Project Scenario Planning During a Period of Uncertainty

Moderator: Derek Dwyer / *Enertech USA*

Panel: Jacob Goldman / *Energy Tax Savers*

Victor Braciszewski / *SmithGroup*

Christina McPike / *WinnCompanies*

ENERGY TAX SAVERS®

ENERGY TAX INCENTIVE EXPERTS

Inflation Reduction Act (IRA)

JACOB GOLDMAN

VICE PRESIDENT

ENERGY TAX SAVERS, INC.

ENERGY TAX SAVERS
ENERGY TAX INCENTIVE EXPERTS

Index

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- Elective Pay
- Bonus Credits
- Depreciation is our Friend (Bonus & 179D)
- The Sky is not Falling!
- If the Sky was Falling what might that look like

jacob.goldman@energytaxsavers.com
Subject : “Please send the slides”

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Sampling of Clients Who Have Received a Check:

Client	Technology	Check Amount
School District in the Pacific Northwest	Geothermal	$7,970,000
City Transit Center in the Midwest	Geothermal	$2,270,000
K-12 School District	Solar	$1,080,000
School District in Iowa	Geothermal	$873,000
K-12 School District	Solar	$796,000
College	Solar	$658,000
K-12 School District	Solar	$599,000
Public Library	Geothermal	$472,000

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Alternative Energy Credits-§48 & §48E, ITC (2022-…)

Technology	Base Credit	5x Bonus Credit (2022)	Domestic Content (2023)	Energy Community (2023)	Low Income (2023)	Range
§48						
Ground Source Heat Pump	6%	30%	2%/10%	2%/10%	0%	6%-50%
§48E						
Thermal Energy Storage Systems	6%	30%	2%/10%	2%/10%	0%	6%-50%
Geothermal Electricity	6%	30%	2%/10%	2%/10%	0%	6%-50%
Solar Technologies	6%	30%	2%/10%	2%/10%	10%/20%	6%-70%
Standalone Energy Storage Systems	6%	30%	2%/10%	2%/10%	0%	6%-50%
Small Wind	6%	30%	2%/10%	2%/10%	10%/20%	6%-70%
Interconnection Property	6%	30%	2%/10%	2%/10%	0%	6%-50%
CHP (Requires Zero Net Greenhouse Gas Fuel)	6%	30%	2%/10%	2%/10%	0%	6%-50%
Fuel Cell (Requires Zero Net Greenhouse Gas Fuel)	6%	30%	2%/10%	2%/10%	0%	6%-50%
Waste Energy Recovery Electricity	6%	30%	2%/10%	2%/10%	0%	6%-50%

Elective Pay

Incentives Available To Municipalities & Not For Profits

(§6417 (2023-…)(Reg. §1.6417))

- **Pre-registration REQUIRED –**
  - **Done after placed in service** (Reg. §1.6417-5T)
- **Investment Tax Credits (§48 & §48E)(6%-70%)**
  - **Available for Solar, Wind, Ground Source, Thermal Storage…**
  - **Up to a 15% haircut for projects paid for with Tax-Exempt Bonds** §48(a)(4) → §45(b)(3)
  - **2 Ways to avoid 10%(2024), 15%(2025), 100%(2026) Haircut**(§48(a)(13) → (§45(b)(10)) (§48E(d)(5) → (§45Y(g)(12))
    1. <1MW (3.4 mmBTU/hr Heating and 284 Tons cooling) or
    2. Meets Domestic Content [Increase Cost Exception(25%) or Non-Availability Exception]

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Alternative Energy Credits-Bonus

- **5 Times Bonus (6% x 5 = 30%) (2022-…)**
  - Project with a Net Output of less than 1 MW (284 Tons Cooling, 3.4 mmBTU/hr Heating) or
  - Meets the Prevailing Wage and Apprenticeship (P+A) Requirements (TD 9998)
- **Domestic Content Bonus (Qualified Facility) (2023-…)(2% or 10%)** (IRS Notice 2023-38)
  - 100% of the cost of Structural steel and iron and
  - 40% of manufactured product (49 CFR § 661.5) is produced in USA
    - Calculated on the entire ITC Qualifying project
    - Calculated on **Manufacturer's Cost**(Will this be difficult?)
- **Energy Community Bonus (2023-…) (2% or 10%)** (IRS Notices 2023-29, 2023-45, 2023-47, 2024-30)
  - https://arcgis.netl.doe.gov/portal/apps/experiencebuilder/experience/?id=a2ce47d4721a477a8701bd0e08495e1d

Map of Energy Communities

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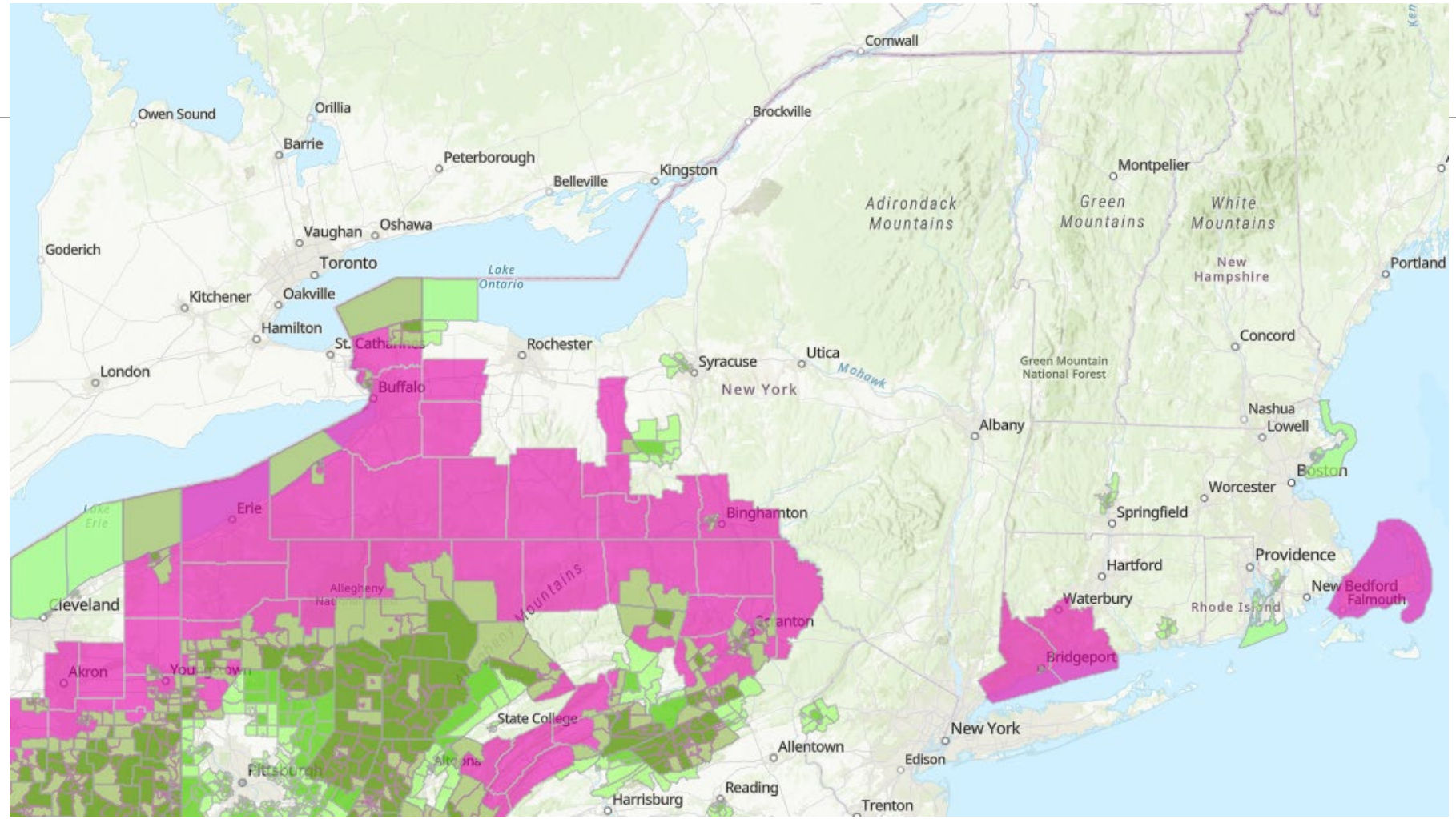
ENERGY TAX INCENTIVE EXPERTS



https://arcgis.netl.doe.gov/portal/apps/experiencebuilder/experience/?id=a2ce47d4721a477a8701bd0e08495e1d

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5Yrs MACRS & Bonus Depreciation & 179D

Energy Property is 5 yr MACRS (§168(e)(3)(B)(vi)(I))

- Only reduce basis by 50% of the tax credit

40% Bonus Depreciation (60% in 2024, 80% in 2023)

- Placed in service in 2025
  - Current Law phases down to 20% in 2026 and 0% after
  - **Congress may increase back to 100%**
- Tax Depreciation Schedules less than 20yrs

179D Tax Deduction

- $2.83-$5.65/sqft for projects meeting PW&A (5x Bonus)
- $0.57-$1.13/sqft if prevailing wage requirements not met
- Overall building energy efficiency must be 25%-50%+ more efficient than ASHRAE

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Time Value of Money

New Construction Commercial Building Examples (35% Tax Rate, 25,000sq.ft Building)

1. $1,000,000 Conventional HVAC – PV of 39 yr Depreciation (6% Discount Rate)
2. $1,800,000 Ground Source System– PV of 5 yr Depreciation & 40% Bonus (6% Discount Rate)
3. $1,800,000 Ground Source System– PV of 100% Bonus (6% Discount Rate)
4. $1,800,000 Ground Source System– PV of 100% Bonus & Qualifies for 179D no PW&A (6% Discount Rate)
5. $1,800,000 Ground Source System– PV of 100% Bonus & Qualifies for 179D w/PW&A (6% Discount Rate)

	PV of Depreciation	Equivalent Project Cost	Simulated Credit
1	$134,158	$865,842	13.4%
2	$574,292	$1,225,708	31.9%
3	$630,000	$1,170,000	35.0%
4	$658,250	$1,141,750	36.6%
5	$771,250	$1,028,750	42.8%

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Possibilities in Order of Likelihood?

Section 48	Section 48E
No Change	No Change
10 yr Program → 5 yr Program	10 yr Program → 5 yr Program
Start of Construction before 12/31, 90 days, 60 days, Bill Passage	Start of Const. before 12/31, 90 days, 60 days, Bill Passage
Placed In Service before 12/31, 90 days, 60 days, Bill Passage	Placed In Service before 12/31, 90 days, 60 days, Bill Passage

ENERGY TAX SAVERS
ENERGY TAX INCENTIVE EXPERTS

About Energy Tax Savers?

- First EPAct 179D service provider (founded 2005)
- Completed more EPAct projects than any other firm (16,000+)
- Diverse background of firm professionals
  - Attorney, CPA, MBA, LEED AP, Enrolled Agent, Big4 Accounting Experience
- Advisors to DOE, NEMA and NRDC for EPAct 179D extension and standards
- Over 150 published articles in various publications
  - *Corporate Business Taxation Monthly, Building Operating Management, IMARK Magazine, Retrofit Magazine, Parking Professional*

Energy Tax Savers, Inc.

