CARBON GOALS— START NOW, IT'S EASIER THAN YOU THINK

SEICA Conference
Palm Beach, Aruba
June 23-25, 2024

Jack Bittner
NIA President

NIA | National Insulation Association®

THE VOICE OF THE INSULATION INDUSTRY™

Meet the Bittner Family…my Proudest Achievement!

I went from this…

to THIS!

Meet the Neighbors

Strength in Numbers

Similar to how a rope gains its strength by weaving together individual threads, each member company is stronger when it joins with the rest of the NIA membership. Together, a large, strong organization works to advance the insulation industry beyond the expectations of any one company.

Why is Insulation the “Forgotten Technology”?

- Reduced knowledge-base has led to underutilization
- Insulation systems being applied…but rarely “engineered” (We've always said this)
- Insulation gets “value engineered” in a project, which reduces the owners’ energy savings and the potential emissions reduction for the life of the building
- Insulation is typically a small part of a larger contract
- No gauges
- No monitoring
- No computer chip/app
- Insulation is not shiny and new

The Benefits Are Instantaneous
The Benefits Are Continuous

Unfortunately, they are invisible and are often taken for granted

Traditional Energy vs Emission Reduction Assessment

Where are We?

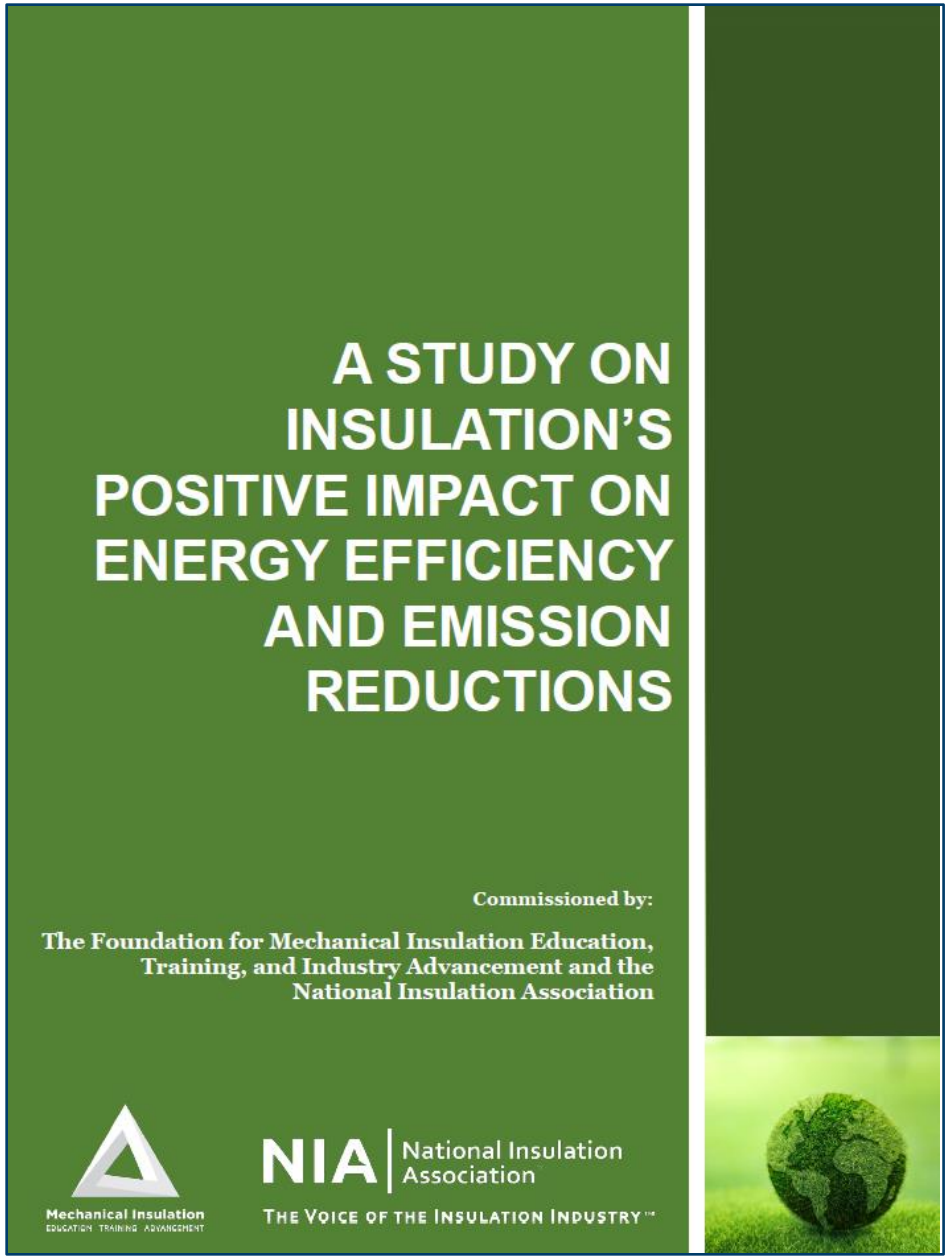
Better Climate CHALLENGE
U.S. DEPARTMENT OF ENERGY

