

**BREAKOUT I SESSION C**

# **Benchmarking & Risk Management**

**Vincent Martinez** – CEO, Architecture 2030

**Andrew Queenan** – Senior Project Architect and Sustainable Design Lead, TowerPinkster

2026 Michigan Energy Summit

Hosted by the Michigan Green Building Collaborative

2026 michigan  **energy**summit

Michigan Energy Summit- 05/14/2026

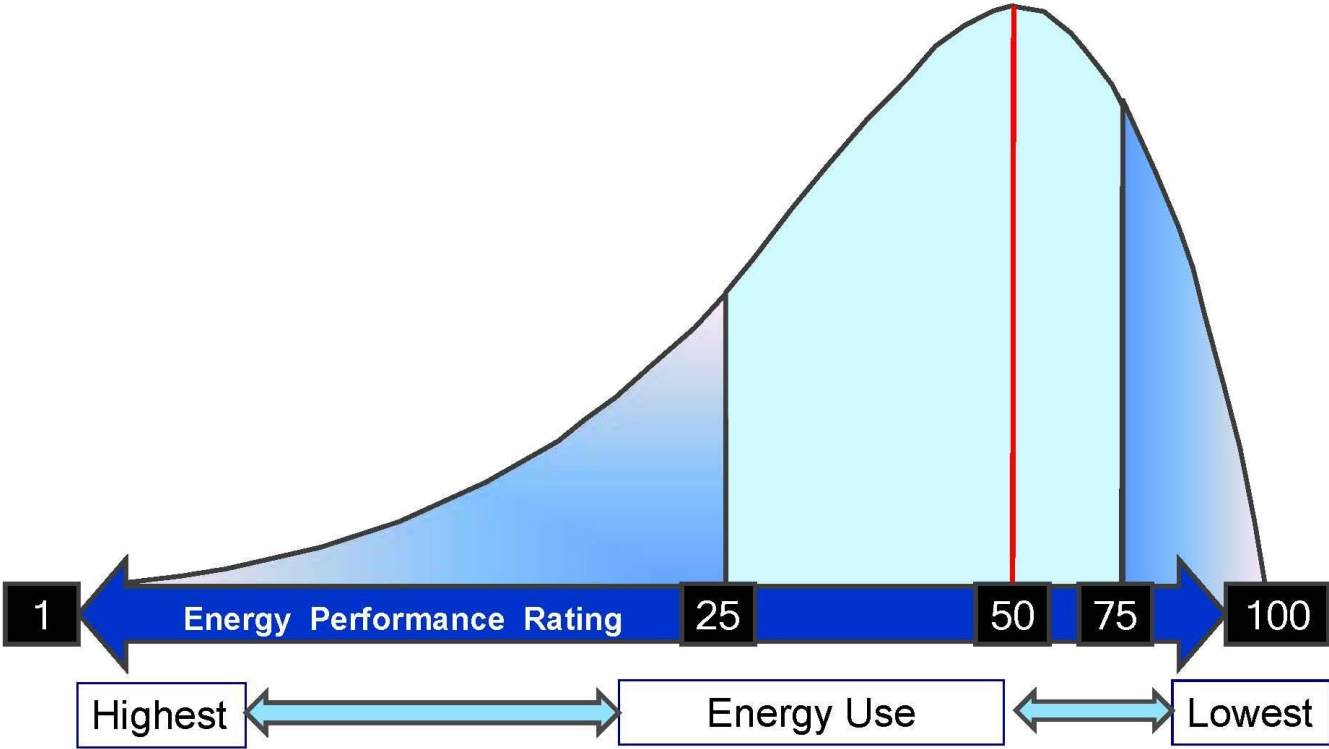
# Benchmarking & Risk Management

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Vincent Martinez, CEO  
2030, Inc. / Architecture 2030



