Current Zero Energy Ready Home (ZERH) Single Family Homes Version 2 Policy Record

(National & California program versions)

Last Updated: October 1, 2024

How to Use this Document

DOE regularly receives partner questions and comments regarding various aspects of the program documents. This document is a record of significant issues that have been received since the release of the last revision to the program documents. These issues are either pending resolution by DOE or have been resolved, sometimes resulting in modifications that will be incorporated into the next revision of the program documents. The primary purpose of this document is to allow all partners to have equal access to the latest policy issues and resolutions.

DOE intends to formally incorporate policy modifications into the next revision of the program documents. Those edits will then be enforced for homes permitted after a specified transition period, typically at least 60 days from the release of the revised program requirements. Partners may, at their discretion, use the determinations in this document immediately, in advance of the formal implementation dates. If they do so, they should be sure to document the permit dates of the affected homes and to include a copy of the policy record in the files retained by the Verifier or Rater. Should the need arise, this will allow partners to demonstrate that they acted with the best information available. Items are listed below in chronological order, by log date.

Once policy record items have been incorporated into the latest document Revision, they will be marked "Incorporated" in the Program Document(s) Affected field and the Topic, Issue, and Resolution fields will be shaded in light gray.

Definitions

Each issue listed here is classified as a Change, Clarification, Refinement, Comment, or an Issue Under Review. These are defined as follows:

- Change: The addition, deletion, or modification of a program requirement. A change will typically result from a partner question or feedback indicating that DOE's original intent is not being met or from changes in relevant standards. A change is the most significant type of edit for partners because it is likely to change the way that partners comply with the program.
- Clarification: The clarification of a program requirement, typically resulting from a partner question indicating confusion or ambiguity. Clarifications are not intended to significantly change the scope of the program guidelines, but rather to clarify the original intent of the requirement. A clarification is secondary in importance to a change; it should not significantly alter the way that most partners comply with the program.
- Refinement: A minor revision, such as an improved choice of words, a grammatical correction, or a correction to a typographical error. A refinement is the least important type of edit; it should have no impact on the way that partners comply with the program.
- Comment: A comment provided by DOE in response to a question, which results in no change to the program documents. This may occur, for example, if the question can be answered by referring to already established policy. Aside from the partner asking the question, such comments will typically have no impact on the way that partners comply with the program.
- Issue Under Review: An issue that has been submitted and that DOE is still evaluating. Once DOE has evaluated the issue, it will offer a resolution and reclassify the issue using one of the four categories above.

Current Zero Energy Ready Home (ZERH) Single Family Homes Version 2 Policy Record

ID	SFV2.029	**Log Date**	10/1/2024	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2, Rev. 1), California Program Requirements (Version 2)			
Topic	Clarifying which permit (for projects with multiple permits) is the building permit which establishes a project's permit date, within the context of the ZERH program requirements.				
Issue	For residential construction projects that involve multiple permits with the local jurisdiction, questions may arise regarding which "building permit" is the permit that is referenced in the DOE ZERH program requirements. The date of a project's permit is important as this date establishes which DOE ZERH program version must be used. In cases where multiple permits are issued for a project (e.g., footing permits, building permits), the 'permit date' is the date on which the permit *authorizing construction of the building*, including the building features affecting energy use (e.g., insulation levels, window U/SHGC specifications, mechanical equipment efficiency), was issued. Permits that establish the ability of a project to conduct work not related to construction of the building and its energy-related features, such as permits related to site development activities, are not intended to establish a project's permit date within the context of the DOE ZERH program.				
Resolution	**The endnote defining 'permit date' in the National Program Requirements (Version 2, Rev. 1) and the California Program Requirements (Version 2) will be updated as follows:** The 'permit date' is the date on which the permit authorizing construction of the building was issued. In cases where multiple permits are issued for a project (e.g., footing permits, building permits), the 'permit date' is the date on which the permit authorizing construction of the building, including the building features affecting energy use (e.g., insulation levels, window U/SHGC specifications, mechanical equipment efficiency), was issued. Alternatively, the date of the Rater's first site visit or the date of the contract on the home is allowed to be used as the 'permit date.' The permit application date is not allowed to be used.				
ID	SFV2.028	**Log Date**	10/1/2024	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1), California Program Requirements (Version 2), California Rater Checklist (Version 2)			
Topic	Align EV-Readiness requirements for shared parking scenarios under Single Family Version 2 with the requirements for ZERH Multifamily Version 2				
Issue	ZERH Single Family Version 2, Revision 1 includes an endnote addressing EV readiness for parking scenarios other than a private garage or driveway. These alternative parking requirements were based on the drafted provision for the 2024 IECC and designed to align closely with the EV ready requirements for the ZERH Multifamily program. Now that the 2024 IECC has been finalized, the Multifamily EV Checklist is being updated to harmonize with the provisions in the Residential portion of the code. In order to reduce redundancy and improve the clarity of the EV Ready requirements for Single Family projects with shared parking scenarios, the shared parking area for any ZERH-certified				

	home must use the Multifamily Version 2 EV Ready Checklist. This update does not increase the stringency of the EV-Ready requirements as published in Single Family Version 2, Revision 1.				
Resolution	**The endnote describing provisions for "other parking configurations" in Item 9.1, Electric Vehicle Ready in the National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1), California Program Requirements (Version 2), and California Rater Checklist (Version 2) will be revised as follows:** Dwelling units in communities that include parking for the dwelling unit (assigned or non-assigned) but do not include a private driveway or garage for the individual dwelling unit must comply with the ZERH Multifamily Version 2 EV-Ready Checklist (most recent revision) for the parking area(s) intended for use by the residents of the ZERH-certified dwelling units. A copy of the completed checklist must be included in the documentation record for each certified dwelling unit. ~~use the following compliance path…within the electrical room.~~				
ID	SFV2.027	**Log Date**	10/1/2024	**Classification**	Change
Program Document(s) Affected		INCORPORATED: PV-Ready Checklist (Version 2, Rev. 1), National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1), California Program Requirements (Version 2), California Rater Checklist (Version 2)			
Topic	Exceptions to PV Ready and EV Ready provisions for homes with garages that are temporarily used as a sales office and/or a construction office				
Issue	In model homes, the space designed to serve as a garage may be temporarily converted to a sales office and/or a construction management office until the model home is sold for use as a residence. This temporary configuration of the garage may have electrical loads (e.g., HVAC, lighting, appliances) that consume available breaker slots and capacity within the home's electrical service panel. After the home is sold for use as a residence, these systems and loads are removed, and the space is converted back to a garage. In some cases, these temporary electrical loads can impact the ability to fully implement the ZERH program's PV and EV Ready provisions. Builders and raters may rate and certify these model homes to ZERH in their configuration at the end of construction, which includes the temporary garage configuration. This policy record entry provides compliance options for the PV and EV Ready provisions that will accommodate these temporary conditions (as they exist at the time of the home's final rating) in a practical manner. These policies also clarify how raters are expected to handle this scenario when inspecting and certifying model homes under the ZERH program.				
Resolution	**A new endnote will be added to Item 5 in the PV-Ready Checklist (Version 2, Rev. 1) as follows:** In model homes with garages temporarily converted to sales or construction offices, the breaker location identified for a future PV system may be temporarily used for a load serving the office space (e.g., HVAC). The current use of the breaker (e.g., HVAC) must also be noted. **A new endnote will be added to Item 7 in the PV-Ready Checklist (Version 2, Rev. 1) as follows:** In model homes with the garage temporarily converted to a sales or construction office, there must be a dual pole circuit breaker intended for the future PV system. If this breaker is temporarily used for a load serving the office space, the intended circuit breaker location may alternatively be labeled at the conduit termination or noted in other homeowner documentation.				

