


KYPSC CASE NO. 2019-00277
STAFF 1st SET DATA REQUESTS
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VERIFICATION

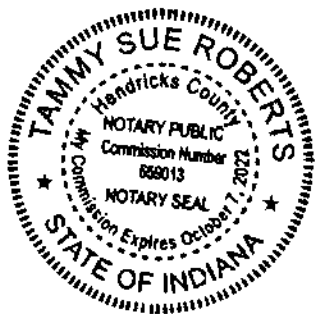
STATE OF INDIANA)
) **SS:**
COUNTY OF HENDRICKS)

The undersigned, Julie A. Hollingsworth, Sr. Program Performance Analyst, being duly sworn, deposes and says that she has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of her knowledge, information and belief.



Julie A. Hollingsworth., Affiant

Subscribed and sworn to before me by Julie A. Hollingsworth. on this 21st day of October, 2019.





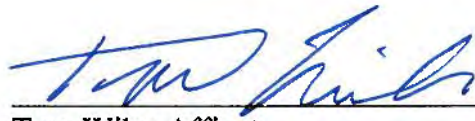
NOTARY PUBLIC

My Commission Expires: 10/7/2022

VERIFICATION

STATE OF OHIO)
)
COUNTY OF HAMILTON) **SS:**

The undersigned, Tom Wiles, Director Analysis, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the data request and that it is true and correct to the best of his knowledge, information and belief.



Tom Wiles Affiant

Subscribed and sworn to before me by Tom Wiles on this 24th day of October, 2019.



NOTARY PUBLIC

My Commission Expires: July 8, 2022



E. MINNA ROLFES-ADKINS
Notary Public, State of Ohio
My Commission Expires
July 8, 2022

VERIFICATION

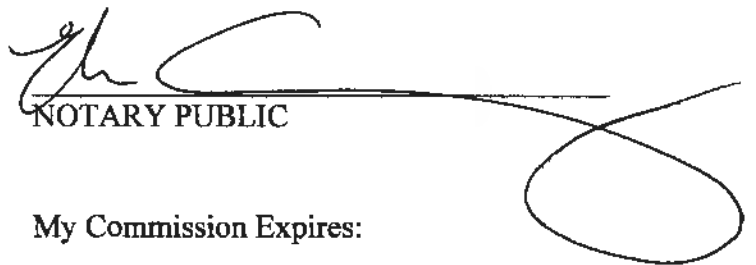
STATE OF NORTH CAROLINA)
)
COUNTY OF MECKLENBURG) **SS:**

The undersigned, Nate Lewis, Senior Products & Services Manager, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.



Nate Lewis Affiant

Subscribed and sworn to before me by Nate Lewis on this 16 day of Oct., 2019.



NOTARY PUBLIC

My Commission Expires:

COMMISSION EXPIRES SEPTEMBER 18, 2022



VERIFICATION

STATE OF NORTH CAROLINA)
)
) SS:
COUNTY OF)

The undersigned, Mark Otersen, Sr. Products and Services Manager, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.


Mark Otersen Affiant

Subscribed and sworn to before me by Mark Otersen on this 19 day of October, 2019.


NOTARY PUBLIC

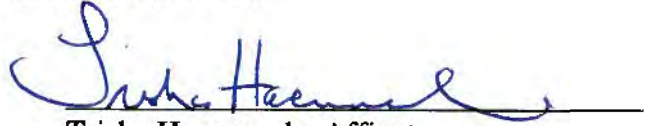
TAMMY R HATCH
NOTARY PUBLIC
WAKE COUNTY, NC

My Commission Expires: 2/27/2023

VERIFICATION

STATE OF OHIO)
) **SS:**
COUNTY OF HAMILTON)

The undersigned, Trisha Haemmerle, Senior Strategy & Collaboration Manager, being duly sworn, deposes and says that she has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of her knowledge, information and belief.


Trisha Haemmerle, Affiant

Subscribed and sworn to before me by Trisha Haemmerle on this 15th day of October, 2019.


NOTARY PUBLIC

My Commission Expires: July 8, 2022



E. MINNA ROLFES-ADKINS
Notary Public, State of Ohio
My Commission Expires
July 8, 2022

VERIFICATION

STATE OF OHIO)
)
COUNTY OF HAMILTON) **SS:**

The undersigned, Bruce L. Sailors, Pricing and Regulatory Solutions Manager, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing post-hearing data requests and that the answers contained therein are true and correct to the best of his knowledge, information and belief.

Bruce L. Sailors
Bruce L. Sailors, Affiant

Subscribed and sworn to before me by Bruce L. Sailors, on this 14TH day of OCTOBER, 2019.



ADELE M. FRISCH
Notary Public, State of Ohio
My Commission Expires 01-05-2024

Adele M. Frisch
NOTARY PUBLIC

My Commission Expires: 1/5/2024

VERIFICATION

STATE OF OHIO)
) **SS:**
COUNTY OF HAMILTON)

The undersigned, Rose Stoeckle, Manager DSM Analytics being duly sworn, deposes and says that she has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of her knowledge, information and belief.

Rose Stoeckle
Rose Stoeckle, Affiant

Subscribed and sworn to before me by Rose Stoeckle on this 11TH day of OCTOBER, 2019.



ADELE M. FRISCH
Notary Public, State of Ohio
My Commission Expires 01-05-2024

Adele M. Frisch
NOTARY PUBLIC

My Commission Expires: 1/5/2024

**Duke Energy Kentucky
Case No. 2019-00277
Staff First Set Data Requests
Date Received: October 10, 2019**

STAFF-DR-01-001

REQUEST:

Refer to the application, paragraph 6. Provide the comments about Duke Kentucky's proposed changes received from the Residential Collaborative and the Commercial and Industrial Collaborative.

RESPONSE:

An email was sent to collaborative members on August 7, 2019 requesting feedback on the proposed requests within the filing. Duke Energy Kentucky did not receive any feedback from collaborative members.

PERSON RESPONSIBLE: Trish Haemmerle

Duke Energy Kentucky
Case No. 2019-00277
Staff First Set Data Requests
Date Received: October 10, 2019

STAFF-DR-01-002

REQUEST:

Refer to the application, paragraph 7.

- a. Provide the annual projected purchases for each additional product.
- b. Provide cost-effective scores for each additional product.

RESPONSE:

a.

<u>Measure (units/qty)</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Energy Star smart Wi-Fi thermostats	358	573	1003
Energy Star Advanced power strips	14	18	23
Water conservation products	9	12	15
Energy Star Air Purifiers	2	4	6
Energy Star Dehumidifiers	2	4	6
LED lighting fixtures	182	365	483

- b. The attached spreadsheet STAFF-DR-01-002(b) Attachment contains the cost effectiveness for each of the measures assuming that the measure would be installed in 2020. Please note that the scores do not include any allocation of the fixed costs or company overhead associated with the Smart Saver® program because the addition of these measures into the program is not expected to result in any additional program-level fixed costs or company overhead. The results are based on the variable costs to implement each measure along with the incentives and participant costs for each measure.

PERSON RESPONSIBLE: Candyce Marsh – a.
Tom Wiles – b.

Measure Name	UCT	TRC	RIM	Participant
Marketplace LED Fixtures Portable	6.99	1.49	0.91	2.62
Marketplace Smart Strips	1.69	0.25	0.59	0.54
Marketplace Dehumidifier	3.28	2.17	0.91	3.49
Marketplace Thermostatic Valve Device	26.06	2.05	1.41	2.29
Marketplace Showerhead	99.04	8.37	1.47	9.25
Marketplace Photocell Outdoor Lights Fixtures	7.64	4.98	0.60	14.71
Marketplace Smart Thermostats	83.62	1.42	0.79	2.81
Marketplace LED Fixtures Direct Wire	12.36	1.19	0.96	1.93
Marketplace Air Purifier	3.82	2.49	0.81	4.55

STAFF-DR-01-003

REQUEST:

Refer to the application, paragraph 8.

- a. Regarding the My Home Energy Report (MyHER) Program, provide the number of households that have opted in.
- b. Provide an explanation for Duke Kentucky's planned expansion of the MyHER Program.
- c. Explain how an expansion of the scope of the MyHER Program will reduce the budget.

RESPONSE:

- a. 3,529 households had enrolled in the My Home Energy Report program as of September 26, 2019.
- b. In 2019, we will be expanding the My Home Energy Report program to also be offered through the Duke Energy Mobile App. This channel will allow current participants in the program to see their usage comparison, usage breakdown as well as energy efficiency tips on the mobile app. It will also offer an additional marketing channel for customers to enroll in the program if they are eligible.
- c. Enabling customers to enroll in the program through the Duke Energy App will reduce the marketing budget that would have otherwise been required with the new opt-in design to obtain new participants through direct mail or email.

PERSON RESPONSIBLE: Tara Bolen

STAFF-DR-01-004

REQUEST:

Refer to the application, paragraph 9.

- a. Provide all reports and studies that support the addition or modification of the additional 38 Food Service technologies.
- b. For each Food Service technology, provide the cost-effectiveness test result.

RESPONSE:

- a. On 1/8/2018, Duke Energy Kentucky filed a DSM application, Case No. 2018-00009. Here, Duke Energy Kentucky proposed updates to the 2017- 2018 fiscal year Non-Residential Smart Saver Prescriptive Program. These updates included the implementation of a reservation system, an increase in the fiscal year budget, the removal of several measures from the program, and incentive adjustments.

On 2/14/2018 the Kentucky Public Service Commission ordered Duke Energy Kentucky to suspend DSM/energy efficiency programs while it evaluated the future value and benefit of these programs.

On 9/13/18, the Kentucky PSC issued an Order for Case No. 2017-00427, which among other things, approved the continuation of the Non-Residential Smart Saver Prescriptive Program with the updates and program modifications mentioned above. This Order included fiscal year spending caps on Duke Energy Kentucky's energy efficiency programs that limits the amount of fiscal year program funding available.

The 38 food service technologies in question are not new measures being added/modified, but instead we are asking to reintroduce these measures that were removed as a result of the Order above. Duke Energy Kentucky is now confident that we will be able to offer the measures that were previously removed under the new fiscal year spending caps due to program participation volume currently being at much lower levels than were experienced prior to the program suspension.

With these being existing measures previously offered, they were evaluated by Opinion Dynamics in the most recent Duke Energy Kentucky EMV report (finalized in July 19) which covered 1/1/16 – 12/31/18 in Duke Energy Kentucky. The EMV report and the accompanying deemed savings review and DSMore table from Opinion Dynamics are attached, which includes the food service measures. Please see STAFF-DR-01-004(a) Attachments 1 – 3 for the studies mentioned.

- b. The attached spreadsheet STAFF-DR-001-04(b) Attachment contains the cost effectiveness for each of the 38 Food Service measures assuming that the measure would be installed in 2020. Please note that the scores below do not include any allocation of the fixed costs or company overhead associated with the Non-Residential Prescriptive program because the re-introduction of these measures into the program is not expected to result in any additional program-level fixed costs or company overhead. The results below are based on the variable costs to implement each measure along with the incentives and participant costs for each measure.

PERSON RESPONSIBLE: Nate Lewis – a.
Tom Wiles – b.

