

# Attachment 1

## DOE-Sponsored Priority List for Single-Family Site-Built Homes

### Contents

Region Map .....	2
Definitions .....	3
Procedures .....	4
Region 1 (Hot) – Single-Family Site-Built PL.....	5
Region 2 (Moderate) – Single-Family Site-Built PL .....	7
Region 3 (Cold) – Single-Family Site-Built PL .....	9

# Region Map

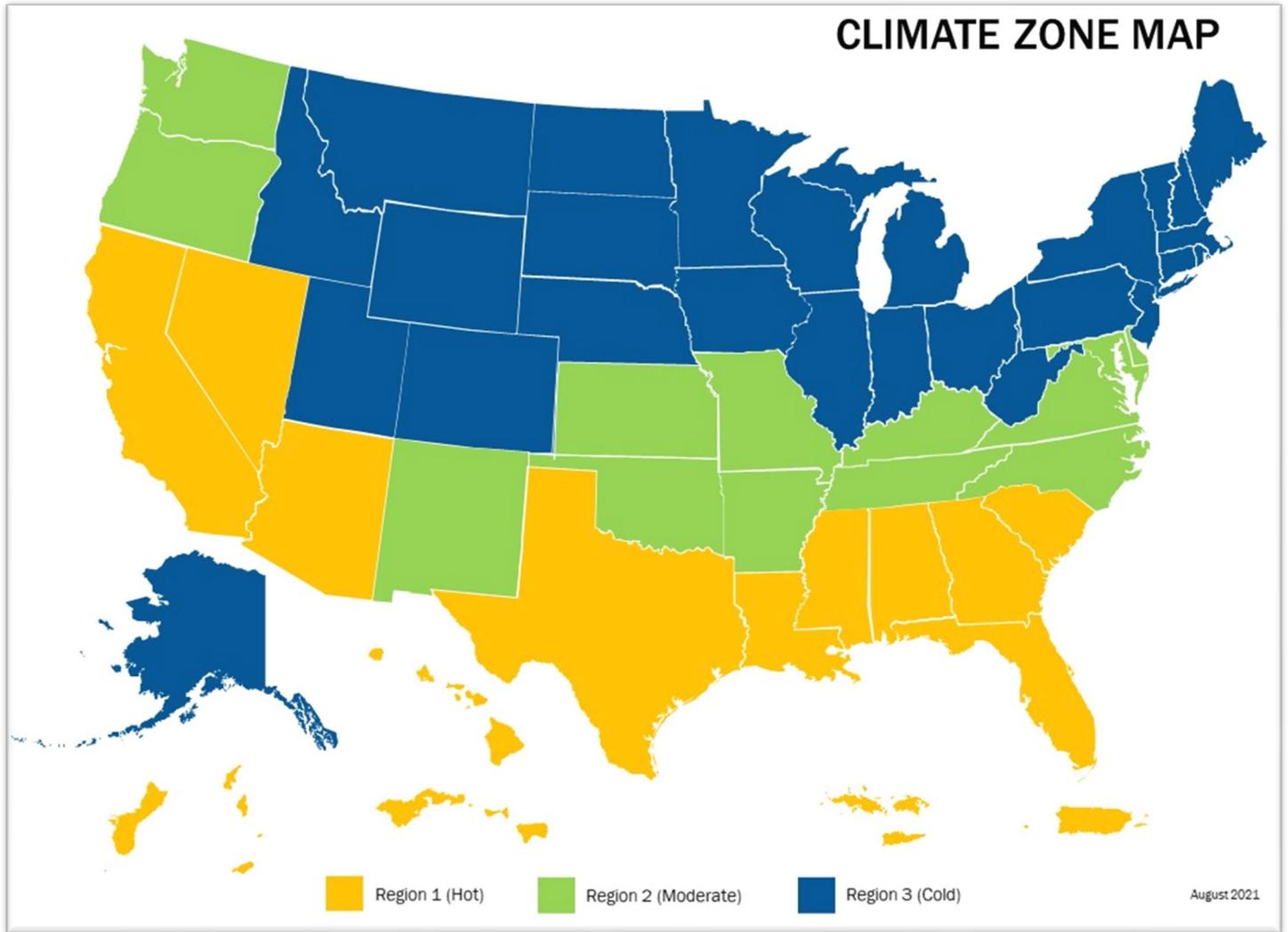


Figure 1 - Regions for Implementation

## Definitions

**A/C:** Air Conditioner is a system that utilizes a refrigerant cycle to produce cooling and dehumidification for indoor spaces. They are rated in various manners depending on the age and type including EER, SEER, and CEER. The higher the number the higher the efficiency.

