

Rural & Resilient:

A bold, energy-efficient critical access hospital maximizes ROI and strengthens a community legacy





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1. Intro: Why Resiliency?
2. Target Value Delivery
3. Design Strategies
4. Construction
5. Q&A



Why Resiliency?



Who we are?



- Critical Access Hospital located in Batesville, IN
- Serve 4 county region with population of more than 60,000 residents
- Founded in 1932



PROJECT GOALS



Service

To be Southeastern Indiana's
regional healthcare
PROVIDER OF CHOICE



Innovation

To represent a **NEW MODEL**
of rural healthcare delivery in
the U.S.



Flexibility &
Independence

The **ABILITY** to **FLEX** as
healthcare evolves and
remain **INDEPENDENT** but
OPEN to ventures that will
strengthen the MMH
mission, vision and values



Community
Wellness

To create an easily accessible
destination for the entire
community, offering spaces
that will **NUTURE** the
PHYSICAL, EMOTIONAL, and
SOCIAL aspects of **HEALTH**

PROJECT HISTORY



2018

Master facility assessment.



2019

Purchased additional land, forming a 120-acre campus.



2021

Project definition completed. Renovate or build new?



2022

Pre-Design of new hospital completed.



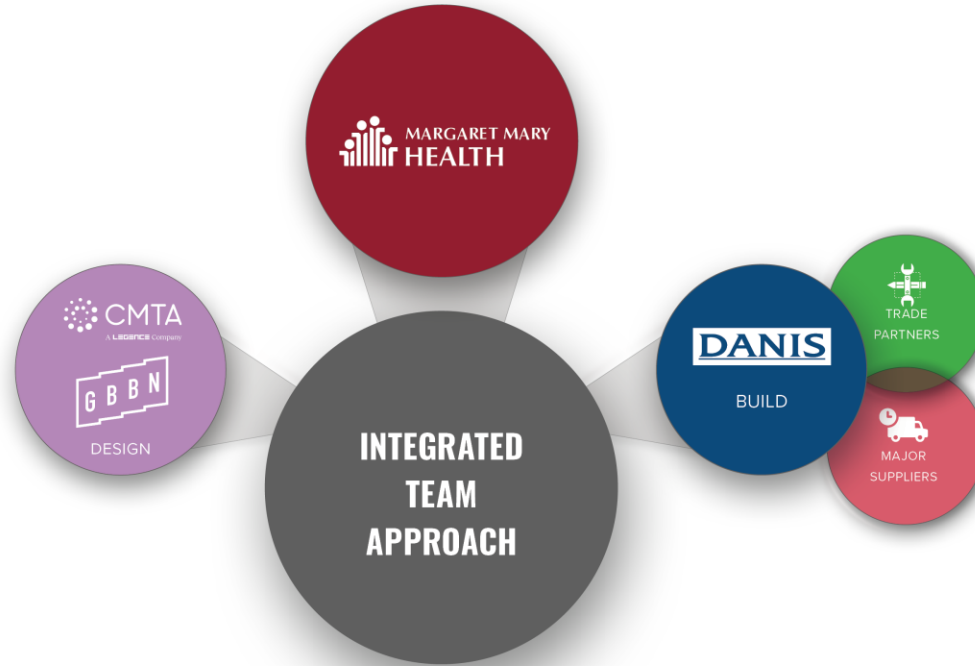
2023

Building the right team.

Target Value Delivery



INTEGRATED TEAM APPROACH



DANIS

TARGET VALUE DELIVERY



Business Case Planning

MARGARET MARY HEALTH CONDITIONS OF SATISFACTION

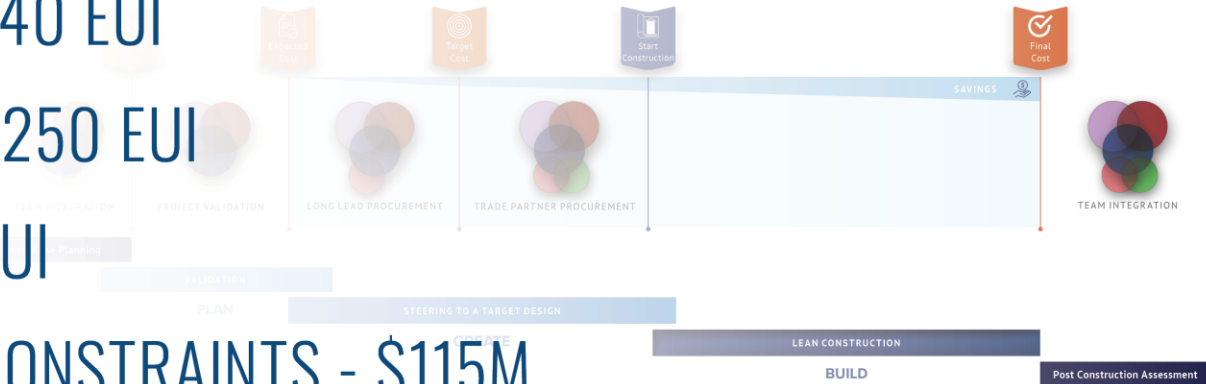
- Resiliency + Sustainable for the Next 90 Years
- Anchor for Community, Generations of Care
- Innovative + Flexible Design
- Operationally Efficient

