

Rural & Resilient:

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





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Agenda

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.



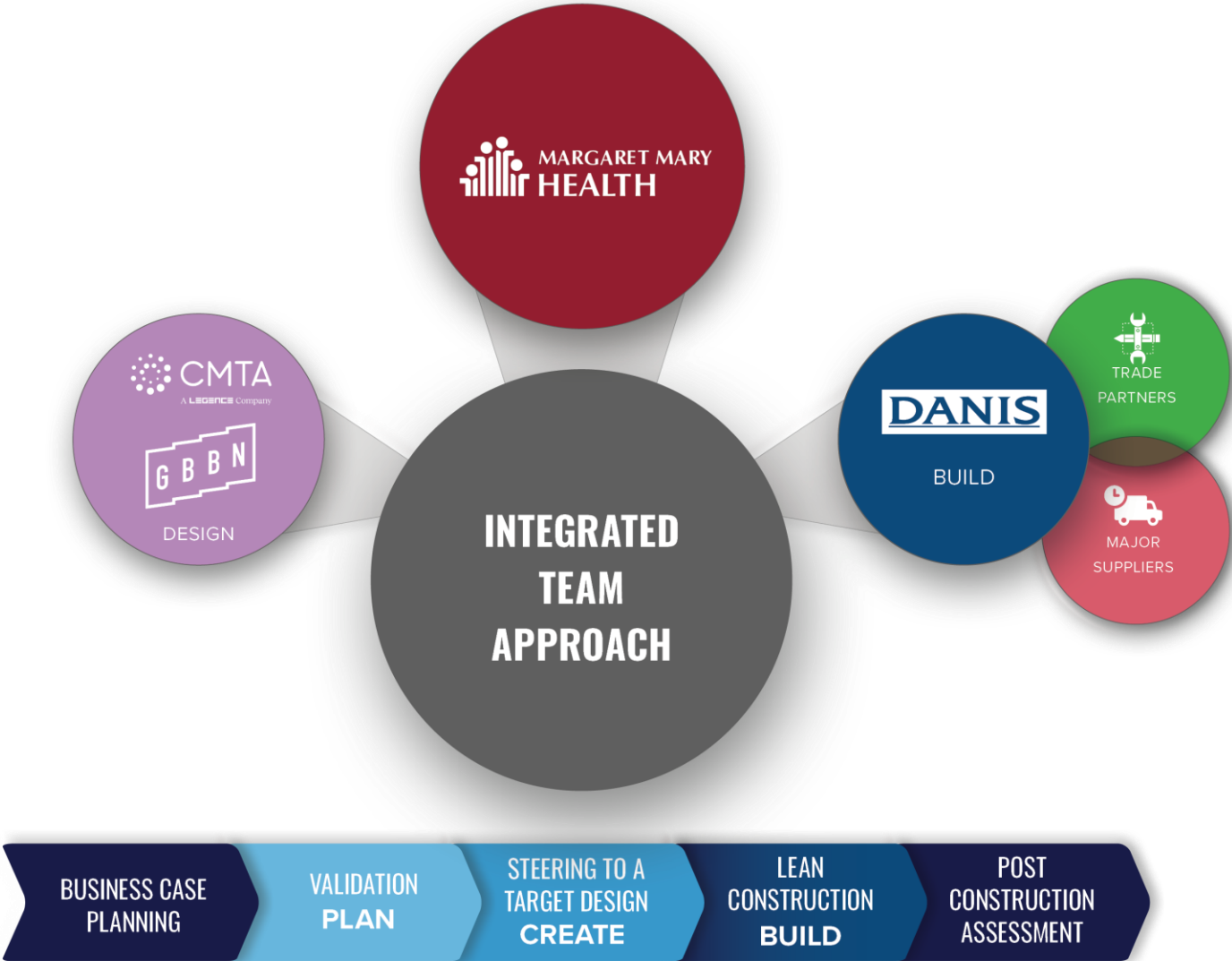
2023

Building the right team.

Target Value Delivery



INTEGRATED TEAM APPROACH



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



TARGET VALUE DELIVERY

RESILIENCY + SUSTAINABLE FOR THE NEXT 90 YEARS

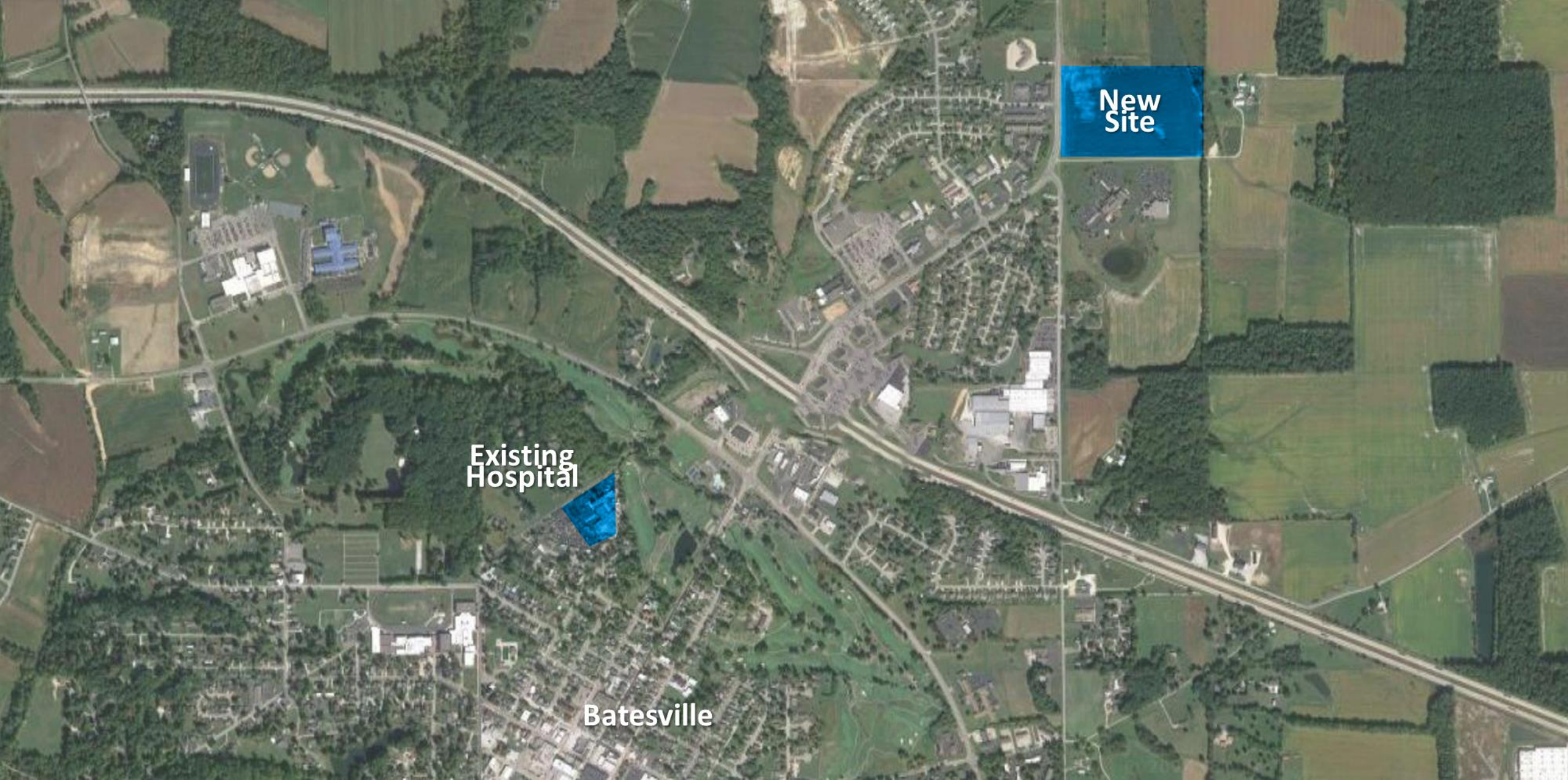
- Current Facility - 340 EUI
- Midwest Average - 250 EUI
- MMH Goal - <100 EUI

