



REBATE CATALOG

ENOVITY BOILER EFFICIENCY PROGRAM



*Pacific Gas and
Electric Company®*

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Pacific Gas and Electric Company supports a variety of companies promoting energy efficiency through funding by public goods funds. Enovity is working with PG&E to support our customers by assisting their efforts in energy efficiency.

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Introduction



Welcome to the Boiler Efficiency Program, implemented by Enovity and administered by Pacific Gas and Electric Company.

ABOUT THE BOILER EFFICIENCY PROGRAM

The Program provides cash rebates and incentives along with no-cost technical assistance to identify and implement energy efficiency improvements in boiler systems. Through November 15, 2012, eligible PG&E customers can take advantage of the Program’s services to help:

- identify boiler energy efficiency measures at a facility,
- evaluate the potential energy savings, cost impacts, and greenhouse gas reductions for a project, and
- coordinate with a contractor of the customer’s choice to install the project.

FUNDING YOUR PROJECT: REBATES OR INCENTIVES?

A given energy efficiency measure may be eligible for either a rebate or an incentive.

To determine which funding avenue best suits a specific project, see the list of available rebates in this Rebate Catalog, and contact a Program representative if you have any questions or would like assistance.

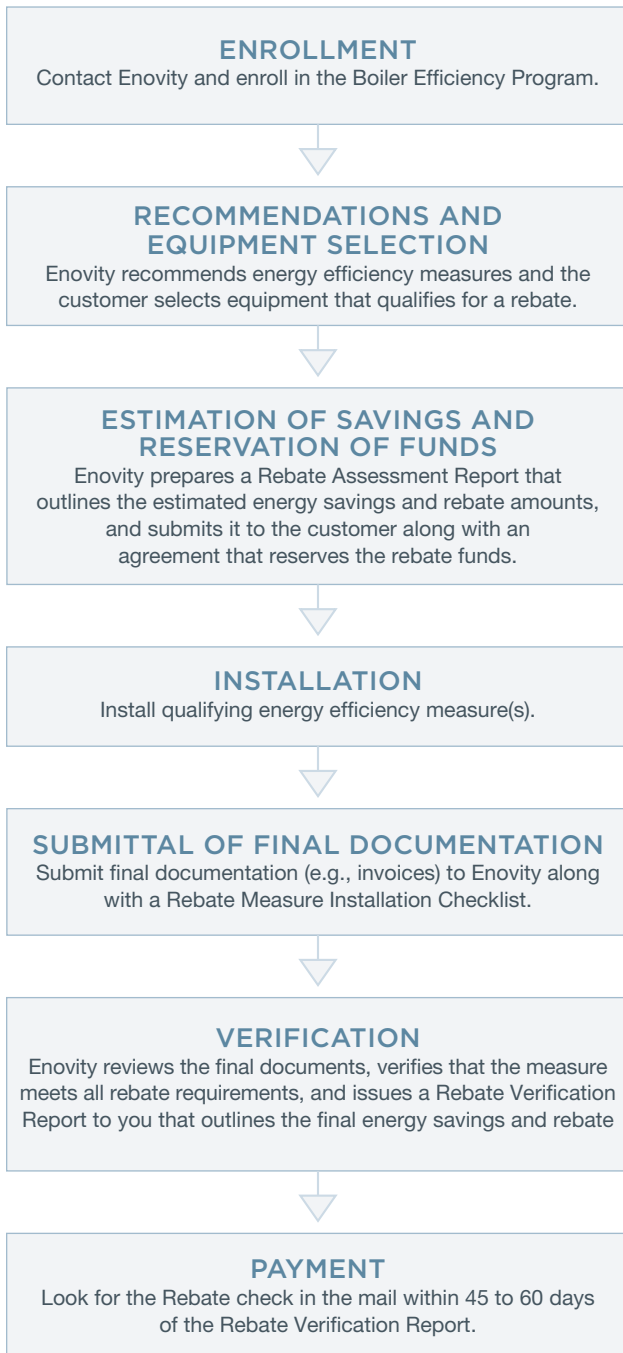
	Rebates	Incentives
Amount Determined By:	Quantity of units installed	Energy savings achieved
Offered For:	A specific list of measures: (see “Available Rebates” below and the Rebate Catalog)	All other measures that result in quantifiable energy savings
Process	Streamlined; Uses data provided by the customer or collected on-site	Requires an onsite detailed evaluation and measurements performed by the Enovity

AVAILABLE REBATES

- High-efficiency boilers and water heaters
- New burner combustion fan VFD
- Steam traps
- Pipe and tank insulation

OBTAINING A REBATE

When obtaining a rebate through the Program, customers must apply before installing energy efficiency measures.



