



ENERGY SAVINGS FOR BUSINESS

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An Overview of HVAC and Water Heating Measures

About ERA

MANDATE

Reduce GHG emissions and grow Alberta's economy by accelerating the development and adoption of innovative technology solutions.

VISION

Alberta has competitive industries that deliver sustainable environmental outcomes, attract investment, and are building a diversified, lower carbon economy.

STRATEGIC PRIORITIES



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Measure Categories

Compressed air

Solar PV

Lighting systems and controls

Motors and drives

Combined heat and power
(CHP)

Refrigeration

Geothermal

HVAC

Water Heating

Process Heating

Building Envelope
and Windows

COMING SOON

Food service

Pump Jack Controllers



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Important Note: Pre-Project Application Submissions

- If a pre-project application is submitted, but is not approved, it does not hold a place in the line for the incentive reservation
- The incentive is only reserved after the pre-project application is approved
- It is important to submit good-quality applications with complete documentation or the review cannot occur comprehensively; this delays the review and approval process



Eligible HVAC Measures Types

Boilers, Boiler Controls, Heaters, and Furnace

Chillers and RTUs

ASHP, VRF, and PTHP

HRV, ERV, DCV, MUA, and Destra Fan

Pipe Insulation



Boilers, Boiler Controls, Heaters & Furnaces

- Replace old equipment with high efficiency units
 - Condensing boilers, furnaces and unit heaters
- Retrofit
 - Replace old burner with new modulating burner
 - Install boiler vent damper
- Participant Incentive value is based on \$/MBH



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Eligibility: Boilers, Boiler Controls, Heaters & Furnaces

- Condensing boilers and furnaces must be ENERGY STAR® certified
- Furnaces require a minimum AFUE of 96%
- Condensing heaters must be located in conditioned spaces
- The maximum eligible boiler size for modulating burner = 2,500 MBH
- The maximum eligible boiler size for vent damper = 2,500 MBH



Requirements: Boilers, Boiler Controls, Heaters & Furnaces

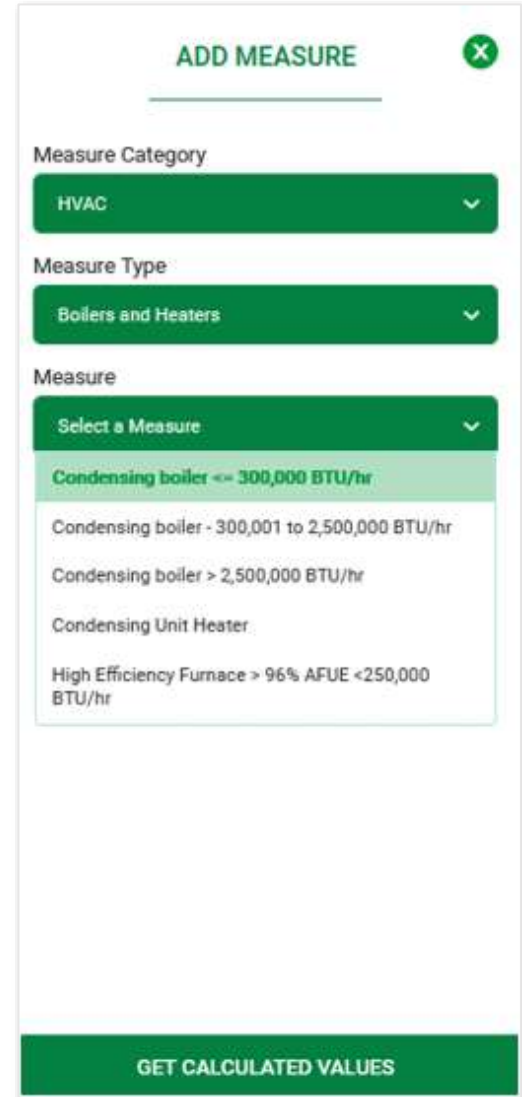
- Must submit specification sheets for all new equipment
- Must provide ENERGY STAR® Unique ID where applicable
- Must provide the following details for the equipment to be replaced
 - Capacity, efficiency and age
 - The application is the equipment serving (i.e., domestic hot water, space heating, or combination)
 - The estimated hours of operation



Application: Boilers, Boiler Controls, Heaters & Furnaces

STEP 1

Select the type of heating measure to be added to the application.



