

Tools for Builders in the Building America Solution Center

2021 IECC Assemblies

Click on your climate zone to get started

IECC Climate Zones

- 1A Very Hot Humid
- 2A Hot Humid
- 2B Hot Dry
- 3A Warm Humid
- 3B Warm Dry
- 3C Warm Marine
- 4A Mixed Humid
- 4B Mixed Dry
- 4C Mixed Marine
- 5A Cool Humid
- 5B Cold Dry
- 5C Cool Marine
- 6A Cold Humid
- 6B Cold Dry
- 7 Very Cold
- 8 Subarctic/Arctic

RED Calc

Free Building Science Calculators for Residential Energy Efficiency Professionals

The Weatherization Assistance Program (WAP) and the Building Technologies Office (BTO) of the Department of Energy (DOE) have collaborated to purchase the RED Calc Free and RED Calc Pro web app software tools. The entire suite of tools is now free for all to use.

Tool Categories: Ventilation Sizing | Airflow Measurement | Insulation | Domestic Hot Water | Moisture | Electrical Use | Weather Data

RED CALC PRO WEB APP

This is a full mobile-first web application. A more professional experience of the RED Calc tools. Organize your work in folders. Cloud storage allows you to access your data from multiple devices. Switches to off-line mode when there is no internet connection. Generate PDF reports. Requires log-in with a free account.

STAND-ALONE RED CALC TOOLS

This is a collection of stand-alone calculation tools. Try these tools for one-off situations for a quick calculation that you do not need to save or print a report - no login required.

Who uses RED Calc Tools?

- Wx Assistance (WAP)**
 - Energy auditors
 - Inspectors
 - QC inspectors
 - Monitors
- Crew leaders**
 - Subcontractors
 - Trainers
- Home Performance**
 - Contractors
 - Energy auditors
 - Ventilation designers
 - Inspectors
 - QC inspectors
 - Program designers
- Utilities**
 - Energy auditors
 - Inspectors
 - QC inspectors
 - Subcontractors
 - Trainers
- Code Enforcement, etc.**
 - CEOs
 - Home builders
 - Research analysts
 - Engineers
 - Building science instructors
 - Homeowners

Heat Pump Water Heater Installation Tool

Welcome! The goal of this tool is to help you through the decision-making process for heat pump water heater (hpwh) product selection and installation.

Home Information (Section 1 of 3)

Zip Code: _____

Number of Bedrooms: _____

Number of Bathrooms: _____

Indoor soaker tub, spa, or jacuzzi fed by water heater? Yes No

Occupants take two baths or at least two 12-minute showers consecutively? Yes No

Location of the Existing Water Heater (Section 2 of 3)

Location: _____

Sufficient space? Yes No

At least 700 cubic feet of air volume? Yes No

Near a thermostat? Sound/vibration OK? Yes No

Drain available for condensate? Yes No

Water Heater Information (Section 3 of 3)

Existing water heater type: _____

Does hot water run out more than 5 times per year? Yes No

Building America Solution Center

Our New Home Page

Explore expert insights on high-performance construction topics, from insulation to air quality and more!

What are you working on today?

- Instructions, Tips and Techniques
- How-to Guidance
- Complete specific construction tasks or projects to achieve professional-quality results while adhering to industry standards and best practices.

- Software and Programs
- Energy Tools
- Find convenience, accessibility, and flexibility to access and utilize a wide range of functionalities and services.

- Assets and Materials
- Digital Library
- Explore available videos or case studies for both new construction and existing homes.

Quality Install Tool

The safety, health, equipment reliability, performance, and actual energy savings from home end-users and equipment upgrades are strongly dependent on quality installation.

Tool Introduction

The Quality Install Tool operates as a publicly accessible open-source web app that runs on any device with a modern browser and has been developed to capture a wide range of upgrades and installations. The tool has the following workflows available for use:

- HVAC Workflows**
 - Air Water Heater
 - Photo by Edward Louie | Pacific Northwest National Laboratory
 - Heat Pump Ductless
 - High Efficiency Gas Furnace
 - Duct Air Sealing and Insulation
 - Mechanical Ventilation
 - IRA Limited Assessment
- Plumbing Workflows**
 - Heat Pump Water Heater
 - High Efficiency Gas (DIO) Water Heater
 - High Efficiency Gas (DIO) Modulating Boiler
- Safety Workflows**
 - Combustion Safety Testing
- Envelope Workflows**
 - Attic Air Sealing and Insulation
 - Wall Air Sealing and Insulation
 - Floor Air Sealing and Insulation Above Unconditioned Space
 - Foundation Wall Air Sealing and Insulation
 - Slab Foundation Air Sealing and Insulation
 - Full Frame Replacement Windows
 - Insert Replacement Windows

Retrofit Decision Tool

We make recommendations to help homeowners reduce energy costs and help fight climate change.

Retrofit Decision Analysis Form

1. Where is the building located?

State/County: _____ OR Zip code: _____

2. What is the type of building?

Single Family Detached | Single Family Attached | Mobile Home | Multifamily with 2+4 units | 5+ units, 1-3 stories | 5+ units, 4+ stories | 5+ units, 4+ stories

3. When was the building built?

Before 1940 | 1940-1979 | 1980 or Later

4. What is the square footage of your building?

Less than 1500 sq ft | 1500 to 2800 sq ft | Greater than 2800 sq ft

5. What is the primary fuel for the existing heating system?

Natural Gas | Electricity | Fuel Oil | Propane | Other Fuel | None

6. What is the existing cooling method?

Central AC | Room AC | Heat Pump | None

7. Does your building have ducts? Yes No

8. What heating fuel does the building water heater use?

Natural Gas | Electricity | Fuel Oil | Propane | Other Fuel

9. What type of windows does the building have?

Single-pane | Double-pane | Triple-pane

10. What type of walls does the building have?

Wood frame | Brick | Concrete | Steel frame

11. Does your building have wall insulation? Yes No Not Sure

Cold Climate Heat Pump Decision Tool

1 Enter Project Information | 2 Residential Load Calculation | 3 Duct System Assessment | 4 Electrical Panel Information | 5 Complete

Welcome to the Cold Climate Heat Pump Decision Tool. The goal of this tool is to help guide contractors and installers through the decision-making process for heat pump (HP) sizing and selection, with a focus on retrofit applications in cold climates. Users will provide information below. The tool will provide HP size, configuration, and further installation guidance. Completion of the tool may take between 15 and 30 minutes.

Please start by providing information about the home, existing heating and cooling equipment, and the project objective below.

Project Location

Zip Code: _____

When was the building built?

Conditioned Floor Area: _____

Project Details

Will the new heat pump serve the whole home or part of the home?

Existing Heating System Age: _____

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