

OWEN Electric

A Touchstone Energy Cooperative 

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MAY 25 2012

PUBLIC SERVICE
COMMISSION

Rate Case No. 2012-00154

**FIRST DATA REQUEST OF
COMMISSION STAFF TO
OWEN ELECTRIC
COOPERATIVE INC**

**8205 Hwy 127 N
PO Box 400
Owenton, KY 40359
502-484-3471**

CRAWFORD & BAXTER, P.S.C.

ATTORNEYS AT LAW
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May 25, 2012

Mr. Jeff Derouen, Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
P. O. Box 615
Frankfort, KY 40602

RECEIVED

MAY 25 2012

PUBLIC SERVICE
COMMISSION

RE: Case No 2012-00154

Dear Mr. Derouen:

Please find enclosed the original and ten (10) copies of the responses requested of Owen Electric Cooperative in Commission Staff's First Information Request issued May 15, 2012 in the above referenced case.

Please contact me with any questions.

Respectfully submitted,

CRAWFORD & BAXTER, P.S.C.
ATTORNEY'S AT LAW
523 Highland Avenue
P.O.Box 353
Carrollton, Kentucky 41008

Attorney for Applicant
Owen Electric Cooperative, Inc.

BY: 
James M. Crawford

Enclosures

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

FILING OF OWEN ELECTRIC COOPERATIVE, INC.)	Case No.
TO IMPLEMENT A TIME OF DAY TARIFF FOR ITS)	2012-00154
SMART HOME PILOT PROGRAM)	

COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION
TO OWEN ELECTRIC COOPERATIVE, INC.

Owen Electric Cooperative, Inc. ("Owen"), pursuant to 807 KAR 5:001, is to file with the Commission the original and six copies of the following information, with a copy to all parties of record. The information requested herein is due within 10 days of the issuance of this request. Responses to requests for information shall be appropriately bound, tabbed and indexed. Each response shall include the name of the witness responsible for responding to the questions related to the information provided.

Each response shall be answered under oath or, for representatives of a public or private corporation or a partnership or association or a governmental agency, be accompanied by a signed certification of the preparer or the person supervising the preparation of the response on behalf of the entity that the response is true and accurate to the best of that person's knowledge, information, and belief formed after a reasonable inquiry.

Owen shall make timely amendment to any prior response if it obtains information which indicates that the response was incorrect when made or, though correct when made, is now incorrect in any material respect. For any request to which Owen fails or refuses to furnish all or part of the requested information, it shall provide a

written explanation of the specific grounds for its failure to completely and precisely respond.

Careful attention shall be given to copied material to ensure that it is legible. When the requested information has been previously provided in this proceeding in the requested format, reference may be made to the specific location of that information in responding to this request.

1. Owen's rates resulting from Case No. 2011-00037¹ were effective for service rendered on March 1, 2012. Has Owen determined the subsequent effect upon its revenue of the new rates for March or April 2012 for its residential and small commercial customers? Explain. Include all calculations and workpapers necessary to support your explanation.

2. Owen proposes its new Smart Home Time of Day ("Smart Home TOD") program as a pilot. Explain whether the pilot is either limited to a certain number of customers, or if it is to be limited to a set length of time.

3. Explain whether Owen has estimated the number of participants in the Smart Home TOD program, either initially or over time.

4. Explain whether Owen is confident that any erosion of revenue that could occur as a result of its Smart Home TOD program will be adequately tempered by Owen's rate design changes authorized in Case No. 2011-00037, or if decreased revenue could eventually cause rates to increase for all residential and small commercial customers.

¹ Case No. 2011-00037, Application of Owen Electric Cooperative Corporation for an Order Authorizing a Change in Rate Design for Its Residential and Small Commercial Rate Classes, and the Proffering of Several Optional Rate Designs for the Residential Rate Classes (Ky. PSC Feb. 29, 2012).

5. Is Owen's proposed Smart Home TOD rate designed to be bill-neutral if a customer takes no action in changing their energy consumption pattern? Explain.

6. a. Would Owen object to a reporting requirement on the results of its Smart Home TOD program if the program is approved?

b. If reporting is required, what frequency, format, and type of data would Owen recommend including in a report?

7. Explain why Owen proposes a two-year commitment for participation in the Smart Home TOD program.

8. Explain the development of the energy charge component of the Smart Home TOD rate. Include all calculations and workpapers necessary to support your response.

9. Owen's On-peak, Off-peak, and Shoulder hours differ from the On-peak and Off-peak hours of East Kentucky Power Cooperative, Inc. ("East Kentucky"), Owen's energy supplier. For example, Owen has a separate rate for Shoulder hours that East Kentucky does not have. Explain why the On-peak and Off-peak demand periods for a program designed to shift usage to periods of lower demand should not match the On-peak and Off-peak demand periods of its supplier.

10. In Case No. 2011-00037, the key components identified for the Smart Home TOD program were: 1) Smart thermostat; 2) Water heater control; 3) Smart appliances; 4) Smart switch; 5) Home management system consisting of display, communication system, meter and home software; 6) Host software; and 7) Third party interface. Provide a brief explanation of each component, including whether each component is still part of Owen's current proposal. If any component has been eliminated, or changed, explain why.

