



Public Utilities Commission

Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)

Case No.: 18-1095-EL-EEC

Mercantile Customer: National Aeronautics & Space Administration- Glenn Research Center

Electric Utility: Ohio Edison Company

**Program Title or
Description:** NASA Plum Brook ESG Non Lighting

Rule 4901:1-39-05(F), Ohio Administrative Code (O.A.C.), permits a mercantile customer to file, either individually or jointly with an electric utility, an application to commit the customer's existing demand reduction, demand response, and energy efficiency programs for integration with the electric utility's programs. The following application form is to be used by mercantile customers, either individually or jointly with their electric utility, to apply for commitment of such programs in accordance with the Commission's pilot program established in Case No. 10-834-EL-POR

Completed applications requesting the cash rebate reasonable arrangement option in lieu of an exemption from the electric utility's energy efficiency and demand reduction (EEDR) rider will be automatically approved on the sixty-first calendar day after filing, unless the Commission, or an attorney examiner, suspends or denies the application prior to that time. Completed applications requesting the exemption from the EEDR rider for a period of up to 12 months will also qualify for the 60-day automatic approval. However, all applications requesting an exemption from the EEDR rider for longer than 12 months must provide additional information, as described within the Historical Mercantile Annual Report Template, that demonstrates additional energy savings and the continuance of the Customer's energy efficiency program. This information must be provided to the Commission at least 61 days prior to the termination of the initial 12 month exemption period to prevent interruptions in the exemption period.

Complete a separate application for each customer program. Projects undertaken by a customer as a single program at a single location or at various locations within the same service territory should be submitted together as a single program filing, when possible.

Check all boxes that are applicable to your program. For each box checked, be sure to complete all subparts of the question, and provide all requested additional information. Submittal of altered or incomplete applications may result in a suspension of the automatic approval process or denial of the application.

Any confidential or trade secret information may be submitted to Staff on disc or via email at ee-pdr@puc.state.oh.us.

Section 1: Mercantile Customer Information

Name: National Aeronautics & Space Administration- Glenn Research Center

Principal address: 21000 Brookpark Rd, Cleveland, OH 44135

Address of facility for which this energy efficiency program applies: Columbus Ave.
Sandusky, OH 44870

Name and telephone number for responses to questions: Anthony Zupanchick 216-433-2853

Electricity use by the customer (check the box(es) that apply):

- ☒ The customer uses more than seven hundred thousand kilowatt hours per year at the above facility. (Please attach documentation.)
- ☐ The customer is part of a national account involving multiple facilities in one or more states. (Please attach documentation.)

Section 2: Application Information

A) The customer is filing this application (choose which applies):

- ☐ Individually, without electric utility participation.
- ☒ Jointly with the electric utility.

B) The electric utility is: Ohio Edison Company

C) The customer is offering to commit (check any that apply):

- ☒ Energy savings from the customer's energy efficiency program. (Complete Sections 3, 5, 6, and 7.)
- ☐ Capacity savings from the customer's demand response/demand reduction program. (Complete Sections 4, 5, 6, and 7.)
- ☐ Both the energy savings and the capacity savings from the customer's energy efficiency program. (Complete all sections of the Application.)

Section 3: Energy Efficiency Programs

A) The customer's energy efficiency program involves (check those that apply):

- ☒ Early replacement of fully functioning equipment with new equipment. (Provide the date on which the customer replaced fully functioning equipment, and the date on which the customer would have replaced such equipment if it had not been replaced early. Please include a brief explanation for how the customer determined this future replacement date (or, if not known, please explain why this is not known)). **If Checked, Please see Exhibit 1 and Exhibit 2**
- ☐ Installation of new equipment to replace failed equipment which has no useful life remaining. The customer installed new equipment on the following date(s): _____.
- ☐ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s):
_____.
- ☐ Behavioral or operational improvement.

B) Energy savings achieved/to be achieved by the energy efficiency program:

- 1) If you checked the box indicating that the project involves the early replacement of fully functioning equipment replaced with new equipment, then calculate the annual savings [(kWh used by the original equipment) - (kWh used by new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: 276,258 kWh (see pg 21 of this document. The summation of the "winter savings" and the "summer savings" represents the total claimed savings here.)

- 2) If you checked the box indicating that the customer installed new equipment to replace failed equipment which had no useful life remaining, then calculate the annual savings [(kWh used by new standard equipment) - (kWh used by the optional higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: _____ kWh

Please describe any less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

- 3) If you checked the box indicating that the project involves equipment for new construction or facility expansion, then calculate the annual savings [(kWh used by standard new equipment) - (kWh used by optional higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: _____ kWh

Please describe the less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

- 4) If you checked the box indicating that the project involves behavioral or operational improvements, provide a description of how the annual savings were determined.

Annual savings: _____ kWh

Section 4: Demand Reduction/Demand Response Programs

A) The customer's program involves (check the one that applies):

- ☒ This project does not include peak demand reduction savings.
- ☐ Coincident peak-demand savings from the customer's energy efficiency program.
- ☐ Actual peak-demand reduction. (Attach a description and documentation of the peak-demand reduction.)
- ☐ Potential peak-demand reduction (check the one that applies):
 - ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a tariff of a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission.
 - ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a program that is equivalent to an RTO program, which has been approved by the Public Utilities Commission of Ohio.

B) On what date did the customer initiate its demand reduction program?

C) What is the peak demand reduction achieved or capable of being achieved (show calculations through which this was determined):

_____ kW

Section 5: Request for Cash Rebate Reasonable Arrangement, Exemption from Rider, or Commitment Payment

Under this section, check all boxes that apply and fill in all corresponding blanks.

A) The customer is applying for:

☐ A cash rebate reasonable arrangement.

☒ An exemption from the energy efficiency cost recovery mechanism implemented by the electric utility.

☐ Commitment payment

B) The value of the option that the customer is seeking is:

A cash rebate reasonable arrangement.

☐ A cash rebate of \$____. (Rebate shall not exceed 50% project cost. Attach documentation showing the methodology used to determine the cash rebate value and calculations showing how this payment amount was determined.)

An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider.

☐ An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for 9 months (not to exceed 24 months). (Attach calculations showing how this time period was determined.)

☒ Ongoing exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for an initial period of 24 months because this program is part of the customer's ongoing efficiency program. (Attach documentation that establishes the ongoing nature of the program.) In order to continue the exemption beyond the initial 12 month period, the customer will need to complete, and file within this application, the Historical Mercantile Annual Report

Template to verify the projects energy savings are persistent.

- ☐ A commitment payment valued at no more than \$____. (Attach documentation and calculations showing how this payment amount was determined.)