Enovity can help customers identify ways to save energy for the boiler system as part of an Initial Site Assessment. Then, when the customer decides to move forward with some or all of the recommendations, they should forward the equipment specifications and/or vendor’s proposal to Enovity.

Enovity will review the submittal and verify that the project, as it is outlined, qualifies for a rebate. Then, the customer will receive a Rebate Assessment Report that includes the requested rebates and quantities, potential energy savings results, and rebate amount to expect. Rebate funds are available on a first-come, first-served basis. Along with the Rebate Assessment Report, Enovity will provide the customer with a Project Installation Agreement that reserves the rebate funds.

Once the project is installed, Enovity will review all final supporting documentation and submit a Rebate Verification Report to the customer that outlines a list of the final energy savings, greenhouse gas reductions, and rebate amounts to be paid. Expect to receive the rebate check within 45 to 60 days of this report. Note that Enovity may elect to perform an on-site inspection to verify applications.



BOILER EFFICIENCY PROGRAM REBATES VS. PG&E REBATES

Some of the rebates in this catalog match rebates in PG&E's Boilers and Water Heating Catalog. The rebate rates and eligibility requirements are the same for these measures; however, applying for rebates through the Program gives customers access to:

- Technical assistance to identify energy efficiency opportunities
- A report on the potential energy savings and greenhouse gas reductions for the measures
- Reservation of the rebate funds
- Implementation assistance to coordinate with contractors and vendors
- Management of rebate projects for customers with multiple facilities
- Two rebates that are only available through the Program: High-Efficiency Condensing Boilers and Variable Frequency Drives for New Boiler Burner Fans

USING THIS REBATE CATALOG

This Rebate Catalog is split into three main sections:

- **Process Heating** – rebates for new, high-efficiency boilers and water heaters that are common to industrial, manufacturing, and food processing facilities.
- **Non-Process Water Heating** – rebates for new, high-efficiency boilers and water heaters that are not used as part of a manufacturing or industrial process, such as space heating and domestic hot water heating.
- **Other** – rebates that are not specific to process or non-process end uses, such as pipe and tank insulation, adding a variable frequency drive to the combustion air fan of a new boiler burner, and steam traps.

Along with each rebate, the Catalog lists the:

- **Eligibility Requirements** – which types of equipment and facilities can apply for the rebate, along with any efficiency or performance standards that must be met
- **Required Documentation** – what must be submitted in order for the rebate to be approved
- **Rebate Amounts** – which product types or performance levels that can apply for the rebate, the Unit of Measure for the rebate, and the rebate amount (per Unit of Measure) for each product type or performance level.

SUBMITTING REQUIRED DOCUMENTATION

In the course of evaluating opportunities at a facility, Enovity will request to review 24 months of utility consumption data. This information is used to verify that the facility is an eligible PG&E customer and also to estimate the energy savings of potential energy efficiency measures. Once a customer decides to move forward with a specific project, Enovity will request to review a contractor's proposal and/or specification sheets from the equipment manufacturer in order to verify that the project qualifies for a rebate. Specific documentation requirements for each rebate are outlined in this Rebate Catalog. Note that some documents must be submitted before installation of measures, whereas other documents (such as a final invoice) must be submitted after the measures are installed.

Definitions

The following terms are used throughout the Catalog and defined here:

Btu

Abbreviation for British thermal unit(s). Equivalent to the amount of heat energy required to raise the temperature of one pound of water by one degree Fahrenheit.

Combustion Efficiency

Combustion efficiency is an indication of a boiler's ability to burn fuel and transfer heat to the boiler fluid. Combustion efficiency represents the amount of energy lost in the boiler exhaust stack (flue) and can be measured in the field by a flue gas analyzer.