Jacob’s Contact Info

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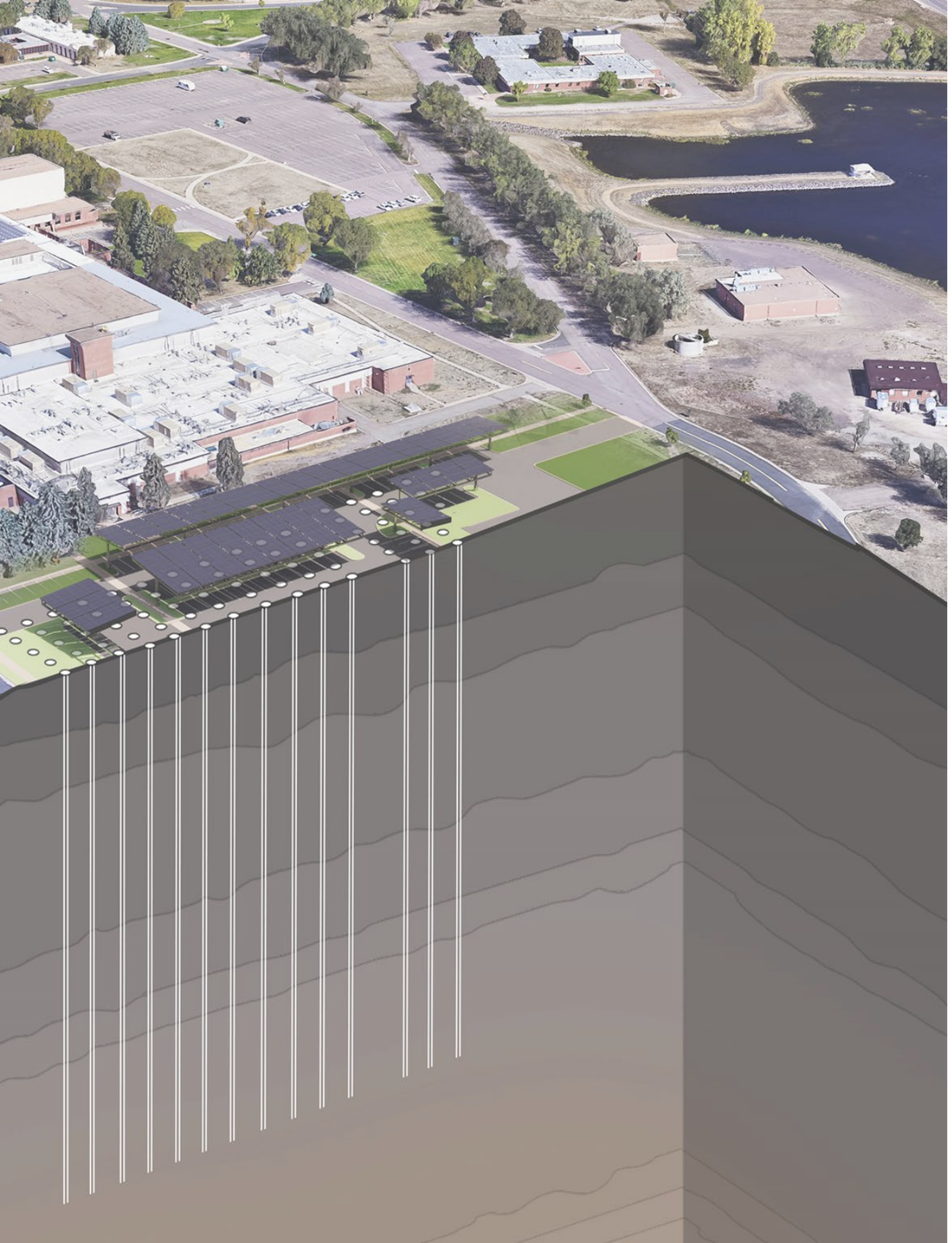

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Design a Better Future

DEFINING IMPACT

Building Scale

Energy/Carbon Performance Modeling

- Energy Shoebox
- Customized performance models
- Compliance Modelling

Sustainable Design & Strategy

- Integrated Design Analytics
- Advanced Engineering
- Sustainable Design Recommendations
- Sustainable Design Tracking Support

Campus Scale

Infrastructure & Systems Analysis

- Portfolio Energy Analysis
- District Energy Analysis
- Microgrids

Climate and Resilience Planning & Design

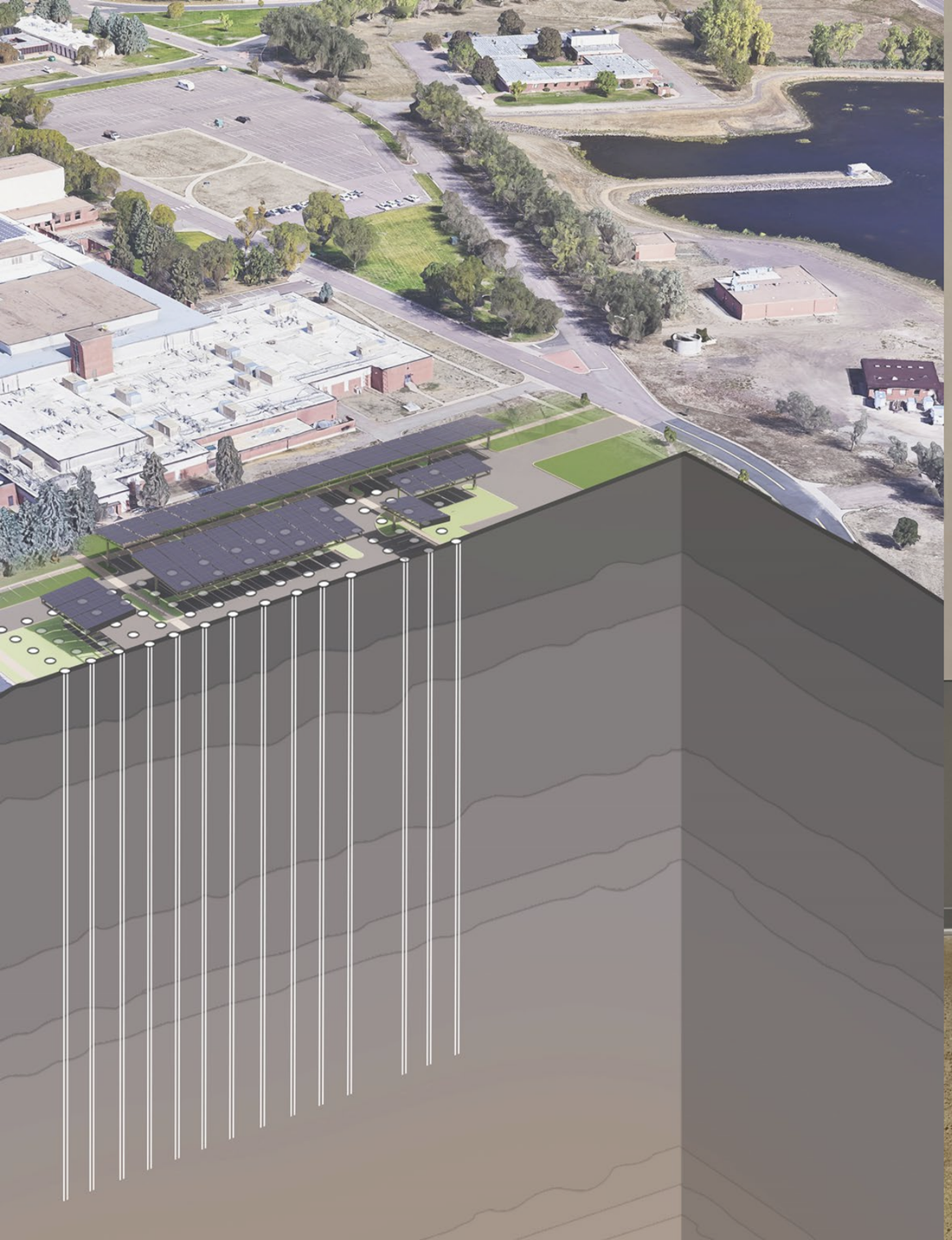
- Climate Action Planning
- Resilience/disaster planning
- Resilient Design Recommendations

Equity and Economic Impact

- Socioeconomic Analysis
- Job and industry analysis
- Utility impact analysis
- Equitable Design Recommendations

R&D

- Direct R&D Grants
- USDOE
- CEC
- Utility Work
- Controls

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UNIVERSITY OF THE PACIFIC
ARTHUR A. DUGONI SCHOOL OF DENTISTRY
GEO
ROCKS

LIFE GOAL: STAY (GSH)PUMPED

- **Financial Incentive Stacking > (GSH)PUMPED!**
- **Sustainability Goals > (GSH)PUMPED!**
  - Net Zero
  - LEED
- **Resilient Analysis Strategies > (GSH)PUMPED!**
  - Hybrid Geo Analysis

INCENTIVE STACKING

	FOR PROFIT	NON-PROFIT	FEDERAL
INVESTMENT TAX CREDIT (ITC) (AKA ENERGY TAX CREDIT)	CREDIT	DIRECT PAY	
TAX DEDUCTIONS (179D, MACRS, BONUS)			
GRANTS			
UTILITY PROGRAMS			

