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INTERNATIONAL ASSOCIATION OF
Heat & Frost Insulators & Allied Workers
Local 24
Baltimore-Washington, DC

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Laurel, MD 20707
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February 4, 2022

Maryland Senate
Budget and Taxation Committee
Chair: Guy Guzzone
Vice Chair: Jim Rosapepe

TESTIMONY IN SUPPORT OF SB 314
Income Tax – Mechanical Insulation Installation Tax Credit

Heat and Frost Insulators & Allied Workers Local 24
Brian S Cavey, Business Manager
brian.cavey@insulators24.org

Chairman Guzzone, Vice Chair Rosapepe and members of the committee, I respectfully submit this testimony in support of SB314

Energy usage has become one of the defining issues of the United States. Industrial and commercial buildings consume 40 % of the energy used on this continent. Properly installed mechanical insulation can increase system efficiency by as much as 80% or more. Mechanical insulation technology reduces the carbon footprint, fuel consumption, greenhouse gas emissions, and is sustainable. Mechanical insulation is defined as materials applied to mechanical services for the purpose of retarding the flow of heat energy. The heat flow retardation can be from hot systems to cooler air surrounding the system or from cold systems gaining heat from the hotter air surrounding the system. No other technology can produce the results toward these goals better and faster than mechanical insulation.

When calculating heat loss data, mechanical insulation pays for itself within four to twelve months on average. Yes, months not years. Mechanical insulation is ready now to perform; it does not require long-term research and new technology. Mechanical Insulation is the original green technology. No other technology can boast the results offered by mechanical insulation.

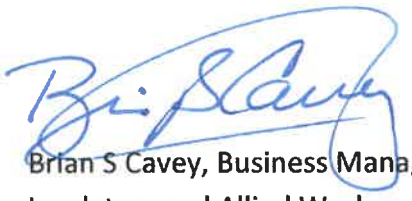
Despite the belief that it is not an "exciting" subject, it is essential to begin thinking differently about mechanical insulation and the value it can provide. During construction of a new facility, it could be dangerous to consider mechanical insulation under "economic thickness"

calculations, given that energy prices have risen substantially over the last 10 to 20 years. Original cost assumptions may change as energy has become more expensive. Furthermore, value engineering mechanical insulation almost always means compromising the insulation thickness, changing the materials or system (a cheaper substitute), or eliminating the insulation. The problem with this is that with insulation reduced, the equipment works harder, thus increasing operating costs and decreasing the equipment's operating life. Nevertheless, this practice of value engineering to reduce initial construction has been real for years, and now building are less efficient because of it. We can change that! We can make building more efficient and drastically lower the carbon emissions by repairing, replacing or upgrading missing and damaged insulation.

Mechanical insulation is one of the best-kept secrets in energy efficiency, and we need to turn it into one of the first things people think about when they want to save money. It not only saves energy but reduces greenhouse gas emissions and extends the life of equipment. The numbers speak for themselves. We just need to get the word out!

We urge a favorable vote on this legislation. Thank you for your time and consideration.

Sincerely and Respectfully,



Brian S Cavey, Business Manager
Insulators and Allied Workers Local 24

*See attached documentation of two insulation energy audits that verify the energy savings and emission reduction mechanical insulation provides

*Watch: https://www.youtube.com/watch?v=P11YCbInvNU

EXHIBIT A

MITAGS-PMI

MARITIME INSTITUTE OF TECHNOLOGY & GRADUATE STUDIES / PACIFIC MARITIME INSTITUTE

MITAGS Insulation Energy Audit

Prepared for: The Maritime Institute of Technology and Graduate Studies

By: Brian S Cavey

November 11, 2016

Building Operations Manager
MITAGS
692 Maritime Boulevard
Linthicum Heights, MD 21090

Dear Operations Manager,

Please find enclosed the MITAGS Insulation Energy Appraisal for Room R-033 within the building at 692 Maritime Blvd in Linthicum Heights, MD. The appraisal evaluates and recommends energy saving opportunities through mechanical insulation. The appraisal provides estimated projects cost, savings and expected payback periods. The details in this report are based on an evaluation of energy consumption and an evaluation of the existing building systems and their operation at the time we conducted the appraisal.

We have developed an approach to identifying and recommending energy conservation measures of the mechanical insulation systems which provides short payback periods; this approach best positions the building against future increases in energy usage, more consistent budgeting of energy usage in the affected areas and cost reductions in both energy usage and equipment maintenance and repair. By implementing the recommended conservation measures you will experience significant energy reductions, cost savings and improved system performance, with an exceptional ROI. In addition, the measures recommended will help to improve building comfort levels, reduce potential employee heat stress issues and provide better working conditions for employees working in the affected areas.

This appraisal was performed and reviewed by Certified Insulation Energy Appraisers. The National Insulation Association's Growing the Insulation Industry Committee created the Insulation Energy Appraisal Program (IEAP). The IEAP is a major industry initiative designed to give facility/energy managers a better understanding of the true dollar and performance value of an insulated system. The program is a tool that quantifies the amount of energy and actual dollars a facility is losing with its current in-place insulation system, and-as mentioned previously-demonstrates the real-world benefits of a more efficient system.

We trust this Energy Appraisal meets with your approval and acceptance.