11. Explain whether vendors other than Tendril have been chosen for the hardware and software requirements for the Smart Home TOD program. Include in the explanation how the vendors were chosen, whether through an RFP or otherwise; and how the comparative costs were evaluated. Include all calculations and workpapers necessary to support your explanation.

12. Provide the cost to equip an individual home with the necessary software and hardware to participate in the Smart Home TOD program. When possible, list each item separately, including the cost of the item and estimated labor to install the item.

13. Confirm that the Smart Home TOD program is entirely voluntary and whether there is an initial cost for joining the program, or if a participant is responsible for separately covering any of the costs incurred for installation of the necessary hardware or software.

14. Explain whether there are any terms or conditions for participation in the Smart Home TOD program other than those set forth in Owen's Schedule 1-B4 Smart Home Pilot -- Time of Day tariff.

15. Refer to Item 3 in the Response to the Attorney General's Supplemental Data Request in Case No. 2011-00037² and Item 1 of Owen's Response to Information Request at Hearing filed with the Commission on May 3, 2012.

a. Identify who will host the data from the Smart Home Pilot Project and what steps have been taken to ensure the security of the data.

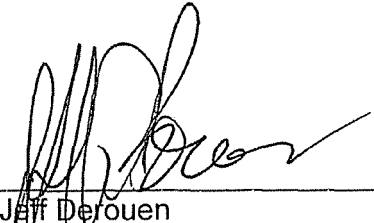
b. Explain how the Smart Home Pilot Project fits into Owen's long-term strategy for demand-side management and demand response programs.

² Id.

c. Explain why the total budget cost of the Smart Home Pilot Project has increased from \$490,000 to \$793,325. Include with the explanation a breakdown of the most recent projected budget.

d. Explain how Owen will pay for the \$361,663 for its share of the Smart Home TOD program.

e. Tendril Networks, Inc. has been selected as the vendor to provide services for the Smart Home program at a cost of \$793,325. Explain whether this is the total cost of the program. If there are other costs, provide the individual cost and an explanation of the reason for the cost.



Jeff Derouen
Executive Director
Public Service Commission
P.O. Box 615
Frankfort, KY 40602

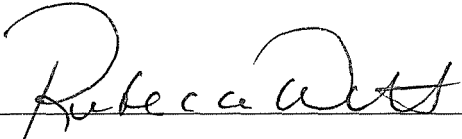
DATED **MAY 15 2012**

cc: Parties of Record

Case No. 2012-00154

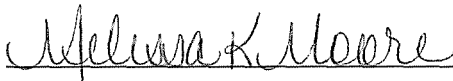
Mark Stallons
President
Owen Electric Cooperative, Inc.
8205 Highway 127 North
P. O. Box 400
venton, KY 40359

Affiant, Rebecca Witt, states that the answers given by her to the foregoing questions are true and correct to the best of her knowledge and belief.



Rebecca Witt


Subscribed and sworn to before me by the affiant, Rebecca Witt, this 25th
day of May, 2012.

Notary 

State-at-Large

My Commission expires April 14, 2015.

Affiant, Jim See, states that the answers given by him to the foregoing questions are true and correct to the best of his knowledge and belief.



Jim See

Subscribed and sworn to before me by the affiant, Mark A Stallons, this 25th day of May, 2012.

Notary Melissa K. Moore

State-at-Large

My Commission expires April 14, 2015.

Affiant, Mark A Stallons, states that the answers given by him to the foregoing questions are true and correct to the best of his knowledge and belief.



Mark A Stallons

Subscribed and sworn to before me by the affiant, Mark A Stallons, this 25th day of May, 2012.

Notary Melissa K Moore

State-at-Large

My Commission expires April 14, 2015.

Affiant, James Adkins, states that the answers given by him to the foregoing questions are true and correct to the best of his knowledge and belief.

James R. Adkins
James Adkins

Subscribed and sworn to before me by the affiant, James Adkins, this 25th
day of May, 2012.

Notary Melissa K. Moore
State-at-Large

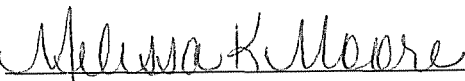
My Commission expires April 14, 2015.

Affiant, Michael Cobb, states that the answers given by him to the foregoing questions are true and correct to the best of his knowledge and belief.



Michael Cobb

Subscribed and sworn to before me by the affiant, Michael Cobb, this 25th day of May, 2012.

Notary 

State-at-Large

My Commission expires April 14, 2015.

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

Question:

Owen's rates resulting from Case No. 2011-00037 were effective for service rendered on March 1, 2012. Has Owen determined the subsequent effect upon its revenue of the new rates for March or April 2012 for its residential and small commercial customers? Explain. Include all calculations and workpapers necessary to support your explanation.

Response:

Owen Electric Cooperative (Owen) has calculated the impact of the new rate design on its revenue for 2012. The effect of the rate design change for the months of March and April 2012 is \$57,423.14. The months of March and April are typically low sales months, so a positive effect of the rate design change during those months would be expected. During periods of low sales, the increase in the customer charge would be expected to exceed the decrease in the energy charge. During periods of high sales, the opposite would be true as the decrease in energy rates would be greater than the increase in the customer charge. Owen expects that the total impact in a *normalized annual period* would be minimal, as was predicted in Case No 2011-00037. See attached document for the calculations referenced above.

