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FREQUENTLY ASKED QUESTIONS – ADVANCED ROOFTOP UNIT CONTROLLERS

Updated July 2018

Q: Who is eligible for the Advanced Rooftop Unit Controllers measure?

A: All business customers (including those who fall under the Business Incentive Program, Agriculture Schools and Government Program, and Large Energy Users Program) and multifamily properties are eligible for this measure.

Q: Is a list of qualified controllers available?

A: There is not an all-encompassing list. Any packaged or engineered solution that meets the requirements of this offer may qualify for the incentive. The requirements of eligible controller solutions are:

- Multispeed or variable speed control of the supply fan
- Modulating outdoor air damper control to maintain proper ventilation rates according to ASHRAE Standard 62.1 under different fan speeds
- Demand control ventilation (DCV) to modulate outdoor air supplied to the building
- Integrated economizer functionality (stages on and off as needed)

There are a number of manufacturers that offer packaged retrofit solutions that currently meet these requirements, see focusonenergy.com/qpls for the current list.

Customers do have the ability to work with their existing building automation providers to identify a custom engineered solution that meets the requirements of this offer.

Q: What energy savings can I expect from retrofitting my existing rooftop units with advanced controllers?

A: Energy savings can be highly variable, and are dependent upon many factors, including: age of the unit, existing condition of the mechanical equipment, and the presence of any existing automation controls, operational sequences and weather. Typical energy savings that have been reported and achieved from numerous independent studies indicate savings ranges anywhere from 20-40% of total RTU energy consumption. This is based on several field studies referenced in the Consortium for Energy Efficiency (CEE) Program Readiness Report: Advanced Rooftop Unit Controllers (August 2013). For systems where the amount of outside air is determined by the need for make-up air for exhaust rather than the amount of people in the space, savings will be minimal or zero.

Q: What is demand-controlled ventilation (DCV) and what are the requirements for incorporating this control strategy into the existing RTU operation?

A: Demand-controlled ventilation (DCV) is a control strategy that responds to the actual “demand” (need) for ventilation in a building zone by varying the rate at which outdoor air is delivered to that zone. DCV saves energy by avoiding the heating, cooling, and dehumidification of more ventilation air than is needed. Carbon dioxide sensors are the most widely accepted technology currently available for implementing DCV. The breathing zone outdoor airflow shall be reset in response to current occupancy and shall be no less than the area component of the DCV zone. The ventilation system shall be controlled such that at steady-state it provides each zone with no less than the breathing zone outdoor airflow for the current zone population.

Carbon dioxide sensors may be placed in either the return air ducts of the single zone systems or in the zone themselves. Outdoor air damper must adjust proportionally so that ventilation rate varies continuously between the minimum ventilation set point and the design ventilation set point of the affected space based on the occupancy at any given time. Time of day schedules may not be used as a means to determine occupancy in the affected space. Economizer operation should override DCV control.

Q: What is integrated economizer functionality?

A: Integrated economizer functionality allows the compressor on the DX refrigeration loop to stage on and off as needed, making up the additional cooling load required when 100% outside air cannot provide the entire cooling load. When the outside air conditions are not suitable for free cooling or integrated economizer operation, the economizer dampers are positioned to provide only the required amount of ventilation airflow.

Q: Does the HVAC/Plumbing Supplemental Data Sheet need to be submitted along with the application?

A: Yes. The HVAC/Plumbing Supplemental Data Sheet should be completed for this measure. Data required includes: nominal cooling capacity of the RTU in tons, fan hp of the supply fan (and any return or relief fans that may be present), confirming the RTU has an operational economizer, and providing open/close times for the business / building for weekdays, Saturdays, and Sundays. If the schedule is variable on weekdays, provide the average open/close time for the week.

Q: Is this measure available for RTUs that use hot water coils, electric resistance, or air source heat pumps as a heating source?

A: No. Only qualifying rooftop units with natural gas as the heating source are eligible for this measure. Rooftop units with other heating sources may be eligible for a custom incentive; contact your energy advisor for more details.

Q: Is this measure available for Advanced RTU Controllers installed as part of a new construction project?

A: Yes, this measure is available for Advanced RTU Controllers installed as part of a new construction project (including additions), along with retrofits of existing rooftop units to add these controls. However, if code requires multiple or variable speed control on fans (≥ 10 hp) or if code requires demand controlled ventilation, then the system is not eligible.

Q: Can rooftop units that apply for the Advanced Rooftop Unit Controls incentive also apply for the separate measures for demand control ventilation (H3266) and variable frequency drives (H2643)?

A: No. If applying for the Advanced Rooftop Unit Controls incentive, the project is not eligible for the separate DCV and VFD incentives.

Q: Is there a size limit for rooftop units to qualify?

A: Yes. Units smaller than 7 tons (nominal) are not eligible. There is no upper size limit for cooling capacity.