Section 6: Cost Effectiveness

The program is cost effective because it has a benefit/cost ratio greater than 1 using the (choose which applies):

- ☐ Total Resource Cost (TRC) Test. The calculated TRC value is: _____(Continue to Subsection 1, then skip Subsection 2)
- ☒ Utility Cost Test (UCT) . The calculated UCT value is: **See Exhibit 3** (Skip to Subsection 2.)

Subsection 1: TRC Test Used (please fill in all blanks).

The TRC value of the program is calculated by dividing the value of our avoided supply costs (generation capacity, energy, and any transmission or distribution) by the sum of our program overhead and installation costs and any incremental measure costs paid by either the customer or the electric utility.

The electric utility's avoided supply costs were _____.

Our program costs were _____.

The incremental measure costs were _____.

Subsection 2: UCT Used (please fill in all blanks).

We calculated the UCT value of our program by dividing the value of our avoided supply costs (capacity and energy) by the costs to our electric utility (including administrative costs and incentives paid or rider exemption costs) to obtain our commitment.

Our avoided supply costs were **See Exhibit 3**

The utility's program costs were **See Exhibit 3**

The utility's incentive costs/rebate costs were **See Exhibit 3**

Section 7: Additional Information

Please attach the following supporting documentation to this application:

- Narrative description of the program including, but not limited to, make, model, and year of any installed and replaced equipment.
- A copy of the formal declaration or agreement that commits the program or measure to the electric utility, including:
 - 1) any confidentiality requirements associated with the agreement;
 - 2) a description of any consequences of noncompliance with the terms of the commitment;
 - 3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;
 - 4) permission by the customer to the electric utility and Commission staff and consultants to measure and verify energy savings and/or peak-demand reductions resulting from your program; and,
 - 5) a commitment by the customer to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.
- A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results. Additionally, identify and explain all deviations from any program measurement and verification guidelines that may be published by the Commission.



Public Utilities Commission

Application to Commit
Energy Efficiency/Peak Demand
Reduction Programs
(Mercantile Customers Only)

Case No.: 18-1095-EL-EEC

State of Ohio :

I, Ronald L. Matthews, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

National Aeronautics & Space Administration- Glenn Research Center

[insert customer or EDU company name and any applicable name(s) doing business as]

2. I have personally examined all the information contained in the foregoing application, including any exhibits and attachments. Based upon my examination and inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete.

Ronald L. Matthews / CONTRACTING OFFICER
Signature of Affiant & Title

Sworn and subscribed before me this 1 day of August, 2018 Month/Year

[Signature]
Signature of official administering oath

Print Name and Title

My commission expires on _____



James W. Jackson, Jr., Attorney At Law
NOTARY PUBLIC - STATE OF OHIO
My commission has no expiration date
Sec. 147.03 R.C.

Customer Legal Entity Name: NASA
Site Address: NASA Plum Brook
Principal Address: Columbus Ave., Sandusky 44870

What date would you have replaced your equipment if you had not replaced it early?
Also, please explain briefly how you determined this future replacement date.

Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.

Description of methodologies, protocols and practices used in measuring and verifying project results

Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment:

Project No.	Project Name	Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment:	Description of methodologies, protocols and practices used in measuring and verifying project results	What date would you have replaced your equipment if you had not replaced it early? Also, please explain briefly how you determined this future replacement date.	Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.
1	ECM 18-Space Power Facility VFD	<p>The Space Power Facility (SPF) utilizes three 75-HP fans to exhaust air from a large spacecraft acoustic testing chamber used to simulate the noise and mechanical vibration of spacecraft operation. All three fans run when testing is in progress. Prior to construction, when the chamber was not running tests, 2 fans are shut off, one exhaust fan continued exhausting conditioned air at 12,668 cubic feet per minute (cfm). This required the facility heating and cooling equipment to continue to provide conditioned make-up air to replace the exhausted air.</p> <p>Installed three new motors and Variable Frequency Drives (VFDs) on each of the three fans allowing for reduced exhaust from the space. The VFD operates the fan at approximately 40 percent speed to ensure two conditions are satisfied at all times: oxygen levels (health and safety) and humidity (comfort). The fan ensures that the oxygen sensors (Due to the presence of liquid nitrogen) and humidity sensors (to eliminate the opportunity for mold growth) are reading acceptable levels. If one of the sensors determines that oxygen or humidity is outside acceptable levels, the VFD increases fan speed to exhaust more air until the desired set points are reached. The fan then returns back to the minimum setting once these conditions are met. By monitoring the humidity and oxygen levels, space conditions will remain safe and prevent mold caused by high humidity levels. In order to operate the fan in this fashion, the VFD is integrated into the existing DDC system.</p>	<p>The M&V methodology to be employed for this project is consistent with Option B as described in the DOE FEMP publication, M&V Guidelines: Measurement and Verification for Federal Energy Projects, Version 3.0. The VFD fan speed was measured for each fan and compared to the reduction in fan speed between the baseline and proposed conditions. The continuous metering of the fan speed will determine savings for each performance period. To determine the savings generated by the VFD installation, ESG used the fan affinity laws and typical meteorological year (TMY) weather data to calculate savings. An 8,760 hour BIN weather analysis was completed to determine how much energy was used to heat and cool the air that is exhausted from the SPF exhaust fans. Conservative efficiencies were assumed for the heating and cooling systems.</p>	N/A	N/A

Customer Legal Entity Name: NASA
Site: NASA Plum Brook
Principal Address: Columbus Ave., Sandusky 44870

Project Number	Project Name	In-Service Date	Project Cost \$	KWh Saved/Year Counting towards Utility compliance	KWh Saved/Year (D) eligible for Incentive	Utility Peak Demand Reduction Contribution, KW
1	ECM 18:Space Power Facility VFD	06/01/2017	\$177,934	276,258	276,258	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
				-	-	-
			Total	276,258	276,258	0

Site: NASA Plum Brook

Customer Eligible Exemption Period: 22 Month(s)

(4) The exemption period reflects the maximum potential exemption period. NOTE: The FirstEnergy Utilities cannot guarantee the length of the exemption period that will ultimately be approved by the Commission.