ALLOWABLE COST CONSTRAINTS - \$115M



Design Strategies



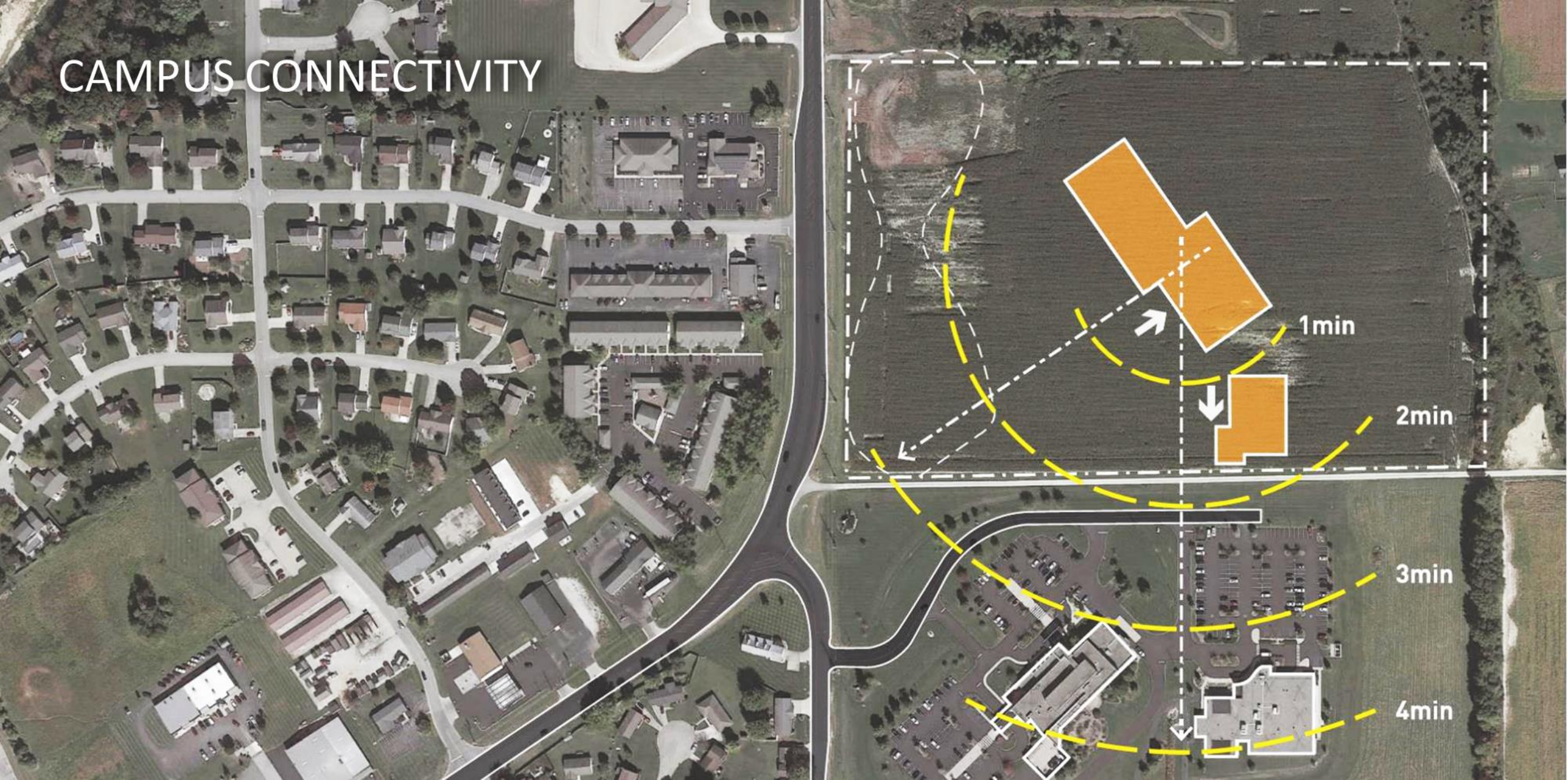


New Site

Existing Hospital

Batesville

CAMPUS CONNECTIVITY



DESIGN APPROACH

FOR COMMUNITY WELLBEING

