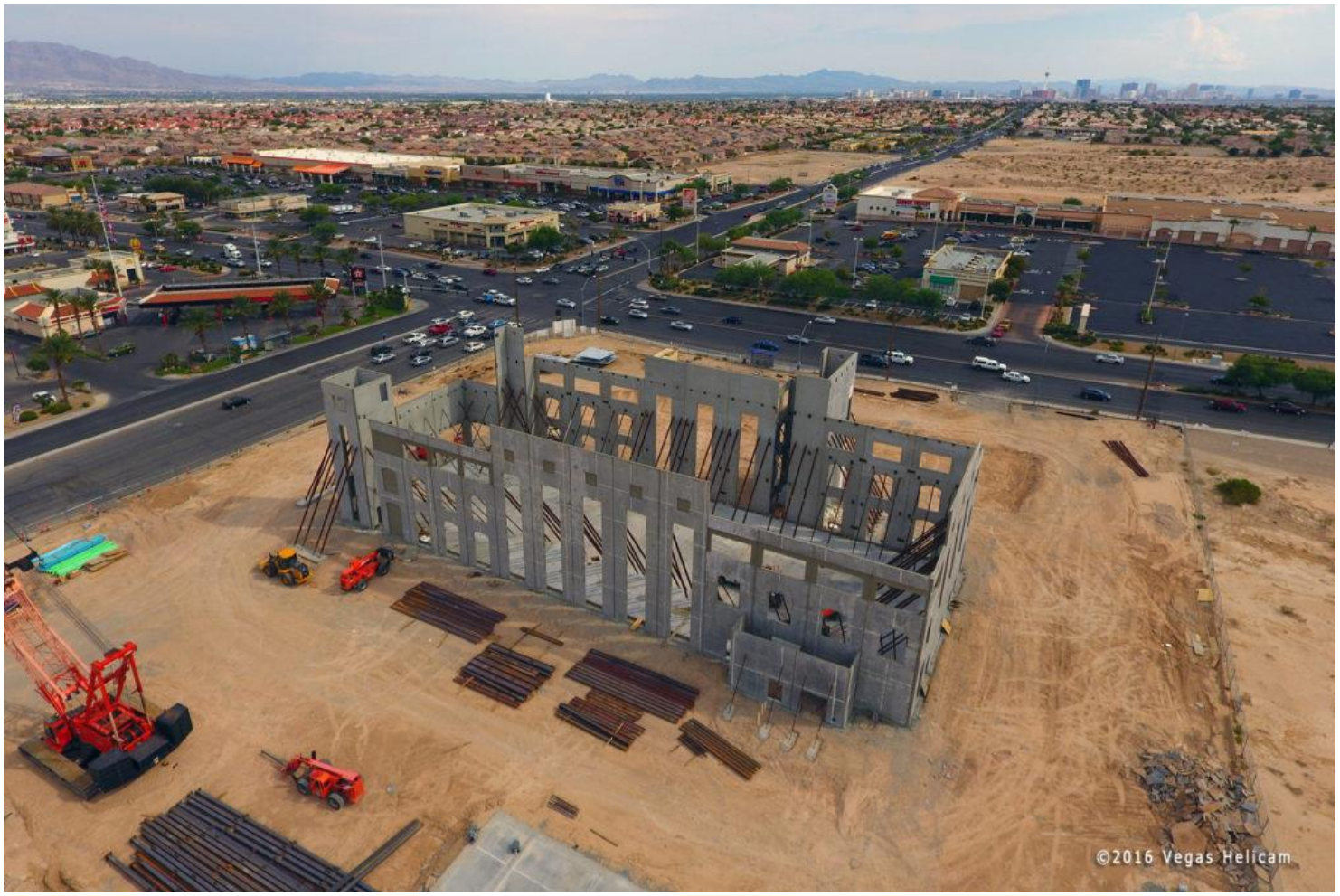
BUSINESS ENERGY SERVICES 2021

NEW CONSTRUCTION SPECIFICATIONS 2012 IECC



REV 1/25/2021

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New Construction Incentives

Prescriptive Incentives are available for electric energy-efficient equipment installations, cooling, commercial kitchens, refrigeration, and other miscellaneous measures. Incentives are provided for qualified equipment commonly installed in a major renovation or new construction project that exceeds specified minimum efficiencies. Performance-based and whole building-based incentives are available for major renovation and new construction projects or qualifying equipment that is not included in the list of qualified prescriptive measures. **The code for which the building was permitted is the code that will be used for incentive determination.**