Industrial GHG Emissions Reduction Audits and Assessments – Working Group Report Out Findings

Scope Criteria	Traditional Energy Assessments	Emission Reduction Assessment
Evaluation of fugitive and process ERMs	No	Yes
Payback periods/ ROI	Under 2-3 years for most ERMs, focusing on energy cost savings	May allow 5 or more years for high-impact ERMs, and may consider internal cost of carbon and/or indirect benefits of projects
Asset Lifetimes and Replacement Schedules	May be considered if known by plant staff	Considers equipment slated for replacement and impact of new fossil-fueled investments on a lifetime basis (alignment with decarbonization pathway)
Impact of renewables purchasing/ electrification	May consider electrification in terms of energy cost savings, with current grid emissions factors	Considers value of future emissions reduction as grid becomes greener, as well as energy cost savings over time
Sequencing of ERMs	No	Considers how phasing of ERMs affects impacts (e.g. efficiency may limit the need for renewables and/or free up capacity to electrify)

NOTED CHALLENGE

- Project approvals were noted as one of the biggest barriers to implementing ERMs, with multiple stages of review being challenging (i.e., legal, procurement, etc.) There is usually a disconnect between corporate-level expectations and plant-level ability to get projects across the finish line. Corporate teams working on implementation are stretched thin, resulting in plant-level resources striving to obtain multiple bids, modifying power infrastructure if necessary for electrification, and confronting other challenges. In addition, finding contractors that have the necessary skill level for certain projects can constrain implementation and delay timelines.



NIA's Energy & Emissions Study

- USA and Canada
- Commercial/building and industrial markets
- How much energy is saved and GHG emissions are reduced with the use of insulation
- Includes under-insulated areas in high temperature markets
- Major manufacturers reported annual volumes in linear feet and square feet for pipe and board insulations

Visit NIA's Carbon Reduction Website to Read the Study

Under-Insulated Areas

- Over time, codes are updated
- Specifications change
- Insulation gets damaged
  - Lack of maintenance
- Insulation is removed for maintenance and never replaced
- Parts are never insulated in the first place