DANIS

TARGET VALUE DELIVERY

RESILIENCY + SUSTAINABLE FOR THE NEXT 90 YEARS

- Current Facility - 340 EUI
- Midwest Average - 250 EUI
- MMH Goal - <100 EUI

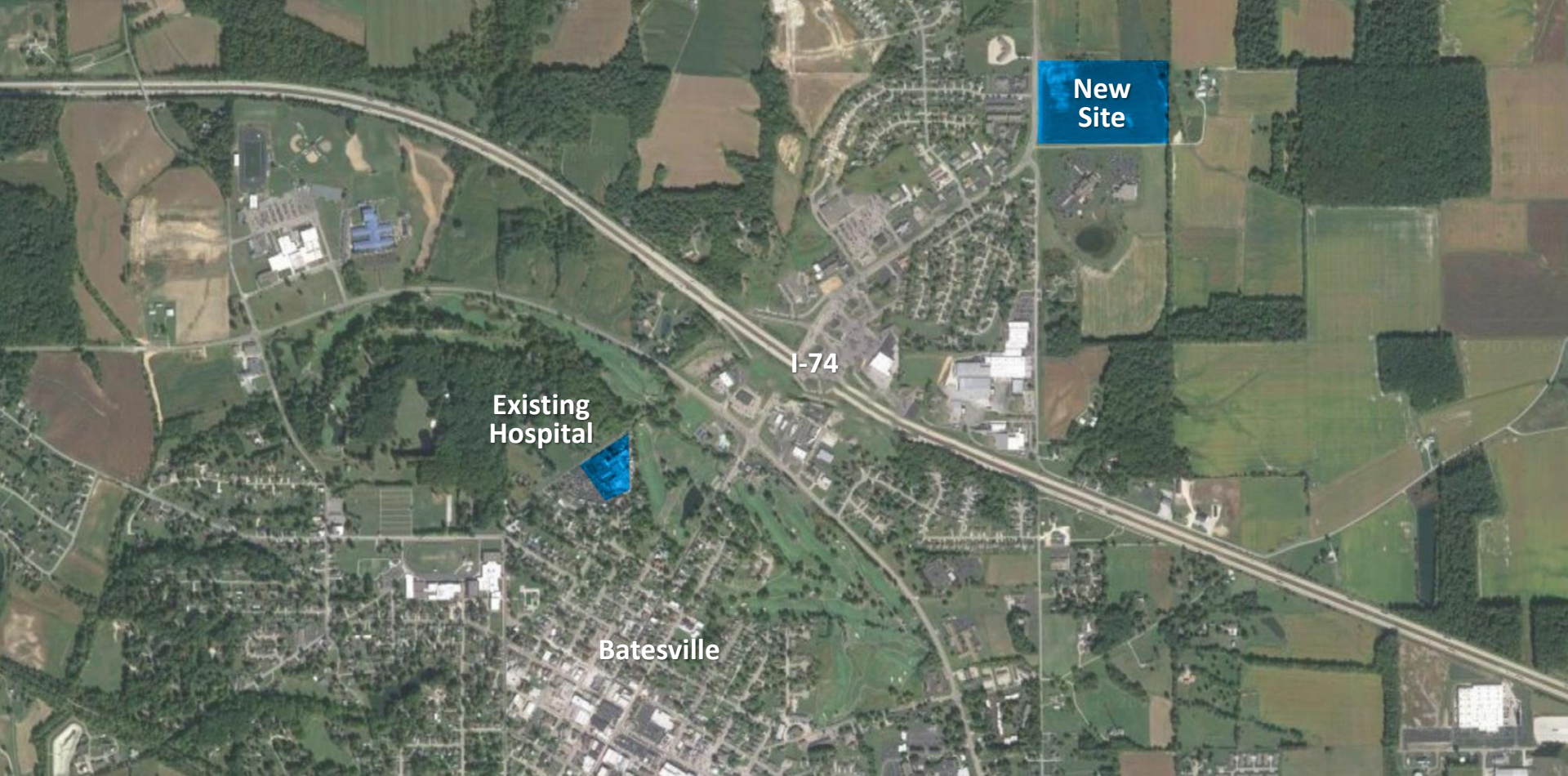


ALLOWABLE COST CONSTRAINTS - \$115M

DANIS

Design Strategies





New Site

I-74

Existing Hospital

Batesville

DESIGN APPROACH

CAMPUS CONNECTIVITY