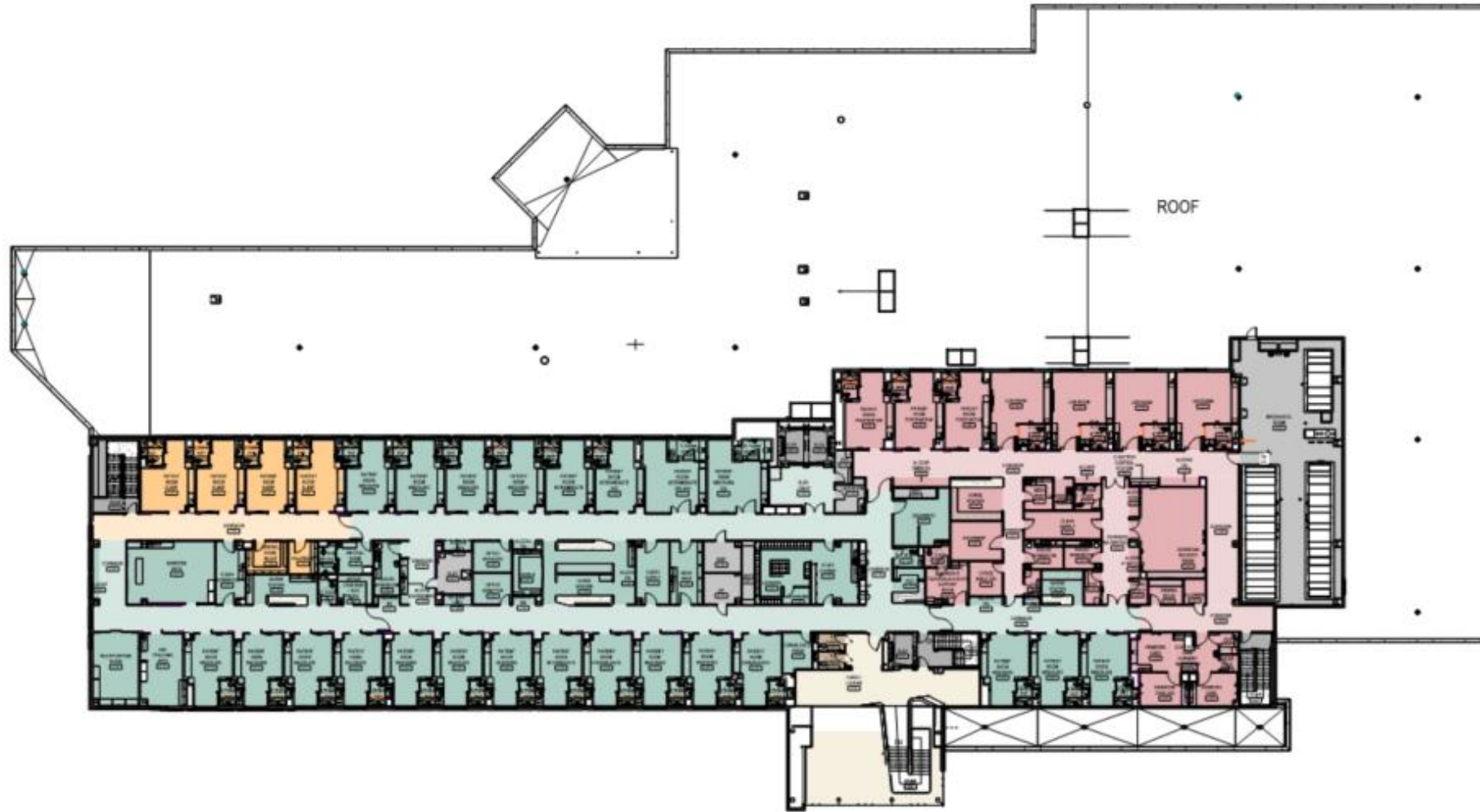


DESIGN APPROACH

FOR COMMUNITY WELLBEING





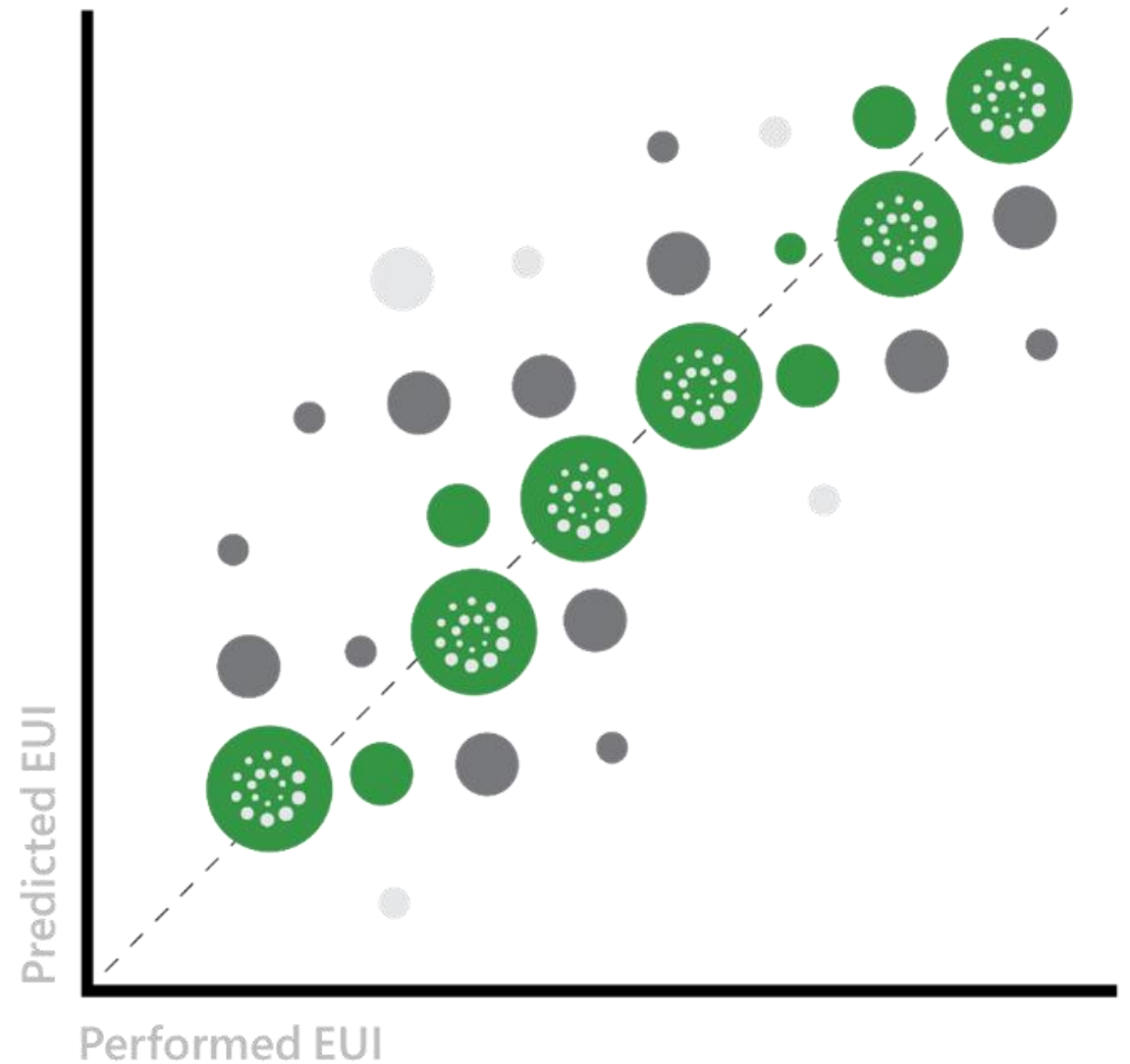




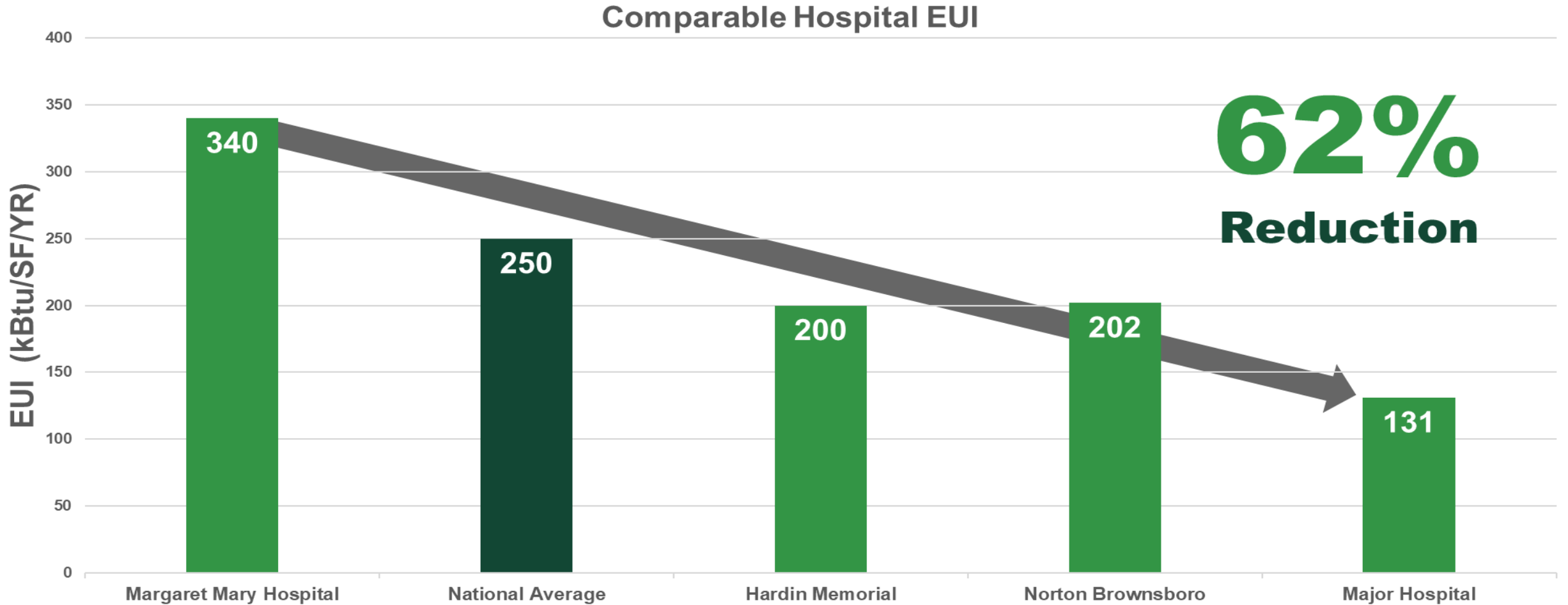
We are Data Driven

"You cannot
manage what you
do not measure."