Thermal Efficiency

Thermal efficiency is the boiler's energy output divided by energy input at steady-state conditions. Thermal efficiency includes the boiler shell (radiation and convection) losses and other miscellaneous losses, which are not included in the combustion efficiency. Thermal efficiency is sometimes also referred to as fuel-to-steam/water efficiency or boiler overall efficiency.

Commercial Facility

Non-residential buildings where no saleable product is manufactured. Typical commercial facilities include office buildings, hospitality, hospitals, high-tech / bio-tech labs, retail stores, and schools and universities.

Energy Efficiency Measure (Measure)

A specific facility modification, improvement, upgrade or repair made with the express purpose of reducing a facility's energy consumption.

Horsepower (hp)

Electrical motor nameplate horsepower; horsepower is equivalent to 746 Watts.

Industrial Facility

Non-residential buildings where a saleable product is manufactured (NAICS codes 31x to 33x). Typical industrial facilities include food processing plants, paper mills, dairy product manufacturers, chemical plants and other manufacturers.

K-value

This refers to thermal conductivity and has a unit of Btu-inch per hour per square foot per degree Fahrenheit.

Manufacture

To mechanically or chemically transform materials or substances into a new product which is neither a structure nor any fixed improvement.

MBtu

One thousand Btu.

MBtu/hr

One thousand Btu per hour.

MMBtu/hr

One million Btu per hour.

NAICS

North American Industry Classification System identifies new, emerging and advanced technology industries. NAICS defines industries according to a consistent principle: businesses that use a similar production process are grouped together. See <http://www.census.gov/eos/www/naics> for more information and for a list of NAICS Codes and Titles.

psig

Pounds of steam pressure per square inch (gauge).

Process Heating Rebates



NON-CONDENSING PROCESS BOILER

Installation of a new high-efficiency (non-condensing) process steam or hot water boiler. Customers installing steam boilers with input ratings above 50,000 MBtu/hr that operate more than 6,000 hours per year should not apply for this rebate, but instead apply for a calculated incentive under the Boiler Efficiency Program. Contact a Program representative or visit www.BoilerEnergyEfficiency.com for more information.

Eligibility Requirements

Customers must:

- Be an industrial end-use customer that manufactures a saleable product (classify within NAICS codes 31 to 33).
- Be an existing facility. New construction facilities or buildings with a footprint expansion should contact a Program representative to confirm eligibility.

Boilers must:

- Meet a minimum combustion efficiency of 82% as installed. To meet this requirement, the combustion efficiency can be inclusive of a feedwater economizer; however, a separate calculated incentive for a feed-water economizer cannot be obtained if the minimum combustion efficiency is met without a feedwater economizer.
- Produce steam or hot water for process use (i.e., not for domestic hot water, space heating, pool or spa use).

Required Documentation

The following documentation must be submitted before installation:

- Estimated boiler hours of operation.
- Flue gas analysis or the estimated efficiency of the existing boiler.
- Product specification sheet, including:
 - Manufacturer name
 - Model number
 - Rated combustion efficiency or rated thermal efficiency
 - Rated heat input

The following documentation must be submitted after installation:

- Flue gas analysis of installed boiler (measured under full-load conditions) to document combustion efficiency.
- Retail vendor or installing contractor's Final Invoice.

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
Process Steam Boiler	MBtu/hr rated input	\$2.00
Process Water Boiler	MBtu/hr rated input	\$2.00

DIRECT CONTACT WATER HEATER

Installation of a new high-efficiency direct-contact water heater. Direct-contact water heaters are designed to bring heat from a flame into direct contact with small droplets of cold water, which run through a stainless steel heat exchange medium. This measure does not apply to replacement of a steam-to-hot-water exchange system. Customers planning to implement projects of that nature should apply for a calculated incentive under the Boiler Efficiency Program. Contact a Program representative or visit www.BoilerEnergyEfficiency.com for more information.

Eligibility Requirements

Customers must:

- Be an existing process facility (classify within NA-ICS codes 31 to 33). New construction facilities or buildings with a footprint expansion should contact a Program representative to confirm eligibility.