Exhibit 3

UCT = Utility Avoided Costs / Utility Costs

Project	Utility Avoided Cost		Utility Cost		Cash Rebate \$		Administrator Variable Fee		Total Utility Cost		UCT
	\$ (A)		\$ (B)		(C)		\$ (D)		\$ (E)		(F)
1	\$	137,093	\$	4,050	\$	10,360	\$	2,763	\$	17,172	8.0
Total		137,093		4,050		10,360		\$2,763		17,172	8.0

Notes

- (A) Represents NPV of avoided energy and capacity costs over a 10 year life multiplied by the annual project savings.
- (B) Represents the utility's costs incurred for self-directed mercantile applications for applications filed and applications in progress. Includes incremental costs of legal fees, fixed administrative expenses, etc.
- (C) This is the amount of the Rebate Payment paid to the customer for this
- (D) Based on approximate Administrator's variable compensation for purposes of calculating the UCT, actual compensation may be less.
- (E) = (B) + (C) + (D)
- (F) = (A) / (E)

NASA ~ NASA Plum Brook

Docket No. 18-1095

Site: Columbus Ave., Sandusky 44870

9. ECM 18: Space Power Facility VFD

9.1 Overview of ECM, M&V Plan, and Savings Calculation for ECM

9.1.1 Scope Overview

The Space Power Facility (SPF) utilizes three 75-HP fans to exhaust air from a large spacecraft acoustic testing chamber used to simulate the noise and mechanical vibration of spacecraft operation. All three fans run when testing is in progress. Prior to construction, when the chamber was not running tests, 2 fans are shut off, one exhaust fan continued exhausting conditioned air at 12,668 cubic feet per minute (cfm). This required the facility heating and cooling equipment to continue to provide conditioned make-up air, to replace the exhausted air.

ESG installed three new motors and Variable Frequency Drives (VFDs) on each of the three fans allowing for reduced exhaust from the space. The VFD operates the fan at approximately 40 percent speed to ensure two conditions are satisfied at all times, oxygen levels (health and safety) and humidity (comfort). The fan ensures that the oxygen sensors (Due to the presence of liquid nitrogen) and humidity sensors (to eliminate the opportunity for mold growth) are reading acceptable levels. If one of the sensors determines that oxygen or humidity is outside acceptable levels, the VFD increases fan speed to exhaust more air until the desired set points are reached. The fan then returns back to the minimum setting once these conditions are met. By monitoring the humidity and oxygen levels, space conditions will remain safe and prevent mold caused by high humidity levels. In order to operate the fan in this fashion, the VFD is integrated into the existing DDC system.

9.1.2 M&V Guideline and Option

The M&V methodology to be employed for this project is consistent with Option B as described in the DOE FEMP publication, M&V Guidelines: Measurement and Verification for Federal Energy Projects, Version 3.0. The VFD percentage will be the key parameter measured to determine the reduction in fan speed between the baseline and proposed conditions. The continuous metering of the fan speed will determine savings for each performance period.

9.1.3 M&V Overview

One time Pre and post-implementation power measurements were taken on the exhaust fan to get the full speed power demand. Post-installation ESG will monitor fan speed for at least three weeks to ensure that the system is operating as designed. Annually ESG will request trend data quarterly from Siemens detailing the fan speed for the previous quarter. With the trend information ESG will determine an average fan speed for the PY and determine the energy savings for the period.

Baseline – During construction, ESG measured the existing rotational speed of each fan. This was used in conjunction with the post installation testing and balancing to verify the airflow being exhausted from the space. The savings calculations were updated with the existing airflow and the baseline energy consumption was adjusted accordingly.

Post-Installation – Post installation, the rotational speed of the fan was measured and verified to be identical to the pre-construction speed. Airflow was then measured at full speed for each fan running independently. Airflow was also measured for two fans in operation at full speed and with all three fans in operation at full speed. Finally, airflow was measured at 40% of full speed (24Hz). For each of these conditions, the respective power demand was measured.

Annual Performance Period – The average VFD percentage for the PY will be calculated based on the trend data provided by the Plum Brook EMCS. Using this data, ESG will multiply the average VFD speed as a percentage by the baseline CFM. This will yield the average actual CFM for the performance period, this value will then be used in the equations above to determine energy savings.

9.1.4 Savings Calculation Overview

To determine the savings generated by the VFD installation, ESG used the fan affinity laws and typical meteorological year (TMY) weather data to calculate savings. An 8,760 hour BIN weather analysis was completed to determine how much energy was used to heat and cool the air that is exhausted from the SPF exhaust fans. Conservative efficiencies were assumed for the heating and cooling systems.

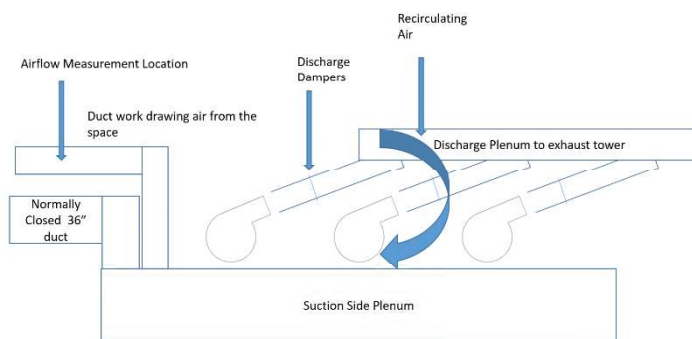
9.2 Installation Verification

9.2.1 Changes between Final Proposal and As-Built Conditions

The Space Power Facility (SPF) utilizes three 75-hp fans to exhaust air from the equipment room supporting vacuum pumps that remove air from a large spacecraft acoustic testing chamber used to simulate the noise and mechanical vibration of spacecraft operation. All three fans run when testing is in progress. Prior to the implementation of ECM 18, the normal mode of operation was with one fan running at 100% speed. It was believed to be exhausting 35,000 cubic feet per minute (CFM) of air when in this mode of operation. ESG proposed to install Variable Frequency Drives (VFDs) to reduce the airflow to 40% of the full speed airflow, which is approximately 14,000 CFM. The selected airflow rate was selected due to turn down limitations of the VFDs. The actual ventilation requirement as defined by ASHRAE Standard 62.1, for the space is much lower than the proposed airflow.

The SPF had already installed the proper air monitoring devices and this work was removed from the scope. This allowed the design to be upgraded to include installing VFD's on all three fans along with new motors on each. During the installation of the motors and VFDs, ESG measured the airflow being exhausted from the space to range from 11,946 CFM to 13,031 CFM with one fan in operation. This was measured for each of the three fans. Average flow rate was determined to be 12,668 CFM. A significant amount of air was found to be short cycling through the two fans that are not operating when in non-testing mode. When two fans are operating with one fan off, the airflow coming from the space was measured to be 12,359 CFM. When all three fans are in operation, which is the case during testing, the airflow was measured to be 12,815 CFM. The increase in airflow from only one fan running to all three fans running was negligible.

There is a second duct that comes off of the return plenum feeding the exhaust fans. This duct is 36" in diameter. During the flow measurements the damper to this duct was in the closed position resulting in zero CFM. ESG believes that the exhaust fans were sized for both of these ducts to be open at the same time. If the 36" duct is to remain in the closed position, ESG recommends that NASA only run one fan at full speed during testing. Operating three fans in this condition could be causing excess wear and tear on the exhaust fans.