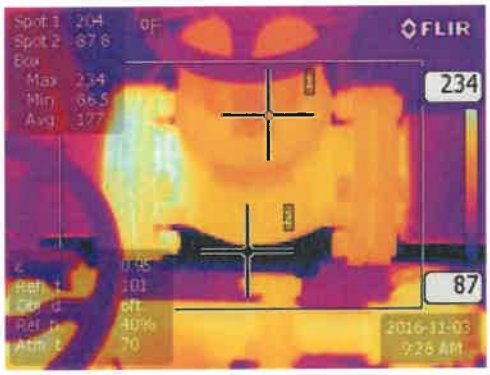
Energy Savings Calculations

MITAGS – Mechanical Room, R-033

Low Pressure Steam System

The following calculations for the low pressure steam system are based on following criteria

- System Operating Temperature is approximately 235°
- System fuel – Natural Gas
- Fuel costs - $3.641/Mcf
- System operates full time – 8320 hours per year



Low Pressure Steam Valve		Emittance of Surface	0.90
Operating Temperature, *F	±235°	Expected Useful Life of Insulation System	20 yrs.
Ambient Temperature, *F	104	Operating hours per year	8320
Insulation selected	Fiberglass	Efficiency of fuel Conversion%	80
		Selected fuel	Natural Gas
		Cost of Fuel,$/Mcf	3.641

Low Pressure Steam valve, 3", no insulation.

Recommendation: Insulate Valve with 1 ½" Fiberglass Pipe Insulation results in reduced surface temperature to 114°, reducing Heat Loss by 1,590 Btu per hour and reducing the annual cost by $58.63 per year with an ROI of approximately 17 months. Applying insulation to this valve will also reduce the CO2 emissions by .889 MT/year.

Results

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO_2 Emissions (MT/yr)
0	235	1745	$64.34	$0.00	NA	NA	0.97
0.5	129	334	$12.30	$70.20	16	74%	0.18
1	119	214	$7.90	$77.73	17	73%	0.12
1.5	114	155	$5.71	$85.26	17	69%	0.09

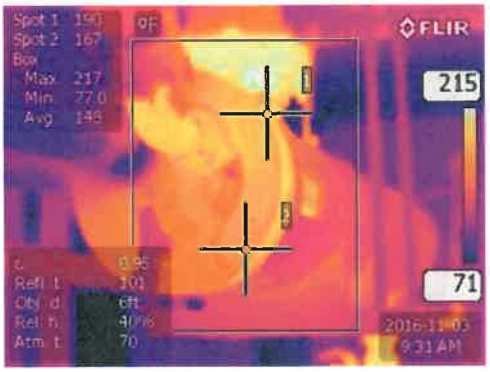
Energy Savings Calculations

MITAGS – Mechanical Room, R-033

Low Pressure Steam System

The following calculations for the low pressure steam system are based on following criteria

- System Operating Temperature is approximately 235°
- System fuel – Natural Gas
- Fuel costs - $3.641/Mcf
- System operates full time – 8320 hours per year



Heat Exchasnger		Emittance of Surface	0.90
Operating Temperature, *F	±235°	Expected Useful Life of Insulation System	20 yrs.
Ambient Temperature, *F	104	Operating hours per year	8320
Insulation selected	Fiberglass	Efficiency of fuel Conversion%	80
		Selected fuel	Natural Gas
		Cost of Fuel,$/Mcf	3.641

Heat Exchanger, no insulation on head; damaged insulation on body.

Recommendation: Insulate head of heat exchanger and replace insulation on body with 1 ½" Fiberglass Pipe Insulation; heat exchanger requires a total of 28 sq ft of insulation. Application of insulation results in reduced surface temperature to 95.5°, reducing Heat Loss by 510 Btu per hour and reducing the annual cost by $18.80 per year per sq ft with an ROI of approximately 23.5 months. Applying insulation to this valve will also reduce the CO2 emissions by .28 MT/year per sq ft..

Results

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO_2 Emissions (MT/yr)
0	234.8	544	$20.06	$0.00	NA	NA	0.3
1	103	64	$2.35	$35.55	24.1	50%	0.04
1.5	95.5	44	$1.64	$36.03	23.5	51%	0.02
2	91.3	34	$1.26	$36.51	23.3	51%	0.02

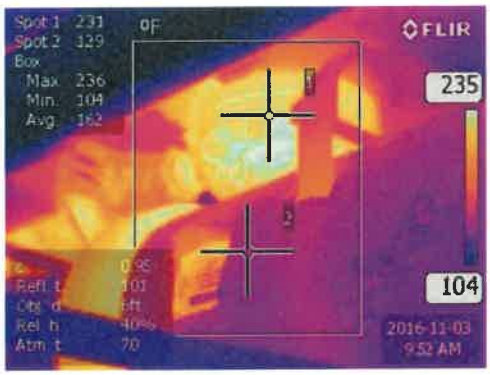
Energy Savings Calculations

MITAGS – Mechanical Room, R-033

Low Pressure Steam System

The following calculations for the low pressure steam system are based on following criteria

- System Operating Temperature is approximately 235°
- System fuel – Natural Gas
- Fuel costs - $3.641/Mcf
- System operates full time – 8320 hours per year



Low Pressure Steam Flange		Emittance of Surface	0.90
Operating Temperature, *F	±235°	Expected Useful Life of Insulation System	20 yrs.
Ambient Temperature, *F	104	Operating hours per year	8320
Insulation selected	Fiberglass	Efficiency of fuel Conversion%	80
		Selected fuel	Natural Gas
		Cost of Fuel,$/Mcf	3.641

Low Pressure Steam Flange, 3", no insulation.