Heaters must:

- Meet a minimum rated thermal efficiency requirement of 90%.
- Exceed 300 MBtu/hr rated input.
- Produce water for process use (i.e., not for domestic

Required Documentation

The following documentation must be submitted before installation:

- Estimated water heater hours of operation.
- Flue gas analysis or the estimated efficiency of the existing boiler.
- Product specification sheet, including:
 - Manufacturer name
 - Model number
 - Rated thermal efficiency
 - Rated heat input

The following documentation must be submitted after installation:

- Retail vendor or installing contractor's Final Invoice.

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
Direct-Contact Water Heater	MBtu/hr rated input	\$2.00

CONDENSING BOILER

Installation of a new high-efficiency condensing boiler for process hot water heating applications. A condensing boiler is designed to capture the latent heat of condensation of the water vapor in the exhaust stream. By extracting this latent heat, condensing boilers can achieve higher efficiencies at lower return water temperatures (less than 130°F) than non-condensing boilers.

Eligibility Requirements

Customers must be an existing industrial facility. New construction facilities or buildings with a footprint expansion should contact a Program representative to confirm eligibility.

Boilers must:

- Meet a minimum rated thermal efficiency of 87% and a combustion efficiency of 88% as installed. If the installed combustion efficiency requirement is not met, then the boiler may be eligible for the water process boiler rebate.
- Have a rated input of at least 300 MBtu/hr.

Required Documentation

The following documentation must be submitted before installation:

- Estimated boiler hours of operation.
- Flue gas analysis or the estimated efficiency of the existing boiler.
- Product specification sheet, including:
 - Manufacturer name
 - Model number
 - Rated thermal efficiency
 - Rated heat input
- Exhaust stack type (either a stainless steel stack or a PVC stack)
- Exhaust stack condensate drain included (customers should check with the manufacturer's representative to determine if a neutralizer kit is needed on the drain)

The following documentation must be submitted after installation:

- Flue gas analysis of installed boiler (measured under typical operating conditions) to document combustion efficiency.
- Retail vendor or installing contractor's Final Invoice.

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
Condensing Process Boiler	MBtu/hr rated input	\$2.50

Non-Process Water Heating Rebates



LARGE SPACE HEATING BOILER (NON-CONDENSING)

Installation of a new high-efficiency hot water or steam boiler for space heating of a commercial building. Boilers used for process, domestic hot water, pool or spa applications do not qualify for this measure. Customers installing units with heat input ratings greater than 5,000 MBtu/hr should not apply for this rebate, but instead apply for a calculated incentive under the Boiler Efficiency Program. Contact a Program representative or visit www.BoilerEnergyEfficiency.com for more information.

Eligibility Requirements

Customers must be an existing commercial facility. New construction facilities or buildings with a footprint expansion should contact a Program representative to confirm eligibility.

Boilers must:

- Meet a minimum rated thermal efficiency of 84%.
- Have a rated input of at least 300 MBtu/hr and not more than 5,000 MBtu/hr.
- Produce hot water used for space heating for human comfort (as defined by the California Energy Commission Titles 20 and 24 standards).

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
Large Space Heating Boiler	MBtu/hr rated input	\$1.00

Required Documentation

The following documentation must be submitted before installation:

- Product specification sheet, including:
 - Manufacturer name
 - Model number
 - Boiler output type (hot water or steam)
 - Rated thermal efficiency
 - Rated heat input
 - Estimated boiler hours of operation.
 - Flue gas analysis or the estimated efficiency of the existing boiler.

The following documentation must be submitted after installation:

- Retail vendor or installing contractor's Final Invoice.

LARGE DOMESTIC HOT WATER BOILER (NON-CONDENSING)

Installation of a new high-efficiency domestic hot water boiler that meets or exceeds 84% thermal efficiency. This measure applies only to domestic hot water boilers with separate storage (tankless), and not to space heating or industrial process end uses.

Eligibility Requirements

Customers must be an existing commercial facility. New construction facilities or buildings with a footprint expansion should contact a Program representative to confirm eligibility.

Hot water boilers must:

- Meet a minimum thermal efficiency of 84%.
- Have a rated input of at least 0.75 MBtu/hr.
- Produce hot water for domestic use (i.e., not for process or space heating use).