# EPA's National Energy Performance Score System





# Energy Performance of Buildings Directive

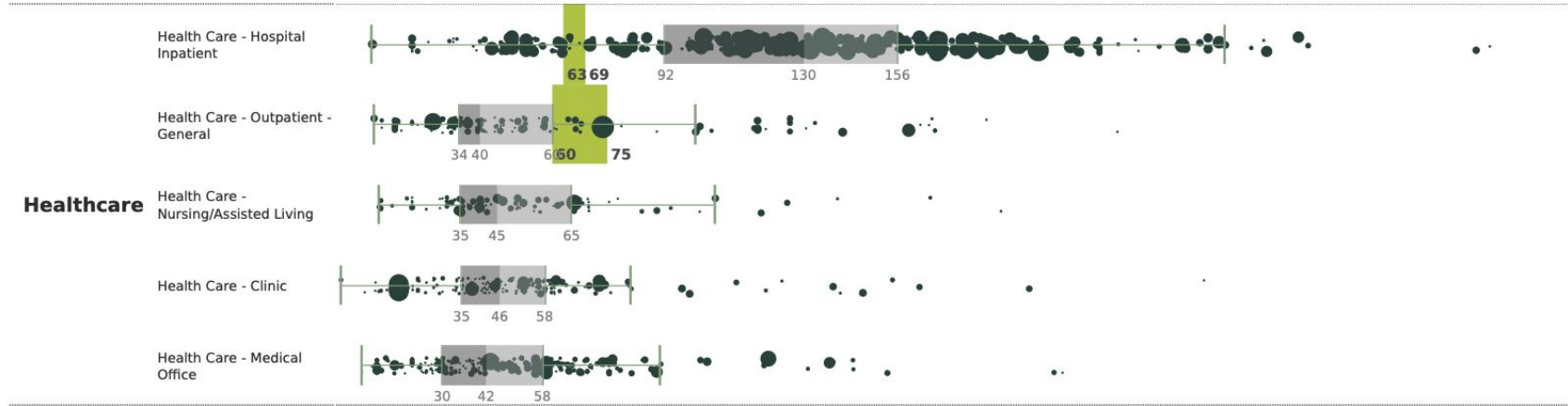
2024/1275 - EPBD





# MAKING MEANINGFUL COMPARISONS

## Gross pEUI with MaxTech Gross pEUI



# ZERO TOOL

## ABOUT YOUR BUILDING

Building Name:

Country:

City | State/Prov.:

Postal Code:

Degree Days: HDD  CDD

New construction  Existing Building

## BUILDING USE DETAILS

In order to provide you with an appropriate comparison for your building, we need to know how spaces in this building will be used. If your building has multiple uses, add them below.

Commercial  Residential

Add Another Use:

Selected Use Type(s):

### OFFICE

Use Default Values?

Gross Floor Area:

Number of Weekly Operating Hours:

## RESULTS

Target EUI is 28 based on a 70% reduction

|          |        |               |
|----------|--------|---------------|
| BASELINE | 93 EUI | 100% Score    |
| TARGET   | 28 EUI | 31 Zero Score |

## BUILDING SUMMARY

|          |             |                        |
|----------|-------------|------------------------|
| LOCATION | seattle, WA | 98103                  |
| USES     | Office      | 100,000 sq.ft (100.0%) |

| RESULTS  | BASELINE | TARGET | YOUR BUILDING |
|--|----------|--------|---------------|
| EUI % Reduction from Baseline                          | 0%       | 70%    | N/A           |
| Zero Score   | 100      | 31     | N/A           |
| Site EUI (kBtu/ft <sup>2</sup> /yr)                    | 93       | 28     | N/A           |
| Source EUI (kBtu/ft <sup>2</sup> /yr)                  | 233      | 70     | N/A           |
| Total GHG Emissions (metric tons CO <sub>2</sub> e/yr) | 878      | 264    | N/A           |

