THE OVERLOOKED LINE ITEM

Unlocking Financial Value Through Energy Management in Healthcare

Mike O'Neill: Director of Finance

Jeff Rich: Chief Innovation Officer

ENERATION

Healthcare's energy independent future

ENERATION: THE TEAM BEHIND THE NATION'S FIRST ENERGY INDEPENDENT HEALTHCARE SYSTEM

- Focused on sustainable energy improvement
- Over 60 combined years of healthcare experience
- Facility management, engineering, process improvement, and business expertise
- Faced the unique challenges & opportunities confronting healthcare leaders

Alan Eber
Chief Executive Officer

Jeff Rich
Chief Innovation Officer

Laura Olson
Chief Business Development Officer

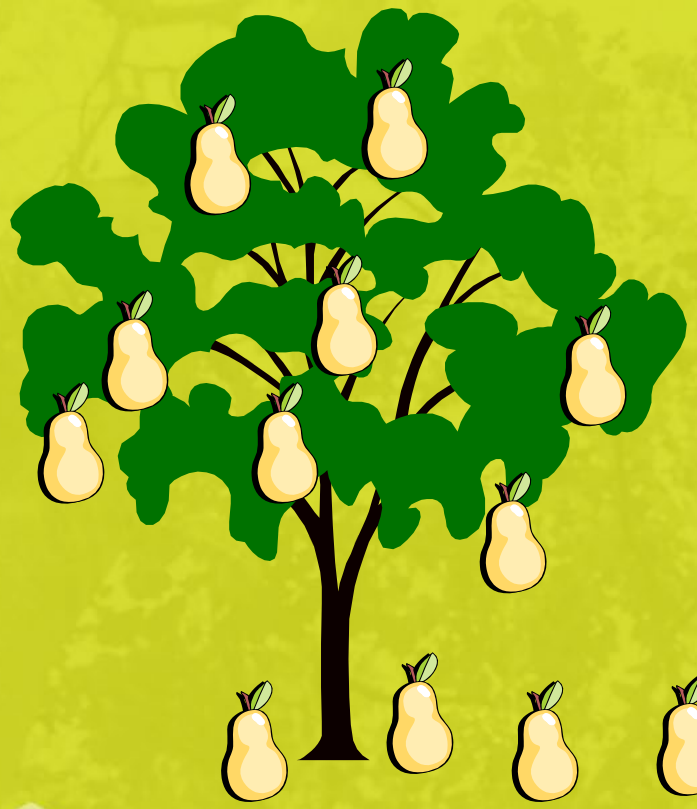
Mike O'Neill
Director of Finance

Jesse Beckendorf
Lead Program Manager

Rick Vogel
Engineer

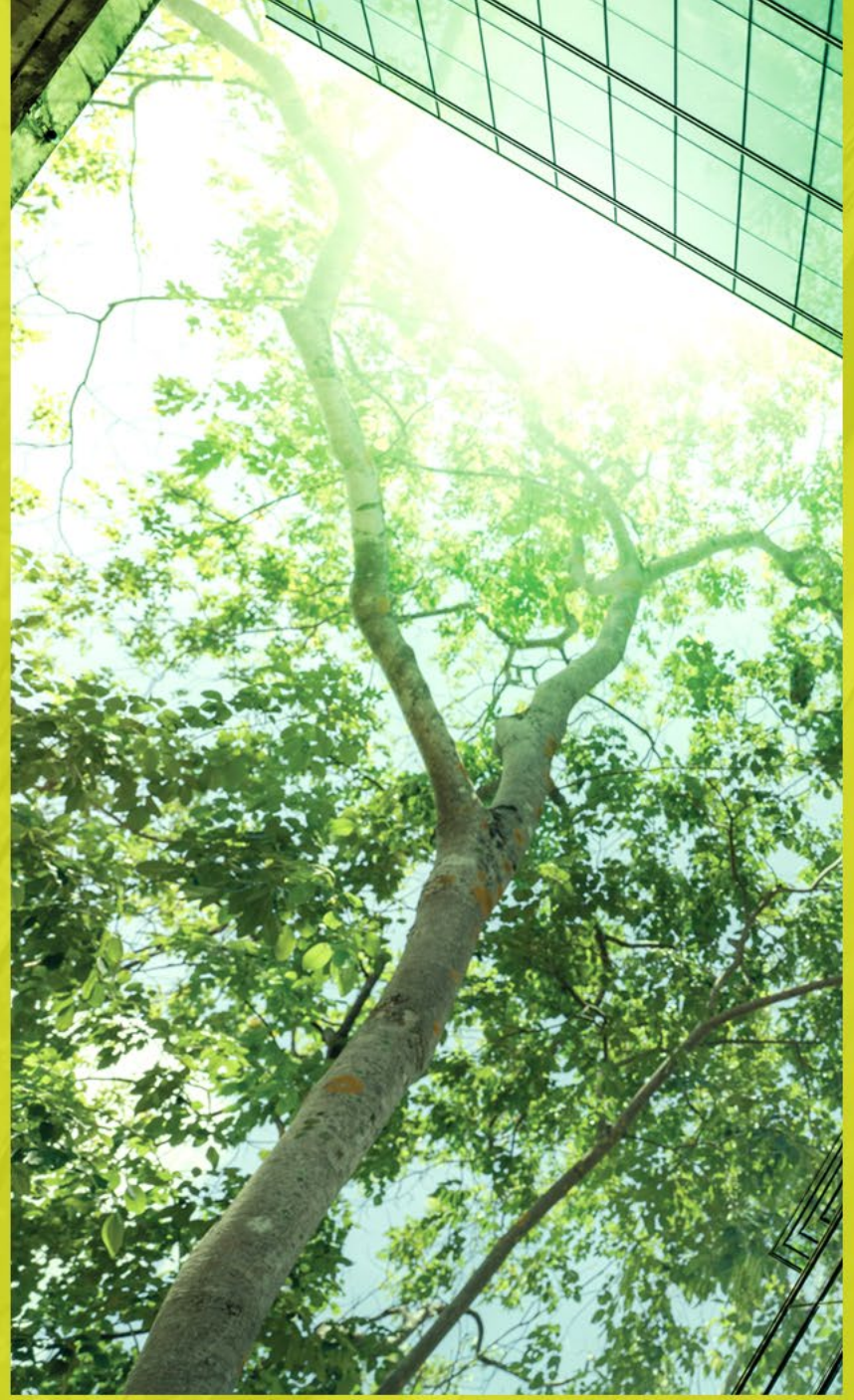
ENERATION

ELIMINATION OF WASTE IS AT THE CORE OF "LEAN" AND "SUSTAINABILITY"



Fruit Laying Around

- Reduce
- Reuse
- Recycle



WHY FOCUS ON THE ENERGY SPEND?

Two-Sided Green!

- Quick, measurable successes
- Significant savings
- Significant emissions reduction
- Not disruptive to operations
- Builds broad support
- Opportunities to scale

ENERATION

HEALTHCARE CONTRIBUTES 8 – 10% OF U.S. EMISSIONS

Primum non nocere – First, Do No Harm.

HARVARD medicine
THE MAGAZINE OF HARVARD MEDICAL SCHOOL

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All Articles > Confronting Health Care's Carbon Footprint

Autumn 2023

Confronting Health Care's Carbon Footprint

Hospitals are waking up to their climate change culpability and the mandate to act

PRACTICE Greenhealth

ABOUT | TOPICS | RESOURCES | EVENTS | METRICS & AWARD

Health care's contri
to a hospital's heali
make up 8.5% of th
Kingdom.