Required Documentation

The following documentation must be submitted before installation:

- Product specification sheet, including:
 - Manufacturer name
 - Model number
 - Rated thermal efficiency
 - Rated heat input
- Estimated boiler hours of operation.
- Flue gas analysis or the estimated efficiency of the existing boiler.

The following documentation must be submitted after installation:

- Retail vendor or installing contractor's Final Invoice.

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
Large Domestic Hot Water Boiler	MBtu/hr rated input	\$1.50

CONDENSING BOILER

Installation of a new high-efficiency condensing boiler for domestic hot water or space heating applications. A condensing boiler is designed to capture the latent heat of condensation of the water vapor in the exhaust stream. By extracting this latent heat, condensing boilers can achieve higher efficiencies at lower return water temperatures (less than 130°F) than non-condensing boilers.

Eligibility Requirements

Customers must be an existing commercial facility. New construction facilities or buildings with a footprint expansion should contact a Program representative to confirm eligibility.

Boilers must:

- Meet a minimum rated thermal efficiency of 87% and a combustion efficiency of 88% as installed. If the installed combustion efficiency requirement is not met, then the boiler may be eligible for either the large space heating boiler rebate or the large domestic hot water boiler rebate.
- Have a rated input of at least 300 MBtu/hr.

Required Documentation

The following documentation must be submitted before installation:

- Estimated boiler hours of operation.
- Flue gas analysis or the estimated efficiency of the existing boiler.
- Product specification sheet, including:
 - Manufacturer name
 - Model number
 - Rated thermal efficiency
 - Rated heat input
 - Exhaust stack type (either a stainless steel stack or a PVC stack)
 - Exhaust stack condensate drain included (customers should check with the manufacturer's representative to determine if a neutralizer kit is needed on the drain)

The following documentation must be submitted after installation:

- Flue gas analysis of installed boiler (measured under typical operating conditions) to document combustion efficiency.
- Retail vendor or installing contractor's Final Invoice.

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
Condensing Space Heating Boiler	MBtu/hr rated input	\$2.50
Condensing Domestic Hot Water Boiler	MBtu/hr rated input	\$2.50

Other Rebates



VARIABLE FREQUENCY DRIVE – NEW BURNER COMBUSTION FAN

This measure upgrades a boiler burner from damper airflow control to a more efficient variable frequency drive (VFD) for electric energy savings.

Eligibility Requirements

Only new burner installations that incorporate a VFD on the combustion air fan are eligible. Customers interested in retrofitting an existing burner with a VFD should not apply for this rebate, but instead apply for a calculated incentive under the Boiler Efficiency Program. Contact a Program representative or visit www.BoilerEnergyEfficiency.com for more information.

Facility must be an existing industrial or commercial facility. New construction facilities or buildings with a footprint expansion should contact a Program representative to confirm eligibility.

Required Documentation

The following documentation must be submitted before installation:

- Estimated boiler annual operating hours.
- Product specification sheet or contactor proposal, including:
 - Combustion fan size (in HP)
 - VFD control indicated on the spec. sheet or proposal
 - VFD Manufacturer

The following documentation must be submitted after installation:

- Final invoice (of the installing contractor or equipment vendor).

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
New Burner Combustion Fan VFD	Fan HP	\$80.00

STEAM TRAPS

Replacement of existing steam traps. Steam traps remove excess condensate from steam lines and prevent steam leakage to the condensate system. Older steam traps are prone to steam leakage due to factors such as corrosion, erosion, and deposits on the steam trap orifice and valve.

Eligibility Requirements

New industrial steam traps must replace, one-for-one, existing failed steam traps. If the facility is a commercial or institutional end-use (non-industrial), existing traps must be either failed or at least six (6) years old to be eligible. New construction projects are not eligible for this measure. For systems exceeding 15 psig contact Enovity for a customized solution.

Required Documentation

The following documentation must be submitted before installation:

- Manufacturer's specification sheet for new trap(s).
- Scope of work indicating the quantity of steam traps to be replaced.
- Industrial facilities: Recent steam trap inspection report, if available.

The following documentation must be submitted after installation:

- Final Invoice (of the installing contractor or equipment vendor).

