



# ENERGY STAR® Program Requirements Product Specification for Commercial Refrigerators and Freezers

## Eligibility Criteria Draft 1, Version 5.0

1 Following is the **Draft 1, Version 5.0** ENERGY STAR product specification for commercial refrigerators and  
2 freezers. A product shall meet all of the identified criteria if it is to earn ENERGY STAR certification.

### 3 **1 Definitions**

4 Below are the definitions of the relevant terms in this document. Where applicable, the cited definitions  
5 are aligned with the definitions in DOE's regulations found in 10 CFR Part 431<sup>i</sup>. When in conflict, the  
6 definitions in the Code of Federal Regulations (CFR) take precedence.

#### 7 A) Product Types:

- 8 1) Commercial Refrigerator: A unit of commercial refrigeration equipment in which all refrigerated  
9 compartments in the unit are capable of operating at or above 32°F (±2°F).
- 10 2) Commercial Freezer: A unit of commercial refrigeration equipment in which all refrigerated  
11 compartments in the unit are capable of operating below 32°F (±2°F).
- 12 3) Commercial Refrigerator-Freezer: A unit of refrigeration equipment consisting of two or more  
13 refrigerated compartments where at least one refrigerated compartment is capable of operating at or  
14 above 32°F (±2°F) and at least one refrigerated compartment is capable of operating below 32°F  
15 (±2°F).
- 16 4) Commercial Refrigerator, Freezer, and Refrigerator-Freezer: Refrigeration equipment that: (a) is not a  
17 consumer product (as defined in §430.2 of 10 CFR Part 430); (b) is not designed and marketed  
18 exclusively for medical, scientific, or research purposes; (c) operates at a chilled, frozen, combination  
19 chilled and frozen, or variable temperature; (d) displays or stores merchandise and other perishable  
20 materials horizontally, semi-vertically, or vertically; (e) has transparent or solid doors, sliding or hinged  
21 doors, a combination of hinged, sliding, transparent, or solid doors, or no doors; (f) is designed for pull-  
22 down temperature applications or holding temperature applications; and (g) is connected to a self-  
23 contained condensing unit or to a remote condensing unit.
- 24 5) Commercial Hybrid: A unit of commercial refrigeration equipment that: (a) consists of two or more  
25 thermally separated refrigerated compartments that are in two or more different equipment families;  
26 and (b) is sold as a single unit.
- 27 6) Horizontal Closed: Equipment with hinged or sliding doors and a door angle greater than or equal to  
28 45°.
- 29 7) Horizontal Open: Equipment without doors and an air-curtain angle greater than or equal to 80° from  
30 the vertical.
- 31 8) Vertical Closed: Equipment with hinged or sliding doors and a door angle less than 45°.
- 32 9) Vertical Open: Equipment without doors and an air-curtain angle greater than or equal to 0° and less  
33 than 10° from the vertical.
- 34 10) Closed Solid: Equipment with doors, and in which more than 75 percent of the outer surface area of  
35 all doors on a unit are not transparent.
- 36 11) Closed Transparent: Equipment with doors, and in which 25 percent or more of the outer surface area  
37 of all doors on the unit are transparent.

<sup>i</sup> 10 CFR Part 431, Subpart C, §431.62

- 38 12) Self-Contained Condensing Unit: A factory-made assembly of refrigerating components designed to  
 39 compress and liquefy a specific refrigerant that is an integral part of the refrigerated equipment and  
 40 consists of 1 or more refrigerant compressors, refrigerant condensers, condenser fans and motors,  
 41 and factory supplied accessories.
- 42 13) Ice Cream Freezer: A commercial freezer that is designed to operate at or below -5°F (±2°F) (- 21°C  
 43 ±1.1°C) and that the manufacturer designs, markets, or intends for the storing, displaying, or  
 44 dispensing of ice cream.
- 45 14) Convertible Temperature Equipment: Commercial refrigeration equipment that is capable of operating  
 46 as a refrigerator (Section 1.A.1.) and as a freezer (Section 1.A.2) with a user adjustable application  
 47 temperature.
- 48 15) Chef Base or Griddle Stand: Commercial refrigeration equipment that is designed and marketed for  
 49 the express purpose of having a griddle or other cooking appliance placed on top of it that is capable  
 50 of reaching temperatures hot enough to cook food.
- 51 16) Preparation or Buffet Table: A commercial refrigerator, freezer, or refrigerator-freezer with a food  
 52 condiment rail designed to hold open perishable food and may or may not be equipped with a lower  
 53 compartment that may or may not be refrigerated.
- 54 17) Semivertical Open: Equipment without doors and an air curtain angle greater than or equal to 10° and  
 55 less than 80° from the vertical.
- 56 18) Service Over Counter: Equipment that has sliding or hinged doors in the back intended for use by  
 57 sales personnel, with glass or other transparent material in front for displaying merchandise, and that  
 58 has a height not greater than 66 inches and is intended to serve as a counter for transactions between  
 59 sales personnel and customers.
- 60 19) Basic Model: All commercial refrigeration equipment manufactured by one manufacturer within a  
 61 single equipment class, having the same primary energy source, and that have essentially identical  
 62 electrical, physical, and functional characteristics that affect energy consumption.
- 63 20) Equipment Family: Classification determined by equipment geometry and door orientation, including:  
 64 Vertical Open (VOP), Semi-Vertical Open (SVO), Horizontal Open (HZO), Vertical Closed Transparent  
 65 (VCT), Vertical Closed Solid (VCS), Horizontal Closed Transparent (HCT), Horizontal Closed Solid  
 66 (HCS), Service Over Counter (SOC), and Chef Base (CB).