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00037
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

OWEN ELECTRIC COOPERATIVE REVENUE ANALYSIS OF NEW RATE STRUCTURE

Customer Charge set at \$14.20

	MARCH 2012	APRIL 2012	Total
Residential Members Billed	55,235	55,205	110,440
Small Commercial Members Billed	2,237	2,023	4,260
Customer Charge Residential- \$11.30	\$624,155.50	\$623,816.50	\$1,247,972.00
Customer Charge Residential- \$14.20	\$784,337.00	\$783,911.00	\$1,568,248.00
Difference	\$160,181.50	\$160,094.50	\$320,276.00
Customer Charge Small Commercial- \$13.34	\$29,841.58	\$26,986.82	\$56,828.40
Customer Charge Small Commercial - \$17.23	\$38,543.51	\$34,856.29	\$73,399.80
Difference	\$8,701.93	\$7,969.47	\$16,571.40
Total Difference due to Customer Charge	\$168,883.43	\$167,963.97	\$336,847.40
Residential kWh Sales	56,075,293	44,939,830	101,015,123
Small Commercial kWh Sales	1,810,889	3,724,105	5,534,994
Energy Charge Residential - \$.08810	\$4,940,233.31	\$3,959,199.02	\$8,899,432.34
Energy Charge Residential - \$.08545	\$4,791,633.79	\$3,840,108.47	\$8,631,742.26
Difference	-\$148,599.53	-\$119,090.55	-\$267,690.08
Energy Charge Small Commercial - \$.08810	\$159,539.32	\$328,093.65	\$487,632.97
Energy Charge Small Commercial - \$.08598	\$155,700.24	\$320,198.55	\$475,898.78
Difference	-\$3,859.08	-\$7,895.10	-\$11,734.19
Total Difference due to Energy charge	-\$152,438.61	-\$126,985.65	-\$279,424.26
Total impact of rate change on current revenue	\$16,444.82	\$40,978.32	\$57,423.14

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

Question:

Owen proposes its new Smart Home Time of Day ("Smart Home TOD") program as a pilot. Explain whether the pilot is either limited to a certain number of customers, or if it is to be limited to a set length of time.

Response:

The pilot is limited at this time to 310 members (with one (1) additional application at Owen's HQ building to be used as a display) and is anticipated to run 2 years.

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

Question:

Explain whether Owen has estimated the number of participants in the Smart Home TOD program, either initially or over time.

Response:

The pilot is designed for 10 employee participants with full Home Area Network (HAN) including thermostat and hot water heater control, 100 low income members with full (HAN) including thermostat and hot water heater control, 100 non low income members with full HAN including thermostat and hot water heater control, and 100 members with HAN but no thermostat or water heater control.

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

Question:

Explain whether Owen is confident that any erosion of revenue that could occur as a result of its Smart Home TOD program will adequately be tempered by Owen's rate design changes authorized in Case No. 2011-00037, or if decreased revenue could eventually cause rates to increase for all residential and small commercial customers.

Response:

Owen is specifically requesting a customer charge of \$25 in order to mitigate any erosion of revenue that could occur as a result of the Smart Home TOD program. As stated in Case 2011-00037 our consumer related fixed expenses are roughly \$27 per member and if we include power related distribution losses the fixed cost exposure rises to \$36 per member. If variable energy sales do not adequately cover the remaining fixed expenses, as well as the variable East Kentucky Power Cooperative, Inc. (EKPC) power supply costs, then we may have to return to the PSC and request a revenue neutral revision in the Smart Home TOD rate where the customer charge would be increased with a corresponding decrease in the variable energy charge.

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

Question:

Is Owen's proposed Smart Home TOD rate designed to be bill-neutral if a customer takes no action in changing their energy consumption pattern? Explain.

Response:

The proposed Smart Home TOD rate is designed to be revenue neutral for the whole rate class. The average usage customer would see no change in their bill but those customers with less or greater than average usage would see a change in the monthly bill.

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

a. Question:

Would Owen object to a reporting requirement on the results of its Smart Home TOD program if the program is approved?

b. Question:

If reporting is required, what frequency, format, and type of data would Owen recommend including in a report?

Response:

Owen has no objection to reporting the results of its Smart Home TOD program, assuming it is approved. Owen would recommend an annual report consisting of an executive summary including energy and demand savings, total revenue, costs, and margins associated with the pilot groups. In addition Owen would attach all associated calculations and formulas used to calculate the above described information.

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

Question:

Explain why Owen proposes a two-year commitment for participation in the Smart Home TOD program.

Response:

The Smart Home Pilot Project is a part of Owen's approved Department of Energy (DOE) grant. The original DOE requirement is for this project to be operational by the end of 2012 with two years of data collection before the end of 2014. However, recently DOE revised the timeline to end on July 31, 2014.

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

Question:

Explain the development of the energy charge component of the Smart Home TOD rate. Include all calculations and workpapers necessary to support your response.

