MISSOURI DEPARTMENT OF ECONOMIC DEVELOPMENT
DIVISION OF ENERGY – ENERGY LOAN PROGRAM

PIPE INSULATION WORKSHEET

BUILDING	LOCATION	DATE

To estimate the savings of adding insulation to the outside of heat distribution pipes, the following information must be known:

The interior pipe diameter.

The total length (feet) of pipe to be insulated.

The pipe fluid temperature (°F).

The pipe room temperature (°F).

The hours of use per day.

Bare pipe heat loss factor (use Heat Loss Factor Table).

Thickness of added insulation.

Insulated pipe heat loss factor (use Heat Loss Factor Table).

Heating plant efficiency (in percent).

The energy cost ($/million Btu).

SAVINGS CALCULATIONS

1. Enter the bare pipe heat loss factor ..... _____
2. Enter the insulated pipe heat loss factor ..... _____
3. Subtract line 2 from line 1 ..... _____
4. Enter the pipe fluid temperature (°F) ..... _____
5. Enter the pipe room temperature (°F) ..... _____
6. Subtract line 5 from line 4 ..... _____
7. Enter the total length (feet) of pipe to be insulated ..... _____
8. Enter the hours of use per year ..... _____
9. Multiply line 3 by line 6 by line 7 by line 8 then divide by 1,000,000 ..... _____
10. Enter the heating plant efficiency (percent divided by 100) ..... _____
11. Divide line 9 by line 10 ..... _____
12. Enter the energy cost ($/million Btu) ..... _____

ANNUAL SAVINGS

13. Multiply line 11 by line 12 ..... $_____/year

PROJECT COST

14. Enter the total cost to insulate the pipe including material, labor and design ..... $_____

SIMPLE PAYBACK

15. Divide line 14 by line 13 ..... _____years

DESCRIPTION PAGE

Pipe Insulation Energy – Conservation Measure

Describe the existing system and the proposed energy-conservation measure (use additional sheets if necessary):

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HEAT LOSS FACTOR TABLE

(REFERENCE FOR PIPE INSULATION WORKSHEET 780-1362)

INTERIOR PIPE DIAMETER	BARE PIPE FACTOR	INSULATED PIPE FACTOR						
		INSULATION THICKNESS (INCHES)						
		½	¾	1	1 ¼	1 ½	1 ¾	2
½	0.63	0.163	0.135	0.116		0.105	0.098	0.091		0.086
¾	0.76	0.191	0.155	0.135		0.120	0.110	0.103		0.096
1	0.93	0.211	0.179	0.153		0.136	0.125	0.115		0.108
1 ¼	1.14	0.263	0.210	0.	178	0.158	0.143	0.132		0.122
1 ½	1.27	0.287	0.232	0.	194	0.172	0.154	0.142		0.132
2	1.53	0.345	0.271	0.229		0.198	0.178	0.163		0.151
2 ¼	1.87	0.425	0.352	0.	270	0.237	0.210	0.190		0.175
3	2.15	0.487	0.368	0.309		0.251	0.214	0.211		0.195
4	2.65	0.600	0.447	0.375		0.305	0.279	0.252		0.231
5	3.20	0.663	0.500	0.407		0.346	0.305	0.271		0.245
6	3.70	0.852	0.628	0.536		0.432	0.379	0.341		0.305
8	4.75	1.090	0.828	0.650		0.549	0.486	0.433		0.388
10	5.75	1.341	0.990	0.778		0.678	0.580	0.511		0.457
12	6.75	1.550	1.152	0.920		0.802	0.664	0.604		0.541