	The endnote associated with Item 9.1, Electric Vehicle Ready, in the National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1), California Program Requirements (Version 2), and California Rater Checklist (Version 2) will be revised as follows: The following…evaluate the documentation. In model homes with the garage temporarily converted to a sales or construction office, connecting the 30-amp Electric Vehicle Charging branch circuit to the electric panel is not required if the intended breaker is servicing a temporary electric load in the garage/office space. The conductor shall be labeled as "electrical vehicle charging." [no further changes to endnote]				
ID	SFV2.026	**Log Date**	10/1/2024	**Classification**	Clarification
Program Document(s) Affected	INCORPORATED: National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1)				
Topic	Jump ducts exempted from the ducts in conditioned space requirement				
Issue	Following discussions with a program stakeholder, DOE wishes to clarify the intent of the exceptions to the requirement to locate ducts within the thermal and air barrier boundary. The stakeholder inquired if the allowance to locate ten feet of ducts outside of conditioned space would include the length of any jump ducts located within the attic space. DOE has determined that this is not the intent - jump ducts serve as passive air pathways not directly connected to the air handler and are addressed by other prescriptive requirements. Jump ducts are therefore not included as part of the ten-foot allowance.				
Resolution	**The endnote associated with Item 4.1, Duct System, in the National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1) will be updated as follows:** Exceptions: a. Up to 10 ft. of total duct length is permitted to be outside of the ~~home/unit's~~ home's thermal and air barrier boundary. Jump ducts are not included as part of this duct length and are covered by exception (d). b. [no changes]; c. [no changes] d. Jump ducts which do not directly deliver or return conditioned air from/to the heating/cooling equipment may be located in attics if all joints, including boot-to-drywall, are air sealed and the jump duct is fully buried under the attic insulation. e. [no changes] [no further changes to endnote]				
ID	SFV2.025	**Log Date**	10/1/2024	**Classification**	Change
Program Document(s) Affected	INCORPORATED: California Program Requirements (Version 2), California Rater Checklist (Version 2)				
Topic	Updated exceptions for California to the required available roof area in the Version 2 PV-Ready Checklist				
Issue	Per Policy Record entry SFV2.016, DOE amended one of the allowable exceptions to the PV-Ready checklist. This amendment requires any homes with at least 500 square feet of roof area oriented between 110 to 270 degrees of true north to comply with the PV-Ready Checklist (the prior value for this criterion was 600 square feet). California was not included in this policy update upon its initial publication. However,				

	the same reasoning applies in California as it does nationally, so DOE will update this exception for the ZERH program version applicable to California as well.
Resolution	**The Mandatory Renewable Ready requirement in the California Program Requirements Version 2 and National Rater Checklist Version 2 will be revised as follows:** 8.1 Provisions of the DOE Zero Energy Ready Home PV-Ready Checklist Version 2 (most recent revision) are completed. (1) (1) Homes must complete the provisions of the PV-Ready Version 2 Checklist, unless one or more of the exceptions below applies in which case the PV-Ready features in the Checklist are not required. The exceptions are: a. [no change] b. [no change] c. [no change] d. The home as designed does not have at least ~~600~~ 500 square feet of roof area oriented in between 110 degrees to 270 degrees of true north. The Rater shall document which, if any, exceptions apply.

ID	SFV2.024	**Log Date**	10/1/2024	**Classification**	Change
Program Document(s) Affected		INCORPORATED: California Program Requirements (Version 2), California Rater Checklist (Version 2)			
Topic	Reduction in required amperage for EV-Ready circuits.				
Issue	Per Policy Record entry SFV2.017, DOE updated its requirements for EV charging to require a 30A rather than and 40A circuit in the Single Family National program version. At that time, California was not included in the policy update. However, the same reasoning applies in California as it does nationally, so DOE will update its requirements to require a 30-amp circuit in California as well.				
Resolution	**The Mandatory Electric Vehicle Ready requirement in the California Program Requirements Version 2 and California Rater Checklist Version 2 will be revised as follows:** 9.1 One parking space is provided per dwelling unit that includes a powered 208/240V, ~~40A~~ 30A receptacle installed in dwelling unit's garage or within 6 feet of the dwelling unit's private driveway. The electric service panel identifies the branch circuit as "Electric Vehicle Charging." (1) For other parking configurations, see endnote. (2) (1) If the addition of the ~~40-amp~~ 30-amp Electric Vehicle Charging branch… [no further changes]. (2) [no change]				

ID	SFV2.023	**Log Date**	8/6/2024	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1), California Program Requirements (Version 2), California Rater Checklist (Version 2)			
Topic	Update to Indoor AirPlus Version 2 prerequisite certification requirement				

Issue	The Indoor AirPlus (IAP) program has recently released its specifications for Version 2, which include two different tiers of certification – Certified and Gold. After significant coordination and discussion with ZERH stakeholders and IAP program staff, ZERH (which currently requires IAP Version 1 certification) will adopt IAP Version 2 as the prerequisite certification for the ZERH Version 2 program, accepting certifications under either the Certified or Gold tier. This update allows ZERH to continue referencing the most current IAP program, ensuring the inclusion of critical health and safety provisions in ZERH-certified homes.
Resolution	**The endnote associated with Indoor AirPlus certification in the National Program Requirements (Version 2, Rev. 1) and National Rater Checklist (Version 2, Rev. 1) will be updated as follows:** Homes permitted on or before 12/31/~~2024~~ 2025 must certify under ~~the Indoor airPLUS Version 1 program requirements~~ either Indoor airPLUS (IAP) Version 1 (Rev 4), or the IAP Version 2 Certified or Gold tier. ~~For homes permitted after 12/31/2024, DOE will specify a revision to these program requirements that updates the mandatory IAQ provisions.~~ Homes permitted on or after 1/1/2026 must certify under the IAP Version 2 Certified or Gold tier. See the Indoor ~~airPLUS~~ AirPlus program site for ~~information on program updates~~ Version 2 program documents: ~~https://www.epa.gov/indoorairplus/indoor-airplus-version-2~~ https://www.epa.gov/indoorairplus/indoor-airplus-program-documents **The endnote associated with Indoor AirPlus certification in the California Program Requirements (Version 2), and California Rater Checklist (Version 2) will be updated as follows:** Homes permitted on or before 12/31/~~2024~~ 2025 must certify under ~~the Indoor airPLUS Version 1 program requirements~~ either Indoor airPLUS (IAP) Version 1 (Rev 4), or the IAP Version 2 Certified or Gold tier. ~~For buildings permitted after 12/31/2024, DOE will consider a revision to these program requirements that specifies if an updated version of Indoor airPLUS must be used.~~ Homes permitted on or after 1/1/2026 must certify under the IAP Version 2 Certified or Gold tier. See the Indoor ~~airPLUS~~ AirPlus program site for ~~information on program updates~~ Version 2 program documents: ~~https://www.epa.gov/indoorairplus/indoor-airplus-version-2~~ https://www.epa.gov/indoorairplus/indoor-airplus-program-documents

ID	SFV2.022	**Log Date**	8/6/2024	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1), California Program Requirements (Version 2), California Rater Checklist (Version 2)			
Topic	WaterSense certification of bathroom sink faucets and aerators				
Issue	If a home is complying with the mandatory requirement for Water Heating Efficiency using option 5.2, “Water heater and fixtures meet efficiency criteria,” the home must have WaterSense fixtures in the bathrooms. The current language requires showerheads, bathroom sink faucets, and bathroom sink aerators to be WaterSense labeled under this option. However, aerators are only one type of flow control technology, and others exist that would serve the same function (to make a non-WaterSense labeled fixture compliant with this requirement by adding a WaterSense labeled flow control accessory). While it is common to use the term “aerator” to describe this whole category of accessories, it is more accurate to use the term “accessories.”				