It is imperative that
the most catastrophl

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CURRENT ISSUE | AR

COMMENTARY | Originally Published 29 April 2024

Fossil Fuels, Climate Change, and Cardiovascular Disease: A Call to Action

Caren G. Solomon, MD, MPH, and Philip J. Landrigan, MD, MSc | AUTHOR INFO & AFFILIATIONS

Circulation • Volume 149, Number 18 • https://doi.org/10.1161/CIRCULATIONAHA.123.065904

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The U.S. healthcare system cont

The NEW ENGLAND JOURNAL of MEDICINE

SPECIALTIES | TOPICS | MULTIMEDIA | CURRENT ISSUE

REVIEW ARTICLE | FOSSIL-FUEL POLLUTION AND CLIMATE CHANGE

Climate Change, Extreme Heat, and Health

Authors: Michelle L. Bell, Ph.D., Antonio Gasparrini, Ph.D., and Georges C. Benjamin, M.D. Author Info & Affiliations

Published May 15, 2024 | N Engl J Med 2024;390:1793-1801 | DOI: 10.1056/NEJMra2210769

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American Lung Association.

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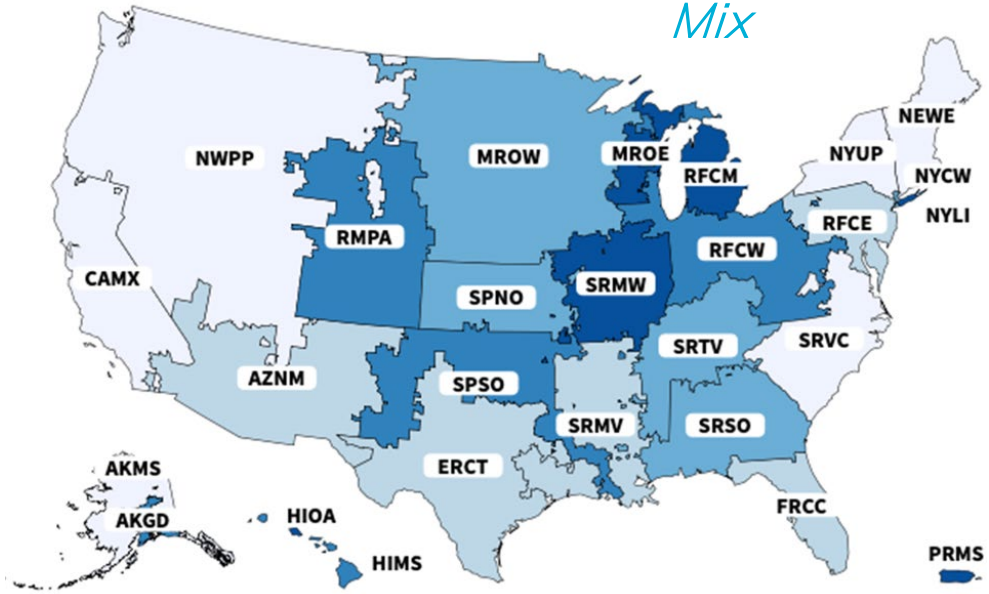
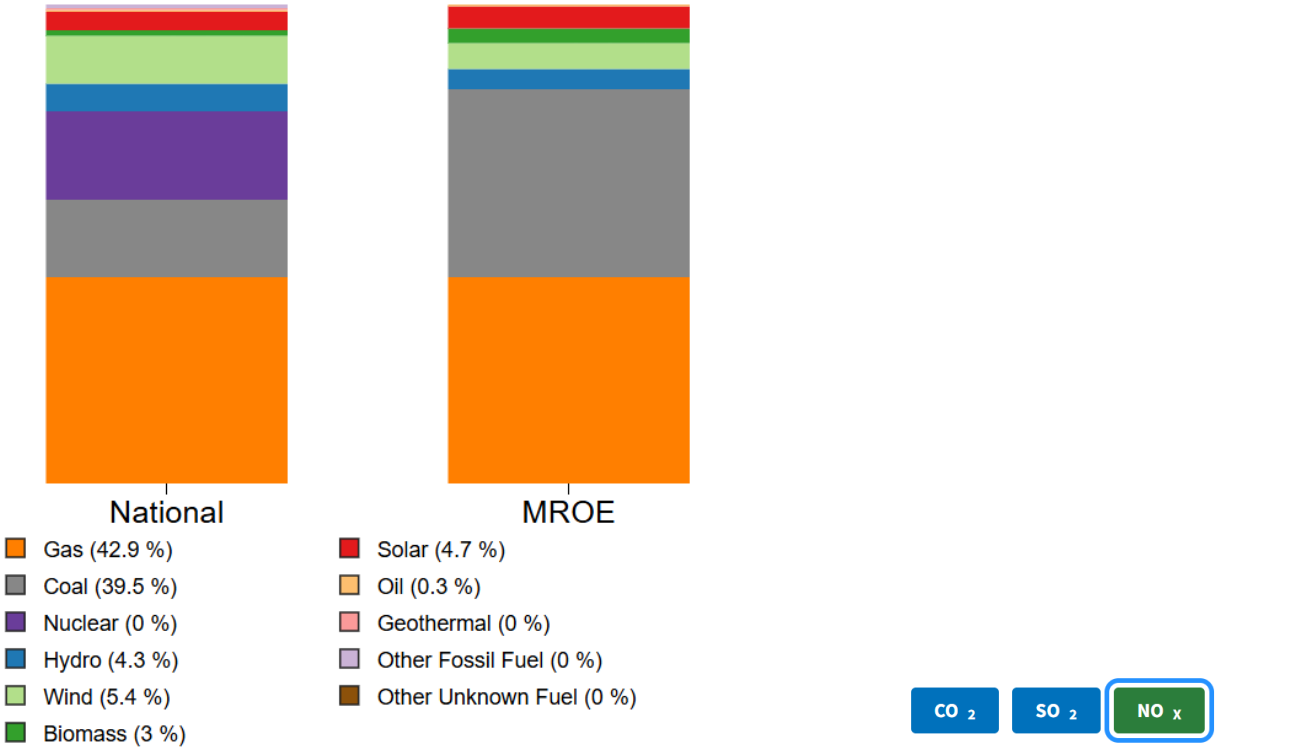
The Importance of Transitioning to Clean Energy

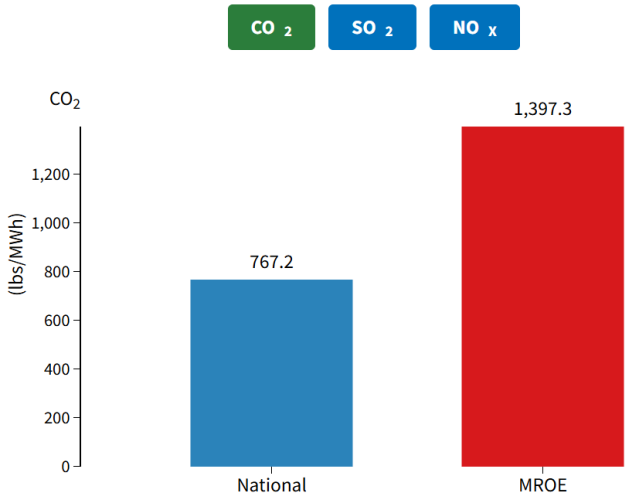
EMISSION RATES

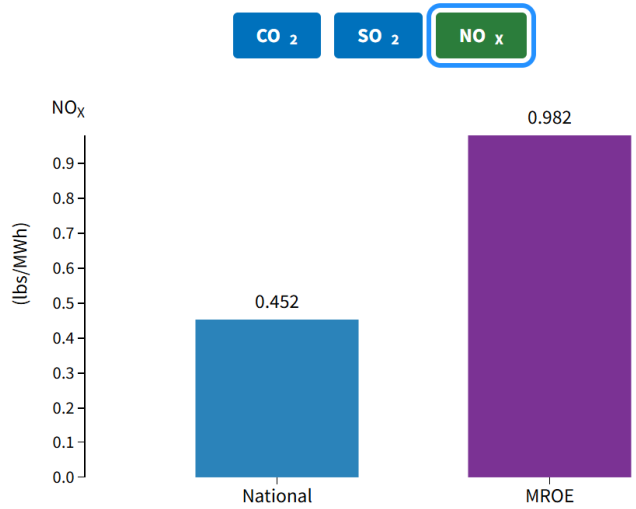
MROE Region Fuel Mix



Midwest Reliability Organization – East (MROE)