1. Lighting Specifications-5% Better Than IECC 2012

Lighting Performance-Based Approach

For performance-based lighting, the energy savings will be based on the calculated lighting power density (LPD) on watts per square foot basis using either the Building Area method or the Space by Space method. Incentives will be paid only on the square footage of the building where the lighting installation is completed and is ready for occupancy. If a portion of a building is not completed such that final lighting installation is not complete and the space ready for occupancy, then that portion is not eligible for an incentive. IECC 2012 Lighting Standard specifies the allowable light density for each major building area or space type. Please see the Business Energy Services Policies and Procedures Manual for more detailed information and example qualification calculation.

The incentive for the lighting performance-based approach is $250 per kW reduction in connected lighting load below the IECC 2012 standard. The total lighting wattage density must be 5% lower than the IECC 2012 standard to qualify for an incentive. The minimum allowed lighting density used to calculate the incentive shall be at 50% of the IECC required value. In cases where an applicant has installed a lighting density less than 50% of the IECC standard value, projects will be evaluated on a case by case basis to determine the incentive. Whichever approach is used it, will be for the entire incentive related to installed fixtures.

The following documentation is required to support the application:

- Supporting calculations demonstrating building/space area and installed lighting wattage such as COMCheck report or engineering calculations
- Lighting layout plans
- Lighting fixtures schedule including fixture counts and manufacturers specification sheet including model number and rated wattage

For any facility whose operating hours vary by more than 35% from the designated annual hours of operation for the applicable building type listed below, otherwise prescriptive measures will be evaluated as custom measures. Business Energy Services reserves the right to determine the business type category.

- Casino 8,760 annual hours - A facility whose primary function is gaming and operates 24-hours
- Retail/Service 5,108 annual hours - A facility whose primary function is the selling of consumer goods and services
- Miscellaneous 5,299 annual hours - Building types that do not fall into any of the other categories such as outdoor agriculture, community center, fire station, dormitories, convention space or apartment complex common spaces

- Warehouse 4,371 annual hours - A building whose primary function is the storage of bulk goods for commercial services that may or may not have a small office and typically would not operate as a retail space
- Office 3,045 annual hours - A building used as a place for commercial, professional, or bureaucratic work
- Grocery 6,505 annual hours - A store that sells food and household items
- Restaurant 6,308 annual hours - A business which prepares and serves food and drink to customers
- Hotel Room Lighting 1,145 annual hours - Hotel/motel guest rooms
- Medical 5,234 annual hours - An institution, place, building or agency that furnishes, conducts, and operates health services for the prevention, diagnosis, or treatment of human disease, pain, injury, deformity, or physical condition
- Process/Industrial 6,665 annual hours - A building primarily used for the production, manufacturing and storage of goods for distribution and sale
- Indoor Agriculture 4,584 annual hours - A facility that grows food products indoors for distribution or sale
- Hotel/Motel 5,336 annual hours - An establishment whose primary function is providing paid lodging on a short-term basis

Please review the Business Energy Services Policies & Procedures for any additional information.

Section C406 - Section C406 of IECC 2012 requires that buildings comply with additional efficiency package options. Efficient Lighting System in accordance with C406.3 and the associated reduced interior lighting power by building area type, shown below, is one method of compliance. If this method is used, the lighting power density for compliance must be used for all lighting areas within the building. Please see IECC 2012 code manual for additional information. Note: If this method is chosen for compliance, exterior lighting qualifications will also apply.

Quick Facts:

- Energy savings is based on the calculated Lighting Power Density (LPD) on a watt per square foot basis using either the Building Area method, Space by Space method or Section C406 Requirements.
- The total lighting power density must be 5% lower than the IECC 2012 standard to qualify for an incentive.