DR. MARTIN LUTHER KING JR. COMMUNITY CENTER AND HEALTH CENT

85K GSF

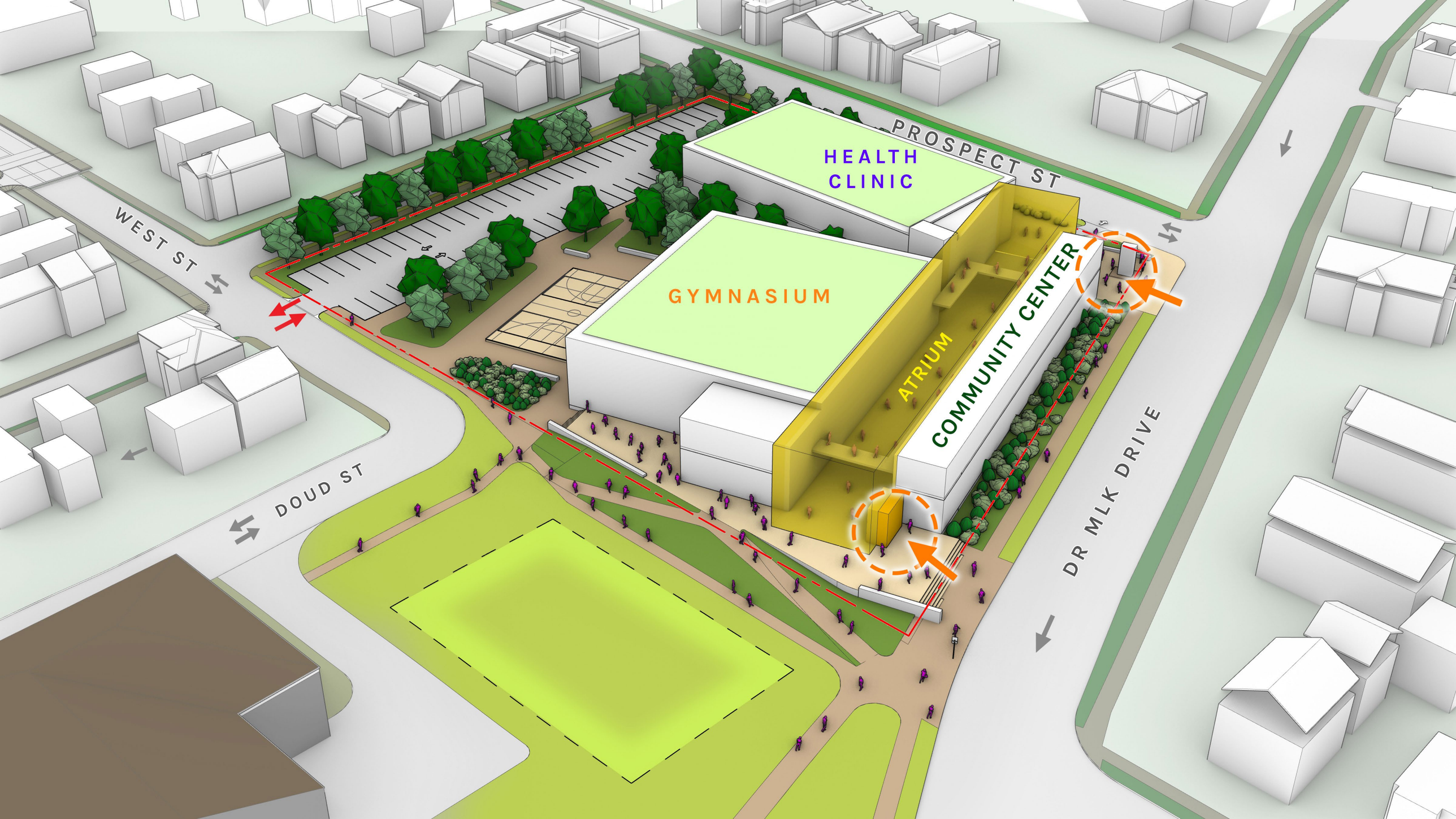
CITY OF RACINE, WI

DRIVERS

- Net Zero
- LEED Platinum

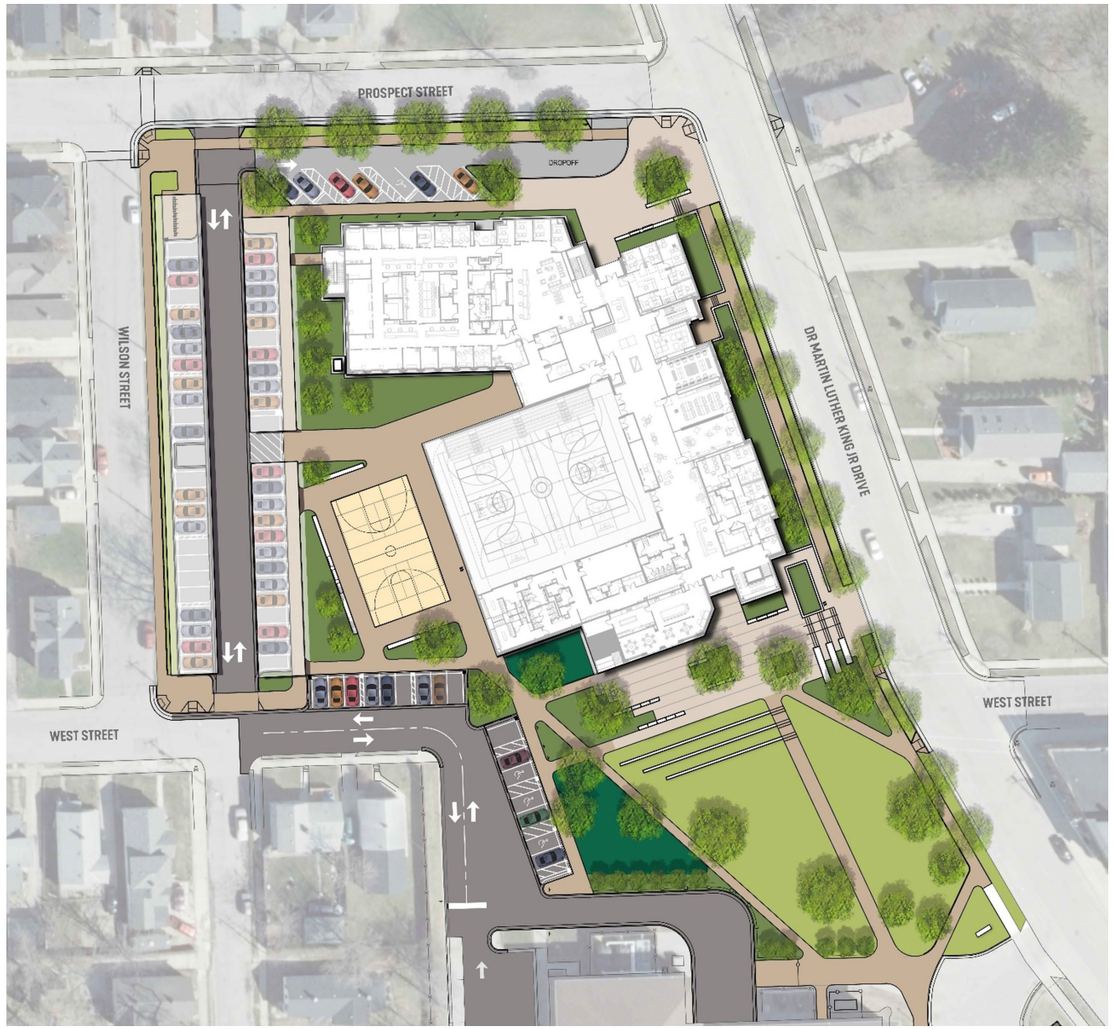
(GSH)PUMPED!

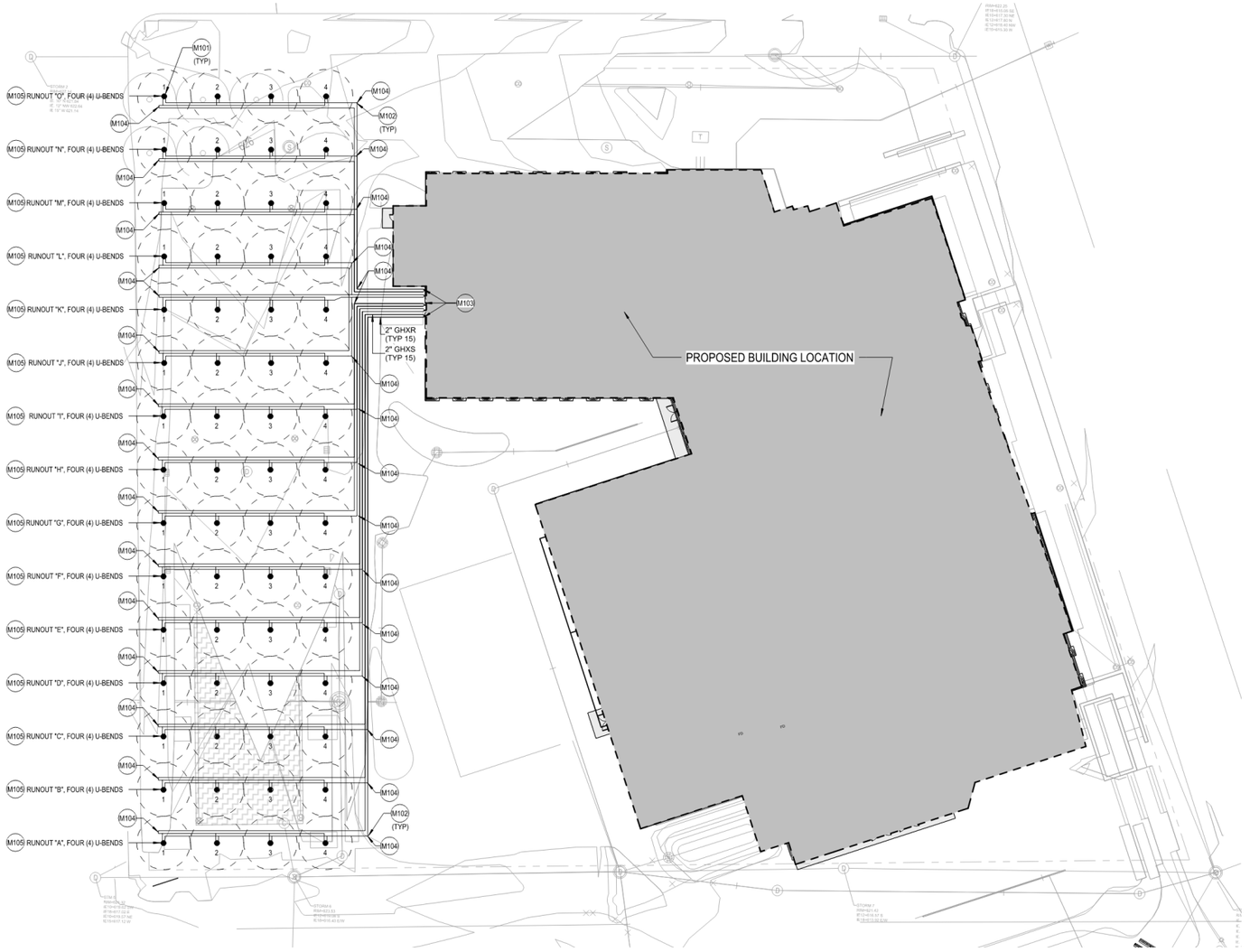
GEOTHERMAL


HEALTH
CLINIC
GYMNASIUM
ATRIUM
COMMUNITY CENTER
PROSPECT ST
WEST ST
DOUD ST
DR MLK DRIVE

DR. MARTIN LUTHER KING JR. COMMUNITY CENTER AND HEALTH CENTER

RACINE, WI





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DR. MARTIN LUTHER KING JR. COMMUNITY CENTER AND HEALTH CENTER

RACINE, WI

- **100% Geo** in a **Cold Climate**
- **Heating Backup >> Find Reduced Cost Versions**
  - **Electric resistance** in air handling units (no added electrical demand)
  - **External connection** for emergency boiler

UNIVERSITY OF NORTHERN COLORADO, COLLEGE OF OSTEOPATHIC ME

100K GSF

GREELY, CO

DRIVERS

LEED GOLD

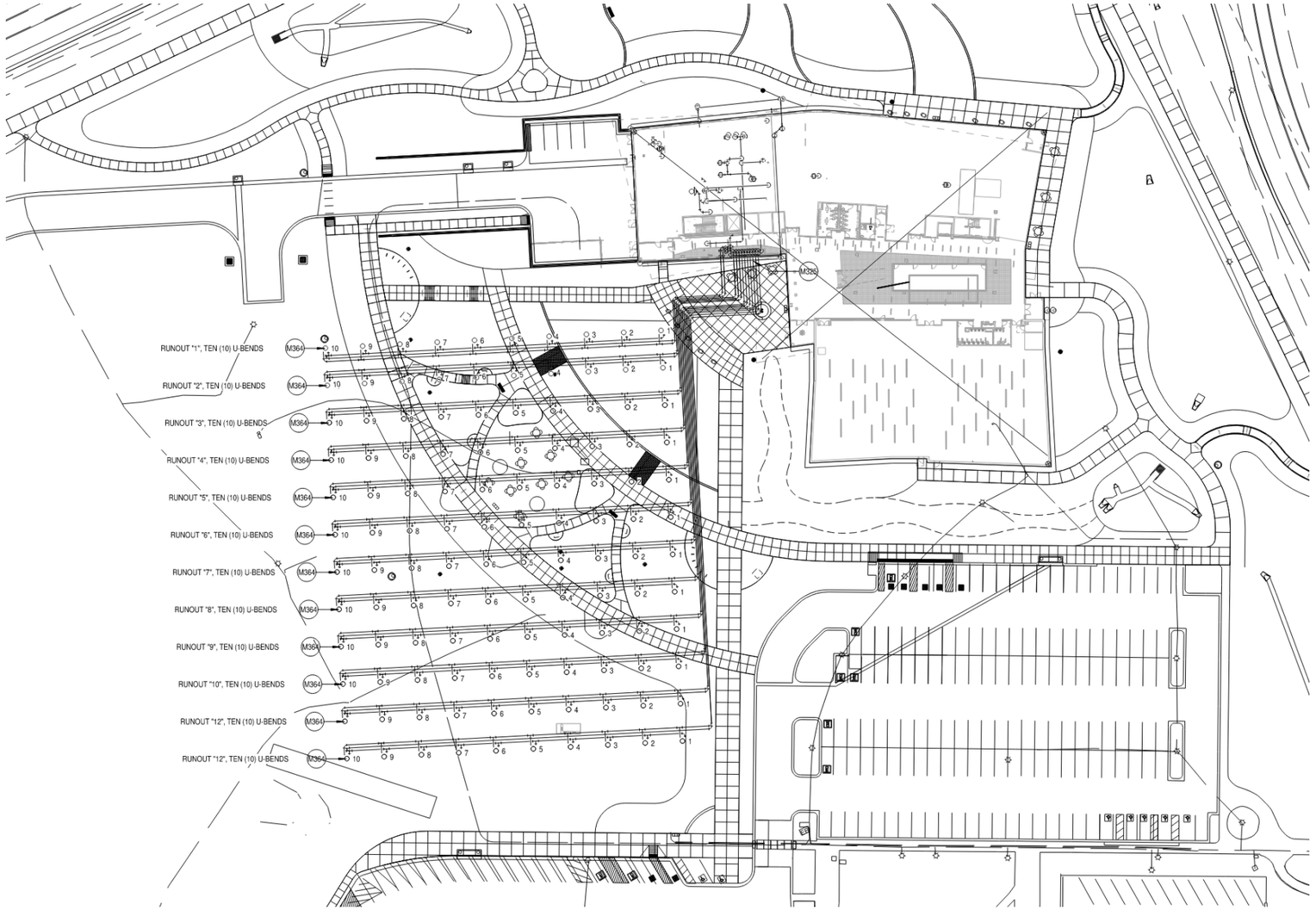
(GSH)PUMPED!