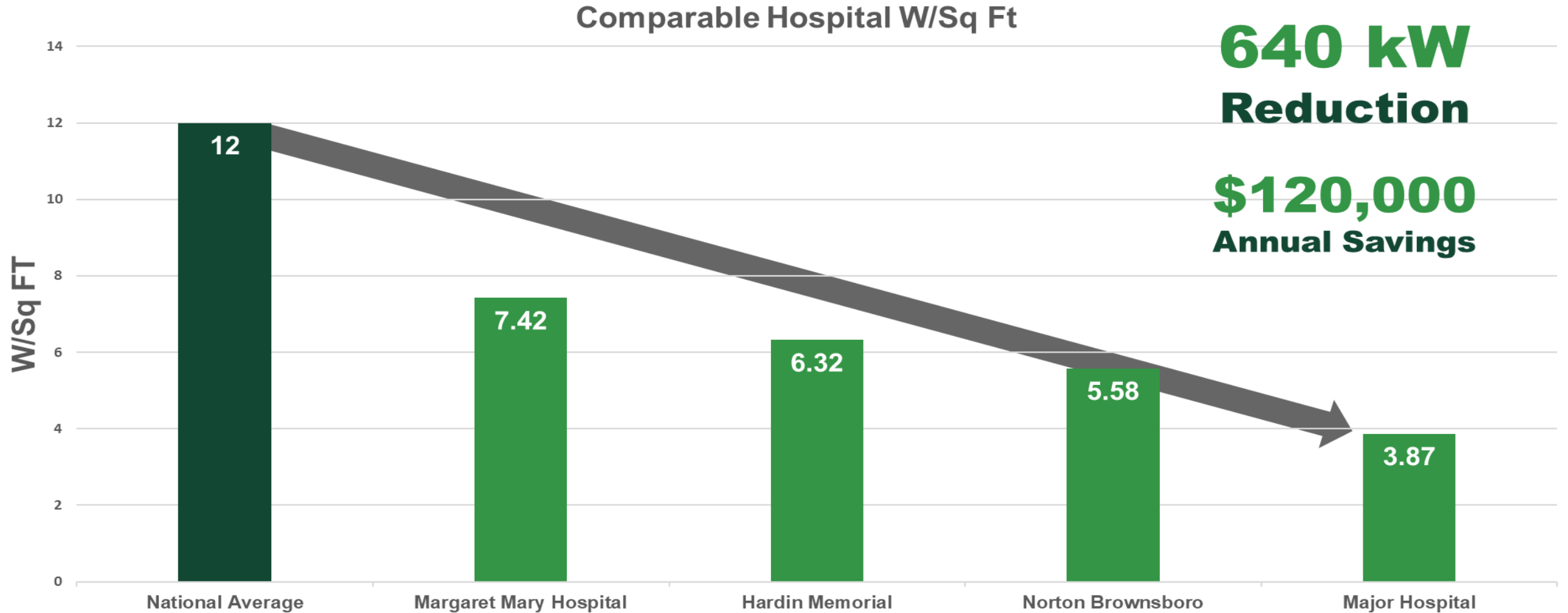
— W. Edwards Deming



Energy Benchmarking

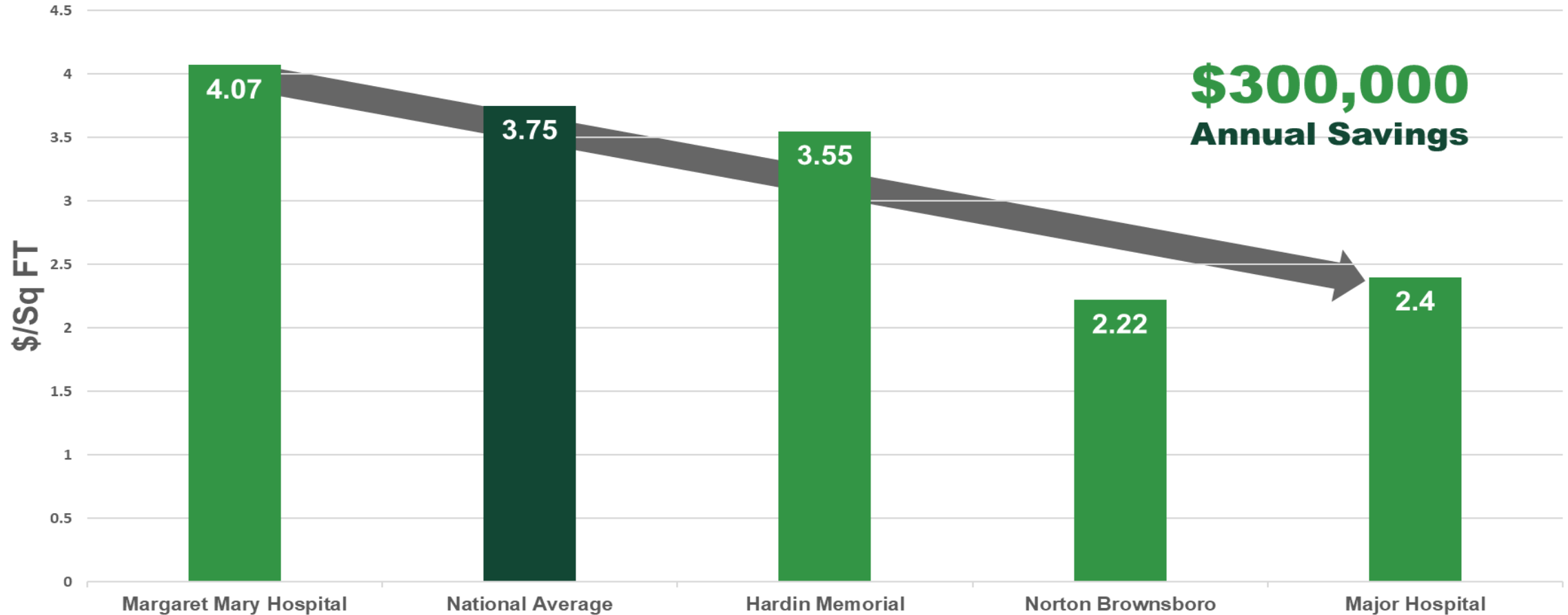


Energy Benchmarking - Demand

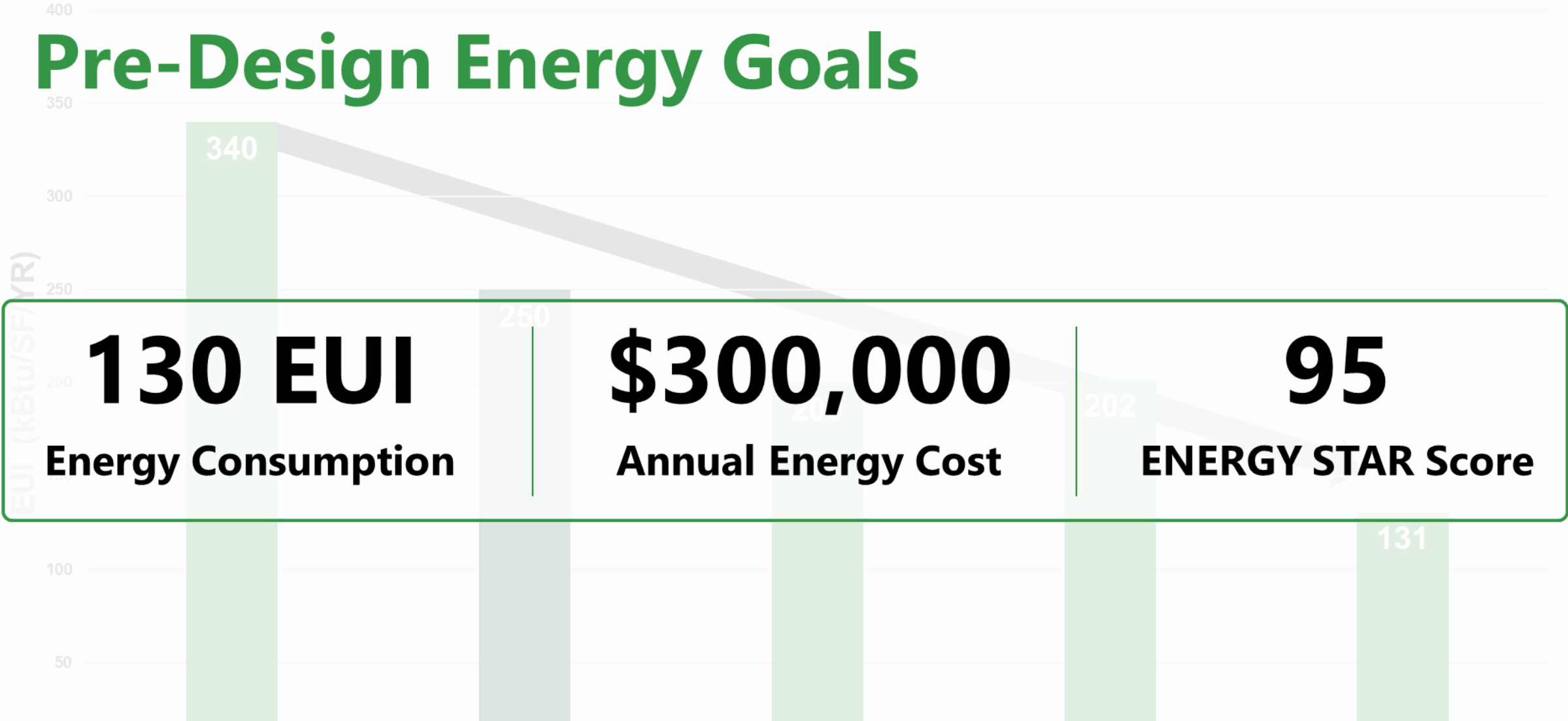


Energy Benchmarking - Cost

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



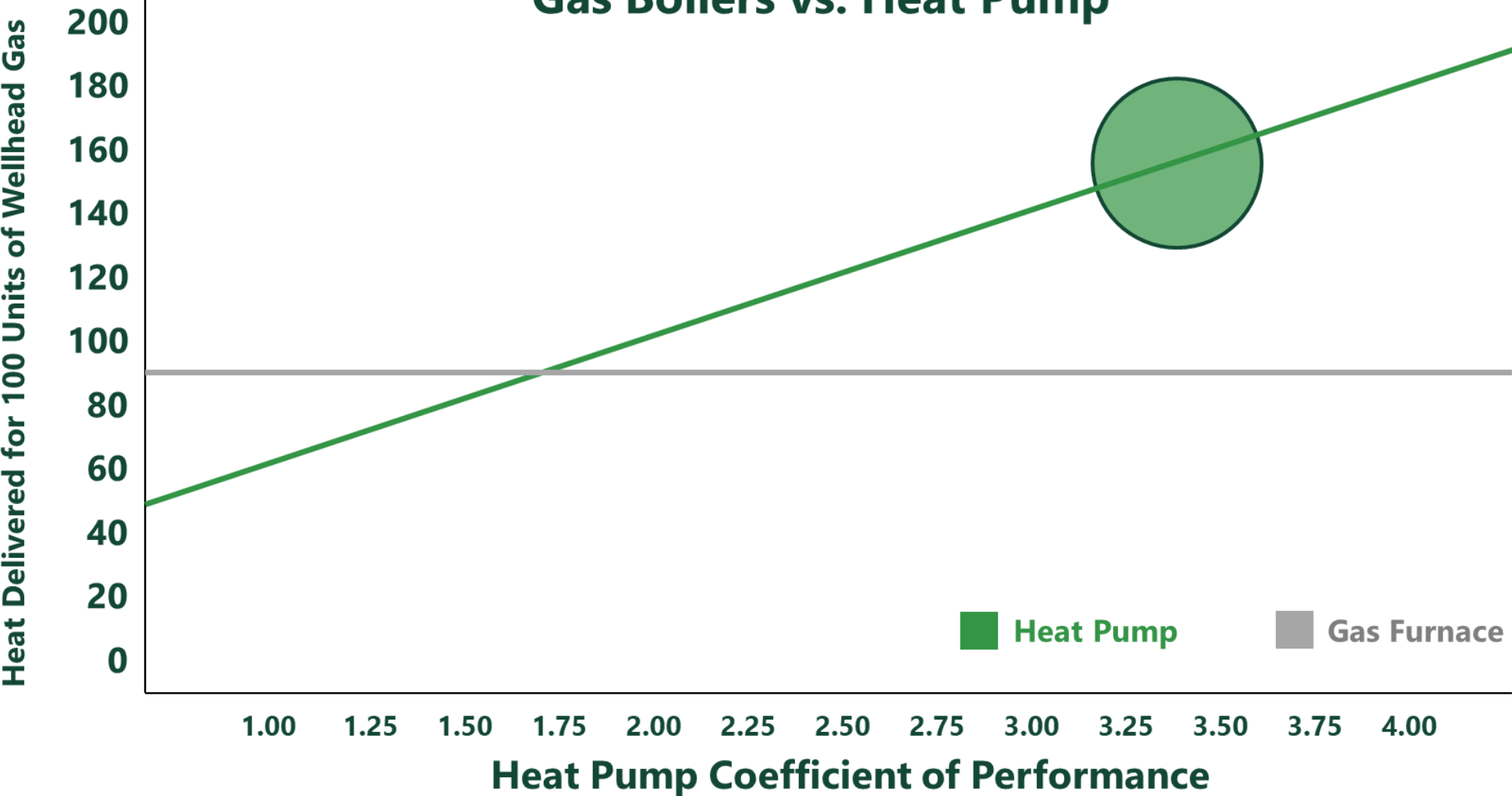
Geothermal Central Plant