**AFUE:** Annualized Fuel Utilization Efficiency is a rating for fossil fuel combustion appliances that accounts for the full combustion cycle over the entire year which may include pilot light and chimney heat loss. The higher the number the higher the efficiency.

**Applicable Measure:** Any measure included on the regional priority list that can be physically installed as outlined in the priority list and does not already exist (e.g., the attic is accessible and has less than the targeted R-value of insulation existing, then insulating the attic is applicable and must be installed). Any measure deemed not to be “applicable” for the project must be documented, including photos and reason for exclusion.

**CEER:** Combined Energy Efficiency Rating is a rating used for packaged or window air conditioners that includes both the operational energy used during the cooling cycle and the standby energy used by the unit when powered on but not operating. The higher the number the higher the efficiency.

**COP:** Coefficient of Performance is a rating used for heat pump technology that focuses specifically on the heating capacity of the unit at a given steady state outdoor temperature. The higher the number the higher the efficiency.

**EC Motors:** Electronically Commutated Motors are motors who utilize DC voltage for operations and are variable speed based on DC voltage input. These motors transform AC voltage to DC voltage internally for the operation of the attached motor.

**EER2:** Energy Efficiency Rating is a rating used for packaged or window air conditioners that only includes the operational energy used by the unit for cooling but does not include the standby energy as is rated using the CEER method. This method has been replaced with CEER for newer appliance models. The higher the number the higher the efficiency.

**HSPF2:** Heating Season Performance Factor is a rating used for heat pump technology that factors in the seasonal outdoor operating conditions in the calculation of heating efficiency. The higher the number the higher the efficiency.

**Mandatory Measure:** Any measure included on the regional priority list that is labeled as “mandatory” and is applicable to the project. These measures must be installed if any DOE funds are to be used on the project.

**Optional Measure:** Any measure included on the regional priority list that is labeled as “optional” and may be installed in the dwelling unit with any funding source, including DOE WAP funds, if all other applicable mandatory measures are also installed.

**PTAC:** Packaged Terminal Air Conditioners are standalone heating/cooling appliances that are used to condition an individual room or small dwelling unit and are installed on an exterior wall with both the condenser and evaporator as well as the air circulation fans all confined in a single unit. These may feature either electric resistance heat or heat pump technology for heating.

**SEER2:** Seasonal Energy Efficiency Rating is a rating used for split system air conditioners that factors in the seasonal operating conditions of the unit in the calculation of cooling efficiency. The higher the number the higher the efficiency.

## Procedures

The Grantee may decide for each project whether it will utilize the approved PL as outlined or conduct a site-specific energy audit in compliance with DOE guidance and its current written energy audit approval.

These PLs apply to any wood-framed single-family site-built dwelling unit that meets the following checklist:

1. No more than 3 stories in height above grade.
2. Primary heating system is NOT:
  - a. a sealed-combustion natural gas furnace originally rated for  $\geq 90\%$  AFUE.
  - b. a heat pump manufactured after 2006.
3. Job will not exceed **\$500** in incidental repairs meeting the definition outlined in [WAP WPN 19-5](#)

Grantees utilizing these PLs with any DOE funds must install all required Health and Safety (H&S) measures per the Grantee's DOE-approved H&S plan. If the PL is applied to a project using any DOE funds, then any measure listed as "mandatory" may only be skipped if it is physically impossible to install, regardless of funding source used for the measure. If another funding source is used for a mandatory measure, it must meet the requirements of the DOE WAP as outlined in the PL. "Optional" measures may only be installed if all other applicable mandatory measures are installed as well.