GEOTHERMAL

COLLEGE OF OSTEOPATHIC MEDICINE

UNIVERSITY OF NORTHERN COLORADO

- **Client's First Geo Project**
- **Not incentives driven**
- **Compressed Project Schedule >> 6 months**
- **Geo Peer Reviewer >> Ally**



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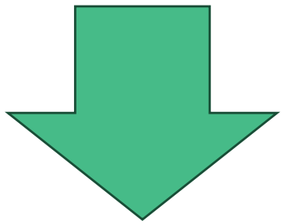
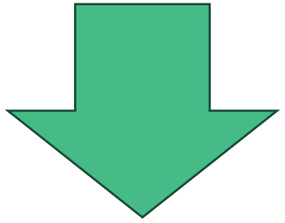
ANALYSIS RESILIENCY

ANALYSIS RESILIENCY

ANALYSIS WORKFLOW



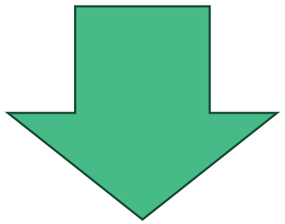
RESPOND TO CHANGES



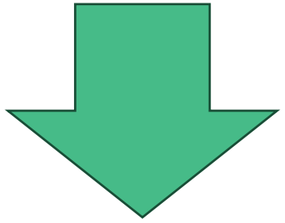
ASSESS VALUE PROPOSITION

ANALYSIS RESILIENCY

ANALYSIS WORKFLOW

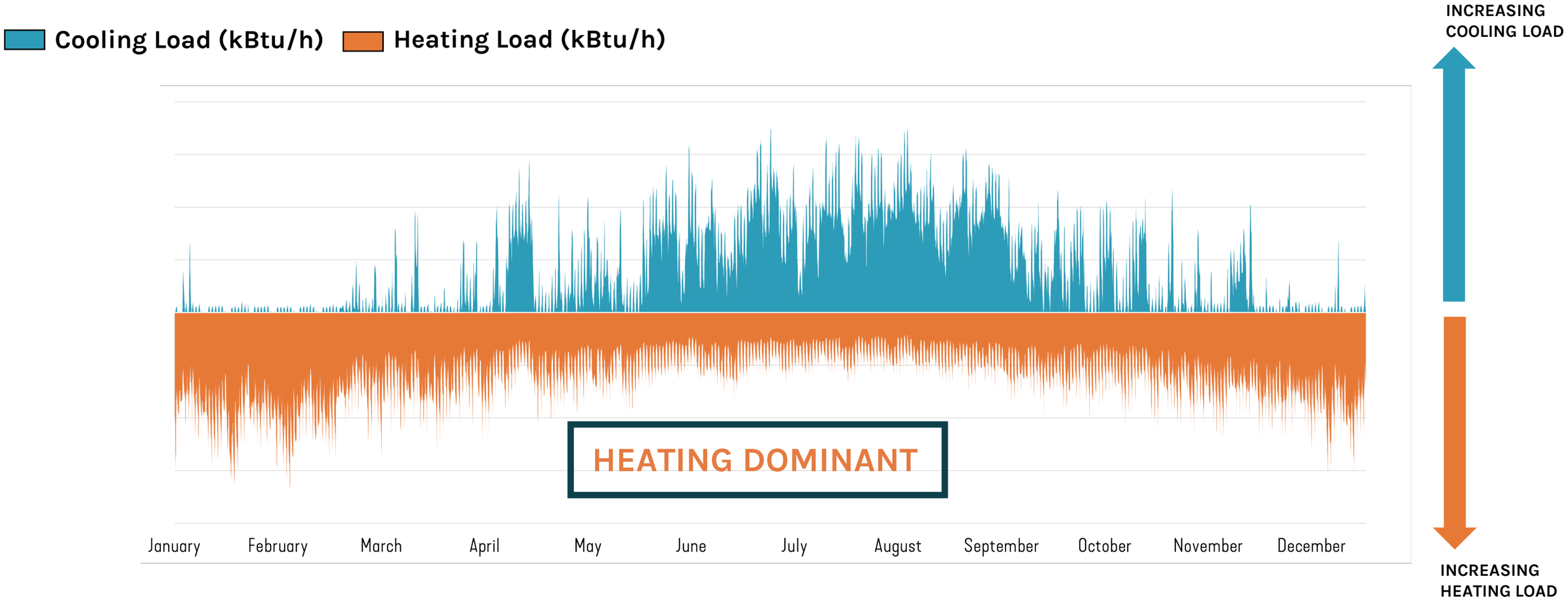


RESPOND TO CHANGES IN BOREFIELD



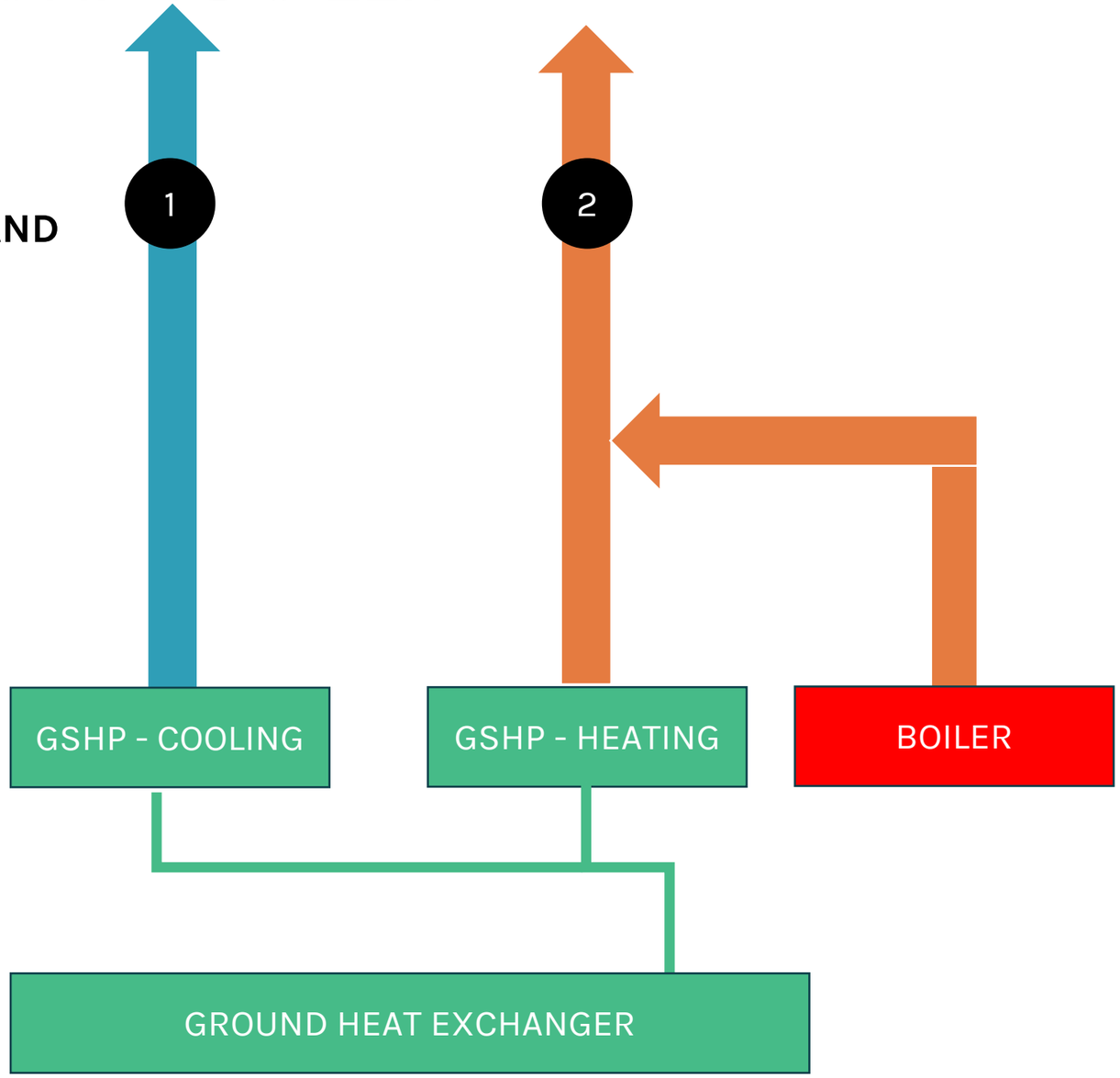
ASSESS VALUE PROPOSITION INVESTMENT VS ENERGY COST