Margaret Mary Health, IN



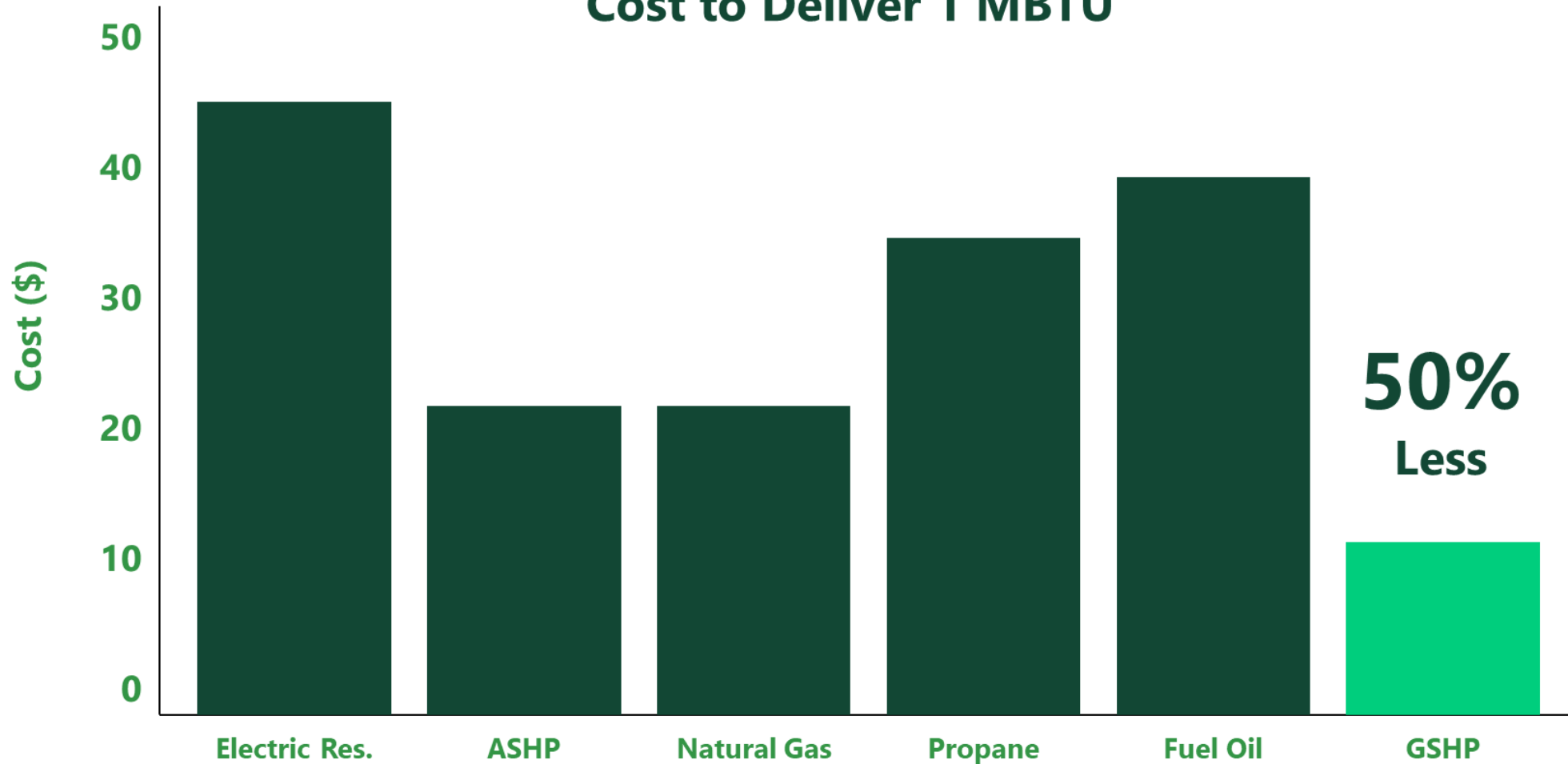
System Comparison – Efficiency

Gas Boilers vs. Heat Pump



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



\$500,000

Utility Incentive



By The Numbers

125,000

Square Feet

\$720

\$/ft² - Construction Budget

\$90M

Construction Budget

\$95

\$/ft² - HVAC Budget

