



ENERGY SAVINGS FOR BUSINESS

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**An Overview of Process Heating, Compressed Air, and
Building Envelope 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 Measures Types

Process Heating

Compressed Air

Building Envelope



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Process Heating

- Steam Traps
 - Replace failed, leaky or plugged traps
- Economizer
 - Condensing
 - Non-condensing
- Insulation
 - Pipes and Fittings
- The incentive value is based on per trap, per MBH or per ft



Eligibility: Process Heating

- Steam traps must be in service
- Economizer must be used for preheating feedwater. Process and space heating boilers are both eligible.
 - Condensing Economizers are capped at \$30,000
 - Non-Condensing Economizers are capped at \$20,000
 - Replacing existing economizers are not eligible
- Insulation available for both pipes and fittings
 - Must be high-density fiberglass or closed-cell elastomeric foam
 - Minimum R-value of 4



Requirements: Process Heating

- Must submit specification sheets for all new equipment
- Must provide the following details of the boiler system the new measures will be installed:
 - Boiler capacity
 - Operating hours
 - Efficiency
- If installing steam traps, please provide:
 - The type
 - The diameter
 - If the steam is saturated or superheated



Application: Process Heating

STEP 1

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

ADD MEASURE ✕

Measure Category
Process Heating ▼

Measure Type
Steam Trap ▼

Measure
Select a Measure ▼

- Steam Trap Diameter 1/8"
- Steam Trap Diameter 1/4"
- Steam Trap Diameter 3/8"
- Steam Trap Diameter 1/2"
- Steam Trap Diameter 5/8"
- Steam Trap Diameter 3/4"
- Steam Trap Diameter 7/8"
- Steam Trap Diameter 1"



Application: Process Heating


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

Is Steam Saturated or Superheated?
Select from the list ▼

Steam Trap Type
Select from the list ▼

Steam Tray Diameter (inches)

Boiler System Annual Operating Hours (hours)

Boiler Input Energy (MBH)

Boiler Thermal Efficiency (%)

Per Unit Emissions Reduction
322.91

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Compressed Air

- VFD-Integrated Compressor
- Zero-Loss/No-Loss Condensate Drains
- Engineered Nozzles
- Air Receivers
- Air Dryers (Cyclic or thermal mass refrigerated dryer, dessicant dryer)
- Low Pressure Drop Filter



Eligibility: Compressed Air

VFD-Integrated Compressor

- Must replace a fixed speed unit
- Compressor should not be a backup

Zero-Loss Condensate Drain

- Must replace a timer-controlled drain on tank or piping
- Not eligible for replacing existing no loss drains

Compressed Air Storage

- Must result in an increase of primary storage

Engineered Nozzle

- Must be installed on an open pipe or replace a non-commercial nozzle

Air Dryers

- Refrigerated dryers must replace non-cycling dryers
- Dessicant dryers must have dew point controls to optimize the regeneration cycles

Low Pressure Drop Filter

- Rated Pressure drop must not exceed 1psig
- Must replace an old coalescing filter



Requirements: Compressed Air

- Must submit specification sheets for all new equipment
- Must provide the following details:
 - The compressed air operating pressure
 - The type and number of air compressor(s) currently in operation, their HP, the CFM, and the number of air compressor(s) on standby
 - The compressor's approximate average percent loading
 - The type of equipment being replaced
 - The nameplate information



Application: Compressed Air

STEP 1

Select the type of Compressed Air measure to be added to the application.

ADD MEASURE ✕

Measure Category
Compressed Air ▼

Measure Type
Compressed Air Storage ▼

Measure
Select a Measure ▼

- Compressed Air Storage - 0 to 269 USG
- Compressed Air Storage - 270 to 449 USG
- Compressed Air Storage - 450 to 629 USG**
- Compressed Air Storage - 630 to 809 USG
- Compressed Air Storage - 810 to 989 USG
- Compressed Air Storage - 990 to 2249 USG
- Compressed Air Storage - 2250 to 3149 USG
- Compressed Air Storage >= 3150 USG



Application: Compressed Air

STEP 2

Provide the required measure specific required information.