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 69 **Note:** Definitions for convertible temperature equipment as well as preparation or buffet tables have been  
 70 revised for clarity. Further, service over counter (SOC) and chef base (CB) are included in the equipment  
 71 family listing. Stakeholders are encouraged to provide feedback on the revised definitions and inclusions.  
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## 73 2 SCOPE

### 74 2.1 Included Products

- 75 2.1.1 Products that (1) meet the definitions of a Commercial Refrigerator, Freezer, and Refrigerator-Freezer,  
 76 Commercial Hybrid; or Convertible Temperature Equipment and (2) fall under the eligible equipment  
 77 class designations in Section 2.1.1 i-xi., or a combination of equipment classes (see Section 1.A.4)  
 78 herein, are eligible for ENERGY STAR certification:
- 79 i. Horizontal Closed Solid Self-Contained Low Temperature (HCS.SC.L),
  - 80 ii. Horizontal Closed Solid Self-Contained Medium Temperature (HCS.SC.M),
  - 81 iii. Horizontal Closed Transparent Self-Contained Low Temperature (HCT.SC.L),
  - 82 iv. Horizontal Closed Transparent Self-Contained Medium Temperature (HCT.SC.M),
  - 83 v. Vertical Closed Solid Self-Contained Low Temperature (VCS.SC.L),
  - 84 vi. Vertical Closed Solid Self-Contained Medium Temperature (VCS.SC.M),

- 85 vii. Vertical Closed Transparent Self-Contained Low Temperature (VCT.SC.L),
- 86 viii. Vertical Closed Transparent Self-Contained Medium Temperature (VCT.SC.M),
- 87 ix. Chef Base Self-Contained Medium Temperature (CB.SC.M)
- 88 x. Chef Base Self-Contained Low Temperature (CB.SC.L), and/or
- 89 xi. Service Over Counter Self-Contained Medium Temperature (SOC.SC.M).

90 Examples of product types that are eligible for certification include: convertible temperature  
91 equipment, reach-in, roll-in, or pass-through units; merchandisers; under-counter units (or  
92 worktops); hybrid units; milk coolers; back bar coolers; bottle coolers; deep well units; beer-  
93 dispensing or direct draw units; and bunker freezers.

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95 **Notes:** For convertible temperature equipment to be listed as a medium and low temperature  
96 certified product, it must meet both medium and low temperature criteria if applicable.  
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99 2.1.2 To be eligible for this specification, commercial refrigeration equipment shall be commercial-grade and  
100 third-party certified to the applicable requirements set forth in the following quality and safety  
101 standards:

- 102 i. ANSI/NSF International Standard for Food Equipment – Commercial Refrigerators and Freezers  
103 (ANSI/NSF 7-2019); and
- 104 ii. UL Standard for Commercial Refrigerators and Freezers (UL-471).

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106 **Notes:** ANSI/NSF 7-2019 exempts equipment from some temperature performance requirements  
107 based on the type of food that is intended to be stored in the unit. Examples of equipment that  
108 would be exempt from the temperature performance requirements of this Standard include:  
109 refrigerators intended only for the storage or display of non-potentially hazardous bottled or canned  
110 products and refrigerators intended only for the display of unprocessed produce. Please refer to  
111 ANSI/NSF 7-2019 to determine the applicable requirements for a specific equipment type.