Resolution	**Endnote 21(d) in the National Program Requirements (Version 2, Rev. 1); endnote 10(d) in the National Rater Checklist (Version 2, Rev. 1); endnote 13(d) in the California Program Requirements (Version 2); and endnote 9(d) in the California Rater Checklist (Version 2) will be updated as follows:** d. All showerheads and bathroom sink faucets and/or faucet accessories ~~and aerators~~ shall be WaterSense labeled. [no further changes to endnote]				
ID	SFV2.021	**Log Date**	8/6/2024	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2, Rev. 1), ERI Target Procedure (Version 2, Rev. 1)			
Topic	Addition of a total duct leakage requirement (not just leakage to outside) in the target home				
Issue	ZERH requires the target home to be configured with Grade I blower fan airflow deviation and Grade I blower fan watt draw efficiency. However, because of the HVAC Grading procedure in Standard 310, Grade I cannot be achieved for these two metrics unless Grade I is also achieved for total duct leakage. Currently, the ZERH target for duct leakage to the outside is zero, but the program does not include an explicit target home specification for total duct leakage. Because of this, in situations where the design has high total duct leakage, the target home could receive Grade II or III ratings for blower fan airflow deviation and blower fan watt draw efficiency, impacting the ZERH ERI Target Score. To eliminate this issue, the Target Home should be configured with Grade I total duct leakage.				

Resolution

Exhibit 2 of the National Program Requirements Version 2, Revision 1 will be updated as follows:

HVAC Grading			
• **Total Duct Leakage**: Grade I (1)	• **Airflow Deviation:** Grade I, -7.5%	• **Watt Draw Efficiency:** Grade I, 0.45 W/cfm	• **Refrigerant Grade** (as applicable)**:** Grade III

(1) The Target Home's duct leakage shall be configured as the maximum allowable total duct leakage to achieve Grade I, per Standard 310, section 5.4.1, Table 2a (shown below):

Time of Test	Number of Returns	Leakage Limit (CFM at 25 Pa)
Rough-In	< 3	The greater of ≤ 4 per 100 ft^2 of CFA or ≤ 40
Rough-In	≥ 3	The greater of ≤ 6 per 100 ft^2 of CFA or ≤ 60
Final	< 3	The greater of ≤ 8 per 100 ft^2 of CFA or ≤ 80
Final	≥ 3	The greater of ≤ 12 per 100 ft^2 of CFA or ≤ 120

Exhibit 1 of the ERI Target Procedure Version 2, Revision 1 will be updated as follows:

Heating Systems	Installation Quality: For forced-air HVAC systems, Grade I total duct leakage (1), Grade I (-7.5%) blower fan airflow deviation; Grade I (0.45 Watts/CFM) blower fan watt draw efficiency; and for air-source heat pumps, Grade III refrigerant undercharge.
Cooling Systems	Installation Quality: For forced-air HVAC systems, Grade I total duct leakage (1), Grade I (-7.5%) blower fan airflow deviation; Grade I (0.45 Watts/CFM) Watt draw efficiency; and for ACs and air-source heat pumps, Grade III refrigerant undercharge.

(1) The Target Home's duct leakage shall be configured as the maximum allowable total duct leakage to achieve Grade I, per Standard 310, section 5.4.1, Table 2a (shown below):

Time of Test	Number of Returns	Leakage Limit (CFM at 25 Pa)
Rough-In	< 3	The greater of ≤ 4 per 100 ft^2 of CFA or ≤ 40
Rough-In	≥ 3	The greater of ≤ 6 per 100 ft^2 of CFA or ≤ 60
Final	< 3	The greater of ≤ 8 per 100 ft^2 of CFA or ≤ 80
Final	≥ 3	The greater of ≤ 12 per 100 ft^2 of CFA or ≤ 120

ID	SFV2.020	**Log Date**	8/6/2024	**Classification**	Clarification

Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1), California Program Requirements (Version 2), California Rater Checklist (Version 2)			
Topic	Addition of advisory language encouraging partners to use the HVI CPD to source equipment meeting the mandatory H/ERV requirement in cold climates.				
Issue	Following discussions with a program stakeholder, DOE has determined that an advisory note referencing the HVI Certified Products Directory (CPD) as an option for sourcing the specifications needed to demonstrate compliance with mandatory requirement 7.2 (in both the National and California Single Family Version 2 specifications) could be helpful for program partners. This advisory language will serve to increase industry awareness of the CPD resource and streamline compliance for builders using listed products.				
Resolution	**A new endnote will be added to the Indoor Air Quality mandatory requirement in the National (Version 2, Revision 1) and California (Version 2) Program Requirements and the National (Version 2, Revision 1) and California (Version 2) Rater Checklists as follows:** 7.2 Energy efficient balanced ventilation (HRV or ERV) is provided in Climate Zones 6-8. (1, 2) (1) An HRV or ERV is required to provide whole-house mechanical ventilation for homes in Climate Zones 6 – 8 and must meet or exceed the following specifications: ≥ 65% SRE (@ 32 °F) and ≥ 1.2 CFM/Watt (at one or more rating points). (2) Advisory: DOE encourages, but does not require, that partners use equipment listed in the Home Ventilating Institute (HVI) Certified Products Directory (CPD) to comply with this requirement. The listing may be used to demonstrate compliance with this program requirement.				
ID	SFV2.019	**Log Date**	3/20/2024	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: U.S. DOE Zero Energy Ready PV-Ready Checklist Version 2, Revision 1			
Topic	Terminating a PV Conduit at an electric sub-panel or other location as required by local code				
Issue	The current Single Family Version 2, Revision 1 PV-Ready Checklist requires the installation of a 1-inch code-compliant conduit which runs from the attic space beneath the designated array to a location within 8 feet of the electric service panel. The Checklist's reference to the "electric service panel" has led to partner inquiries about whether the conduit can be terminated at an electric sub-panel or an alternative location (if required by local code) instead of the main electric service panel. New language clarifying this requirement to allow conduit termination at a sub-panel or other location as required by local code will be included as noted below. The breaker or slot for a future breaker required by the checklist may also be located in a code-compliant sub-panel rather than the main panel. Additionally, a requirement for PV-readiness of future ground-mount systems was inadvertently left out of the Revision 1 Checklist and will be added back in.				
Resolution	**Item 5 in the PV-Ready Checklist Version 2, Revision 1 will be revised as follows:** Provide to owner architectural drawing of solar PV system components relating the information from Items 1-3 above ***or*** Provide to owner a written description of the following information: • List of renewable-ready features. This can be documented by providing a copy of this checklist. • Description of the location of the proposed array location and its size, from Item #1. • Location of breaker or slot for future breaker in the main electrical service panel or a code-compliant sub-panel.				