2012 IECC Building Area Type Table

2012 IECC Building Area Type	Code Watts/Sq Ft	BES Watts/Sq Ft
Automotive Facility	0.9	0.86
Convention Center	1.2	1.14
Courthouse	1.2	1.14
Dining: Bar Lounge/Leisure	1.3	1.24
Dining: Cafeteria/Fast Food	1.4	1.33
Dining: Family	1.6	1.52
Dormitory	1	0.95
Exercise Center	1	0.95
Fire Station	0.8	0.76
Gymnasium	1.1	1.05
Healthcare-Clinic	1	0.95
Hospital	1.2	1.14
Hotel	1	0.95
Library	1.3	1.24
Manufacturing Facility	1.3	1.24
Motel	1	0.95
Motion Picture Theater	1.2	1.14
Multi-family	0.7	0.67
Museum	1.1	1.05
Office	0.9	0.86
Parking Garage	0.3	0.29
Penitentiary	1	0.95
Performing Arts Theaters	1.6	1.52
Police Station	1	0.95
Post Office	1.1	1.05
Religious Building	1.3	1.24
Retail	1.4	1.33
School/University	1.2	1.14
Sports Arena	1.1	1.05
Town Hall	1.1	1.05
Transportation	1	0.95
Warehouse	0.6	0.57
Workshop	1.4	1.33

2012 IECC Space by Space Area Type Table

2012 IECC Space by Space Area Type	Code Watts/Sq Ft	BES Watts/Sq Ft
Atrium - First 40 ft. in height (per ft. ht.)	0.03	0.03
Atrium - Above 40 ft. in height (per ft. ht.)	0.02	0.02
Audience Seating - Auditorium	0.9	0.86
Audience Seating - Performing arts theater	2.6	2.47
Audience Seating - Motion picture theater	1.2	1.14
Audience Seating - Classroom/lecture/training	1.3	1.24
Audience Seating - Conf/meeting/multipurpose	1.2	1.14
Audience Seating - Corridor/transition	0.7	0.67
Dining Area - Bar/lounge/leisure dining	1.4	1.33
Dining Area - Family dining	1.4	1.33
Dressing/fitting room performance arts theater	1.1	1.05
Electrical/mechanical	1.1	1.05
Food Preparation	1.2	1.14
Laboratory - Classrooms	1.3	1.24
Laboratory - Medical/industrial/research	1.8	1.71
Lobby	1.1	1.05
Lobby - Performing arts theater	3.3	3.14
Lobby - Motion picture theater	1	0.95
Locker Room	0.8	0.76
Lounge Recreation	0.8	0.76
Office - Enclosed	1.1	1.05
Office - Open plan	1	0.95
Restroom	1	0.95
Sales Area	1.6	1.52
Stairwell	0.7	0.67
Storage	0.8	0.76
Workshop	1.6	1.52
Courthouse/police/prison - Courtroom	1.9	1.81
Courthouse/police/prison - Confinement cells	1.1	1.05
Courthouse/police/prison - Judge chambers	1.3	1.24
Courthouse/police/prison - Prison audience seating	0.5	0.48
Courthouse/police/prison - Prison classroom	1.3	1.24
Courthouse/police/prison - Prison dining	1.1	1.05
Automotive - Service/repair	0.7	0.67
Bank/Office - Banking activity area	1.5	1.43
Convention Center - Exhibit space	1.5	1.43
Convention Center - Audience/seating space	0.9	0.86