<https://zerotool.org/>



# Some building types can go further than others

Baseline Gross EUI by CBECS Use Type

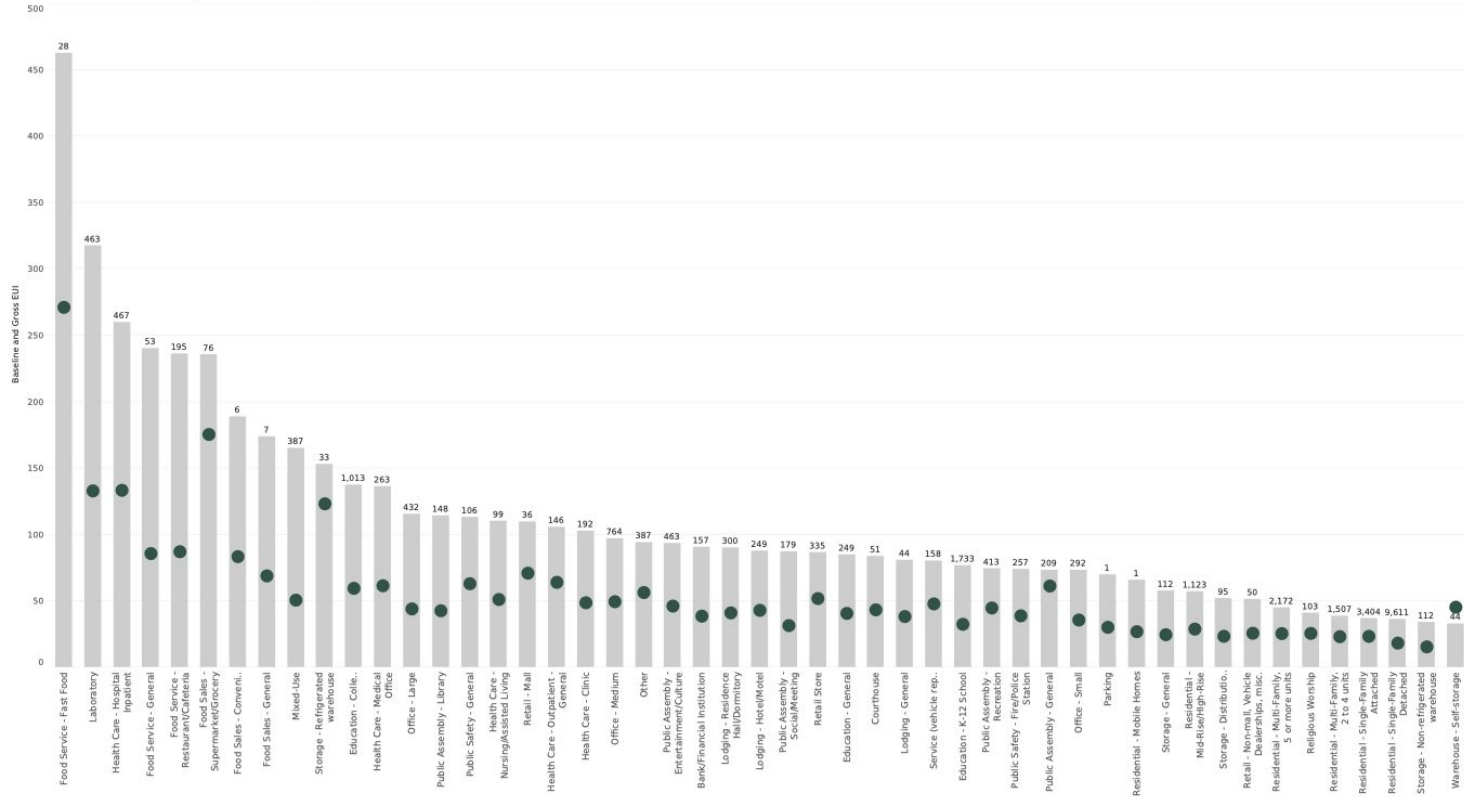




Image generated using Google gemini



## Adopt Multi-Metric Measurement

**FUEL SOURCES  
+  
ENERGY**



**EUI 40**  
(Gas-Dependent)



**EUI 40**  
(All Electric)



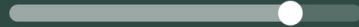
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## Beyond the Energy Metric

# Levers of Change



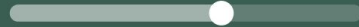
### ENERGY EFFICIENCY



reduce total energy demand



### ELECTRIFICATION



eliminate on-site fossil fuel combustion



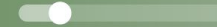
### RENEWABLE ENERGY

ON-SITE



generate on-site GHG-free electricity

OFF-SITE



procure off-site GHG-free electricity



### GRID DECARBONIZATION

external factor shaping all levers

# THE LAST MILE PROBLEM



First mile



Transit



Last mile



Image generated using Google Gemini

## California solar mandate: What you need to know



Why trust EnergySage? ▾

Table of contents ▲

- What is the California solar mandate?
- Exceptions to the California solar mandate
- California solar mandate costs and savings numbers
- Compare your own solar options



October 2019

### SERVICE NOTICE

#### **Local Law 92 of 2019 and Local Law 94 of 2019: Green and Solar Roof Requirements for New Buildings and Complete Roof Replacements**

**Beginning November 15, 2019, all new buildings and alterations of existing buildings where the entire existing roof deck or roof assembly is being replaced must provide a sustainable roofing zone covering 100% of the roof.**

Written by: Kerry Thoubboron

SOUTH MIAMI

### New homes will now require solar panels in South Miami, a first in Florida

By Carli Teproff

[cteproff@miamiherald.com](mailto:cteproff@miamiherald.com)

Updated July 19, 2017 6:09 AM



South Miami passed a new law on July 18, 2017, requiring all new homes built in the city to have solar panels, the first such measure in Florida. The law, which goes into effect in September, also applies to some residential renovations. [Al Diaz \[adiaz@miamiherald.com\]\(mailto:AlDiaz.adiaz@miamiherald.com\)](mailto:AlDiaz.adiaz@miamiherald.com)



## The Path to Net-Zero Energy

# The Zero-Ready Protocol

Every project must design for tomorrow

### Standardize

- All-electric systems and appliances
- Reserve capacity for future loads
- Solar-ready roofs, panels and conduits

### ROOF

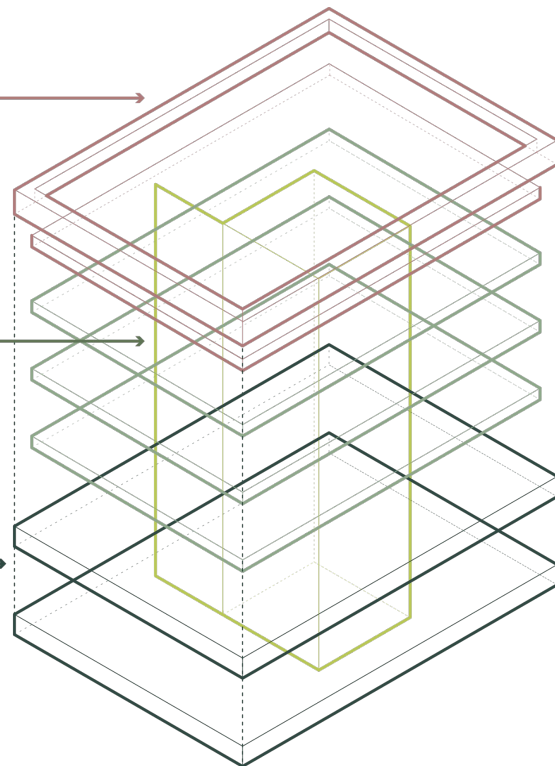
Install On-Site Solar  
(or design for Solar-Readiness)

