



# Wrap Up Energy Savings with Pipe Insulation

## Our easy pipe insulation program offers big rebates and fast paybacks with rebates that cover up to 60% of the project cost

We offer the following prescriptive rebates for our business natural gas customers installing new or replacement insulation on existing piping for commercial heating systems. Insulation installed on new piping is not eligible. Commercial systems used for space heating and water heating account for 20%–64% of energy costs. Other heating load (such as humidification, swimming pools, laundry, kitchen, industrial processes or other uses) is an additional large load. Insulation installed on non-commercial systems or on pipes larger than 12" in diameter may qualify for our Custom Efficiency rebates, which require preapproval prior to purchase and installation.

### Suggested actions to save:

- Conduct a survey of your steam distribution and condensate return piping. (If you need to hire this out, or need help identifying opportunities, we offer an energy assessment which can provide guidance in how to move forward with energy efficiency improvements for your facility.)
- Insulate pipes with no insulation or replace damaged insulation and apply for a cash rebate.



Pipe diameter	Average fluid temp: 105°F – 200°F		Average fluid temp: 201°F – 250°F		Average fluid temp: 251°F – 350°F	
	Minimum insulation thickness	Rebate \$/ft*	Minimum insulation thickness	Rebate \$/ft*	Minimum insulation thickness	Rebate \$/ft*
0.5" to < 1.0"	1.0"	\$5	1.5"	\$6	2.0"	\$8
1.0" to < 1.5"	1.0"	\$5	1.5"	\$6	3.0"	\$8
1.5" to < 4.0"	2.0"	\$6	2.5"	\$8	4.5"	\$9
> 4.0"	2.0"	\$6	3.0"	\$8	4.5"	\$9

Pipe diameter (inches)	Linear feet of insulation	Thickness of insulation (inches)	Average fluid temperature	Pipe use	Existing insulation being replaced	Pipe location	Process load %**	Rebate \$/feet (from chart above)	Total rebate
	_____ ft		_____ °F	<input type="checkbox"/> Space heating <input type="checkbox"/> Domestic hot water <input type="checkbox"/> Both	<input type="checkbox"/> Repaired <input type="checkbox"/> Did not exist	<input type="checkbox"/> Inside <input type="checkbox"/> Outside	_____ %		

To calculate the pipe insulation rebate, use the following calculation:

Pipe diameter inches x linear feet x rebate amount = total pipe insulation rebate.

Pipe insulation rebates are available for adding insulation to existing bare pipe or replacing damaged existing insulation. Insulating new pipes is not eligible. Other pipe insulation rebates may be available through Custom Efficiency, which requires preapproval prior to purchase and installation. If the information varies throughout the system, please provide requested information for each variation. Attach an additional sheet if needed.

\*These rebate amounts apply to invoices dated on or after 10/1/17. For invoices prior to this date, refer to the 2017 Heating Efficiency rebate application.

\*\*Process load is defined as the percentage of natural gas used for anything other than space heating and domestic hot water heating — such as manufacturing, industrial, and commercial processes. Boilers with greater than 30% process load must apply for Custom Efficiency rebates, which require preapproval prior to purchase and installation.

**Why insulate?**

From the U.S. Department of Energy: Uninsulated distribution and condensate return lines are a constant source of wasted energy. The table shows typical heat loss from uninsulated steam distribution lines. Insulation can typically reduce energy losses by 90% and help ensure proper steam pressure at plant equipment. Any surface over 120°F should be insulated, including boiler surfaces, steam and condensate return piping, and fittings.

Insulation frequently becomes damaged or is removed and never replaced during steam system repair.

**Avoid energy waste:**

- Damaged or wet insulation should be repaired or replaced immediately to avoid compromising the insulation value.
- Eliminate sources of moisture prior to insulation replacement. Leaks from valves, external pipes, tubes or adjacent equipment can cause wet insulation.
- After steam lines are insulated, changes in heat flows can influence other parts of the steam system.

**Benefits of commercial and industrial insulation**

- Conserves energy by reducing heat loss or gain
- Controls surface temperatures for personnel protection and comfort
- Facilitates temperature control
- Prevents condensation on cold surfaces
- Controls noise

Source: NAIMA (North American Insulation Manufacturers Association)

**Savings potential**

Heat loss per 100 feet of uninsulated steam line				
Distribution line diameter, inches	Heat loss per 100 feet of uninsulated steam line, MMBtu/yr			
	Steam pressure, psig			
	15	150	300	600
1	140	285	375	495
2	235	480	630	840
4	415	850	1,120	1,500
8	740	1,540	2,030	2,725
12	1,055	2,200	2,910	3,920

Based on horizontal steel pipe, 75°F ambient air, no wind velocity, and 8,760 operation hours per year. Source: U.S. Department of Energy: [https://energy.gov/sites/prod/files/2014/05/f16/steam2\\_insulate.pdf](https://energy.gov/sites/prod/files/2014/05/f16/steam2_insulate.pdf)