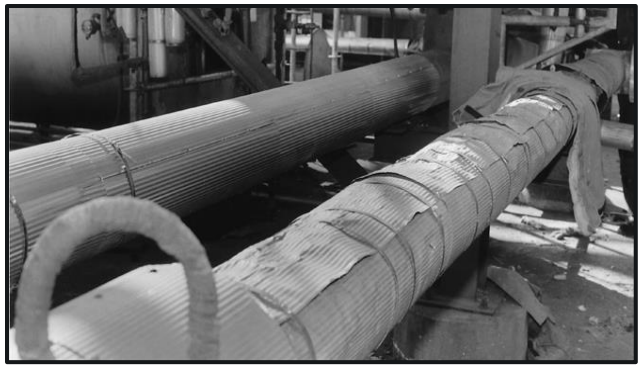


Table 3. The Cost of Under-Insulated Areas

	Summary of Cumulative Findings vs. Potential Loss Due to Under-Insulated Areas – Both Market Segments			
	Study Results – Savings			
	Past 5 Years	Base Year	Next 5 Years	Total 11-Year Window
	2017–2021	2022	2023–2027	2017–2027
	Dollar ($) Savings			
	$91,035,494,015	$25,150,492,889	$162,073,528,203	$278,259,515,107
Average Potential Loss				
Commercial Market Segment	$ (1,529,396,299)	$ (422,528,281)	$ (2,722,835,274)	$ (4,674,759,854)
Percent of Total Savings	*-1.7%*	*-1.7%*	*-1.7%*	*-1.7%*
Industrial Market Segment	$ (7,541,773,421)	$ (2,083,299,161)	$ (13,425,090,586)	$ (23,049,163,168)
Percent of Total Savings	*-8.3%*	*-8.3%*	*-8.3%*	*-8.3%*
Combined Total	$ (9,071,169,720)	$ (2,505,827,442)	$ (16,147,925,860)	$ (27,723,923,022)
Percent of Total Savings	-10.0%	-10.0%	-10.0%	-10.0%
	CO_2 Savings - Metric Tons			
	2,468,748,389	682,044,289	4,395,195,149	7,545,987,828
Average Potential Loss				
Commercial Market Segment	(41,474,973)	(11,458,344)	(73,839,279)	(126,772,596)
Percent of Total Savings	*-1.7%*	*-1.7%*	*-1.7%*	*-1.7%*
Industrial Market Segment	(204,494,658)	(56,496,002)	(364,068,665)	(625,059,325)
Percent of Total Savings	*-8.3%*	*-8.3%*	*-8.3%*	*-8.3%*
Combined Total	(245,969,631)	(67,954,346)	(437,907,944)	(751,831,921)
Percent of Total Savings	-10.0%	-10.0%	-10.0%	-10.0%

So, what's the problem?

Two possibilities….

ASSETS

versus

EXPENSES

Owners view insulation as an expense, not an asset.

INSULATION = ASSET

Savings, education courses, inspection programs, safety, extremely attractive ROI…and it keeps on giving year after year

Maybe We Have Been Using The Wrong Bait?

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Carbon Goals

- Countries have set carbon reduction goals
  - -45% by 2030
  - Net 0 by 2050
  - And have allocated billions of dollars to do this

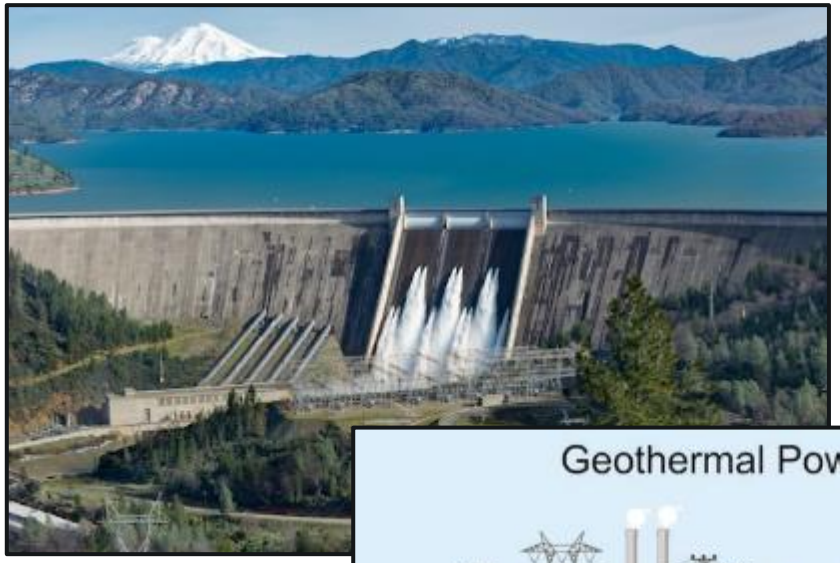
		USA Delta /year				
45%	Reduction by 2030	2,470,508,167	Metric Tons	=	5,445,000,000,000	Pounds
Net 0	Reduction by 2050	5,490,018,149	Metric Tons	=	12,100,000,000,000	Pounds