Airflow was then measured at the proposed 40% of full speed with one fan in operation and measured to be on average 5,100 CFM. In order to ensure that enough ventilation is provided to the basement of the SPF, ESG consulted ASHRAE 62.1 Table 6-1 to determine the proper amount of air required. The table provides many different space types that determine the amount of air required to ventilate different space type based upon the area of the space. Each space type has a required CFM/Square Foot value that determines the amount of ventilation required. The space types that most closely correspond to the SPF are the “Corridors”, “Electrical Equipment Room” or “Storage rooms” space types. The space is typically unoccupied and would not require additional ventilation for people. See below for a summary of the space types, CFM/Square Foot, and total ventilation required for the space based on these categories.

ASHRAE 62.1 Space Type	ASHRAE 62.1 CFM/SF Requirement	Area of SPF basement	Total CFM required	Total CFM Currently provided in non-testing mode
Corridor	0.06	42,000	2,520 CFM	5,100
Electrical Equipment Room	0.06	42,000	2,520 CFM	5,100
Storage	0.12	42,000	5,040 CFM	5,100

Figure 51: ASHRAE Std. 62.1 Outside Air Requirements

Being conservative, ESG determined that the ventilation requirement should be based on the “Storage” space type. This requires 5,040 CFM of outside air total for the space. Based upon the space types provided above, the new flow rate of 5,100 CFM meets the ASHRAE 62.1 standard for ventilation requirements. ESG monitored the space conditions for 2 weeks and to trend the oxygen levels in the space along with the humidity levels. The attached report shows the trending of both values. All conditions seen were well within the acceptable ranges for O2 and humidity.

9.2.2 Changes in Energy and Cost Savings

As a result of decreased airflow for both the baseline and post-installation conditions, there was an decrease in expected savings. The changes in proposed versus expected energy and cost savings are presented in the figure below.

Post Installation Report

	Total Energy Use (MBtu)	Summer Electric Energy Use (kWh/Yr)	Summer Electric Energy Cost (\$/Yr1)	Winter Electric Energy Use (kWh/Yr)	Winter Electric Energy Cost (\$/Yr1)	Summer Natural Gas Use (Mbtu/yr)	Summer Natural Gas Cost, (\$/Yr1)	Winter Natural Gas Use (Mbtu/yr)	Winter Natural Gas Cost, (\$/Yr1)	Total costs, Year 1 (\$/Yr)
Proposed	5,499	104,190	\$6,013	244,430	\$11,447	2,146	\$11,676	2,163	\$11,769	\$40,905
Expected	2,806	76,689	\$4,426	199,569	\$9,346	928	\$5,049	935	\$5,088	\$23,909
Variance	(2,693)	(27,501)	(\$1,587)	(44,861)	(\$2,101)	(1,218)	(\$6,627)	(1,228)	(\$6,681)	(\$16,996)

Figure 52: Impact to Annual Energy and Cost Savings from Changes between Final Proposal and As-Built Conditions for ECM 18

9.2.3 Summary of Construction Period Savings

The verified Construction Period savings of \$18,176 is below the estimated savings of \$31,311 (at Baseline utility rates). The shortfall is largely due to less than anticipated airflow being drawn from the space.

9.2.4 Construction Period Savings Calculations

The construction savings associated with this ECM are based on the completion date of the installation and of the new motors and VFD on the 15th of September 2016 and lasting until the Project Acceptance date. Savings were calculated based on the annual estimated cost savings and assigning a monthly savings value of one-twelfth of the annual savings. This date correlate to the date at which the Government took beneficial use of the equipment and began to receive savings for the installed ECM.

9.3 Post-Installation M&V Activities Conducted

9.3.1 Instrumentation

During the Post-Installation Phase, a Third party Test and Balance firm confirmed the equipment's ability to perform as specified in the Final Proposal. The firm verified chilled water flow and airflow of the FCU. Power measurements were taken using a Fluke 1730 Energy Logger.

9.3.2 Calibration of Metering Equipment

The Fluke 1730 Energy Logger requires annual calibration. It was calibrated in January 2016. Power measurements were taken and the meter was verified to still be within tolerance on May 13, 2017.

9.3.3 Period of Monitoring

As described in the Final Proposal, ESG monitored the oxygen and humidity levels in the space for SPF for a minimum of two weeks. Dates of monitoring were May 1, 2017 through May 16, 2017. During this time period, the humidity and oxygen levels all remained within the expected levels. One time power measurements were taken for the VFD power measurements.

9.3.4 Sampling Plan

There is no sampling plan defined for this ECM.

9.3.5 Post-Installation Measurements

Post installation measurements consisted of one time power measurements and will be assumed to remain constant for the remainder of the performance period. Trend data will be incorporated in the Year 1 M&V Report to validate fan speed and hours of testing mode operation. The following figure summarizes the variance between the proposed post-installation key parameter values and the measured values based on the prescribed verification activities in the M&V plan.

Parameter	Proposed Value	Measured Value
SPF Fan 4-4-1 (kW)	47	45
Baseline airflow (cfm)	35,000	12,668
Post-Installation airflow (cfm)	17,500	5,100

Figure 53: Parameter Summary

9.3.6 Performance Verification

Performance was verified when the motors and VFD's were installed in accordance with the design and through a detailed start up and check out (commissioning) report. This assured the equipment is operating to the manufacturer's specifications and rated efficiency. ESG verified the VFD's are operating properly and that in the case of a low O2 event, that the proper response is seen. The engineering calculations from the final proposal were updated with the measured values presented in section 9.3.5.

9.3.7 Performance Deficiencies

As described above, actual airflow exhausted from the space was found to be 12,668 CFM at full speed resulting in 5,100 CFM being exhausted from the space when operated at 40% speed. This was evaluated and determined to be sufficient ventilation for the space. Based on the changes due to the variance in the measured airflow versus the expected baseline and post-installation airflows a comparison to the proposed savings was performed. The following figures present the variance in the expected savings based on the measured values. Refer to Appendix 18-2 for complete analysis.