\$11,875,000

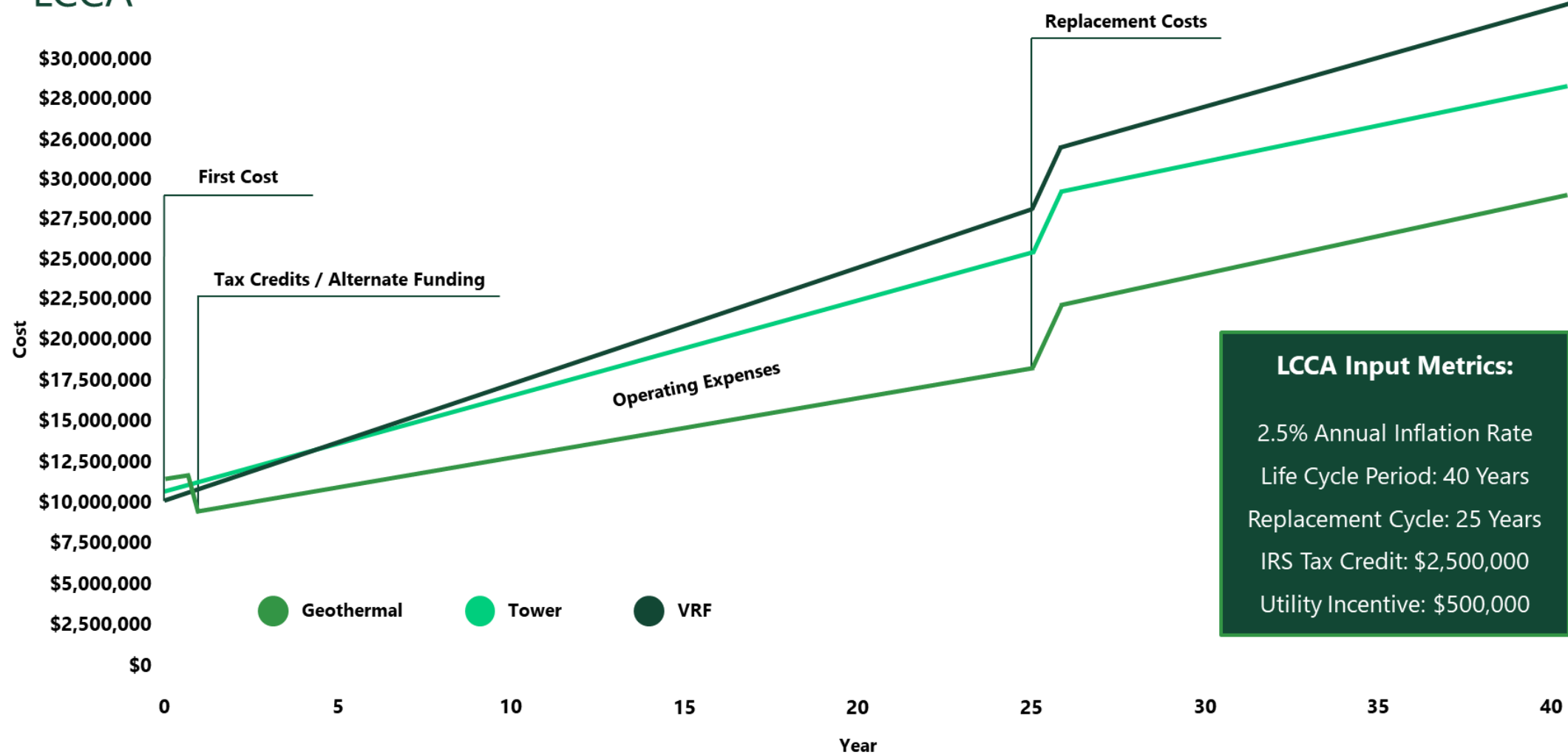
HVAC Budget

\$2,500,000

Targeted IRA Funding

Geothermal

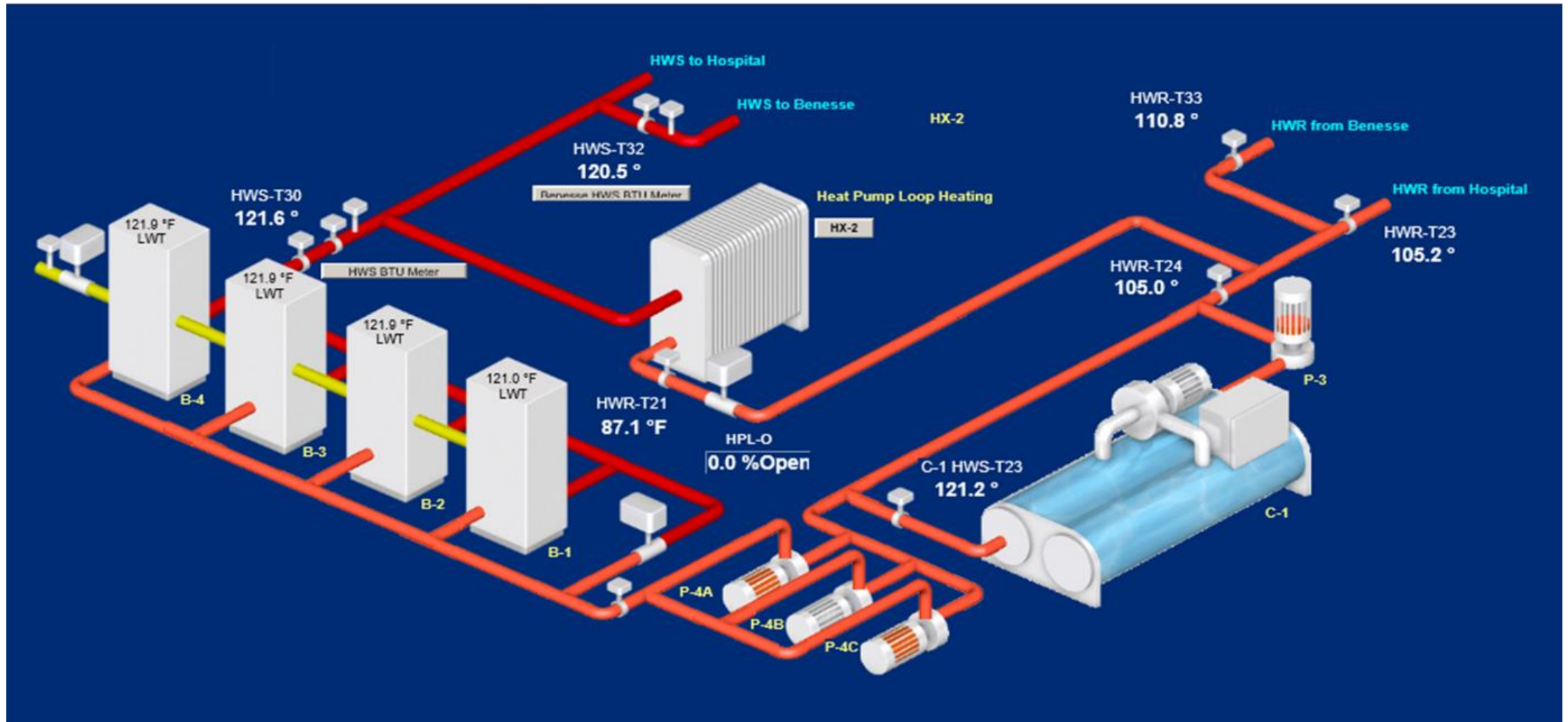
LCCA



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

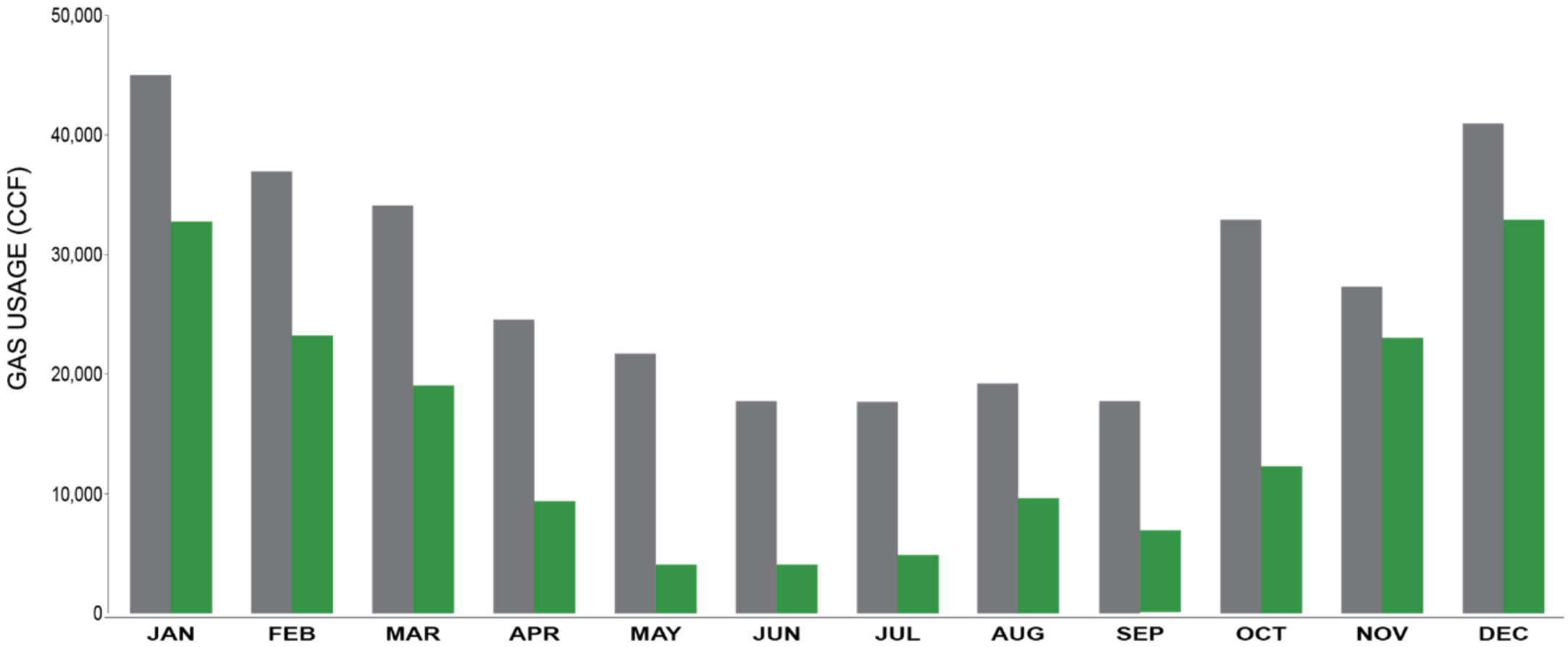
AVERAGE MONTHLY USAGE: 15,359

TOTAL USAGE: 184,304 CCF

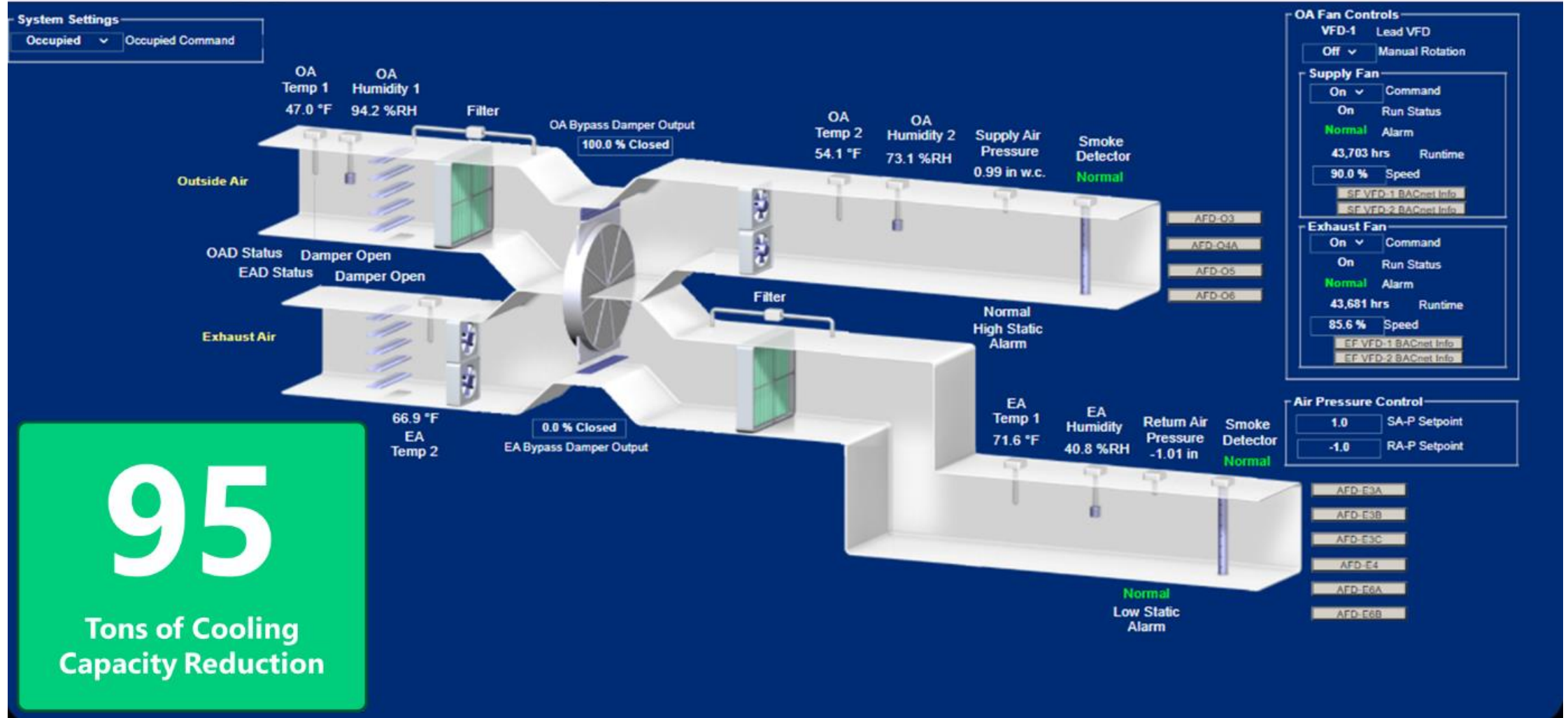