	Item 6 in the PV-Ready Checklist Version 2, Revision 1 will be revised as follows: Install 1" electric metallic tube (EMT) conduit or the other 1" code-compliant conduit from the attic space beneath the designated array location or the roof area near the designated array location, to a location within 8 feet of the main electric service panel or a code-compliant sub-panel that terminates to a junction box. The number of bends shall adhere to the electrical code requirements. Cap and label both ends. For ground-mounted PV systems, code-compliant conduit is run from the future array location to a location within 8 feet of the main electric service panel or a code-compliant sub-panel that terminates to a junction box. For both rooftop and ground-mounted systems the conduit may terminate at an alternate location if required by local code. Cap and label both ends. ***Field Verify.*** **Item 7 in the PV-Ready Checklist Version 2, Revision 1 will be revised as follows:** ~~a.~~ Install or reserve space in the main electrical service panel or a code-compliant sub-panel for the future installation of a dual pole circuit breaker for use by the PV system. Label the service panel. ***Field Verify.***

ID	SFV2.018	**Log Date**	12/13/2023	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2, Rev. 1), National Rater Checklist (Version 2, Rev. 1), California Program Requirements (Version 2), California Rater Checklist (Version 2)			
Topic	Domestic hot water system storage limit requirements				
Issue	The current water heating efficiency requirements allow a stored volume limit of either 0.5 gallons or 1.8 gallons between the water heater (or recirculation loop) and the furthest fixture (depending on which compliance option is used). However, the "furthest fixture" is not clearly defined and has led to partner inquiries regarding this requirement's applicability to fixtures that are not located in bathrooms. The program's intent is to require all hot water fixtures (including, but not limited to, bathroom, kitchen, and utility fixtures) to comply with these requirements. One exception are fixtures located in bathrooms that do not contain a shower or tub, which have a lower hot water demand profile. Language clarifying this requirement and the exception for bathrooms without a tub or shower will be included as noted below.				

Resolution	**The mandatory water heating efficiency requirement (items 5.1 and 5.2) in the National Program Requirements Version 2 Rev. 1 and National Rater Checklist Version 2, Rev. 1 will be revised as follows:** 5.1 Hot water delivery systems meet efficient design requirements. (1) 5.2 Water heater and fixtures meet efficiency criteria. (2, 3) (1) Hot water delivery systems meet the following efficiency requirements: To minimize water wasted while waiting for hot water, the hot water distribution system shall store no more than 0.5 gallons (1.9 liters) of water in any piping/manifold between the hot water source and any hot water fixture, except for fixtures in bathrooms without a shower or bathtub. System options include manifold-fed systems; structured plumbing systems; core plumbing layouts, and on-demand recirculation systems. The following requirements apply to recirculation systems: a. Recirculation systems must be based on an occupant-controlled switch or an occupancy sensor~~, installed in each bathroom.~~ A sensor or switch must be installed for each fixture or set of fixtures within a room (e.g., a bathroom with multiple fixtures) ~~which is~~ located beyond a 0.5-gallon stored volume range from the water heater. b. – c. [no changes] To verify that the system…Rater must confirm compliance with these requirements. ~~For production builders with house plans that offer an optional bathroom that does not include a shower or tub, the hot water distribution to this bathroom, when included, is not required to be evaluated under this requirement.~~ (2) Water heaters and fixtures meet the following efficiency criteria: a. – d. [no changes] e. The hot water distribution system shall store no more than 1.8 gallons between the hot water source and the furthest fixture. In the case of on-demand recirculation systems, the hot water source is considered as the point at which the branch feeding the fixture branches off the recirculation loop. Recirculation systems must be based on an occupant-controlled switch or an occupancy sensor. A sensor or switch must be installed for each fixture or set of fixtures within a room (e.g., a bathroom with multiple fixtures) located beyond a 1.8-gallon stored volume range from the water heater. This storage limit shall be verified by either 1) a calculation using the piping or tubing interior diameter and the system length based on plans, or 2) by a field verification test, using the protocol described in the prior endnote, which demonstrates a minimum temperature rise of 10 °F by the time 2.0 gallons of water is delivered to the furthest hot water fixture. Fixtures in bathrooms without a shower or bathtub are exempt from the system storage limit requirement. [no further changes to endnote] (3) [no changes] **The mandatory water heating efficiency requirement (item 5.2) in the California Program Requirements (Version 2), and California Rater Checklist (Version 2) will be revised as follows:**

	5.2 Water heater and fixtures meet efficiency criteria. (1) (1) Water heaters and fixtures meet the following efficiency criteria: a. – d. [no changes] e. The hot water distribution system shall store no more than 1.8 gallons between the hot water source and the furthest fixture. In the case of on-demand recirculation systems, the hot water source is considered as the point at which the branch feeding the fixture branches off the recirculation loop. <u>Recirculation systems must be based on an occupant-controlled switch or an occupancy sensor. A sensor or switch must be installed for each fixture or set of fixtures within a room (e.g., a bathroom with multiple fixtures) located beyond a 1.8-gallon stored volume range from the water heater</u>. This storage limit shall be verified by either 1) a calculation using the piping or tubing interior diameter and the system length based on plans, or 2) by a field verification test, using the protocol described in the prior endnote, which demonstrates a minimum temperature rise of 10 °F by the time 2.0 gallons of water is delivered to the furthest hot water fixture. <u>Fixtures in bathrooms without a shower or bathtub are exempt from the system storage limit requirement.</u> In the calculation method…Rater must confirm compliance with these requirements. ~~For production builders with house plans that offer an optional bathroom that does not include a shower or tub, the hot water distribution to this bathroom, when included, is not required to be evaluated under this requirement.~~ [no further changes to endnote]

ID	SFV2.017	**Log Date**	10/15/2023	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2), National Rater Checklist (Version 2)			
Topic	Reduction in required amperage for EV-Ready circuits.				
Issue	Developing updates to DOE Zero Energy Ready Home program requirements often includes monitoring code updates for increases (or in some cases, decreases) in stringency. In order to coordinate with DOE's Building Energy Codes Program, DOE may choose to align ZERH program requirements with code and drafted upcoming code requirements. The 2024 Residential IECC draft code lowers the required circuit capacity for EVSE, EV-Ready, and EV-Capable spaces from 40 to 30 amperes. Additionally, the program had discussions with builder partners on typical EV circuit amperage levels and also assessed the implications on EV charging. Based on these inputs DOE will update its requirements to require a 30-ampere circuit.				
Resolution	**The Mandatory Electric Vehicle Ready requirement in the National Program Requirements Version 2 and National Rater Checklist Version 2 will be revised as follows:** 9.1 One parking space is provided per dwelling unit that includes a powered 208/240V, ~~40A~~ <u>30A</u> receptacle installed in dwelling unit's garage or within 6 feet of the dwelling unit's private driveway. The electric service panel identifies the branch circuit as "Electric Vehicle Charging." (1) For other parking configurations, see endnote. (2)				

	(1) The following exceptions apply: • If the addition of the ~~40-amp~~ 30-amp Electric Vehicle Charging branch… [no further changes]. (2) [no change]