Source: eGRID Emissions & Generation Resource Integrated Database

FACILITY ENERGY WASTE

Healthcare facilities are among the most energy intensive buildings

Providence Swedish Issaquah among U.S. hospitals leading energy stewardship

JANUARY 10, 2024 SWEDISH COMMUNICATIONS

New Clinic Uses Half the Energy; Recognized by DOE

Photo 1: Gundersen Health System's Sparta Medical Clinic in Sparta, Wisconsin

Type of building: New Construction - Outpatient Medical Center
Size: 35,000 sq. ft.
Built: 2016
Median Clinic Energy Use in Climate Zone 6/Cold: 70 kBtu/sq. ft.
Sparta Clinic Energy Use in Climate Zone 6/Cold: 38 kBtu/sq. ft.
Sparta Clinic Annual Energy Spend: $32,500
Annual Cost Savings Realized vs. Median: Nearly 50% of energy costs
Facility Life Cycle Cost Savings: $4,000,000*
**Based on a 50-year life span and a 3% inflation rate.*

Case Study: New Clinic is Net-Zero

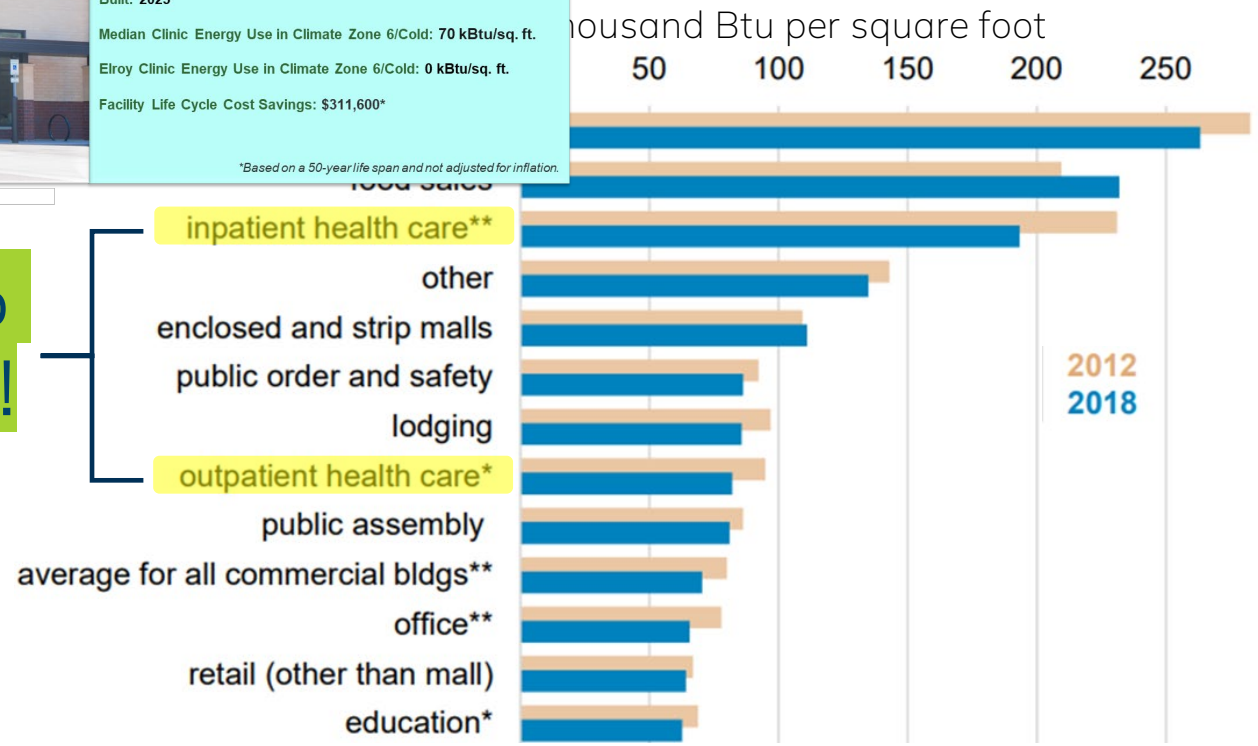
Net Zero Medical Clinic in Elroy, Wisconsin

Type of building: New Construction – Outpatient Medical Clinic
Size: 9,400 sq. ft.
Built: 2023
Median Clinic Energy Use in Climate Zone 6/Cold: 70 kBtu/sq. ft.
Elroy Clinic Energy Use in Climate Zone 6/Cold: 0 kBtu/sq. ft.
Facility Life Cycle Cost Savings: $311,600*
**Based on a 50-year life span and not adjusted for inflation.*

CASE STUDY: NEW HOSPITAL AMONG TOP 1% MOST ENERGY-EFFICIENT FACILITIES

Type of building: New Inpatient Hospital
Size: 433,000 sq. ft.
Built: 2012-2014
Median Hospital Energy Use in Climate Zone 6/Cold: 253 kBtu/sq. ft.
Legacy Hospital Energy Use in Climate Zone 6/Cold: 135 kBtu/sq. ft.
Annual Cost savings realized: $650,000 annually
Facility Life Cycle Cost Savings: $32,500,000*

50-70% Wasted!



*Change is statistically significant at the 10% significance level.
** Change is statistically significant at the 5% significance level.

Source: U.S. Energy Information Administration, *Commercial Buildings Energy Consumption Survey*

WHY DON'T HEALTHCARE BUILDINGS PERFORM WELL?

They are frequently missing a management process

Existing Facilities:

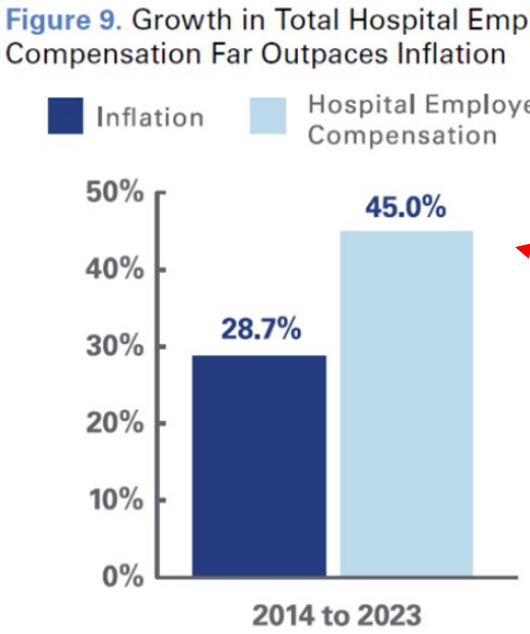
- Energy performance is not "top-of-mind"
  - ✓ Fraction of annual expense budget – usually ~1%
- Lack of metrics, benchmarks, and dashboards
- Little understanding of impacts & opportunity
- No energy goals for staff – focused on comfort complaints
- Resource constraints