Measure Name	ProdCode	State	EM&V Annual kWh Gross w/o losses	Annual non-coincident kW w/o losses	EM&V Saved Summer Coincident kW w/o losses	EM&V Saved Winter Coincident kW w/o losses	Unit of Measure	Combined Free Rider % - Spillover%	New or Updated Lighting Logger Load/ savings shape included in report (yes/no)	Measure Life	SRC_PGM		
											MEAS_ID	MEAS_ID	Notes
High Efficiency Pumps 2HP	NRP&M	KY	402.82001	0.10946	0.0850	0.0850	per pump	18.21%		15	2133	493	
High Efficiency Pumps 20HP	NRP&M	KY	4,028.20011	1.09464	0.8541	0.8541	per pump	18.21%		15	2134	494	
High Efficiency Pumps 3HP	NRP&M	KY	604.23002	0.16420	0.1279	0.1279	per pump	18.21%		15	2136	496	
High Efficiency Pumps 5HP	NRP&M	KY	1,007.05003	0.27366	0.2137	0.2137	per pump	18.21%		15	2138	498	
Anti-sweat Heater Controls	NRFS	KY	1,673.97248	0.26798	-	0.0981	per door	18.21%		12	2163	292	
Combination Oven (90 lbs_hr)	NRFS	KY	18,431.30233	3.66174	3.5347	-	per oven	18.21%		12	2168	531	
Compact Fluorescent Fixture	NRLTG	KY	385.99199	0.10185	0.0785	0.0785	per fixture (ballast + bulb)	12.06%		12	2169	532	
Compact Fluorescent Screw in	NRLTG	KY	150.61295	0.03979	0.0306	-	per bulb (cfl)	12.06%		2	2170	533	
Convection Oven	NRFS	KY	2,261.91417	0.51644	0.4338	-	per oven	18.21%		12	2171	309	
High Bay 2L T-5 High Output	NRLTG	KY	326.99322	0.08628	0.0670	0.0670	per fixture (ballast + bulb)	12.06%		12	2179	317	
High Bay 6L T-5 High Output	NRLTG	KY	486.40849	0.12834	0.0989	0.0989	per fixture (ballast + bulb)	12.06%		12	2181	320	
High Bay TB 4ft Fluorescent 4 Lamp (F32 Watt TB)	NRLTG	KY	654.60581	0.17272	0.1331	0.1331	per fixture (ballast + bulb)	12.06%		12	2185	322	
High Bay TB 4ft Fluorescent 8 Lamp (F32 Watt TB)	NRLTG	KY	1,054.64270	0.27828	0.2144	0.2144	per fixture (ballast + bulb)	12.06%		12	2186	323	
Holding Cabinet Full Size Insulated	NRLTG	KY	709.20001	0.18713	0.1441	0.1441	per fixture (ballast + bulb)	12.06%		12	2187	325	
Holding Cabinet Half Size Insulated	NRFS	KY	5,259.49091	0.96000	0.8064	0.8064	per unit (cabinet)	18.21%		12	2188	327	
Ice maker (100 to 500 lbs_day)	NRFS	KY	1,797.19286	0.32804	0.2755	0.2755	per unit (cabinet)	18.21%		12	2189	328	
Ice maker (Greater Than 1000 lbs_day)	NRFS	KY	564.44078	0.06439	0.0644	0.0644	per ice maker	18.21%		10	2203	348	
LED Case lighting	NRFS	KY	3,541.18119	0.40398	0.4043	0.4043	per ice maker	18.21%		10	2205	350	
LED Exit Signs Electronic Fixtures (Retrofit Only)	NRLTG	KY	459.44753	0.05248	0.0386	0.0386	per door	12.06%		16	2207	544	
Low Watt TB lamps 2-4ft, replacing standard 32 Watt T8	NRLTG	KY	228.69526	0.02609	0.0310	0.0261	per fixture	12.06%		16	2209	352	
Occupancy Sensors over 500 Watts	NRLTG	KY	35.71424	0.00752	0.0059	0.0059	per bulb	12.06%		12	2212	355	
Occupancy Sensors under 500 Watts	NRLTG	KY	684.78580	0.19300	0.3020	0.1930	per sensor	12.06%		10	2215	367	
Setback Programmable Thermostat	NRHVAC	KY	273.49433	0.07900	0.1230	0.0790	per sensor	12.06%		10	2216	368	
Steamer_6 pan	NRHVAC	KY	1,158.55522	0.18505	0.0002	0.0304	per unit (thermostat)	18.21%		11	2225	384	
Vending Equipment Controller	NRFS	KY	15,180.07555	3.46347	2.9092	2.9092	per steam cooker	18.21%		12	2235	527	
High Performance Low Watt TB 4ft 2 lamp, replacing standard T8	NRFS	KY	805.82329	0.21151	0.1565	0.1565	per vending equipment controller	18.21%		10	2274	416	
High Performance Low Watt TB 4ft 3 lamp, replacing standard T8	NRLTG	KY	87.61893	0.01845	0.0148	0.0148	per fixture (ballast + bulb)	12.06%		12	2284	365	
High Performance Low Watt TB 4ft 4 lamp, replacing standard T8	NRLTG	KY	148.95218	0.03137	0.0252	0.0252	per fixture (ballast + bulb)	12.06%		12	2285	358	
High Performance TB 4ft 2 lamp, replacing T12 High Output 8ft 1 lamp	NRLTG	KY	157.71407	0.03322	0.0267	0.0267	per fixture (ballast + bulb)	12.06%		12	2286	359	
High Performance TB 4ft 2 lamp, replacing standard T8	NRLTG	KY	291.03721	0.06129	0.0497	0.0497	per fixture (ballast + bulb)	12.06%		12	2287	394	
High Performance TB 4ft 2 lamp, replacing standard T8	NRLTG	KY	73.80942	0.01554	0.0123	0.0123	per fixture (ballast + bulb)	12.06%		12	2293	343	
High Performance TB 4ft 2 lamp, replacing T12-HPT8	NRLTG	KY	138.15899	0.02915	0.0234	0.0234	per fixture (ballast + bulb)	12.06%		12	2294	342	
High Performance TB 4ft 3 lamp, replacing standard T8	NRLTG	KY	83.33922	0.01755	0.0140	0.0140	per fixture (ballast + bulb)	12.06%		12	2295	345	
High Performance TB 4ft 4 lamp, replacing standard T8	NRLTG	KY	123.80936	0.02608	0.0209	0.0209	per fixture (ballast + bulb)	12.06%		12	2297	347	
Window Film	NRHVAC	KY	4.09239	0.00065	0.0018	0.0002	per square foot	18.21%		10	2376	437	
ENERGY STAR Commercial Glass Door Freezers 30 to 50ft3 - var	NRFS	KY	3,368.91975	0.44136	0.3713	0.3713	per unit (freezer)	18.21%		12	2900	884	
ENERGY STAR Commercial Glass Door Freezers more than 50ft3 - var	NRFS	KY	7,117.85236	0.81200	0.6829	0.6829	per unit (freezer)	18.21%		12	2902	886	
ENERGY STAR Commercial Glass Door Refrigerators 15 to 30 ft3 - var	NRFS	KY	667.98614	0.07620	0.0638	0.0638	per unit (refrigerator)	18.21%		12	2906	890	
ENERGY STAR Commercial Glass Door Refrigerators 30 to 50ft3 - var	NRFS	KY	727.98490	0.08305	0.0697	0.0697	per unit (refrigerator)	18.21%		12	2908	892	
ENERGY STAR Commercial Glass Door Refrigerators more than 50ft3 - var	NRFS	KY	897.98137	0.10244	0.0865	0.0865	per unit (refrigerator)	18.21%		12	2910	894	
ENERGY STAR Commercial Solid Door Freezers less than 15ft3 - var	NRFS	KY	594.98766	0.06788	0.0571	0.0571	per unit (freezer)	18.21%		12	2912	896	
ENERGY STAR Commercial Solid Door Freezers 15 to 30 ft3 - var	NRFS	KY	868.98198	0.09913	0.0832	0.0832	per unit (freezer)	18.21%		12	2914	898	
ENERGY STAR Commercial Solid Door Freezers 30 to 50ft3 - var	NRFS	KY	1,727.96416	0.19713	0.1655	0.1655	per unit (freezer)	18.21%		12	2916	900	
ENERGY STAR Commercial Solid Door Refrigerators 15 to 30 ft3 - var	NRFS	KY	469.99025	0.05362	0.0454	0.0454	per unit (refrigerator)	18.21%		12	2922	906	
ENERGY STAR Commercial Solid Door Refrigerators 30 to 50ft3 - var	NRFS	KY	789.98361	0.09012	0.0756	0.0756	per unit (refrigerator)	18.21%		12	2924	908	
AC 135,000 - 240,000 per ton	NRHVAC	KY	66.97341	0.03187	0.0839	-	per ton	18.21%		15	2960	975	
AC 65,000 - 135,000 per ton	NRHVAC	KY	54.79854	0.02608	0.0687	-	per ton	18.21%		15	2970	977	
VFD HVAC Fan	NRP&M	KY	1,011.70000	0.16200	0.0700	0.1459	per fan hp	18.21%		15	3636	1112	
VFD HVAC Pump	NRP&M	KY	1,558.00000	0.26600	0.2070	0.2396	per CHW pump hp	18.21%		15	3641	1113	
VFD Process Pump 1-50 HP	NRP&M	KY	1,012.00000	0.04300	0.2090	0.2090	per HP	18.21%		15	3646	1114	
Beverage Reach-in Controller	NRFS	KY	671.98606	0.14000	0.0378	0.0378	per controller	18.21%		10	3666	1132	
CFL Reflector Flood	NRLTG	KY	227.29529	0.05997	0.0462	0.0462	per lamp	12.06%		2	3701	1139	
CFL Screw high wattage	NRLTG	KY	460.69044	0.12156	0.0936	0.0936	per lamp	12.06%		2	3706	1140	
ECM Case Motors	NRFS	KY	356.00000	0.04555	0.0303	0.0410	per motor	18.21%		15	3741	1147	
ECM Cooler and Freezer Motors - ECM replacing PSC	NRFS	KY	1,757.00000	0.20057	0.1487	0.1807	per motor	18.21%		15	3746	1148	
ECM Cooler and Freezer Motors - ECM replacing SP	NRFS	KY	581.00000	0.06632	0.0488	0.0598	per motor	18.21%		15	3751	1149	
Exterior HID replacement above 175W to 250W HID retrofit	NRLTG	KY	412.99143	0.00000	-	-	per fixture	12.06%		12	3756	1150	
Exterior HID replacement above 250W to 400W HID retrofit	NRLTG	KY	708.98529	0.00000	-	-	per fixture	12.06%		12	3761	1151	
Exterior HID replacement above 400W HID retrofit	NRLTG	KY	1,275.97353	0.00000	-	-	per fixture	12.06%		12	3766	1152	
Exterior HID replacement to 175W HID retrofit	NRLTG	KY	279.99419	0.00000	-	-	per fixture	12.06%		12	3771	1153	
Garage HID replacement above 175W to 250W HID retrofit	NRLTG	KY	942.98044	0.10757	0.1080	0.1076	per fixture	12.06%		6	3776	1154	
Garage HID replacement above 250W to 400W HID retrofit	NRLTG	KY	1,620.96638	0.18492	0.1850	0.1850	per fixture	12.06%		6	3781	1155	

Garage HID replacement to 175W HID retrofit	NRLTG	KY	638.98675	0.07290	0.0730	0.0729	per fixture	12.06%	6	3791	1157
Guest Room Energy Management, Electric Heating	NRHVAC	KY	653.03000	0.14842	0.1123	0.1337	per HVAC	18.21%	8	3796	1158
LED Downlight	NRLTG	KY	240.88189	0.06356	0.0490	0.0490	par lamp	12.06%	15	3811	1161
LED lamps	NRLTG	KY	140.72213	0.03718	0.0285	-	per lamp	12.06%	8	3816	1162
Pre Rinse Sprayers	NRFS	KY	1,395.97105	0.23302	0.1160	0.1160	per unit (sprayer)	18.21%	5	3841	1167
Snack Machine Controller	NRFS	KY	279.99419	0.03194	0.0086	0.0086	per controller	18.21%	10	3846	1168
VSD Air Compressors	NRPROC	KY	629.13695	0.15124	0.1512	0.1512	per HP	18.21%	15	3851	1169
Faucet Aerator (DI) - COMM, pvt use 0.5 gpm	NRHVAC	KY	241.99498	0.02761	0.0350	0.0350	per aerator	18.21%	10	3863	3000
Faucet Aerator (DI) - School, public use 0.5 gpm	NRHVAC	KY	1,299.97304	0.14830	0.0350	0.0350	per aerator	18.21%	10	3864	3001
Faucet Aerator (DI) - School, public use 1.0 gpm	NRHVAC	KY	916.98098	0.10461	0.0250	0.0250	per aerator	18.21%	10	3867	3004
Low Flow Showerhead (DI) - COMM, pvt use 1.5 gpm	NRHVAC	KY	426.99114	0.04871	0.0320	0.0320	per showerhead	18.21%	10	3868	3005
Controlled Plug Strip	NRIT	KY	99.99793	0.01141	-	-	per power strip	18.21%	4	3877	3014
Ductless Mini-Split AC, Schools (K-12) vs room AC	NRHVAC	KY	140.15576	0.06670	0.2856	-	per ton	18.21%	15	3899	3038
HT ES UC DW w-Boost Htr (Elec) New-rapl on BC	NRFS	KY	3,374.23960	0.51324	0.4157	0.3593	per dishwasher	18.21%	10	3923	3062
LED Canopy replacing 175-250W HID	NRLTG	KY	666.06906	0.00000	-	-	per fixture	12.06%	15	3925	3064
LED Canopy replacing 251-400W HID	NRLTG	KY	972.29826	0.00000	-	-	per fixture	12.06%	15	3926	3065
LED Canopy replacing up to 175W HID	NRLTG	KY	420.47184	0.00000	-	-	per fixture	12.06%	15	3927	3066
LED FLD rplng or ILO GRT 100W HAL, INCD, or HID	NRLTG	KY	606.06609	0.00000	-	0.0680	per fixture	12.06%	15	3928	3067
LED FLD rplng or ILO up to 100W HAL, INCD, or HID	NRLTG	KY	178.25473	0.00000	-	0.0200	per fixture	12.06%	15	3929	3068
LED Highbay replacing 251-400W HID	NRLTG	KY	1,140.51170	0.25933	0.1885	0.1234	per fixture	12.06%	15	3930	3069
LED Highbay replacing greater than 400W HID	NRLTG	KY	2,094.81741	0.47645	0.3463	0.2267	per fixture	12.06%	15	3931	3070
LED Lowbay replacing 176W-250W HID	NRLTG	KY	1,103.31142	0.18496	0.1616	0.1058	per fixture	12.06%	15	3932	3071
LED Lowbay replacing up to 175W HID	NRLTG	KY	394.03979	0.11666	0.0577	0.0378	par fixture	12.06%	15	3933	3072
LED Panel 1x4 replacing or in lieu of T8 FL	NRLTG	KY	77.28471	0.02152	0.0154	0.0101	per fixture	12.06%	15	3934	3073
LED Panel 2x2 replacing or in lieu of T8 FL	NRLTG	KY	50.23506	0.01354	0.0100	0.0065	per fixture	12.06%	15	3936	3075
LED Panel 2x4 replacing or in lieu of T8 FL	NRLTG	KY	158.43366	0.05006	0.0315	0.0207	per fixture	12.06%	15	3938	3077
Low-Temp ES sngl Tank - CNV DW New-rapl on BC	NRFS	KY	12,272.88196	2.64600	-	1.9591	per dishwasher	18.21%	20	3941	3080
Switch or Fixture-Mounted Daylight Sensor	NRLTG	KY	84.99824	0.02275	0.0210	0.0210	per control	12.06%	8	3947	3086
High Bay TB 4ft 2L rplng 150-249W HID (retrofit only)	NRLTG	KY	512.98936	0.13940	0.1030	0.1030	per fixture	12.06%	15	3948	3087
HT ES Sngl Tank - CNV DW w-Boost Htr (Elec) New-rapl on BC	NRFS	KY	10,009.64375	1.52253	1.2332	1.0658	per dishwasher	18.21%	20	3984	3123
LED Portable Task Lights (rplng or ILO INCD, HAL, or CFL task Ltng)	NRLTG	KY	91.43250	0.02787	0.0222	-	per fixture	12.06%	15	3990	3129
LED Track Ltng (rplng or ILO INCD, HAL, CFL, or HID track Ltng)	NRLTG	KY	197.58887	0.04676	0.0430	-	per fixture	12.06%	15	3992	3131
CoolRoof New Replace on Burnout Health-sq ft	NRHVAC	KY	0.46768	0.00017	0.0000	-	per square foot	18.21%	15	8355	4502
CoolRoof New Replace on Burnout Hotel-sq ft	NRHVAC	KY	0.53845	0.00019	0.0006	-	per square foot	18.21%	15	8360	4503
CoolRoof New Replace on Burnout Other-sq ft	NRHVAC	KY	0.35022	0.00012	0.0002	-	per square foot	18.21%	15	8380	4507
CoolRoof New Replace on Burnout Retail-sq ft	NRHVAC	KY	0.58743	0.00021	0.0003	-	per square foot	18.21%	15	8385	4508
Combination Oven_10 pan	NRFS	KY	6,506.24123	1.48446	1.2024	1.0391	per oven	18.21%	12	10150	5758
Convection Oven Full-Sized	NRFS	KY	2,084.52430	0.47560	0.3852	0.3329	per oven	18.21%	12	10152	5760
Fryer (Large Vat)	NRFS	KY	2,660.76604	0.60708	0.4917	0.4250	per fryer	18.21%	12	10173	5850
Fryer (Standard Vat)	NRFS	KY	1,057.70203	0.24132	0.1955	0.1689	per fryer	18.21%	12	10174	5851
Zero Energy Doors_Med-Temp Cooler	NRFS	KY	1,399.99416	0.15971	0.1598	0.1598	per door	18.21%	10	10183	5860
ARC 10 to 15 Ton Gas Heat	NRHVAC	KY	649.89328	0.10381	0.1659	0.1670	per ton	18.21%	15	10184	5861
ARC greater than 15 Ton Gas Heat	NRHVAC	KY	803.61269	0.12836	0.2025	0.2087	per ton	18.21%	15	10185	5862
ARC HP 10 to 15 Ton	NRHVAC	KY	774.77877	0.12375	0.1668	0.2788	per ton	18.21%	15	10186	5863
ARC less than 10 Ton Gas Heat	NRHVAC	KY	563.79967	0.09005	0.1459	0.1432	per ton	18.21%	15	10189	5866
HVAC DX AC 135-240kBtuh 11.7 EER (Tier 0_1)	NRHVAC	KY	80.42735	0.02854	0.0632	-	per ton	18.21%	15	10223	5700
HVAC DX AC 135-240kBtuh 12.2 EER (Tier 2)	NRHVAC	KY	119.98179	0.04258	0.0944	-	per ton	18.21%	15	10224	5701
HVAC DX AC 240-760kBtuh 10.5 EER (Tier 0_1)	NRHVAC	KY	76.81633	0.02726	0.0604	-	per ton	18.21%	15	10225	5702
HVAC DX AC 240-760kBtuh 10.8 EER (Tier 2)	NRHVAC	KY	106.68934	0.03786	0.0839	-	per ton	18.21%	15	10226	5703
HVAC DX AC 65-135kBtuh 11.7 EER (Tier 0_1)	NRHVAC	KY	61.41725	0.02180	0.0483	-	per ton	18.21%	15	10227	5704
HVAC DX AC 65-135kBtuh 12.2 EER (Tier 2)	NRHVAC	KY	100.97168	0.03583	0.0794	-	per ton	18.21%	15	10228	5705
HVAC DX AC less than 65kBtuh 14 SEER (Tier 0_1)	NRHVAC	KY	62.04396	0.02202	0.0537	-	per ton	18.21%	15	10231	5708
HVAC DX AC less than 65kBtuh 15 SEER (Tier 2)	NRHVAC	KY	115.81538	0.04110	0.1002	-	per ton	18.21%	15	10232	5709
HVAC DX HP greater than 240 kBtuh 10.3 EER 3.3 COP (Tier 1)	NRHVAC	KY	130.43575	0.02083	0.0839	0.0190	per ton	18.21%	15	10235	5712
HVAC DX HP Split less than 65kBtuh 14 SEER 8.5 HSPFF (Tier 1)	NRHVAC	KY	166.62455	0.02661	0.0537	0.0836	per ton	18.21%	15	10239	5716
HVAC DX mini split AC 15 SEER	NRHVAC	KY	115.81538	0.04110	0.1002	-	per ton	18.21%	15	10242	5719
HVAC DX mini split AC 16 SEER	NRHVAC	KY	179.15192	0.06358	0.1409	-	per ton	18.21%	15	10243	5720
HVAC DX mini split AC 20 SEER	NRHVAC	KY	334.41692	0.11868	0.2630	-	per ton	18.21%	15	10245	5722
HVAC DX mini split HP 16 SEER 8.5 HSPFF	NRHVAC	KY	137.64783	0.02199	0.0872	0.0294	per ton	18.21%	15	10248	5725
HVAC DX mini split HP 18 SEER 9.6 HSPFF	NRHVAC	KY	331.40273	0.05293	0.1550	0.1216	per ton	18.21%	15	10250	5727
HVAC DX mini split HP 20 SEER 9.6 HSPFF	NRHVAC	KY	394.13606	0.06295	0.2093	0.1216	per ton	18.21%	15	10252	5729
HVAC DX PTAC 12000 Btuh 10.7 EER	NRHVAC	KY	51.73172	0.01836	0.0407	-	per HVAC	18.21%	15	10254	5731
LED 4ft Case Lights, T8 to LED	NRLTG	KY	86.50540	0.01560	0.0151	-	per fixture	12.06%	15	10264	5741
LED 5ft Case Lights, T8 to LED	NRLTG	KY	109.26897	0.01971	0.0190	-	per fixture	12.06%	15	10266	5743
LED 4ft Tube 1-LED, replacing or in lieu of T8 fluorescen	NRLTG	KY	53.85048	0.01297	0.0092	0.0060	per fixture	12.06%	15	10268	5745
LED 4ft Tube 2-LED, replacing or in lieu of T8 fluorescen	NRLTG	KY	80.46595	0.02161	0.0173	-	per fixture	12.06%	15	10269	5746
LED 2ft Tube 1-LED, replacing or in lieu of T8 fluorescen	NRLTG	KY	35.90032	0.00865	0.0062	0.0040	per fixture	12.06%	15	10270	5747
LED 2ft Tube 2-LED, replacing or in lieu of T8 fluorescen	NRLTG	KY	52.30287	0.01405	0.0112	-	per fixture	12.06%	15	10271	5748
LED 2ft Tube 3-LED, replacing or in lieu of T8 fluorescen	NRLTG	KY	68.39606	0.01837	0.0147	-	per fixture	12.06%	15	10272	5749