ID	SFV2.016	**Log Date**	10/15/2023	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2), National Rater Checklist (Version 2)			
Topic	Updated exceptions to Single Family Version 2 PV-Ready Checklist to required available roof area.				
Issue	Developing updates to DOE Zero Energy Ready Home program requirements often includes monitoring code updates for changes in stringency or other requirements. DOE ZERH may choose to align program requirements with code and drafted upcoming code requirements. The 2024 Residential IECC Public Comment Draft #2 section R404.6.1 states that "A dwelling unit with … less than 500 square feet (46 m^2) of roof area oriented between 110 degrees and 270 degrees of true north" is not required to meet the requirements for renewable energy infrastructure (PV-readiness). To maintain alignment with the criteria for PV ready applicability, DOE will also require any homes with at least 500 square feet of roof area oriented between 110 to 270 degrees of true north to comply with the PV-Ready Checklist. The prior value for this criteria (600 square feet) was based on an earlier draft of the 2024 IECC.				
Resolution	**The Mandatory Renewable Ready requirement in the National Program Requirements Version 2 and National Rater Checklist Version 2 will be revised as follows:** 8.1 Provisions of the DOE Zero Energy Ready Home Single Family Homes Version 2 (Rev. 01) PV-Ready Checklist completed. (1) (1) The DOE ZERH Single Family program requires that the provisions of the PV-Ready Version 2 Checklist are completed, unless one or more of the exceptions below applies in which case the PV-Ready features in the Checklist are not required. The exceptions are: d. [no change] e. [no change] f. [no change] e. The home as designed does not have at least ~~600~~ 500 square feet of roof area oriented in between 110 degrees to 270 degrees of true north. The Rater shall document which, if any, exceptions apply.				

ID	SFV2.015	**Log Date**	10/15/2023	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Rater Checklist (Version 2)			
Topic	Rater training and partnership requirements				
Issue	Following partner inquiries regarding oversight and training requirements for Raters, ENERGY STAR Single Family New Homes will be releasing a Version 3.2 policy record update to clarify the intent of the statement that Energy Rating Companies "operate under either a Home Certification Organization (HCO) or Multifamily Review Organization (MRO)" because the requirements for training, credentials, and oversight generally relate to individual Raters rather than their company. DOE agrees that the oversight requirements are better stated as a requirement of individual Raters, rather than Energy Rating Companies. This ENERGY STAR policy record item also clarifies that Raters must complete their EPA-recognized training prior to filling out either Rater checklist or conducting any inspections. DOE concurs with this				

	approach and incorporates the same language into the ZERH program documents. To ensure that Energy Rating Company and Rater partnership, training, and credentialing requirements are verified, two new items will be added to Section 1 of the National Rater Checklist (Version 2) that ensure Energy Rating Company and Rater partnership, training, and credentialing requirements are verified.
Resolution	**Two items will be added to the National Rater Checklist (Version 2) as follows:** 1.2 Rater has verified and documented that their company has a ZERH partnership agreement using the ZERH Partner Locator.(1) 1.3 Rater(s) signing checklists attest that they have completed DOE-recognized training (according to the timeline posted on the ZERH website) and are credentialed by a Home Certification Organization for ZERH (HCO for ZERH). Raters are only required to document the partnership status of their company once, for the first home that the Rater certifies for them.

ID	SFV2.014	**Log Date**	10/15/2023	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2), National Rater Checklist (Version 2)			

Topic	Updated required percentages for EV Readiness measures applicable to shared parking scenarios
Issue	Policy record item SFV2.003 addresses how homes certifying to ZERH Single Family Version 2 should handle EV-readiness requirements if they utilize a shared parking area rather than a private garage. When published, SFV2.003 was consistent with the public comment draft of the ZERH Multifamily National Version 2 program requirements, which dealt with shared parking scenarios. However, responses during the Multifamily V2 comment period showed that stakeholders had significant concerns about the affordability of implementing the requirement as drafted. In response, the program lowered the required percentage of EVSE, EV Capable, and EV Ready parking spaces required in shared parking areas in the ZERH Multifamily V2 program requirements. To maintain consistency across program versions, the percentage will also be reduced in ZERH Single Family Version 2. Definitions for EVSE space, EVSE, EV-ready space, and EV-capable space consistent with ZERH Multifamily V2 will also be included.

Resolution	**The new endnote (2) created by Policy record item SFV2.003 (affecting both the National Program Requirements, Version 2 and the National Rater Checklist, Version 2) will be updated as follows:**
	
	(2) Dwelling units in communities that include parking for the dwelling unit (assigned or non-assigned), but do not include a private driveway or garage for the individual dwelling unit, must use the following compliance path:
	
	• Allocated parking for dwelling units shall be provided with an EV Capable space, EV Ready space, or Electrical Vehicle Supply Equipment (EVSE) space for ~~40%~~ 20% of units or automobile parking spaces, whichever is less. To meet this ~~40%~~ 20% threshold, the following minimum types of spaces are provided:
	  • 10% of parking (based on automobile parking spaces for the dwelling units or the number of dwelling units, whichever is less) shall be EVSE spaces. Round up to the next whole number of parking spaces.
	  • The remaining ~~30%~~ 10% of the total shall be any combination of EVSE, EV Capable, or EV Ready spaces. Round up to the next whole number of parking spaces.

	When determining the total number of spaces, do not include in the calculation spaces in parking lots or parking garages where the cost of the energy use of the parking lot or garage is not the responsibility of the Builder/Developer, Building Owner, or Property Manager. **Electric Vehicle Supply Equipment Installed Space (EVSE space) is defined as: "**An automobile parking space where operational EVSE has been installed." **Electric Vehicle Supply Equipment (EVSE) is defined as:** "Equipment for plug-in power transfer including the ungrounded, grounded, and equipment grounding conductors, and the electric vehicle connectors, attachment plugs, personal protection system and all other fittings, devices, power outlets or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle." Under this compliance path, installed EVSE must be located within 3 feet of each EVSE space it serves. The branch circuit serving an individual space EVSE shall have a rated capacity not less than 8.3kVA (40A at 208/240V). EVSE serving multiple EVSE spaces is permitted. **An Electric Vehicle Ready Space (EV-ready space) is defined as:** "An automobile parking space provided with a branch circuit and either an outlet or enclosure for connection to EVSE." Under this compliance path, branch circuits serving EV Ready spaces must terminate at an outlet or enclosure located within 3 feet of each EV Ready space it serves. The branch circuit serving an EV Ready space must have a rated capacity not less than 8.3kVA (40A at 208/240V). **An Electric Vehicle Capable Space (EV-capable space) is defined as:** "An automobile parking space provided with electrical infrastructure such as, but not limited to, raceways, cables, enclosures, electrical capacity, and electrical distribution equipment space, necessary for connection to EVSE." Under this compliance path, EV Capable Spaces must consist of a continuous raceway or cable assembly installed between an enclosure or outlet located within 3 feet of the EV Capable space and a suitable panelboard or other onsite electrical distribution equipment. The following exceptions to the 3 feet requirement apply: • Parking spots in a covered garage are deemed EV-Capable if the conduit terminates anywhere within the garage on that parking level. • Projects with a common area electrical room may have the conduit terminate anywhere within the electrical room.

ID	SFV2.013	**Log Date**	10/15/2023	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2)			
Topic	Rater intent and discretion language.				
Issue	To more clearly convey the Rater's role in determining compliance with program requirements, ENERGY STAR Single Family New Homes will be releasing a Version 3.2 policy record update eliminating language allowing Raters to interpret program intent based on their individual discretion. The original purpose of these statements was to clarify that minor deviations from a stated program requirement may be acceptable, rather than implying that Raters have the authority to interpret program intent, which could potentially lead to inconsistent implementation of program requirements. To better convey that Raters are to verify that checklist items have been met within program-defined tolerances, ENERGY STAR updated the Certification Process section of the Single Family new Homes Version 3.2 National Program Requirements.				