DESIGN APPROACH

FOR COMMUNITY WELLBEING



New Hospital

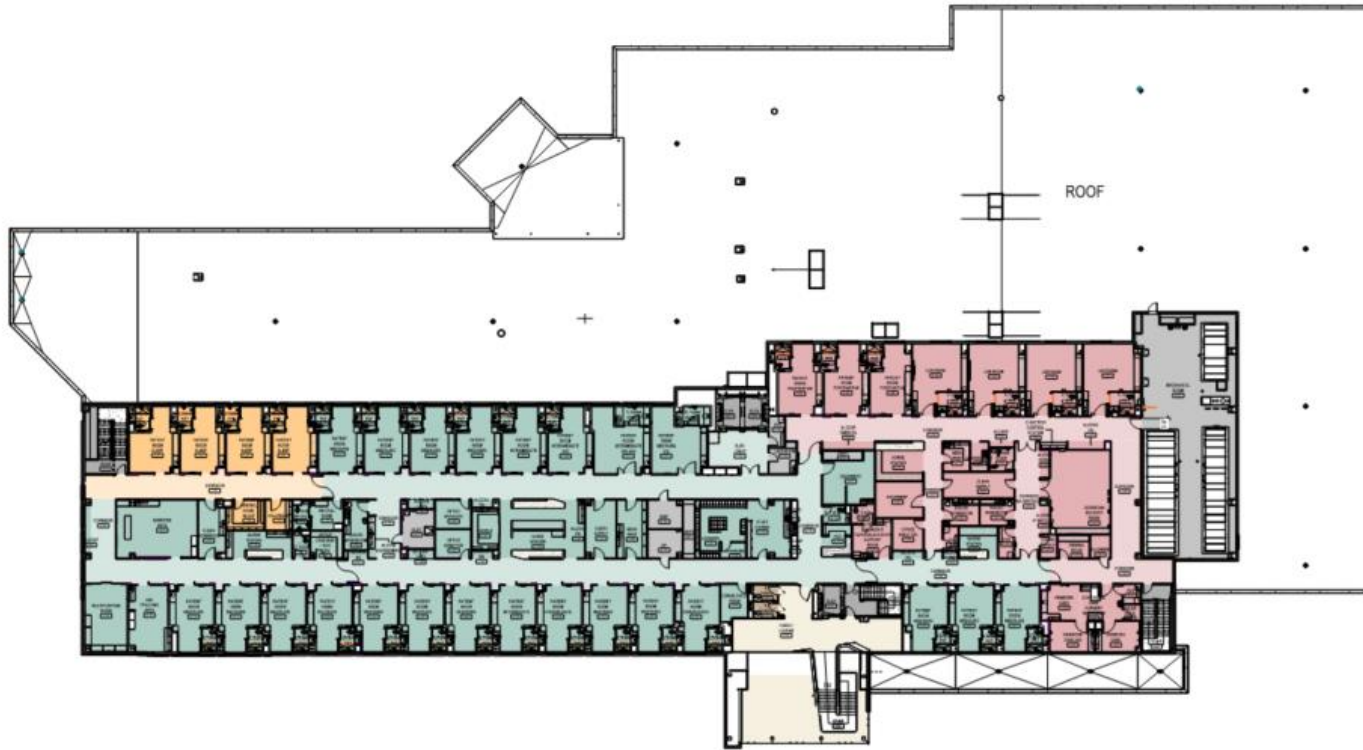
Future Health &
Wellness Center

Physician's
Center

Outpatient &
Cancer Center

State Road - 229



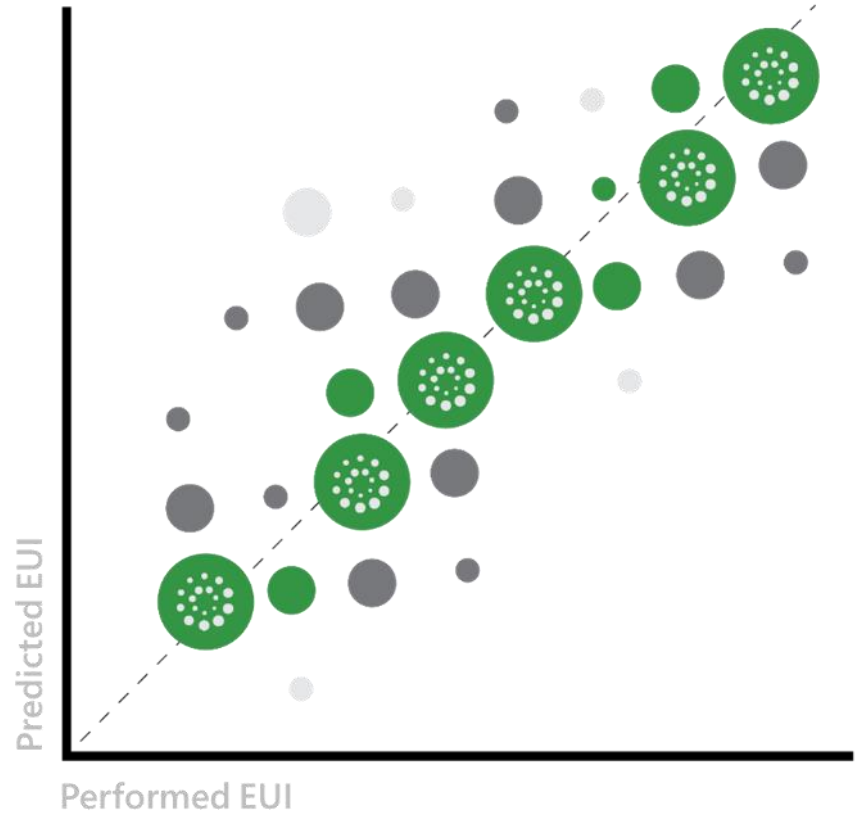




We are
Data Driven

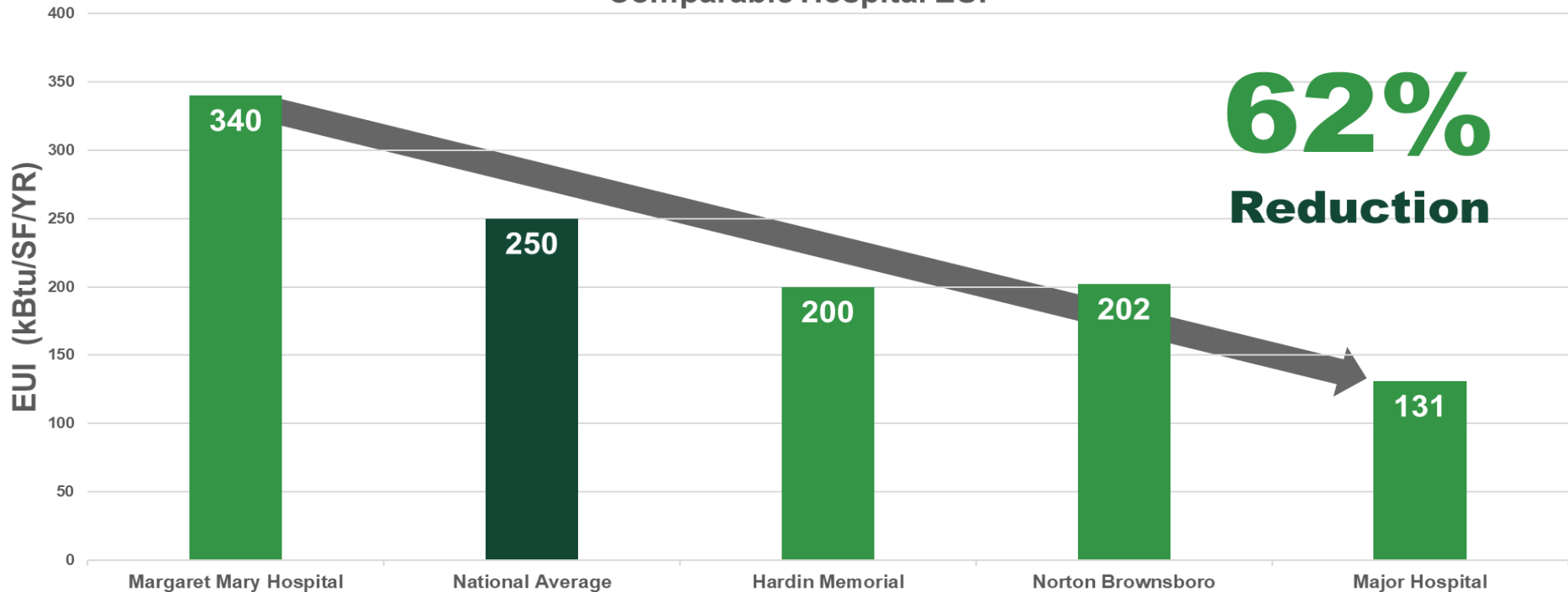
**“You cannot
manage what you
do not measure.”**