### SYSTEMS

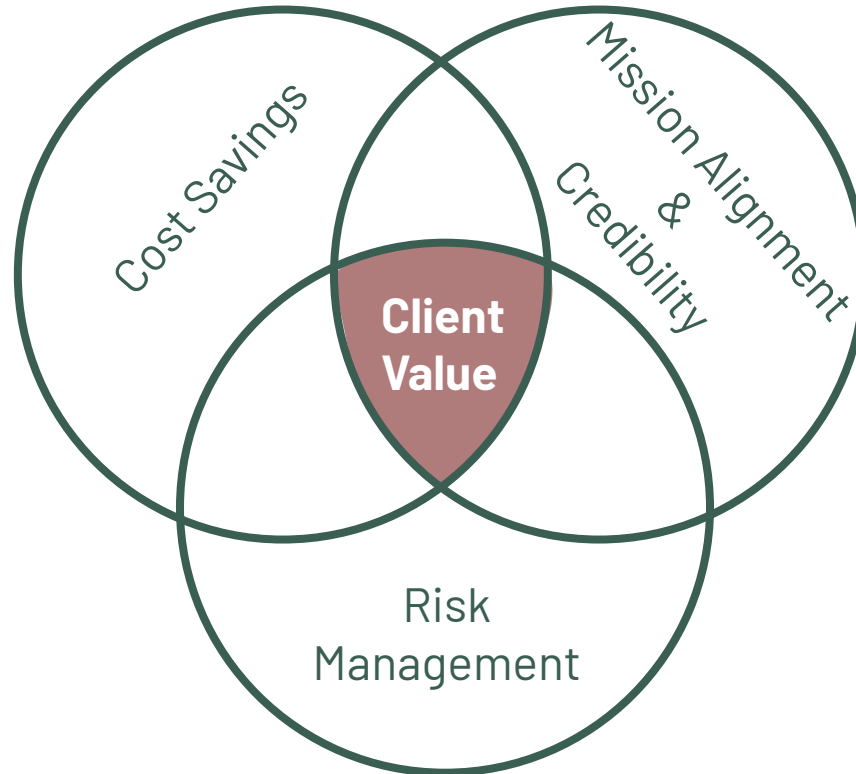
Use All-Electric Systems  
(or design for Electric-Readiness)

### ENVELOPE

Maximize energy efficiency  
within technical limits



# Client Value: Outcomes clients already prioritize



# Client Value: Risk Management

Transform Energy Risk into Asset De-Risking  
and Value Protection

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## Stranded Assets

Depreciation and costly future mandates

## Regulatory Vulnerability

Exposure to new regulatory requirements

## Loss of Market Position

Tenant commitments & investor mandates

# Client Value: The Market Push and Pull

Convert Performance into Bankable,  
ESG-Aligned Capital

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## Asset De-Risking

Protects long-term valuations

## Bankable ESG Capital

Unlocks new financing

## Trillion-Dollar Market

Predictable demand for required global investment

# Benchmarking + Risk Management

Michigan Energy Summit | Breakout Session

May 8, 2024

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OH YES,  
THE PAST CAN HURT.  
BUT THE WAY I SEE IT,  
YOU CAN EITHER RUN FROM IT,  
OR LEARN FROM IT.



# THE RISK LANDSCAPE:

- Reveal hidden financial, operational, and regulatory risks.
- Apply Systems thinking to our process



ANSI/ASHRAE/IES Standard 90.1-2019  
(Supersedes ANSI/ASHRAE/IES Standard 90.1-2016)  
Includes ANSI/ASHRAE/IES addenda listed in Appendix I

## Energy Standard for Buildings Except Low-Rise Residential Buildings (I-P Edition)

See Appendix I for approval dates by ASHRAE, the Illuminating Engineering Society, and the American National Standards Institute.

This Standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the Standard. Instructions for how to submit a change can be found on the ASHRAE® website ([www.ashrae.org/continuous-maintenance](http://www.ashrae.org/continuous-maintenance)).

The latest edition of an ASHRAE Standard may be purchased from the ASHRAE website ([www.ashrae.org](http://www.ashrae.org)) or from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: [orders@ashrae.org](mailto:orders@ashrae.org); Fax: 404-875-3319; 2129, Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4773 (for orders in US and Canada). For reprint permission, go to [www.ashrae.org/permissions](http://www.ashrae.org/permissions).