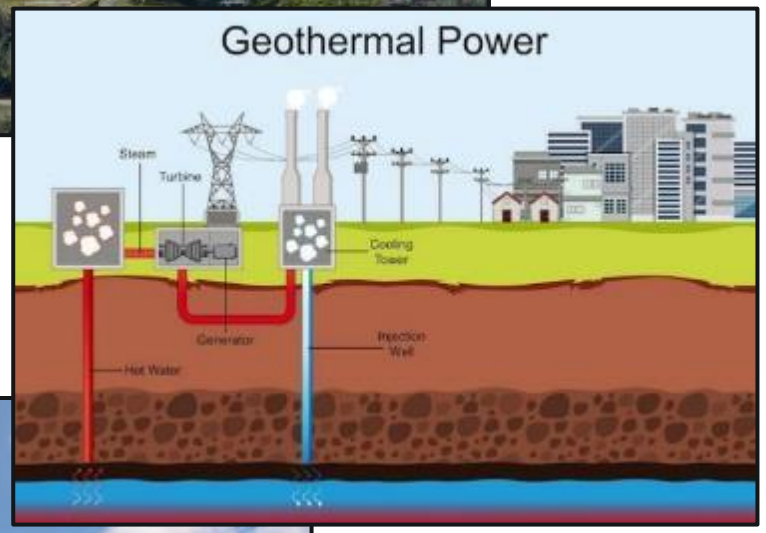
The big problem is that the technology doesn't exist to accomplish these goals

The “Green” Path

Often, to achieve reductions in energy consumption and GHG emissions, programs transition to “green” energy technologies.

- Solar and wind (possibly with battery back-up)
- Geothermal
- Hydrogen / ammonia
- Carbon capture, utilization, and sequestration (CCUS)
- Hydroelectric





The Challenges

- Lengthy design, approval, and construction cycles
- Significant capital investment $$$$
- Technologies still being developed
- Some don’t provide 24/7/365 solutions

Trees, Windmills, and Insulation

A tree needs 10 years, on average, to mature enough to reduce carbon to the level used in modeling.

10 Years

A windmill takes from 18 months to **4 years** before it is operational (due to location, permits, design, construction timelines, etc).

4 Years

Plant a Tree

Build a Windmill

INSULATION: It begins contributing **TODAY** and **KEEPS** working.

Trees, Windmills, and Insulation

AND GET CARBON CREDITS

Then when you reach your carbon goals, you have carbon credits to sell to others.

$ Free money! $

Install Insulation

Get ahead of the lunacy and the irrational desperation

Millions of dollars have ALREADY been invested in

- Technology to remove CO_2 from of the sky and atmosphere
- Building vaults to bury trees underground, so they don't release CO_2 as they decay

Other Ideas

- Mandate a global ban on having children
- Genetically engineer smaller humans
- Eliminate Beef

Just insulate your pipes and equipment, folks!

Everybody seems to want something that is shiny and new… and that doesn't exist yet

Savings from Insulation

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CO_2 Reduction and Insulation

Insulation Contribution to USA Carbon Reduction Goals				
USA Goal/yr			2,470,508,167	Metric Tons
Insulation Savings	2022		68,000,000	Metric Tons
			3%	

= 14,000 Windmills

Insulation Contribution to USA Carbon Reduction Goals			
USA Goal (-45%)	2030	17,293,557,169	Metric Tons
Insulation Savings	2030	476,000,000	Metric Tons
		3%	