The screenshot shows a mobile application interface for adding a measure. At the top, there is a title bar with the text "ADD MEASURE" and a close button (X). Below the title bar, there are three dropdown menus. The first is labeled "Measure Category" and is set to "HVAC". The second is labeled "Measure Type" and is set to "Boilers and Heaters". The third is labeled "Measure" and is currently open, showing a list of options. The first option, "Condensing boiler <= 300,000 BTU/hr", is highlighted in green. Other options in the list include "Condensing boiler - 300,001 to 2,500,000 BTU/hr", "Condensing boiler > 2,500,000 BTU/hr", "Condensing Unit Heater", and "High Efficiency Furnace > 96% AFUE <250,000 BTU/hr". At the bottom of the form, there is a green button labeled "GET CALCULATED VALUES".



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Application: Boilers, Boiler Controls, Heaters & Furnaces

STEP 2

Provide the required measure specific required information.

MEASURE SPECIFIC INFORMATION

ENERGY STAR ID ⓘ

Quantity

Brand Name

Model Name

Model Number

Fuel Type

Efficiency (AFUE)

Specification Sheet ⓘ

Select from computer (or) Drag and Drop documents to upload. Acceptable file types: JPEG, PNG, PDF, Docx, xlsx

Boiler Input Rate (MBH)

Boiler System Annual Operating Hours (hours)

Boiler Application

Per Unit Emissions Reduction

Total Emissions Reduction - Boiler or Heater

GET CALCULATED VALUES



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Chillers & RTUs

- Replace chillers and RTUs with higher efficiency units
- Chillers are applicable for both space and process cooling
- The Chiller Efficiency rating is based on AHRI 550/590 for IPLV conditions
- The RTU Efficiency is based on EER
- The Participant Incentive value is based on \$/unit specific to a defined range of tonnage



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Eligibility: Chillers & RTUs

- The equipment must be for primary use and not as a back up
- The refrigerant must comply with all applicable codes and appropriate authorities
- Chillers**
 - The IPLV's Rated kW/ton must be less than the qualifying efficiency
 - Must meet ASHRAE 90.1 std-2016 Table 6.8. 1-3 Path A or B efficiency
- RTUs**
 - Must meet the minimum EER value as specified



Requirements: Chillers & RTUs

- Must provide specification sheets for all new equipment
- Provide the following details for the existing equipment:
 - The capacity and efficiency
 - The annual operating hours
 - The manufacturer name and model number
- For chillers, specify the application that they are serving (i.e. space or process cooling)



Application: Chillers & RTUs

STEP 1

Select the measure.

ADD MEASURE ✕

Measure Category
HVAC

Measure Type
RTUs - Unitary AC

Measure
Select a Measure

- RTU - Split System or Single Package with Economizer 3.0 - <5.4 Tons
- RTU - Split System or Single Package with Economizer 5.4 - <11.255 Tons
- RTU - Split System or Single Package 11.25 - <20.0 Tons**
- RTU - Split System or Single Package 20.0 - <63.3 Tons

GET CALCULATED VALUES



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Application: Chillers & RTUs

STEP 2

Provide the required measure specific required information.

MEASURE SPECIFIC INFORMATION

Quantity

Specification Sheet ⓘ
 Select from computer (or) Drag and Drop documents to upload. Acceptable file types: .JPEG, .PNG, .PDF, .Docx, .xlsx

Equipment Annual Operating Hours (hours)

RTU Heating Capacity (BTU/hr)

RTU Heating Efficiency (%)

RTU Cooling Capacity (Tons)

RTU Cooling Efficiency (EER)

RTU Manufacturer Name

RTU Model Name

RTU Model Number

Per Unit Emissions Reduction

Total Emissions Reduction

GET CALCULATED VALUES



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ASHP, VRF & PTHP

- Replacement of electric heating and cooling with ASHP, VRF or PTHP
- Applicable to any sector
- Incentives based on \$/ton