2012 IECC Space by Space Area Type	Code Watts/Sq Ft	BES Watts/Sq Ft
Dormitory Living Quarters	1.1	1.05
Fire Station - Engine room	0.8	0.76
Fire Station - Sleeping quarters	0.3	0.29
Gymnasium/Fitness - Fitness area	0.9	0.86
Gymnasium/Fitness – Gym audience seating	0.4	0.38
Gymnasium/Fitness - Playing area	1.4	1.33
Healthcare Clinic/Hosp. - Corridors/transition	1	0.95
Healthcare Clinic/Hosp. - Exam/treatment	1.7	1.62
Healthcare Clinic/Hosp. - Emergency	2.7	2.57
Healthcare Clinic/Hosp. - Public/staff lounge	0.8	0.76
Healthcare Clinic/Hosp. - Medical supplies	1.4	1.33
Healthcare Clinic/Hosp. - Nursery	0.9	0.86
Healthcare Clinic/Hosp. - Patient room	0.7	0.67
Healthcare Clinic/Hosp. - Pharmacy	1.2	1.14
Healthcare Clinic/Hosp. - Radiology/imaging	1.3	1.24
Healthcare Clinic/Hosp. - Operating room	2.2	2.09
Healthcare Clinic/Hosp. - Recovery	1.2	1.14
Healthcare Clinic/Hosp. - Lounge/recreation	0.8	0.76
Healthcare Clinic/Hosp. - Laundry/washing	0.6	0.57
Hotel - Dining area	1.3	1.24
Hotel - Guest rooms	1.1	1.05
Hotel - Hotel Lobby	2.1	2.00
Hotel - Highway lodging dining	1.2	1.14
Hotel - Highway lodging guest room	1.1	1.05
Library - Stacks	1.7	1.62
Library - Card file & cataloging	1.1	1.05
Library - Reading area	1.2	1.14
Manufacturing - Corridors/transition	0.4	0.38
Manufacturing - Detailed manufacturing	1.3	1.24
Manufacturing - Equipment room	1	0.95
Manufacturing - Extra high bay >50ft	1.1	1.05
Manufacturing - High bay 25-50ft	1.2	1.14
Manufacturing - Low bay <25ft	1.2	1.14
Museum - General exhibition	1	0.95
Museum - Restoration	1.7	1.62
Parking Garage	0.2	0.19
Post Office - sorting area	0.9	0.86
Religious Bldg - Fellowship hall	0.6	0.57
Religious Bldg - Audience seating	2.4	2.28
Religious Bldg - Worship pulpit/choir	2.4	2.28

2012 IECC Space by Space Area Type	Code Watts/Sq Ft	BES Watts/Sq Ft
Retail - Dressing/fitting area	0.9	0.86
Retail - Mall concourse	1.6	1.52
Retail - Sales area	1.6	1.52
Sports Arena - Audience seating	0.4	0.38
Sports Arena - Court sports-class 4	0.7	0.67
Sports Arena - Court sports-class 3	1.2	1.14
Sports Arena - Court sports-class 2	1.9	1.81
Sports Arena - Court sports-class 1	3	2.85
Sports Arena - Ring sports area	2.7	2.57
Transportation - Air/train/bus baggage area	1	0.95
Transportation - Airport concourse	0.6	0.57
Transportation - Terminal-ticket counter	1.5	1.43
Warehouse - Fine material storage	1.4	1.33
Warehouse - Medium/bulky material	0.6	0.57

2012 IECC Section C406 Requirements Building Area Type Table

Section C406 Requirements 2012 IECC Building Area Type	Code Watts/Sq Ft	BES Watts/Sq Ft
Automotive Facility	0.82	0.78
Convention Center	1.08	1.03
Courthouse	1.05	1.00
Dining: Bar Lounge/Leisure	0.99	0.94
Dining: Cafeteria/Fast Food	0.90	0.86
Dining: Family	0.89	0.85
Dormitory	0.61	0.58
Exercise Center	0.88	0.84
Fire Station	0.71	0.67
Gymnasium	1.00	0.95
Healthcare-Clinic	0.87	0.83
Hospital	1.10	1.05
Hotel/Motel	0.88	0.84
Library	1.18	1.12
Manufacturing Facility	1.11	1.05
Motion Picture Theater	0.83	0.79
Multi-family	0.60	0.57
Museum	1.06	1.01
Office - > 30% daylight area	0.90	0.86
Office - < 30% daylight area	0.85	0.81

Section C406 Requirements 2012 IECC Building Area Type	Code Watts/Sq Ft	BES Watts/Sq Ft
Performing Arts Theaters	1.39	1.32
Police Station	0.96	0.91
Post Office	0.87	0.83
Religious Building	1.05	1.00
Retail - > 30% daylight area	1.40	1.33
Retail - < 30% daylight area	1.30	1.24
School/University	0.99	0.94
Sports Arena	0.78	0.74
Town Hall	0.92	0.87
Transportation	0.77	0.73
Warehouse	0.60	0.57
Workshop	1.20	1.14

2. Cooling and Miscellaneous Specifications

Air- and Water-Cooled Units

New air- and water-cooled air conditioning units or heat pumps that meet or exceed the qualifying efficiency (EER) shown in the Cooling Incentive Tech Sheet Table are eligible for an incentive. These units can be either split system or single packaged units. Evaporative coolers do not qualify under the New Construction Prescriptive Air Conditioning Incentive but may qualify under the New Construction Performance-Based Service. All packaged and split system cooling equipment must meet Air-Conditioning, Heating and Refrigeration Institute (AHRI) standards (210/240, 320 or 340/360), be UL listed, and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC). A manufacturer's specification sheet indicating the system efficiency must accompany the application.