If the auditor determines that the dwelling unit needs any measure not included on this PL or if the home does not meet the basic requirements listed above, then a site-specific energy audit must be run in compliance with the Grantee's most recently DOE-approved energy audit procedures.

ACPU expenditure of financial assistance provided under WAP for labor, weatherization materials, and related matters cannot exceed the Average Cost Per Unit (ACPU) limits as defined in DOE's annual Weatherization Program Notice (WPN) XX-1. All installation costs must be procured in compliance with [2 CFR 200](#) and Grantee's procurement policies. Individual measure cost caps, if applicable, are detailed in the applicable regional Priority List.

## Region 1 (Hot) – Single-Family Site-Built PL

1. **Mandatory:** Install all applicable Health and Safety (H&S) measures per the Grantee’s DOE-approved H&S Plan.
2. **Mandatory:** Light Emitting Diode (LED) lighting replacement of all existing screw-based incandescent, halogen, or compact fluorescent lighting used for a minimum of one hour per day.
  - [Lighting Replacement SWS](#)
3. **Mandatory:** Air Sealing – seal the exterior pressure boundary surfaces at all the following locations: attic top-plates; ceiling, wall, and floor bypasses, penetrations, and holes; sill box to floor intersection if on unconditioned crawlspace or basement, or entire sill box area if conditioned foundation.
  - Target value is 1 cfm/ft<sup>2</sup> of conditioned floor area.
  - [Air sealing SWS](#)
4. **Mandatory:** Duct Sealing – seal all accessible ducts located outside the thermal boundary.
  - Target value is 1 Pascal per register as measured with a Pressure Pan.
  - [Duct sealing SWS](#)
5. **Mandatory:** Duct Insulation – insulate all accessible uninsulated ducts located outside the thermal boundary to R-8 or R12 if exposed to the exterior.
  - [General Duct insulation SWS](#)
6. **Mandatory:** Ceiling insulation
  - Unconditioned Attic
    - i. **Mandatory:** insulate all accessible attics to R-38 or to capacity if less.
      - [Attic Floors - Unconditioned Attics SWS](#)
    - ii. **Mandatory:** insulate all uninsulated enclosed attics to capacity (e.g., floored or cathedral).
      - [Attic Floors - Unconditioned Attics SWS](#)
  - Finished Attic / Kneewall Attic / Bonus Room
    - i. **Mandatory:** Insulate all attic flats (collar beam & outer ceiling joists) to R-38 or to capacity if less.
      - [Attic Floors - Unconditioned Attics SWS](#)
    - ii. **Mandatory:** Insulate all uninsulated attic enclosed roof rafter slopes to maximum capacity possible.
      - [Inaccessible Ceilings – Dense Pack SWS](#)
    - iii. **Mandatory:** Insulate all uninsulated knee walls to R-15 or to capacity, whichever is greater.
      - [Attic Knee Walls SWS](#)
7. **Mandatory:** Wall Insulation
  - a. **Mandatory:** Insulate any uninsulated exterior wall cavities to capacity with dense pack insulation.
  - b. **Optional:** Insulate any partially insulated exterior wall cavities (e.g., 3.5” cavity with 2” of existing batt) using dense-pack insulation.
    - [Dense Pack Insulation SWS](#)
8. **Mandatory only for home with propane or oil-fired primary heat:** Floor insulation – insulate all uninsulated floors over unconditioned foundations to R-30 or to full joist capacity, if less. Must include complete ground moisture barrier over any exposed dirt floor.
  - [Floors SWS](#), [Ground Vapor Retarders SWS](#)
9. **Optional:** \$250 per home DOE WAP funds cap
  - Faucet aerators ( $\leq 2.2$  GPM) – [Low-Flow Devices SWS](#)
  - Showerhead ( $\leq 2.5$  GPM) - [Low-Flow Devices SWS](#)
  - Domestic Water Heater (DWH) tank insulation (R-10 minimum) – [Tank Insulation SWS](#)
  - DWH pipe insulation (6’ of both hot and cold-water lines nearest the DWH, and any accessible hot water lines beyond that to R-3) – [Pipe Insulation SWS](#)