Recommendation: Insulate Valve with 1 ½" Fiberglass Pipe Insulation results in reduced surface temperature to 115°, reducing Heat Loss by 531 Btu per hour and reducing the annual cost by $19.55 per year with an ROI of approximately 17 months. Applying insulation to this valve will also reduce the CO2 emissions by ..29 MT/year.

Results

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO_2 Emissions (MT/yr)
0	235	582	$21.45	$0.00	NA	NA	0.32
0.5	131	110	$4.06	$23.40	16	74%	0.06
1	120	71	$2.61	$25.91	17	73%	0.04
1.5	115	51	$1.90	$28.42	17	69%	0.03

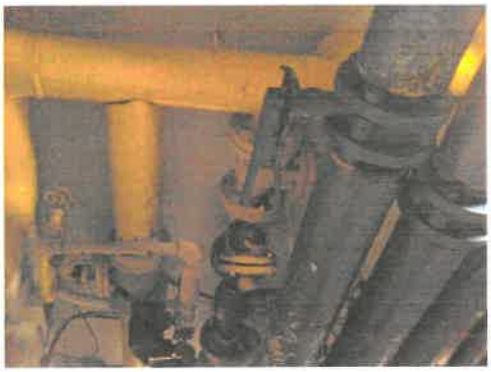
Energy Savings Calculations

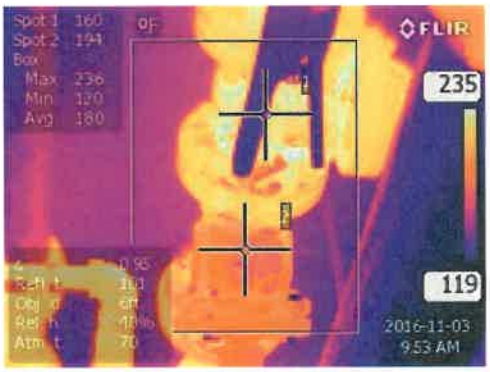
MITAGS – Mechanical Room, R-033

Low Pressure Steam System

The following calculations for the low pressure steam system are based on following criteria

- System Operating Temperature is approximately 235°
- System fuel – Natural Gas
- Fuel costs - $3.641/Mcf
- System operates full time – 8320 hours per year





Low Pressure Steam Valve and Strainer	
Operating Temperature, *F	±235°
Ambient Temperature, *F	104
Insulation selected	Fiberglass

Emittance of Surface	0.90
Expected Useful Life of Insulation System	20 yrs.
Operating hours per year	8320
Efficiency of fuel Conversion%	80
Selected fuel	Natural Gas
Cost of Fuel,$/Mcf	3.641

Low Pressure Steam valve and strainer, 3", no insulation.

Recommendation: Insulate Valve with 1 ½" Fiberglass Pipe Insulation results in reduced surface temperature to 115°, reducing Heat Loss by 3,182 Btu per hour and reducing the annual cost by $117.31 per year with an ROI of approximately 17 months. Applying insulation to this valve will also reduce the CO2 emissions by .1.76 MT/year.

Results

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO_2 Emissions (MT/yr)
0	235	3490	$128.68	$0.00	NA	NA	1.93
0.5	131	660	$24.33	$140.40	16	74%	0.37
1	120	426	$15.69	$155.46	17	73%	0.24
1.5	115	308	$11.37	$170.52	17	69%	0.17

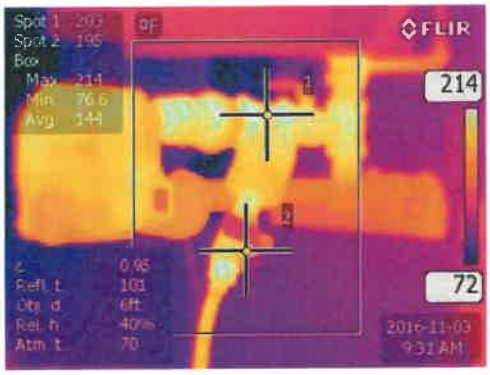
Energy Savings Calculations

MITAGS – Mechanical Room, R-033

Low Pressure Steam System

The following calculations for the low pressure steam system are based on following criteria

- System Operating Temperature is approximately 235°
- System fuel – Natural Gas
- Fuel costs - $3.641/Mcf
- System operates full time – 8320 hours per year



Low Pressure Steam Trap piping	
Operating Temperature, *F	±235°
Ambient Temperature, *F	104
Insulation selected	Fiberglass

Emittance of Surface	0.90
Expected Useful Life of Insulation System	20 yrs.
Operating hours per year	8320
Efficiency of fuel Conversion%	80
Selected fuel	Natural Gas
Cost of Fuel,$/Mcf	3.641

Low Pressure Steam Trap, 2", no insulation.

Recommendation: Insulate Valve with 1 ½" Fiberglass Pipe Insulation results in reduced surface temperature to 112°, reducing Heat Loss by 911 Btu per hour and reducing the annual cost by $33.59 per year with an ROI of approximately 17 months. Applying insulation to this valve will also reduce the CO2 emissions by .50 MT/year.