The total incentive is determined by two components – an equipment incentive and an efficiency incentive. Both the equipment and efficiency incentives are applied per ton of cooling installed. The equipment qualifies for an equipment incentive if the qualifying efficiency is met for the equipment size category. In addition, the efficiency incentive is added on a prorated basis if the equipment exceeds the minimum qualifying efficiency for the equipment size category.

The incentive for air conditioners is calculated as follows:

Tons X [Equipment Incentive/ton + Efficiency Incentive/ton X (EER new – EER qualifying)]

For air-cooled units =<65,000 Btuh, the SEER value must be entered for the Unit Efficiency to calculate the incentive amount. For all other sizes of air-cooled units, use the EER values in the Unit Efficiency column.

NOTE: When choosing the Efficient HVAC Performance option for Section C406 of IECC 2012, it is required that the increased performance qualifications under the C406 section of the application be used.

Quick Facts:

- Evaporative coolers do not qualify under the New Construction Prescriptive Air Conditioning Incentive but may qualify under the New Construction Performance-Based Service.
- All packaged and split system cooling equipment must meet Air-Conditioning, Heating and Refrigeration Institute standards (210/240, 320 or 340/360), be UL listed, and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC).

Packaged Terminal Units (PTAC/PTHP)

Package terminal air conditioners and heat pumps are through-the-wall self-contained units that are two tons (24,000 Btuh) or less. Such units' cool small areas and are commonly used for individual rooms. Only units that have an EER greater than or equal to [14.2 - (0.3 x capacity in Btu/h / 1000)] qualify for an incentive. All EER values shall be rated at 95 °F outdoor dry-bulb temperature. These units have a combination of heating and cooling assemblies intended for mounting through the wall. It includes refrigeration, outdoor louvers, forced ventilation, and may connect to external heating source or have electric resistance heating.

Quick Facts:

- Two tons (24,000 Btuh) or less.
- All EER values shall be rated at 95 °F outdoor dry-bulb temperature.

Variable Speed Drives

Variable speed drives (VSD) offer a method of significantly reducing the energy consumed by fans, centrifugal pumps, and other motor driven machinery operating under varying loads. VSD must be installed for the primary purpose of reducing energy usage.

Prescriptive incentives are available for applications < 200 HP on qualifying HVAC fans (supply, return, exhaust, make up), single speed cooling tower fans, chilled/condenser water circulation pumps (HVAC), hot water circulation pumps (HVAC) and boiler feed water pumps, unless required by code. Equipment must operate a minimum of 1500 hours. Integrated VSD applications on new chillers or package units are not eligible for this incentive.

VSDs on process equipment are not eligible for this measure and must utilize the Performance-Based Technology Form.

For instances where VSDs are installed on redundant/backup systems (such as secondary chilled water pumps), only one unit is eligible for an incentive.

Application Code for eligible VSD applications :
BEF = Building Exhaust Fan
CTF = Cooling Tower Fan
CWP = Chilled/Condenser Water Pump
FWP = Boiler Feed Water Pump
HWP = Hot Water Circulator Pump
MAF = Make-up Air Fan
RFA = Return fan on return air handler
SFA = Supply fan on supply air handler

NOTE: VSD applications required by IECC 2012 are not eligible for incentives. VSDs on all VAV fan

installations > 7.5 HP are not eligible as they are required by IECC 2012. Variable speed fans are required by IECC 2012 on cooling tower fans > 7.5 HP and are not eligible for incentives. Hydronic systems greater than or equal to 300,000 Btuh in design output capacity supplying heated or chilled water to comfort conditioning systems must have flow control capabilities (which can be satisfied with a VSD).