= 98,000 Windmills

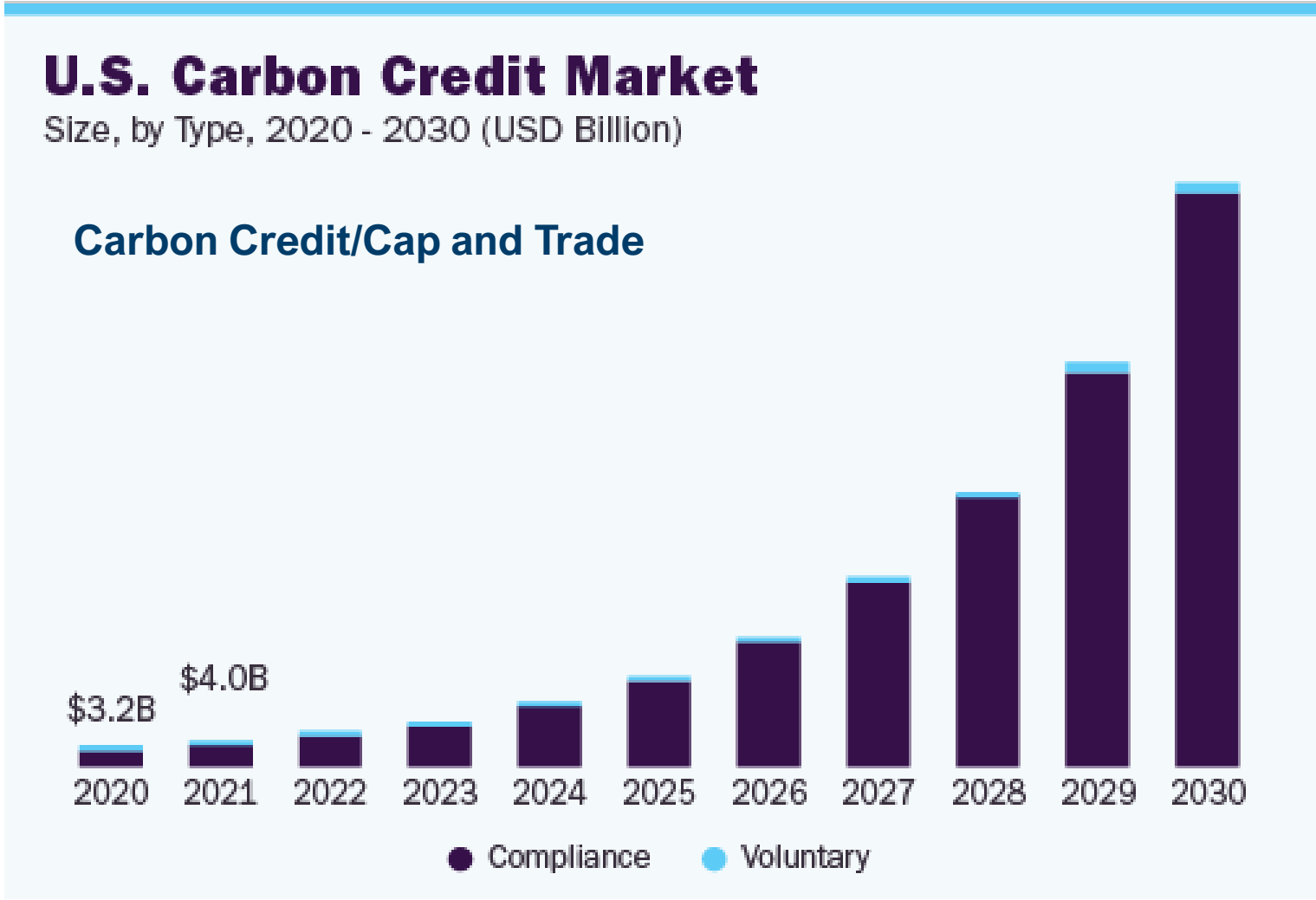
Let's Change Our Narrative... CO_2 is King

Carbon Credits

- Generally created by governments to limit the amount of GHG organizations can emit by placing a cap on them—– the specific number of tons of CO_2 the company can emit

A company that brings its overall emissions below what is required by law can SELL the excess credits to other companies