## 112 2.2 Excluded Products

113 2.2.1 Refrigerated buffet tables and preparation tables, walk-in coolers, blast chillers and freezers,  
114 horizontal open equipment, vertical open equipment, semi-vertical open equipment, remote  
115 condensing equipment, ice cream freezers, and equipment rated at the lowest application product  
116 temperature (LAPT, see 10 CFR Part 431, Subpart C, §431.62 and section 2.2 of Appendix B to  
117 Subpart C) are not eligible for ENERGY STAR. Products that are covered under other ENERGY  
118 STAR product specifications (e.g., Residential Refrigerators and Freezers) are not eligible for  
119 certification under this specification.

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121 **Note:** The ANSI/NSF International Standard for Food Equipment – Commercial Refrigerators and Freezers  
122 (ANSI/NSF 7-2019) safety standard reference has been updated from the 2014 to the 2019 version. Also,  
123 glass frosters were removed from the listing of eligible product examples as these products are not covered  
124 under the Federal standard. However, convertible temperature equipment was added to the eligible product  
125 list of examples. In addition, the listing of excluded products has been revised to reflect the proposed scope  
126 expansion to chef base or griddle stands and service over counter equipment as well as to clarify continued  
127 exclusion from scope for refrigerated buffet tables and preparation tables, walk-in coolers, and blast chillers  
128 and freezers.

129 Based on analyses and stakeholder feedback, there is an opportunity and strong support to incentivize  
130 energy-efficient models for self-contained medium and low temperature chef bases and self-contained  
131 medium temperature service over counter products. Based on stakeholder comments, technologically feasible  
132 designs can increase energy efficiency, such as using alternative refrigerants, LED lights, improved insulation,  
133 control changes, and alternative compressor designs. These product classes were categorized based on  
134 design and application.

135 Some stakeholder comments recommended using worktop data as a surrogate for chef bases, while other  
136 stakeholders were against this approach. Energy performance data suggest that the most efficient chef bases  
137 may be comparable to worktops, but on average chef bases use more energy per volume. While worktops  
138 look similar to chef bases, chef bases tend to be shorter in height, structured to support more weight atop,  
139 have oversized refrigeration units, have smaller refrigerated volume capacity to worktops of comparable  
140 external linear length, and serve different refrigeration needs. For these reasons, the chef bases are  
141 considered a separate category from worktops, which are in the VCS.SC.M and VCS.SC.L classes. As a  
142 result, the EPA proposes unique criteria levels for chef base refrigerators, or CB.SC.M, using only chef base  
143 data without surrogate worktop data. However, in the absence of additional unique freezer chef base data,  
144 worktop data was used to propose a level for chef base freezers, or CB.SC.L (see data package tab 12).

145 More data are available for medium temperature chef bases than for low temperature units; still, there seems  
146 to be a similar opportunity for low temperature chef bases as well as convertible models (i.e., models that can  
147 be tested at the set points 0°F and 38°F).

148 The EPA proposes expanding the scope to include convertible temperature equipment, which can be  
149 recognized under both low and medium temperature products if they meet both specified criteria. For example,  
150 if the product fails the low temperature Maximum Daily Energy Consumption (MDEC) but meets the medium  
151 temperature MDEC, it will not be listed as a certified product. This scope expansion allows greater consumer  
152 availability and incentivizes designing convertible products that are energy efficient in both operating  
153 temperature set points.

154 The lowest application product temperature (LAPT) applies to equipment that is physically incapable of  
155 reaching the prescribed rating temperature or set point. Testing models at temperatures greater than the set  
156 point (0°F or 38°F) may provide an unfair advantage to them relative to models being tested at the set point.  
157 As such, equipment shall be tested and meet the ENERGY STAR criteria at the specified rating temperature  
158 or set point -- EPA intends not to consider models tested at LAPT.

159 EPA welcomes additional feedback on the inclusion and product categorization of convertible units, chef  
160 bases, and service over counter units.

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## 162 **3 CERTIFICATION CRITERIA**

### 163 **3.1 Significant Digits and Rounding**

164 3.1.1 All calculations shall be carried out with directly measured (unrounded) values. Final ratings for daily  
165 energy consumption shall be rounded to 0.01 kWh increments in accordance with the DOE test  
166 procedure provisions.

167 3.1.2 Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website  
168 shall be calculated in accordance with the requirements for determining certified ratings for DOE.