Quick Facts:

- Prescriptive incentives are available for applications ≤ 200 HP on qualifying HVAC fans, single speed cooling tower fans, chilled/condenser water circulation pumps, hot water circulation pumps and boiler feed water pumps.
- VSDs on process equipment are not eligible for this measure and must utilize the Performance-Based Technology Form.

3. Commercial Kitchens/Refrigeration Specifications

Only electric equipment qualifies for incentives. ENERGY STAR® maintains a list of qualifying products and specifications at www.energystar.govor www.CEE1.org. To determine if non-ENERGY STAR models meet the ASTM standard, contact your manufacturer's representative.

Fryers

The fryer shall meet or exceed ENERGY STAR specifications which are a heavy load cooking energy efficiency of > 80% utilizing American Society for Testing and Materials (ASTM) Standard F1361 and a normalized idle energy rate ≤ 1,000 watts (based on a 15-inch fryer).

Large Vat Fryers

The commercial fryer shall have a tested heavy load (French fry for large vats) cooking energy efficiency of > 80% utilizing ASTM Standard F2144 for large vat fryers. Multiple vat configurations are paid per qualifying vat.

Griddles

The griddle shall meet or exceed ENERGY STAR specifications which are a heavy load cooking energy efficiency of > 70% utilizing ASTM Standard F1275 and a normalized idle energy rate ≤ 320 watts per ft2.

Convection Ovens

The oven shall meet or exceed ENERGY STAR specifications which are a heavy load potato cooking energy efficiency of > 70% utilizing ASTM Standard F1496 and an idle energy rate of ≤ 1.0 kW for half size and ≤ 1.6 kW for full size.

Combination Ovens

The oven shall meet or exceed heavy load cooking energy efficiency of > 60% utilizing ASTM Standard F1639.

Steam Cookers

The commercial steam cooker shall meet ENERGY STAR specifications for energy efficiency or shall have a tested heavy load potato cooking energy efficiency of > 50% utilizing ASTM Standard F1484.

Pan Capacity	Idle Rate (watts)
3-pan	400
4-pan	530
5-pan	670
6-pan or larger	800

Holding Cabinets

This measure does not include cook and hold equipment. All measures shall be electric hot food holding cabinets that are fully insulated and have solid doors in full, three-quarter and half sizes respectively. Qualifying cabinets shall not exceed the maximum idle energy rate of 20 watts per cubic foot in accordance with the ASTM Standard F2140 test method as stated in ENERGY STAR. Cook and hold equipment and units < ½ size may be eligible and should be applied for as a custom incentive.

Ventilation Control-New Hood

This incentive applies toward the purchase and installation of a new commercial kitchen exhaust hood control system installed in a new dedicated commercial kitchen exhaust hood and make-up air system. The incentive is per exhaust fan hp. The control system must be used in conjunction with variable speed fan motor controls. Only pre-approved control systems will qualify for an incentive. Please see the Business Energy Services Service Policies and Procedures for details on approved control systems.

Evaporator Fan

This measure is for the installation of controls in medium temperature walk-in coolers. The controller reduces airflow of the evaporator fans when there is no refrigerant flow. The measure must control a minimum of 1/20 HP where fans operate continuously at full speed. The measure also must reduce fan motor power by at least 75% during the off cycle. This measure is NOT applicable if any of the following conditions apply:

1) The compressor runs all the time with high duty cycle

2) The evaporator fan does not run at full speed all the time

3) The evaporator fan motor runs on polyphase power

4) The evaporator fan motor is not shaded-pole or permanent split capacitor

5) Evaporator does not use off-cycle or time-off defrost

Ice Machines

This specification covers machines generating 60 grams (2 oz.) or lighter ice cubes, as well as flaked, crushed and fragmented ice makers. Performance data is based on Air-Conditioning, Heating and Refrigeration Institute (AHRI) Standard 810. Air-cooled (self-contained, ice making heads, or remote condensing) or Water-cooled machines with an independent and isolated compressor and ice formation feeds on a closed-chilled water loop are eligible. The efficiency specifications for the two qualifying tiers are equivalent to ENERGY STAR/or CEE Tier 2. The entire AHRI tested ice making system must be purchased to qualify. Remote machines shall be purchased with qualifying remote condenser or remote condenser/compressor unit. Visit www.ahrinet.org for product information and testing procedures. Specifications are available at http://www.energystar.gov or www.cee1.org. The test method must be in accordance with AHRI Standard 810.