START WITH BUILDING LOADS



HYBRID – GSHP +BOILER

TOTAL ENERGY = BUILDING HEATING AND COOLING LOADS



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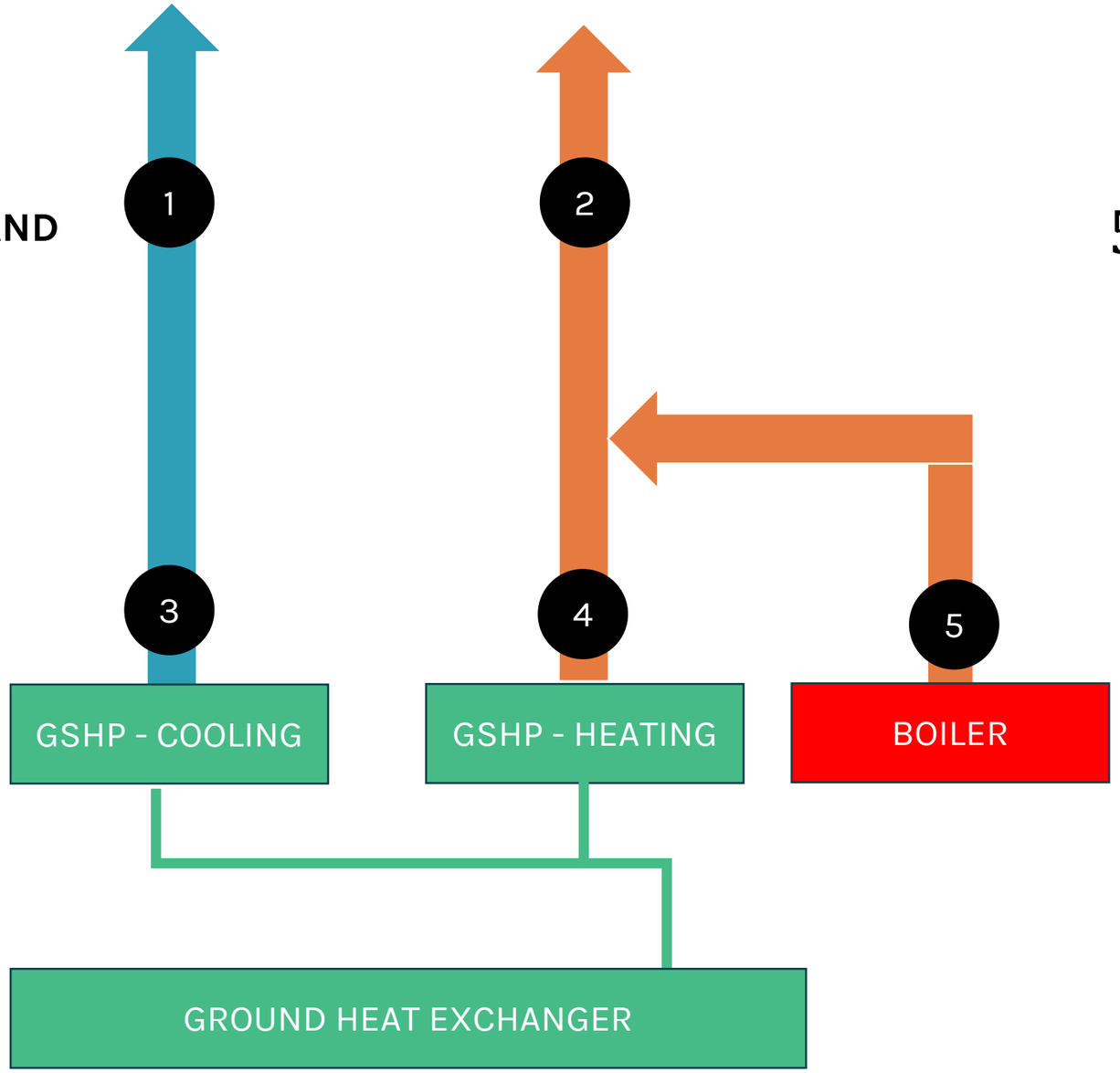
DUAL USE CALCULATION: HYBRID – GSHP +BOILER

TOTAL ENERGY = BUILDING HEATING AND COOLING LOADS

PLANT EQUIPMENT THERMAL OUTPUT



$$50\% < \frac{Qualified\ Energy}{Total\ Energy}$$

$$\mathbf{50\%} < \frac{\mathbf{3+4}}{\mathbf{1+2}}$$

SAME AS…

$$50\% < \frac{3+4}{3+4+5}$$

BUILD THE MODEL: TOOLKIT

MODELING LANGUAGE

MODELING ENVIRONMENTS

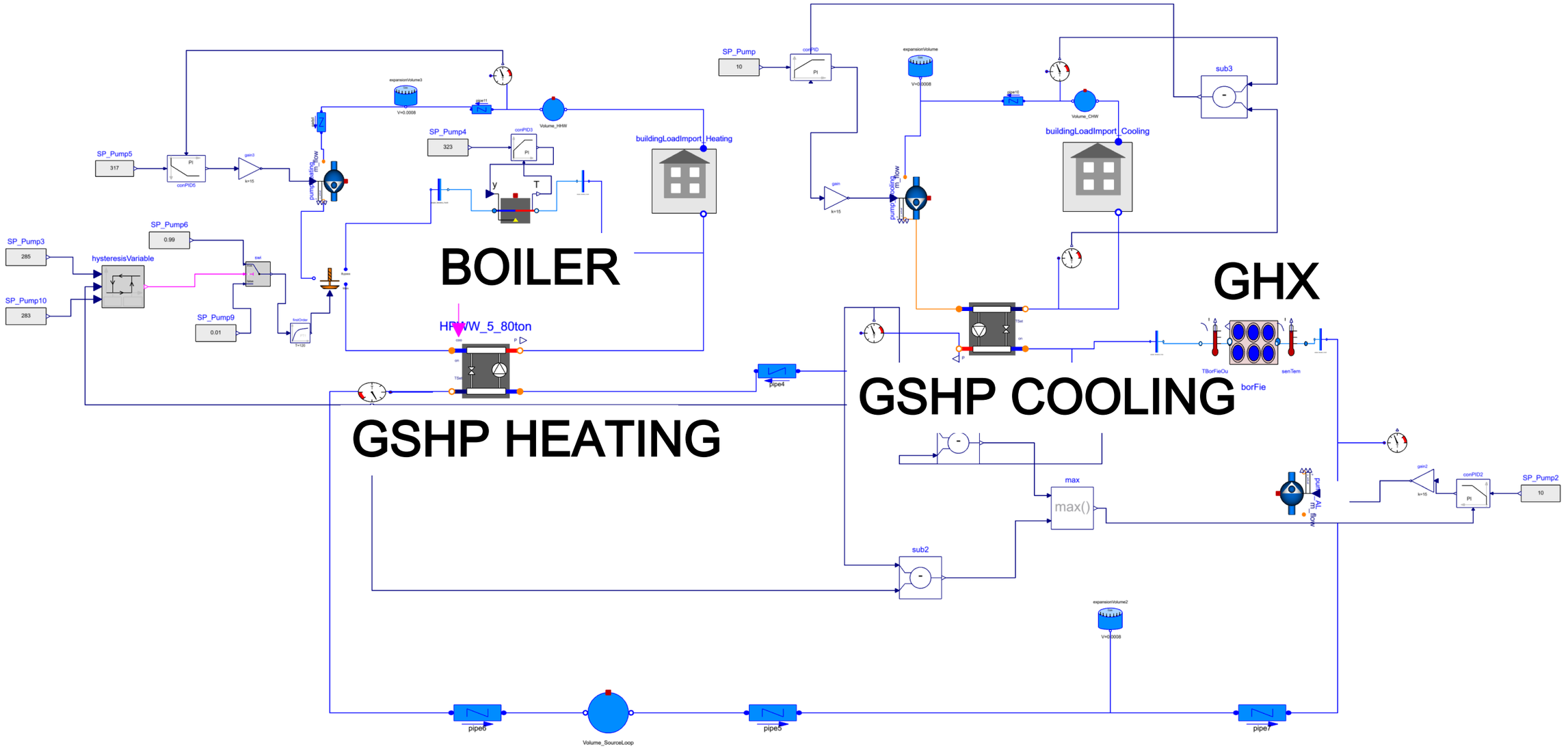
Modelon **Impact**

LIBRARIES

Open Source

Proprietary

BUILD THE MODEL: HYBRID – GSHP +BOILER



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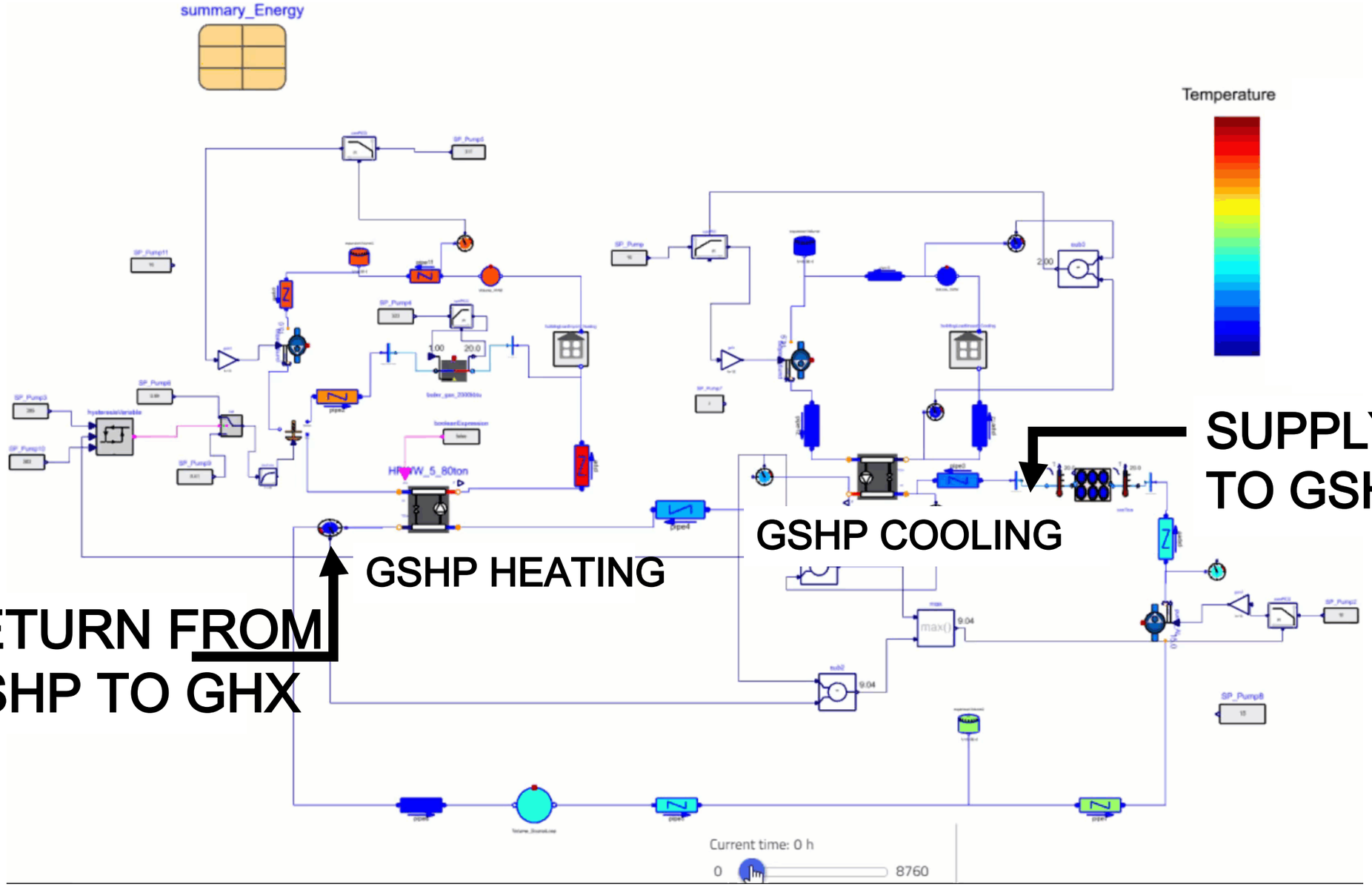
PAUSE IN THE ACTION - MODEL VALIDATION