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186 **3.2 General Requirements**

187 3.2.1 Maximum Daily Energy Consumption (MDEC) Requirements:

188 **Table 1: ENERGY STAR Requirements for Commercial Refrigerators, Freezers, and Refrigerator-**  
 189 **Freezer<sup>ii</sup>**

| Product Volume (in cubic feet)             | Refrigerator              | Freezer                   |
|--|---------------------------|---------------------------|
| <b>Vertical Closed</b>                     |                           |                           |
| <b>Solid</b>                               | <b>VCS.SC.M*</b>          | <b>VCS.SC.L</b>           |
| 0 < V < 15                                 | 0.0267V+0.8               | 0.2068V+0.9               |
| 15 ≤ V < 30                                | 0.05V+0.45                | 0.1167V+2.2488            |
| 30 ≤ V < 50                                |                           | 0.1526V+1.1727            |
| 50 ≤ V                                     | 0.025V+1.6991             | 0.028V+7.4                |
| <b>Transparent</b>                         | <b>VCT.SC.M</b>           | <b>VCT.SC.L</b>           |
| 0 < V < 15                                 | 0.095V+0.445              | 0.232V+2.36               |
| 15 ≤ V < 30                                | 0.05V+1.12                |                           |
| 30 ≤ V < 50                                | 0.076V+0.34               |                           |
| 50 ≤ V                                     | 0.105V-1.111              |                           |
| <b>Horizontal Closed</b>                   |                           |                           |
| <b>Solid or Transparent</b>                | <b>HCT.SC.M, HCS.SC.M</b> | <b>HCT.SC.L, HCS.SC.L</b> |
| All volumes                                | 0.05V+0.28                | 0.057V+0.55               |
| <b>Chef Bases**</b>                        |                           |                           |
| <b>Doors or Drawers</b>                    | <b>CB.SC.M</b>            | <b>CB.SC.L</b>            |
| All volumes                                | 0.07V+0.65                | 0.22V+1.38                |
| <b>Service Over Counter</b>                |                           |                           |
| <b>Total Display Area (in square feet)</b> | <b>SOC.SC.M</b>           | N/A                       |
| 0 < TDA < 20                               | 0.32TDA+0.6               |                           |
| 20 ≤ TDA < 40                              | 0.65TDA-6.0               |                           |
| 40 ≤ TDA                                   | 0.4667TDA-1.3333          |                           |

190 \* DOE Equipment Class designations relevant to ENERGY STAR eligible product scope  
 191 (1) Equipment family code (HCS= horizontal closed solid, HCT=horizontal closed transparent, VCS= vertical  
 192 closed solid, VCT=vertical closed transparent, SOC= service over counter),  
 193 (2) Operating mode (SC=self-contained), and  
 194 (3) Rating Temperature (M=medium temperature (38 °F), L=low temperature (0 °F)).  
 195 \*\* CB = chef base or griddle stand as defined in Section 1.A.15.  
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<sup>ii</sup> The operating temperature range for commercial refrigerators and freezers is located at 10 CFR Part 431, Subpart C, §431.66(e)  
**ENERGY STAR Program Requirements for Commercial Refrigerator and Freezer – Eligibility Criteria**

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**Note:** Out of the eight classes in the ENERGY STAR commercial refrigerators and freezers product specification v4.0, two classes in particular have demonstrated market advances and present opportunities for savings beyond the current ENERGY STAR levels. As such, new Maximum Daily Energy Efficiency (MDEC) requirements for VCS.SC.M and VCS.SC.L are proposed. The energy performance data used in criteria setting was obtained from the U. S. Department of Energy's (DOE) Compliance Certification Database. The proposed Version 5.0 levels reflect the performance of the top 27% of VCS.SC.M and VCS.SC.L products. Data for VCS.SC.M volume bins  $15 \leq V < 30$  and  $30 \leq V < 50$  are distributed similarly and justify a single criterion ( $0.05V+0.45$ ) for both volume bins. For consistency, these volume bins continue to be distinct in Table 1. All volume bins for VCS.SC.M and VCS.SC.L criteria were revised accordingly to recognize approximately the top 25% of models within those volume bins. One discussion guide commenter indicated that under-counter freezers (VCS.SC.L) may be approaching maximum efficiency levels already established in v4.0. Since most under-counter units fall under the smaller volume bins (<30 cu ft), which will be modestly revised for v5.0, there are likely to continue to be models eligible for ENERGY STAR certification. Additional input supports subcategorizing the VCS.SC categories, but DOE's standards do not include further class divisions; as such, ENERGY STAR aligns with the federal standard. These incremental changes incentivize greater energy efficiency while accommodating sufficient consumer choice.