Response:

The development of the energy charges are presented on pages 2 through 4 of this response. Pages 2 and 3 contain the load data for Schedule A and page 4 provides the details dealing with the rate. These rates are based on the same test year for Owen as in Case No. 2011-00037. The first step was to determine the revenue from the current rates. The second step is to obtain the load data for the rate schedule and determine the desired on-peak, off-peak and should periods. The third step is to determine what the rates would be for the customer charge, the off-peak period and the shoulder period. Owen set the following rates for these periods at \$25.00, \$0.06, and \$.08 respectively. The fourth step was the determination of the on-peak energy rate by dividing the additional revenue needed from this rate by the on-peak energy. This rate comes out to \$0.16329 per kWh. As stated above, the details for this approach are provided on page 4. The customer charge rate was chosen so that most of the customer related costs are provided by the charge. The energy rates have been selected on the basis of judgment.

It should be noted that page 5 of this response is a new tariff sheet that contains the proper rates for this proposal. The original tariff had an error in the development of the proposed rates.

OWEN ELECTRIC COOPERATIVE
CASE NO. 2012-00154

RESPONSE TO COMMISSION STAFF REQUEST NO. 1

LOAD DATA FOR SCHEDULE A - FARM AND HOME

	May		June		July		August		September		Witness: Jim Adkins	Item No. 8 Page 3 of 5
	Weekday	WeekEnd	Weekday	WeekEnd	Weekday	WeekEnd	Weekday	WeekEnd	Weekday	WeekEnd		
1	878,971	441,259	1,241,113	483,080	1,227,108	432,141	1,182,275	577,595	984,853	375,325		
2	825,601	406,263	1,107,942	437,909	1,117,750	384,191	1,082,746	517,018	909,345	336,020		
3	808,692	392,320	1,037,305	404,972	1,051,060	363,382	1,028,370	486,488	895,439	325,575		
4	818,958	399,079	1,001,921	391,504	1,012,285	348,760	1,000,171	479,386	888,986	315,412		
5	941,023	400,802	1,055,631	386,448	1,056,844	349,710	1,058,508	459,611	989,354	318,971		
6	1,169,582	411,045	1,172,940	397,299	1,148,938	362,931	1,222,428	465,570	1,196,909	334,525		
7	1,270,718	494,140	1,272,753	439,527	1,255,314	405,202	1,289,037	516,905	1,274,879	381,127		
8	1,217,297	594,877	1,388,525	533,561	1,367,845	482,251	1,311,864	635,444	1,206,896	458,445		
9	1,180,928	672,885	1,505,522	607,728	1,502,428	533,821	1,409,108	745,574	1,237,900	521,738		
10	1,186,672	700,239	1,640,312	684,492	1,649,042	617,822	1,585,127	839,781	1,323,478	553,212		
11	1,222,252	740,184	1,800,383	739,585	1,822,554	663,946	1,738,155	920,063	1,420,613	578,914		
12	1,266,190	731,903	1,916,458	798,204	1,952,765	704,489	1,879,559	1,006,185	1,503,225	594,098		
13	1,289,763	729,795	2,004,764	832,595	2,057,418	718,180	2,022,798	1,045,041	1,569,839	629,283		
14	1,323,618	739,381	2,106,881	873,391	2,145,053	723,033	2,142,417	1,079,303	1,675,479	645,382		
15	1,426,066	751,082	2,226,511	913,091	2,265,724	727,086	2,284,183	1,140,763	1,775,543	673,335		
16	1,569,457	767,568	2,390,405	922,812	2,419,888	752,984	2,449,969	1,181,202	1,915,764	711,989		
17	1,615,863	801,027	2,420,858	944,185	2,445,624	771,478	2,514,092	1,197,457	1,988,287	738,813		
18	1,603,583	816,025	2,409,798	950,397	2,437,148	776,270	2,480,508	1,183,909	1,976,860	728,399		
19	1,602,260	756,493	2,345,591	907,639	2,372,365	740,267	2,401,463	1,128,520	1,984,165	698,374		
20	1,588,233	769,542	2,195,850	859,608	2,231,589	697,519	2,288,845	1,072,884	1,998,719	666,471		
21	1,621,744	783,255	2,166,705	822,333	2,166,753	685,320	2,219,371	1,031,456	1,915,297	635,777		
22	1,497,987	730,666	2,020,516	784,774	2,011,902	630,217	1,938,774	907,688	1,631,661	570,030		
23	1,216,072	614,051	1,704,485	656,072	1,706,250	556,270	1,611,423	790,462	1,341,282	484,302		
24	1,036,118	519,436	1,446,418	547,217	1,427,971	462,003	1,345,635	652,974	1,125,203	399,903		

RESPONSE TO COMMISSION STAFF'S FIRST DATA REQUEST
PROPOSED SMART HOME RATE

Revenue from current rates			
	Customer Charge	Energy Rate	
Rates	\$ 14.20	\$ 0.09	
Billing Units	\$ 648,908	\$ 710,449,061	
	\$ 9,214,494	\$ 60,707,872	
Total		\$ 69,922,366	

Development of Proposed Rates - Smart Home			
	Rate	Units	Revenue
Customer Charge	\$ 25.00	648,908	\$ 16,222,700
Off-peak Energy	0.06000	477,783,602	\$ 28,667,016
Shoulder Energy	0.08000	155,595,795	\$ 12,447,664
Total Revenue			\$ 57,337,380
Total Energy		633,379,397	
On-peak Revenue Requirements			\$ 12,584,986
On-peak Energy			77,069,664
On peak Energy Rate			0.16329

Proposed Smart Home Rates	
Customer Charge	\$ 25.00
On-peak Energy Charge per kWh	\$ 0.16329
Off-peak Energy Charge per kWh	\$ 0.06000
Shoulder Energy Rate per kWh	\$ 0.08000

FOR Entire Territory Served
Community, Town or City
P.S.C. KY. NO. 6

Original SHEET NO. 23D

CANCELING P.S.C. KY. NO. _____

_____ SHEET NO. _____

Owen Electric Cooperative, Inc.