Quick Facts:

- The entire AHRI tested ice making system must be purchased to qualify.
- The efficiency specifications for the two qualifying tiers are equivalent to ENERGY STAR/or CEE Tier 2.

Refrigerators/Freezers

The refrigeration system shall be a new built-in (packaged) unit. Cases with remote refrigeration systems do not qualify for a prescriptive incentive. Customers shall provide proof that the appliance meets the ENERGY STAR Version 2.0 specifications using ANSI/ASHRAE Standard 72-2005 (38 °F +/- 2 °F for refrigerators and 0 °F +/- 2 °F for freezers). Please see the Business Energy Services Policy and Procedures for energy usage specifications.

NOTE: If a refrigeration measure is required by code, it is not eligible for an incentive.

4. Performance- and Whole Building-Based Specifications

These specifications refer to the 2012 version of the IECC. The code for the jurisdiction under which a project is permitted will be the applicable code.

Performance-Based Approach- 5% Better Than IECC 2012

The Performance-Based Approach enables the design team to consider a custom approach for individual items, such as a high efficiency chiller. Documentation of savings in the form of a building performance model or appropriate engineering algorithms must be provided by the applicant and must show that the annual energy consumption is at least 5% better that the IECC 2012 minimum. The incentive rate is based on kWh savings. (More detailed information is contained in the Business Energy Services Policies and Procedures document.)

Please refer to the Business Energy Services Policies & Procedures Manual Appendix for guidelines on supporting documentation required for different project types. Note that the information below is required to confirm kWh savings. Examples of documentation to be included with the application are:

- A narrative or list of specific energy efficient features of the building and listing the energy efficient system performance and comparing it to IECC 2012 minimum system performance.
- A description of the building schedule and major operating assumptions.
- The input and output files used for the model annotated to show the base case and where the energy efficient features are included. Industry accepted modeling tools such as eQUEST, DOE-2, Trane Trace, etc. can be used for building simulation purposes.
- A summary worksheet summarizing the results of the modeling and showing annual energy savings and demand savings between the high-efficiency case and the IECC 2012 minimum.

By providing as much of the information given in the guidelines as possible, the timeframe for project approval will likely be reduced.

Whole Building Based Approach- 5% Better Than IECC 2012 or ASHRAE 90.1-2010

The Whole Building-Based Approach enables the design team to consider a custom approach for either the building as a whole such as required for LEED qualifications, or a combination of measures on a whole building level. Documentation of savings in the form of a building performance model or appropriate engineering algorithms must be provided by the applicant. The standard reference design and proposed design shall be configured and analyzed as specified by either the Section C407 of IECC 2012 or ASHRAE/IESNA Standard 90.1-2010 using the Building Performance Rating Method in Appendix G. Compliance software tools shall generate a report that demonstrates at least 5% percentage improvement in the proposed design compared to the standard reference design. The incentive rate is based on kWh savings.

Please refer to the Business Energy Services Policies & Procedures Manual Appendix for guidelines on supporting documentation required for this approach. Note that this information is required to confirm kWh savings. Examples of documentation to be included with the application are:

- Input and output report(s) from the energy analysis simulation containing the complete input and output files, as applicable.
- An explanation of any error or warning messages appearing in the simulation tool output.
- Documentation of the building component characteristic of the standard reference design and proposed designed.
- A narrative or list of specific energy efficient features of the building listing the energy efficient system performance and comparing it to IECC 2012 minimum system performance.
- A description of the building schedule and major operating assumptions.
- Industry accepted modeling tools such as eQUEST, DOE-2, Trane Trace, etc. can be used for building modeling purposes.
- A summary worksheet summarizing the results of the modeling and showing annual energy savings and demand savings between the high-efficiency case and the IECC 2012 minimum.

By providing as much of the information given in the guidelines as possible, the timeframe for project approval will likely be reduced.

Please refer to the Business Energy Services Policy and Procedures definitions page for a description of the Northern and Southern Service Territories.