The chef base criteria levels were added to Table 1 and are based on stakeholder-submitted and publicly-available data, manufacturer specifications, and incentive program qualified product lists. The current CB.SC.M dataset has a pass rate of 49%, but considering this dataset represents about 50% of the market, we anticipate a pass rate of about 24%. The data indicate that the most efficient CB.SC.M products are at or below the DOE level for the VCS.SC.M class (which includes worktops). As a result, the CB.SC.M level is set below the DOE level for VCS.SC.M. Extending this relationship to chef base freezers (CB.SC.L), for which there are far fewer data points, and a comparison with worktop freezers (that fall around the DOE level for VCS.SC.L), implies that the DOE level for VCS.SC.L approximates high efficiency levels for CB.SC.L and may capture about 30% of the most energy efficient units.

SOC.SC.M data were obtained from DOE's Compliance Certification Database. SOC.SC.M units were binned into three total display area (TDA) subcategories (see Table 1). "TDA" means the total display area (ft<sup>2</sup>) of the case, as measured under DOE's test procedure at 10 CFR Part 431, Subpart C, Appendix B. A binned approach allowed greater consumer availability with a total passing rate of 28%.

Stakeholders were interested in convertible temperature equipment SOC.SC models (low to medium temperature range), but with such a small market share and the complexity of installing these units (per the stakeholder's comment), the Agency decided not to create different levels for low temperature SOC.SC units. However, a convertible temperature SOC.SC unit tested as a SOC.SC.M can be certified as SOC.SC.M if the proposed criteria are met.

EPA requests stakeholder input on current categories (VCS.SC.M and VCS.SC.L), chef bases (CB.SC.M and CB.SC.L), and SOC.SC.M criteria levels and approaches.

- 3.2.2 Determination of Refrigerated Volume: The refrigerated volume (V) of a refrigerator or freezer shall be calculated in accordance with the DOE test procedure at 10 CFR Part 431, Subpart C, Appendix B.
- 3.2.3 Determination of Total Display Area: The total display area (TDA) of a refrigerator or freezer shall be calculated in accordance with the DOE test procedure at 10 CFR Part 431, Subpart C, Appendix B.
- 3.2.4 Determining Maximum Daily Energy Consumption for Commercial Hybrid: This section applies to Commercial Hybrid Refrigerators, Freezers, and Refrigerator-Freezers. The maximum daily energy consumption (MDEC) of hybrid equipment shall be the sum of all individual compartment MDEC values. For purposes of hybrid equipment, the refrigerated volume associated with the different equipment families defines compartments. The refrigerated volume of each individual compartment shall be measured, and its MDEC limit determined, based on the compartment's volume and door type, as listed in Table 1 above. The sum of the volumes of each compartment shall be equivalent to the total volume of the cabinet.

**Example:** Consider a vertical closed refrigerator with a total volume of 50 cubic feet with one 25 cu. ft. compartment having a transparent door and the other 25 cu. ft. compartment having a solid door. The MDEC of the equipment would be the sum of the MDEC for the two compartments. The requirement used to calculate the MDEC for each compartment is based on the compartment's volume and door type:

Transparent Door MDEC:  $(25 \text{ cu. ft.} \times 0.05) + 1.12 = 2.37 \text{ kWh/day}$   
Solid Door MDEC:  $(25 \text{ cu. ft.} \times 0.05) + 0.45 = 1.70 \text{ kWh/day}$

MDEC for entire cabinet:  $2.37 \text{ kWh/day} + 1.70 \text{ kWh/day} = 4.07 \text{ kWh/day}$

### 3.3 Additional Reporting Requirements

3.3.1. Report the type of refrigerant used in the commercial refrigerator and freezer, for example: R-290, R-134a, or other refrigerants.

**Note:** For numerous product categories, the ENERGY STAR program highlights refrigerant type in the consumer-facing ENERGY STAR Product Finder. More than 1,000 certified commercial refrigerators currently report refrigerant information. The ENERGY STAR Version 5.0 Commercial Refrigerator and Freezer Draft 1 Specification formalizes this practice by including a refrigerant type reporting requirement.