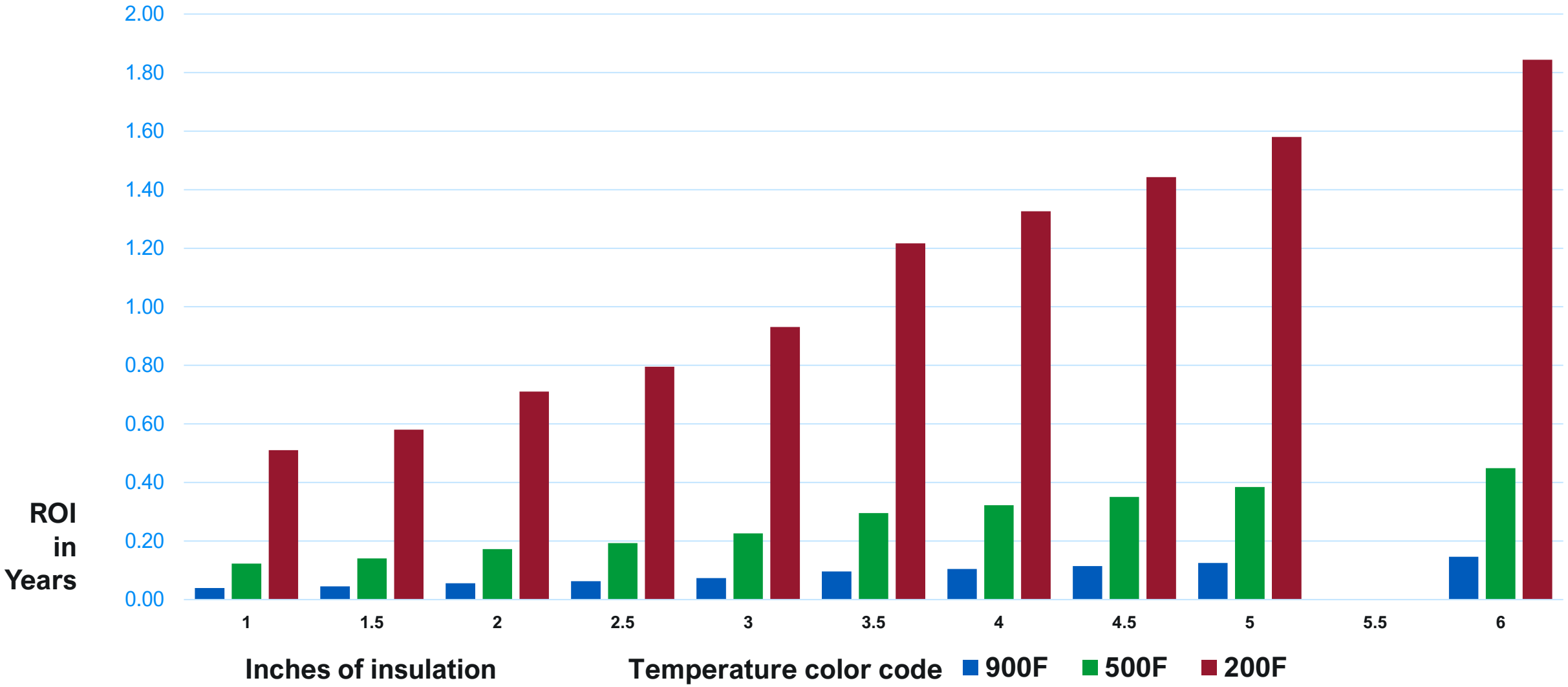
Carbon Credit = 1 ton of CO_2
Value = $40-80 per ton (2023)



Summary: We are using the wrong bait.

- Insulation projects are low cost.
- Project execution is typically weeks for maintenance and repairs.
- Simple payback less than 1 year, often only 1 or 2 months.
- **All design thicknesses delivered reductions in CO_2 and NO_x emissions of 88 to 98%. We need to focus on this first! We have been using the wrong bait.**