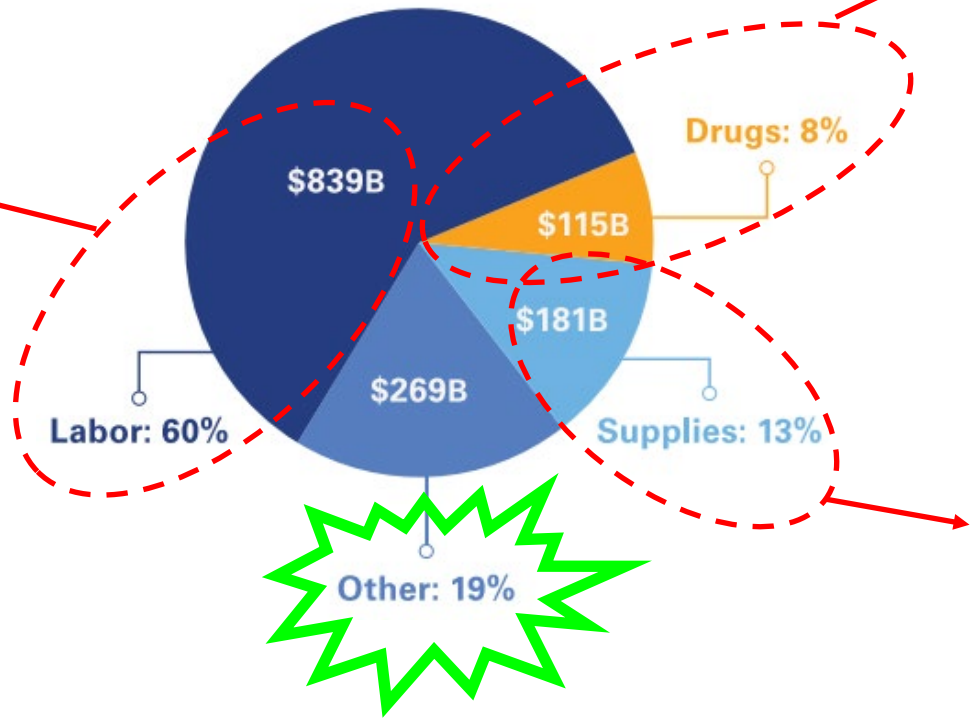
New Facilities:

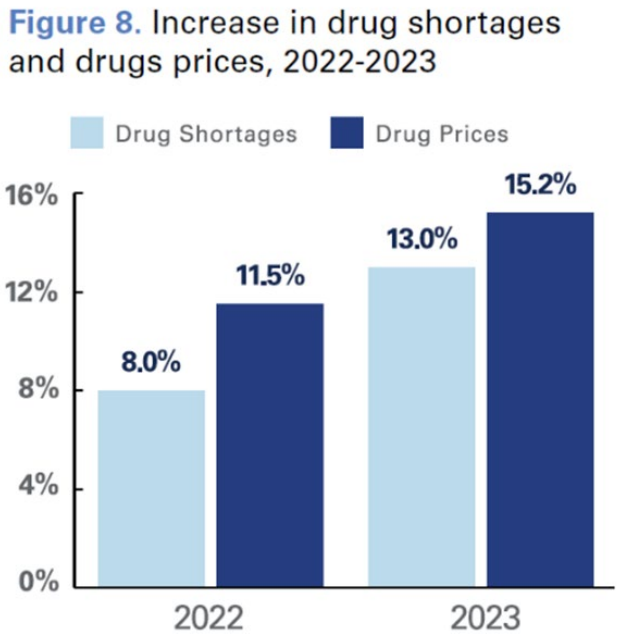
- Life cycle costs are not understood by owners
  - ✓ Energy efficiency targets are not required
- Priority is to deliver under capital budget and on schedule
  - ✓ Efficient energy design can require sensible capital investment
- Weak performance mechanisms in design and construction contracts
  - ✓ Many buildings are never commissioned by a third party

TYPICAL HOSPITAL EXPENSE ALLOCATION

Strong, recent headwinds for variable cost mitigation



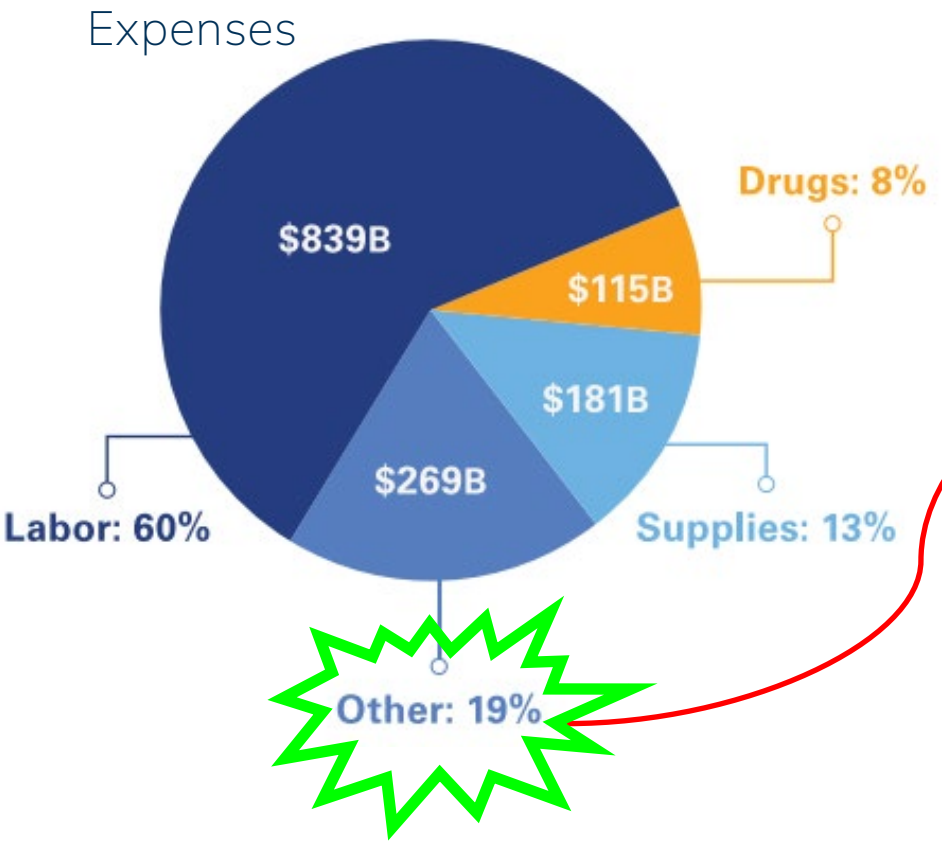


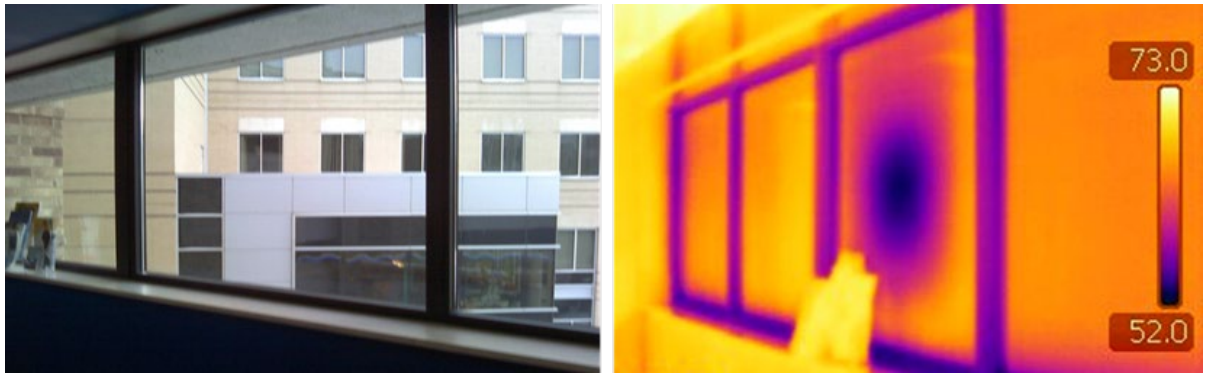


Hospital supply expenses per patient increased 18.5% between 2019 and 2022, outpacing increases in inflation by nearly 30%.

