Commercial & Industrial Energy Efficiency Retrofits - HVAC/Controls Worksheet



Please complete this worksheet for retrofit of heating, ventilation, air conditioning equipment and controls. **To qualify, the project must meet the applicable specifications stated on all pages of this worksheet.** Your total incentive for each measure will be the quantity multiplied by the per unit incentive (Q x I = TI). When completed, attach this worksheet to your application form.

Note: Projects with an estimated incentive of \$1,500 or greater should receive pre-approval from Idaho Power prior to equipment installation.

PROJECT NAME:

| What type of h | eating does this building use: | Electric Other | |
|-------------------|----------------------------------|--|-----------------------------|
| Replacing | | Installing | Incentive Amt. (PER TON) |
| AIR-COOLED AIR CO | NDITIONING UNITS | | |
| Measure #: H1 | Standard <5 ton AC/HP unit | New <5 ton AC unit that meets CEE Tier 1 | \$ 30.00 |
| H23 | Standard <5 ton AC/HP unit | New ≤ 5 ton AC unit that meets CEE Tier 2 | 75.00 |
| AIR-COOLED HEAT P | UMP UNITS | | |
| Measure #: H4 | Standard <5 ton AC/HP unit | New <5 ton HP unit that meets CEE Tier 1 | 30.00 |
| H24 | Standard ≤ 5 ton AC/HP unit | New ≤ 5 ton HP unit that meets CEE Tier 2 | 75.00 |
| VARIABLE REFRIGER | ANT FLOW (VRF) UNITS | | |
| Measure #: H5 | Standard < 64 ton AC/HP unit | New < 64 ton AC unit that meets CEE Tier 1 | 75.00 |
| H6 | Standard < 64 ton AC/HP unit | New < 64 ton HP unit that meets CEE Tier 1 | 75.00 |
| H25 | Standard <5 ton AC/HP unit | New <5 ton AC unit that meets CEE Tier 2 | 100.00 |
| H26 | Standard <5 ton AC/HP unit | New ≤ 5 ton HP unit that meets CEE Tier 2 | 100.00 |

| Measure Number | Incentive Amt. (PER TON) | Manufacturer | Model # | Unit Size (TON) | Quantity (UNITS) | AHRI Reference # | Total Incentive |
|-------------------|-----------------------------|--------------|---------|--------------------|---------------------|---------------------|-----------------|
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| Replacing | | Installing | Quantity (Units) | Incentive (PER Unit) | Total Incentive | | |
|---------------------------------------|---------------------------------------|--|----------------------------|--------------------------------|-----------------|--|--|
| AIR-C | AIR-COOLED CHILLERS | | | | | | |
| H7 | Standard air-cooled chiller | <150 ton air-cooled chiller, IPLV 16.2 EER or higher | ton | 80.00 | \$ | | |
| H27 | Standard air-cooled chiller | >150 ton air-cooled chiller, IPLV 16.6 EER or higher | ton | 80.00 | \$ | | |
| WAT | ER-COOLED CHILLERS—ELECTRONICALLY | OPERATED, RECIPROCATING OR POSITIVE DISPLACEMENT | | | | | |
| H8 | Standard water-cooled chiller | < 75 ton unit, IPLV 0.50 or less (kW/ton) | ton | 40.00 | \$ | | |
| H9 | Standard water-cooled chiller | > 75 ton and <150 ton, IPLV 0.47 or less (kW/ton) | ton | 40.00 | \$ | | |
| H28 | Standard water-cooled chiller | > 150 and <300 ton, IPLV 0.44 or less (kW/ton) | ton | 40.00 | \$ | | |
| H29 | Standard water-cooled chiller | <u>></u> 300 and <600 ton, IPLV 0.42 or less (kW/ton) | ton | 40.00 | \$ | | |
| H30 | Standard water-cooled chiller | 2 600 ton, IPLV 0.40 or less (kW/ton) | ton | 40.00 | \$ | | |
| WAT | ER-COOLED CHILLERS—ELECTRONICALLY | OPERATED, CENTRIFUGAL | | | | | |
| H10 | Standard water-cooled chiller | < 150 ton unit, IPLV 0.45 or less (kW/ton) | ton | 40.00 | \$ | | |
| H11 | Standard water-cooled chiller | > 150 and < 300 ton, IPLV 0.43 or less (kW/ton) | ton | 40.00 | \$ | | |
| H31 | Standard water-cooled chiller | > 300 and < 400 ton, IPLV 0.41 or less (kW/ton) | ton | 40.00 | \$ | | |
| H32 | Standard water-cooled chiller | 2 400 ton, IPLV 0.40 or less (kW/ton) | ton | 40.00 | Ś | | |
| ECON | IOMIZERS | | | | | | |
| H12 | No prior control | Air-side economizer control addition | ton | 100.00 | \$ | | |
| H13 | Non-functional economizer | Air-side economizer system repair | ton | 50.00 | \$ | | |
| EVAP | EVAPORATIVE COOLERS | | | | | | |
| H14 | Standard AC unit | Direct evaporative cooler | ton | 200.00 | \$ | | |
| ELECTRONICALLY COMMUTATED MOTOR (ECM) | | | | | | | |
| H21 | Shaded pole or permanent split capaci | tor motor ECM motor in HVAC application | Motor | 100.00 | \$ | | |
| HOTEL/MOTEL CONTROL | | | | | - | | |
| H15 | Manual Controls | Lodging room occupancy control system | unit | 75.00 | \$ | | |