SAVINGS

AVERAGE MONTHLY USAGE SAVINGS: 12,764 CCF

TOTAL ANNUAL SAVINGS: 153,166 CCF

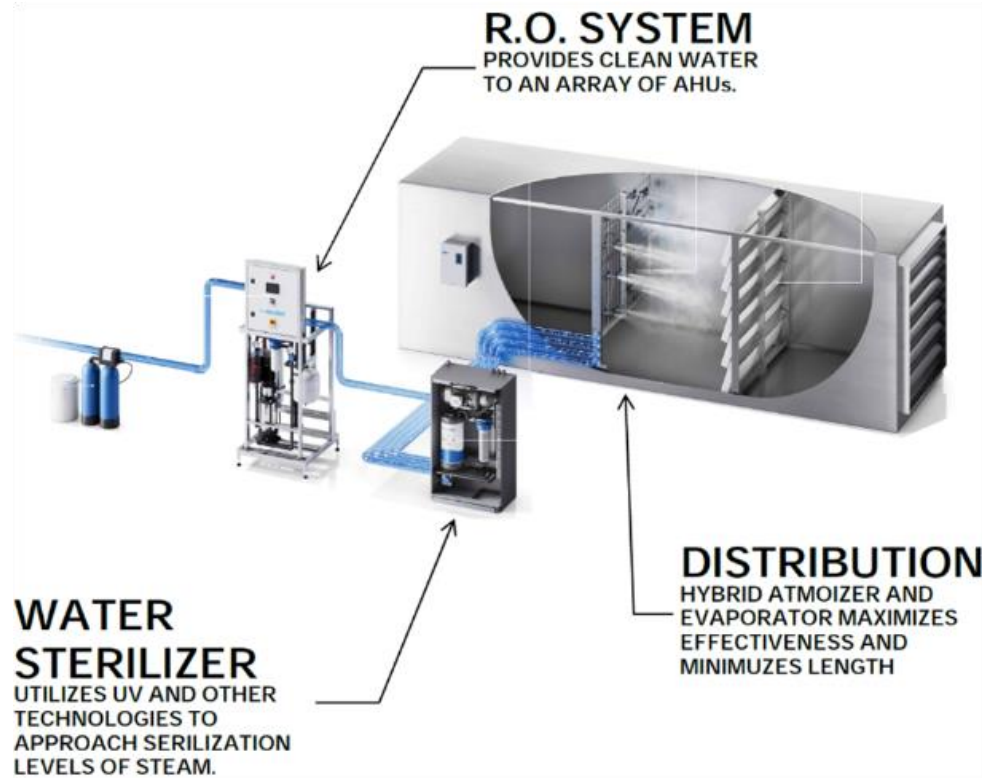


Energy Recovery

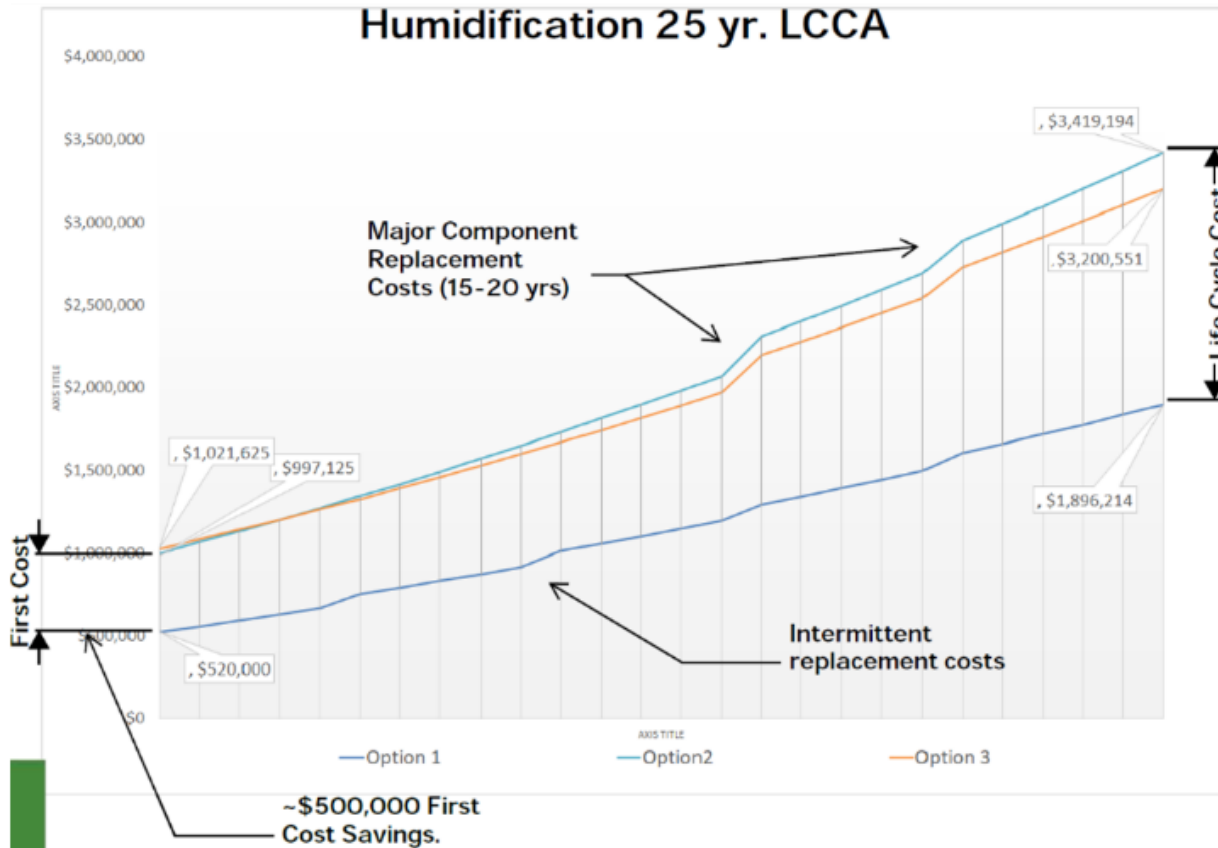


95
 Tons of Cooling
 Capacity Reduction

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.

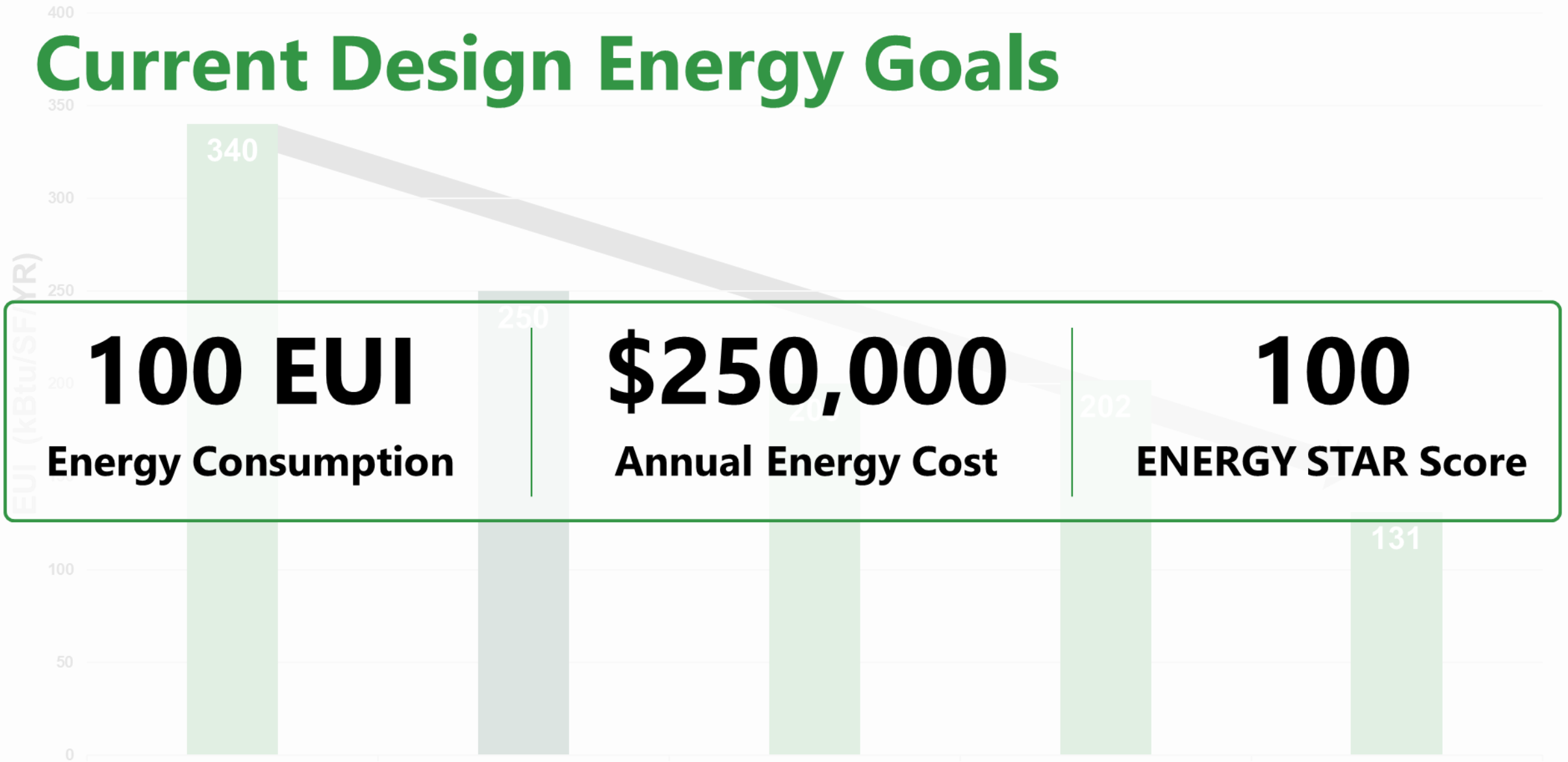
Adiabatic	Steam
- Pumps + UV + Heat = <u>~45w/gal</u>	- @ 65% Eff = <u>~3600w/gal</u>
- EUI: <u>~3.4</u>	- EUI: <u>~10.2</u>
- Energy Cost/Year = <u>~\$5750</u>	- Energy Cost/Year = <u>~\$11,500</u>
- Maintenance Cost/Year = <u>~\$10,000</u>	- Maintenance Cost/Year = <u>~\$55,000*</u>
<u>~\$50,000 savings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



Q & A