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**efficiency first**



**Energy  
Efficiency**

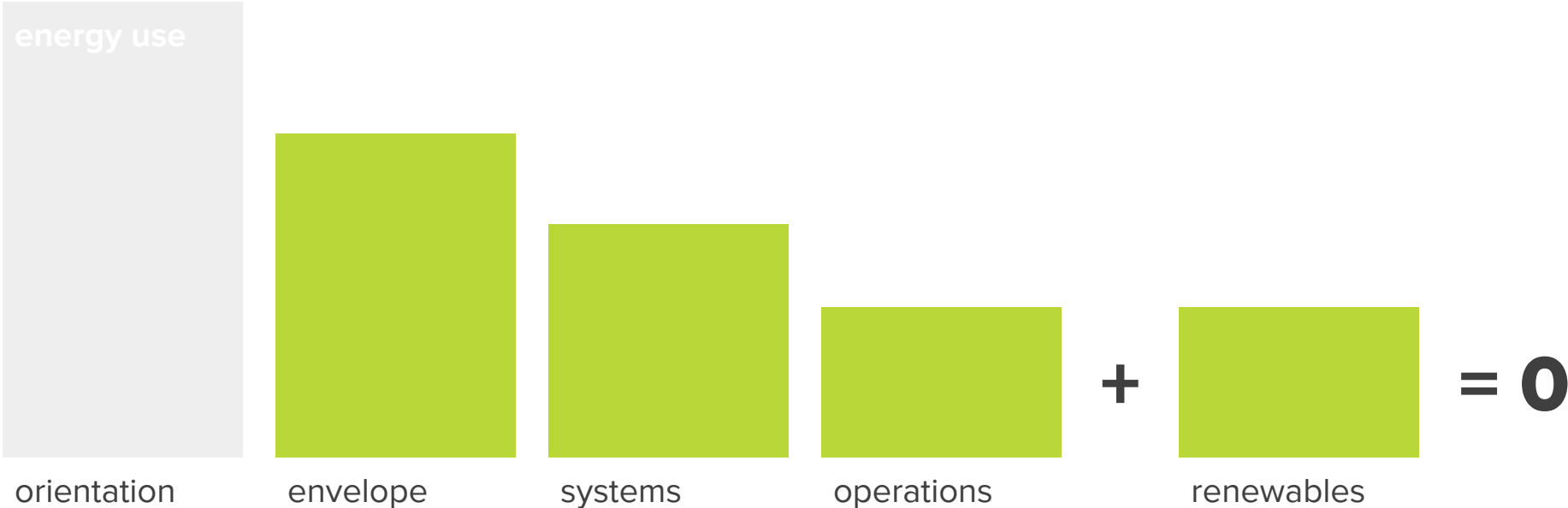


**Electrification**



**Renewable  
Energy**

# NET ZERO APPROACH



**PASSIVE DESIGN**

# ORIENTATION



DIRECT GAIN: GLAZING



DIRECT GAIN: HEAT STORAGE



DOUBLE ROOF



EARTH SHELTERING



EAST/WEST SHADING



EVAPORATIVE COOLING TOWERS



FORM FOR COOLING



FORM FOR DAYLIGHTING



FORM FOR HEATING



GREEN ROOF



INDIRECT GAIN: SUNSPACE



INTERMEDIATE LIGHT SHELVES



NIGHT VENT COOLING



SHADING DEVICES



SIDE DAYLIGHTING



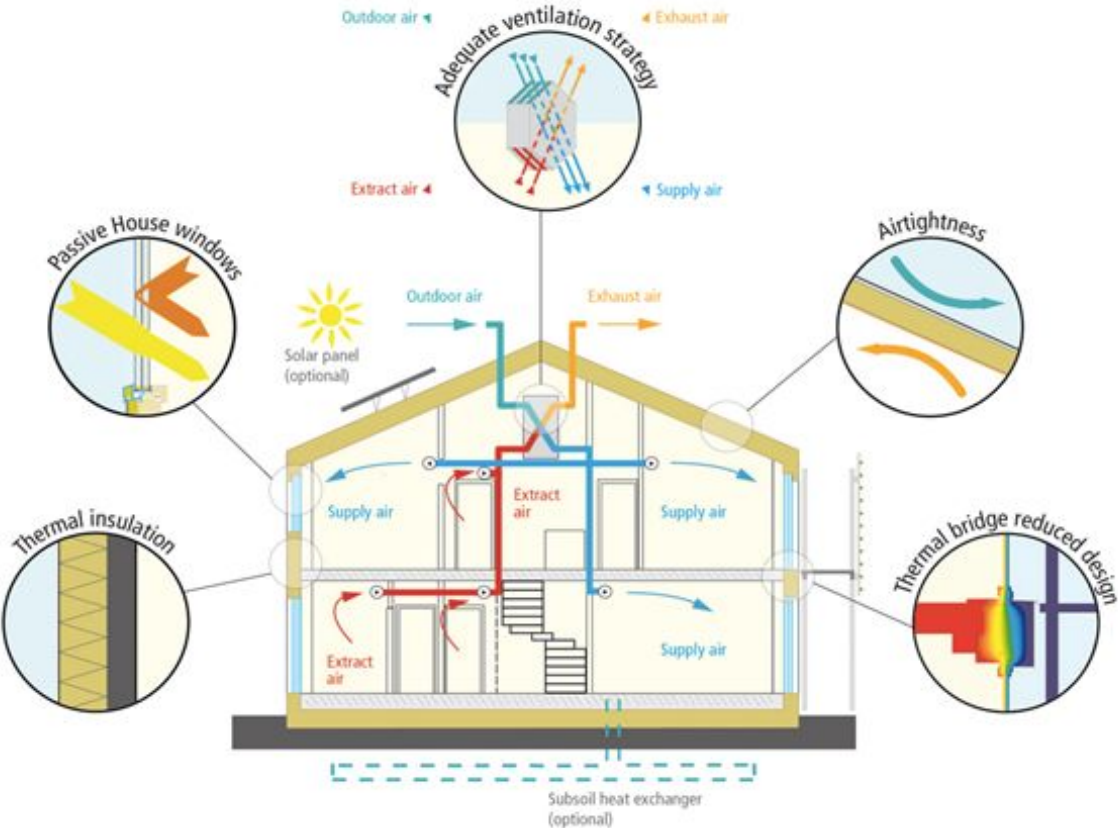