## 4 TESTING

### 4.1 Test Methods

4.1.1 When testing commercial refrigerators and freezers, the following test methods shall be used to determine ENERGY STAR certification:

**Table 2: Test Methods for ENERGY STAR Certification**

| ENERGY STAR Requirement  | Test Method Reference                  |
|--|--|
| Daily Energy Consumption (DEC), Refrigerated Volume (V) and Total Display Area (TDA) | 10 CFR Part 431, Subpart C, Appendix B |

**Note:** Additional explicit references to test methods for refrigerated volume (V) and total display area (TDA) were added to the General Requirements sections 3.2.2, 3.2.3, and Table 2.

Based on stakeholder feedback, the current DOE testing standard 10 CFR Part 431, Subpart C, Appendix B, based on ANSI/ASHRAE Standard 72-2005, Method of Testing Commercial Refrigerators and Freezers, is appropriate for both chef bases and service over counter units. Therefore, all data used in the scope expansion analyses were based on ASHRAE 72. The refrigerated volume in 10 CFR Part 431, Subpart C, Appendix B references AHAM HRF-1-2008, Association of Home Appliance Manufacturers, Energy and Internal Volume of Refrigerating Appliances, and AHRI 1200-2006, Standard for Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets.

Some commenters recommended testing chef bases with a hot appliance atop (e.g., testing with an operating griddle stand on top). However, according to Food Service Technology Center (FSTC) reports (#501311381 and #501311380-R1) and the Southern California Edison report #ET15SCE1010, there was a negligible difference in energy consumption. The FSTC reports suggest there is not a need to adjust ASHRAE 72.

287 EPA requests further stakeholder input, particularly on chef base or griddle stand testing requirements, as this  
288 is a category not currently in the DOE's energy conservation standards 10 CFR 431.66(f)).

289 Commenters brought up a couple of questions regarding service over counter products, including opening  
290 schedules that possibly allow for more warm air infiltration than in other products and ambient temperatures  
291 during testing that reflect active commercial kitchen conditions. Most stakeholders agreed the existing DOE  
292 test procedure (10 CFR Part 431, Subpart C, Appendix B) was suitable so long as these units were compared  
293 to each other and not combined with another product class.

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## 296 4.2 Number of Units Required for Testing

297 4.2.1 One of the following sampling plans shall be used for purposes of testing for ENERGY STAR  
298 certification:

299 i. A single unit is selected, obtained, and tested. The measured performance of this unit and of  
300 each subsequent unit manufactured must be equal to or better than the ENERGY STAR  
301 specification requirements. Results of the tested unit may be used to certify additional  
302 individual model variations within a basic model group as long as the definition for basic  
303 model group provided in Section 1 above is met; or

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305 ii. Units are selected for testing and results calculated according to the sampling requirements  
306 defined in 10 CFR Part 429, Subpart B § 429.42. The certified rating must be equal to or  
307 better than the ENERGY STAR specification requirements. Results of the tested unit may be  
308 used to certify additional model variations within a basic model group as long as the definition  
309 for basic model group provided in Section 1, above, is met. Further, all individual models  
310 within a basic model group must have the same certified rating based on the applicable  
311 sampling criteria this rating must be used for all manufacturer literature, the qualified product  
312 list, and certification of compliance to DOE standards.  
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## 314 5 EFFECTIVE DATE

315 5.1.1 The ENERGY STAR Commercial Refrigerator and Freezer Version 5.0 specification shall take effect  
316 on TBD. To be certified for ENERGY STAR, a product model shall meet the ENERGY STAR  
317 specification in effect on the model's date of manufacture. The date of manufacture is specific to each  
318 unit and is the date on which a unit is considered to be completely assembled.

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320 **Note:** EPA anticipates finalizing this Version 5.0 specification in Q4 2021 to Q1 2022. Once a final  
321 specification is released, manufacturers may immediately begin certifying products to the new Version 5.0  
322 specification, but will have nine months to transition to it, understanding that certification to the current version  
323 must cease 4.5 months after the final specification is published. Once the specification takes effect, products  
324 that do not meet the Version 5.0 criteria will be removed from the ENERGY STAR Product Finder and may no  
325 longer be marketed or labeled as ENERGY STAR unless retested and recertified.

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## 327 6 FUTURE SPECIFICATION REVISIONS

328 6.1.1 EPA reserves the right to change the specification should technological and/or market changes affect  
329 its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to  
330 the specification are achieved through market research and industry discussions. In the event of a  
331 specification revision, please note that ENERGY STAR certification is not automatically granted for the  
332 life of a product model.