	DOE concurs with this approach and incorporates the same language into the ZERH program documents.
Resolution	**The National Program Requirements (Version 2) Section 3, DOE ZERH Single Family Version 2 Certification Process, will be updated as follows:** 4. Use a Rater operating under a DOE-recognized HCO for ZERH to verify that all requirements have been met in accordance with the Mandatory Requirements and with the inspection procedures for minimum rated features in ANSI / RESNET / ICC Standard 301~~-2019~~, Appendix B. (1, 2) This will require a minimum of two inspections: one at pre-drywall and the other at final. The Rater must review all items in the ZERH Single Family V2 (Rev. 01) National Rater Checklist. (3) For modular homes, a Rater must verify in the plant any requirement that is not readily verifiable on-site. (1) In the event that a Rater is not able to determine whether ~~an item is consistent with the intent of a provision~~ a program requirement has been met, (e.g., an alternative method of meeting a checklist requirement has been proposed), then the Rater shall consult their Provider. If the Provider also cannot make this determination, then the Rater or Provider shall report the issue to DOE prior to project completion at: zerh@doe.gov and will receive an initial response within 5 business days. If DOE believes the current program guidelines are sufficiently clear to determine whether the ~~intent~~ item in question has been met … [no further changes]. (2) [no additional changes – see SFV2.010] (3) ~~Raters are expected to use their experience and discretion to verify that the overall intent of each checklist item has been met (i.e., identifying major defects that undermine the intent of the checklist item versus identifying minor defects that the Rater may deem acceptable).~~ The Rater must verify that each inspection checklist item has been met within program-defined tolerances.

ID	SFV2.012	**Log Date**	10/15/2023	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2)			
Topic	Removal of Provider discretion to define 'Permit Date' and addition of allowance to use Rater's first site visit				
Issue	To allow for more consistent implementation of its program requirements, ENERGY STAR Single Family New Homes will be releasing a Version 3.2 policy record update to remove the allowance to use Provider discretion to define 'permit date' and add an additional alternative to 'permit date' – the date of the Rater's first inspection. The update does not add an allowance to use the permit application date. DOE concurs with this approach and incorporates the same language into the ZERH program documents.				
Resolution	**Endnote 4 in the ZERH National Program Requirements Version 2 will be revised as follows:** ~~The Rater may define the 'permit date' as either the date that the permit was issued or the date of the contract on the home. In cases where permit or contract dates are not available, Providers have discretion to estimate permit dates based on other construction schedule factors. These assumptions should be both defensible and documented.~~				

	The 'permit date' is the date on which the permit authorizing construction of the building was issued. Alternatively, the date of the Rater's first site visit or the date of the contract on the home is allowed to be used as the 'permit date'. The permit application date is not allowed to be used.				
ID	SFV2.011	**Log Date**	10/15/2023	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2)			
Topic	Description of Section 45L tax credit eligibility				
Issue	The Inflation Reduction Act of 2022 (IRA) amended Internal Revenue Code Section 45L to provide eligible contractors with a tax credit for eligible new or substantially reconstructed homes that meet applicable ENERGY STAR home program or DOE Zero Energy Ready Home (ZERH) program requirements. Project eligibility for the 45L credit prior to the IRA update of the tax credit was based on a project's date of acquisition. However, IRS Notice 2023-65, released on September 27, 2023, establishes that the DOE ZERH Program Requirements webpage determines the ZERH certification requirements in effect for 45L credit eligibility, and these ZERH certification requirements are based on building type, location, and permit date.				
Resolution	**The Building Eligibility Requirements section of the National Program Requirements (V2) will be revised as follows:** To determine the required version and revision of DOE ZERH program requirements to use based on a project's location, building type, and permit date, partners must reference the DOE ZERH implementation timelines information posted on the DOE ZERH program requirements website. Partners are advised to check the DOE ZERH website and IRS Guidance on the 45L tax credit for further information about tax credit eligibility. ~~Also note 45L tax credit eligibility is based on a project's Acquisition Date.~~				
ID	SFV2.010	**Log Date**	6/23/2023	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2)			
Topic	Use of sampling for ZERH measures.				
Issue	Endnote 9 in the ZERH V2 National Program Requirements indicates that sampling of ZERH requirements may be possible under the Sampling Protocol of a Home Certification Organization (HCO) for ZERH's approved sampling protocol. However, the DOE Zero Energy Ready Home Program Certification System for Homes and Apartments Using an Energy Rating Index or Dwelling Unit Modeling Compliance Path clearly states that "townhouses, single family homes, and duplexes are not eligible for sampling."				
Resolution	**Endnote 9 in the ZERH National Program Requirements Version 2 will be revised as follows:** Sampling of those requirements for ENERGY STAR Single Family New Homes (ESSFNH) and Indoor airPLUS qualification is allowed to the extent permitted by their respective program requirements and allowances for sampling. Sampling of these ZERH program requirements is not allowed for townhouses, single family homes, or duplexes. ~~Rater-only sampling of features specific to the DOE ZERH Single Family Home qualification may be conducted in accordance with an HCO for ZERH-approved Sampling Protocol.~~				
ID	SFV2.009	**Log Date**	6/23/2023	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2)			

Topic	Eligibility requirements specify detached homes and townhomes.
Issue	ENERGY STAR Single Family New Homes (SFNH) released a Version 3.2 policy record update to clarify that only detached structures and townhomes are eligible to be certified using the SFNH program. In contrast to Townhouses, which are explicitly defined as attached structures, the definition of Dwelling does not distinguish between detached and attached structures: "...any building that contains one or two Dwelling Units used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes." Through the examples of Dwellings that are listed (single-family homes and duplexes), however, EPA intended to convey that only detached structures are eligible to be certified using the SFNH program. DOE agrees with this approach and incorporates the same clarifying language into the ZERH program documents to align fully with the ENERGY STAR eligibility criteria.
Resolution	**The National Program Requirements (V2) eligibility language will be revised as follows:** The following homes are eligible for qualification under the DOE Zero Energy Ready Home (ZERH) Single Family program: <u>detached</u> Dwellings (1) (e.g., single-family homes, duplexes) and Townhomes (2). These homes may be site-built or modular construction (3). [no changes to endnotes] (1)

ID	SFV2.008	**Log Date**	6/23/2023	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2), National Rater Checklist (Version 2)			

Topic	Pre-drywall inspection is always required.
Issue	ENERGY STAR Single Family New Homes released a Version 3.2 policy record update to clarify that pre-drywall inspection is always required for compliance, as there is no reliable alternative for inspecting framing members, wall insulation installation, and other elements that are hidden after drywall installation. DOE concurs with this approach and incorporates the same clarifying language into the ZERH program documents.
Resolution	**In the National Program Requirements (V2) Step 4 of the Certification Process Section will be revised as follows:** "Using a Rater, verify that all requirements have been met in accordance with the Mandatory Requirements for All Certified Homes and with the inspection procedures for minimum rated features in ANSI / RESNET / ICC 301, Appendix B. <u>This will require a minimum of two inspections: one at pre-drywall and the other at final</u>." **In the National Rater Checklist (V2) a new endnote will be added after the "Rater Pre-Drywall Inspection Date" field in the checklist, as follows:**