(Name of Utility)

CLASSIFICATION OF SERVICE

SCHEDULE 1-B4 – SMART HOME PILOT - TIME OF DAY

(N)

- A. Applicable – to the entire territory served.
- B. Available – to all consumers eligible for Schedule I–Farm and Home participating in Owen Electric’s Smart Home Pilot Program. Participation will be limited to those residential members residing in single family homes with high speed internet access, air conditioning/electric heat, electric water heating, and who use on average 1,100 kWh of energy or more each month. Two year minimum commitment required.
- C. Type of Service – Single Phase, 60 cycle, 120/240 volt.
- D. Rate

Customer Charge (no usage)	\$25.00 per meter, per month
Energy Charge per kWh	
On-Peak Energy	\$0.16329
Off-Peak Energy	\$0.06000
Shoulder	\$0.08000

E. Schedule of Hours

On-Peak and Off-Peak Hours

Months	Days (5 days a week)	On-Peak Hours	Off-Peak Hours	Shoulder Hours
May thru September	Monday thru Friday	4:00 p.m. to 7:00 p.m.	9:00 p.m. to 12:00 noon	12:00 noon to 4:00 p.m.
				7:00 p.m. to 9:00 p.m.
October thru April	Monday thru Friday	7:00 a.m. to 10:00 a.m.	10:00 a.m. to 5:00 p.m.	5:00 p.m. to 10:00 p.m.
			10:00 p.m. to 6:00 a.m.	6:00 a.m. to 7:00 a.m.

F. Terms of Payment – the above rates are net, the gross being five percent (5%) higher. In the event the current monthly bill is not paid within fifteen days from the date the bill was rendered, the prompt payment discount will be forfeited and the gross amount shall apply.

The monthly kilowatt hour usage shall be subject to plus or minus an adjustment per kWh determined in accordance with the Fuel Adjustment Clause.

The tariff is subject to the Energy Emergency Control Program as filed with the Kentucky Energy Regulatory Commission (now the Public Service Commission) on February 23, 1981, in Administrative Case No. 240, and as approved by the Commission Order of March 31, 1981.

DATE OF ISSUE April 17, 2012
Month / Date / Year

DATE EFFECTIVE Service rendered on and after June 1, 2012
Month / Date / Year

ISSUED BY _____
(Signature of Officer)

TITLE President /CEO

BY AUTHORITY OF ORDER OF THE PUBLIC SERVICE COMMISSION
IN CASE NO. _____ DATED _____

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

Question:

Owen's On-peak, Off-peak, and Shoulder hours differ from the On-peak and Off-peak hours of East Kentucky Power Cooperative, Inc. ("East Kentucky"), Owen's energy supplier. For example, Owen has a separate rate for Shoulder hours that East Kentucky does not have. Explain why the on-peak and Off-peak demand periods for a program designed to shift usage to periods of lower demand should not match the On-peak and Off-peak demand periods of its supplier.

Response:

Owen has selected hours that differ from EKPC's on-peak and off-peak periods for several reasons. One, Owen evaluated its peak, off-peak, and shoulder periods based on Owen's Schedule A. Second, Owen has evaluated EKPC's on and off-peak periods with primary emphasis on the timing of EKPC's monthly coincident peak ("CP"). And third, Owen wished to include hours that would make the program more attractive for its members to choose. EKPC's on-peak hours, which include weekends, cover a long period of time and do not attract participation by Owen's members.

It should be noted that Owen's proposed peak hours and shoulder hours do cover most of EKPC's on-peak hours for weekdays. Owen's peak hours also covers EKPC's monthly fifteen minute billing CP interval for the recent years that were reviewed.

OWEN ELECTRIC COOPERATIVE
CASE NO 2012-00154
RESPONSE TO COMMISSION STAFF'S FIRST INFORMATION REQUEST

Question:

In Case No. 2011-00037, the key components identified for the Smart Home TOD program were: 1) Smart thermostat; 2) Water heater control; 3) Smart appliances; 4) Smart switch; 5) Home management system consisting of display, communication system, meter and home software; 6) Host software; and 7) Third party interface. Provide a brief explanation of each component, including whether each component is still part of Owen's current proposal. If any component has been eliminated, or changed, explain why.