Variable Speed Drives on HVAC Fan/Pump Motors

| | Replacing | Installing | Drive hp Motor h | p QTY (Units) | Incentiv (Per HP | e Total) Incentive | |
|----|-------------------------------|--|--|---------------------------------------|---|----------------------------|--|
| V1 | Single speed HVAC system | Variable speed/frequency drive installed on chilled water pumps, condenser water pumps and cooling tower fans | , drive hp , drive hp ''drive hp'''' | motor hp motor hp motor hp''''' | units \$60 units" \$60 units \$60 | 00 \$ 00 \$ 00 \$ | |
| V2 | Single speed HVAC system | Variable speed/frequency drive installed on supply, return, outside air and make-up air fans, hot water pumps | drive hp drive hp drive hp | motor hp motor hp motor hp | units \$100 units \$100 units \$100 | .00 \$.00 \$.00 \$ | |
| V3 | No existing VSD | Variable speed/frequency drive installed on potato or onion storage shed ventilation | drive hp drive hp drive hp | motor hp motor hp motor hp | units \$200 units \$200 units \$200 | .00 \$.00 \$.00 \$ | |
| Ρ | Please provide the following: | | | | | | |

Annual operating hours (per motor):

Idaho Power meter number or service agreement number serving the drive:

Location where the drive will be installed inside the facility:

HVAC CONTROL STRATEGIES

Please select the type of HVAC system you will install controls on and then select the strategies you will implement.

| TABLE 1—HVAC SYSTEM TYPE | TABLE 2—HVAC CONTROL STRATEGY OPTIONS |
|---|---|
| Packaged Rooftop Units/Split Systems | (must select a minimum of one strategy to qualify for an incentive) |
| Packaged Rooftop Heat Pump Units | Optimum Start and Optimum Stop |
| Packaged Variable Air Volume (VAV) Units | Economizer Controls |
| VAV Units with Chilled Water Coils | Demand Controlled Ventilation (DCV) |
| Water Source Heat Pump Units | Supply Air Temperature Reset |
| Ground Source Heat Pump Units | Chilled Water Reset |
| Packaged Variable Volume and Temperature (VVT) Units | Condenser Water Reset |
| Dackaged Variable Volume and Temperature (VV/T) Unite | Heat Dump |

| Packaged variable volume and remperature (vvr) onits – Heat Pump | |
|--|--|
| | |
| | |

| Replacing | | Installing | Quantity (TON) | Incentive* (PER TON) | | Total Incentive |
|-----------|--------------------------------|---|-------------------|----------------------|------------|--------------------|
| | | | | Retrofit System | New System | |
| H33 | Proposed strategy not existing | Implement one (1) control strategy from Table 2** | | 100.00 | 60.00 | \$ |
| H16 | Proposed strategy not existing | Implement two (2) control strategies from Table 2 | | 125.00 | 70.00 | \$ |
| H17 | Proposed strategy not existing | Implement three (3) control strategies from Table 2 | | 150.00 | 80.00 | \$ |
| H18 | Proposed strategy not existing | Implement four (4) control strategies from Table 2 | | 175.00 | 90.00 | \$ |
| H19 | Proposed strategy not existing | Implement five (5) control strategies from Table 2 | | ○ 200.00 | 100.00 | \$ |

*Control strategies installed on existing qualified HVAC equipment qualify for the Retrofit System incentive. Control strategies installed on newly purchased HVAC equipment (in existing facilities) qualify for the New System incentive.

**The incentive for one control strategy is available once every two years (per building). All other criteria applies.

TOTAL:

\$

PROJECT DESCRIPTION Please provide a detailed description of this project.

CHECKLISTS FOR SUBMISSION

PRE-APPROVAL CHECKLIST

Signed/Dated Non-Lighting Application HVAC/Controls Worksheet (must be completely filled out) Manufacturer Specification Sheets

PAYMENT CHECKLIST

Signed/Dated Non-Lighting Application HVAC/Controls Worksheet (must be completely filled out) Invoices for Material & Labor

Specifications for HVAC/Controls

Efficient Air Conditioning, Heat Pump, or VRF Units

New air-cooled air conditioning, air-cooled heat pump and VRF package units and split systems qualify if they meet the listed minimum efficiencies. New unit coil and condenser must be a matching system. Used or reconditioned units are not eligible. New unit must replace an existing central mechanical cooling unit that is at the end of its useful life. Spaces served by evaporative cooling or portable cooling units are not eligible for an incentive. The minimums are from the Consortium for Energy Efficiency (CEE) Unitary Air Conditioning Specification located at <u>www.cee1.org</u>. (link may not be compatible with all browsers, right click the link to copy the link location, then paste the URL into a different Internet browser)

Chillers

New commercial chiller units are eligible provided the units meet or exceed the efficiency rating listed on this worksheet. This incentive applies to like-for-like chiller replacements. New unit must replace an existing chiller that is at the end of its useful life. Only primary chillers qualify. Chillers intended for backup service are not eligible.

