customer's bill in one rate plan to a near approximation of a bill with same usage in another rate plan such as comparing a bill under a typical residential rate to a DPP program rate. This helps customers to understand rate plans and make informed decisions.

A trial period refers to a period of time which a customer can try a rate option and later withdraw from it without incurring a penalty.

Q. Has the Commission addressed shadow billing or a trial period for demand response in a previous case?

A. Yes, the Commission was supportive of both shadow billing and a trial period in Consumers Energy's most recent rate case, Case No. U-18322. In that case, the Commission was supportive of a continued investigation into implementing shadow billing and/or a trial period to increase customer understanding and evaluation of demand response rates.[23] [24]

Q. Is Consumers proposing to implement either of these options in this case?

A. No. Company witness Miller indicates that the Company is still investigating tools such as shadow billing to help increase customer understanding of different rate options.[25]

Q. Has Consumers implemented a three-month trial period for demand response programs?

A. No. The Company is still investigating the option of providing a three-month trial period and has indicated that such an option would require an update to marketing material, website apps, call-center scripts, and automated enrollment.

Q. Does Staff continue to recommend the use of either a trial period or shadow billing?

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[23] March 29, 2018 Commission order in Case No. U-18322, pp 77-78.
[24] June 28, 2018 Commission order in Case No. U-18322, pp 9-10.
[25] Prefiled direct testimony and exhibits of Hubert W. Miller, III p 12.

A. Yes, Staff continues to recommend the use of either a trial period, shadow billing, or a reasonable proxy for shadow billing that leverages the use of a customer's own AMI data to determine how new rates could impact their electric bill if usage patterns remain unchanged.

Q. Does this conclude your testimony?

A. Yes, it does.

S T A T E OF M I C H I G A N

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * *

In the matter of the application of	)	
CONSUMERS ENERGY COMPANY	)	
for authority to increase its rates for	)	Case No. U-20134
the generation and distribution of	)	
electricity and for other relief.	)	
	)	

EXHIBITS OF

NAOMI J. SIMPSON

MICHIGAN PUBLIC SERVICE COMMISSION

September 10, 2018

Request No. 273

MPSC AUDIT REQUEST

CASE NO: U-20134
DATE OF REQUEST: 8/03/2018
NO. NS-3
REQUESTED BY: Naomi Simpson
DATE OF RESPONSE: 8/10/2018
RESPONDENT: Hubert W. Miller III

Question:

1. Please reference witness Blumenstock's testimony on pages 16-17. The Company has provided expected DR MW and ZRC targets for Planning Year 2019/2020 by program type, which would begin in April 2019 assuming MISO's Planning Year. Please provide MW and ZRC targets that the Company plans to have enrolled for 12 months ending 12/31/2018 and 12/31/2019 by program type (Residential behavioral DR, Residential A/C Cycling DR, C&I Emergency DR, Rate EIP, and Rate GI).

Answer:
The projected MWs and ZRCs for year-end 2018 and 2019 are included in the below table.

DR Program	2018		2019		Source
	MWs	ZRCs	MWs	ZRCs	
Residential Dynamic Peak Pricing (behavioral DR)	14.0	14.4	17.1	17.7	U-120134 MPSC Audit Rqst 135 Attachment 1, Peak TOU
A/C Cycling	31.7	33.0	50.0	52.1	U-120134 MPSC Audit Rqst 135 Attachment 1, AC Peak Power Savers
Business DR (emergency)	70.0	78.5	120.0	134.5	U-120134 MPSC Audit Rqst 135 Attachment 2, Cost Summary
Rate EIP	48	54	48	54	U-20165 Exhibit No. A-2 (RTB-2) page 77
Rate GI	137	154	137	154	U-20165 Exhibit No. A-2 (RTB-2) page 77

($000)

MPSC AUDIT REQUEST

CASE NO: U-20134
DATE OF REQUEST: 8/15/2018
NO. NS-4
REQUESTED BY: Naomi Simpson
DATE OF RESPONSE: 8/21/2018
RESPONDENT: Hubert W. Miller III

Question:

1. Please reference witness Miller's Exhibits A-12, Schedule B-5.3 and A-106 page 1 and the Company's response to audit question #275. Please separate following tables identifying residential capital and O&M costs by program into year ending 12/31/2018 and 12/31/2019 while still providing the detail by program as shown below.