# HIGH PERFORMING ENVELOPE

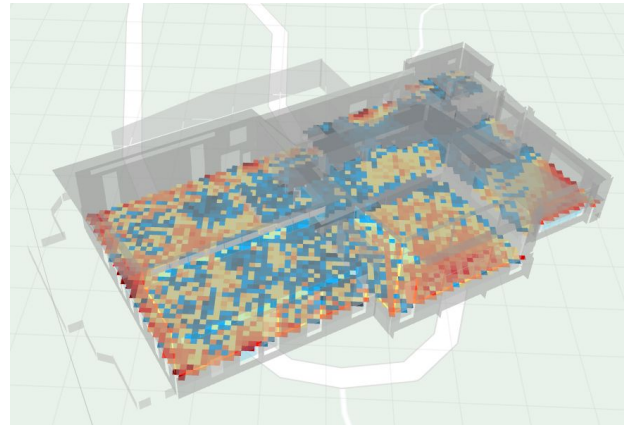
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| <b>Component</b> | <b>Code</b> | <b>Design</b> |
|------------------|-------------|---------------|
| Roof             | R-30        | R-37          |
| Exterior Walls   | R-13.3      | R-19          |
| Windows          | U-0.36      | U-0.32 low-e  |

+ Insulated coiling doors

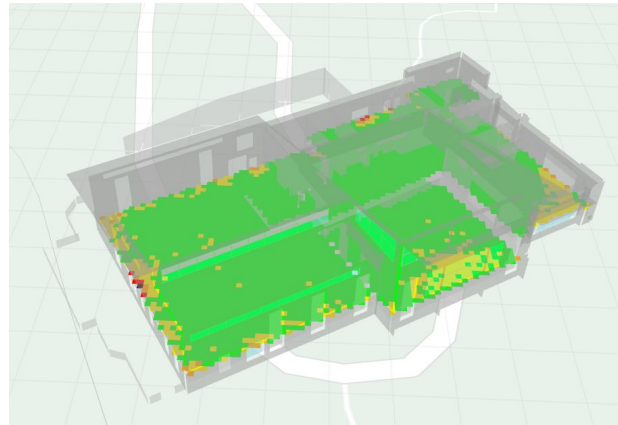
# ENVELOPE





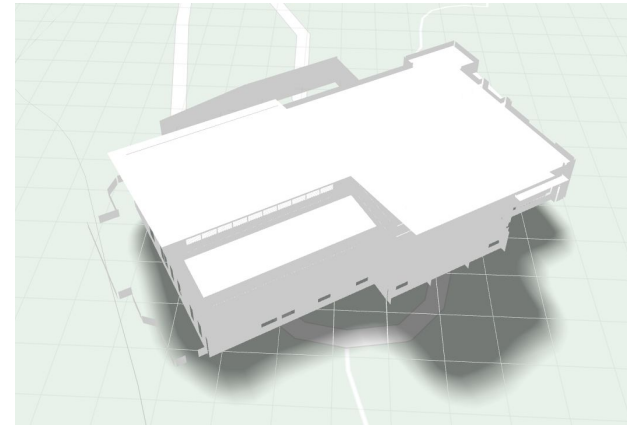
### DAYLIGHT

Dispersed throughout floor plan to reduce lighting electric load.



### GLARE

Minimized.