LED 2ft Tube 4-LED, replacing or in lieu of TB fluorescen	NRLTG	KY	76.44265	0.02053	0.0164	-	per fixture	12.06%	15	10273	5750
Air Cooled Chiller_Any greater than 150 tons	NRHVAC	KY	70.33400	0.02495	0.0929	-	per ton	18.21%	20	10957	6122
Air Cooled Chiller_Any less than 150 tons	NRHVAC	KY	71.72028	0.02545	0.0929	-	per ton	18.21%	20	10958	6123
Water Cooled Screw or Scroll at least 150 tons and less than 300 tons	NRHVAC	KY	40.34266	0.01432	0.0531	-	per ton	18.21%	20	10999	6128
LED 4ft Tube 3-LED, replacing or in lieu of TB fluorescen	NRLTG	KY	112.65233	0.03026	0.0242	-	per fixture	12.06%	15	11084	6201
LED 4ft Tube 4-LED, replacing or in lieu of TB fluorescen	NRLTG	KY	144.83871	0.03891	0.0311	-	per fixture	12.06%	15	11085	6202
Int Induction Lighting replacing HPS greater than 200W, up to 400W	NRLTG	KY	740.22905	0.21694	0.1562	0.1234	per fixture	12.06%	20	16162	8847
LED 2ft Tube 1-LED, replacing or in lieu of TB fluorescen	NRLTG	KY	35.90032	0.01251	0.0062	0.0040	per lamp	12.06%	15	16165	8850
LED 4ft Tube 1-LED, replacing or in lieu of TB fluorescen	NRLTG	KY	53.85048	0.01695	0.0092	0.0060	per lamp	12.06%	15	16166	8851
LED A Lamps	NRLTG	KY	149.17801	0.04417	0.0312	0.0237	per lamp	12.06%	15	16167	8852
LED Decorative, Globe, 3-Way Lamps	NRLTG	KY	161.36252	0.04778	0.0357	0.0256	per lamp	12.06%	15	16168	8853
LED Outdoor Channel Sign, greater than 2 feet	NRLTG	KY	376.93018	0.00000	-	-	per letter	12.06%	15	16172	8857
LED PAR, BR, MR Lamps	NRLTG	KY	151.37341	0.04482	0.0317	0.0241	per lamp	12.06%	15	16174	8859
Occupancy Sensors per Watt	NRLTG	KY	1.00869	0.00028	0.0002	0.0001	per Watt controlled	12.06%	8	16183	8868
High Volume Low Speed Fan	NRHVAC	KY	12,898.65746	4.56637	3.4151	2.6306	per fan	18.21%	15	17719	10001
LED Highbay replacing greater than 400W HID Lamp	NRLTG	KY	2,808.16705	0.83221	0.5878	0.4465	per lamp	12.06%	13	17788	10070
LED Highbay Fixture replacing 6-lamp 4ft TB fixture	NRLTG	KY	277.32816	0.08212	0.0580	0.0441	per fixture	12.06%	15	17792	10074
LED Highbay Fixture replacing 2-lamp 8ft T12 fixture	NRLTG	KY	418.84901	0.12403	0.0876	0.0665	per fixture	12.06%	15	17793	10075
LED Highbay Fixture replacing 4-lamp 4ft T5HO fixture	NRLTG	KY	439.58349	0.13017	0.0919	0.0698	per fixture	12.06%	15	17795	10077
LED FLD rplcing or ILO greater than 500W HAL, INCD, or HID	NRLTG	KY	3,743.73067	0.00000	-	-	per lamp	12.06%	15	17797	10079
Exterior HID replacement above 250W to 400W HID retrofit Lamp	NRLTG	KY	1,288.33264	0.08907	-	-	per lamp	12.06%	12	17803	10085
VFD on Chilled Water Pump	NRP&M	KY	515.56668	0.20898	0.1546	-	per HP	18.21%	15	17816	10098



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Memorandum

DEK Non-Residential Smart \$aver® Prescriptive Program

To: Jean Williams and Monica Redman (Duke Energy)
From: Matt Drury, Marion Cundari, Antje Flanders (Opinion Dynamics)
Date: May 15, 2019
Re: Deemed Savings Review for Duke Energy Kentucky Smart \$aver® Prescriptive Program

1. Introduction

Opinion Dynamics conducted a limited review of ex ante per unit savings (“deemed savings”) for the Duke Energy Kentucky (DEK) Smart \$aver® Prescriptive Program, covering the evaluation period of January 1, 2016 to December 31, 2018. The team leveraged the recently completed evaluation for Duke Energy Ohio (DEO) Smart \$aver® Program¹ to develop DEK deemed savings values:

- For **lighting measures that were included in the DEO deemed savings review**, we developed ex post deemed savings values based on deemed savings review results from the DEO evaluation, but incorporated DEK-specific hours of use values and weighted coincidence factors and waste heat factors, by building types, from the DEK program database.
- For **non-lighting measures that were included in the DEO deemed savings review**, ex post deemed savings values equal ex post deemed savings values from the DEO evaluation.
- For **measures that were not part of the DEO deemed savings review**, ex post deemed savings values equal ex ante values provided by Duke Energy.

Table 1 summarizes, by technology, (1) the number of program measures incented during the evaluation period, (2) their savings, (3) the number of measures included in the deemed savings review, and (4) the share

¹ Opinion Dynamics. *Duke Energy Ohio Non-Residential Smart \$aver® Prescriptive Program Evaluation Report – Final*, dated December 7, 2018.

of total savings they account for. The deemed savings review included 15 measures that account for 53% of overall DEK program savings.

Table 1. Summary of Measures Reviewed

Technology	Total Measures	Total Ex Ante Savings	Reviewed Measures	Percent of Total Ex Ante Savings
Lighting	71	44,502,508	13	53%
HVAC	39	1,061,057	-	0%
Food Service Products	33	556,419	1	<0.1%
Pumps and Drives	8	520,311	1	<0.1%
Process Equipment	1	204,470	-	0%
Information Technology	1	200	-	0%
Total	153	46,844,963	15	53%

2. Deemed Savings Review

To complete the deemed savings review, Opinion Dynamics leveraged the results of the DEO deemed savings review, completed as part of the DEO evaluation finalized in December 2018. For lighting measures, we updated hours of use, coincidence factors, and waste heat factors based on DEK-specific information from the DEK program tracking database.

The following sections provide a summary of the reviewed measures, by technology, and compare the ex-ante and ex post deemed savings values. We provide an explanation (if applicable) where the values differ. We provide the complete analysis with all algorithms and assumptions in the accompanying Excel spreadsheet.

2.1 Lighting Measures

Table 2 summarizes the results of our review for the 13 lighting measures.

Table 2. Lighting Measure Summary (per Fixture)

Measure	Measure ID	Ex Ante Deemed			Ex Post			Reasons for Differences	
		Δ kWh	Δ Winter kW	Δ Summer kW	Δ kWh	Δ Winter kW	Δ Summer kW		
LED 2x4 Panel replacing T8 fluorescent	6938	187	-	0.040	158	0.021	0.032	<ul style="list-style-type: none"> Adjusted hours of use to reflect hours of use in the participant database. Updated WHFs and coincidence factors with values from the IN TRM V2.2, weighted by building types in the participant database. Ex ante savings do not include winter demand savings; developed ex post winter demand savings. 	
LED 1x4 Panel replacing T8 fluorescent	6934	80	-	0.017	77	0.010	0.015		
LED 2x2 Panel replacing T8 fluorescent	6936	50	-	0.011	50	0.007	0.010		
LED Highbay replacing 251-400W HID	6930	1,042	-	0.210	1,141	0.123	0.189		
LED Highbay replacing greater than 400W HID	6931	1,914	-	0.387	2,095	0.227	0.346		
LED Lowbay replacing 176W-250W HID	6932	743	-	0.150	1,103	0.106	0.162		
LED Lowbay replacing up to 175W HID	6933	469	-	0.095	394	0.038	0.058		
One LED 4ft Tube, replacing T8 fluorescent	16166	57	0.009	0.012	54	0.006	0.009	<ul style="list-style-type: none"> Adjusted hours of use to reflect hours of use in the participant database. Updated WHFs and coincidence factors with values from the IN TRM V2.2, weighted by building types in the participant database. <p><i>Note that the database contained two measure IDs with different ex ante assumptions for both reviewed LED tube measures. For the purposes of the deemed savings review and the impact analysis, we combined these duplicate measures.</i></p>	
	10268	48	-	0.010					
One LED 2ft Tube, replacing T8 fluorescent	16165	42	0.007	0.009	36	0.004	0.006		
	10270	32	-	0.007					
LED Flood replacing > 100 W HID/Halogen/incandescent	6928	520	-	-	606	0.068	-		<ul style="list-style-type: none"> Adjusted hours of use to reflect hours of use in the participant database. Updated winter coincidence factors to reflect exterior lighting usage during winter peak (7-8 AM)
LED Flood replacing up to 100 W HID/Halogen/incandescent	6929	153	-	-	178	0.020	-		

2.2 Food Service Products

Our review included one food service measure, accounting for less than 1% of ex ante program savings. Table 3 summarizes the results of our review for this measure.