10. **Optional:** Replace up to (1) refrigerator per home, with a label rating of less than 400kWh/yr and maximum installed cost of **\$850** per unit when the existing refrigerator:
- Was manufactured before 2001, OR
  - Uses >1000 kWh/yr based upon energy use metering or industry accepted resource.
    - [Refrigerator Replacement SWS](#)
11. **Optional:** Primary Heating and Air-Conditioning System Replacements
- [Heating & Cooling: Equipment Installation SWS](#)
- i) Replace existing ducted electric resistance forced-air furnace and air conditioning combination with a heat pump of minimum 15.2/SEER2 & 7.8/HSPF2 which must include an EC air handler motor and programmable thermostat ([SWS 5.0108.1](#); [SWS 5.0101.1](#)).
  - ii) Replace existing combination of non-ducted fixed electric resistance heat (e.g., electric baseboard, and PTAC units), and non-ducted air conditioning (i.e., window or room A/C, including PTAC) with a minimum 19/SEER2 & 10/HSPF2 mini-split heat pump system which must include a programmable thermostat ([SWS 5.0108.3](#); [SWS 5.0101.1](#)).
  - iii) Replace existing window A/C manufactured before 2014 with a minimum 12 CEER or higher unit of the same or lesser BTU capacity.
  - iv) If the home has any other existing combination of heating/cooling systems other than as described above, then an energy model may be run that assumes items 1-8 have been completed and determine if an alternative heating/cooling system replacement is cost effective for this specific home.

## Region 2 (Moderate) – Single-Family Site-Built PL

1. **Mandatory:** Install all applicable Health and Safety (H&S) measures per the Grantee’s DOE-approved H&S Plan.
2. **Mandatory:** Light Emitting Diode (LED) lighting replacement of all existing screw-based incandescent, halogen, or compact fluorescent lighting used for a minimum of one hour per day.
  - [Lighting Replacement SWS](#)
3. **Mandatory:** Air Sealing – seal the exterior pressure boundary surfaces at all the following locations: attic top-plates; ceiling, wall, and floor bypasses, penetrations, and holes; sill box to floor intersection if on unconditioned crawlspace or basement, or entire sill box area if conditioned foundation.
  - Target value is 1 cfm/ft<sup>2</sup> of conditioned floor area.
  - [Air sealing SWS](#)
4. **Mandatory:** Duct Sealing – seal all accessible ducts located outside the thermal boundary.
  - Target value is 1 Pascal per register as measured with a Pressure Pan.
  - [Duct sealing SWS](#)
5. **Mandatory:** Duct Insulation – insulate all accessible uninsulated ducts located outside the thermal boundary to R-8 or R12 if exposed to the exterior.
  - [General Duct insulation SWS](#)
6. **Mandatory:** Ceiling insulation
  - Unconditioned Attic
    - i. **Mandatory:** insulate all accessible attics to R-49 or to capacity if less.
      - [Attic Floors - Unconditioned Attics SWS](#)
    - ii. **Mandatory:** insulate all uninsulated enclosed attics to capacity (e.g., floored or cathedral).
      - [Attic Floors - Unconditioned Attics SWS](#)
  - Finished Attic / Kneewall Attic / Bonus Room
    - i. **Mandatory:** Insulate all attic flats (collar beam & outer ceiling joists) to R-49 or to capacity if less.
      - [Attic Floors - Unconditioned Attics SWS](#)
    - ii. **Mandatory:** Insulate all uninsulated attic enclosed roof rafter slopes to maximum capacity possible.
      - [Inaccessible Ceilings – Dense Pack SWS](#)
    - iii. **Mandatory:** Insulate all uninsulated knee walls to R-15 or to capacity, whichever is greater.
      - [Attic Knee Walls SWS](#)
7. **Mandatory:** Wall Insulation
  - a. **Mandatory:** Insulate any exterior wall cavity with no existing insulation to full dense-packed capacity.
  - b. **Optional:** Insulate any partially insulated exterior wall cavities (e.g., 3.5” cavity with 2” of existing batt) using dense-pack insulation.
    - [Dense Pack Insulation SWS](#)
8. **Mandatory:** Floor insulation – insulate all uninsulated floors over unconditioned foundations to R-30 or to full joist capacity, if less. Must include complete ground moisture barrier over any exposed dirt floors.
  - [Floors SWS](#), [Ground Vapor Retarders SWS](#)
9. **Optional:** **\$250** per home DOE WAP funds cap
  - Faucet aerators (<2.2 GPM) – [Low-Flow Devices SWS](#)
  - Showerhead (<2.5 GPM) - [Low-Flow Devices SWS](#)
  - Domestic Water Heater (DWH) tank insulation (R-10 minimum) – [Tank Insulation SWS](#)
  - DWH pipe insulation (6’ of both hot and cold-water lines nearest the DWH, and any accessible hot water lines beyond that to R-3) – [Pipe Insulation SWS](#)