Response:

The components of the Smart Home TOD pilot project are:

- a. Dual meter socket – to accommodate two meters on the home. Two meters are required since there is no ZigBee capable meter available for the Cooper power line carrier AMI system Owen currently uses.
- b. ERT meter – This is the second meter required to send meter data to the Home Area Network (HAN) system. As noted above, this additional meter is required because the vendor utilized by Owen does not currently have a meter with the capability to transmit to the HAN system.
- c. Tendril Translate – converts the ERT meter data to ZigBee, (the communication format for the HAN system), and transfers the data to the Tendril Transport device.
- d. Tendril Transport – the hardware and software, or the brains, of the HAN with an internet link to the web site where the energy management interface resides.
- e. Host Software – Software as a Service (SaaS) hosted by Tendril where the members' data resides, and includes an Owen branded website which is available to members and Owen staff. The website contains all of the calculations and analytical tools that can be viewed by the members and used by Owen to analyze the data and create reports. This website is accessible to the member on their personal computer and also through their smart phone.

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- f. Display – Not included to save on the cost of the system and because the data is available on the members' personal computer and on their smart phone.
- g. Tendril Set Point thermostat – programmable thermostat, which may be programmed either locally or remotely by computer or smart phone.
- h. Tendril Load control switch – 240 volt hard wired HAN controlled and monitored switch to control the hot water heater.
- i. ThinkEco Modlet SE - 120 volt 15 amp outlet plug that the HAN system can control and monitor. Only 10 of these are being deployed initially for evaluation and possible use in low income homes for window air conditioners.
- j. Smart Appliances – excluded due to cost constraints.

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Question:

Explain whether vendors other than Tendril have been chosen for the hardware and software requirements for the Smart Home TOD program. Include in the explanation how the vendors were chosen, whether through an RFP or otherwise; and how the comparative costs were evaluated. Include all calculations and workpapers necessary to support your explanation.

Response:

Tendril was the only vendor selected for the Smart Home TOD program.

The program started off with an RFP developed between Owen and Power System Engineering (PSE), who is NRECA's consultant for this project. At the same time we developed a potential vendor list of 13 companies. The RFP was sent to all 13 companies which resulted in 8 bids. The eight were initially evaluated on capability, pilot cost and deployment cost. Through the RFP process, we learned a lot and the scope of the work continued to be modified. One of the primary things we learned was that Software as a Service (SaaS) hosted by a third party vendor is more effective than hosting the systems at Owen. The vendor has the skills, the security, the resources, and it is more economical for the vendor to provide that service. From the initial assessment we developed a list of questions and held webinars with each of the vendors to address those questions, and to answer any particular questions from their bid. During that process we were able to eliminate four bidders. One of the eliminated vendors was a cell system company whose coverage was not reliable in Owen's territory, one was too expensive for the SaaS monthly fee, one did not have all the capabilities the RFP required, and two companies worked together but supplied separate bids so we eliminated one.

Owen then developed an addendum to the RFP that would allow us to make more accurate comparisons and held half day on-site meetings with each of the remaining four vendors. It was determined that all four vendors were capable of doing the project so the next goal was to determine which would be the best for a deployment at Owen. After these meetings Owen made reference calls on all four vendors to evaluate customer satisfaction

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and deployment experience. Two vendors were eliminated at this point due to either bad references and/or lack of experience, even though their bids were lower. The remaining two bidders were very close. We chose the final vendor due to their excellent experience and capability in all areas including software, member engagement, recruitment, measurement and verification, deployment skills, and past project experience.

See attached document for bid comparisons for final four vendors. Note that bid selection was made based upon the initial scope of work and the RFP (provided to the Commission as a Post Hearing Data Request Item in Case No 2011-00037). Subsequent to awarding the bid, the project's scope of work was expanded. See response to item No.15c for further explanation of the increase in cost of the project over its original estimate.

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Owen Electric Cooperative
Home Energy Management RFP Response Estimated Normalized Costs Summary
 NRECA Demonstration Project

Important: Please see detailed spreadsheets for assumptions used in cost normalizations.

200 Subscribers - DOE Grant Workplan Quantity - 2 Year Demonstration Cost			
	A	B	C
Estimated Upfront Cost	\$ 311 k	\$ 303 k	\$ 309 k
Estimated Yearly Cost	\$ 84 k	\$ 7 k	\$ 62 k
Total Estimated Upfront Cost Plus 2 Year Capitalization of Recurring Fees	\$ 469 k	\$ 317 k	\$ 427 k
			Tendrill
			\$ 538 k
			\$ 0 k

5000 Subscribers - Full Deployment Quantity - Cost Over 15 Year Life of System			
	A	B	C
Estimated Upfront Cost	\$ 4.6 M	\$ 4.2 M	\$ 4.3 M
Estimated Yearly Cost	\$ 0.1 M	\$ 0.1 M	\$ 0.1 M
Total Estimated Upfront Cost Plus 15 Year Capitalization of Recurring Fees	\$ 5.7 M	\$ 5.4 M	\$ 5.8 M
			Tendrill
			\$ 4.1 M
			\$ 0 M

Assumptions for Cost Analysis

Escalation Rate	3.00%
Interest Rate	5.00%

Capitalization is equal to Net Present Value over time period
 Fixed rate escalation and interest

* Tendrill did not provide this data on original bid proposal

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Question:

Provide the cost to equip an individual home with the necessary software and hardware to participate in the Smart Home TOD program. When possible, list each item separately, including the cost of the item and estimated labor to install the item.