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Eligibility: ASHP, VRF & PTHP

- Only the replacement of electric heating and cooling is eligible
- ASHP efficiency must meet either:
 - CEE Tier 1 or 2 Unitary HP specs, or
 - NEEP efficiencies cold climate ASHP specs
- VRF Heat Pumps must meet either :
 - Meet CEE Tier 1 COP Requirements
 - Be certified by the AHRI as a VRF Heat Pump
- Packaged Terminal Heat Pump must be either:
 - Certified by AHRI as a PTHP
 - Compliant with NRCan Energy Performance Std for PTAC and PTHP



Requirements: ASHP, VRF & PTHP

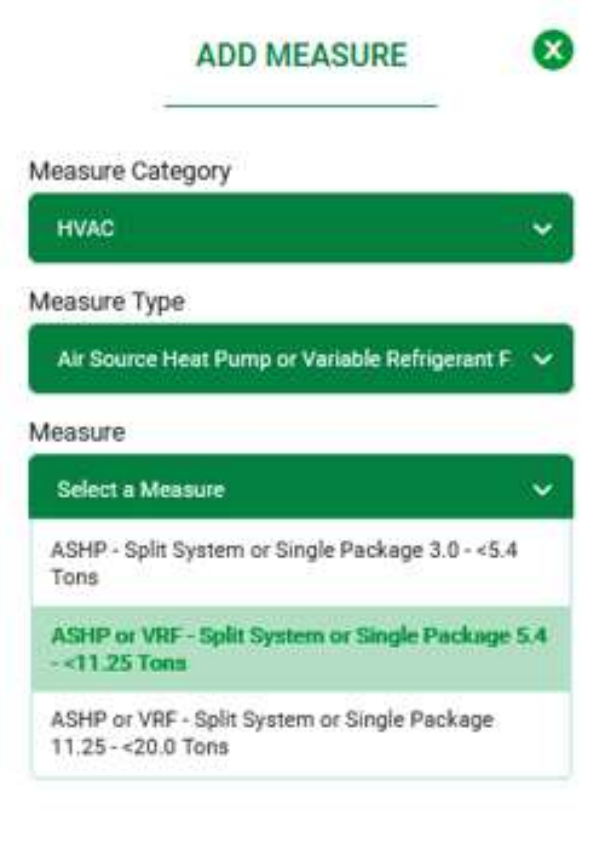
- Must provide specification sheets for all new equipment
- Must provide the following information for the existing heating or cooling systems:
 - The type of heating or cooling system
 - The nameplate efficiency data (for both cooling and heating)
 - The manufacturers' name and model number
 - The estimated hours of operation per year



Application: ASHP, VRF & PTHP

STEP 1

Select the type of measure being added to the application.



The screenshot shows a web form titled "ADD MEASURE" with a close button (X) in the top right corner. The form contains three sections:

- Measure Category:** A dropdown menu with "HVAC" selected.
- Measure Type:** A dropdown menu with "Air Source Heat Pump or Variable Refrigerant F" selected.
- Measure:** A dropdown menu with "Select a Measure" at the top. Below it, three options are listed:
 - ASHP - Split System or Single Package 3.0 - <5.4 Tons
 - ASHP or VRF - Split System or Single Package 5.4 - <11.25 Tons** (highlighted in green)
 - ASHP or VRF - Split System or Single Package 11.25 - <20.0 Tons



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Application: ASHP, VRF & PTHP

STEP 2

Provide the required measure specific required information.