Table 3. Food Service Equipment Measure Summary (per Door)

Measure	Measure ID	Ex Ante Deemed			Ex Post			Reasons for Differences
		Δ kWh	Δ Winter kW	Δ Summer kW	Δ kWh	Δ Winter kW	Δ Summer kW	
Anti-sweat Heater Controls	2163	1,674	-	0.006	1,674	0.098	-	<ul style="list-style-type: none"> • Maintained ex ante energy savings as they are based on modeled projects in Ohio. • Developed ex post winter demand savings consistent with other Duke Energy Smart \$aver programs. • Set ex post summer demand savings to zero since most TRMs do not claim savings for this measure as summer humidity levels typically cause controls to not operate during summer peak periods.

2.3 Pumps and Drives

Our review included one VFD measure, accounting for less than 1% of ex ante program savings. Table 4 summarizes the results of our review for this measure.

We note a significant difference in the DEO and DEK ex ante values received for this measure: DEO values were 4,661 kWh and 0.568 kW for both summer and winter demand, compared to DEK values of 271 kWh and 0.033 for both summer and winter demand. Ex post values, established for both DEO and DEK evaluations, fall in between these ex ante values.

Table 4. Motors, Pumps, and VFD Equipment Measure Summary (per HP)

Measure	Measure ID	Ex Ante Deemed			Ex Post			Reasons for Differences
		Δ kWh	Δ Winter kW	Δ Summer kW	Δ kWh	Δ Winter kW	Δ Summer kW	
VFD Process Pump (1-50 HP)	3646	271	0.033	0.033	1,012	0.209	0.209	<ul style="list-style-type: none"> • Ex post values are based on metering and modeling, using the approach used for the DEC/DEP and DEO evaluations.

3. Key References

Table 3 lists the references used in this deemed savings review, including (1) documentation supplied by Duke Energy that documents ex ante values and (2) other references used to develop ex post values.

Table 5. Key References

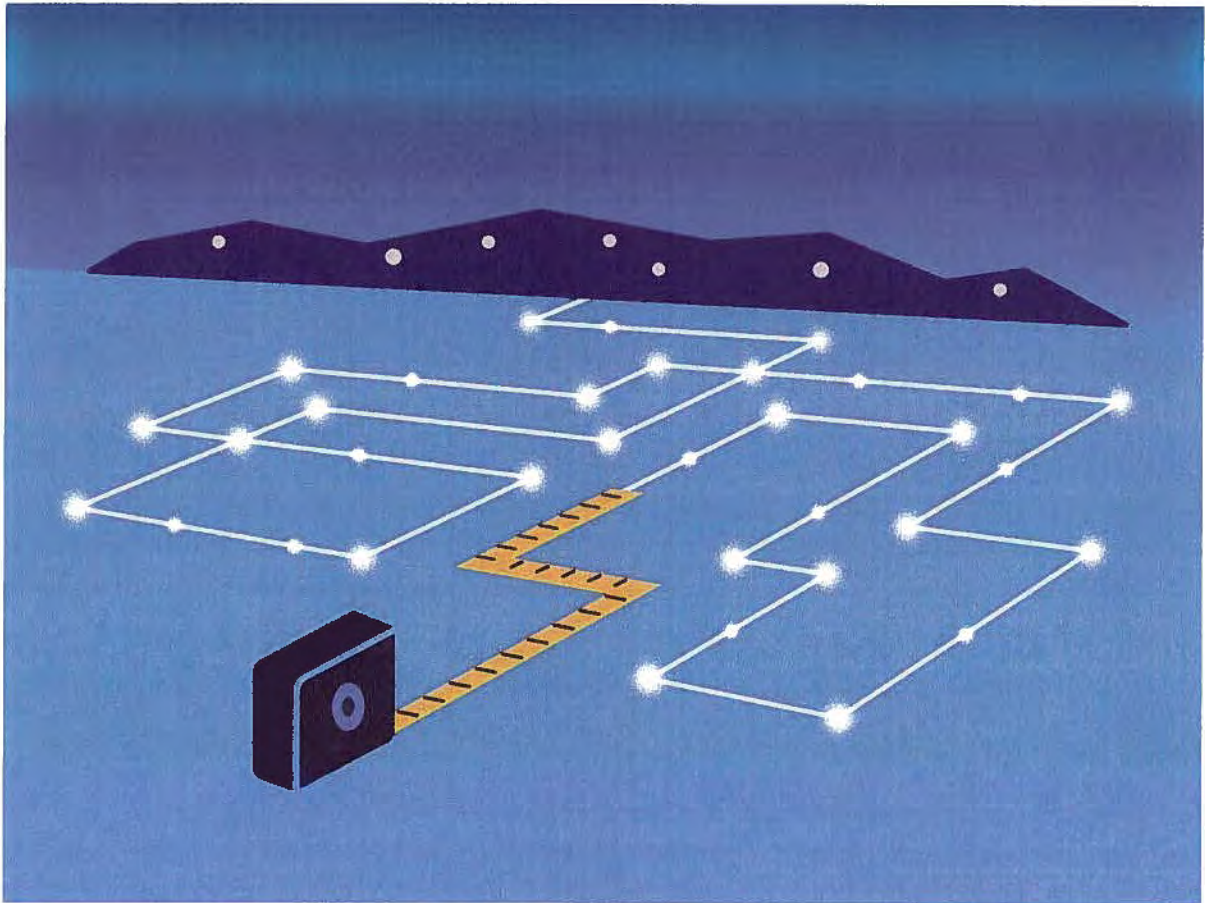
Reference
Program-Supplied Documentation: <ul style="list-style-type: none">• DEK Program Tracking Data (file: DEK NonRes Prescriptive data request 03042019 -combined -FINAL.xlsx)• Deemed Savings Review for Duke Energy Ohio Smart \$aver® Program (file: Duke Energy_Deemed Savings Review_NR Prescriptive_DEO_FINAL_2018-12-07.docx)• Duke Energy Ohio Non-Residential Smart \$aver® Prescriptive Program Evaluation Report (file: Duke Energy_Evaluation Report_NR Prescriptive_DEO - FINAL.pdf)
TRMs: <ul style="list-style-type: none">• Ohio Technical Reference Manual. August 6, 2010• Illinois Technical Reference Manual. Version 6.0. February 8, 2017• Indiana Technical Reference Manual. Version 2.2. July 28, 2015
Other References: <ul style="list-style-type: none">• United Illuminating Company and Connecticut Light & Power Coincidence Factor Study. January 4, 2007. https://www.puc.nh.gov/Electric/Monitoring%20and%20Evaluation%20Reports/National%20Grid/116_RLW_CF%20Res%20C&I%20ltg.pdf



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Duke Energy Kentucky

Non-Residential Smart \$aver® Prescriptive Program Impact Evaluation Report – Final

July 24, 2019

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1. Evaluation Summary

1.1 Program Summary

The Duke Energy Kentucky (DEK) Smart Saver® Program provides incentives for electric commercial and industrial customers to purchase and install high-efficiency lighting, HVAC systems, pumps and drives, and qualifying process, food service, and information technology equipment. The program also uses incentives to encourage maintenance of existing equipment in order to reduce energy usage. Incentives are available for new construction and retrofits and replacements. Prescriptive incentives under the program are limited to 75% or less of the customer cost.

The main delivery channel for the program is application-based. The program has two additional delivery channels:

1. The **Business Savings Store** on the Duke Energy website offers customers a limited number of qualified products for which they can receive an instant discount. The discounts offered in the store are consistent with incentive levels in the main delivery channel.
2. The **midstream channel** allows distributors to provide instant discounts on eligible lighting equipment to prequalified customers. The discounts offered through this channel are consistent with incentive levels in the main delivery channel. The midstream channel is offered through qualified distributors only.

The evaluation period for this program is January 1, 2016 to December 31, 2018.

1.2 Evaluation Objectives

This evaluation included assessment of impacts only. Both gross and net impact analyses leveraged results from the recently completed evaluation of the Duke Energy Ohio (DEO) Smart Saver® Prescriptive Program.¹ This evaluation did not include a process evaluation.

The evaluation addressed the following key objectives.

Gross Impact Evaluation

- Develop ex post deemed savings values, based on the recently completed DEO evaluation and information from the DEK program-tracking database.
- Develop ex post gross energy and peak demand savings (both summer and winter), by end-use.
- Develop gross realization rates, by end-use.

Net Impact Analysis

- Develop net energy and peak demand savings (both summer and winter), by end-use, based on DEK ex post gross savings and net-to-gross ratios (NTGRs) from the recently completed DEO evaluation.

¹ Opinion Dynamics Corporation. Duke Energy Ohio – Non-Residential Smart Saver® Prescriptive Program Evaluation Report. December 7, 2018.

1.3 Key Findings

Gross Impact Findings

During the evaluation period, DEK Smart Saver® Program customers generated 46.6 GWh of ex post gross energy savings, 8.1 MW of gross summer peak demand savings, and 4.2 MW of gross winter peak demand savings.

Our gross impact analysis found overall realization rates for energy, summer demand, and winter demand savings of 99%, 90%, and 141%, respectively. The program-level realization rates are closely aligned with the lighting realization rates because lighting makes up 93% of main channel ex ante gross energy savings. The desk reviews and on-site visits for the DEO evaluation found no discrepancies between tracked and installed measures. As a result, the realization rates are entirely driven by updates to per-unit savings values based on the deemed savings review.

Table 1-1 presents gross realization rates, by technology.²

Table 1-1. Overall Gross Impact Realization Rates

Technology	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)
Lighting	99%	89%	145%
HVAC	100%	100%	100%
Food Service Products	100%	100%	102%
Pumps and Drives	108%	116%	114%
Process Equipment	100%	100%	100%
Information Technology	100%	N/A	N/A
Total	99%	90%	141%

Net Impact Findings

The net-to-gross analysis for the recently completed DEO evaluation yielded a program-level NTGR for main channel projects of 87.4%. The NTGRs for lighting and non-lighting measures were 87.9% and 81.8%, respectively. The estimated program-level FR was 18.3%, PSO was 0.04%, and TA SO was 5.6%.

Table 1-2 summarizes the NTGR results of the DEO evaluation.

² In addition to these gross realization rates, Duke Energy requires realization rates that it can apply to new measures, for planning purposes. Those realization rates can be found in Section 3.2.3.

Table 1-2. Summary of DEO Evaluation NTGR Results

Technology	FR	PSO	TA SO	NTGR*
Lighting	17.7%	0.04%	5.6%	87.9%
Non-Lighting	23.9%			81.8%
Total	18.3%	0.04%	5.6%	87.4%

* NTGR = 1 - FR + PSO + TA SO

We applied the DEO technology group-level NTGRs to DEK ex post gross savings to determine DEK ex post net savings. Table 1-3 summarizes ex post gross and net savings for the evaluation period.

Table 1-3. Summary of Ex Post Gross and Net Program Savings

Technology	Ex Post Gross			NTGR	Ex Post Net		
	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)		Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)
Main Channel	32,739,912	5,627	3,195	0.87	28,648,110	4,910	2,792
<i>Lighting</i>	30,390,723	5,004	2,896	0.88	26,726,741	4,401	2,547
<i>HVAC</i>	1,030,005	446	111	0.82	842,427	365	91
<i>Food Service Products</i>	553,627	58	63	0.82	452,804	47	51
<i>Pumps and Drives</i>	561,088	70	77	0.82	458,906	57	63
<i>Process Equipment</i>	204,470	49	49	0.82	167,233	40	40
Midstream Channel	11,717,043	2,081	970	1.00	11,717,043	2,081	970
Online Store	2,139,742	434	75	1.00	2,139,742	434	75
Total	46,596,696	8,142	4,240		42,504,895	7,425	3,836

2. Program Description

This section describes key elements of program design and performance. The evaluation period addressed in this report is January 1, 2016 to December 31, 2018.

2.1 Program Design

The DEK Smart \$aver® Program provides incentives for electric commercial and industrial customers to purchase and install high-efficiency lighting, HVAC systems, pumps and drives, and qualifying process, food service, and information technology equipment. The program also uses incentives to encourage maintenance of existing equipment in order to reduce energy usage. Incentives are available for new construction and retrofits and replacements. Prescriptive incentives under the program are limited to 75% or less of the customer cost.

The main delivery channel for the program is application-based. In addition, the Business Savings Store on the Duke Energy website offers customers a limited number of qualified products for which they can receive an instant discount. The discounts offered in the store are consistent with program incentive levels. The program also includes a midstream marketing channel that allows distributors to provide the same incentives directly to prequalified customers on applicable equipment and receive reimbursement for those incentives from Duke Energy.

2.2 Program Performance

Based on the program-tracking database, the program generated 46,845 MWh of ex ante gross energy savings. Approximately 71% of these savings were generated through the program's main channel; the midstream channel and the Business Savings Store accounted for 25% and 5% of these savings, respectively. Ex ante gross energy savings, by delivery channel and technology, are summarized in Table 2-1.

Table 2-1. Smart \$aver® Prescriptive Program Projects and Ex Ante Gross Savings

Delivery Channel	Ex Ante Gross Savings	
	MWh	Percent
Main Channel	33,169	71%
<i>Lighting</i>	30,861	93%
<i>HVAC</i>	1,030	3%
<i>Food Service Products</i>	554	2%
<i>Pumps and Drives</i>	520	2%
<i>Process Equipment</i>	204	1%
Midstream Channel	11,535	25%
<i>Lighting</i>	11,535	100%
Online Store	2,141	5%
<i>Lighting</i>	2,106	98%
<i>HVAC</i>	31	1%
<i>Food Service products</i>	3	<1%
<i>Information Technology</i>	0.2	<1%
Total	46,845	

3. Impact Evaluation

The gross impact evaluation mainly leveraged results from the recently completed DEO evaluation. However, it included two evaluation activities specific to DEK: a program-tracking database review and a limited update to Duke Energy's ex ante (deemed) savings assumptions.

This section summarizes the gross impact methodology - including a general overview of the DEO methodology and DEK-specific activities - as well as gross impact results.

3.1 Methodology

The first step in the gross impact evaluation was to perform a database review. We received an extract from the DEK program-tracking database that contained the data needed in support of our evaluation. Our team of energy data scientists and engineers cleaned these data and created an evaluation dataset that reflects program activity during the evaluation period. Key data-cleaning activities included verification of installation dates, removal of duplicate and otherwise ineligible records (e.g., zero savings), and development of ex ante savings (by multiplying per-unit savings by measure quantities).