10. **Optional:** Replace up to (1) refrigerator per home, with a label rating of less than 400kWh/yr and maximum installed cost of **\$850** per unit when the existing refrigerator:
- Was manufactured before 2001, OR
  - Uses >1000 kWh/yr based upon energy use metering or industry accepted resource.
    - [Refrigerator Replacement SWS](#)
11. **Optional:** Primary Heating and Air-Conditioning System Replacements
- [Heating & Cooling: Equipment Installation SWS](#)
  - i) Replace existing ducted electric resistance forced air furnace and air conditioning combination with a heat pump of minimum 15.2/SEER2 & 8.1/HSPF2 which must include an EC air handler motor and programmable thermostat ([SWS 5.0108.1](#); [SWS 5.0101.1](#)).
  - ii) Replace existing combination of non-ducted fixed electric resistance heat (e.g., electric baseboard, and PTAC units), and non-ducted air conditioning (i.e., window or room A/C, including PTAC) with a minimum 19/SEER2 & 10/HSPF2 mini-split heat pump system which must include a programmable thermostat ([SWS 5.0108.3](#); [SWS 5.0101.1](#)).
  - iii) Replace existing window A/C manufactured before 2014 with a minimum 12 CEER or higher unit of the same or lesser BTU capacity.
  - iv) If the home has any other existing combination of heating/cooling systems other than as described above, then an energy model may be run that assumes items 1-8 have been completed and determine if an alternative heating/cooling system replacement is cost effective for this specific home.