MEASURE SPECIFIC INFORMATION

Quantity

Specification Sheet 
 Select from computer (or) Drag and Drop documents to upload. Acceptable file types: .JPEG, .PNG, .PDF, .Docx, .xlsx

Equipment Annual Operating Hours (hours)

ASHP or VRF System Capacity (Tons)

Please confirm that electrical heat is being replaced

Cooling System Replaced

ASHP or VRF System Heating Efficiency (HSPF)

ASHP or VRF System Cooling Efficiency (SEER)

ASHP or VRF System Manufacturer Name

ASHP or VRF System Model Name

ASHP or VRF System Model Number

Per Unit Emissions Reduction

Total Emissions Reduction - ASHP or VRF

GET CALCULATED VALUES



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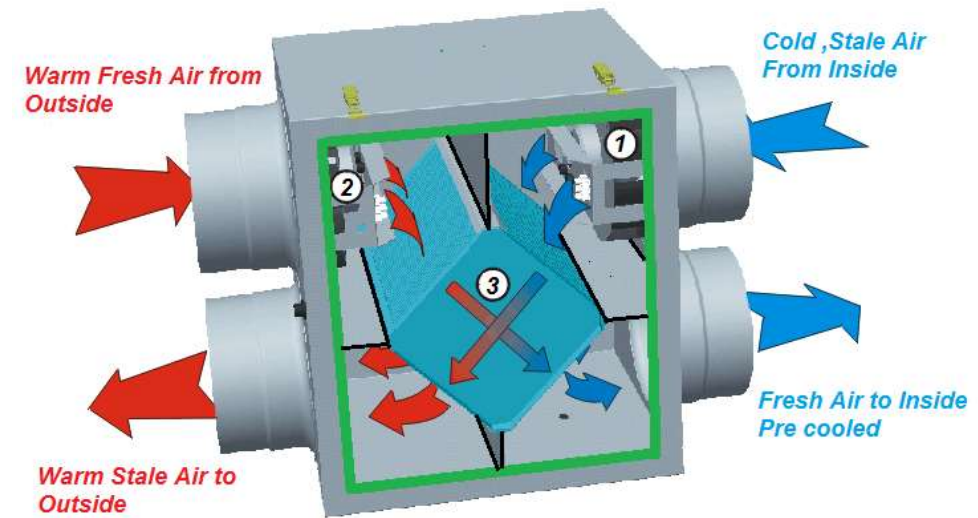
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HRV, ERV, DCV, MUA, Destra Fan

- Provide comfort at reduced energy consumption
- Retrofit units to existing installation
- Incentive matrix
 - \$/100 CFM for ERV, HRV, MUA
 - \$/CO₂ sensor for DCV
 - \$/ fan for Destra Fan



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Eligibility: HRV, ERV, and MUA

HRV & ERV

- Must meet the minimum effectiveness of 65% at 32°F
- Must be compliant with ASHRAE 62.1
- Must not be located where DCV or temperature setbacks are in use or where 100% exhaust air must be removed from the building to avoid cross-contamination

Condensing MUA

- Must be gas-fired units
- Must meet the minimum thermal efficiency of 90%



Eligibility: DCV, Destra Fan

DCV

- Must be installed in a constant volume HVAC system
- The controlled space must be a minimum of 1,000 sq. ft
- Must be compliant with ASHRAE 62.1
- Must not be located where energy or heat recovery is in use
- Must only be for previously non-controlled ventilation (adding new sensors)

Destratification Fans

- Must be installed in buildings that have space heating
- Must have a minimum fan diameter of 20 ft
- Must have a minimum ceiling height of 20 ft