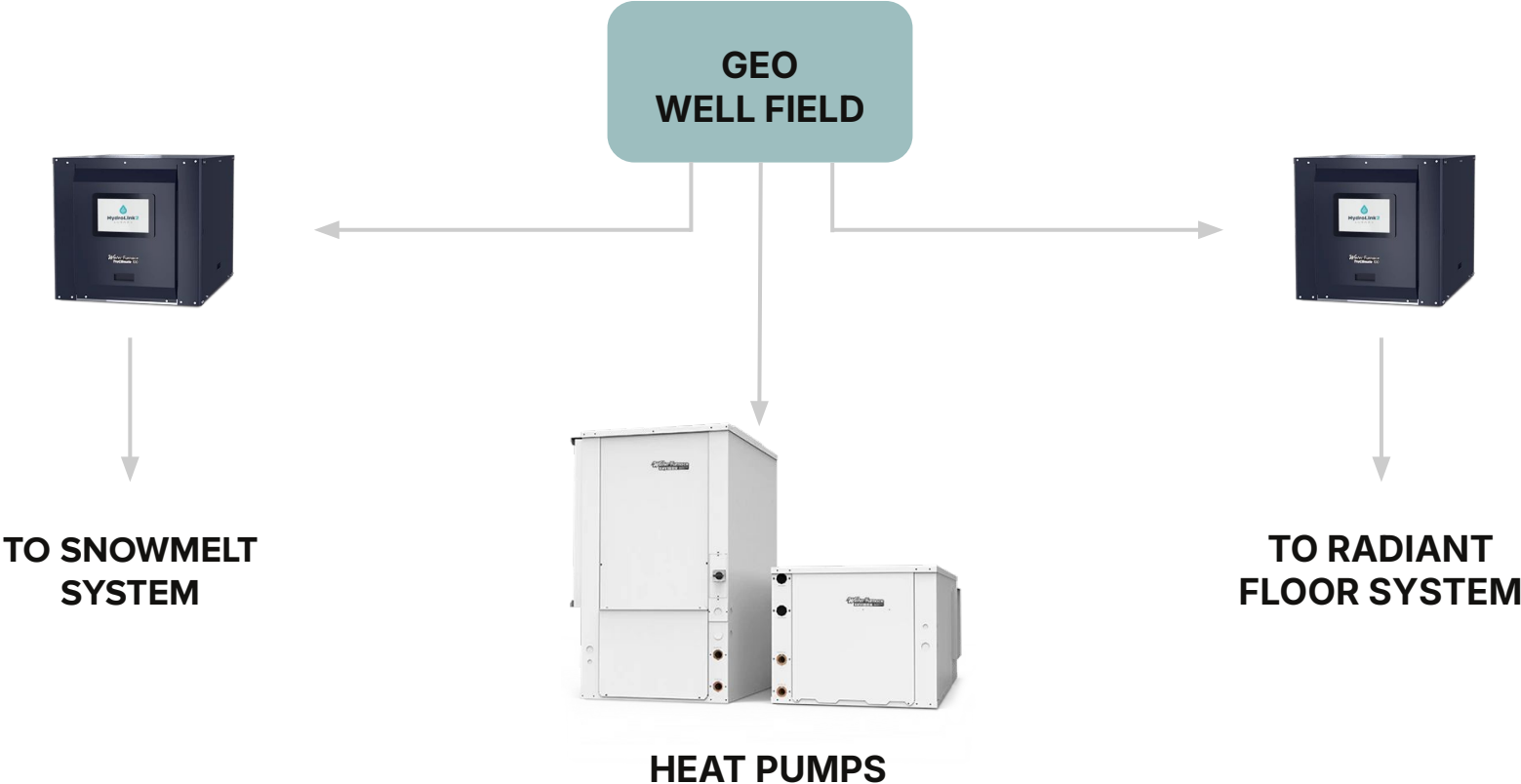


### SHADING

Mid-June at 4:00 PM

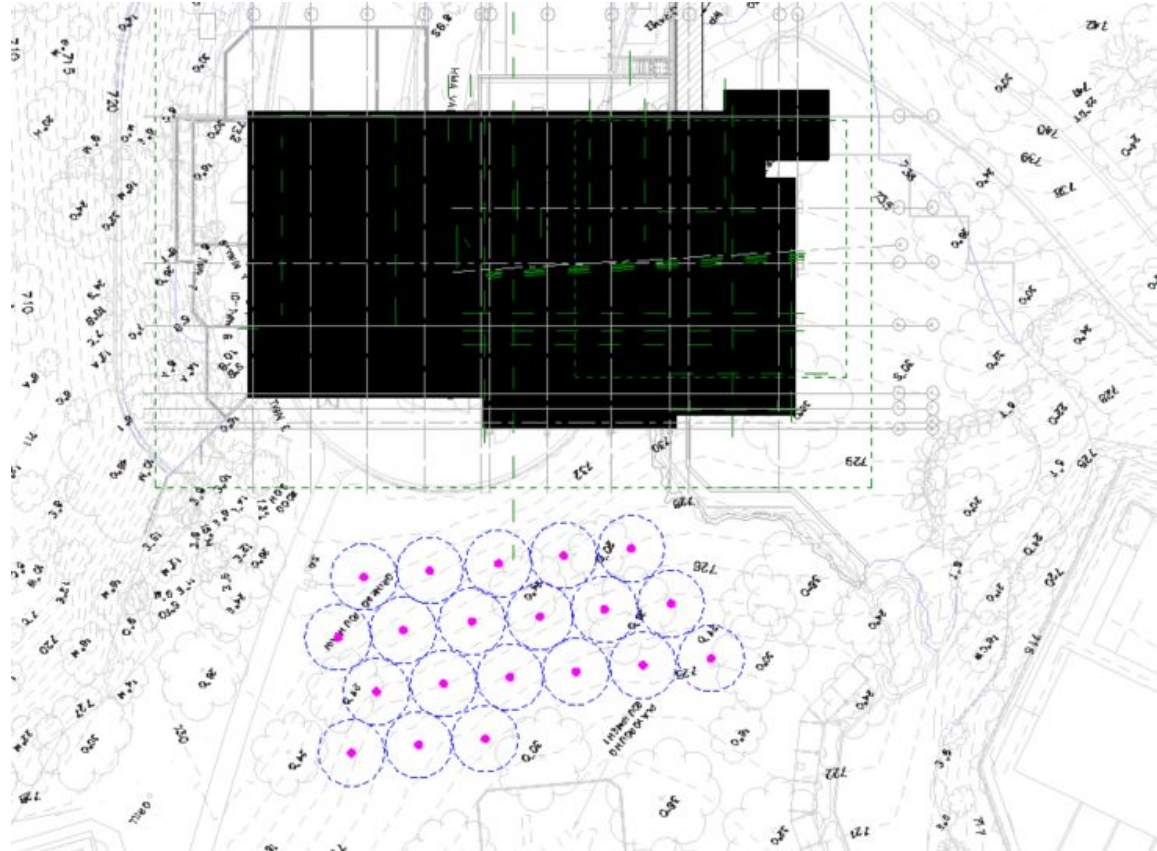
**RENEWABLES**

# PLANT SIDE CONFIGURATION



# GEOTHERMAL SYSTEMS

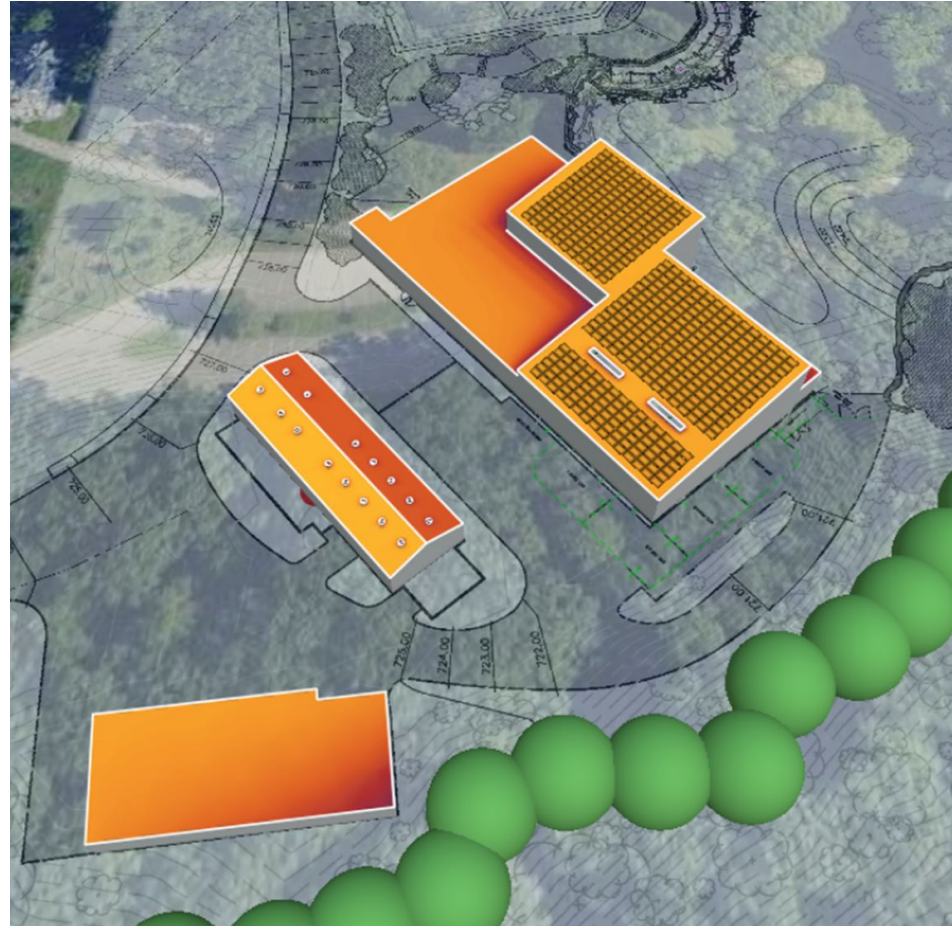
20 bores



# SOLAR PV

## Preliminary Sizing:

- 150 KW AC
- 225,000 KWH annual production
- Estimated \$370,000 install cost
- 12.8 year payback
- \$0.13/KWH rate assumed
- 1.5 MW potential from Butterworth



## QUESTIONS TO ASK DESIGN TEAMS

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1. Ask for Energy Model Reviews.
2. Are we meeting or exceeding code?
3. How do we measure performance once we begin operating the building?
4. What are future risks/challenges you see?
5. Are you experienced in performing energy audits?

# OPPORTUNITIES FOR BUILDING OWNERS

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- Data-Driven Design Process
- Measurable Data to compare against during operations
- Return on Investment that goes beyond upfront cost vs operations.
- Ability to reduce risk

**THANK YOU!**

# **Benchmarking & Risk Management**

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