Air-cooled chiller efficiencies must include condenser-fan energy consumption. Efficiency ratings for IPLV must be based on ARI standard rating conditions per ARI-550-98 and ARI-590-98.

Economizer Repair

This incentive is for one-time unit repairs. Payments require an itemized invoice of corrections, setting adjustments or other repairs made. A description of how the unit failed and an itemized description of what steps were taken to repair the equipment must accompany the application. The incentive for repairs cannot exceed the stated cost on the invoice (purchased materials and contracted labor). In-house labor costs are not eligible for incentive consideration. This incentive cannot be combined with the HVAC Control Strategy – economizer control incentive

Direct Evaporative Coolers

The direct evaporative cooler system incentive applies to equipment that replaces direct expansion (DX) system of equivalent size (or greater). Evaporatively pre-cooled DX systems do not qualify.

Electronically Commutated Motor (ECM)

This incentive applies to any ECM motor when replacing a conventional shaded pole (SP) or permanent split capacitor (PSC) motor in HVAC applications.

VSD/VFD

Incentives apply to new equipment and new installations only and must meet the following criteria. Replacement VSDs/VFDs are not eligible.

- VSD/VFD must be installed in accordance with the Institute for Electrical and Electronics Engineers (IEEE) Standard 519 and Idaho Power's Rule K, Customer's Load and Operations Tariff.
- Throttling or bypass devices such as inlet vanes, dampers, three-way valves or throttling valves must be removed or permanently disabled to qualify for an incentive.
- Incentives are based on the drive horsepower or the motor horsepower that the drive controls, whichever is less. The motor must be a minimum of 5 horsepower, operate at minimum 2,000 hours per year, and be variably-loaded. The VSD/VFD installation must save energy on the equipment that it is installed on. Motors that are individually less than 5 hp are eligible provided they are controlled by a common VFD and the combined motor hp controlled per VFD is ≥ 5 hp.
- Manufacturer specification sheets for the VSD/VFD must accompany the Non-Lighting Application.
- Manufacturer specification sheets for harmonic mitigation, when required, must accompany the application.

HVAC Controls

Hotel/Motel Guest Room HVAC Occupancy Control Incentives

apply to any "smart" system that can sense when the room is unoccupied and turns the room HVAC unit off (or sets it back) to reduce unnecessary energy use. Eligible equipment includes thermostatic set-back controls controlling an electrically heated system. Systems can be centralized or local controls. Systems must set-back room space temperatures by a minimum of 8 degrees F when the room is determined to be unoccupied. Temperature set-back must occur no longer than 30 minutes after the room is determined unoccupied. Eligible systems include thermostat based controls, room key-card controls, and system check-in/check-out controls.

HVAC Control Strategies

An incentive is available for systems that incorporate energy saving strategies based on the tons of cooling controlled.

The following energy management HVAC control strategies must meet the criteria listed below to receive an incentive. For projects that will be done in phases, tonnage will be prorated for the area controlled.

- The control strategies must be installed on an HVAC system type listed on Table 1.
- At least one strategy from the options listed on Table 2 must be implemented per HVAC system type selected in Table 1.
- Only control strategies not currently installed are eligible.
- Control strategies installed on existing qualified HVAC equipment qualify for the Retrofit System incentive. Control strategies installed on newly purchased HVAC equipment (in existing facilities) qualify for the New System incentive.

Optimum Start and Optimum Stop

The fan start time is delayed until the fan run time matches that needed to meet the desired zone temperatures. The fan stop time is advanced until the fan run time matches that needed to meet the desired zone temperatures.

Economizer Controls

New economizer controls are enabled whenever the outside air temperature is below the maximum allowed temperature. Enthalpy control is also allowed. Economizer must have differential control and must be configured to allow freecooling and economizing at outdoor temperatures up to 65°F. Economizers on new HVAC units are only eligible for an incentive where not already required by code. New HVAC systems 5 tons and greater are not eligible for an economizer incentive.

Demand Controlled Ventilation (DCV)

To qualify for this strategy, the minimum outside air fraction must be varied based on a DCV sensor.

Supply Air Temperature Reset

To qualify for this strategy, the air temperature leaving the system cooling coil must be reset based on outdoor air temperature.

Chilled Water Reset

To qualify for this strategy, the supply chilled water temperature must be allowed to rise during low loads.

Condenser Water Reset

To qualify for this strategy, the cooling tower temperature floats with the load and wet-bulb temperature. This strategy is not eligible for new HVAC systems.

Manufacturer specification sheets must accompany the application.