Requirements: HRV, ERV, DCV, MUA, Destra Fan

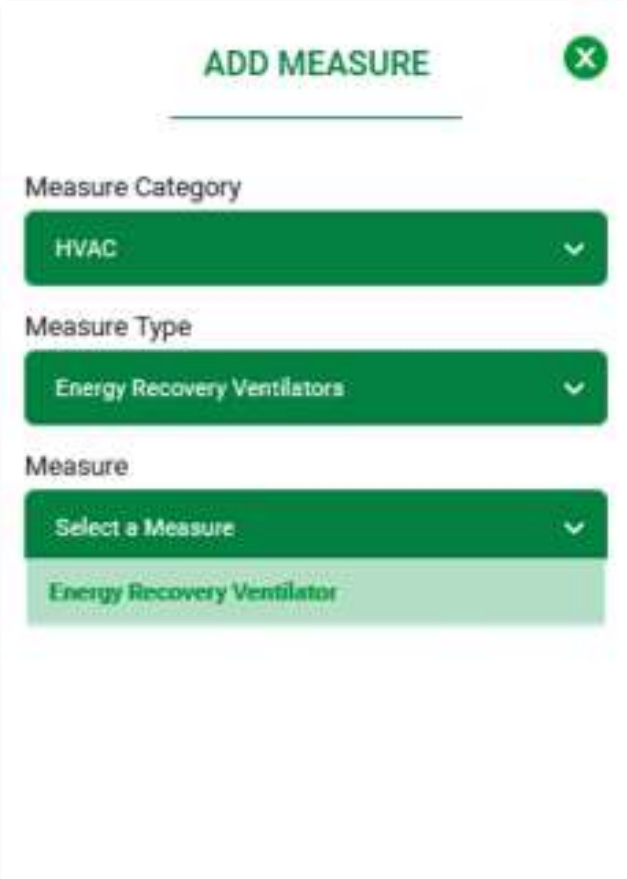
- Must provide specification sheets for all new equipment
- Must provide the following information for the existing HVAC equipment:
 - The capacity and efficiency
 - The annual operating hours
- Must provide the thermal efficiencies
- If replacing an MUA, must provide the manufacturer's nameplate data (CFM, make and model) for the existing MUA



Application: HRV, ERV, DCV, MUA, Destra Fan

STEP 1

Select the type of measure being added to the application.



ADD MEASURE ✕

Measure Category
HVAC ▼

Measure Type
Energy Recovery Ventilators ▼

Measure
Select a Measure ▼
Energy Recovery Ventilator




Application: HRV, ERV, DCV, MUA, Destra Fan

STEP 2

Provide the required measure specific required information.

MEASURE SPECIFIC INFORMATION

Quantity

Specification Sheet ⓘ
 Select from computer (or) Drag and Drop documents to upload. Acceptable file types: .JPEG, .PNG, .PDF, .Docx, .xlsx

Equipment Annual Operating Hours (hours)

HRV/ERV CFM

Percentage Sensible Heat Recovery (%)

Heating System Input Rate (MBH) ⓘ

Heating System Efficiency (%) ⓘ

HRV/ERV Manufacturer Name

HRV/ERV Model Name

HRV/ERV Model Number

Per Unit Emissions Reduction

Total Emissions Reduction - HRV/ERV

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Pipe Insulation

- Hot & Cold Fluids
- Steam
- Indoor and Outdoor
- Available for any pipe diameter



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Eligibility and Requirements: Pipe Insulation

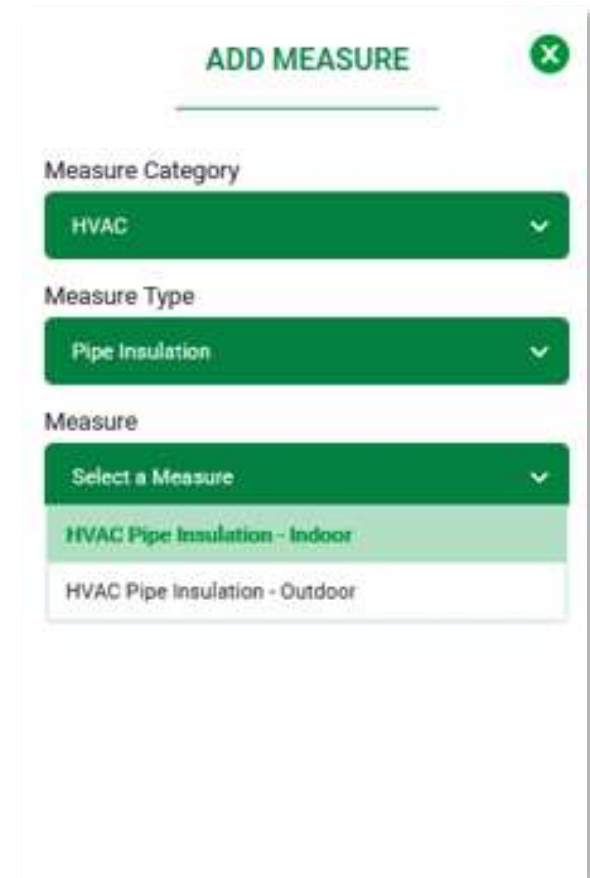
- Must provide the specifications sheets
- Must have a minimum R-Value of 2.5
- Must be made of the following materials: Elastomeric foam rubber, polyethylene foam, UV-resistant polyethylene foam, mineral wool, fiberglass, polyurethane foam, rigid phenolic foam, cellular glass, or calcium silicate



Application: Pipe Insulation

STEP 1

Select the type of measure being added to the application.