Source: American Hospital Association: Cost of Caring

FIXED COST OPPORTUNITY?





Other Expense Category:

- Includes non-labor costs
  - purchased services, facilities, utilities, I.T., etc.
- Assumed to have little opportunity
- Not an area of expertise or focus
- "The cost of saving lives"

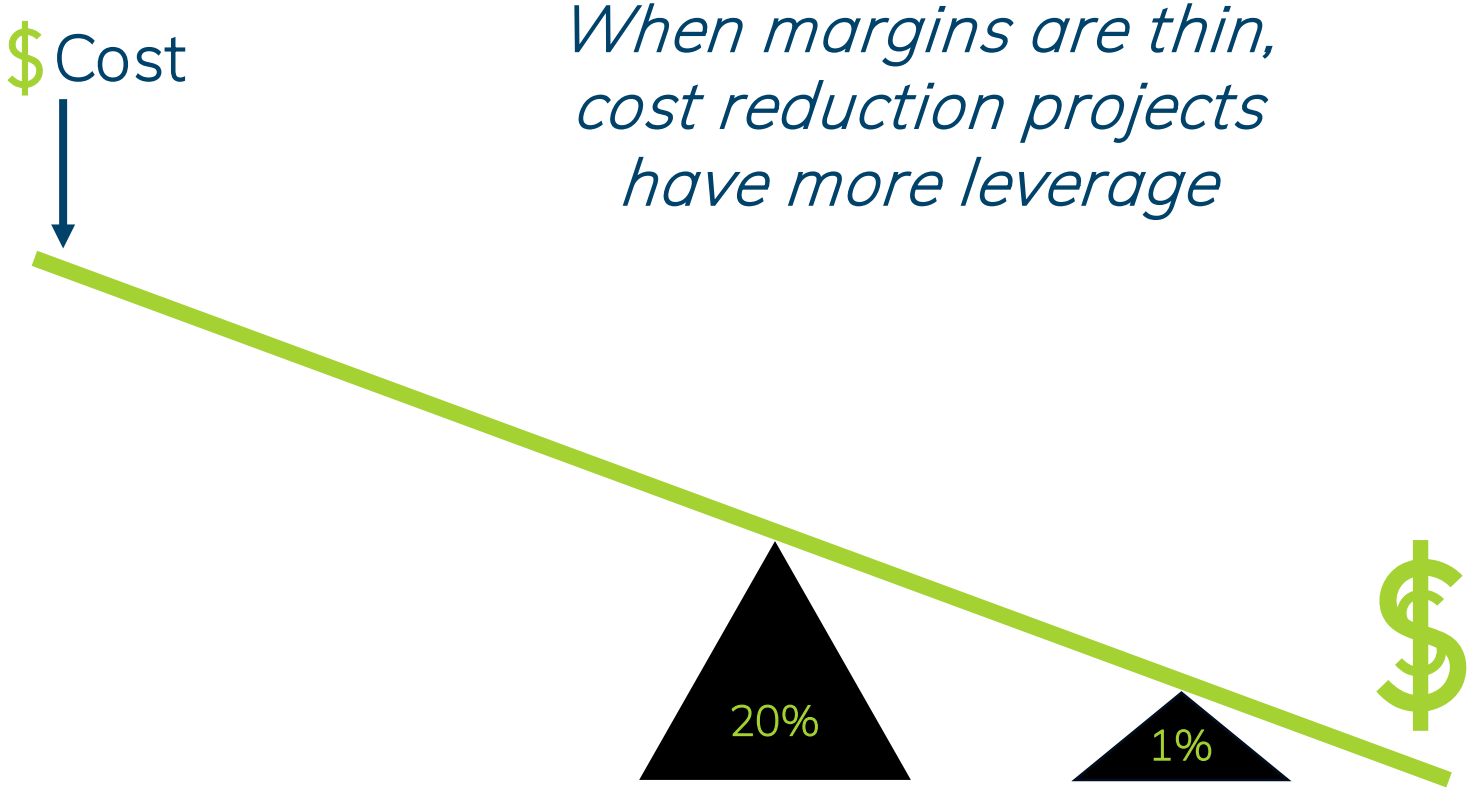
Source: American Hospital Association: Cost of Caring

LEVERAGE FOR TWO-SIDED GREEN

How much revenue is needed to offset each dollar of operating expense?

Operating Margin	Multiplier	Revenue needed to offset $1K of operating expense
1%	100x	$100,000
2%	50x	$50,000
3%	33x	$33,000
4%	25x	$25,000
5%	20x	$20,000
10%	10x	$10,000
20%	5x	$5,000

When margins are thin, cost reduction projects have more leverage



Healthcare facility space annual O&M cost*

Energy comprises ~20% of total facility O&M cost

Hospital data

- American Society of Healthcare Engineers (ASHE) Benchmarks Report
- 151 hospitals in the U.S. and Canada

Clinic data

- Eneration sample

Facility Type	Size (Sq Ft)	Annual O&M Expense
Large Hospital	500,000	$9,245,000
Critical Access Hospital	100,000	$1,849,000
Large Outpatient	50,000	$558,500
Small Outpatient	10,000	$111,700

	Hospital $/Sqft	Clinic $/Sqft
Utilities		
Nat Gas	$ 1.18	$ 0.65
Electricity	$ 2.49	$ 1.25
Water	$ 0.25	$ 0.15
Sewer	$ 0.18	$ 0.12
Fuel Oil #2	$ 0.12	$ -
	$ 4.22	$ 2.17
Maintenance	$ 4.23	$ 3.20
Env. Services	$ 8.14	$ 5.00
Insurance	$ 0.40	$ 0.30
Security	$ 1.50	$ 0.50
Total	$ 18.49	$ 11.17

*Data do not include taxes, depreciation, debt financing or remodeling costs

https://www.ashe.org/system/files/ashe/reportombenchmarks.pdf

WISCONSIN "MEDIAN" HOSPITAL ENERGY PERFORMANCE

Revenue required to offset @4% margin ~ $48M

Large WI Hospital (~500,000 sq ft)

- Annual Electricity Cost = $1,650,000
- Annual Natural Gas Cost = $272,000
- Annual Emissions = 178,845,000 lbs.