Response:

	Smart Home Pilot Components	100 HAN only	211 HAN plus Thermostat and Hot Water Control
a	Dual Meter Socket- Estimated average cost	\$100	\$100
b	ERT Meter - (Owen was able to find used devices)	\$15	\$15
c	Installation of ERT Meter and Meter Socket	\$50	\$50
d	Tendril Translate	\$135	\$135
e	Tendril Transport	\$135	\$135
f	Tendril Set Point Thermostat		\$135
g	Tendril Hot Water Heater Control		\$135
h	Installation of Tendril Translate and Tendril Transport	\$157	
i	Installation of Tendril Translate, Tendril Transport, Thermostat, Water Heater Control		\$400
	Total Installation cost per home	<u>\$592</u>	<u>\$1,105</u>

Additional costs of \$95 per ThinkEco Modlet SE unit will be incurred as needed for the purchase of these items. Also, there is a Software as a Service (SaaS) fee of \$11.76 per month per home for the software service during the pilot project. If Owen decides to implement a full deployment of this system, the SaaS fee will be reduced based upon the number of participants, and is currently expected to be approximately \$3.66 per month per home.

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Items a, b, c, and d listed above are expected to be eliminated if Owen decides to implement a full deployment of the project, as these components will be incorporated into a smart meter being developed by Owen's AMI power line carrier provider.

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Question:

Confirm that the Smart Home TOD program is entirely voluntary and whether there is an initial cost for joining the program, or if a participant is responsible for separately covering any of the costs incurred for installation of the necessary hardware or software.

Response:

Owen's Smart Home pilot is an entirely voluntary program that members may elect to participate in. Members will not incur any additional costs for joining or participating in the smart home pilot program.

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Question:

Explain whether there are any terms or conditions for participation in the Smart Home TOD program other than those set forth in Owen's Schedule 1-B4 Smart Home Pilot – Time of Day Tariff.

Response:

For the sake of the Smart Home TOD pilot program, participation will be limited to those residential members residing in single family homes with high speed internet access, air conditioning/electric heat, electric water heating, and who use on average 1,100 kWh of energy or more each month. The revised tariff, included in Item 8, page 5 of 5, has been edited to include all terms and conditions for participation in the pilot.

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Refer to Item 3 in the Response to the Attorney General's Supplemental Data Request in Case No. 2011-00037 and Item 1 of Owen's Response to Information Request at Hearing filed with the Commission on May 3, 2012.

a. Question:

Identify who will host the data from the Smart Home Pilot Project and what steps have been taken to ensure the security of the data.

a. Response: (Jim See, Witness)

Tendril will host the data for the Smart Home Pilot Project. The steps taken to ensure data security are:

1. Confidentiality agreement in contract
2. Secure FTP website setup to ensure data encryption during transfer.
3. Inserted below is information from "Tendril Platform, Architecture and Security Overview"

Security

The increased complexity of Smart Grid technologies and operations require solutions that are secure and reliable on every level. Since inception, Tendril has been committed to incorporating strong cyber security protection measures into its platform. Tendril has adopted an approach to cyber security based on well-known industry standards and best practices. In addition, security best practices are included throughout Tendril's software development life cycle. Tendril actively participates in several open alliances and work groups in an effort to adopt and advance cyber security solutions throughout the Smart Grid space, including the Cyber Security Coordination Task Group (CSCTG), the UCalug Smart Grid Security (SG Security) and the Open Web Application Security Project (OWASP). A risk management approach based on NIST SP 800-30 has been used to identify, classify, and analyze relevant threats and vulnerabilities. Tendril uses a qualified third-party to perform periodic external vulnerability assessments of its infrastructure and network services. Tendril also performs an end-to-end system security profile analysis, including (but not limited to) reviews of architecture, operating procedures, deployment and hardening process, audit and event management, packet traces, and patch management.

Security Standards

Tendril incorporates the following standards throughout the product life-cycle:

- NIST IR 7628 – DRAFT Smart Grid Cyber Security Strategy and Requirements! !

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- ASAP-SG AMI Security Profile – Profile for securing Advanced Metering Infrastructure (AMI)
- AMI-SEC System Security Requirements – Advanced Metering Infrastructure (AMI) and Smart Grid end-to-end security
- NIST Special Publication (SP) 800-30 – Risk Management Guide for Information Technology Systems
- NIST Special Publication (SP) 800-53 – Recommended Security Controls for US Federal Information Systems and Organizations
- OpenHAN – Home Area Network (HAN) device communication, measurement, and control (includes security use cases)
- ZigBee Smart Energy Profile – Home Area Network (HAN) Device Communications and Information Model
- Open Web Application Security Project (OWASP) – Worldwide free and open community focused on improving the security of application software

Physical Security

Physical security is provided by a SAS 70 Type II certified co-location partner and includes 24-hour manned security, biometric access control, video surveillance, and physical locks.

Network Security

Tendril employs multiple layers of commercial firewalls to build a layered defense to external network attacks. Tendril utilizes a default deny firewall rule-set. Only the minimum required services are allowed access. All computing and network resources are continuously monitored for service availability as well as resource constraints.