MEASURE SPECIFIC INFORMATION

Quantity

Compressed Air Pressure (PSIG)

Type of Air Compressor

Is Tank Primary?

HP of Air Compressors

Air Receiver Volume (USG)

Age of Air Compressor

Approximate Average % Loading of Compressors

Compressed Air Storage Specification Sheet

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Building Envelope and Windows

- Air Curtains
 - Shipping/receiving doors dock-in
 - Pedestrian
- Door Dock Seal
 - Compression Type
 - Shelter type
- Insulation
 - Ceiling
 - Wall
- High Efficiency Windows



Eligibility: Building Envelope

Air Curtains

- Must be installed on single/double shipping/receiving doors
- Must be tested by ANSI/AMCA 220-05 or similar
- Not eligible where other infiltration-combatting mechanisms are present

Door Dock Seal

- Must replace deteriorated seals or addition of new seals on existing shipping/receiving doors

Ceiling Insulation

- Minimum incremental increase in insulation of R-20
- Minimum combined insulation greater than R-40

Wall Insulation

- Minimum incremental increase in insulation of R-7
- Minimum combined insulation greater than R-27

High-Efficiency Windows

- U-Value thermal resistance to be less than 0.30



Requirements: Building Envelope

- Must submit specification sheets for all new equipment
- Air Curtains and Door Dock applications must provide:
 - The height of the doorway that will be covered
 - The width of the doorway that will be covered
- High Efficiency Window applications must provide:
 - The area of new windows (in sq.ft)
 - The U-Value of New Windows
- Wall and ceiling insulation applications must provide:
 - Area covered by insulation (sq.ft)
 - R-Value of new insulation
 - R-Value of existing insulation



Application: Building Envelope

STEP 1

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

ADD MEASURE ✕

Measure Category
Building Envelope and Windows ▼

Measure Type
Air Curtains ▼

Measure
Select a Measure ▼

- Air Curtains - Overhead/Shipping Door - 8'x8', 8'x9' and 8'x10'**
- Air Curtains - Overhead/Shipping Door - 10'x10' or larger than 100 sqft
- Air Curtains - Pedestrian Doors 3'x7'
- Air Curtains - Pedestrian Doors 6'-7' or 6'x8'
- Air Curtains - Pedestrian Doors 2x(3'x7')
- Air Curtains - Pedestrian Doors 2x(6'x7') or 2x(6'x8')



Application: Building Envelope

STEP 2

Provide the required measure specific required information.

Measure

Air Curtains - Pedestrian Doors 6'-7' or 6'x8' ▾

MEASURE SPECIFIC INFORMATION

Quantity

Enter here

Specification Sheet ⓘ

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

Height covered by Air Curtain (feet)

Enter here

Width covered by Air Curtain (feet)

Enter here

Per Unit Emissions Reduction

41.14

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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 |



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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 web interface with three input fields, each with a title and an information icon (i) in a circle. 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 fields is a 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 Project Incentive Calculation

A company is looking to carry out projects in two different facilities:

- Facility A: Economizer installation
- Facility B: VFD Integrated Compressor installation

| | |
|------------------------------|------------------|
| 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 Project Incentive Calculation: Facility A Project

Total Cost of Economizer (equipment + labour) = \$21,500
Economizer capacity = 4,000 MBH

Potential Measure Incentive
 $4,000 \times \$3/\text{MBH}$
= \$12,000

Maximum Eligible Measure Incentive
 $\$21,500 \times 50\%$
= \$10,750

Total Eligible Measure Incentive
= \$10,750



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Example of Project Incentive Calculation: Facility B Project

Total Cost of VFD Integrated Compressor (equipment + labour) = \$61,200
Compressor Rating = 50hp



Example of Project Incentive Calculation

| | Facility A Project (Economizer) | Facility B Project (VFD Compressor) |
|---|------------------------------------|--|
| Total Costs (Equipment, Labour and Design) | \$21,500 | \$61,200 |
| Potential Measure Incentive | \$12,000 | \$7,500 |
| Maximum Eligible Measure Incentive | \$10,750 | \$30,600 |
| Eligible Measure Incentive | \$10,750 | \$7,500 |





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