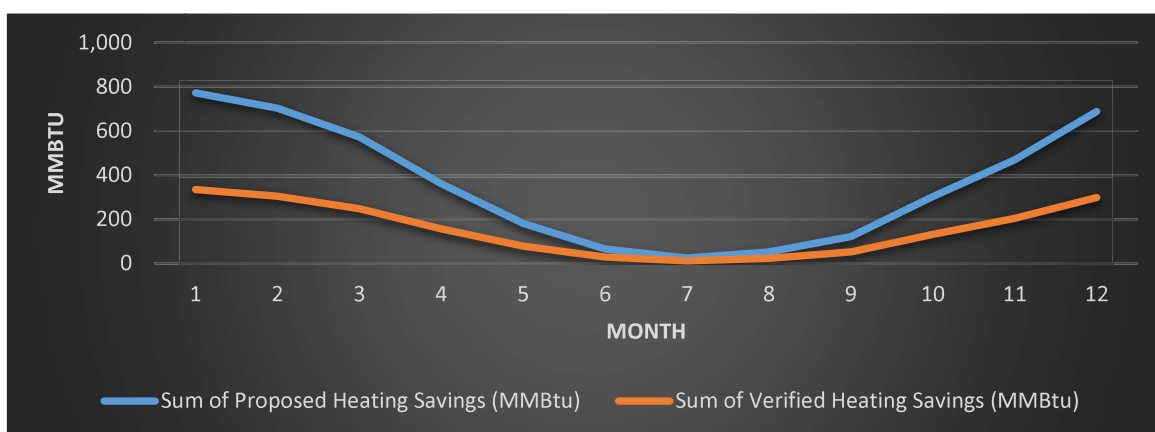


Figure 54: ECM 18 Proposed versus verified monthly heating savings

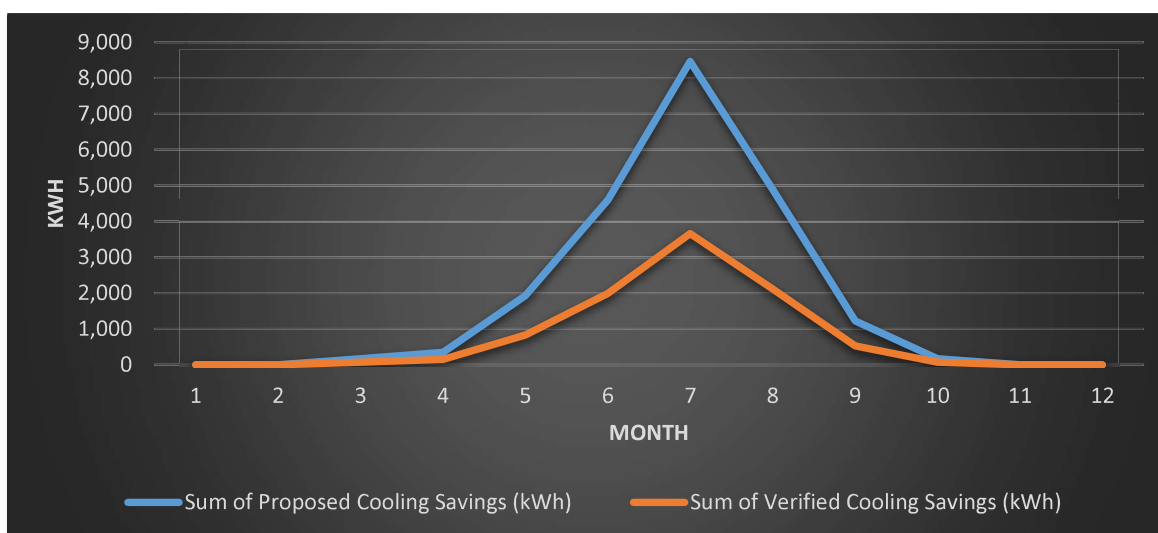


Figure 55: ECM 18 Proposed versus verified monthly cooling savings

9.3.8 Impact of Performance Deficiencies and/or Enhancements

Since less air than anticipated is being exhausted from the space, less savings are being achieved than projected. The impact to savings for Year 1 of the Performance Period is estimated to be \$16,996 below the proposed savings, as presented in section 9.2.2.

9.4 Expected Savings Calculations and Methodology

9.4.1 Analysis Methodology

When the exhaust fan is in operation it consumed energy at a constant demand. This can be measured once and multiplied by the run time hours to get the annual energy consumption. To replace the exhausted air a make-up air unit must pull in outside air, condition it for the space, then supply the air to the space. When a VFD is installed on an exhaust fan, it is able to vary the speed of the motor to reduce the volume of air exhausted from the space. The power of the fan will be reduced at a rate proportional to the reduction in speed cubed as shown below.

9.4.2 Assumptions and Sources of Data

The following table lists assumed or stipulated values that are used in the baseline or post-construction calculations:

Parameter	Value	Basis
Heating System Efficiency	80%	Conservative estimate
Cooling System Efficiency	1.1 kW/ton	Conservative estimate
Motor Efficiency	94%	Conservative estimate
Indoor Space Temperature	70°F	Conservative estimate
Hours of testing per year	1080 hrs.	Personnel interview
Indoor Humidity Ratio	0.009 lbm/lba	Standard Air Conditions

Figure 56: Parameter Summary

9.4.3 Equations and Technical Details

When the exhaust fan is in operation it consumed energy at a constant demand. This can be measured once and multiplied by the run time hours to get the annual energy consumption. To replace the exhausted air a make-up air unit must pull in outside air, condition it for the space, then supply the air to the space. When a VFD is installed on an exhaust fan, it is able to vary the speed of the motor to reduce the volume of air exhausted from the space. The power of the fan will be reduced at a rate proportional to the reduction in speed cubed as shown below.

$$\text{Fan Power Actual: } HP_2 = HP_1 \left(\frac{CFM_{average}}{CFM_{full\ speed}} \right)^3$$

$$\text{Fan Savings} = (\text{Fan Power}_{baseline} - \text{Fan Power}_{actual}) * \text{Hrs}$$

The energy required to condition the make-up air can be approximated using the standard equation below.

$$\text{Heating Savings: } \frac{BTU}{yr} = (Hrs_{heat} * 1.08 * (CFM_{base} - CFM_{prop}) * (T_i - T_o) * Eff_{heat})$$

$$\text{Cooling Sensible Savings: } \frac{kWh}{yr} = \frac{(Hrs_{cool} * 1.08 * (CFM_{base} - CFM_{prop}) * (T_o - T_i) * Eff_{cool})}{12,000 \frac{BTUs}{Ton} * Eff_{motor}}$$

$$\text{Cooling Latent Savings: } \frac{kWh}{yr} = \frac{Hrs_{cooling} (4840 * (CFM_{base} - CFM_{prop}) * (HR_o - HR_i) * Eff_{cool})}{12,000 \frac{BTUs}{Ton} * Eff_{motor}}$$

Where:

Hrs_{heat} = The number of hours during a particular year when the temperature is below 70F

Hrs_{cool} = The number of hours during a typical year when the temperature is above 70F

CFM_{base} = The baseline CFM exhausted (12,668)

CFM_{prop} = The proposed CFM exhausted (5,100)

T_i = The indoor temperature (70F)

T_o = The outdoor temperature based on TMY data (Bin weather data from NREL)

Eff_{heat} = The efficiency of the heating system (80%)

Eff_{cool} = The efficiency of the cooling system (1.1 kw/ton)

Eff_{motor} = The efficiency of the electric motors that drive the exhaust fans (94%)

HR_o = Humidity Ratio of outside air (Bin weather data from NREL)

HR_i = Humidity Ratio of inside air (0.009 Lbm/lba)

$$PY \text{ Savings} = \text{Fan Savings} + \text{Cooling Sensible Savings} + \text{Cooling Latent Savings}$$

9.4.4 Baseline and Savings Adjustments

As described in section 9.2.1 – Changes between Final Proposal and As-Built conditions, airflow was adjusted to be the average airflow of 12,668 CFM.