Results

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO_2 Emissions (MT/yr)
0	235	1002	$36.95	$0.00	NA	NA	0.55
0.5	127	201	$7.40	$62.56	25	47%	0.11
1	115	119	$4.38	$72.56	27	45%	0.07
1.5	112	91	$3.36	$82.56	29	41%	0.05

Estimated Calculations supplied by National Institute of Building Sciences Mechanical Insulation Energy Calculator ©

Thank you for taking the time to allow us to introduce you to a sample appraisal to provide you with a glimpse of the potential savings that could be achieved by evaluating and properly insulating the mechanical systems in your facility. While the enclosed report is but a sample of the savings that would be achieved in one mechanical room, we have quantified energy loss, calculated potential energy savings as well as reductions in greenhouse gas emissions by utilizing Infrared / Digital Photography and State of the Art Energy Appraisal Software.

Clarifications

The preceding information does not include any allowance incentives, for emission reductions, nor does it include the following additional advantages to you of upgrading your mechanical insulation systems as recommended:

a. Potential tax benefits and credits from energy conservation investments
b. Enhanced personnel protection, noise control and fire safety
c. Condensation prevention and freeze protection
d. Reduced corrosion potential
e. Reduced equipment wear and tear
f. Reduced ongoing insulation maintenance expense
g. Improved process flows
h. More attractive and comfortable working environment

Mechanical Insulation is applied as a safeguard to protect personnel from burns. Insulation is used to reduce ambient temperatures to prevent personnel from working under stressful high temperature conditions. "*ASTM Standard Practice C 1057*" contains a Standard Practice for Determination of Skin Contact Temperature from heated surfaces. The Standard Industry Practice is to use 140°F as the maximum temperature of a heated surface that may be contacted by working personnel.

Design of Insulation Systems is a process that must utilize numerous criteria to determine the best materials, applications and temperature changes. We have evaluated the mechanical systems and the design requirements in order to provide solutions to best integrate the often conflicting demands of initial investment, durability, value and life cycle costs. We have tried to minimize the variation of temperature in processes and to minimize energy use.

Damaged / Inadequate Insulation

While we evaluated but a small area of the facility, the energy loss due to damaged / inadequate insulation in the facility appears to be significant. Due to the age of the systems, the frequent cycling of HVAC systems, the areas humidity levels and the physical abuse some of these systems have endured, a high percentage of the System Insulation is compromised to the point that it should be replaced. There are places in the facility where the insulation has been removed and has not been replaced. We <u>did not</u> include the energy savings from damaged insulation in any of our calculations.

If you were to choose to conduct a complete facility appraisal we would utilize information provided by your engineering staff including heating and cooling set points, process temperatures, total annual hours of operation, scheduled down times, type of energy used, cost of energy, facility design, HVAC system function and design, business functions and energy conservation strategies to provide a complete evaluation of the mechanical system insulation in your facility. Our report would include this information in conjunction with our expertise and training in analyzing and verifying with thermographs, installed material uses, wind velocities, area weather data, design and relative humidity values as well as facility, mechanical, and equipment geometries to evaluate the existing conditions at the Maritime Institute of Technology and Graduate Studies.

After completing our interview with the facility/ energy manager and other engineering staff, we will review the facility layout system integration and will then conduct a comprehensive walk-through of the facility. We use thermographs to differentiate differences in temperature (Δt) and to pinpoint underlying problems in energy usage. From this data, in conjunction with a visual survey, we will produce a comprehensive report to provide you with a wealth of detailed information about the locations, causes and extent of problems, potential solutions and calculation of available savings. After obtaining site specific data we will perform calculations, evaluate current and potential energy conservation measures, and then compile a comprehensive, detailed report with recommendations to reduce energy costs, to improve energy efficiency and reduce the carbon footprint. Our final reports will provide you vital information to determine energy loss patterns and potential fuel cost savings in both dollars and Btu's to reveal hidden problems, helping you determine the next course of action.

A thorough inspection of Mechanical Room R-033 revealed a large amount of missing and damaged insulation. The examples on the previous pages show the cost and fuel savings by adding insulation to uninsulated piping and equipment while also greatly reducing the CO2 emissions produced when using excessive amounts of energy because of the lack of insulation.

While inspecting the room, we found uninsulated: 7 valves/strainers, 4 flanges, some other miscellaneous fittings and equipment and a significant amount of bare piping. The examples on the previous pages include 2 valves, 1 strainer, 1 flange, 1 piece of equipment and a small amount of uninsulated piping. The savings from insulating just the items in the examples are significant with heat loss savings of 20,494 Btu/h and cost saving of $755.48 per year. These examples account for approximately a quarter of the uninsulated items in Room R-033 leaving you with anticipated savings of over $3,321 per year should you choose to apply the missing insulation.

We welcome the opportunity to meet with you to review and explain any questions you have concerning the attached report.

Sincerely yours,

Brian S Cavey, CIEA

EXHIBIT B

ST. VINCENT PALLOTTI
HIGH SCHOOL

Pallotti High School Insulation Energy Audit

Prepared for: St. Vincent Pallotti High School

By: Brian S Cavey

April 24, 2020

Building Operations Manager
St Vincent Pallotti High School
113 St Marys Pl
Laurel, MD 20707

Dear Operations Manager,

Please find enclosed the Insulation Energy Appraisal for Boiler Room within the building at 113 St Marys Pl, Laurel, MD 20707. The appraisal evaluates and recommends energy saving opportunities through mechanical insulation. The appraisal provides estimated projects cost, savings and expected payback periods. The details in this report are based on an evaluation of energy consumption and an evaluation of the existing building systems and their operation at the time we conducted the appraisal.