Capital Expenses	Business	A/C Peak Cycling	Dynamic Pricing	Residential Universal Peak Rewards	Residential BYOT	Total
(24 Mths Ending 2019)						
Contractor	$ 817	$ 9,425	$ -	$ 10,068	$ -	$ 20,310
Labor	129	1	-	-	-	130
Materials	117	5,149	-	-	-	5,266
Business Expenses	4	-	-	-	-	4
Other	37	-	-	-	-	37
Total Capital	$ 1,104	$ 14,575	$ -	$ 10,068	$ -	$ 25,747

O&M Expenses	Business	A/C Peak Cycling	Dynamic Pricing	Residential Universal Peak Rewards	Residential BYOT	Total
(12 Mths Ending 2019)						
Contractor	$ 1,383	$ 3,300	$ 537	$ 400	$ -	$ 5,620
Labor	853	122	122	-	-	1,097
Materials	304	1	1	-	-	306
Business Expenses	3,215	14	14	-	-	3,242
Other	-	-	-	-	2,209	2,209
Total O&M	$ 5,755	$ 3,437	$ 674	$ 400	$ 2,209	$ 12,475

Answer:

1. The demand response program capital and O&M expenses contained in Exhibits A-12 (HWM-1) and A-106 (HWM-2), respectively, are separated into the business DR program and residential DR programs by program year ending 12/31/2018 and 12/31/2019 in the table below. The Company had developed these plans in late 2017 based on the information and performance of the programs available at that time. While the Company is committed to achieving the total enrolled MW levels

($000)

included in the original plan, it has had to adjust the 2018 residential program mix to achieve these demand savings targets. The electronic format of this table is attached as "U-20134 MPSC Staff Audit Rqst 280 Attachment 1.xlsx."

12 Mths Ending 2018		Residential				
Capital Expenses	Business	A/C Peak Cycling	Dynamic Pricing	Universal Peak Rewards	Residential BYOT	Total
Contractor	$ 493	$ 4,141	$ -		$ -	$ 4,634
Labor	78		-	-	-	78
Materials	70	1,997	-	-	-	2,067
Business Expenses	2	-	-	-	-	2
Other	22	-	-	-	-	22
Total Capital	$ 665	$ 6,138	$ -	$ -	$ -	$ 6,803

		Residential				
O&M Expenses	Business	A/C Peak Cycling	Dynamic Pricing	Universal Peak Rewards	Residential BYOT	Total
Contractor	$ 1,383	$ 3,253	$ 583	$ 1,100	$ -	$ 6,319
Labor	853	122	122	-	-	1,097
Materials	304	1	1	-	-	306
Business Expenses	1,815	14	14	-	-	1,842
Other	-	-	-	-	-	-
Total O&M	$ 4,355	$ 3,390	$ 720	$ 1,100	$ -	$ 9,565

12 Mths Ending 2019		Residential				
Capital Expenses	Business	A/C Peak Cycling	Dynamic Pricing	Universal Peak Rewards	Residential BYOT	Total
Contractor	$ 324	$ 5,284	$ -	$ 10,068	$ -	$ 15,676
Labor	51		-	-	-	51
Materials	46	3,152	-	-	-	3,198
Business Expenses	2	-	-	-	-	2
Other	15	-	-	-	-	15
Total Capital	$ 438	$ 8,436	$ -	$ 10,068	$ -	$ 18,942

		Residential				
O&M Expenses	Business	A/C Peak Cycling	Dynamic Pricing	Universal Peak Rewards	Residential BYOT	Total
Contractor	$ 1,383	$ 3,300	$ 537	$ 400	$ -	$ 5,620
Labor	853	122	122	-	-	1,097
Materials	304	1	1	-	-	306
Business Expenses	3,215	14	14	-	-	3,242
Other	-	-	-	-	2,209	2,209
Total O&M	$ 5,755	$ 3,437	$ 674	$ 400	$ 2,209	$ 12,475

Request # 247

MPSC AUDIT REQUEST

CASE NO: U-20134
DATE OF REQUEST: 7/18/2018
NO. NS-2-2
REQUESTED BY: Naomi Simpson
DATE OF RESPONSE: 7/23/2018
RESPONDENT: Hubert W. Miller III

Question:

In what month did the Company reach 37,500 customers enrolled in the A/C cycling demand response program previously known as the DLA program?

Answer:

Please refer to audit response 120. The company reached the goal of 37,500 AC switches installed during the week of May 21, 2018.

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

* * * * *

In the matter of the application of CONSUMERS ENERGY COMPANY for authority to increase its rates for the generation and distribution of electricity and for other relief.	))))))	Case No. U-20134

PROOF OF SERVICE

Linda G. Brauker, being duly sworn, deposes and says that on September 10, 2018, A.D., she emailed a copy of the attached MPSC Testimony and Exhibits to the persons as shown on the attached list.

Linda Brauker

Linda G. Brauker

Subscribed and sworn to before me
this 10th day of September, 2018.

Lisa Felice

Lisa Felice
Notary Public, Eaton County, Michigan
My Commission Expires: April 15, 2020

Service List for U-20134

Consumers Energy Company
Anne M. Uitvlugt
Bret A. Totoraitis
Gary A. Gensch, Jr.
Michael C. Rampe
Robert W. Beach
Theresa A.G. Staley
Consumers Energy Company
One Energy Plaza
Jackson, MI 49201
anne.uitvlugt@cmsenergy.com
bret.totoraitis@cmsenergy.com
gary.genschjr@cmsenergy.com
michael.rampe@cmsenergy.com
robert.beach@cmsenergy.com
theresa.staley@cmsenergy.com
mpsc.filings@cmsenergy.com