<table>
<tr><td></td><td colspan="5">“Any Item that will be concealed by drywall (e.g., wall insulation) must be verified during the pre-drywall inspection. If drywall is installed prior to the inspection, then it must be entirely removed to fully verify all Items. It is not sufficient to remove only portions of drywall to inspect a subset of areas. Additional information is available in the ENERGY STAR Technical Bulletin: Pre-Drywall Inspection Is Always Required. Some Items can typically only be verified at a later stage of construction than when the pre-drywall inspection occurs (e.g., bath fan airflow). Any Item that has not been verified during the pre-drywall inspection must be verified prior to or during the final inspection.”</td></tr>
<tr><td>ID</td><td>SFV2.007</td><td>Log Date</td><td>6/23/2023</td><td>Classification</td><td>Change</td></tr>
<tr><td colspan="2">Program Document(s) Affected</td><td colspan="4">INCORPORATED: National Program Requirements (Version 2), National Rater Checklist (Version 2)</td></tr>
<tr><td>Topic</td><td colspan="5">Requirement for ENERGY STAR labeled ceiling fans.</td></tr>
<tr><td>Issue</td><td colspan="5">ENERGY STAR labeled ceiling fans yield modest energy savings when considered as part of a whole building design and can add costs. Limiting builders to use only ENERGY STAR labeled ceiling fans as a mandatory provision reduces program flexibility. The ZERH Version 2 ERI Target Procedure programs the target home to use a ceiling fan with a 122 CFM/Watt fan efficacy if the design home uses a ceiling fan. This efficacy ensures a similar level of efficiency to that of an ENERGY STAR labeled ceiling fan. If the mandatory provision to use only ENERGY STAR labeled ceiling fans is removed, the target home will still account for the efficiency savings of a highly efficient fan while providing more flexibility in how the home’s Energy Rating Index threshold is achieved.</td></tr>
<tr><td>Resolution</td><td colspan="5">The National Program Requirements (V2) Mandatory Item 6, will be updated as follows:

<table><tr><td>6. Lighting & Appliances</td><td>☐ All builder-supplied and -installed refrigerators, dishwashers, clothes washers, and clothes dryers are ENERGY STAR qualified. (1)
☐ 100% of builder-installed lighting fixtures and lamps (bulbs) provided are LEDs. (2)
☐ All installed bathroom ventilation ~~and ceiling~~ fans are ENERGY STAR qualified. (3)</td></tr></table>
[no changes to endnotes]

The National Rater Checklist (V2), Item 6.3, will be updated as follows:

6.3: All installed bathroom ventilation ~~and ceiling~~ fans are ENERGY STAR qualified. (1)
[no changes to endnotes]</td></tr>
<tr><td>ID</td><td>SFV2.006</td><td>Log Date</td><td>6/23/2023</td><td>Classification</td><td>Change</td></tr>
<tr><td colspan="2">Program Document(s) Affected</td><td colspan="4">INCORPORATED: National Program Requirements (Version 2), National Rater Checklist (Version 2)</td></tr>
<tr><td>Topic</td><td colspan="5">Program version required for Indoor airPLUS mandatory prerequisite certification.</td></tr>
<tr><td>Issue</td><td colspan="5">The Indoor airPLUS (IAP) program is currently updating its specifications for Version 2. These updates will likely result in two different levels of IAP certification being available with different requirements. The ZERH program (which currently requires IAP Version 1 certification) is monitoring these changes as they are developed and finalized and will make corresponding adjustments to the indoor air quality-related</td></tr>
</table>

	provisions in ZERH. To allow for more time to assess the IAP Version 2 changes, ZERH will extend the time period during which homes will certify under IAP Version 1 as the ZERH requirement.				
Resolution	**The end note associated with Indoor airPLUS certification in the National Program Requirements (V2) and the National Rater Checklist (V2) will be updated as follows:** Homes permitted on or before ~~12/31/2023~~ 12/31/2024 must certify under the Indoor airPLUS Version 1 program requirements. For homes permitted after ~~12/31/2023~~ 12/31/2024, DOE may consider a revision to these program requirements that specifies if an updated version of Indoor airPLUS must be used. See the Indoor airPLUS program site for information on program updates: https://www.epa.gov/indoorairplus/indoor-airplus-program-documents.				
ID	SFV2.005	**Log Date**	6/23/2023	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2), National Rater Checklist (Version 2)			
Topic	Exception to the mandatory requirement for ducts located in conditioned space.				
Issue	The ZERH Single Family Version 2 program requires ducts in conditioned space while providing a few exceptions for alternate duct designs. The exception stating that "ducts and air-handling equipment may be located within an uninsulated and unvented crawl space or basement when the applicable dehumidification requirements of the Indoor airPLUS program (Version 1) are met" was originally written for a limited application and the program no longer intends to allow for this design approach given the lack of insulation for the crawlspace.				
Resolution	**The National Program Requirements (V2) endnote 17 (e) will be updated as follows:** ~~a. Ducts and air-handling equipment may be located within an uninsulated and unvented crawl space or basement when the applicable dehumidification requirements of the Indoor airPLUS program (Version 1) are met.~~ **The National Rater Checklist (V2) endnote 7 (e) will be updated as follows:** ~~Ducts and air-handling equipment may be located within an uninsulated and unvented crawl space or basement when the applicable dehumidification requirements of the Indoor airPLUS program (Version 1) are met.~~				
ID	SFV2.004	**Log Date**	6/23/2023	**Classification**	Change
Program Document(s) Affected		National Program Requirements (Version 2), National Rater Checklist (Version 2)			
Topics	Water Heating Efficiency Requirements with updates for: • Addressing solar water heating system requirements • Adjusting stored volume limits Adding an option for WaterSense certified homes				
Issues	**Solar Water Heating Requirements:** ZERH Single Family Homes National Program Requirements, Version 2 do not recognize the possible use of solar hot water heaters in meeting the mandatory item "water heater and fixtures meet efficiency criteria" (Exhibit 1, Item 5). **Stored Volume Limits**: as heat pump water heater deployment increases, easing the hot water piping stored volume limit will allow streamlined integration of this technology and still enable high energy savings.				

WaterSense 2.0 Certification: WaterSense certification ensures both energy and water savings, and several of the efficiency measures recognized by ZERH are required for WaterSense. Leveraging the WaterSense certification as an alternate compliance option for ZERH's water efficiency requirements leverages this companion federal program and recognizes the performance of these homes.

Resolutions

The Water Heating Efficiency in the National Program Requirements (V2) and the National Rater Checklist (V2) will be updated as follows:

Water Heating Efficiency	☐ Hot water delivery systems meet efficient design requirements (1) ***or*** ☐ Water heater and fixtures meet efficiency criteria (2) ***or*** ☐ Home is certified under WaterSense Labeled Homes Version 2.0.