We have developed an approach to identifying and recommending energy conservation measures of the mechanical insulation systems which provides short payback periods; this approach best positions the building against future increases in energy usage, more consistent budgeting of energy usage in the affected areas and cost reductions in both energy usage and equipment maintenance and repair. By implementing the recommended conservation measures you will experience significant energy reductions, cost savings and improved system performance, with an exceptional ROI. In addition, the measures recommended will help to improve building comfort levels, reduce potential employee heat stress issues and provide better working conditions for employees working in the affected areas.

This appraisal was performed and reviewed by a Certified Insulation Energy Appraiser. The National Insulation Association's Growing the Insulation Industry Committee created the Insulation Energy Appraisal Program (IEAP). The IEAP is a major industry initiative designed to give facility/energy managers a better understanding of the true dollar and performance value of an insulated system. The program is a tool that quantifies the amount of energy and actual dollars a facility is losing with its current in-place insulation system, and-as mentioned previously-demonstrates the real-world benefits of a more efficient system.

We trust this Energy Appraisal meets with your approval and acceptance.

Thank you for taking the time to allow us to present you with this appraisal to provide you with a glimpse of the potential savings that could be achieved by evaluating and properly insulating the mechanical systems in your facility. While the enclosed report is but a sample of the savings that would be achieved in one mechanical room, we have quantified energy loss, calculated potential energy savings as well as reductions in greenhouse gas emissions by utilizing State of the Art Energy Appraisal Software.

Clarifications

The information does not include any allowance incentives for emission reductions, nor does it include the following additional advantages to you of upgrading your mechanical insulation systems as recommended:

a. Potential tax benefits and credits from energy conservation investments
b. Enhanced personnel protection, noise control and fire safety
c. Condensation prevention and freeze protection
d. Reduced corrosion potential
e. Reduced equipment wear and tear
f. Reduced ongoing insulation maintenance expense
g. Improved process flows
h. More attractive and comfortable working environment

Mechanical Insulation is applied as a safeguard to protect personnel from burns. Insulation is used to reduce ambient temperatures to prevent personnel from working under stressful high temperature conditions. *"ASTM Standard Practice C 1057"* contains a Standard Practice for Determination of Skin Contact Temperature from heated surfaces. The Standard Industry Practice is to use 140°F as the maximum temperature of a heated surface that may be contacted by working personnel.

Design of Insulation Systems is a process that must utilize numerous criteria to determine the best materials, applications and temperature changes. We have evaluated the mechanical systems and the design requirements in order to provide solutions to best integrate the often conflicting demands of initial investment, durability, value and life cycle costs. We have tried to minimize the variation of temperature in processes and to minimize energy use.

Damaged / Inadequate Insulation

While we evaluated the boiler system within the facility, the energy loss due to damaged / inadequate insulation to other systems appears to be noteworthy. Due to the age of the systems, the frequent cycling of HVAC systems, the areas humidity levels and the physical abuse some of these systems have endured, a high percentage of the System Insulation is compromised to the point that it should be replaced. There are places in the facility where the insulation has been removed and has not been replaced. We <u>did not</u> include the energy savings from damaged insulation in any of our calculations.

If you were to choose to conduct a complete facility appraisal we would utilize information provided by your engineering staff including heating and cooling set points, process temperatures, total annual hours of operation, scheduled down times, type of energy used, cost of energy, facility design, HVAC system function and design, business functions and energy conservation strategies to provide a complete evaluation of the mechanical system insulation in your facility. Our report would include this information in conjunction with our expertise and training in analyzing and verifying with thermographs, installed material uses, wind velocities, area weather data, design and relative humidity values as well as facility, mechanical, and equipment geometries to evaluate the existing conditions at the Maritime Institute of Technology and Graduate Studies.

After completing our interview with the facility operations manager, we will review the facility layout system integration and will then conduct a comprehensive walk-through of the facility. We use thermographs to differentiate differences in temperature and to pinpoint underlying problems in energy usage. From this data, in conjunction with a visual survey, we will produce a comprehensive report to provide you with a wealth of detailed information about the locations, causes and extent of problems, potential solutions and calculation of available savings. After obtaining site specific data we will perform calculations, evaluate current and potential energy conservation measures, and then compile a comprehensive, detailed report with recommendations to reduce energy costs, to improve energy efficiency and reduce the carbon footprint. Our final reports will provide you vital information to determine energy loss patterns and potential fuel cost savings in both dollars and Btu's to reveal hidden problems, helping you determine the next course of action.

A thorough inspection of the Boiler Room after the removal of the original asbestos insulation shows the cost and fuel savings by adding insulation to uninsulated piping and equipment while also greatly reducing the CO2 emissions produced when using excessive amounts of energy because of the lack of insulation.