Primary Function	Further Breakdown (where needed)	Source EUI (kBtu/ft²)	Site EUI (kBtu/ft²)
Ambulatory Surgical Center		138.3	62.0
Hospital	Hospital (General Medical & Surgical)*	426.9	234.3
	Other/Specialty Hospital	433.9	206.7
Medical Office*		232.8	97.7

ENERGY STAR® Portfolio Manager®

Target:	Target ENERGY STAR Score: 50
Uses:	Hospital (General Medical & Surgical) (100.0%)
Energy Types:	Energy Not Entered *Assumed Mix Based on State & Property Type*: Electric - Grid (41.9%) Natural Gas (58.1%)

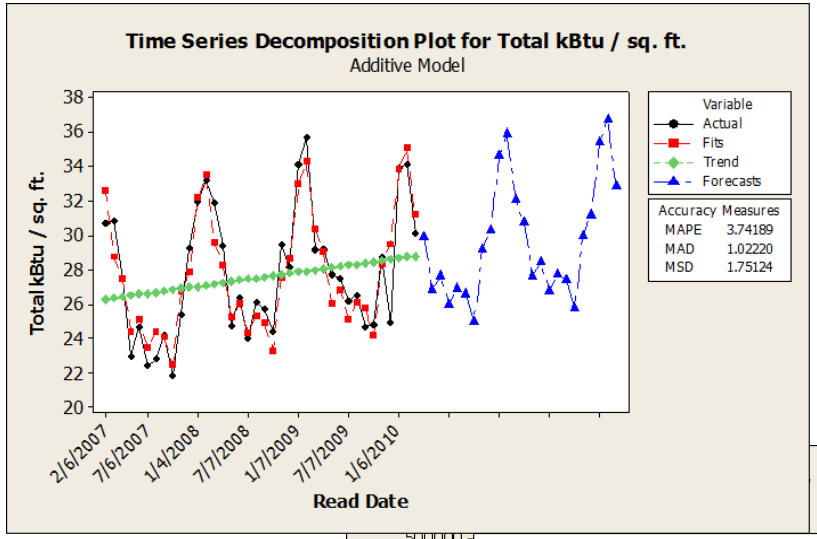
Revenue required to offset @4% margin ~ $1.1M

Small WI Hospital (~100,000 sq ft)

- Annual Electricity Cost = $378,000
- Annual Natural Gas Cost = $62,000
- Annual Emissions = 40,900,000 lbs.

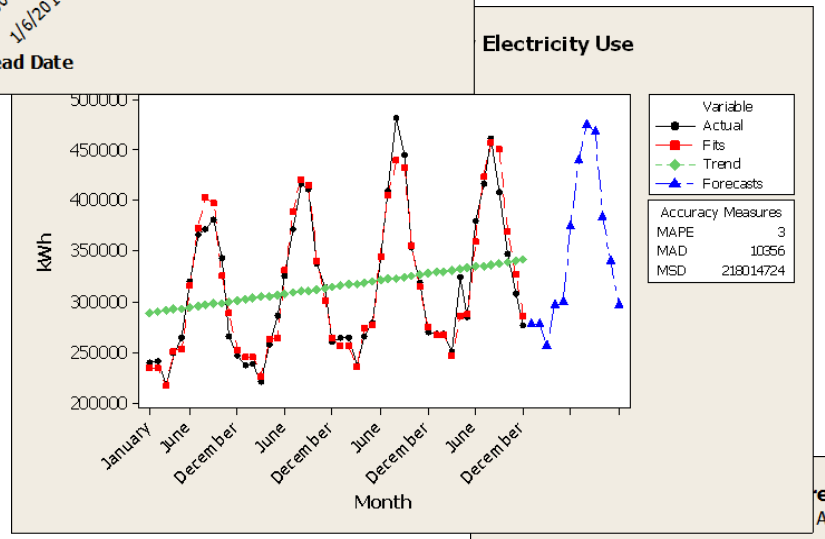
Source: Energy Star: Portfolio Manager

THINGS GET WORSE OVER TIME

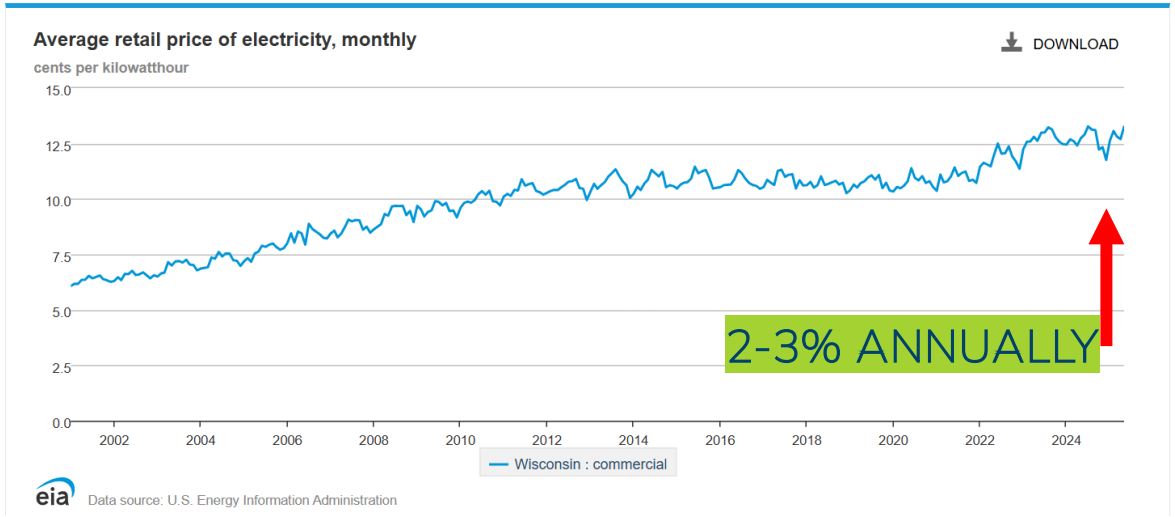


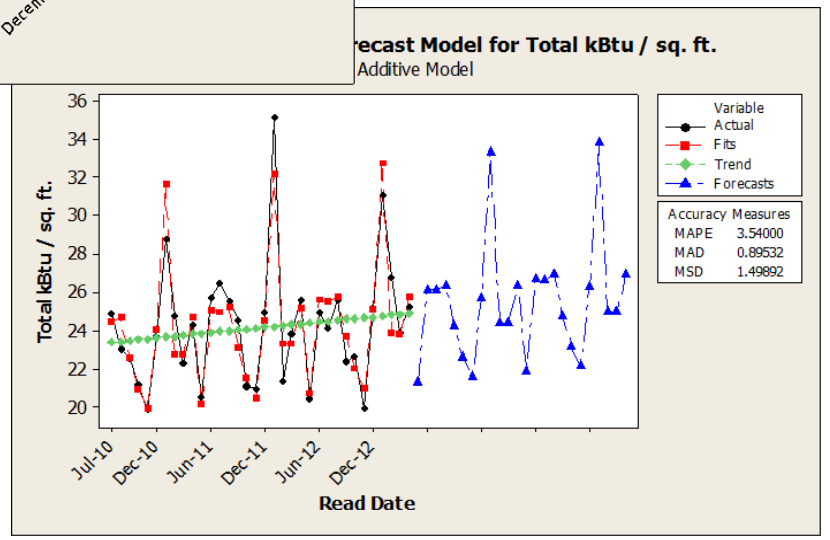
ENERGY EROSION

2-3% ANNUALLY



Retail Price Increases





Source: Eneration

"BUSINSS AS USUAL"

Annual accepted increases by many

Energy Erosion	2-3%
Price increase	2-3%
Total energy increase	4-6%

MN Facility Type	Square Feet	Annual Energy Cost Increase	Required Revenue Increase to Offset @ 4% Margin
Large Hospital	500,000	$86,490	$2,162,250
Critical Access Hospital	100,000	$19,800	$495,000

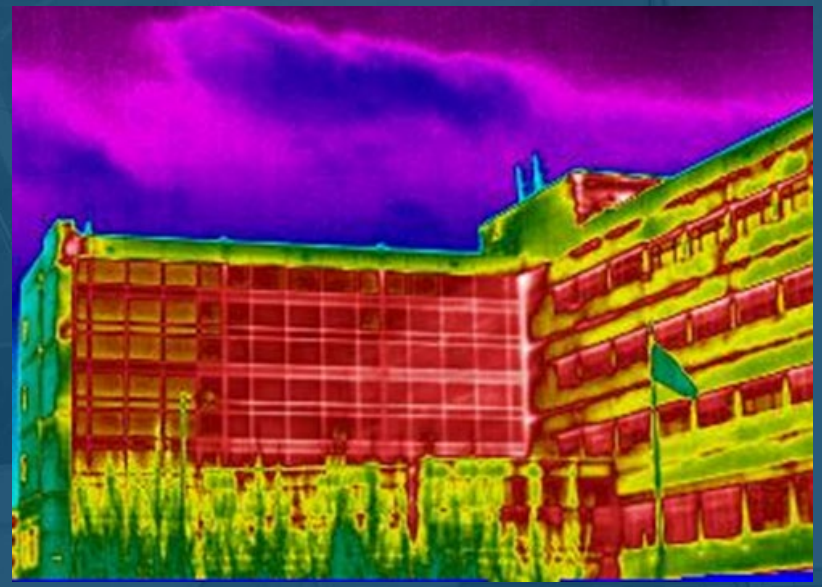
ENERATION

WHAT HAVE WE FOUND?