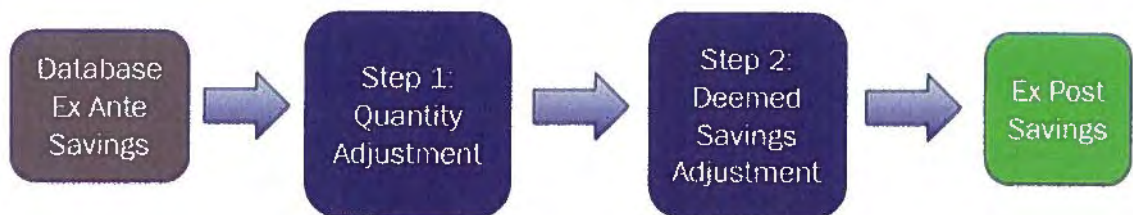
The database review resulted in a clean dataset that reflects the eligible population of program projects with complete data required to estimate savings. We used this dataset to develop technology- and program-level ex ante gross impacts.

Following the database review, the evaluation team used a combination of results from the DEO evaluation and a limited deemed savings update to estimate ex post (verified) gross impacts. The methodology consisted of a two-step process to adjust the ex ante savings from the program-tracking database:

- **Step 1: Quantity Adjustment:** We applied technology-specific quantity adjustments from the DEO evaluation to measure quantities in the program-tracking database.
- **Step 2: Deemed Savings Adjustment:** Based on a limited deemed savings update, we developed measure-specific per-unit savings adjustment factors, which we applied to the per-unit measure savings in the program-tracking database.

Figure 3-1 depicts this process.

Figure 3-1. Gross Impact Evaluation Approach



3.1.1 Quantity Adjustment

The quantity adjustments used for the DEK gross impact analysis were based on 90 desk reviews and 39 on-site verification visits, conducted for a sample of DEO main channel projects. Based on information from both

desk reviews and on-site visits, we developed technology-level quantity adjustment factors. While the desk reviews and on-site visits included only main channel projects, we applied the technology-level adjustment factors to all DEK program-incented measures, including those incented through the Business Savings Store and the midstream channel.

3.1.2 Deemed Savings Adjustment

The purpose of the deemed savings review was to make limited updates to per-unit savings assumptions for select measures incented through the DEK Smart \$aver® Prescriptive Program. We leveraged the recently completed DEO evaluation to develop DEK deemed savings values, as follows:

- For 13 **lighting measures that were included in the DEO deemed savings review**, we developed ex post deemed savings values based on deemed savings review results from the DEO evaluation, but incorporated DEK-specific hours of use values from the DEK program database, as well as coincidence factors and waste heat factors, weighted by building type.
- For two **non-lighting measures that were included in the DEO deemed savings review**, ex post deemed savings values were set to equal ex post deemed savings values from the DEO evaluation.
- For **measures that were not part of the DEO deemed savings review**, ex post deemed savings values were set to equal DEK ex ante values provided by Duke Energy.

The full, measure-level deemed savings review is provided in Appendix A.

3.2 Gross Impact Results

Table 3-1 summarizes the DEK ex ante and ex post gross energy impacts (including savings from all three delivery channels) resulting from the two-step adjustment approach described above. The following subsections provide more detailed results from the quantity and deemed savings adjustment analyses, including realization rates.

Table 3-1. Overall Gross Impacts

Technology	Ex Ante Gross Savings			Ex Post Gross Savings		
	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)
Lighting	44,502,508	8,413	2,711	44,213,463	7,518	3,939
HVAC	1,061,057	447	112	1,061,057	447	112
Food Service Products	556,419	58	62	556,419	58	63
Pumps and Drives	520,311	60	67	561,088	70	77
Process Equipment	204,470	49	49	204,470	49	49
Information Technology	200	-	-	200	-	-
Total	46,844,963	9,027	3,001	46,596,696	8,142	4,240

3.2.1 Quantity Adjustment

The DEO desk reviews and on-site visits did not find any discrepancies between the program-tracking data, project materials, and on-site measure quantities. Therefore, the quantity realization rates, shown in Table 3-2, were 100% for all technology types. We therefore applied no quantity adjustment to DEK ex ante savings.

Table 3-2. Quantity Adjustments

Technology	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)
Lighting	100%	100%	100%
HVAC	100%	100%	100%
Food Service Products	100%	100%	100%
Pumps and Drives	100%	100%	100%
Process Equipment	100%	100%	100%
Information Technology	100%	N/A	N/A
Total	100%	100%	100%

3.2.2 Deemed Savings Adjustment

The deemed savings review resulted in modifications to the per-unit savings assumptions for the 13 lighting and 2 non-lighting measures included in this analysis. Table 3-3 summarizes the results of the deemed savings review, by technology.

Table 3-3. Deemed Savings Adjustments

Technology	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)
Lighting	99%	89%	145%
HVAC ^A	100%	100%	100%
Food Service Products	100%	100%	102%
Pumps and Drives	108%	116%	114%
Process Equipment ^A	100%	100%	100%
Information Technology ^{A,B}	100%	N/A	N/A
Total	99%	90%	141%

^A The deemed savings review did not include any HVAC, process, or information technology measures. Ex post savings for these technologies are set to equal ex ante savings, i.e., a realization rate of 100%.

^B The information technology measures incented during the evaluation period did not have peak demand savings. As a result, a realization rate is not applicable.

3.2.3 Overall Gross Realization Rates

Based on the quantity and deemed savings adjustments, the overall program-level realization rates are 99% for energy savings, 90% for summer peak demand savings, and 141% for winter peak demand savings. These values are driven by adjustments to the deemed savings values. Table 3-4 summarizes the overall gross realization rates.

Table 3-4. Overall Gross Realization Rates

Technology	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)
Lighting	99%	89%	145%
HVAC	100%	100%	100%
Food Service Products	100%	100%	102%
Pumps and Drives	108%	116%	114%
Process Equipment	100%	100%	100%
Information Technology	100%	N/A	N/A
Total	99%	90%	141%

In addition to the ex post gross impact results and realization rates developed above, Duke Energy requires realization rates that it can apply to new measures, for planning purposes. In most cases, the realization rates summarized in Table 3-4 can be used for that purpose, with two exceptions: The high winter demand realization rates for lighting and food service equipment resulted from assigning positive ex post savings to measures that had ex ante winter demand savings of zero. Applying these values to new measures with non-zero ex ante winter demand savings would overstate winter demand savings for those measures. As a result, we developed alternate winter demand realization rates for lighting and food service measures, which are based on only those incented measures that have non-zero ex ante winter demand savings. These rates can be applied to new lighting and food service measures, respectively, with non-zero ex ante winter demand savings.

Table 3-5 summarizes the overall gross realization rates when using the alternate winter peak demand realization rates described above. It should be noted that none of the other technology-level realization rates in Table 3-5 changed.

Table 3-5. Overall Gross Realization Rates – Alternate Rates for Planning Purposes

Technology	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)
Lighting	99%	89%	81%
HVAC	100%	100%	100%
Food Service Products	100%	100%	100%
Pumps and Drives	108%	116%	114%
Process Equipment	100%	100%	100%
Information Technology	100%	N/A	N/A
Total	99%	90%	83%

4. Net Impact Analysis

4.1 Methodology

Our net impact analysis included application of a net-to-gross ratio (NTGR) to ex post gross savings. The NTGR includes consideration of free-ridership (FR), participant spillover (PSO), and trade ally spillover (TA SO), applicable to the main delivery channel. These concepts are defined as follows:

- Free-riders are program participants who would have completed the same energy efficiency upgrade without the program. FR scores represent the percentage of savings that would have been achieved in the absence of the program. FR scores can range from 0% (not a free-rider; the participant would not have completed the project without the program) to 100% (a full free-rider; the participant would have completed the project without the program). FR scores between 0% and 100% represent partial free-riders, i.e., participants who were to some degree influenced by the program to complete the energy efficiency upgrade.
- PSO refers to additional energy efficiency upgrades participants made at the time of or after their participation in the Smart \$aver® Prescriptive Program that were influenced by the program but for which they did not receive a program incentive. PSO is estimated at the program level and expressed as a percentage of program savings.
- TA SO refers to non-incented energy efficiency upgrades made by customers who were influenced by a participating trade ally who was in turn influenced by the Smart \$aver® Prescriptive Program. TA SO is estimated at the program level and is expressed as a percentage of program savings.

FR, PSO, and TA SO are all based on the recently completed DEO evaluation. The NTGR is calculated as follows:

$$NTGR = 1 - FR + PSO + TA SO$$

Because the DEO evaluation scope did not include NTGR research with participants in the midstream channel and the online store, we applied a default NTGR of 1.0 to projects delivered through these two channels.

4.2 Net Impact Results

The DEO evaluation estimated the program-level NTGR for the main delivery channel to be 87.4%. The NTGRs for lighting and non-lighting are 87.9% and 81.8%, respectively.

Table 4-1 presents the NTGRs by NTG component (i.e., FR, PSO, and TA SO) and by technology group (i.e., lighting and non-lighting).

Table 4-1. Summary of DEO Evaluation NTGR Results

Technology	FR	PSO	TA SO	NTGR
Lighting	17.7%	0.04%	5.6%	87.9%
Non-Lighting	23.9%			81.8%
Total	18.3%	0.04%	5.6%	87.4%

The DEK Smart Saver® Program realized net energy savings of nearly 43 GWh during the evaluation period. The main channel contributed approximately 29 GWh to this total while the midstream channel contributed nearly 12 GWh and the online store contributed just over 2 GWh. The largest share of net savings came from main channel lighting projects, which accounted for 63% of total program net savings.

Table 4-2 summarizes ex post net savings for the evaluation period.

Table 4-2. Summary of Net Program Savings

Technology	Ex Post Gross				Ex Post Net		
	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)	NTGR	Energy Savings (kWh)	Summer Peak Demand (kW)	Winter Peak Demand (kW)
Main Channel	32,739,912	5,627	3,195	0.87	28,648,110	4,910	2,792
<i>Lighting</i>	30,390,723	5,004	2,896	0.88	26,726,741	4,401	2,547
<i>HVAC</i>	1,030,005	446	111	0.82	842,427	365	91
<i>Food Service Products</i>	553,627	58	63	0.82	452,804	47	51
<i>Pumps and Drives</i>	561,088	70	77	0.82	458,906	57	63
<i>Process Equipment</i>	204,470	49	49	0.82	167,233	40	40
Midstream Channel	11,717,043	2,081	970	1.00	11,717,043	2,081	970
Online Store	2,139,742	434	75	1.00	2,139,742	434	75
Total	46,596,696	8,142	4,240		42,504,895	7,425	3,836

5. Summary Form

Duke Energy Kentucky Non-Residential Smart \$aver® Prescriptive Program

Completed EM&V Fact Sheet

Program Description

The Duke Energy Kentucky Non-Residential Smart \$aver® Prescriptive Program provides incentives to commercial and industrial customers for a range of measures, including lighting; HVAC systems; pumps and drives; process equipment; food service products; and information technology equipment. The program works with trade allies to promote the program and drive participation. The program also offers two alternative channels where customers can purchase a subset of products offered through the main channel at comparable incentive levels either online through the Business Savings Store or directly from distributors as part of the midstream channel.

Date	July 24, 2019
Region(s)	Duke Energy Kentucky
Evaluation Period	January 1, 2016– December 31, 2018
Annual kWh Savings (ex post net)	42,505 MWh
Coincident kW Impact (ex post net)	7.4 MW (Summer) 3.8 MW (Winter)
Measure Life	Not Evaluated
Net-to-Gross Ratio	87.4% overall; 87.9% lighting; 81.8% non-lighting (based on 2018 DEO evaluation)
Process Evaluation	No
Previous Evaluation(s)	Impact Evaluation of the Non-Residential Smart \$aver® Prescriptive Program in Ohio and Kentucky; November 21, 2013

Evaluation Methodology

The evaluation team performed a limited gross and net impact analysis, leveraging results from a recently completed evaluation for the Duke Energy Ohio Non-Residential Smart \$aver® Prescriptive Program.

For the gross impact analysis, we reviewed program-tracking data and developed a comprehensive database of program measures and ex ante savings. We updated per-unit “deemed” savings values for lighting measures included in the DEO deemed savings review with DEK-specific hours of use values from the DEK program database, as well as coincidence factors and waste heat factors, weighted by building type. For non-lighting measures included in the DEO deemed savings review, we applied DEO ex post savings values. Finally, we estimated ex post gross energy and demand savings, by technology, based on these per-unit deemed savings adjustments and quantity adjustments from the DEO evaluation.

The net impact evaluation developed ex post net energy and demand savings by applying net-to-gross ratios from the DEO evaluation to DEK ex post gross savings.

6. DSMore Table

The Excel spreadsheet containing measure-level inputs for Duke Energy Analytics is provided in a separate file. Per-measure savings values in the spreadsheet are based on the gross and net impact analyses reported above. The evaluation scope did not include updates to measure life assumptions.

[DSMore Table provided in a separate file]

Appendix A. Deemed Savings Review Memorandum

The Word document containing the deemed savings review memorandum is provided in a separate file.