9.4.5 Energy and Water Rates

The analysis described above calculates the Baseline and Post-Installation energy cost using the utility rates applicable for Plum Brook Station.

9.4.6 Expected Savings for First Performance Year

Expected Year 1 savings for this ECM are presented in the following figure.

Post Installation Report

	Total Energy Use (MBtu)	Summer Electric Energy Use (kWh/Yr)	Summer Electric Energy Cost, Year 1 (\$/Yr)	Winter Electric Energy Use (kWh/Yr)	Winter Electric Energy, Year 1 Cost (\$/Yr)	Summer Natural Gas Use (Mbtu/yr)	Summer Natural Gas Cost, Year 1 (\$/yr)	Winter Natural Gas Use (Mbtu/yr)	Winter Natural Gas Cost, Year 1 (\$/yr)	Total Costs, Year 1 (\$/yr)
Baseline	4,582	119,872	\$6,919	308,842	\$14,463	1,553	\$8,451	1,565	\$8,517	\$38,350
Post- Installation	1,776	43,183	\$2,492	109,273	\$5,117	625	\$3,402	630	\$3,429	\$14,441
Savings	2,806	76,689	\$4,426	199,569	\$9,346	928	\$5,049	935	\$5,088	\$23,909

Figure 57: Expected Year 1 Savings for ECM 18

9.5 Details of O&M Savings

Not applicable.

9.5.1 Source of O&M Savings

Not applicable.

9.5.2 O&M Verification

Not applicable.

9.5.3 O&M Cost Savings Adjustment Factors

Not applicable.

Mercantile Customer Project Commitment Agreement
Exemption Option

THIS MERCANTILE CUSTOMER PROJECT COMMITMENT AGREEMENT ("Agreement") is made and entered into by and between Ohio Edison Company its successors and assigns (hereinafter called the "Company") and National Aeronautics & Space Administration- Glenn Research Center, its permitted successors and assigns (hereinafter called the "Customer") (collectively the "Parties" or individually the "Party") and is effective on the date last executed by the Parties as indicated below.

WITNESSETH

WHEREAS, the Company is an electric distribution utility and electric light company, as both of these terms are defined in R.C. § 4928.01(A); and

WHEREAS, Customer is a mercantile customer, as that term is defined in R.C. § 4928.01(A)(19), doing business within the Company's certified service territory; and

WHEREAS, R.C. § 4928.66 (the "Statute") requires the Company to meet certain annual energy efficiency and peak demand reduction ("EE&PDR") benchmarks; and

WHEREAS, when complying with certain EE&PDR benchmarks the Company may include the effects of mercantile customer-sited EE&PDR projects; and

WHEREAS, Customer has certain customer-sited demand reduction, demand response, or energy efficiency project(s) as set forth in attached Exhibit 1 (the "Customer Energy Project(s)") that it desires to commit to the Company for integration into the Company's Energy Efficiency & Peak Demand Reduction Program Portfolio Plan ("Company Plan") that the Company will implement in order to comply with the Statute; and

WHEREAS, the Customer, pursuant to and consistent with the Statute, desires to pursue exemption from paying charges included in the Company's then current cost recovery mechanism (hereinafter, "Rider DSE") as approved by the Public Utilities Commission of Ohio ("Commission") for recovery of the DSE2 costs associated with the Company Plan; and is committing the Customer Energy Project(s) as a result of such exemption.

WHEREAS, Customer's decision to commit its Customer Energy Project(s) to the Company for inclusion in the Company Plan has been reasonably encouraged by the possibility of an exemption; and

WHEREAS, in consideration of, and upon receipt of, said exemption, Customer has consented to committing the Customer Energy Project(s) to the Company and complying with all other terms and conditions set forth herein, including without limitation, the submission of an annual report on the energy savings and/or peak-demand reductions achieved by the Customer Energy Project(s).

NOW THEREFORE, in consideration of the mutual promises set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties, intending to be legally bound, do hereby agree as follows:

1. **Customer Energy Projects.** Customer hereby commits to the Company and Company accepts for integration into the Company Plan the Customer Energy Project(s) set forth on attached Exhibit 1. Said commitment shall be for the life of the Customer Energy Project(s). Company will incorporate said project(s) into the Company Plan to the extent that such projects qualify. In so committing, and as evidenced by the affidavit attached hereto as Exhibit A, Customer acknowledges that the information provided to the Company about the Customer Energy Project(s) is true and accurate to the best of its knowledge.

- a. By committing the Customer Energy Project(s) to the Company, Customer acknowledges and agrees that the Company shall control the use of the kWh and kW reductions resulting from said projects for purposes of complying with the Statute. By committing the Customer Energy Project(s), Customer has the ability to either:
- i. Take ownership of the Energy Efficiency resource credits resulting from their Customer Energy Project(s) and may be able to bid - or sell - the Energy Efficiency resource credits into the market operated by the grid operator, PJM Interconnection, Inc. (PJM), provided several prerequisites are met; or
 - ii. Allow the Company to take ownership of the Energy Efficiency resource credits associated with their Customer Energy Project(s). The Company shall, at its sole discretion, aggregate said capacity into the PJM market through an auction. Any proceeds from any such bids accepted by PJM will be used to offset the costs charged to the Customer and other of the Company's customers for compliance with state mandated energy efficiency and/or peak demand requirements

Please indicate your preference as to the treatment of your Energy Efficiency resource credits:

- ☒ Customer would like to retain ownership of its Energy Efficiency resource credits.
- ☐ Customer assigns ownership of its Energy Efficiency resource credits to Company for purposes of bidding these credits into PJM.