— W. Edwards Deming



Energy Benchmarking

Comparable Hospital EUI

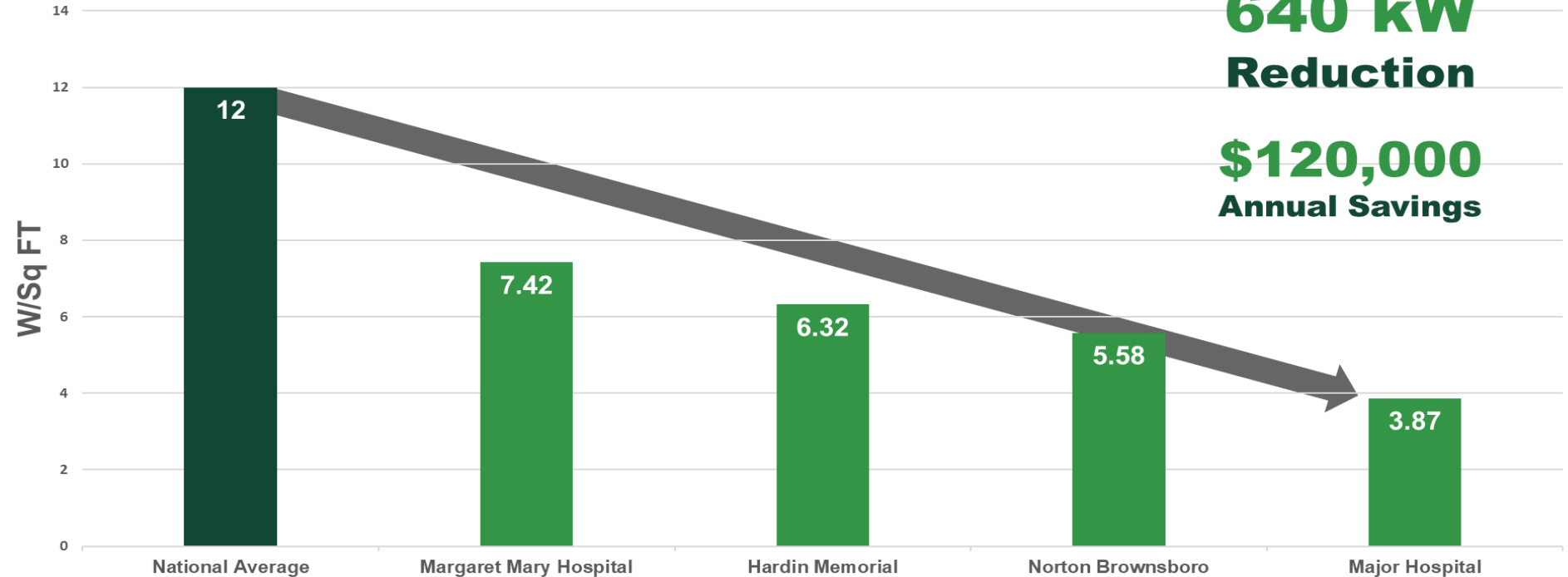


Energy Benchmarking - Demand

Comparable Hospital W/Sq Ft

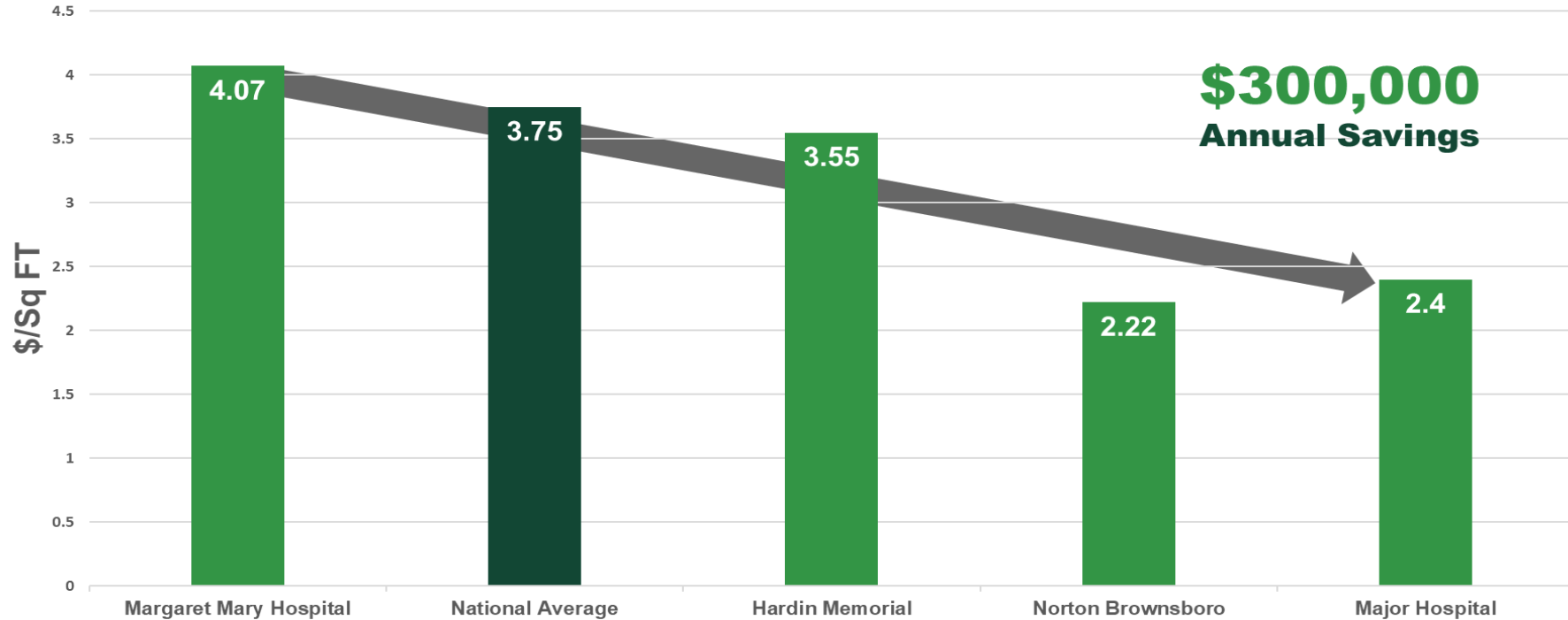
**640 kW
Reduction**

**\$120,000
Annual Savings**

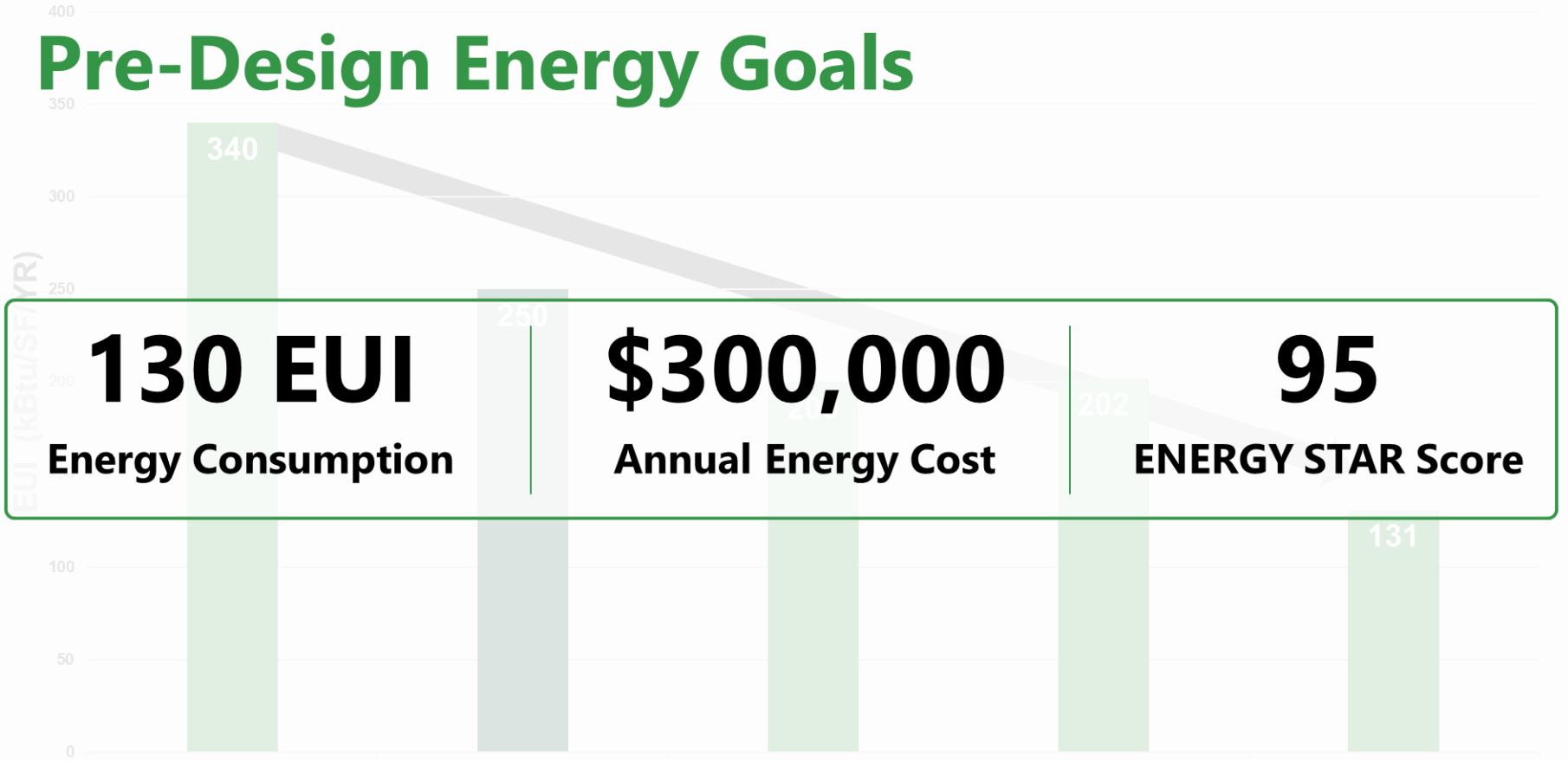


Energy Benchmarking - Cost

Comparable Hospital \$/Sq Ft



Pre-Design Energy Goals



What's Important to You?

Engaging with Local Facilities Team



Strategies

- Geothermal Central Plant
- Heat Recovery Chillers
- Air Side Energy Recovery
- Adiabatic Humidification