[Deemed Savings Review Memorandum provided in a separate file]

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Measure Name	UCT	TRC	RIM	Participant
Beverage Reach-in Controller	3.66	1.65	0.85	2.86
Demand Control Ventilation for Kitchen Exhaust Hood	3.69	1.39	0.94	2.10
ENERGY STAR Commercial Glass Door Freezers 15 to 30 ft3 - var	8.66	2.42	0.99	3.93
ENERGY STAR Commercial Glass Door Freezers 30 to 50ft3 - var	11.46	3.32	1.02	5.43
ENERGY STAR Commercial Glass Door Freezers less than 15ft3 - var	10.38	5.07	1.01	8.76
ENERGY STAR Commercial Glass Door Freezers more than 50ft3 - var	14.90	4.63	1.04	7.77
ENERGY STAR Commercial Glass Door Refrigerators 15 to 30 ft3 - var	3.36	0.67	0.84	1.15
ENERGY STAR Commercial Glass Door Refrigerators 30 to 50ft3 - var	2.79	0.49	0.80	0.86
ENERGY STAR Commercial Glass Door Refrigerators less than 15ft3 - var	5.17	1.43	0.92	2.36
ENERGY STAR Commercial Glass Door Refrigerators more than 50ft3 - var	2.76	0.51	0.79	0.88
ENERGY STAR Commercial Solid Door Freezers 15 to 30 ft3 - var	4.26	1.09	0.88	1.81
ENERGY STAR Commercial Solid Door Freezers 30 to 50ft3 - var	6.05	1.55	0.94	2.53
ENERGY STAR Commercial Solid Door Freezers less than 15ft3 - var	4.37	1.94	0.89	3.29
ENERGY STAR Commercial Solid Door Freezers more than 50ft3 - var	9.49	2.58	1.00	4.18
ENERGY STAR Commercial Solid Door Refrigerators 15 to 30 ft3 - var	2.77	0.48	0.80	0.83
ENERGY STAR Commercial Solid Door Refrigerators 30 to 50ft3 - var	3.00	0.53	0.81	0.92
ENERGY STAR Commercial Solid Door Refrigerators less than 15ft3 - var	2.94	0.55	0.81	0.95
ENERGY STAR Commercial Solid Door Refrigerators more than 50ft3 - var	3.41	0.64	0.84	1.08
Griddles	4.09	0.48	1.08	0.62
Holding Cabinet Full Size Insulated	5.85	2.62	1.11	3.60
Holding Cabinet Half Size Insulated	4.15	0.74	1.03	1.03
Holding Cabinet Three Quarter Size Insulated	4.34	0.97	1.04	1.34
HT ES PotPanUtl DW (Elec) New -replc on Burnout	1.46	1.06	0.67	1.90
HT ES PotPanUtl DW (Gas) New -replc on Burnout	1.00	0.72	0.56	1.45
HT ES PotPanUtl DW New -replc on Burnout	1.46	1.06	0.67	1.90
Icemaker (100 to 500 lbs_day)	1.02	0.51	0.54	1.12
Icemaker (501 to 1000 lbs_day)	2.15	2.00	0.75	3.69
Icemaker (Greater Than 1000 lbs_day)	2.53	1.62	0.80	2.86
Night covers for displays	1.44	0.38	0.54	0.86
Refrigerators - C&I - CEE T2 ER	2.09	1.11	0.81	1.76
Refrigerators - C&I - CEE T2 TOS	1.73	0.54	0.75	0.89
Refrigerators - C&I - ENERGY STAR ER	3.50	2.69	0.96	4.05
Refrigerators - C&I - ENERGY STAR TOS	1.96	0.72	0.79	1.15
Snack Machine Controller	3.23	1.33	0.73	2.69
Strip Curtains - Freezers	2.04	1.48	0.74	2.78
Strip Curtains - Refrigerated Warehouse	5.43	4.26	0.96	8.80
Vending Equipment Controller	4.56	2.05	1.11	2.65
Walk-In Cooler Automatic Door-Closer Retrofit	3.31	1.48	0.77	2.84

STAFF-DR-01-005

REQUEST:

Refer to the application, paragraph 11. Provide the identity of the Evaluation, Measurement and Verification (EM&V) vendor and the process in which they were selected to perform the analysis of the Peak Time Rebate (PTR) pilot program.

RESPONSE:

In 2014, Duke Energy began an extensive RFP project to select new evaluators for DR and EE programs. We selected 3 evaluators, Navigant, Opinion Dynamics, and Nexant, for our pool of EM&V firms. The firms were chosen for specific program evaluations based on their program proposals, cost, and expertise in areas of evaluation (e.g. billing analysis, process evaluations, experience with DR or EE programs), and performance/quality. Due to Nexant's experience with TOU program evaluations, expertise with impact analyses using randomized control trial (RCT) and difference-in-differences methodologies, historical favorable cost proposals and quality of work, they were selected.

PERSON RESPONSIBLE: Rose Stoeckle

STAFF-DR-01-006

REQUEST:

Refer to the application, paragraph 13.

- a. Provide support of the 33 cents/kWh credit.
- b. Duke Kentucky states that credits will be calculated and applied no later than the second billing month following the Critical Peak Event (CPE). Explain why credits will not be applied during the billing month the CPE occurred or in the first billing month following the CPE.

RESPONSE:

- a. See STAFF-DR-01-006(a) Attachment for the credit calculation.
- b. Due to timing, the credit may not appear on the customer's first bill after an event. The calculation of the credit amount is a manual process accomplished outside of the billing system. It may take several days for data collection, model development, and credit calculations to be complete. In some cases, an event may be called on or very close to the end of a customer billing cycle and the bill could be prepared and sent before the credit calculation process is completed.

PERSON RESPONSIBLE: Bruce Sailors

STAFF-DR-01-006(a) ATTACHMENT

**BEING PROVIDED ELECTRONICALLY AND
ON CD DUE TO THE SIZE OF THE EXCEL
SPREADSHEET**

REQUEST:

Refer to the application, paragraph 17.

- a. Explain in detail the criteria for a customer to be eligible to participate in the PTR Pilot program.
- b. Explain whether a Wi-Fi enabled thermostat is necessary in order for a customer to participate in the PTR Pilot program.

RESPONSE:

- a. The PTR Pilot program is available to customers:
 - i) With an active Rate RS account.
 - ii) Not taking service under Riders TS, AMO, NM, or the Power Manager Program.
 - iii) Current on their account without deferred payment arrangements.
 - iv) Who are not designated as a medical alert customer.
 - v) With an installed and certified smart meter.
 - vi) Able to provide and maintain either an email address or text number to enable Company's pilot program communications.
 - vii) Who are one of the first approximately 1,000 customers to enroll. Duke Energy Kentucky will allow up to 100 additional customers to enroll as a buffer to counter customer attrition during the pilot. However, the Company

will cancel additional marketing efforts once 1,000 customers enroll in the pilot. Acquisition efforts are also subject to the proposed budget for the pilot. In addition, Company will monitor the number of enrollments above and below the average monthly usage of the customers solicited to ensure a diverse customer group.

- b. A Wi-Fi enabled thermostat is not necessary for a customer to participate in the PTR Pilot program. However, the Company will identify customers who have this type of thermostat.

PERSON RESPONSIBLE: Bruce Sailors

REQUEST:

Refer to the application, paragraph 19.

- a. Explain how Duke Kentucky expects to fund the PTR Pilot program.
- b. Explain in detail what billing system revisions and other preparations are expected to be needed.

RESPONSE:

- a. The Company proposes to recover the PTR Pilot program costs through Rider DSMR.
- b. As originally planned, an interface with the MDM system would be provided to assist analysts with acquiring the hourly load data needed to determine a customer's credit amount. In addition, another interface with the billing system was planned to be developed to accept an input file containing credit amounts for customers and apply those credit amounts to the bill so that manual entry of credits is not required. However, the Company has recently reassessed this system work and determined that it is more cost efficient to implement the pilot more manually. The work to develop the interfaces would be unique to the current systems and would have to be redone for the new Customer Connect billing system. Therefore, the Company is eliminating the cost of the interfaces and replacing that effort with a lower cost solution. This change will reduce the costs for the pilot but the net impact is not

material, (i.e., See response to AG-DR-01-012), and therefore the Company does not propose any changes to the costs and cost effectiveness results.

Other preparations for the pilot would include but are not limited to development of marketing materials, development of the credit calculation process, and Customer Prototype Lab implementation preparations.

PERSON RESPONSIBLE: Bruce Sailors

REQUEST:

Refer to the application, paragraph 21.

- a. Explain why a reduction of 0.3 kW per hour per participant is considered.
- b. Explain why the cost-effectiveness scores are based on a three-year pilot instead of a two-year pilot.
- c. Provide the cost-effectiveness scores based on a two-year pilot.

RESPONSE:

- a. Load reduction of 0.3 kW per hour per participant is an estimate of load impact for the Kentucky pilot based on estimates of customer response from a similar pilot offered in 2015 in the Duke Energy Carolinas North Carolina service area.
- b. As agreed in a settlement with the Kentucky Attorney General in Case No. 2016-00152, the pilot program will run for 2 years and then be frozen while an EM&V report is developed, reviewed, and filed with the Commission. The Company will recommend a program disposition. The Commission will require time to review the Company's recommendation and provide an order on the disposition of the program. During the time frame after the initial 2 years of the pilot and until the Commission provides an order on the recommended program disposition, the pilot will continue for participants who are on the program. The Company estimates that

the ultimate disposition of the PTR pilot program will be known approximately 3 years from the start of the pilot. Therefore, a 3-year score is presented.

- c. Reducing the time frame of the pilot from 3 years to 2 years reduces the TRC score from 0.20 to 0.16.

PERSON RESPONSIBLE: Bruce Sailors

**Duke Energy Kentucky
Case No. 2019-00277
Staff First Set Data Requests
Date Received: October 10, 2019**

STAFF-DR-01-010

REQUEST:

Refer to the application, Appendix A. Provide the supporting calculations for the Cost Effectiveness Test Results in Excel spreadsheet format, with formulas unprotected and all rows and columns fully accessible.

RESPONSE:

Please see STAFF-DR-01-010 Attachment.

PERSON RESPONSIBLE: Julie Hollingsworth

Cost Effectiveness Test Results (A)

Program Name	UCT	TRC	RIM	PCT
Residential Programs				
My Home Energy Report	1.86	1.86	0.79	
Residential Smart Saver®	2.40	1.34	0.74	3.35
Peak Time Rebate Pilot	0.19	0.20	0.19	NA
Non-Residential Programs				
Smart Saver® Prescriptive	4.23	1.93	1.05	3.28

Cumulative Elec Lost Rev Net of Fuel NF	NPV Participant Costs (gross)	NPV Participant Costs (net)	Participant Elec Bill Savings (gross)	NPV Incentives	NPV Program Costs (Excl. Incentives and excl. EMV)	Cumulative Cost- Based Avoided Elec Capacity	Cumulative Cost- Based Avoided Elec Production	Cumulative Avoided T&D Electric
211,282	-	-	331,519	-	156,267	79,829	150,049	61,500
4,032,599	2,559,358	1,965,965	8,035,478	533,112	1,272,912	639,479	2,980,190	707,158
-	-	-	-	13,436	511,751	-	59,889	42,266
4,878,840	3,541,508	2,521,171	10,998,694	607,396	1,005,140	1,415,122	4,416,316	991,555

(A) Cost effectiveness scores of the modified programs listed, as filed in 2019 amendment filing
 Most recent scores for existing programs can be found in the Company's annual true up filing, Case No. 2018-00370, Appendix A

STAFF-DR-01-011

REQUEST:

Refer to the application, Appendix B.

- a. Provide in Excel spreadsheet format with all formulas unprotected and all rows and columns fully accessible.
- b. Provide a revised Appendix b with the gas allocations as ordered in Case No. 2018-00370.¹
- c. Refer to page 2 of 6. Also, refer to Case No. 2018-00370, Appendix B, page 2. Confirm that the lowered estimated costs of the Residential Smart Saver residential program are due to the decrease in the costs associated with ending the free LED Program.

RESPONSE:

- a. Please see STAFF-DR-01-011(a) Attachment.
- b. Please see STAFF-DR-01-011(b) Attachment.
- c. The lowered estimated costs of Residential Smart Saver program are not due to the Free LED Program. The difference is due to a decrease in customer participation within the HVAC measures.

PERSON RESPONSIBLE: Julie Hollingsworth – a. & b.
Mark Otersen – c.

¹ Case No. 2018-00370, *Electronic Annual Cost Recovery Filing for Demand Side Management by Duke Energy Kentucky, Inc.* (Ky. PSC Oct. 2, 2019).

Kentucky DSM Rider

Comparison of Revenue Requirement to Rider Recovery

Residential Programs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Projected Program Costs 7/2017 to 6/2018 (A)	Projected Lost Revenues 7/2017 to 6/2018 (A)	Projected Shared Savings 7/2017 to 6/2018 (A)	Program Expenditures 7/2017 to 6/2018 (B)	Program Expenditures (C) Gas	Electric	Lost Revenues 7/2017 to 6/2018 (B)	Shared Savings 7/2017 to 6/2018 (B)	2017 Gas (D)	Reconciliation Electric (E)	Rider Collection (F) Gas	Electric	(Over)/Under Gas (G)	Collection Electric (H)
Appliance Recycling Program	\$ -	\$ 15,695	\$ -	\$ -	\$ -	\$ -	\$ 12,052	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Energy Efficiency Education Program for Schools	\$ 275,930	\$ 67,148	\$ (495)	\$ 155,368	\$ 33,228	\$ 122,140.11	\$ 47,617	\$ 1,910	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Low Income Neighborhood	\$ 306,206	\$ 37,486	\$ (15,051)	\$ 221,100	\$ -	\$ 221,100.45	\$ 28,800	\$ (9,556)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Low Income Services	\$ 925,461	\$ 51,905	\$ (46,167)	\$ 431,011	\$ 187,756	\$ 243,254.65	\$ 29,438	\$ (18,091)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
My Home Energy Report	\$ 798,061	\$ 706,256	\$ 25,078	\$ 372,001	\$ -	\$ 372,000.83	\$ 395,323	\$ 25,456	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Residential Energy Assessments	\$ 276,410	\$ 79,984	\$ 8,280	\$ 136,433	\$ -	\$ 136,433.40	\$ 46,714	\$ 7,164	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Residential Smart \$aver®	\$ 2,503,271	\$ 1,026,020	\$ 85,565	\$ 1,446,170	\$ -	\$ 1,446,169.64	\$ 780,687	\$ 126,113	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Power Manager®	\$ 706,922	\$ -	\$ 840,876	\$ 527,636	\$ -	\$ 527,635.84	\$ -	\$ 111,905	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Power Manager® for Apartments	\$ 58,552	\$ -	\$ 5,795	\$ (8,399)	\$ -	\$ (8,399.05)	\$ -	\$ 840	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Home Energy Assistance Pilot Program (I)	\$ 258,401	\$ -	\$ -	\$ 214,095	\$ 89,662	\$ 124,432	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Revenues collected except for HEA											\$ 109,473	\$ 151,925	\$ (1,472,706)	\$ 9,903,602
Total	\$ 6,109,214	\$ 1,984,494	\$ 903,882	\$ 3,495,415	\$ 310,646	\$ 3,184,768	\$ 1,340,630	\$ 247,742	\$ (2,724,719)	\$ 46,144	\$ (1,363,233)	\$ 10,055,527	\$ (1,050,839)	\$ (5,236,244)

- (A) Amounts identified in report filed in Case No. 2015-00368 and Case No. 2016-00289.
- (B) Actual program expenditures, lost revenues (for this period and from prior period DSM measure installations), and shared savings for the period July 1, 2017 through June 30, 2018.
- (C) Allocation of program expenditures to gas and electric in accordance with the Commission's Order in Case No. 2014-00388.
- (D) Recovery allowed in accordance with the Commission's Order in Case No. 2012-00085.
- (E) Recovery allowed in accordance with the Commission's Order in Case No. 2012-00085.
- (F) Revenues collected through the DSM Rider between July 1, 2017 and June 30, 2018.
- (G) Column (5) + Column (9) - Column(11).
- (H) Column (6) + Column (7) + Column (8) + Column (10) - Column(12).
- (I) Revenues and expenses for the Home Energy Assistance Pilot Program.