(2) Hot water delivery systems meet…… [no additional changes to this endnote]

(3) Water heaters and fixtures meet the following efficiency criteria:

a. Gas water heaters, if present, shall have a Uniform Energy Factor ≥ 0.87

b. Electric water heaters, if present, shall have a Uniform Energy Factor ≥ 2.2

c. Solar water heating systems, if present, shall have a minimum solar fraction, as follows:

2021 IECC Climate Zone	1, 2	3, 4A, 4B	4C, 5, 6	7, 8
Minimum Solar Fraction (SF)	0.80	0.64	0.47	0.28

i. The solar water heating system's Solar Fraction (SF) must be documented by an OG-300 certification. Alternatively, projects may find an equivalent system in the OG-300 directory which contains the same OG-100 elements as the chosen system and meets or exceeds the minimum required solar fraction. In this situation, documentation of the OG-100 elements and the comparable OG-300 system must be provided. All systems must be made up of OG-100 tested components.

ii. When a solar water heating system meeting these specifications is used, gas and electric water heaters used for backup are exempt from the Uniform Energy Factor (in the two prior sub-items) requirements of 0.87 and 2.2, respectively.

d. All showerheads and bathroom sink faucets and aerators shall be WaterSense labeled.

e. The hot water distribution system shall store no more than ~~1.2~~ 1.8 gallons between the hot water source and the furthest fixture. In the case of on-demand recirculation systems, the hot water source is considered as the point at which the branch feeding the fixture branches off the recirculation loop. This storage limit shall be verified by either 1) a calculation using the piping or tubing interior diameter and the system length based on plans, or 2) by a field verification test, using the protocol described in the prior endnote, which demonstrates a minimum temperature rise of 10 °F by the time ~~1.4~~ 2.0 gallons of water is delivered to the furthest hot water fixture.

Projects using this compliance option are not permitted to use hot water recirculation systems which operate continuously or operate based solely on a timer or temperature sensor.

ID	SFV2.003	**Log Date**	6/23/2023	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2), National Rater Checklist (Version 2)			

<table>
<tr><td>Topics</td><td>EV Charging for parking spaces that are not private driveways or garages, and the distance between an EV charging receptacle and a private driveway.</td></tr>
<tr><td>Issue</td><td>Some single-family homes, duplexes, and townhomes do not have private driveways or garages, but instead have parking spaces in a parking lot associated with the community. These parking spaces may be assigned to specific homes or be open to general use. The current EV Ready mandatory requirement is unclear for this scenario and could be construed as not requiring any EV Charging infrastructure. However, the intent of the requirement is that residences without private driveways or garages should still include EV Ready provisions.

Additionally, the 3-foot distance requirement between the EV charging receptacle and the private driveway is closer than is necessary considering the length of charging cords.</td></tr>
<tr><td>Resolution</td><td>The Electric Vehicle Ready provision in the National Program Requirements (V2) and in the National Rater Checklist (V2) will be updated as follows:

<table>
<tr><td>Electric Vehicle Ready</td><td>One parking space is provided per dwelling unit that includes a powered 208/240V, 40A receptacle installed in dwelling unit’s garage or within ~~3~~ 6 feet of private driveway ~~or dedicated parking space~~. The electric service panel identifies the branch circuit as “Electric Vehicle Charging” (1). For other parking configurations, see endnote (2).</td></tr>
</table>
(1) If the addition of the 40-amp Electric Vehicle Charging branch circuit increases the electrical service to the next nominal size (i.e., from 200-amp to 400-amp service), connecting the circuit to the electrical panel is not required. The conductor shall be labeled as “electrical vehicle charging.” The Rater shall retain a copy of the electrical sizing calculations or statement from the electrical designer for their records but need not evaluate the documentation.
Where the local electric distribution entity has certified in writing that it is not able to provide 100% of the necessary distribution capacity that would be needed according to this requirement within 2 years after the estimated date of the certificate of occupancy, the required EV charging infrastructure shall be reduced based on the available existing electric distribution capacity. The Rater must include the utility's written explanation in the project records.
Where meeting the capacity requirements to satisfy this requirement will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per dwelling unit, the required EV charging infrastructure shall be reduced based on the available existing electric distribution capacity. The Rater must include documentation from the utility regarding added costs in the project records.

~~Homes without a private driveway or garage are exempt from this requirement.~~
Dwelling units for which no parking is provided by the builder are exempt from this requirement.

(2) Dwelling units in communities that include parking for the dwelling unit (assigned or non-assigned), but do not include a private driveway or garage for the individual dwelling unit, must use the following compliance path:</td></tr>
</table>

	• Allocated parking for dwelling units shall be provided with an EV Capable space, EV Ready space, or Electrical Vehicle Supply Equipment (EVSE) space for 40% of units or automobile parking spaces, whichever is less. To meet this 40% threshold, the following minimum types of spaces are provided:
	  • 10% of parking (based on automobile parking spaces for the dwelling units or the number of dwelling units, whichever is less) shall be EVSE spaces. Round up to the next whole number of parking spaces.
	  • The remaining 30% of the total shall be any combination of EVSE, EV Capable, or EV Ready spaces. Round up to the next whole number of parking spaces.
	
	When determining the total number of spaces, do not include in the calculation spaces in parking lots or parking garages where the cost of the energy use of the parking lot or garage is not the responsibility of the Builder/Developer, Building Owner or Property Manager.

ID	SFV2.002	**Log Date**	6/23/2023	**Classification**	Clarification
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2)			
Topic	Requirement to use 'adaptive recovery' thermostats with air source heat pumps				
Issue	The current endnote 33 requires the use of programmable thermostats with 'adaptive recovery' when they are used with air source heat pumps, which is intended to refer to thermostats that are capable of learning how long the heat pump takes to reach the programmed temperature settings and automatically turn on the heat pump with adequate lead time for the home to reach the set point on schedule without requiring excessive electric back-up heating. Many newer thermostats from a variety of manufacturers come with this functionality although it may be referred to using different terminology, such as "recovery mode."				
Resolution	**The endnote associated with the thermostat properties in Exhibit 2 will be updated as follows:** In homes with heat pumps with electric resistance back-up heating, programmable thermostats shall incorporate controls ~~have "Adaptive Recovery" technology~~ to prevent the excessive use of electric back-up heating. This functionality may be described as adaptive recovery, recovery mode, or similar terms.				
ID	SFV2.001	**Log Date**	6/23/2023	**Classification**	Change
Program Document(s) Affected		INCORPORATED: National Program Requirements (Version 2), ERI Target Procedure (Version 2)			
Topic	Target Home window SHGC factors in climate zones 4-8.				
Issue	A Solar Heat Gain Coefficient (SHGC) of 0.40 is used to configure the Zero Energy Ready Home Single Family Target Home in climate zones 4-8. This aligns with the requirements in ENERGY STAR Single Family New Homes Version 3.2, Rev.12. However, windows with the U values specified for these climate zones are not as commonly associated with this magnitude of SHGC, and those windows that do have higher SHGCs are generally more appropriate for use in designs that are orientation specific. The stringency of the ZERH National Version 2 Target Home makes it difficult to compensate when lower (and more common) SHGC windows are used. A SHGC of 0.30 is commonly available in double pane window products that offer an appropriate balance between low U-factors and moderate SHGC in cold climates. This change to the SHGC value in Climate Zones 4 – 8 will be consistent with changes in the ENERGY STAR Single Family New Homes program.				

Resolution	**The SHGC values in the ZERH National Program Requirements Version will be revised as follows:** ~~0.40~~ 0.30 in Climate Zones 4A and 4B. ~~Any~~ 0.30 in Climate Zones 4C, 5-8 **The SHGC values in the ZERH ERI Target Procedure Version 2 will be revised as follows:** ~~0.40~~ 0.30 in Climate Zones 4 - 8