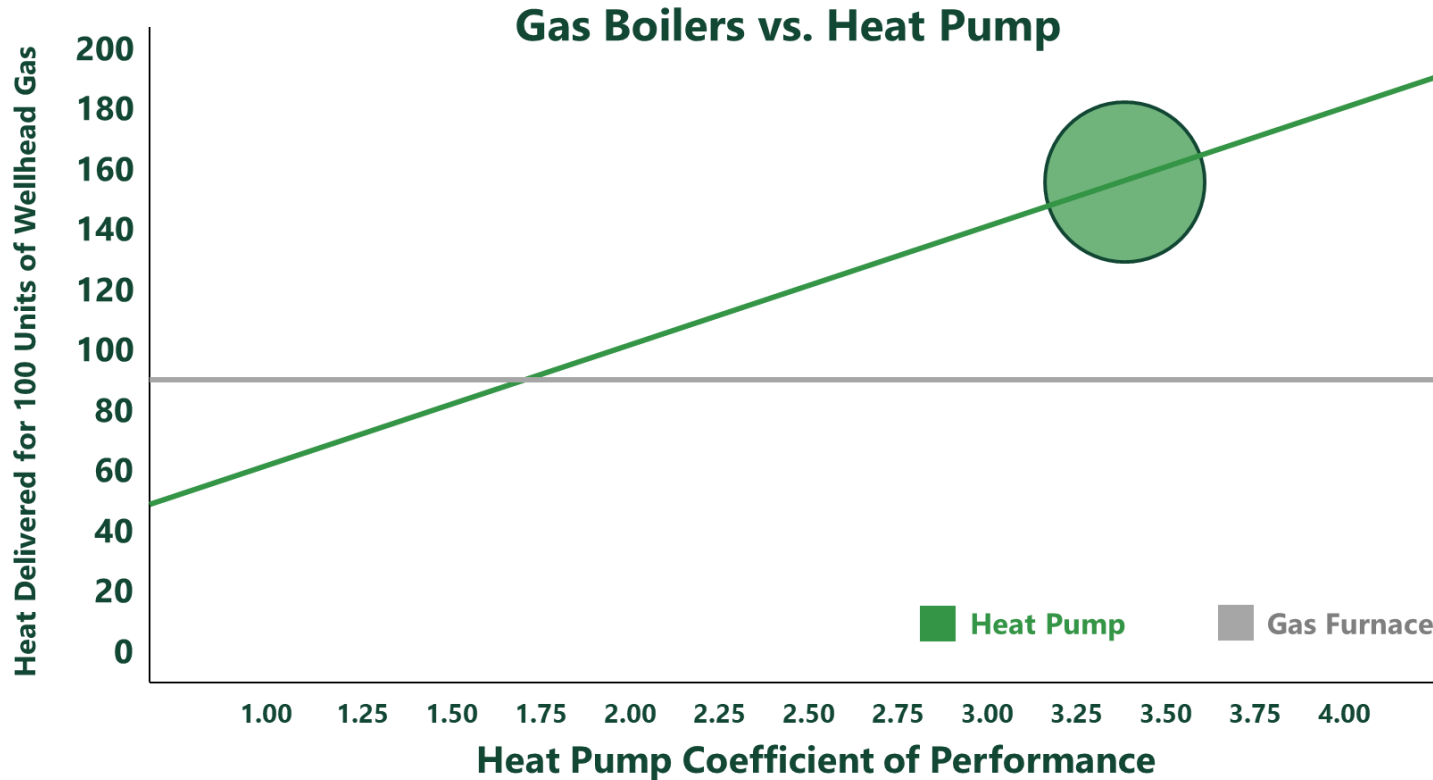


Geothermal Central Plant

Margaret Mary Health, IN

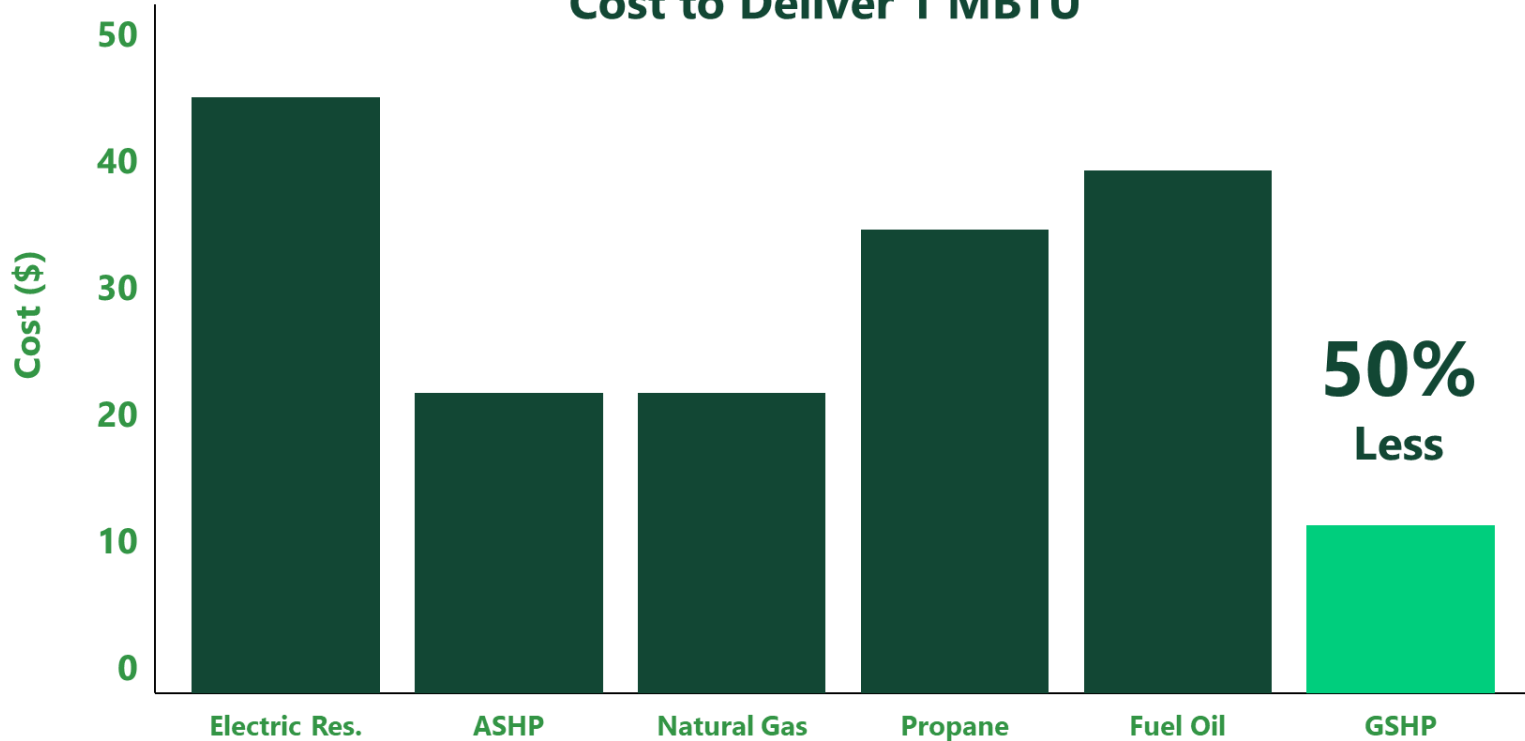


System Comparison – Efficiency



System Comparison – Efficiency

Cost to Deliver 1 MBTU



Alternative Funding



ITC Increases

Green systems / technologies



Direct-Payment to Not-for-Profit Owners



30% Base Tax Credit

Installed efficiency / generation



By The Numbers

125,000

Square Feet