While inspecting the room, we found uninsulated: 24 feet of 10" steam piping, 75 feet of 8" steam piping, 12 feet of 6" steam piping, 18 feet of 4" steam piping, 78 feet of 3 " steam piping, 9 feet of 2" steam piping, 75 feet of 1 ½" boiler feed piping and 63 feet of 1 ¼" boiler feed piping. The attached charts show the energy usage and CO2 emissions of uninsulated piping and insulated piping. It is recommended to use 2" thickness of fiberglass insulation on the steam piping and 1 ½" thickness of fiberglass insulation on the boiler feed piping. The savings from insulating the items are significant with heat loss savings of 502,137 Btu/h and cost saving of $11,076.06 per year. Insulators and Allied Workers Local 24 Joint Apprenticeship Program will be donating the insulation and labor to insulate all of the piping in this report during the 2020 apprenticeship school saving Pallotti High School approximately $11,500 in costs. Using this cost, a return on investment of the insulation would be slightly less than one year.

We welcome the opportunity to meet with you to review and explain any questions you have concerning the attached report.

Sincerely yours,

Brian S Cavey, CIEA

10" steam piping (per foot)

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO2 Emissions (MT/yr)
0	349	3298	$73.06	$0.00	NA	NA	1.14
1	104	256	$5.67	$38.27	7	176%	0.09
1.5	93	169	$3.73	$44.61	8	155%	0.06
2	89	135	$2.98	$52.75	9	133%	0.05

8" steam piping (per foot)

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO2 Emissions (MT/yr)
0	349	2784	$61.67	$0.00	NA	NA	0.96
1	101	200	$4.43	$33.78	7	169%	0.07
1.5	92	144	$3.20	$38.79	8	151%	0.05
2	88	115	$2.55	$44.17	9	134%	0.04

6" steam piping (per foot)

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO2 Emissions (MT/yr)
0	349	2283	$50.58	$0.00	NA	NA	0.79
1	100	168	$3.73	$28.61	7	164%	0.06
1.5	92	120	$2.66	$33.13	8	145%	0.04
2	87	93	$2.06	$38.22	9	127%	0.03

4" steam piping (per foot)

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO2 Emissions (MT/yr)
0	349	1723	$38.16	$0.00	NA	NA	0.6
1	95	113	$2.51	$22.76	8	157%	0.04
1.5	88	84	$1.87	$26.55	9	137%	0.03
2	85	69	$1.53	$31.55	10	116%	0.02

3" steam piping (per foot)

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO2 Emissions (MT/yr)
0	349	1443	$31.96	$0.00	NA	NA	0.5
1	93	95	$2.11	$21.42	9	139%	0.03
1.5	87	70	$1.55	$25.04	10	121%	0.02
2	84	58	$1.28	$28.87	11	106%	0.02

2" steam piping (per foot)

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO2 Emissions (MT/yr)
0	349	1107	$24.53	$0.00	NA	NA	0.38
1	90	70	$1.55	$19.47	10	118%	0.02
1.5	85	53	$1.17	$22.49	12	104%	0.02

1 ½" boiler feed (per foot)

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO2 Emissions (MT/yr)
0	200	404	$8.96	$0.00	NA	NA	0.14
1	81	23	$0.52	$16.75	24	50%	0.01
1.5	79	18	$0.40	$19.55	27	44%	0.01

1 ¼" boiler feed (per foot)

Thickness (inches)	Surface Temp (°F)	Heat Loss (Btu/h)	Cost of Fuel ($/yr)	Installed Cost ($)	Payback (months)	Annual Return	CO2 Emissions (MT/yr)
0	200	372	$8.23	$0.00	NA	NA	0.13
1	81	23	$0.51	$16.13	25	48%	0.01
1.5	78	16	$0.35	$19.43	30	41%	0.01

SB 314 - Mechanical Insulation Installation Tax.pd
Uploaded by: Donna Edwards
Position: FAV

MARYLAND STATE & D.C. AFL-CIO

AFFILIATED WITH NATIONAL AFL-CIO

7 School Street • Annapolis, Maryland 21401-2096

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President
Donna S. Edwards

Secretary-Treasurer
Gerald W. Jackson

SB 314 – Income Tax – Mechanical Insulation Installation Tax Credit
Senate Budget and Taxation Committee
February 8, 2022

SUPPORT

Donna S. Edwards
President
Maryland State and DC AFL-CIO

Chairman and members of the Committee, thank you for the opportunity to submit testimony in support of SB 314 – Income Tax – Mechanical Insulation Installation Tax Credit. My name is Donna S. Edwards, and I am the President of the Maryland State and District of Columbia AFL-CIO. On behalf of Maryland's 340,000 union members, I offer the following comments.

The clean energy economy of the future – that creates family-sustaining careers – cannot be achieved without a parallel focus on increasing energy efficiency. We need to retrofit buildings that have profligate energy usage, as well ensure that new construction is built with maximum efficiency in mind, and we need to do so with skilled labor that demands high standards.

SB 314 recognizes the importance of insulation in achieving our energy efficiency goals, by incentivizing businesses to install mechanical insulation on a commercial or industrial building with a credit against the State income tax for us to 30% of the cost. Moreover, it requires that, in order to receive this credit, those businesses must have the mechanical insulation installed meeting the minimum American Society of Heating, Refrigeration, and Air-Conditioning Engineers standard for insulation. Applying the credit to this rigorous standard ensures that we are not wasting taxpayer dollars on shoddy workmanship, and that our goal of increased energy efficiency can be met. But this standard does not only benefit the taxpayer, but also the business paying for the installation. They can be comforted in the fact that they are getting the highest quality installation, reducing their overall energy costs, while also realizing a 30% cost reduction.