## Region 3 (Cold) – Single-Family Site-Built PL

1. **Mandatory:** Install all applicable Health and Safety (H&S) measures per the Grantee’s DOE-approved H&S Plan.
2. **Mandatory:** Light Emitting Diode (LED) lighting replacement of all existing screw-based incandescent, halogen, or compact fluorescent lighting used for a minimum of one hour per day.
  - [Lighting Replacement SWS](#)
3. **Mandatory:** Air Sealing – seal the exterior pressure boundary surfaces at all the following locations: attic top-plates; ceiling, wall, and floor bypasses, penetrations, and holes; sill box to floor intersection if on unconditioned crawlspace or basement, or entire sill box area if conditioned foundation.
  - Target value is 1 cfm/ft<sup>2</sup> of conditioned floor area.
  - [Air sealing SWS](#)
4. **Mandatory:** Duct Sealing – seal all accessible ducts located outside the thermal boundary.
  - Target value is 1 Pascal per register as measured with a Pressure Pan.
  - [Duct sealing SWS](#)
5. **Mandatory:** Duct Insulation – insulate all accessible uninsulated ducts located outside the thermal boundary to R-8 or R12 if exposed to the exterior.
  - [General Duct insulation SWS](#)
6. **Mandatory:** Ceiling insulation
  - Unconditioned Attic
    - i. **Mandatory:** insulate all accessible attics to R-60 or to capacity if less.
      - [Attic Floors - Unconditioned Attics SWS](#)
    - ii. **Mandatory:** insulate all uninsulated enclosed attics to capacity (e.g., floored or cathedral).
      - [Attic Floors - Unconditioned Attics SWS](#)
  - Finished Attic / Kneewall Attic / Bonus Room
    - i. **Mandatory:** Insulate all attic flats (collar beam & outer ceiling joists) to R-60 or to capacity if less.
      - [Attic Floors - Unconditioned Attics SWS](#)
    - ii. **Mandatory:** Insulate all uninsulated attic enclosed roof rafter slopes to maximum capacity possible.
      - [Inaccessible Ceilings – Dense Pack SWS](#)
    - iii. **Mandatory:** Insulate all uninsulated knee walls to R-15 or to capacity, whichever is greater.
      - [Attic Knee Walls SWS](#)
7. **Mandatory:** Wall Insulation
  - a. **Mandatory:** Insulate any exterior wall cavity with no existing insulation to full dense-packed capacity.
  - b. **Optional:** Insulate any partially insulated exterior wall cavities (e.g., 3.5” cavity with 2” of existing batt) using dense-pack insulation.
    - [Dense Pack Insulation SWS](#)
8. **Mandatory:** Foundation Insulation – (skip measure if foundation is slab)
  - a. Conditioned and Unvented Foundations
    - **Mandatory:** Insulate accessible rim/band joist (sill box) to R-30 or to capacity, if less.
    - **Optional:** Insulate accessible above-grade foundation walls to R-15 continuous insulation or R-19 cavity insulation or to capacity, if less.
    - [Rim/Band Joist SWS](#), [Conditioned Subspaces: Walls SWS](#)
  - b. Unconditioned or Vented Foundations
    - **Mandatory:** Insulate all floors over unconditioned foundations to R-30 or to full joist capacity, if less. Must include complete ground moisture barrier over any exposed dirt floors.
    - [Floors SWS](#), [Ground Vapor Retarders SWS](#)

9. **Optional: \$250** per home DOE WAP funds cap
- Faucet aerators ( $\leq 2.2$  GPM) – [Low-Flow Devices SWS](#)
  - Showerhead ( $\leq 2.5$  GPM) - [Low-Flow Devices SWS](#)
  - Domestic Water Heater (DWH) tank insulation (R-10 minimum) – [Tank Insulation SWS](#)
  - DWH pipe insulation (6' of both hot and cold-water lines nearest the DWH, and any accessible hot water lines beyond that to R-3) – [Pipe Insulation SWS](#)
10. **Optional:** Replace up to (1) refrigerator per home, with a label rating of less than 400kWh/yr and maximum installed cost of **\$850** per unit when the existing refrigerator:
- Was manufactured before 2001, OR
  - Uses >1000 kWh/yr based upon energy use metering or industry accepted resource.
    - [Refrigerator Replacement SWS](#)
11. **Optional:** Primary Heating and Air-Conditioning System Replacements
- [Heating & Cooling: Equipment Installation SWS](#)
- i) Replace existing ducted electric resistance forced-air furnace and air conditioning combination with a heat pump of minimum 8.5/HSPF2 & COP @5°F >1.75 (at maximum capacity operation) which includes an EC air handler motor and programmable thermostat ([SWS 5.0108.1](#); [SWS 5.0101.1](#)).
  - ii) Replace existing combination of non-ducted fixed electric resistance heat (e.g., electric baseboard, and PTAC units), and non-ducted air conditioning (i.e., window or room A/C, including PTAC) with a minimum 10/HSPF2 & COP @5°F >1.75 (at maximum capacity operation) mini-split heat pump system which must include a programmable thermostat ([SWS 5.0108.3](#); [SWS 5.0101.1](#)).
  - i) Replace existing ducted heat pump system that is manufactured before 2006 with a heat pump rated a minimum of 8.5/HSPF2 & COP @5°F >1.75 (at maximum capacity operation) which must include an EC air handler motor and programmable thermostat ([SWS 5.0108.1](#); [SWS 5.0101.1](#)).
  - iii) Replace existing window A/C manufactured before 2014 with a minimum 12 CEER or higher unit of the same or lesser BTU capacity.
  - iv) If the home has any other existing combination of heating/cooling systems other than as described above, then an energy model may be run that assumes items 1-8 have been completed and determine if an alternative heating/cooling system replacement is cost effective for this specific home.