Environmental Law & Policy Center and The Ecology Center
Margrethe K. Kearney
Environmental Law & Policy Center
1514 Wealthy St. SE, Suite 256
Grand Rapids, MI 49506
mkearney@elpc.org

Robert Kelter
Unimuke John Agada
rkelter@elpc.org
jagada@elpc.org

Charles Griffith
charles@ecocenter.org

MCTA
Michael S. Ashton
Anita G. Fox
Fraser Trebilcock Davis & Dunlap, PC
124 W. Allegan St., Suite 1000
Lansing, MI 48933
mashton@fraserlawfirm.com
afox@fraserlawfirm.com

Michigan State University Workers Council, UWUA, AFL-CIO
John R. Canzano
423 N. Main St., Ste. 200
Royal Oak, MI 48067
jcanzano@michworkerlaw.com

Wal-Mart Stores East; Sam's East
Melissa M. Horne
Higgins Cavanagh & Cooney, LLP
10 Dorrance St., Suite 400
Providence, RI 02903
mhorne@hcc-law.com

Energy Michigan
Laura A. Chappelle
Timothy J. Lundgren
Varnum Law
The Victor Center
201 N. Washington Sq., Ste. 910
Lansing, MI 48933-1323
lachappelle@varnumlaw.com
tjlundgren@varnumlaw.com

Kimberly Champagne
Alex Zakem
Douglas Jester
kjchampagne@varnumlaw.com
ajz-consulting@comcast.net
djester@5lakesenergy.com

MEC, NRDC, Sierra Club, City of Grand Rapids, City of Flint
Christopher M. Bzdok
Tracy Jane Andrews
Olson, Bzdok & Howard
420 E. Front St.
Traverse City, MI 49686
chris@envlaw.com
tjandrews@envlaw.com

Karla Gerds
Kimberly Flynn
karla@envlaw.com
kimberly@envlaw.com

The Kroger Co.
Kurt J. Boehm
Jody Kyler Cohn
Boehm, Kurtz & Lowry
36 E. Seventh St., Ste. 1510
Cincinnati, OH 45202
kboehm@bkllawfirm.com
jkylercohn@bkllawfirm.com

Michael L. Kurtz
Kevin Higgins
mkurtz@BKLlawfirm.com
khiggins@energystrat.com

ChargePoint, Inc.
Justin K. Ooms
Timothy J. Lundgren
Varnum Law
The Victor Center
201 N. Washington Sq., Ste. 910
Lansing, MI 48933-1323
jkooms@varnumlaw.com
tjlundgren@varnumlaw.com

Service List for U-20134

Residential Customer Group
Don L. Keskey
Brian W. Coyer
Public Law Resource Center PLLC
University Office Place
333 Albert Ave., Ste. 425
East Lansing, MI 48823
donkeskey@publiclawresourcecenter.com
bwcoyer@publiclawresourcecenter.com

MCV
Richard J. Aaron
Jason T. Hanselman
John A. Janiszewski
Dykema Gossett
Capitol View
201 Townsend St., Ste. 900
Lansing, MI 48933
raaron@dykema.com
jhanselman@dykema.com
jjaniszewski@dykema.com

Charles E. Dunn
cedunn@midcogen.com

Attorney General
Celeste R. Gill
Assistant Attorney General
Dept. of Attorney General
Special Litigation Unit
G. Mennen Williams Bldg., 6th Floor
525 W. Ottawa St.; P.O. Box 30755
Lansing, MI 48909
gillc1@michigan.gov
ag-enra-spec-lit@michigan.gov

MPSC Staff
Heather Durian
Michael Orris
Daniel Sonneveldt
Assistant Attorneys General
Michigan Public Service Comm.
7109 W. Saginaw Hwy., 3rd Floor
Lansing, MI 48917
durianh@michigan.gov
orrism@michigan.gov
sonneveldtd@michigan.gov

Michigan Energy Innovation Business Council
Timothy J. Lundgren
Laura A. Chappelle
Varnum Law
The Victor Center
201 N. Washington Sq., Ste. 910
Lansing, MI 48933-1323
tjlundgren@varnumlaw.com
lachappelle@varnum.law.com

Laura Sherman
laura@mieibc.org

Toni L. Newell
Varnum Law
333 Bridge St., N.W.
Grand Rapids, MI 49504
tlnewell@varnumlaw.com

ABATE
Bryan A. Brandenburg
Michael J. Pattwell
Clark Hill
212 E. Cesar E. Chavez Ave.
Lansing, MI 48906
bbrandenburg@clarkhill.com
mpattwell@clarkhill.com

Jennifer M. Johnson
Lauren K. Degnan
Jeffry C. Pollock
Billie S. LaConte
Kitty A. Turner
jmjohnson@clarkhill.com
ldegnan@clarkhill.com
jcp@jpollockinc.com
bsl@jpollockinc.com
kat@jpollockinc.com

Administrative Law Judge
Hon. Sharon L. Feldman
Administrative Law Judge
Michigan Public Service Comm.
7109 W. Saginaw Hwy., 3rd Floor
Lansing, MI 48917
feldmans@michigan.gov