\$720

\$/ft² - Construction Budget

\$90M

Construction Budget

\$95

\$/ft² - HVAC Budget

\$11,875,000

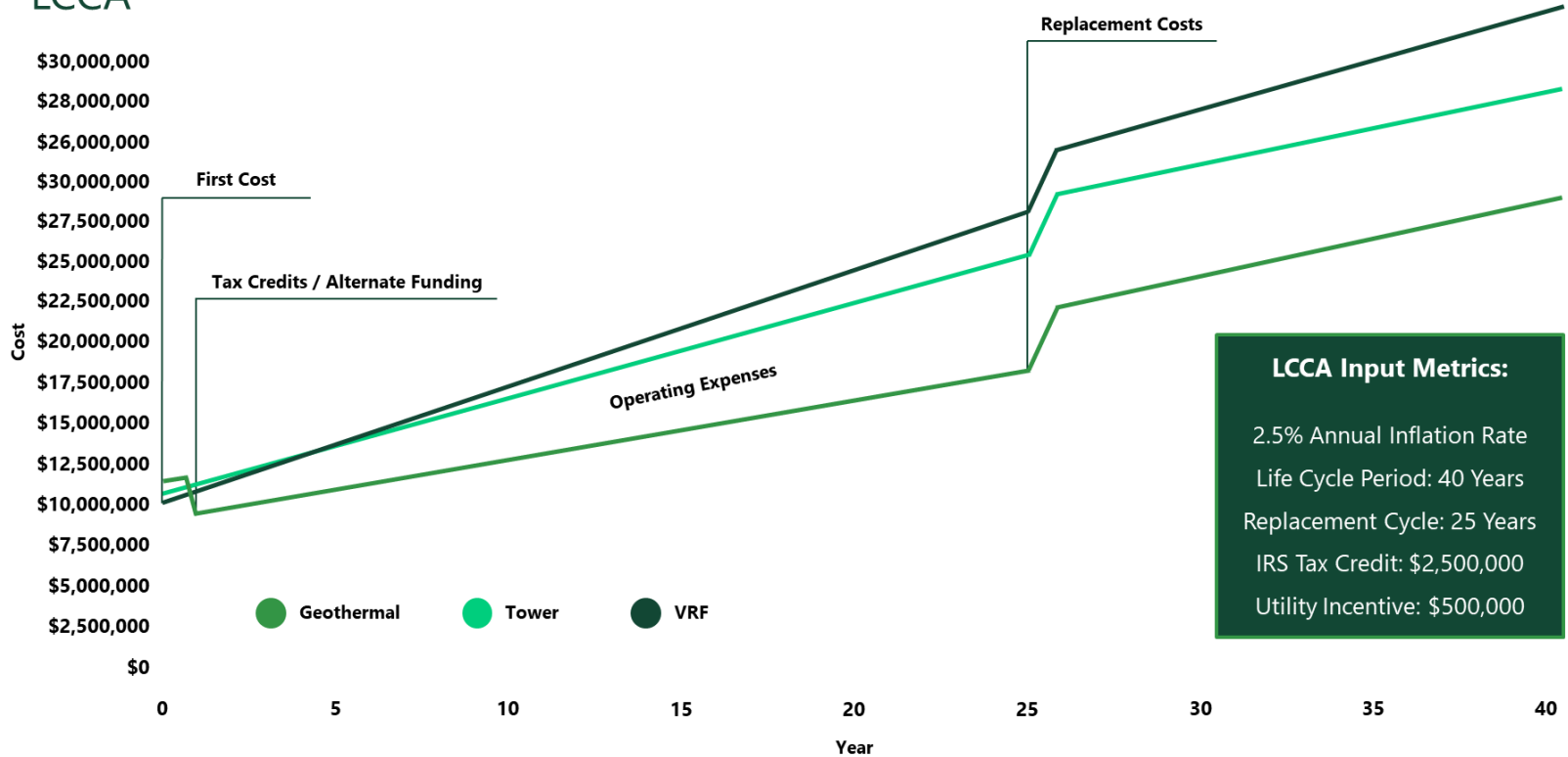
HVAC Budget

\$2,500,000

Targeted IRA Funding

Geothermal

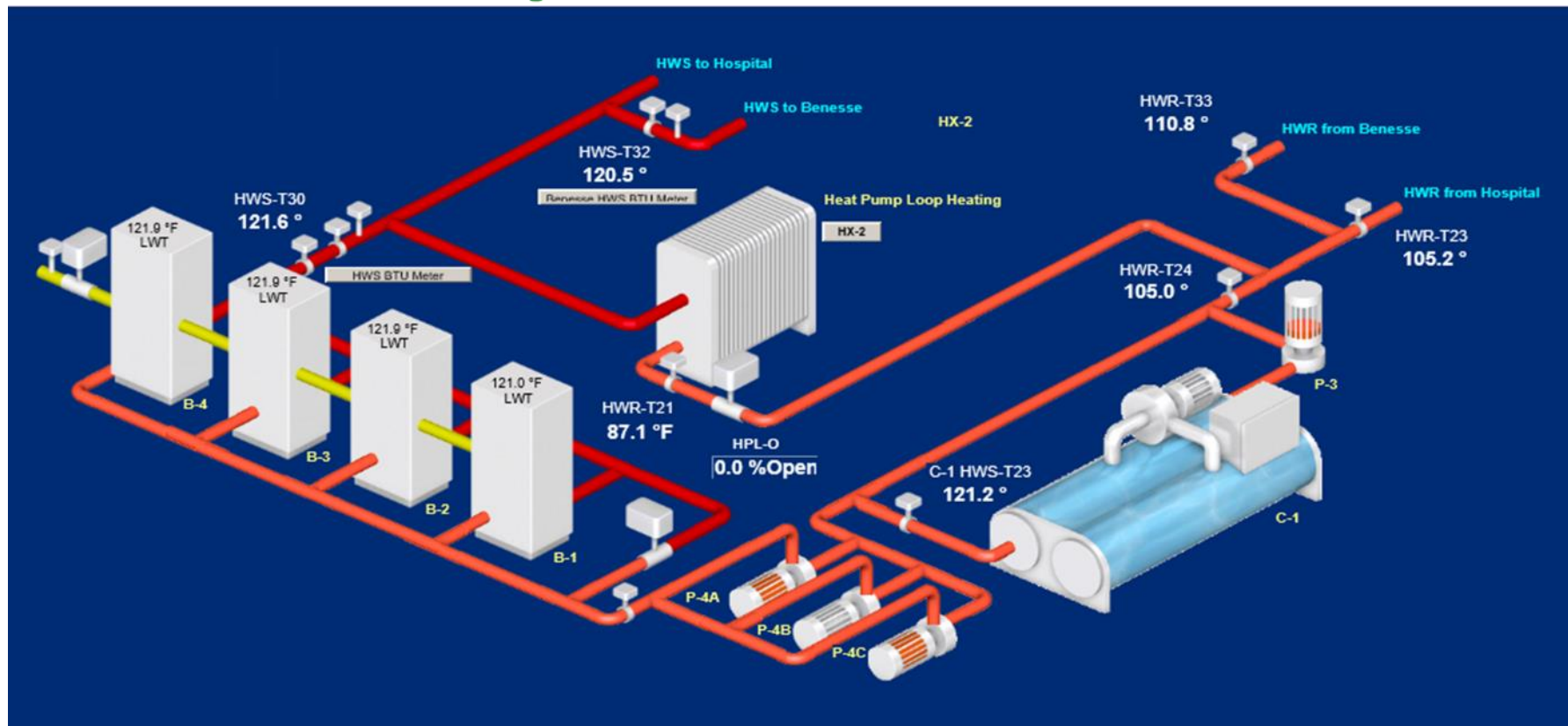
LCCA



LCCA Input Metrics:

- 2.5% Annual Inflation Rate
- Life Cycle Period: 40 Years
- Replacement Cycle: 25 Years
- IRS Tax Credit: \$2,500,000
- Utility Incentive: \$500,000