- b. The Company acknowledges that some of Customer's Energy Projects contemplated in this paragraph may have been performed under certain other federal and/or state programs in which certain parameters are required to be maintained in order to retain preferential financing or other government benefits (individually and collectively as applicable, "Benefits"). In the event that the use of any such project by the Company in any way affects such Benefits, and upon written request from the Customer, Company will release said Customer's Energy Project(s) to the extent necessary for Customer to meet the prerequisites for such Benefits. Customer acknowledges that such release (i) may affect Customer's exemption benefits discussed in Article 3 below; and (ii) will not affect any of Customer's other requirements or obligations, including without limitation any reporting requirements, as set forth herein.
- c. Any future Customer Energy Project(s) committed by Customer shall be subject to a separate application and, upon approval by the Commission, said projects shall become part of this Agreement.
- d. Customer will provide Company or Company's agent(s) with reasonable assistance in the preparation of a joint application for approval of this Agreement ("Joint Application") that will be filed with the Commission, with such Joint Application being consistent with then current Commission requirements.
- e. Upon written request and reasonable advance notice, Customer will grant employees or authorized agents of either the Company or the Commission reasonable, pre-arranged access to the Customer Energy Project(s) for purposes of measuring and verifying energy savings and/or peak demand reductions resulting from the Customer Energy Project(s). It is expressly agreed that consultants of either the Company or the Commission are their respective authorized agents.

2. **Joint Application to the Commission.** The Parties will submit the Joint Application using the Commission's standard "Application to Commit Energy Efficiency/Peak Demand Reduction Programs" in which they will seek the Commission's approval of (i) this Agreement; (ii) the commitment of the Customer Energy Project(s) for inclusion in the Company Plan; and (iii) the Customer's exemption from paying the DSE2 charge of the Company's Rider DSE.

The Joint Application shall include all information as set forth in the Commission's standard form which, includes without limitation:

- i. A narrative description of the Customer Energy Project(s), including but not limited to, make, model and year of any installed and/or replaced equipment;
- ii. A copy of this Agreement; and
- iii. A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results.

3. **Customer Exemption and Annual Report.** Upon Commission approval of the request for exemption, the Company will exempt Customer from paying any Rider DSE charges consistent with any Commission directives as set forth in the Commission's Finding and Order approving the Joint Application. Such exempt status shall apply to those accounts identified by Customer that pertain to those Customer sites with one or more Customer Energy Project(s) approved for integration into the Company Plan by the Commission in the Joint Application.

- a. For purposes of this Agreement, a "site" shall be a single location with one or more facilities. As examples only, a site includes an industrial plant, a hospital complex or a university located on one or more parcels of land, provided that said parcels are contiguous.
- b. For purposes of this Agreement, an "account" shall be as defined by the Company through its normal business practices. Any account identified by Customer shall be eligible for exemption, provided that said account pertains to a specific site with at least one Customer Energy Project that qualifies Customer for exemption from paying Rider DSE charges.
- c. Any new accounts created at a site on which there is already an approved Customer Energy Project shall, at the option of the Customer, be included within the exemption granted under said project, and shall be included for purposes of calculating future eligibility for exemption under the project. Any such election shall become effective in the first billing cycle after March 15th following identification of said account in the annual report required under Section 3(d)(iii) below.
- d. Customer acknowledges and agrees that if it desires to pursue such exempt status, as evidenced in the Joint Application, Customer is obligated to provide to the Company an annual report on the energy savings and peak-demand reductions achieved by the Customer Energy Project(s) on a calendar year basis. Company shall provide Customer with such information as it may require, that is in Company's possession, for the purposes of preparing such report. Company shall provide a template for Customer to use in preparing the annual report and shall make available a designated Company representative to answer questions.
 - i. Said report shall be submitted annually on or before January 31 of each year after Commission approval of the Joint Application.
 - ii. Said report shall provide all information required under the Rules, and where the requirements of the Rules conflict with a requirement under this Agreement or the Joint Application, the requirements of the Rules shall control.

iii. Said report shall, at a minimum, include the following information for each Customer Energy Project that has been approved by the Commission:

1. A demonstration that the energy savings and peak-demand reductions associated with the Customer Energy Project(s) meet the total resource cost test or that the Company's avoided cost exceeds the cost to the Company for the Customer's program;
2. A statement distinguishing programs implemented before and after January 1 of the current year;
3. A quantification of the energy savings or peak-demand reductions for programs initiated prior to 2009 in the baseline period;
4. A recognition that the Company's baselines have been increased by the amount of mercantile customer energy savings and demand reductions;
5. A listing and description of the Customer Energy Projects that have been implemented, which provides the detail required by the Rules;
6. An accounting of expenditures made by the mercantile customer for each program and its component energy savings and peak-demand reduction attributes; and
7. A timeline showing when each Customer Energy Project went into effect and when the energy savings and peak-demand reductions occurred.
8. Any other information reasonably necessary for the Company to (i) verify Customer's continued eligibility for exemption from paying Rider charges; and (ii) report in the Company's annual status report to the Commission the EE&PDR results related to each Customer Energy Project.

e. Customer's exemption shall automatically terminate:

- i. At the end of the exemption period as determined by the Commission
- ii. Upon order of the Commission or pursuant to any Commission rule;
- iii. If Customer fails to comply with the terms and conditions set forth in the Company's then current Rider DSE, or its equivalent, as amended from time to time by the Commission, within a reasonable period of time after receipt of written notice of such non-compliance;
- iv. If it is discovered that Customer knowingly falsified any documents provided to the Company or the Commission in connection with this Agreement or the Joint Application. In such an instance, Company reserves the right to recover any exempted rider charges from the date of approval of the Joint Application through the date said exemption is terminated; or
- v. If Customer fails to submit the annual report required in (d) above. In such an instance, Company reserves the right to recover any exempted rider charges from the date of approval of the Joint Application through the date said exemption is terminated. It is expressly agreed that this provision shall not apply should said report contain errors, provided that the submission of said report is made in good

faith. It is further agreed that the Company will provide written notice of the date on which said report is due at least thirty (30) days prior thereto.

- f. Company reserves the right to recover from Customer any Rider DSE charges incurred by Customer after the date Customer's exemption terminates.

3. Termination of Agreement. This Agreement shall automatically terminate:

- a. If the Commission fails to approve this Agreement through the Joint Application;
- b. Upon order of the Commission; or
- c. At the end of the life of the last Customer Energy Project subject to this Agreement.

Customer shall also have an option to terminate this Agreement should the Commission not approve the Customer's exemption, provided that Customer provides the Company with written notice of such termination within ten days of either the Commission issuing a final appealable order or the Ohio Supreme Court issuing its opinion should the matter be appealed.

Customer acknowledges that if a Customer Project is withdrawn pursuant to Paragraph 1(b) of this Agreement, the exemption or a portion of such exemption may be affected. Should Customer elect to withdraw a project pursuant to Paragraph 1(b), Customer shall provide Company with reasonable assistance in preparing any documentation that may be required by the Commission and, upon reasonable request, shall provide documentation supporting the necessity to withdraw such project.