Simple Payback (Years) on 8" Pipe at 200°F, 500°F, and 900°F



8” Pipe, Emissions Reduction––per FOOT, per YEAR

Process Temp (°F)	Insulation Thickness (in)	CO2 (lb/ft/yr)	NOx (lb/ft/yr)	Process Temp (°F)	Insulation Thickness (in)	CO2 (lb/ft/yr)	NOx (lb/ft/yr)	Process Temp (°F)	Insulation Thickness (in)	CO2 (lb/ft/yr)	NOx (lb/ft/yr)
200	Bare		69	500	Bare		.04	900	Bare	16816.4	7.63
200	0.5		49	500	0.5		79	900	0.5	2061.1	0.93
200	1	132.1	0.26	500	1		98	900	1	1144.4	0.52
200	1.5		19	500	1.5	357.2	0.72	900	1.5		38
200	2		16	500	2			900	2		31
200	2.5		13	500	2.5			900	2.5		25
200	3		11	500	3			900	3	484.3	0.22
200	3.5		.1	500	3.5			900	3.		
200	4		09	500	4			900	4		
200	4.5	42.0	0.08	500	4.5			900	4.		
200	5	39.2	0.08	500	5	145.3	0.2	900	5		
Reduction at PP thickness		90%				96%					

1 Foot =
24 Trees
21 light bulbs

10 Feet =
240 Trees
210 light bulbs

100 Feet =
2,400 Trees
2,100 light bulbs

1 Foot =
103 Trees
89 light bulbs

10 Feet =
1030 Trees
8,900 light bulbs

100 Feet =
10,300 Trees
89,000 light bulbs

1 Foot =
327 Trees
282 light bulbs

10 Feet =
3270 Trees
2,820 light bulbs

100 Feet =
32,700 Trees
28,200 light bulbs

PP Thickness

Summary: We are using the wrong bait.

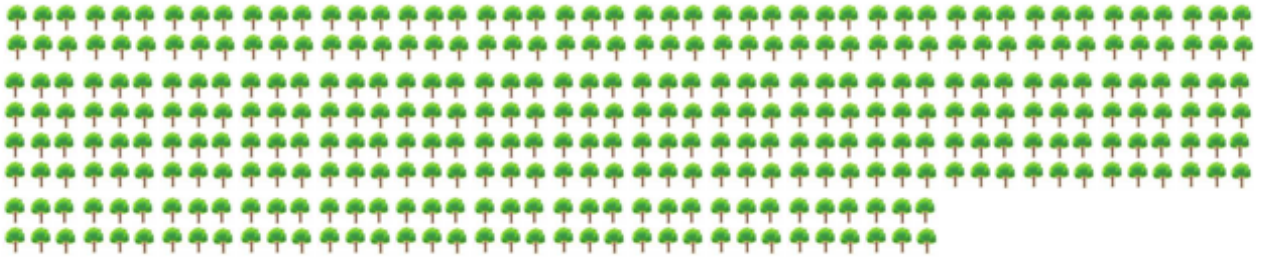
- **All design thicknesses delivered reductions in CO_2 and NO_x emissions of 88 to 98%. We need to focus on this first!**
- Insulation projects are low cost.
- Project execution is typically weeks for maintenance and repairs.
- ROI is less than 1 year, **often only 1 or 2 months.**

OFFSETTING CO2 EMISSIONS – MECHANICAL INSULATION IS AN OBVIOUS CHOICE!

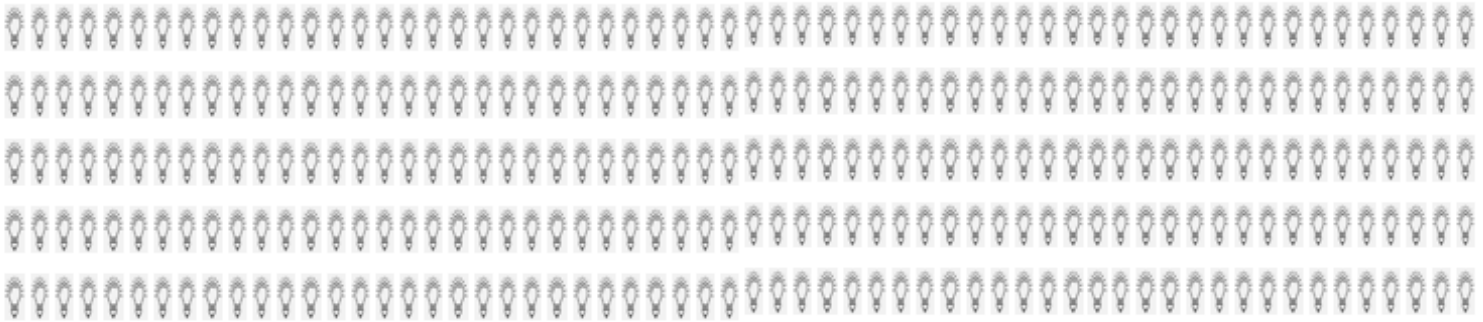
One full size pickup truck(1) that is driven 20,000 miles emits approximately 18,000 lbs of CO2.