Heat Recovery





Hospital A without HRC

AVERAGE MONTHLY USAGE: 28,123

TOTAL USAGE: 337,470 CCF



Hospital B with HRC

AVERAGE MONTHLY USAGE: 15,359

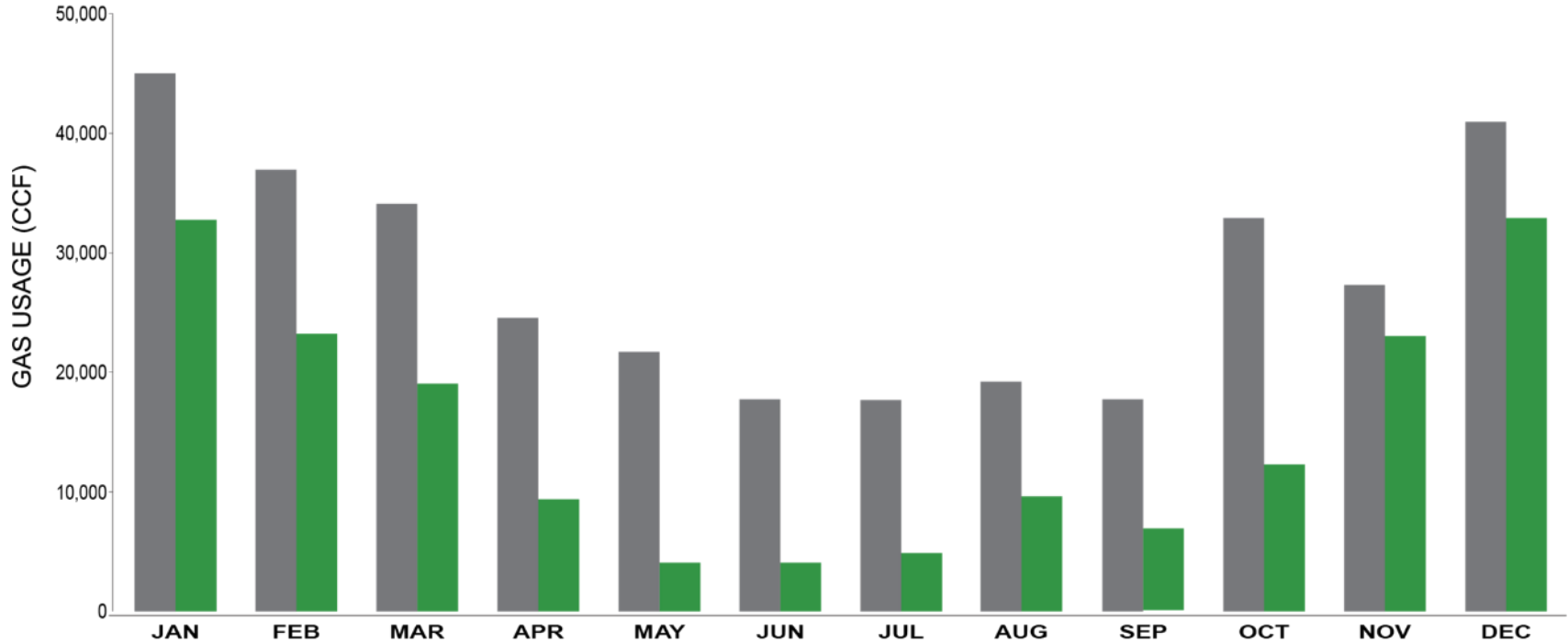
TOTAL USAGE: 184,304 CCF

SAVINGS

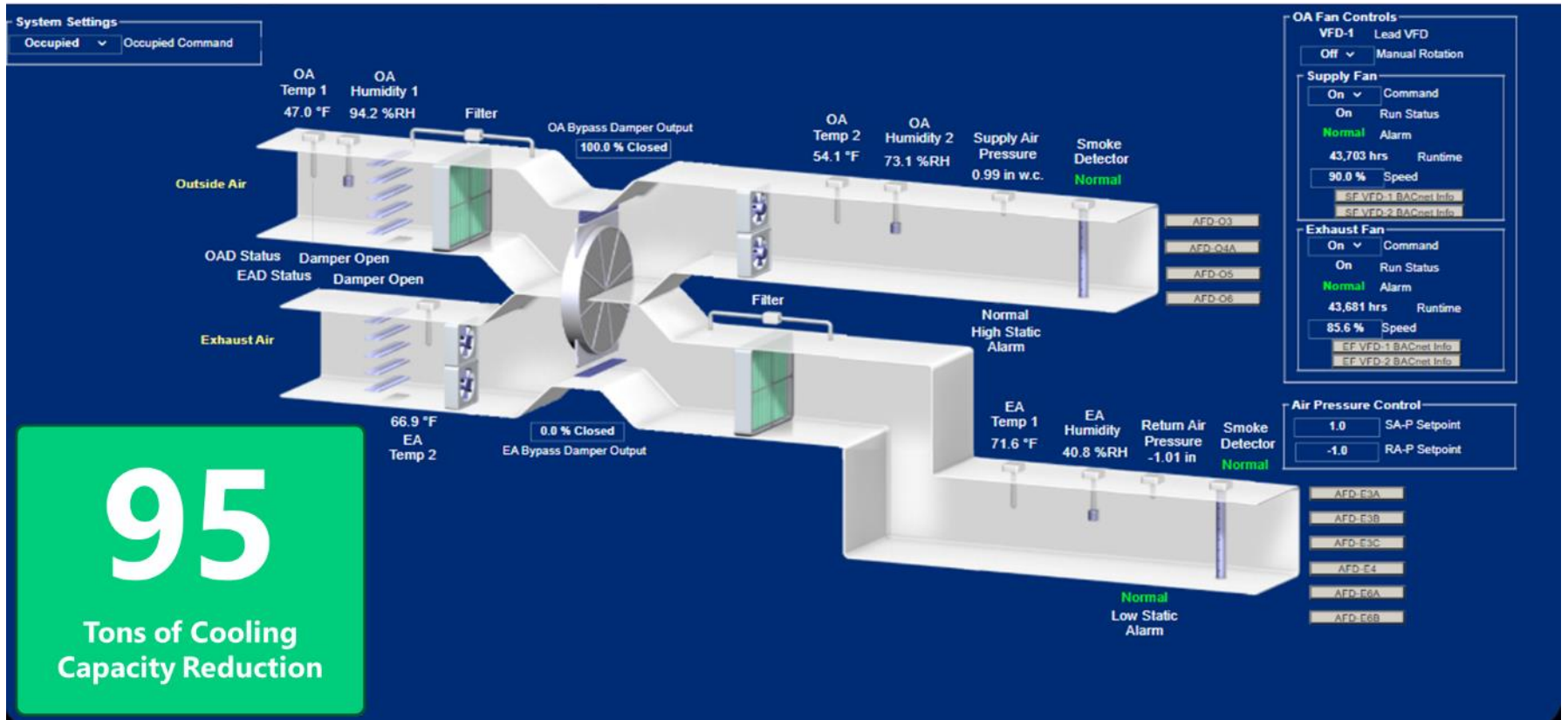


AVERAGE MONTHLY USAGE SAVINGS: **12,764 CCF**

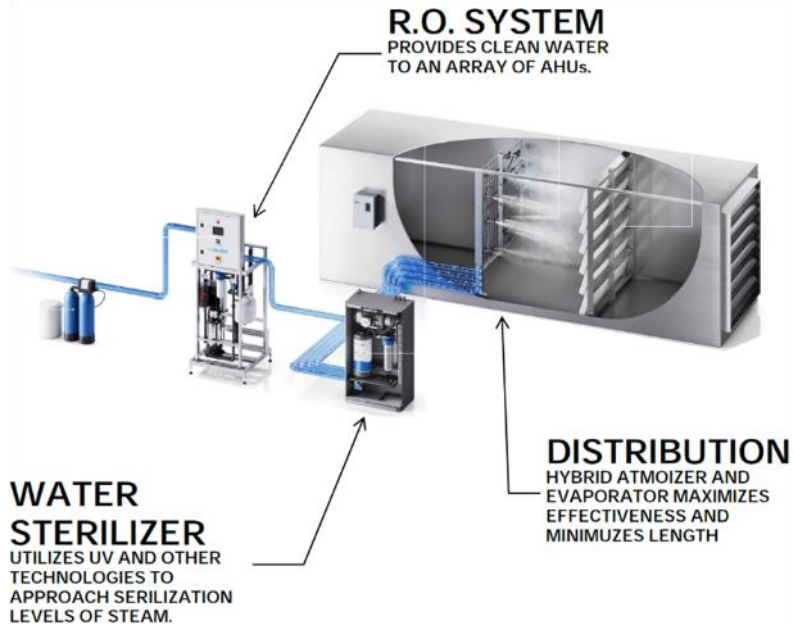
TOTAL ANNUAL SAVINGS: **153,166 CCF**



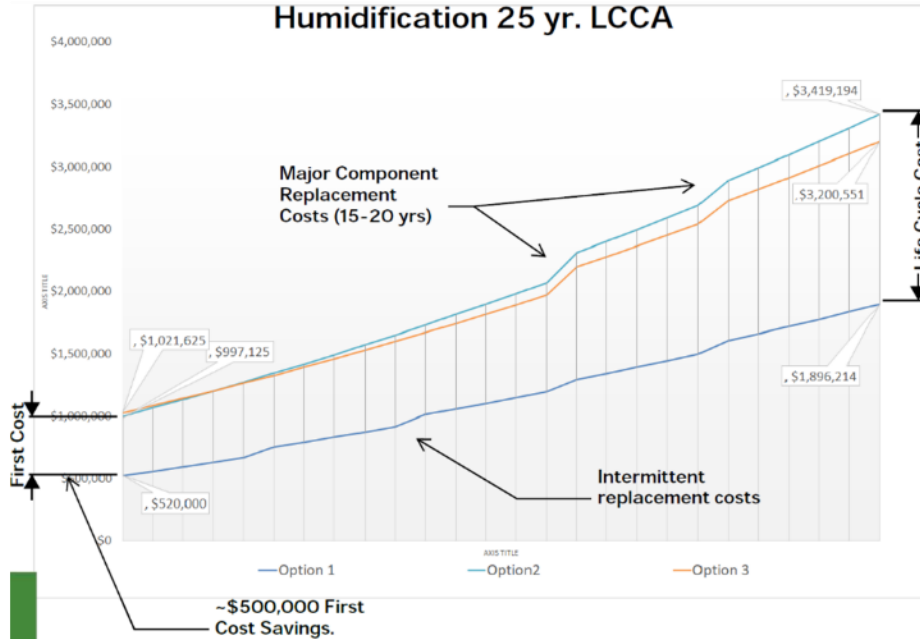
Energy Recovery



Humidification Options



Adiabatic Humidification



Cost Assumptions/Clarifications:

- Electric sterilizer maintenance premium ~\$15,000/year
- Utility costs based on historical billing data.
- Study doesn't account for costs of sterilization energy.

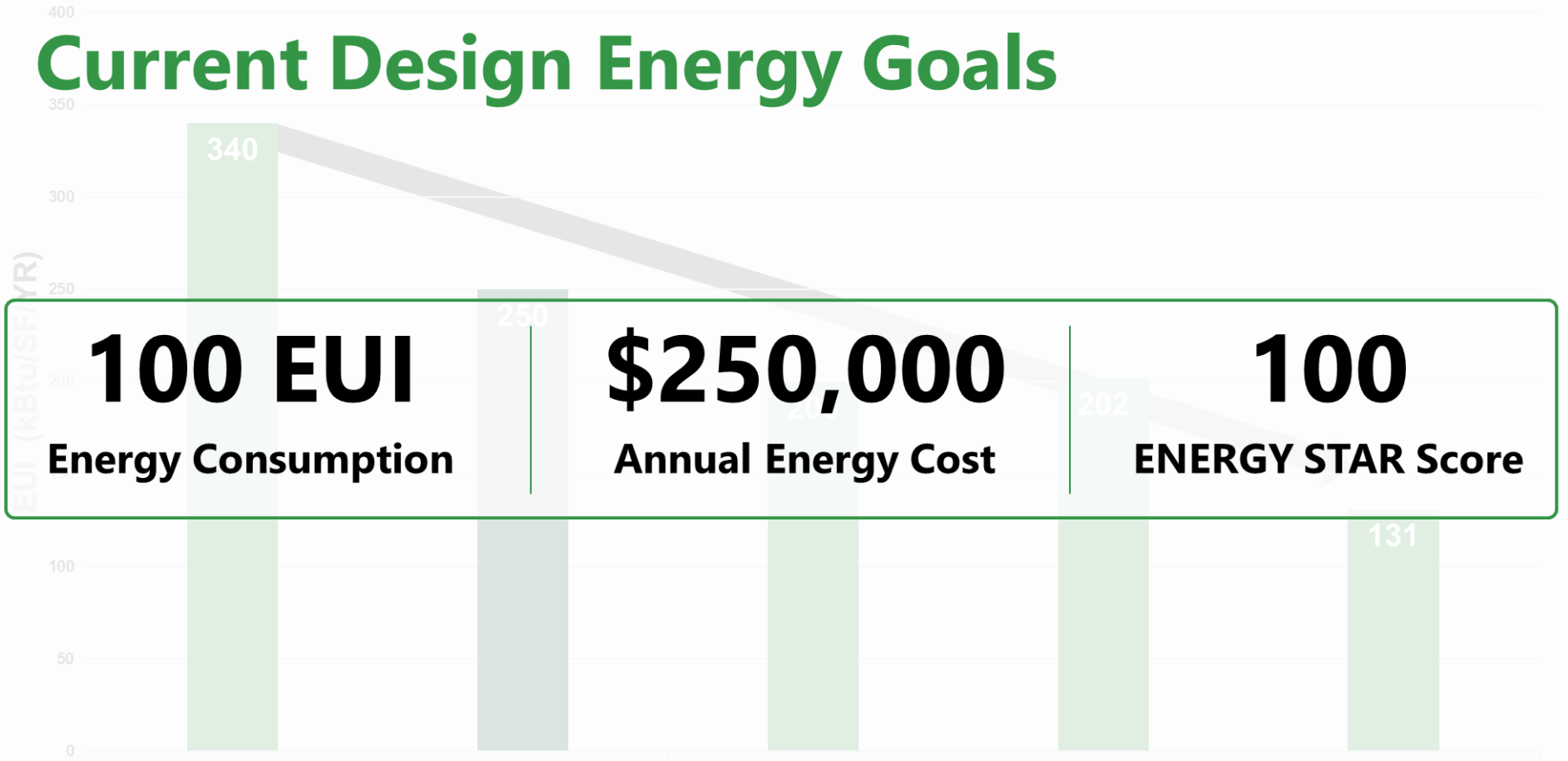
Adiabatic	Steam
- Pumps + UV + Heat = ~45w/gal	- @ 65% Eff = ~3600w/gal
- EUI: ~3.4	- EUI: ~10.2
- Energy Cost/Year = ~\$5750	- Energy Cost/Year = ~\$11,500
- Maintenance Cost/Year = ~\$10,000	- Maintenance Cost/Year = ~\$55,000*
~\$50,000 savings / year.	*ASHRAE O&O cost database

Electrification of Health Care & Resiliency

- Sterilization
- Kitchen
- Generator Back-up



Current Design Energy Goals



Construction



DANIS Innovations

Industrialized Construction Center



ONSITE ICC
VIDEO

DANIS

OVERALL RESULTS

867,000+ SF TOTAL PROJECTS
ONSITE INDUSTRIALIZED CONSTRUCTION

DANIS Innovations
Industrialized Construction Center

6.5%
cost
savings

ZERO
WASTE
sustainability

18%
workforce
savings

**ENHANCED
QUALITY**
manufacturing
techniques

21%
schedule
savings

81%
IMPROVED
Workforce Utilization



ENHANCING ENVELOPE PERFORMANCE
WHOLE BUILDING AIR LEAKAGE TESTING
ASTM E779

50%
MORE
EFFICIENT

Allowable Leakage Per Design
0.40 CFM75/ft²

Danis Onsite ICC Envelope
<0.20 CFM75/ft²



DANIS

**healthcare
design** CONFERENCE + EXPO

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ONSITE INDUSTRIALIZED CONSTRUCTION CENTER



Q&A

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