4. Confidentiality. Each Party shall hold in confidence and not release or disclose to any person any document or information furnished by the other Party in connection with this Agreement that is designated as confidential and proprietary ("Confidential Information"), unless: (i) compelled to disclose such document or information by judicial, regulatory or administrative process or other provisions of law; (ii) such document or information is generally available to the public; or (iii) such document or information was available to the receiving Party on a non-confidential basis at the time of disclosure.

- a. Notwithstanding the above, a Party may disclose to its employees, directors, attorneys, consultants and agents all documents and information furnished by the other Party in connection with this Agreement, provided that such employees, directors, attorneys, consultants and agents have been advised of the confidential nature of this information and through such disclosure are deemed to be bound by the terms set forth herein.
- b. A Party receiving such Confidential Information shall protect it with the same standard of care as its own confidential or proprietary information.
- c. A Party receiving notice or otherwise concluding that Confidential Information furnished by the other Party in connection with this Agreement is being sought under any provision of law, to the extent it is permitted to do so under any applicable law, shall endeavor to: (i) promptly notify the other Party; and (ii) use reasonable efforts in cooperation with the other Party to seek confidential treatment of such Confidential Information, including without limitation, the filing of such information under a valid protective order.
- d. By executing this Agreement, Customer hereby acknowledges and agrees that Company may disclose to the Commission or its Staff any and all Customer information, including Confidential Information, related to a Customer Energy Project, provided that Company uses reasonable efforts to seek confidential treatment of the same.

5. **Taxes.** Customer shall be responsible for all tax consequences (if any) arising from the application of the exemption.
6. **Notices.** Unless otherwise stated herein, all notices, demands or requests required or permitted under this Agreement must be in writing and must be delivered or sent by overnight express mail, courier service, electronic mail or facsimile transmission addressed as follows:

If to the Company:

--.

FirstEnergy Service Company
76 South Main Street
Akron, OH 44308
Attn: Mercantile Energy Efficiency Program A-GO-8
Telephone: 330 384 4504
Fax: 330 777 6051
Email: mercantile@firstenergycorp.com

If to the Customer:

National Aeronautics & Space Administration- Glenn Research Center
21000 Brookpark Road
Cleveland, OH 44135
Attn: Ronald L. Matthews
Telephone: 216-433-2766
Fax:
Email: ronald.l.matthews@nasa.gov

or to such other person at such other address as a Party may designate by like notice to the other Party. Notice received after the close of the business day will be deemed received on the next business day; provided that notice by facsimile transmission will be deemed to have been received by the recipient if the recipient confirms receipt telephonically or in writing.

7. **Authority to Act.** The Parties represent and warrant that they are represented by counsel in connection with this Agreement, have been fully advised in connection with the execution thereof, have taken all legal and corporate steps necessary to enter into this Agreement, and that the undersigned has the authority to enter into this Agreement, to bind the Parties to all provisions herein and to take the actions required to be performed in fulfillment of the undertakings contained herein.
8. **Non-Waiver.** The delay or failure of either party to assert or enforce in any instance strict performance of any of the terms of this Agreement or to exercise any rights hereunder conferred, shall not be construed as a waiver or relinquishment to any extent of its rights to assert or rely upon such terms or rights at any later time or on any future occasion.
9. **Entire Agreement.** This Agreement, along with related exhibits, and the Company's Rider DSE, or its equivalent, as amended from time to time by the Commission, contains the Parties' entire understanding with respect to the matters addressed herein and there are no verbal or collateral representations, undertakings, or agreements not expressly set forth herein. No change in, addition to, or waiver of the terms of this Agreement shall be binding upon any of the Parties unless the same is set forth in writing and signed by an authorized representative of each of the Parties. In the event of any conflict between Rider DSE or its equivalent and this document, the latter shall prevail.
10. **Assignment.** Customer may not assign any of its rights or obligations under this Agreement without obtaining the prior written consent of the Company, which consent will not be unreasonably withheld. No assignment of this Agreement will relieve the assigning Party of any of its obligations under this Agreement until such obligations have been assumed by the assignee and all necessary consents have been obtained.
11. **Severability.** If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this Agreement, and the Parties further agree to substitute for the invalid portion a valid provision that most closely approximates the economic effect and intent of the invalid provision.

12. **Governing Law.** This Agreement shall be governed by the laws and regulations of the Federal Government, without regard to its conflict of law provisions.
13. **Execution and Counterparts.** This Agreement may be executed in multiple counterparts, which taken together shall constitute an original without the necessity of all parties signing the same page or the same documents, and may be executed by signatures to electronically or telephonically transmitted counterparts in lieu of original printed or photocopied documents. Signatures transmitted by facsimile shall be considered original signatures.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized officers or representatives as of the day and year set forth below.

Ohio Edison Company_
(Company)

By: 

Title: V.P. Of Energy Efficiency

Date: 11-15-18

National Aeronautics & Space Administration- Glenn Research Center_
(Customer)

By: Ronald L. Matthews 

Title: Contracting Officer

Date: July 31, 2018

Affidavit of National Aeronautics & Space Administration- Glenn Research Center – Exhibit A

STATE OF OHIO)
)
COUNTY OF Erie) SS:

I, Ronald L. Matthews, being first duly sworn in accordance with law, deposes and states as follows:

1. I am the Contracting Officer of the National Aeronautics & Space Administration- Glenn Research Center ("Customer") As part of my duties, I oversee energy related matters for the Customer.
2. The Customer has agreed to commit certain energy efficiency projects to Ohio Edison Company ("Company"), which are the subject of the agreement to which this affidavit is attached ("Project(s)").
3. In exchange for making such a commitment, the Company has agreed to provide Customer with a Rider Exemption ("Incentive"). This Incentive was a critical factor in the Customer's decision to go forward with the Project(s) and to commit the Project(s) to the Company.
4. All information related to said Project(s) that has been submitted to the Company is true and accurate to the best of my knowledge.

FURTHER AFFIANT SAYETH NAUGHT.

Ronald L. Matthews

Sworn to before me and subscribed in my presence this 1 day of 8, 2018



James W. Jackson, Jr., Attorney At Law
NOTARY PUBLIC - STATE OF OHIO
My commission has no expiration date
Sec. 147.03 R.C.

Notary

[Signature]

This foregoing document was electronically filed with the Public Utilities

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in

Case No(s). 18-1095-EL-EEC

Summary: Application to Commit Energy Efficiency/Peak Demand Reduction Programs of Ohio Edison Company and National Aeronautics & Space Administration - Glenn Research Center electronically filed by Ms. Jennifer M. Sybyl on behalf of Ohio Edison Company and National Aeronautics & Space Administration - Glenn Research Center