This bill is good for our environment, for workers, for businesses, and for our communities, and **for these reasons we ask for a favorable report on SB 314.**

MBIA Letter of Support SB 314.pdf
Uploaded by: Lori Graf
Position: FAV

MARYLAND BUILDING INDUSTRY ASSOCIATION
11825 West Market Place | Fulton, MD 20759 | 301-776-6242

February 9, 2022

The Honorable Guy Guzzone
Senate Budget and Taxation Committee
Miller Senate Office Building,
3 West Wing 11 Bladen St.,
Annapolis, MD, 21401

RE: Support SB 314 Income Tax – Mechanical Insulation Installation Tax Credit

Dear Chairman Guzzone:

The Maryland Building Industry Association, representing 100,000 employees statewide, appreciates the opportunity to participate in the discussion surrounding **SB 314 Income Tax – Mechanical Insulation Installation Tax Credit**. MBIA **Supports** the Act in its current version.

This bill would allow a credit against the state income tax for the installation of Mechanical Insulation if the expense exceeds $10,000. MBIA respectfully supports this measure. Mechanical insulation provides a significant reduction in energy costs for buildings by reducing the heating and cooling requirements. The installation of more efficient insulation will help achieve Maryland's climate goals. Since this insulation has high initial costs, MBIA supports expanding access to it by allowing for a state tax credit that incentivizes its use. It crates long term cost reductions and MBIA supports expanding its use where possible.

For these reasons, MBIA respectfully requests the Committee give this measure a favorable report. Thank you for your consideration.

For more information about this position, please contact Lori Graf at 410-800-7327 or lgraf@marylandbuilders.org.

cc: Members of the Senate Budget and Taxation Committee

Written Testimony SB314.pdf
Uploaded by: Pete Ielmini
Position: FAV

Heat and Frost Insulators
Labor Management Cooperative Trust
9602 Martin Luther King Jr Hwy Lanham, MD 20706 Executive Director Pete Ielmini

Dear Maryland State Senator(s)

I wish to offer the opportunity to submit favorable testimony for the Senate Bill0314 **Mechanical Insulation Installation Tax Credit** on February 9, 2022. As the Executive Director of the Insulators Labor Management Cooperative Trust (LMCT), I have a particular interest with Maryland's various insulation businesses and contractors that offers a fiscal impact on the state's economy. The benefits of energy conservation and reduction of pollution will remain dormant unless there are realistic responsible fiscal rewards to drive this technology forward.

This tax credit will offer our contractors the ability to introduce this absolutely necessary technology that will save money with reduced spending in residential, commercial, and industrial markets. The taxpayer would clearly realize the additional, and larger, costs saving concepts by utilizing energy efficient technologies. Currently Labor-Management efforts are implemented to educate building owners about the benefits, which has offered some results but far from the potential. This tax credit would offer a tangible incentive to capture more opportunities. The tax savings would pale in comparison to reduced future cost of energy usage. Additionally, the state will exceed the lost revenue of the tax credit, by having increased employment of Maryland residents and increased commerce. Keep in mind, this work may not be performed if it was not otherwise for the initial monetary attraction of a tax credit.

Recently, Insulators Local 24 and their contractors promoted mechanical insulation with many building and business owners. They were successful in securing seven jobs which was far less than half of their efforts. This tax credit could be that game changer. Let us use the actual data from those jobs to illustrate how the tax incentive could benefit Maryland.

This is data was is combined of 7 jobs that were actually performed								
	Total Cost (60/30/10)*				Full MD Tax	Proposed MD		MD Sales
					% per hour	Tax Incentive		Tax
Hours	total cost	Labor	Material	overhead	$ 0.0795 Hr	70%	30%	6%
1100	$168,000	$100,800	$50,400	$16,800	$8,014	$5,610	$2,404	$3,024
24500	$2,979,000	$1,787,400	$893,700	$297,900	$142,098	$99,469	$42,629	$53,622
2158	$345,000	$207,000	$103,500	$34,500	$16,457	$11,520	$4,937	$6,210
7351	$876,000	$525,600	$262,800	$87,600	$41,785	$29,250	$12,536	$15,768
2963	$303,600	$182,160	$91,080	$30,360	$14,482	$10,137	$4,345	$5,465
26875	$2,860,000	$1,716,000	$858,000	$286,000	$136,422	$95,495	$40,927	$51,480
4620	$630,000	$378,000	$189,000	$63,000	$30,051	$21,036	$9,015	$11,340
69567	**$8,161,600**	**$4,896,960**	**$2,448,480**	**$816,160**	**$389,308**	**$272,516**	**$116,792**	**$146,909**

Maryland 70% Tax & Sales Tax received	$419,425
Traditional Maryland State Tax	$389,308
	Difference of
Maryland Tax Revenue Net Gain	**$30,116**

Table 1 * - Total cost breakdown will vary, this breakdown is for comparison only

As you can see, table #1 breaks down the amount of state revenue that would be received with and without the proposed tax incentive bill. It initially appears that the state lost $116,792 with the 30% reduction of revenue. However, it would gain an additional $146,900 in sales tax revenue from the purchase of material. Remember this example of projects would not exist if the tax incentive were not implemented. The state of Maryland would receive a gain revenue above the traditional state tax of $30,108.