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
Commercial Steam Traps ≤ 15 psig	Unit	\$50.00
Industrial Steam Traps ≤ 15 psig	Unit	\$100.00

PIPE INSULATION

This measure applies to the addition of insulation to existing bare (un-insulated) hot water or low-pressure (15 psig or less) steam pipes that are connected to gas-fired boiler equipment. Customers adding insulation to pipes that carry medium- or high-pressure steam should not apply for this measure, but instead apply for a calculated incentive under the Boiler Efficiency Program. Contact a Program representative or visit www.BoilerEnergyEfficiency.com for more information.

Eligibility Requirements

Only bare (un-insulated), pipes that transfer fluid directly from (or back to) gas-fired boiler equipment in existing commercial and industrial facilities are eligible (including condensate return pipes). Fluid temperature within pipe must be at least 120°F and not more than 250°F. Minimum pipe diameter to qualify is 1". Insulation thickness must be either 1" or 2". Insulation material must be fiberglass, foam, or calcium silicate.

Required Documentation

The following documentation must be submitted before installation:

- Temperature of fluid (by pipe insulation thickness added).
- Product specifications, including:
 - Manufacturer name
 - Insulation material (e.g., fiberglass, foam or calcium silicate)
 - Material k-value rating
 - Insulation thickness (one or two inches)
- Scope of work, including:
 - Pipe diameter
 - Length of bare pipe insulated by insulation thickness

The following documentation must be submitted after installation:

- Retail vendor or installing contractor's final invoice.

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
1" Pipe Insulation, Hot Water 120 - 200°F	Linear Foot	\$2.00
2" Pipe Insulation, Hot Water 120 - 200°F	Linear Foot	\$3.00
1" Pipe Insulation, Low Pressure (< 15 psig) steam 200 - 250°F	Linear Foot	\$3.00
2" Pipe Insulation, Low Pressure (< 15 psig) steam 200 - 250°F	Linear Foot	\$4.00

TANK INSULATION

Addition of insulation to bare (un-insulated) tanks that are connected to gas-fired boiler equipment. This measure only applies to tanks that contain low- and medium-temperature solutions (200°F or less). Customers adding insulation to tanks that contain high-temperature solutions (more than 200°F) should not apply for this measure, but instead apply for a calculated incentive under the Boiler Efficiency Program. Contact a Program representative or visit or visit www.BoilerEnergyEfficiency.com for more information.

Eligibility Requirements

Only existing bare tanks that are used for the storage or transfer of liquid or solution and are coupled to gas-fired boiler equipment that transfers heat to the liquid or solution are eligible.

Insulation thickness must be either 1" or 2". Insulation material must be either fiberglass or foam.

Required Documentation

The following documentation must be submitted before installation:

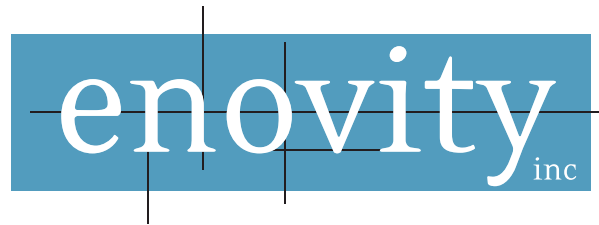
- Temperature of solution.
- Product specifications, including:
 - Manufacturer name
 - Insulation material (e.g., fiberglass or foam)
 - Material k-value rating
 - Insulation thickness (one or two inches)
- Dimensions or square footage of bare tank surface area.
 - Area of the side = $(2 * \pi * r) * h$
 - Area of the top = $\pi * r^2$

The following documentation must be submitted after installation:

- Retail vendor or installing contractor's final invoice.

Rebate Amount

Description	Unit of Measure (UOM)	Rebate per UOM
1" Tank Insulation, Low Temperature 120 – 170°F solution	Square Foot	\$2.00
2" Tank Insulation, Low Temperature 120 – 170°F solution	Square Foot	\$3.00
1" Tank Insulation, Medium Temperature 170 – 200°F solution	Square Foot	\$3.00
2" Tank Insulation, Medium Temperature 170 – 200°F solution	Square Foot	\$4.00



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Enovity Inc.

Main Office

100 Montgomery St, Suite 600
San Francisco, CA 94104

415.974.0390 x148 *voice*
415.974.0399 *fax*

BoilerEfficiency@enovity.com *email*
www.boilerenergyefficiency.com



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