Commercial Programs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Projected Program Costs 7/2017 to 6/2018 (A)	Projected Lost Revenues 7/2017 to 6/2018 (A)	Projected Shared Savings 7/2017 to 6/2018 (A)	Program Expenditures 7/2017 to 6/2018 (B)	Lost Revenues 7/2017 to 6/2018 (B)	Shared Savings 7/2017 to 6/2018 (B)	2017 Reconciliation (C)	Rider Collection (D)	(Over)/Under Collection (E)
Small Business Energy Saver	\$ 1,077,726	\$ 232,139	\$ 127,508	\$ 883,115	\$ 166,751	\$ 111,408			
Smart \$aver® Custom	\$ 435,565	\$ 109,614	\$ 64,889	\$ 841,404	\$ 133,475	\$ 291,228			
Smart \$aver® Non-Residential Performance Incentive Program	\$ 44,593	\$ 14,276	\$ 6,908	\$ -	\$ -	\$ -			
Smart \$aver® Prescriptive - Energy Star Food Service Products	\$ 40,177	\$ 14,711	\$ 7,236	\$ 44,817	\$ 6,995	\$ 5,716			
Smart \$aver® Prescriptive - HVAC	\$ 224,262	\$ 27,306	\$ 20,926	\$ 107,753	\$ 10,908	\$ 2,712			
Smart \$aver® Prescriptive - IT	\$ 15,537	\$ 5,272	\$ (1,553)	\$ 5,647	\$ 3	\$ (565)			
Smart \$aver® Prescriptive - Lighting	\$ 1,223,636	\$ 283,247	\$ 125,607	\$ 2,309,504	\$ 359,979	\$ 552,075			
Smart \$aver® Prescriptive - Motors/Pumps/VFD	\$ 30,337	\$ 10,489	\$ 3,034	\$ 38,758	\$ 6,529	\$ 8,629			
Smart \$aver® Prescriptive - Process Equipment	\$ 9,832	\$ 2,331	\$ (983)	\$ 5,139	\$ 2,043	\$ (514)			
Power Manager® for Business	\$ 143,872	\$ 6,906	\$ (2,021)	\$ 46,632	\$ 131	\$ (3,224)			
Total	\$ 3,245,539	\$ 706,291	\$ 351,552	\$ 4,282,770	\$ 686,815	\$ 967,465	\$ 5,576,651	\$ 5,490,906	\$ 6,022,795
PowerShare®	\$ 924,919	\$ -	\$ 80,183	\$ 709,527	\$ -	\$ 141,236	\$ 178,273	\$ 463,782	\$ 565,255

- (A) Amounts identified in report filed in Case No. 2015-00368 and Case No. 2016-00289.
- (B) Actual program expenditures, lost revenues (for this period and from prior period DSM measure installations), and shared savings for the period July 1, 2017 through June 30, 2018.
- (C) Recovery allowed in accordance with the Commission's Order in Case No. 2012-00085.
- (D) Revenues collected through the DSM Rider between July 1, 2017 and June 30, 2018.
- (E) Column (4) + Column (5) + Column (6) + Column (7) - Column (8)

2019-2020 Projected Program Costs, Lost Revenues, and Shared Savings

Residential Program Summary (A)

	Residential Program Summary (A)				Allocation of Costs (B)			Budget (Costs, Lost Revenues, & Shared Savings)	
	Costs	Lost Revenues	Shared Savings	Total	Electric	Gas	Electric Costs	Electric	Gas Costs
Low Income Neighborhood	\$ 371,468	\$ 7,935	\$ (15,844)	\$ 363,559	100.0%	0.0%	\$ 371,468	\$ 363,559	\$ -
Low Income Services	\$ 810,628	\$ 11,128	\$ (30,069)	\$ 791,688	100.0%	0.0%	\$ 810,628	\$ 791,688	\$ -
My Home Energy Report (D)	\$ 165,696	\$ 161,739	\$ 13,511	\$ 340,946	100.0%	0.0%	\$ 165,696	\$ 340,946	\$ -
Residential Energy Assessments	\$ 326,678	\$ 15,180	\$ 7,262	\$ 349,120	100.0%	0.0%	\$ 326,678	\$ 349,120	\$ -
Residential Smart Saver® (D)	\$ 1,949,221	\$ 260,300	\$ 252,080	\$ 2,461,601	100.0%	0.0%	\$ 1,949,221	\$ 2,461,601	\$ -
Power Manager®	\$ 564,560	\$ -	\$ 131,418	\$ 695,978	100.0%	0.0%	\$ 564,560	\$ 695,978	\$ -
Peak Time Rebate Pilot	\$ 207,736	\$ -	\$ -	\$ 207,736	100.0%	0.0%	\$ 207,736	\$ 207,736	\$ -
Total Costs, Net Lost Revenues, Shared Savings	\$ 4,395,988	\$ 456,282	\$ 358,359	\$ 5,210,629			\$ 4,395,988	\$ 5,210,629	\$ -
Home Energy Assistance Pilot Program (E)	\$ 261,425							\$ 151,925	\$ 109,500

NonResidential Program Summary (A)

	NonResidential Program Summary (A)				Allocation of Costs (B)			Budget (Costs, Lost Revenues, & Shared Savings)	
	Costs	Lost Revenues	Shared Savings	Total	Electric	Gas	Electric Costs	Electric	Gas
Small Business Energy Saver	\$ 874,529	\$ 36,499	\$ 116,303	\$ 1,027,331	100.0%	0.0%	\$ 874,529	\$ 1,027,331	NA
Smart Saver® Custom	\$ 675,415	\$ 36,816	\$ 155,383	\$ 867,615	100.0%	0.0%	\$ 675,415	\$ 867,615	NA
Smart Saver® Non-Residential Performance Incentive Program	\$ -	\$ -	\$ -	\$ -	100.0%	0.0%	\$ -	\$ -	NA
Smart Saver® Prescriptive (C), (D)	\$ 1,676,125	\$ 60,956	\$ 520,952	\$ 2,258,032	100.0%	0.0%	\$ 1,676,125	\$ 2,258,032	NA
PowerShare®	\$ 908,290	\$ -	\$ 153,191	\$ 1,061,481	100.0%	0.0%	\$ 908,290	\$ 1,061,481	NA
Total Costs, Net Lost Revenues, Shared Savings	\$ 4,134,358	\$ 134,271	\$ 945,829	\$ 5,214,458			\$ 4,134,358	\$ 5,214,458	NA
Total Program	\$ 8,530,346	\$ 590,553	\$ 1,304,188	\$ 10,425,087					

(A) Costs, Lost Revenues (for this period and from prior period DSM measure installations), and Shared Savings for Year 8 of portfolio.

(B) Allocation of program expenditures to 100% electric, see Allocation of program expenditures to 100% electric, see Annual Cost Recovery for Demand Side Management Application

(C) Smart Saver® Prescriptive consists of the following technologies: Energy Efficient Food Service Projects, HVAC, Lighting, IT, Pumps and Motors, and Process Equipment.

(D) Yellow highlighted rows include modifications to programs as described in application.

(E) Upon approval from the Commission, the HEA program will no longer be calculated as part of the DSMR rider

Duke Energy Kentucky
 Demand Side Management Cost Recovery Rider (DSMR)
 Summary of Calculations for Programs

July 2019 to June 2020

	Program Costs (A)
<u>Electric Rider DSM</u>	
Residential Rate RS	\$ 5,210,629
Distribution Level Rates Part A DS, DP, DT, GS-FL, EH & SP	\$ 4,152,977
Transmission Level Rates & Distribution Level Rates Part B	\$ 1,061,481
<u>Gas Rider DSM</u>	
Residential Rate RS	\$ -

(A) See Appendix B, page 2 of 5.

Duke Energy Kentucky
Demand Side Management Cost Recovery Rider (DSMR)
Summary of Billing Determinants

Year	2019
Projected Annual Electric Sales kWH	
Rate RS	1,436,685,800
Rates DS, DP, DT, GS-FL, EH, & SP	2,333,287,003
Rates DS, DP, DT, GS-FL, EH, SP, & TT	2,570,138,003
Projected Annual Gas Sales CCF	
Rate RS	57,859,338

Duke Energy Kentucky
Demand Side Management Cost Recovery Rider (DSMR)
Summary of Calculations

July 2017 to June 2018

Rate Schedule Riders	True-Up Amount (A)	Expected Program Costs (B)	Total DSM Revenue Requirements	Estimated Billing Determinants (C)	DSM Cost Recovery Rider (DSMR)
<u>Electric Rider DSM</u> Residential Rate RS	\$ (5,331,020)	\$ 5,210,629	\$ (120,391)	1,436,685,800 kWh	\$ (0.000084) \$/kWh
Distribution Level Rates Part A DS, DP, DT, GS-FL, EH & SP	\$ 6,131,808	\$ 4,152,977	\$ 10,284,785	2,333,287,003 kWh	\$ 0.004408 \$/kWh
Transmission Level Rates & Distribution Level Rates Part B TT	\$ 575,486	\$ 1,061,481	\$ 1,636,967	2,570,138,003 kWh	\$ 0.000637 \$/kWh
Distribution Level Rates Total DS, DP, DT, GS-FL, EH & SP					\$ 0.005045 \$/kWh
<u>Gas Rider DSM</u> Residential Rate RS	\$ (1,069,860)	\$ -	\$ (1,069,860)	57,859,338 CCF	\$ (0.018491) \$/CCF
Total Rider Recovery			\$ 10,731,501		
Customer Charge for HEA Program (D)					
<u>Electric No.4</u> Residential Rate RS			Annual Revenues \$ 151,925	Number of Customers 126,604	Monthly Customer Charge \$ 0.10
<u>Gas No. 5</u> Residential Rate RS			\$ 109,500	91,250	\$ 0.10
Total Customer Charge Revenues			\$ 261,425		
Total Recovery			\$ 10,992,926		

(A) (Over)/Under of Appendix B page 1 multiplied by the average three-month commercial paper rate for 2017 to include interest on over or under-recovery in accordance with the Commission's order in Case No. 95-312. Value is:

1.018100

(B) Appendix B, page 2.

(C) Appendix B, page 4.

(D) Forecasted changes do not reflect the request to increase the HEA monthly charge to \$0.20 per meter/per month. The HEA forecast does not factor into the DSMR rate adjustment

Summary of Load Impacts July 2017 Through June 2018*

Allocation Factors
 based on July 2017-
 June 2018

Residential Programs	kWh	% of Total Res		ccf	% of Total Res		Elec % of Total Sales	% of Gas Sales
		Sales			Sales			
Energy Efficiency Education Program for Schools	361,289	0.0240%		4,214	0.0065%		79%	21%
Low Income Neighborhood	226,273	0.0150%		-	0.0000%		100%	0%
Low Income Services	197,878	0.0132%		6,549	0.0102%		56%	44%
My Home Energy Report	9,221,319	0.6129%		-	0.0000%		100%	0%
Residential Energy Assessments	294,049	0.0195%		-	0.0000%		100%	0%
Residential Smart \$aver®	4,933,960	0.3280%		-	0.0000%		100%	0%
Power Manager®	-	0.0000%		-	0.0000%		100%	0%
Power Manager® for Apartments	-	0.0000%		-	0.0000%		100%	0%
Total Residential	15,234,768	1.0126%		10,763	0.0167%			
Total Residential (Rate RS) Sales	1,504,451,330	100%		64,504,698	100%			
For July 2017 Through June 2018								

*Load Impacts Net of Free Riders at Meter

Kentucky DSM Rider

Comparison of Revenue Requirement to Rider Recovery

Residential Programs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Projected Program Costs 7/2017 to 6/2018 (A)	Projected Lost Revenues 7/2017 to 6/2018 (A)	Projected Shared Savings 7/2017 to 6/2018 (A)	Program Expenditures 7/2017 to 6/2018 (B)	Program Expenditures Gas	Program Expenditures Electric (C)	Lost Revenues 7/2017 to 6/2018 (B)	Shared Savings 7/2017 to 6/2018 (B)	2017 Gas (D)	Reconciliation Electric (E)	Rider Collection Gas	Rider Collection Electric (F)	(Over)/Under Gas (G)	(Over)/Under Electric (H)
Appliance Recycling Program	\$ -	\$ 15,695	\$ -	\$ -	\$ -	\$ -	\$ 12,052	\$ -						
Energy Efficiency Education Program for Schools	\$ 275,930	\$ 67,148	\$ (495)	\$ 155,368	\$ 33,228	\$ 122,140.11	\$ 47,617	\$ 1,910						
Low Income Neighborhood	\$ 306,206	\$ 37,486	\$ (15,051)	\$ 221,100	\$ -	\$ 221,100.45	\$ 28,800	\$ (9,556)						
Low Income Services	\$ 825,461	\$ 51,905	\$ (46,167)	\$ 431,011	\$ 187,756	\$ 243,254.65	\$ 29,438	\$ (16,091)						
My Home Energy Report	\$ 798,081	\$ 706,256	\$ 25,078	\$ 372,001	\$ -	\$ 372,000.83	\$ 395,323	\$ 25,458						
Residential Energy Assessments	\$ 278,410	\$ 79,984	\$ 8,280	\$ 136,433	\$ -	\$ 136,433.40	\$ 46,714	\$ 7,164						
Residential Smart Saver®	\$ 2,503,271	\$ 1,026,020	\$ 85,565	\$ 1,446,170	\$ -	\$ 1,446,169.84	\$ 780,687	\$ 126,113						
Power Manager®	\$ 706,922	\$ -	\$ 840,876	\$ 527,636	\$ -	\$ 527,635.84	\$ -	\$ 111,905						
Power Manager® for Apartments	\$ 58,552	\$ -	\$ 5,795	\$ (8,399)	\$ -	\$ (8,399.05)	\$ -	\$ 840						
Home Energy Assistance Pilot Program (I) Revenues collected except for HEA	\$ 258,401			\$ 214,095	\$ 89,662	\$ 124,432					\$ 109,473	\$ 151,925		
Total	\$ 6,109,214	\$ 1,984,494	\$ 903,882	\$ 3,495,415	\$ 310,646	\$ 3,184,768	\$ 1,340,630	\$ 247,742	\$ (2,724,719)	\$ 48,144	\$ (1,363,233)	\$ 9,903,602	\$ (1,050,839)	\$ (5,236,244)

- (A) Amounts identified in report filed in Case No. 2015-00368 and Case No. 2016-00289.
- (B) Actual program expenditures, lost revenues (for this period and from prior period DSM measure installations), and shared savings for the period July 1, 2017 through June 30, 2018.
- (C) Allocation of program expenditures to gas and electric in accordance with the Commission's Order in Case No. 2014-00388.
- (D) Recovery allowed in accordance with the Commission's Order in Case No. 2012-00085.
- (E) Recovery allowed in accordance with the Commission's Order in Case No. 2012-00085.
- (F) Revenues collected through the DSM Rider between July 1, 2017 and June 30, 2018.
- (G) Column (5) + Column (9) - Column(11).
- (H) Column (6) + Column (7) + Column (8) + Column (10) - Column(12).
- (I) Revenues and expenses for the Home Energy Assistance Pilot Program.