The screenshot shows a mobile application interface for adding a measure. At the top, there is a header 'ADD MEASURE' with a close button (X) on the right. Below the header, there are three dropdown menus. The first is labeled 'Measure Category' and has 'HVAC' selected. The second is labeled 'Measure Type' and has 'Pipe Insulation' selected. The third is labeled 'Measure' and has 'Select a Measure' selected. Below the 'Measure' dropdown, there is a list of options: 'HVAC Pipe Insulation - Indoor' (highlighted) and 'HVAC Pipe Insulation - Outdoor'.



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Application: Pipe Insulation


STEP 2

Provide the required measure specific required information.

MEASURE SPECIFIC INFORMATION

Quantity

Specification Sheet ⓘ

 Select from computer (or) Drag and Drop documents to upload. Acceptable file types: .JPEG, .PNG, .PDF, .Docx, .xlsx

Equipment Annual Operating Hours (hours)

Heating System Input Rate (MBH) ⓘ

Heating System Efficiency (%) ⓘ

Length of Insulation (feet)

Pipe Diameter (inches)

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Eligible Water Heating Measures

Condensing Storage Tank Water Heaters

Condensing Tankless Water Heaters

Water Heater Jackets



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Eligibility: Water Heating

- Must have a thermal efficiency of 90% or more
- Condensing storage and tankless heater types must be ENERGY STAR® certified
- For water heater jackets, a minimum R-Value of 6 is required



Requirements: Water Heating

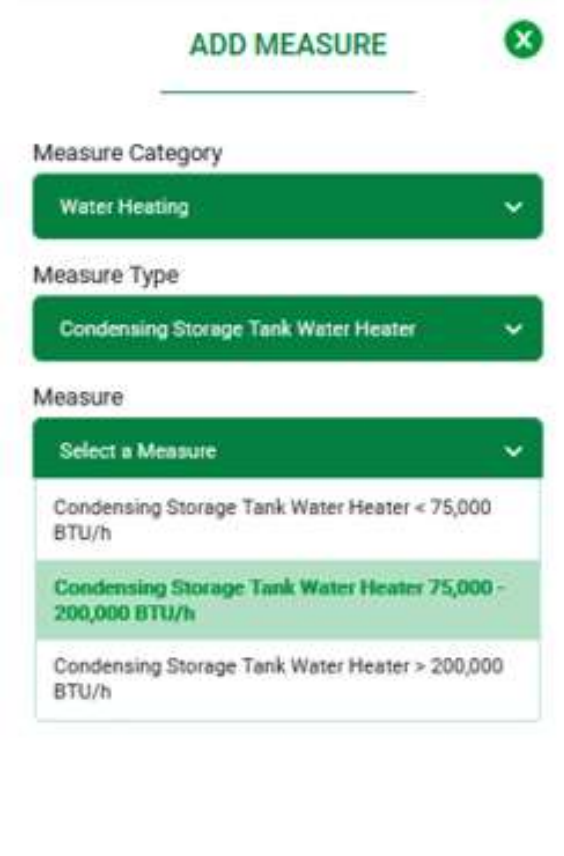
- Must provide the specifications sheets
- Must provide the ENERGY STAR® Unique ID
- If replacing a water heating system, must provide the following information for the existing water heating system:
 - The input rate (MBH)
 - The volume of the tank (if applicable)
 - The approximate age of the system



Application: Water Heating

STEP 1

Select the type of measure being added to the application.