How can we offset the emissions from one pickup truck?

We could plant 360 trees(2)



We could replace (310) 43-watt incandescent light bulbs with LED light bulbs(3)



Or we could insulate approximately 8' of bare 4" pipe operating @ 350F with 2" of insulation (4)

Just ONCE & PAY BACK continues every year

(1) 2021 Ford 150 2.7 L pick up emits 406 grams of carbon per mile; Source – EPA Fuel economy and greenhouse gas emissions sticker on truck
(2) http://www.tenmilliontrees.org/trees/ Typical tree on average saves 50 pounds/yr. of CO2
(2) EPA states medium growth coniferous or deciduous tree, planted in an urban setting and allowed to grow for 10 years, sequesters 23.2 and 38.0 lbs. of carbon, respectively.
(3) https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator. Replace a 43W incandescent that operates 3 hours a day would reduce C02 58 lbs. / year
(4) Crall, CP Insulation is Greener than trees. Insulation Outlook Jan 2009

Conclusions

- We now have quantified actual data to support these facts
- We have the tools
  - Certified Appraisers, 3E Plus® software
- We have a carbon savings technology that actually already exists!
- We can offer $$ that is plentiful and laying on the ground like leaves in the fall
- Oh yeah! We also offer you (the owner) the opportunity to obtain carbon credits that you can use to support your commitments……..or $ell them. Current cost is $80 and getting higher!

Next Steps

- As a united industry, we must talk about this with every customer visit
- Raise the visibility of the value of Carbon Credits
  - Very soon they might turn into a form of crypto currency
- Share your successes with others
- You can have the tools to prove this. Become an Certified Appraiser and Certified Inspector

How do we make this a *Strength in Numbers* industry effort?

What resources do you need to do this? What can NIA provide you?

Can you get an energy/carbon saving testimonial from a customer?

NIA's Resources

Certified Energy & Emissions Appraisers

National Insulation Association
Certified Insulation Energy Appraiser™

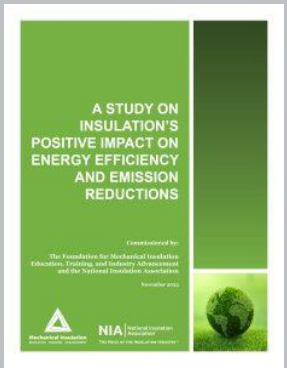
www.insulation.org/findanappraiser

Certified Insulation Inspectors

National Insulation Association
Certified Thermal Insulation Inspector™

www.insulation.org/findainspector
or
www.insulationinspector.org

Read the Energy & Emission Study



www.insulation.org/carbon

Upcoming NIA Meetings/Education

Fall Summit 2024
EDUCATE | ENGAGE | ELEVATE
OCTOBER 28–29, 2024 MGM NATIONAL HARBOR NATIONAL HARBOR, MARYLAND

National Insulation Association® Certified Insulation Energy Appraiser™

November 12-13, 2024
(Virtual Course)

NIA 69th Annual Convention
Scottsdale, Arizona
April 28–30, 2025
Strength in Numbers

National Insulation Association® Certified Thermal Insulation Inspector™

December 4-5 and 10-11, 2024
(Virtual Course)

Questions?

Thank you.

Jack Bittner
NIA President
www.insulation.org