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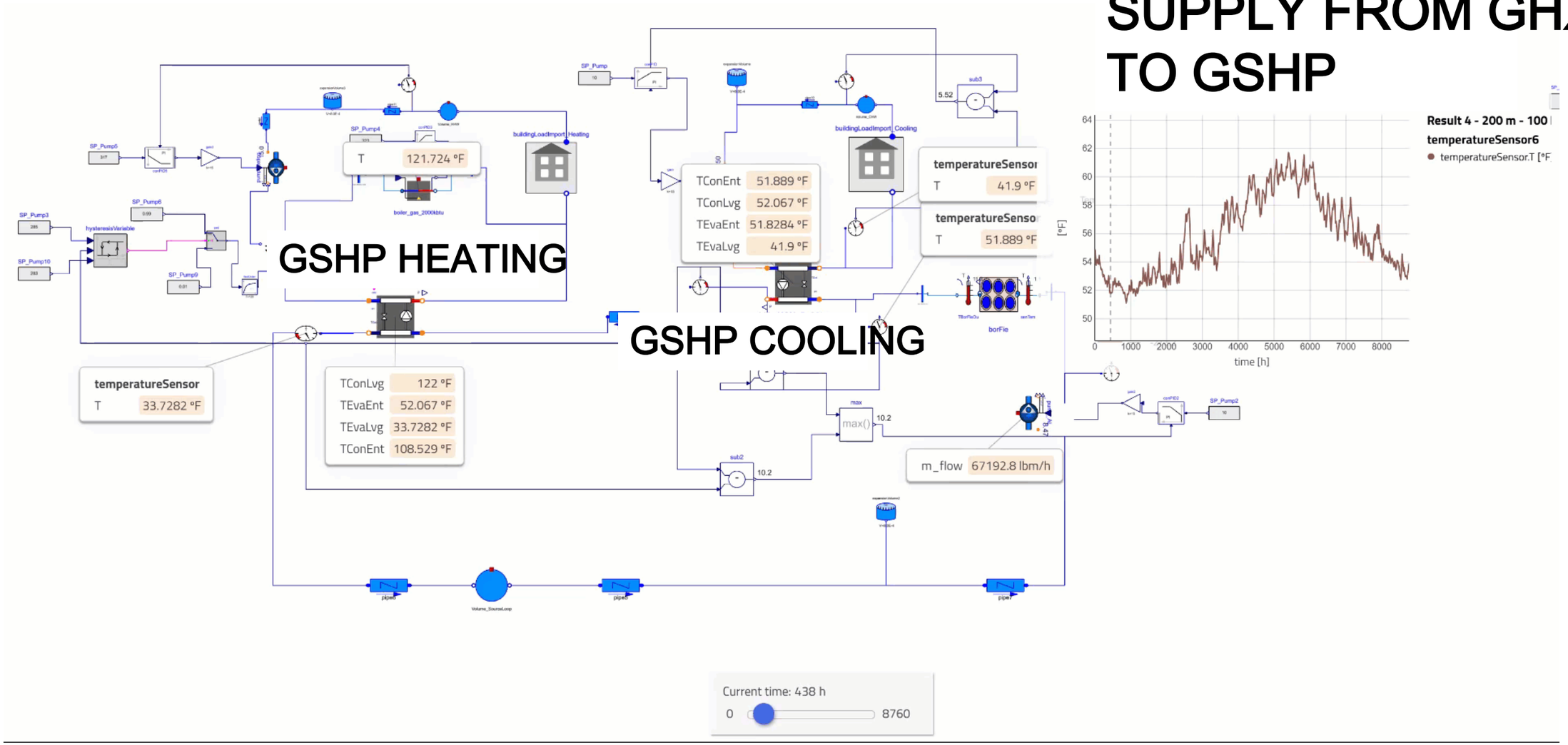

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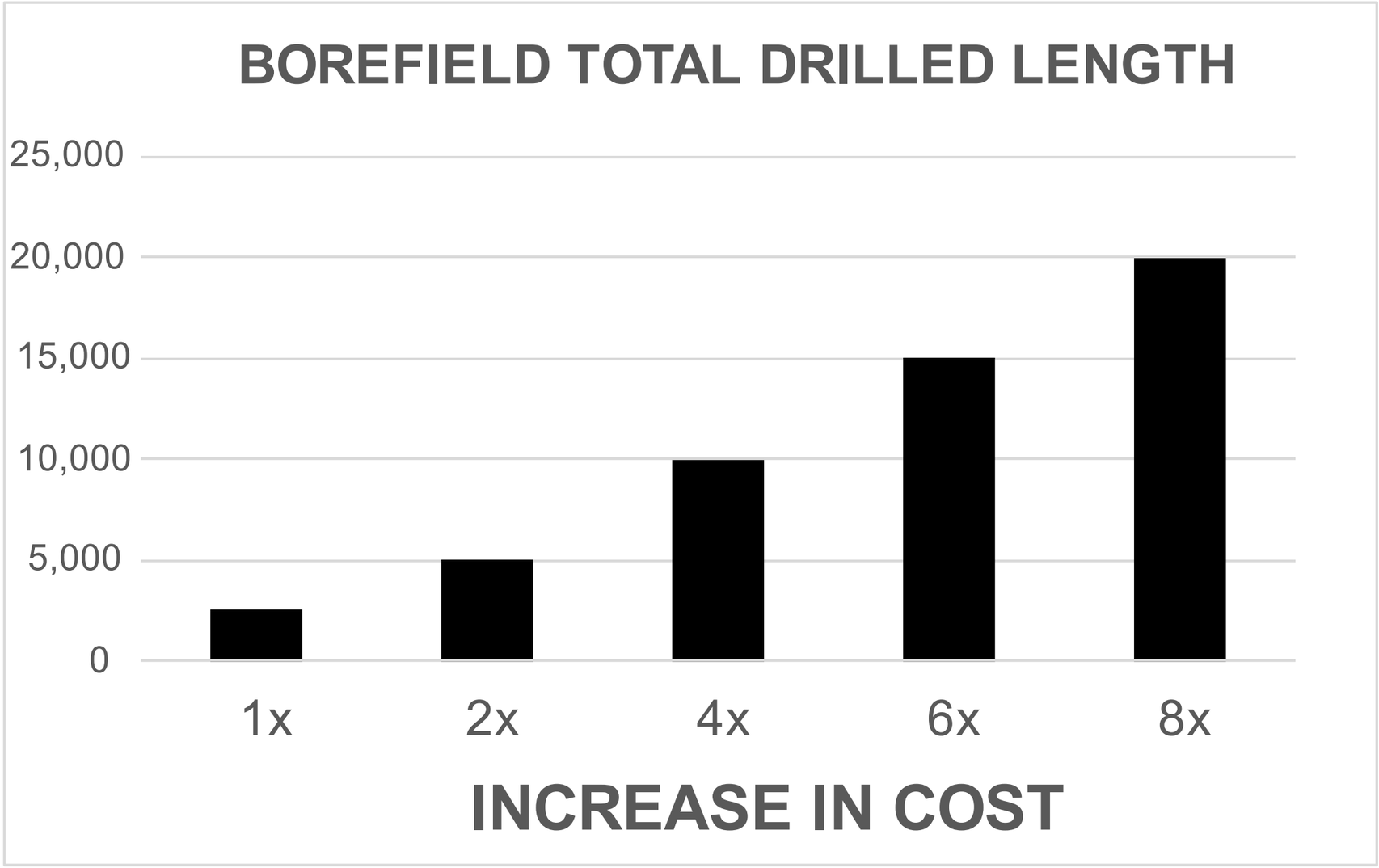
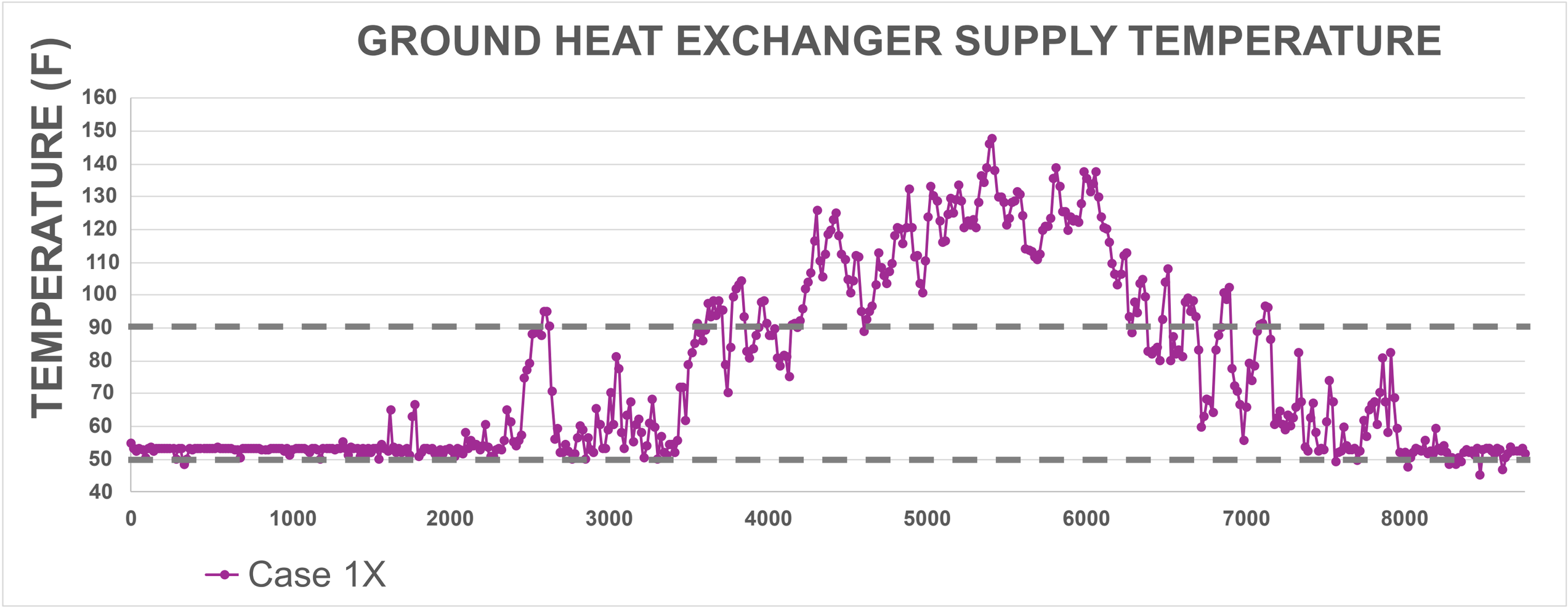
BACK TO THE ACTION: VARY BOREFIELD SIZE