The screenshot shows a mobile application interface for adding a measure. At the top, there is a header 'ADD MEASURE' with a close button (X) on the right. Below the header, there are three dropdown menus:

- Measure Category:** A green dropdown menu with 'Water Heating' selected.
- Measure Type:** A green dropdown menu with 'Condensing Storage Tank Water Heater' selected.
- Measure:** A green dropdown menu with 'Select a Measure' selected. Below the dropdown, three options are listed:
 - Condensing Storage Tank Water Heater < 75,000 BTU/h
 - Condensing Storage Tank Water Heater 75,000 - 200,000 BTU/h (highlighted in light green)
 - Condensing Storage Tank Water Heater > 200,000 BTU/h



Application: Category

STEP 2

Provide the required measure specific required information.

MEASURE SPECIFIC INFORMATION

ENERGY STAR ID ⓘ
Enter here

Quantity
Enter here

Brand Name
Autofilled Value

Model Name
Autofilled Value

Model Number
Autofilled Value

Heater Type
Autofilled Value

Fuel Type
Autofilled Value

Fuel Type
Autofilled Value

Storage Volume
Autofilled Value

Input Rate - Gas-fired (kBTU/hr)
Autofilled Value

Thermal Efficiency (TE)
Autofilled Value

Specification Sheet ⓘ
Select from computer (or) Drag and Drop documents to upload. Acceptable file types: .JPEG, .PNG, .PDF, .Docx, .xlsx

Water Heater Input Rate (MBH) ⓘ
Enter here

Volumetric Capacity of Tank Being Replaced ⓘ
Enter here

Input BTU/h of Tank Being Replaced
Enter here

Age of Tank Being Replaced
Enter here

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Application: Emissions and Costs

STEP 3

The emissions reduction estimates are automatically calculated. Review all costs to ensure they have been accurately recorded. They will be compared to the cost quote(s) uploaded in the application. The incentive is capped to 50% of the total cost.

NOTE: Installation costs should be included in the labour costs. All other costs should be included in the design costs.

Per Unit Emissions Reduction
0.193
Total Emissions Reduction
Calculated value
Equipment & Material Costs ⓘ
Enter here
Labour Cost ⓘ
Enter here
Design Cost ⓘ
Enter here



Application: Calculated Incentives

STEP 4

Review the calculated values.

Maximum Eligible Measure Incentive is the calculated incentive cap relative to the total eligible project cost.

The screenshot displays a user interface for calculating incentives. It consists of three stacked input fields, each with a title and an information icon (i) to its right. The first field is titled 'Measure Incentive' and contains the text 'Calculated value'. The second field is titled 'Maximum Eligible Measure Incentive' and also contains 'Calculated value'. The third field is titled 'Total Eligible Measure Incentive' and contains 'Calculated value'. Below these three fields is a prominent green button with the text 'GET CALCULATED VALUES' in white capital letters.

Measure Incentive is the incentive based on the measures list.

The Total Eligible Measure Incentive is the lower of the two above values.



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Example of Incentives

A hotel is carrying out a boiler and PTHP retrofit. As part of the retrofit, the project will install:

- 121 PTHP for guest rooms
- 1 Condensing boiler (1,500 MBH)

Per Unit Emissions Reduction	2.641085082
Total Emissions Reduction	Calculated Value
Equipment & Material Costs ⓘ	Enter here
Labour Cost ⓘ	Enter here
Design Cost ⓘ	Enter here
Total Cost	Calculated Value



Example of Incentives

Total Cost of PTHP = \$96,800
Total Eligible Measure Incentive = \$24,200

Number of PTHP: 121

Potential Measure Incentive:
 $121 \times \$200/\text{unit} = \$24,200$

Maximum Measure Incentive:
 $96,800 \times 0.5 = \$48,400$

Total Cost of Condensing Boiler = \$42,200
Total Eligible Measure Incentive = \$18,000

Boiler Rating: 1,500 MBH

Potential Measure incentive:
 $1,500 \times \$12/\text{MBH} = \$18,000$

Max Eligible Measure Incentive:
 $\$42,200 \times .50 = \$21,100$



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By chat on the ERA website and program portal