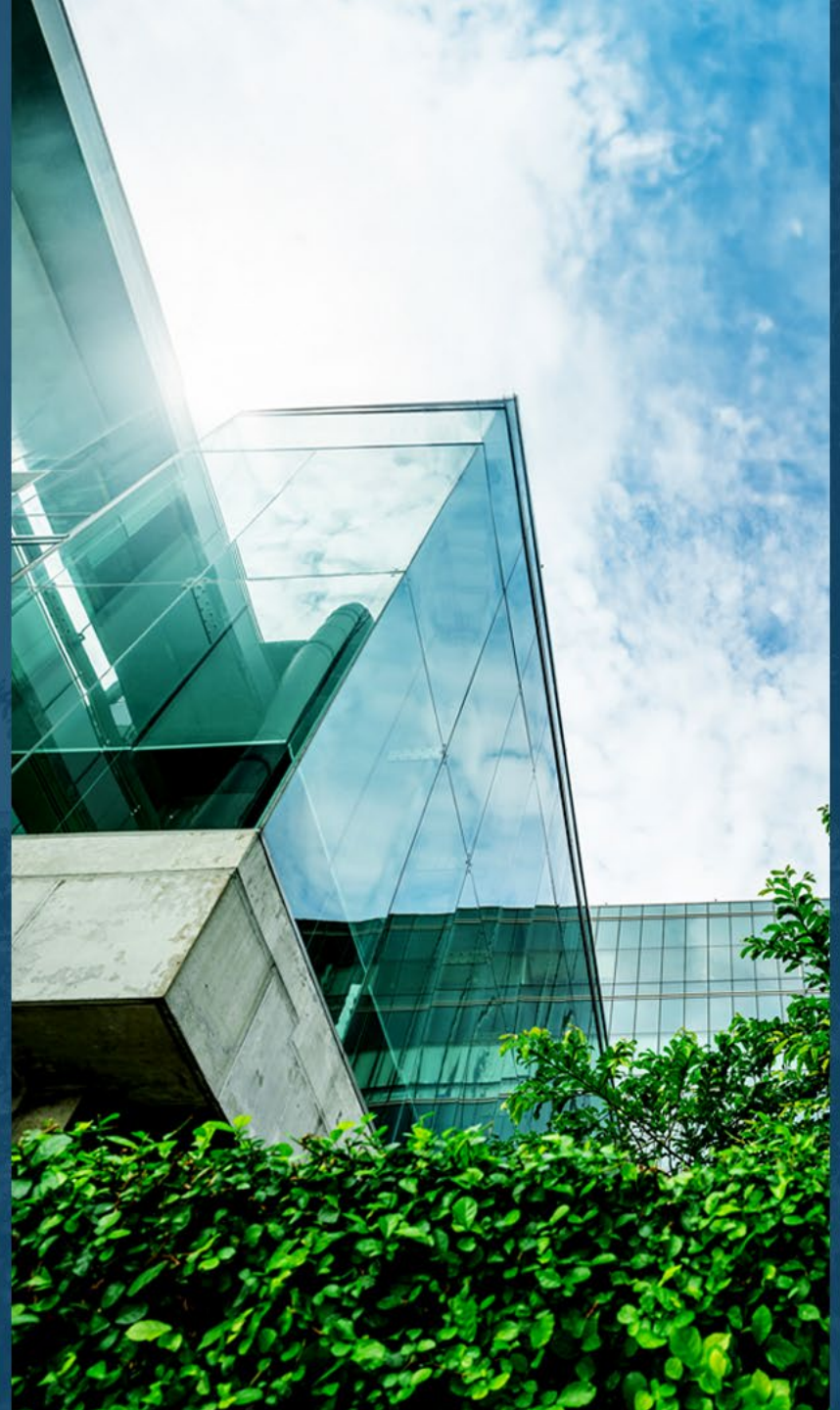
Type	Sq Ft	Annual Spend	% Waste	Identified Savings	Payback (Yrs.)
MOB	73,785	$260,000	30%	$76,878	3.2
Medical Center	218,906	$1,700,000	56%	$955,935	2.0
Medical Center	310,000	$1,000,000	36%	$361,000	2.3
Medical Center	500,000	$2,300,000	35%	$800,000	4.3
Clinic	360,000	$1,300,000	23%	$294,710	3.9
Clinic	44,000	$73,000	38%	$28,000	1.5
Clinic	39,000	$90,000	44%	$40,000	1.0
CAH	75,000	$300,000	18%	$55,000	2.0
CAH	160,000	$530,000	21%	$113,467	4.1
		$7,553,000	**36%**	**$2,724,990**	**3.0**

Source: Eneration

New Facilities Are Not Immune!



- High Tech ≠ High Performance
- LEED certification ≠ High Performance



MANAGE ENERGY PERFORMANCE

Keys to Success

- Measure and Benchmark
- Set goals
- Identify & define projects
  - Conservation first!
- Allocate resources & implement
- Review progress
- Celebrate
- Repeat