Commercial Programs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Projected Program Costs 7/2017 to 6/2018 (A)	Projected Lost Revenues 7/2017 to 6/2018 (A)	Projected Shared Savings 7/2017 to 6/2018 (A)	Program Expenditures 7/2017 to 6/2018 (B)	Lost Revenues 7/2017 to 6/2018 (B)	Shared Savings 7/2017 to 6/2018 (B)	2017 Reconciliation (C)	Rider Collection (D)	(Over)/Under Collection (E)
Small Business Energy Saver	\$ 1,077,726	\$ 232,139	\$ 127,508	\$ 883,115	\$ 166,751	\$ 111,408			
Smart Saver® Custom	\$ 435,565	\$ 109,614	\$ 64,889	\$ 841,404	\$ 133,475	\$ 291,228			
Smart Saver® Non-Residential Performance Incentive Program	\$ 44,593	\$ 14,276	\$ 6,908	\$ -	\$ -	\$ -			
Smart Saver® Prescriptive - Energy Star Food Service Products	\$ 40,177	\$ 14,711	\$ 7,236	\$ 44,817	\$ 6,995	\$ 5,716			
Smart Saver® Prescriptive - HVAC	\$ 224,262	\$ 27,306	\$ 20,926	\$ 107,753	\$ 10,908	\$ 2,712			
Smart Saver® Prescriptive - IT	\$ 15,537	\$ 5,272	\$ (1,553)	\$ 5,647	\$ 3	\$ (565)			
Smart Saver® Prescriptive - Lighting	\$ 1,223,636	\$ 283,247	\$ 125,607	\$ 2,309,504	\$ 359,979	\$ 552,075			
Smart Saver® Prescriptive - Motors/Pumps/VFD	\$ 30,337	\$ 10,489	\$ 3,034	\$ 38,759	\$ 6,529	\$ 8,629			
Smart Saver® Prescriptive - Process Equipment	\$ 9,832	\$ 2,331	\$ (983)	\$ 5,139	\$ 2,043	\$ (514)			
Power Manager® for Business	\$ 143,872	\$ 6,906	\$ (2,021)	\$ 46,632	\$ 131	\$ (3,224)			
Total	\$ 3,245,539	\$ 706,291	\$ 351,552	\$ 4,282,770	\$ 686,815	\$ 967,465	\$ 5,576,651	\$ 5,490,906	\$ 8,022,795
PowerShare®	\$ 924,919	\$ -	\$ 80,183	\$ 709,527	\$ -	\$ 141,236	\$ 178,273	\$ 463,782	\$ 565,255

- (A) Amounts identified in report filed in Case No. 2015-00368 and Case No. 2016-00289.
- (B) Actual program expenditures, lost revenues (for this period and from prior period DSM measure installations), and shared savings for the period July 1, 2017 through June 30, 2018.
- (C) Recovery allowed in accordance with the Commission's Order in Case No. 2012-00085.
- (D) Revenues collected through the DSM Rider between July 1, 2017 and June 30, 2018.
- (E) Column (4) + Column (5) + Column (6) + Column (7) - Column (8)

2019-2020 Projected Program Costs, Lost Revenues, and Shared Savings

Residential Program Summary (A)

	Costs	Lost Revenues	Shared Savings	Total	Allocation of Costs (B)			Budget (Costs, Lost Revenues, & Shared Savings)	
					Electric	Gas	Electric Costs	Electric	Gas Costs
Low Income Neighborhood	\$ 371,468	\$ 7,935	\$ (15,844)	\$ 363,559	100.0%	0.0%	\$ 371,468	\$ 363,559	\$ -
Low Income Services	\$ 810,828	\$ 11,128	\$ (30,069)	\$ 791,888	49%	51%	\$ 397,458	\$ 378,517	\$ 413,170
My Home Energy Report (D)	\$ 165,696	\$ 161,739	\$ 13,511	\$ 340,946	100.0%	0.0%	\$ 165,696	\$ 340,946	\$ -
Residential Energy Assessments	\$ 326,678	\$ 15,180	\$ 7,262	\$ 349,120	100.0%	0.0%	\$ 326,678	\$ 349,120	\$ -
Residential Smart \$aver® (D)	\$ 1,949,221	\$ 260,300	\$ 252,080	\$ 2,461,601	100.0%	0.0%	\$ 1,949,221	\$ 2,461,601	\$ -
Power Manager®	\$ 564,560	\$ -	\$ 131,418	\$ 695,978	100.0%	0.0%	\$ 564,560	\$ 695,978	\$ -
Peak Time Rebat Pilot	\$ 207,736	\$ -	\$ -	\$ 207,736	100.0%	0.0%	\$ 207,736	\$ 207,736	\$ -
Total Costs, Net Lost Revenues, Shared Savings	\$ 4,395,988	\$ 456,282	\$ 358,359	\$ 5,210,629			\$ 3,982,817	\$ 4,797,458	\$ 413,170
Home Energy Assistance Pilot Program (E)	\$ 261,425							\$ 151,925	\$ 109,500

NonResidential Program Summary (A)

	Costs	Lost Revenues	Shared Savings	Total	Allocation of Costs (B)			Budget (Costs, Lost Revenues, & Shared Savings)	
					Electric	Gas	Electric Costs	Electric	Gas
Small Business Energy Saver	\$ 874,529	\$ 38,499	\$ 116,303	\$ 1,027,331	100.0%	0.0%	\$ 874,529	\$ 1,027,331	NA
Smart \$aver® Custom	\$ 875,415	\$ 36,816	\$ 155,383	\$ 867,815	100.0%	0.0%	\$ 675,415	\$ 867,815	NA
Smart \$aver® Non-Residential Performance Incentive Program	\$ -	\$ -	\$ -	\$ -	100.0%	0.0%	\$ -	\$ -	NA
Smart \$aver® Prescriptive (C), (D)	\$ 1,676,125	\$ 60,956	\$ 520,952	\$ 2,258,032	100.0%	0.0%	\$ 1,676,125	\$ 2,258,032	NA
PowerShare®	\$ 908,290	\$ -	\$ 153,191	\$ 1,061,481	100.0%	0.0%	\$ 908,290	\$ 1,061,481	NA
Total Costs, Net Lost Revenues, Shared Savings	\$ 4,134,358	\$ 134,271	\$ 945,829	\$ 5,214,458			\$ 4,134,358	\$ 5,214,458	NA
Total Program	\$ 8,530,346	\$ 590,553	\$ 1,304,188	\$ 10,425,087					

(A) Costs, Lost Revenues (for this period and from prior period DSM measure installations), and Shared Savings for Year 8 of portfolio.

(B) Allocation of program expenditures to 100% electric, see Allocation of program expenditures to 100% electric, see Annual Cost Recovery for Demand Side Management Application

(C) Smart \$aver® Prescriptive consists of the following technologies: Energy Efficient Food Service Projects, HVAC, Lighting, IT, Pumps and Motors, and Process Equipment.

(D) Yellow highlighted rows include modifications to programs as described in application.

(E) Upon approval from the Commission, the HEA program will no longer be calculated as part of the DSMR rider

Duke Energy Kentucky
Demand Side Management Cost Recovery Rider (DSMR)
Summary of Calculations for Programs

July 2019 to June 2020

	Program Costs (A)
<u>Electric Rider DSM</u>	
Residential Rate RS	\$ 4,797,458
Distribution Level Rates Part A DS, DP, DT, GS-FL, EH & SP	\$ 4,152,977
Transmission Level Rates & Distribution Level Rates Part B	\$ 1,061,481
<u>Gas Rider DSM</u>	
Residential Rate RS	\$ 413,170

(A) See Appendix B, page 2 of 5.

Duke Energy Kentucky
Demand Side Management Cost Recovery Rider (DSMR)
Summary of Billing Determinants

Year	2019
Projected Annual Electric Sales kWh	
Rate RS	1,436,685,800
Rates DS, DP, DT, GS-FL, EH, & SP	2,333,287,003
Rates DS, DP, DT, GS-FL, EH, SP, & TT	2,570,138,003
Projected Annual Gas Sales CCF	
Rate RS	57,859,338

Duke Energy Kentucky
Demand Side Management Cost Recovery Rider (DSMR)
Summary of Calculations

July 2017 to June 2018

Rate Schedule Riders	True-Up Amount (A)	Expected Program Costs (B)	Total DSM Revenue Requirements	Estimated Billing Determinants (C)	DSM Cost Recovery Rider (DSMR)
<u>Electric Rider DSM</u>					
Residential Rate RS	\$ (5,331,020)	\$ 4,797,458	\$ (533,562)	1,436,685,800 kWh	\$ (0.000371) \$/kWh
Distribution Level Rates Part A DS, DP, DT, GS-FL, EH & SP	\$ 6,131,808	\$ 4,152,977	\$ 10,284,785	2,333,287,003 kWh	\$ 0.004408 \$/kWh
Transmission Level Rates & Distribution Level Rates Part B TT	\$ 575,486	\$ 1,061,481	\$ 1,636,967	2,570,138,003 kWh	\$ 0.000637 \$/kWh
Distribution Level Rates Total DS, DP, DT, GS-FL, EH & SP					\$ 0.005045 \$/kWh
<u>Gas Rider DSM</u>					
Residential Rate RS	\$ (1,069,860)	\$ 413,170	\$ (656,689)	57,859,338 CCF	\$ (0.011350) \$/CCF
Total Rider Recovery			\$ 10,731,501		
<u>Customer Charge for HEA Program (D)</u>					
<u>Electric No.4</u>			Annual Revenues	Number of Customers	Monthly Customer Charge
Residential Rate RS			\$ 151,925	126,604	\$ 0.10
<u>Gas No. 5</u>					
Residential Rate RS			\$ 109,500	91,250	\$ 0.10
Total Customer Charge Revenues			\$ 261,425		
Total Recovery			\$ 10,992,926		

(A) (Over)/Under of Appendix B page 1 multiplied by the average three-month commercial paper rate for 2017 to include interest on over or under-recovery in accordance with the Commission's order in Case No. 95-312. Value is:
 (B) Appendix B, page 2.
 (C) Appendix B, page 4.
 (D) Forecasted changes do not reflect the request to increase the HEA monthly charge to \$0.20 per meter/per month. The HEA forecast does not factor into the DSMR rate adjustment

Summary of Load Impacts July 2017 Through June 2018*

Allocation Factors
 based on July 2017-
 June 2018

Residential Programs	kWh	% of Total Res		ccf	% of Total Res		Elec % of Total Sales	% of Gas Sales
		Sales			Sales			
Energy Efficiency Education Program for Schools	361,289	0.0240%		4,214	0.0065%		79%	21%
Low Income Neighborhood	226,273	0.0150%		-	0.0000%		100%	0%
Low Income Services	197,878	0.0132%		6,549	0.0102%		56%	44%
My Home Energy Report	9,221,319	0.6129%		-	0.0000%		100%	0%
Residential Energy Assessments	294,049	0.0195%		-	0.0000%		100%	0%
Residential Smart Saver®	4,933,960	0.3280%		-	0.0000%		100%	0%
Power Manager®	-	0.0000%		-	0.0000%		100%	0%
Power Manager® for Apartments	-	0.0000%		-	0.0000%		100%	0%
Total Residential	15,234,768	1.0126%		10,763	0.0167%			
Total Residential (Rate RS) Sales	1,504,451,330	100%		64,504,698	100%			
For July 2017 Through June 2018								

*Load Impacts Net of Free Riders at Meter

Summary of Load Impacts July 2018 Through June 2019 (1),(2)

Allocation Factors

	kWh	% of Total Res Sales	ccf	% of Total Res Sales	Allocation Factors	
					Elec % of Total % of Sales	Gas % of Total % of Sales
Residential Programs						
Appliance Recycling Program	-	0.0000%	-	0.0000%	100%	0%
Energy Efficiency Education Program for Scho	-	0.0000%	-	0.0000%	100%	0%
Low Income Neighborhood	233,478	0.0161%	-	0.0000%	100%	0%
Low Income Services	319,010	0.0220%	12,784	0.0228%	49%	51%
My Home Energy Report	13,289,996	0.9150%	-	0.0000%	100%	0%
Residential Energy Assessments	424,069	0.0292%	-	0.0000%	100%	0%
Residential Smart \$aver®	5,233,623	0.3603%	-	0.0000%	100%	0%
Power Manager®	-	0.0000%	-	0.0000%	100%	0%
Total Residential	19,500,175	1.3426%	12,784	0.0228%		
Total Residential (Rate RS) Sales Projected	1,452,393,991	100%	55,988,621	100%		

(1) Load Impacts Net of Free Riders at Meter

(2) Appliance Recycling Program and Energy Efficiency Education Program for Schools will continue to collect lost revenues for prior period participation.

**Duke Energy Kentucky
Case No. 2019-00277
Staff First Set Data Requests
Date Received: October 10, 2019**

STAFF-DR-01-012

REQUEST:

Referring to the proposed PTR Program, if any affiliates of Duke Energy, Inc., offer a similar program, provide a comparison of the program to Duke Kentucky's proposed program, load reduction results of the programs, and any studies evaluating the programs.

RESPONSE:

There are no Company affiliates currently offering a similar PTR program. Duke Energy Carolinas (DEC), in conjunction with other pilot rate offerings, did offer a similar PTR pilot for a summer in 2015 in North Carolina. However, that PTR Pilot program was limited in duration, was not a DSM program, and was not independently evaluated. A link to the pilot report performed for all the 2015 DEC pilot rate programs can be found below.

<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=027d9699-1442-4c49-9832-d894e550b626>

PERSON RESPONSIBLE: Bruce Sailors