Server Security

- Tendril maintains the system in a secure and hardened configuration in the Tendril data center.
- All production servers have been hardened with the Bastille Linux hardening scripts.
- All unnecessary services and software have been removed.
- All production servers are registered with our patch management system.
- All operating system and application patches are tracked and audited.
- All user accounts are controlled by a centralized account management system based on LDAP. Each user is given a unique username and password that allows them access to the resources that they require.

Virtual Security

Tendril uses a virtualization server infrastructure. Remote access to all physical servers is restricted to Tendril NOC personnel and requires the use of a specific admin virtual private network (VPN).

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Application Security

Tendril supports communications to several entities, including to home area networks (HANs) using both AMI network and broadband, integration with AMI Head-End, MDMS and CIS systems and other 3rd-party applications and data stores and has implemented comprehensive application security model to support all communication channels.

Communications from the home to the Tendril Connect Platform servers over broadband are secured using two-way SSL/TLS encrypted communications, ensuring integrity, confidentiality, and authentication of all data in transit. Role based access control provides deeper security. While back-office- file-based interfaces are secured using SSH File Transfer Protocol (SFTP). In addition, application data access from portals and mobile applications occurs over

HTTPS and all application data access is authenticated. Communication between Tendril Connect Platform and AMI Head-End typically follow SOA-based integration patterns and leverages these means of security.

Home Area Network Security

ZigBee enabled smart-meters are adopting Elliptical Curve Cryptography (ECC) at brisk pace. Tendril's Smart Energy certified devices are ECC enabled, ensuring secure data transmissions within the Home Area Network and meter.

Data Security

Customer-specific network security zones and servers are utilized to ensure system segregation. Application security encrypts sensitive data at rest. All backups are stored using AES-256 encryption.

Organizational Security

Tendril utilizes a least privilege-required system of access permissions. Personnel are only given as much access as is required for them to do their duties.

Security in the Cloud

As a leader in the field, Tendril offers a best-in-class platform for managing Demand-Side Smart Grid deployments. As a trusted third party between the consumer and utility, Tendril as a Cloud provider serves as an intermediary in matters of privacy and data ownership. Tendril in this way is a type of escrow agent, alleviating sources of conflict between utilities and consumers. There are a number of benefits to data privacy and ownership that are availed through leveraging Tendril's cloud solution.

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b. Question:

Explain how the Smart Home Pilot Project fits into Owen's long-term strategy for demand-side management and demand response programs.

b. Response: (Mark Stallons, Witness)

The Smart Home Pilot Program is one of several board approved strategic plan initiatives designed to provide members with tools to manage their energy use. The pilot is necessary to measure energy savings, demand savings, technology readiness, program cost, consumer acceptance, and ultimately financial feasibility of said technology and associated rate incentive strategy. Additional Action items in the developmental pipeline include Pre-Pay Metering & Kentucky How Smart programs.

c. Question:

Explain why the total budget cost of the Smart Home Pilot Project has increased from \$490,000 to \$793,325. Include with the explanation a breakdown of the most recent projected budget.

c. Response: (Jim See, Witness)

Owen's initial Smart Home project was to be overseen by Owen and had 100 homes with displays, programmable thermostats, hot water switches, member home management software, and smart appliances. Enrollment, deployment, and support were not defined but input was requested from the vendors. There was also a proof of concept phase, a phase one of 5 to 10 homes then the pilot of 100 homes. Since this technology was so new, Owen's approach, working with our expert consultant PSE, was to give flexibility to our vendors so we could evaluate their approach as well as the vendors themselves.

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Through the long evaluation process explained in question 11, Owen Electric along with PSE assistance, enhanced the Smart Home pilot to be SaaS hosted, having 311 installations (three 100 member test groups, 10 employees and one for demo for HQ and training), Tendril will do all the marketing, deployment, analysis and Tier 1, 2 and 3 support.

East Kentucky Power Cooperative (EKPC), Owen's power supplier, suggested that Owen add a low income initiative of 100 additional homes, and agreed to contribute \$70,000 to the cost of the project. After review, Owen accepted the EKPC proposal and incorporated it into the final scope of work.

Cost breakdown:

1. Project Management Services - \$180,685
2. Marketing Consulting and enrollment services - \$80,325
3. Member Surveys - \$15,000
4. Web Portal Branding - \$11,500
5. Software platform setup - \$85,000
6. HW warranty and shipping - \$5,665
7. SaaS - \$109,710
8. Tier -1 Support - \$51,450
9. HAN installations – \$112,100
10. Hardware - \$141,890

d. Question:

Explain how Owen will pay for the \$361,663 for its share of the Smart Home TOD program.

d. Response: (Mark Stallons, Witness)

Owen will fund its share of the Smart Home TOD program through revenue generated by ongoing operations.

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e. Question:

Tendril Networks, Inc. has been selected as the vendor to provide services for the Smart Home program at a cost of \$793,325. Explain whether this is the total cost of the program. If there are other costs, provide the individual cost and an explanation of the reason for the cost.

e. Response: (Jim See, Witness)

The Statement of Work (SOW) with Tendril is a fixed price. In a project of this scope, complexity, and due to the infancy of the technology, Owen fully expects changes in the scope of work to occur. The change order process, built into the contract, will address any additional costs relating to scope changes in the project. At this time it is not possible to identify what those changes in scope might entail.