EXISTING FACILITY CASE STUDY

Type of building: Critical Access Hospital

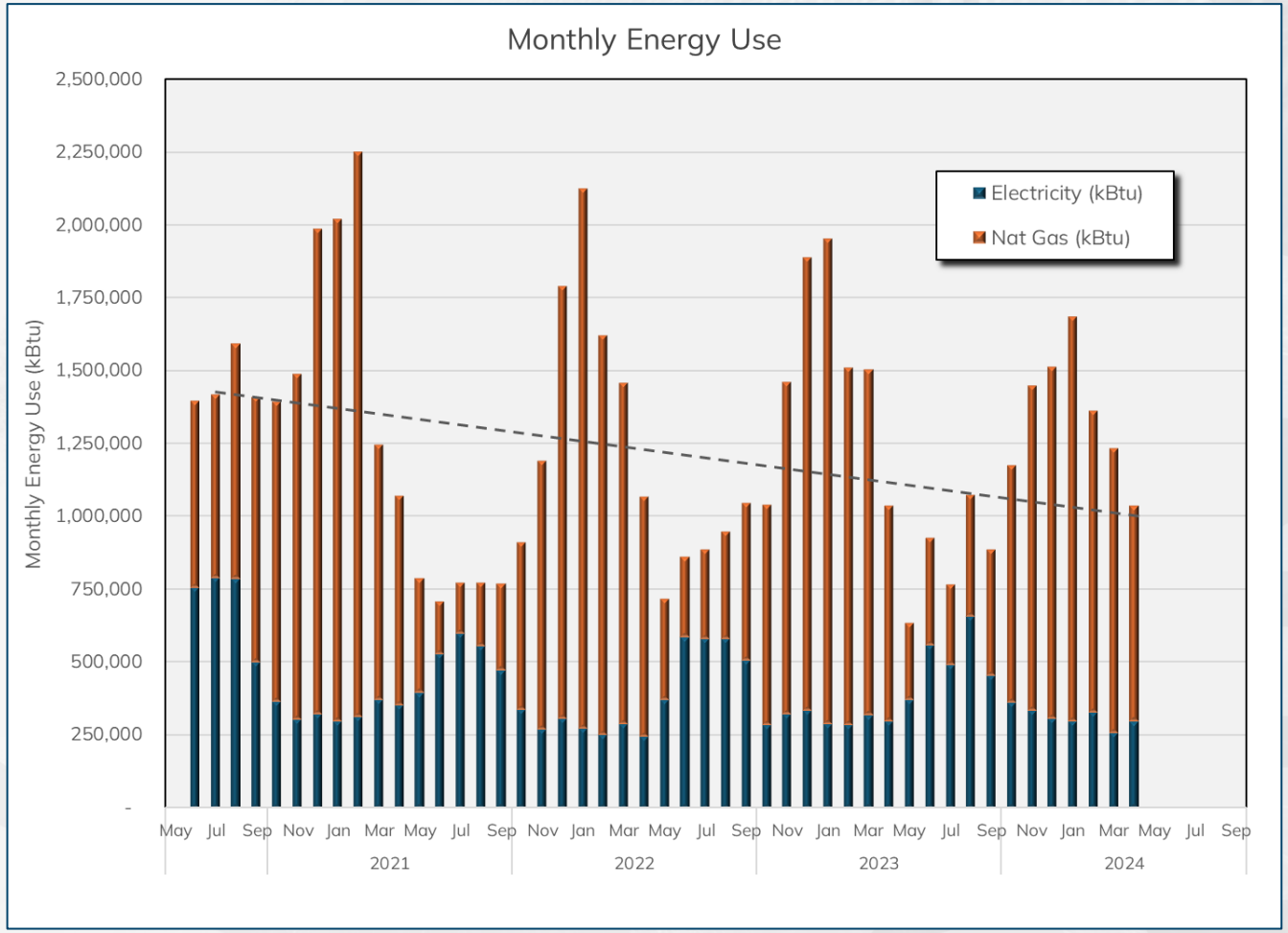
Size: 68,000 sq. ft.

Built: 2020

Energy Intensity Improvement: 20%

Annual cost savings: $50,000

No Capital Investment



EXISTING FACILITY CASE STUDY

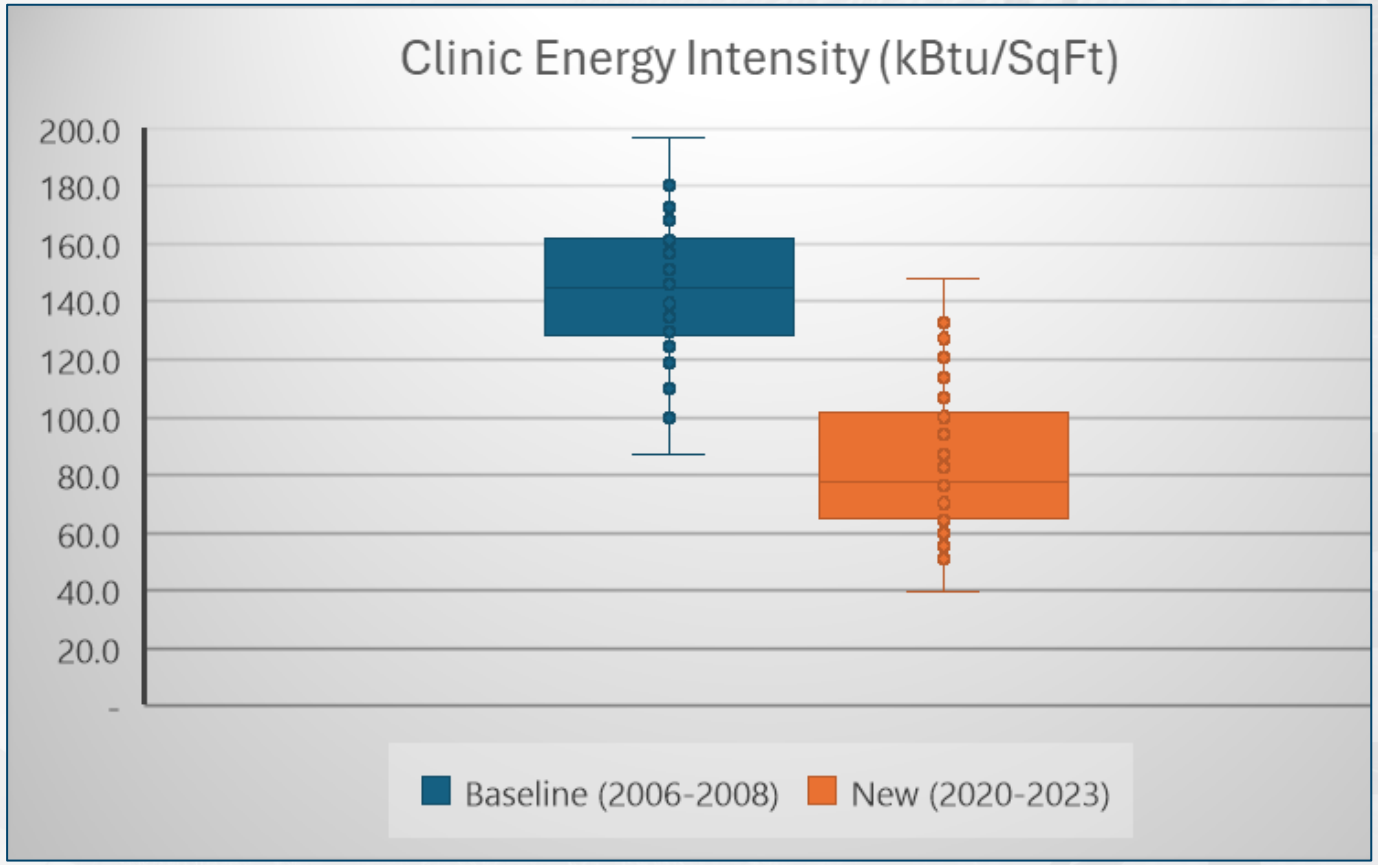
Type of building: Outpatient Clinic

Size: 39,000 sq. ft.

Built: 2006

Energy Intensity Improvement: 50%

Annual cost savings: $40,000



BUILD BETTER ENERGY PERFORMANCE

Keys to Success

- Quantify life-cycle energy cost & emissions for facility
- Set energy performance goals
- Drive alignment through contract language
- Model and compare design choice trade-offs
- Certify construction through commissioning
- Validate energy performance post-occupancy

NEW FACILITY CASE STUDY – NET ZERO CLINIC

Type of building: New Construction – Outpatient Medical Clinic

Size: 9,400 sq. ft.

Built: 2023

Median Clinic Energy Use in Climate Zone 6/Cold: 70 kBtu/sq. ft.

Energy Use in Climate Zone 6/Cold: 0 kBtu/sq. ft.

Facility Life Cycle Cost Savings: $311,600*

**Based on a 50-year life span and not adjusted for inflation.*

NEW FACILITY CASE STUDY – HIGH PERFORMANCE HOSPITAL

Type of building: New Inpatient Hospital

Size: 433,000 sq. ft.

Built: 2012-2014

Median Hospital Energy Use in Climate Zone 6/Cold: 253 kBtu/sq. ft.

Legacy Hospital Energy Use in Climate Zone 6/Cold: 135 kBtu/sq. ft.

Annual Cost savings realized: $650,000 annually

Facility Life Cycle Cost Savings: $32,500,000*

THANK YOU!

For what you do every day for your patients and your community

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