VALUE: HEAT PUMP SCREENING BASED ON BOREFIELD SIZE



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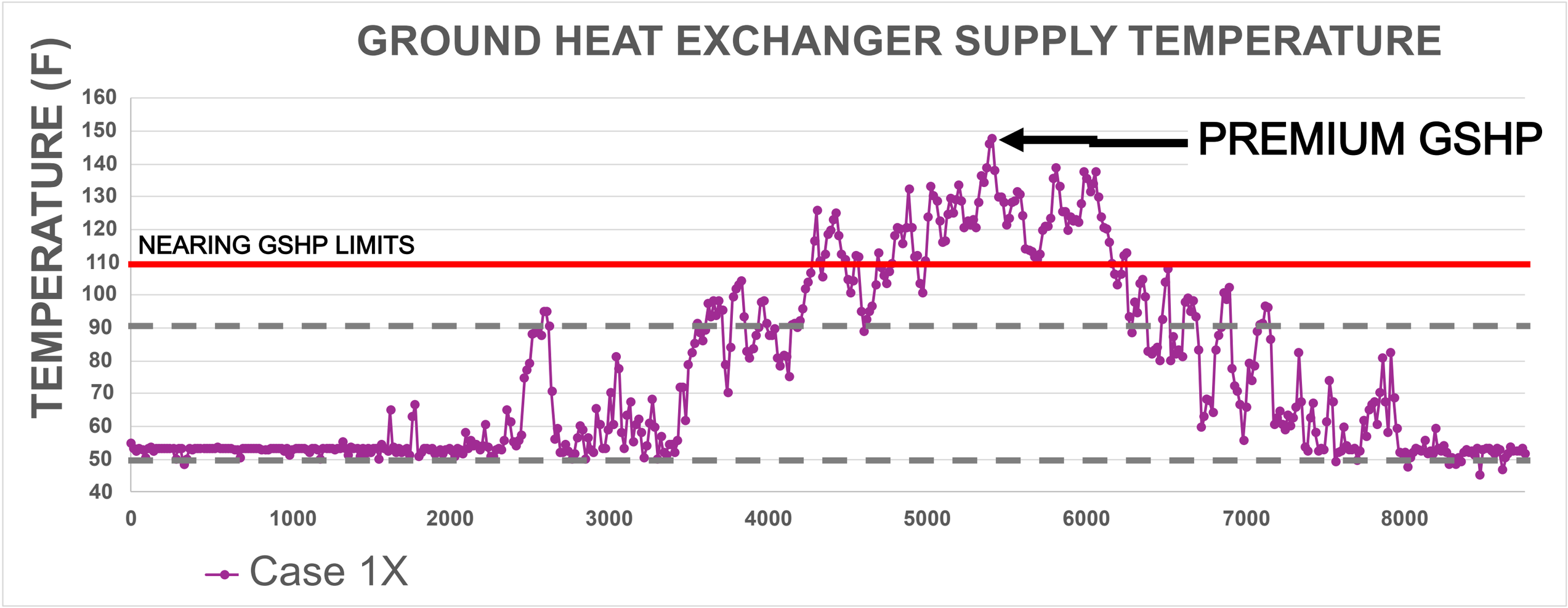

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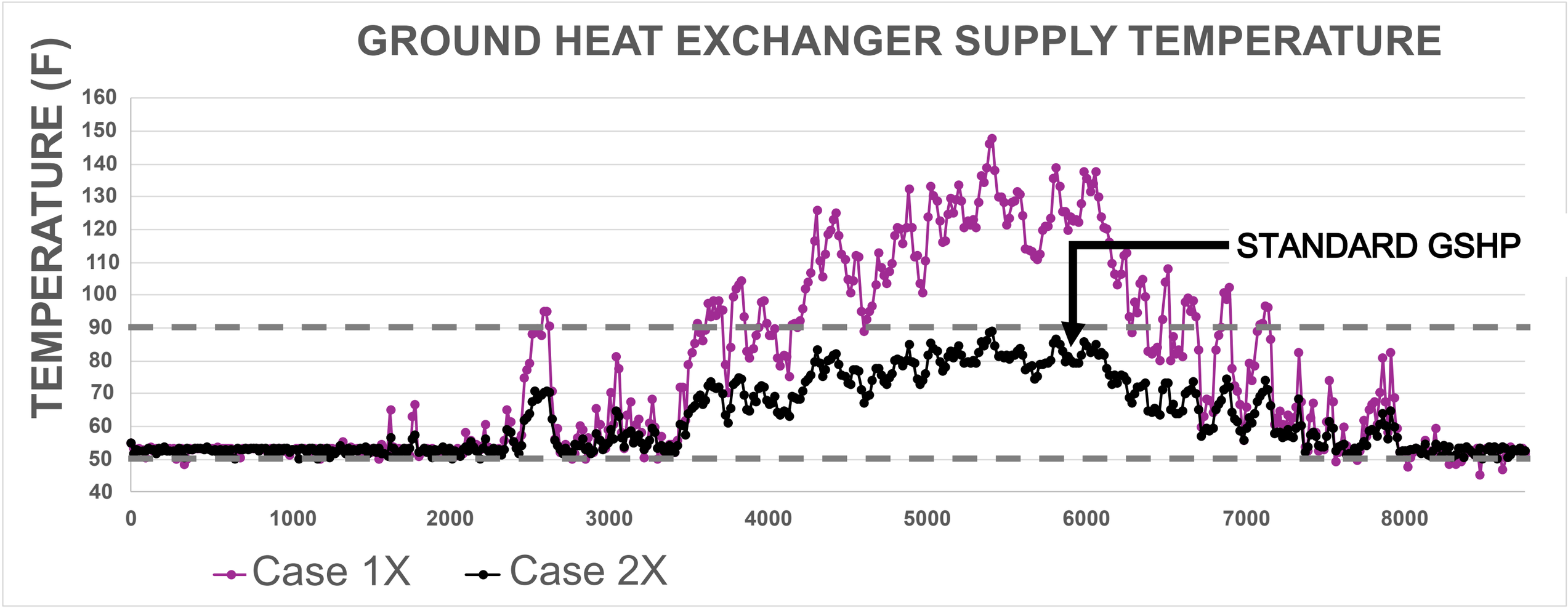

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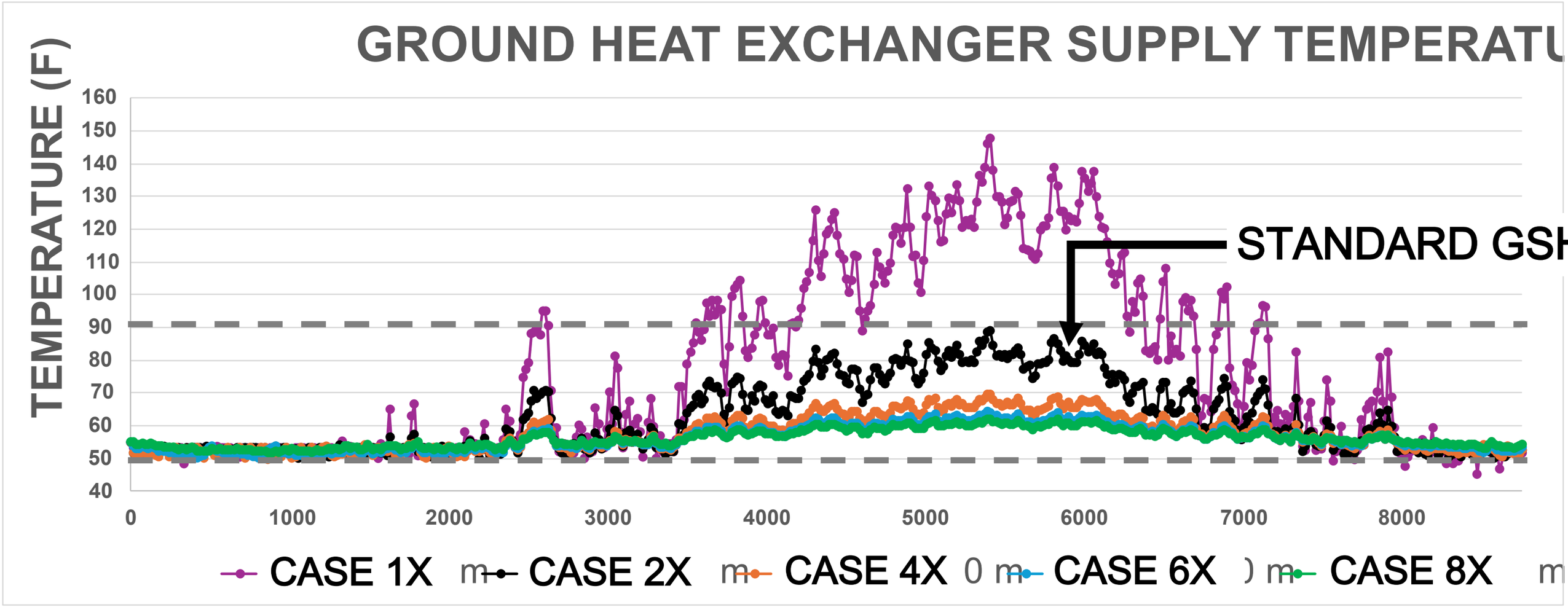
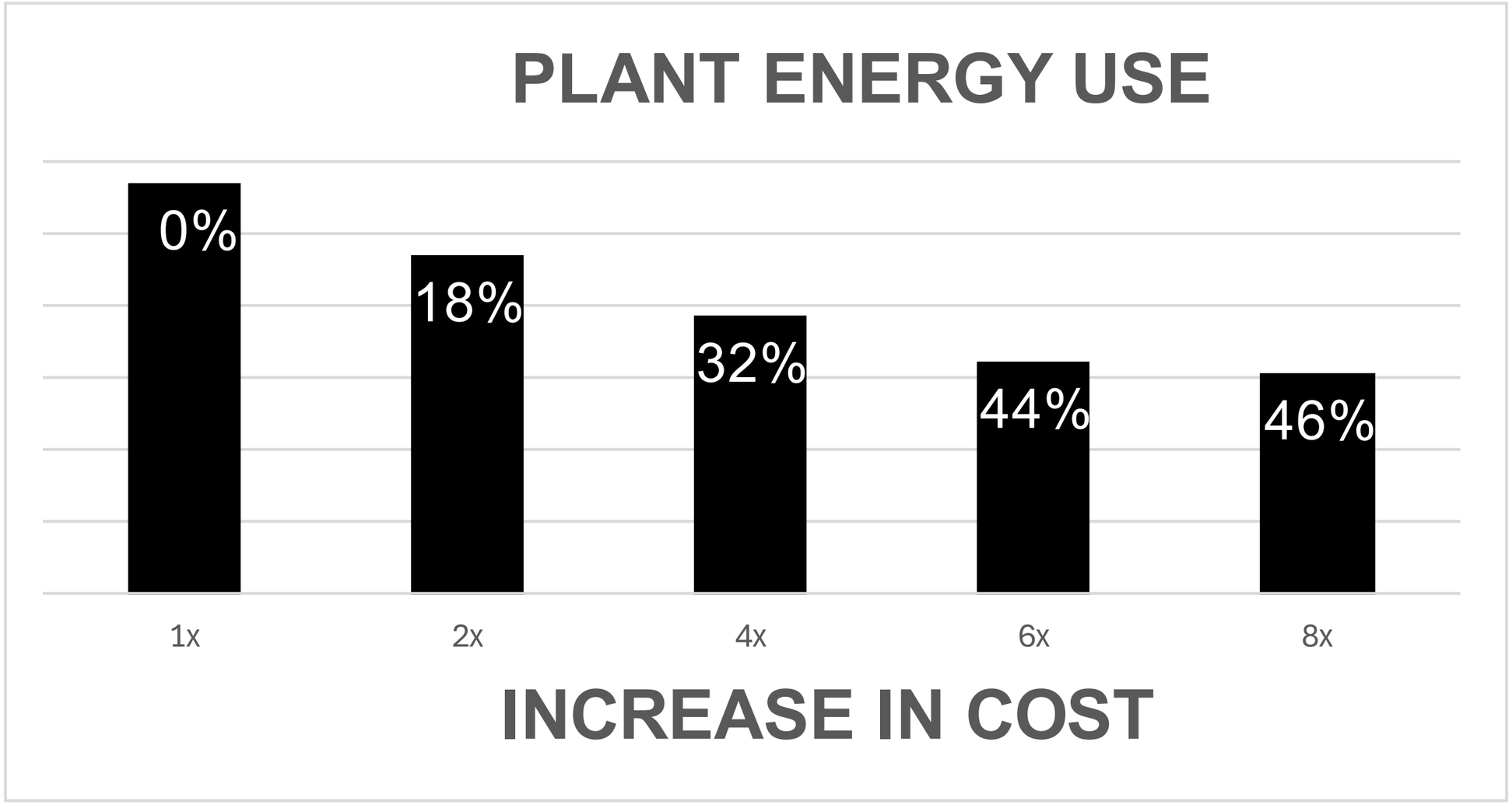