The Maryland benefits do not stop there. Mechanical insulation rate of return is rather quick. A very conservative estimate would be 3 years, usually less but we will use 3 years. The first 3 years the cost of energy savings would return the amount of the original $8.1 million installation. That means there is a savings of $19 million over the next 10 years. Just imagine if those projects were state owned buildings, producing even more revenue for Maryland with only an investment of $117,000. The respective energy savings could be verified under various guidelines as established by the applicable documents and utilizing a program that was developed by the US Department of Energy known as the 3E Plus.

Let us now address employment creation. The typical mechanical insulator completes approximately 1800 hours a year. Using figure 1 as the example and considering these projects would not exist prior to the tax incentive was implemented. It would take about thirty-five workers to complete 69,500 hours of work. This just created 35 Maryland mechanical insulation careers, not just jobs, but good high paying careers that pay into Maryland's health and medical benefit programs and into a Maryland registered apprentice insulators program.

The Maryland mechanical insulation installation tax credit provides facility owners an incentive to increase new installations or maintenance of existing mechanical insulation systems by lowering their tax expense in the fiscal year. The proposed bill is no risk to Maryland tax revenue base as for the tax credit, it is more than compensated with the increased revenue of sale tax of the material. The additional net results for facility owners are provided a tax incentive to immediately create jobs to stimulate the economy while reducing energy consumption and carbon emissions. Mechanical insulation is a proven technology. It does not require research and development or engineering or design processes. The costs of implementing this tax credit bill other than normal administrative tasks is basically nil. The industry incurs the cost of construction or maintenance and is rewarded by tax incentive after completing the work.

Additionally, I have attached an example of a statewide survey that was conducted in Montana that you may find interesting. I also included a link that explains what a Mechanical Insulation Energy Audit is, with examples of such. Mechanical Insulation Energy Audits

Thank you again for you time, please to not hesitate to contact me with any concerns or questions.

Sincerely

Pete Ielmini

Executive Director
Insulators LMCT
Pielmini@insulatorsLMCT.org

SB 314 Mechanical Insulation Installation Tax Cred

Uploaded by: Barbara Wilkins

Position: INFO

LARRY HOGAN
Governor

BOYD K. RUTHERFORD
Lieutenant Governor

Maryland
DEPARTMENT OF BUDGET AND MANAGEMENT

DAVID R. BRINKLEY
Secretary

MARC L. NICOLE
Deputy Secretary

SENATE BILL 314 Income Tax - Mechanical Insulation Installation Tax Credit (Rosapepe)

STATEMENT OF INFORMATION

DATE: February 8, 2022

COMMITTEE: Senate Budget & Taxation

SUMMARY OF BILL:. SB 314 creates a nonrefundable income tax credit for up to 30% of the allowable costs incurred to install mechanical insulation on a commercial or industrial building. The credit is administered by the Maryland Energy Administration with a maximum of $5 million in tax certificates.

EXPLANATION: The Department of Budget and Management's focus is not on the underlying policy proposal being advanced by the legislation, but rather on the $5 million annual loss in General Fund revenues.

Fully funding the implementation of the Blueprint for Maryland's Future (Kirwan) will require fiscal discipline in the years ahead, if the State is to maintain the current projected structural budget surpluses. Mandated spending increases need to be reevaluated within the context of this education funding priority and the Governor's tax relief proposals.

Further, economic conditions remain precarious as a result of COVID-19. High rates of inflation and workforce shortages may be short lived or persist. While current budget forecasts project structural surpluses, the impact of the ongoing COVID-19 pandemic continues to present a significant budgetary vulnerability.

For additional information, contact Barbara Wilkins at
(410) 260-6371 or barbara.wilkins1@maryland.gov

SB0314 - LOI - Income Tax – Mechanical Insulation

Uploaded by: Landon Fahrig

Position: INFO

Maryland Energy Administration

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor
Mary Beth Tung, Director

TO: Members, Senate Budget & Taxation
FROM: Mary Beth Tung – Director, MEA
SUBJECT: SB 314 - Income Tax – Mechanical Insulation Installation Tax Credit
DATE: February 8, 2022

MEA POSITION: Letter of Information

Senate Bill 314 creates a new income tax credit administered by the Maryland Energy Administration (MEA) providing an incentive to install mechanical insulation in commercial and industrial properties. The bill requires additional staffing within MEA, creates certain administrative challenges, and may produce a free-ridership issue.

There is no dollar-amount limit on each individual tax credit certificate, meaning the amount of each credit could be quite large. The constraints proposed in the bill under subsection (f)(1) would not be calculated until after the MEA certificate is issued. This may lead to administrative inefficiencies.

The Mechanical Insulation Installation Tax Credit is available for "qualified expenses" in excess of $10,000, up to 30% of costs, and up to an aggregate total of $5 million for commercial and industrial projects. The credit is a fairly large percentage of total expenses (up to 30%), likely making it desirable.

Due to the expected magnitude of credits and volume of applicants, MEA anticipates that the annual cumulative credits will be at or near the aggregate limit of $5 million, reducing General Fund revenues by that same amount. Due to the anticipated volume of applicants, MEA cannot absorb the administration of the new credit.

Lastly, the bill may create free-ridership. COMAR 09.15.05.01 incorporates by reference the 2018 International Mechanical Code, and these standards appear to already require certain levels of mechanical insulation. Therefore, this bill would incentivise to some degree that which is already mandated for new construction in Maryland.

MEA thanks the committee for its consideration of this information.