VALUE: ENERGY SAVINGS



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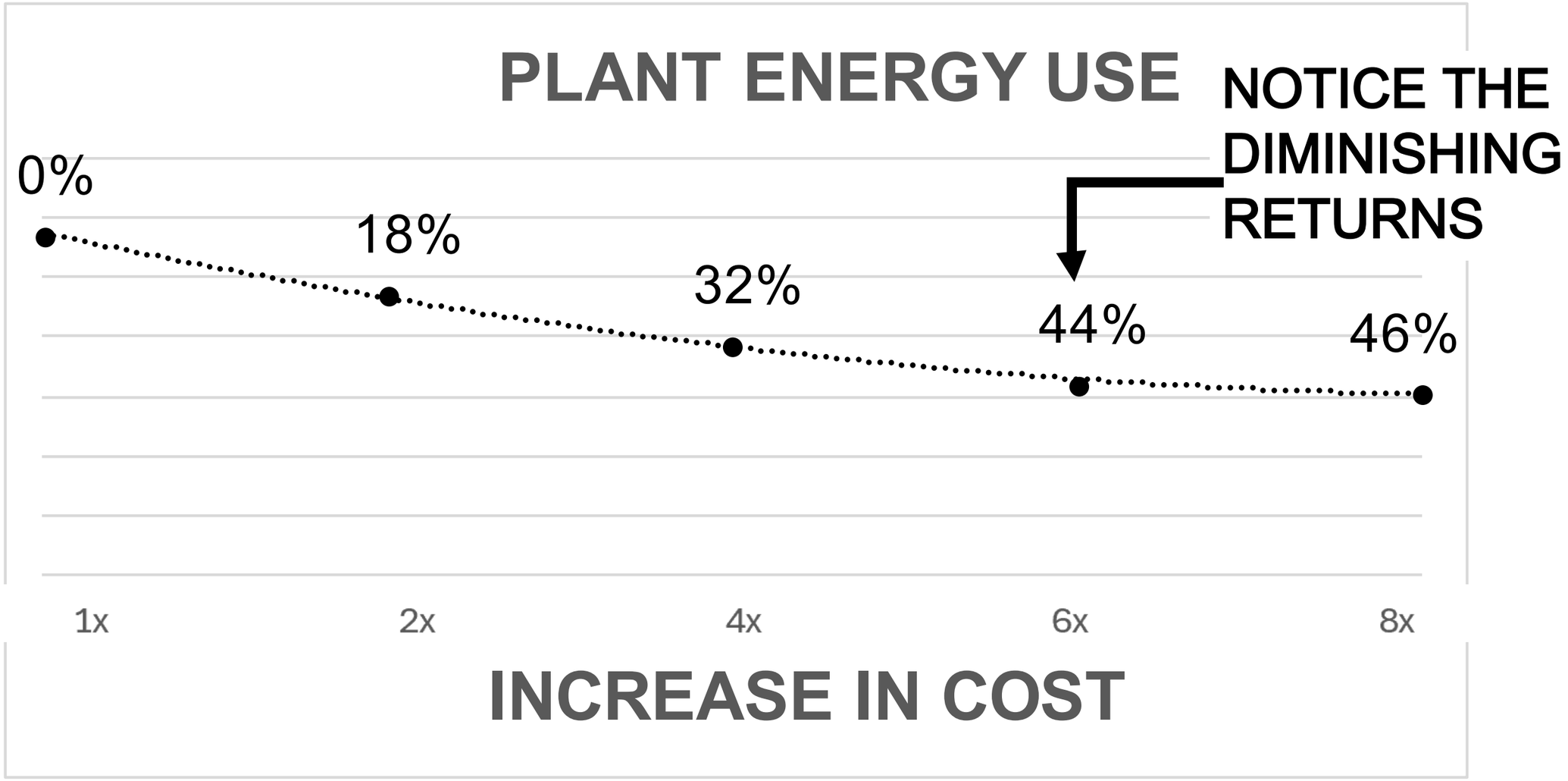
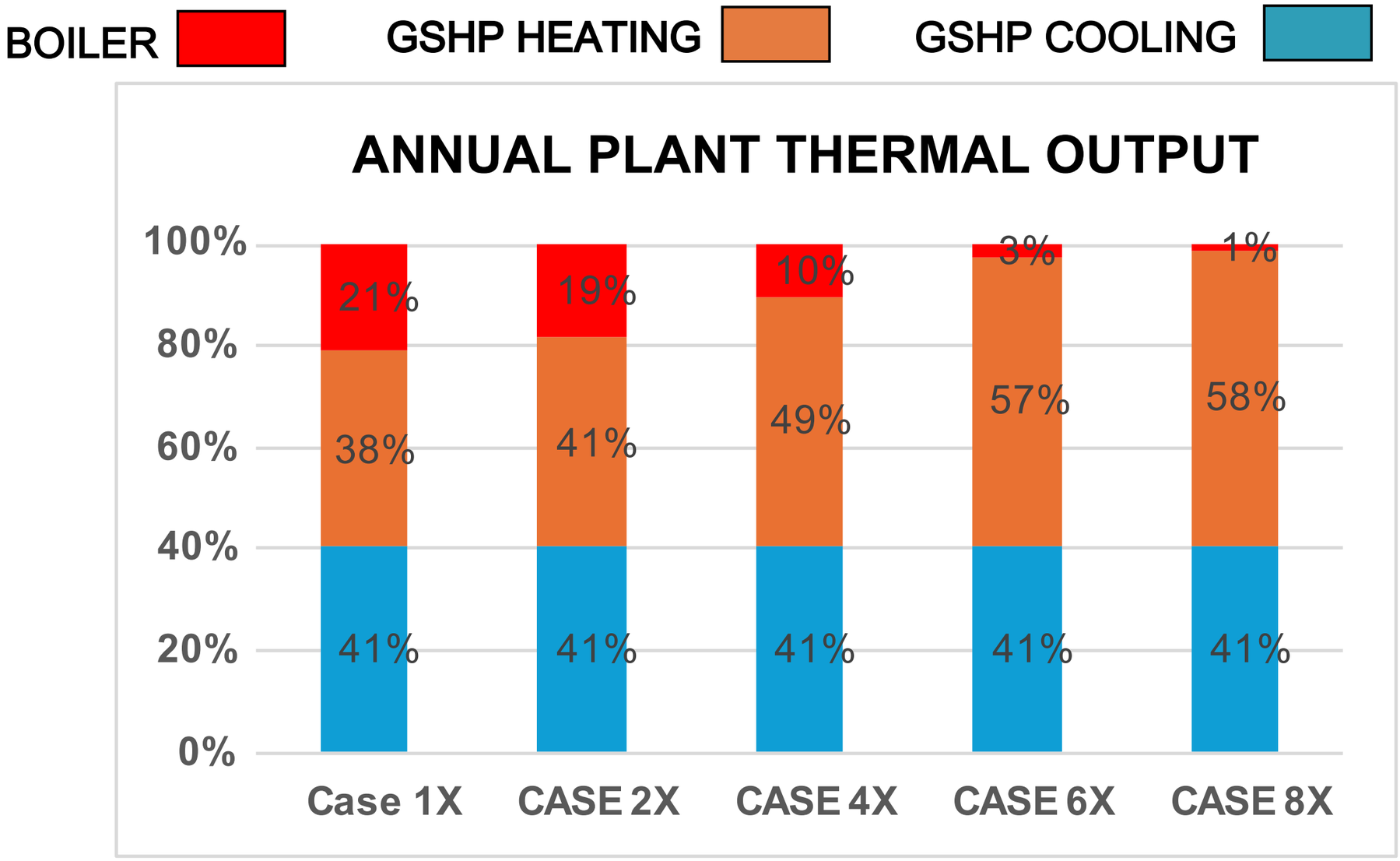


VALUE: INVESTMENT COST – ITC DUAL USE EVALUATION



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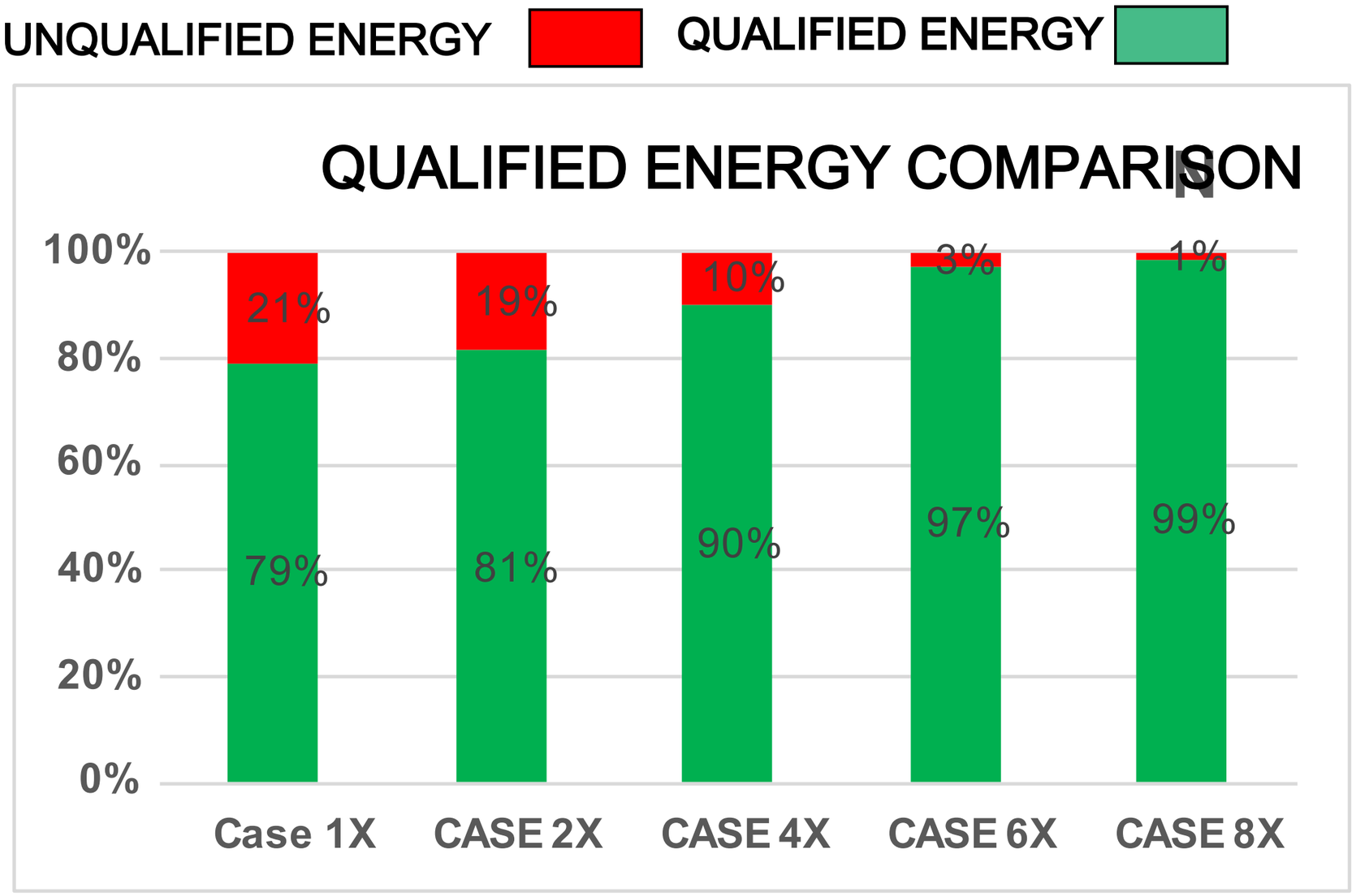
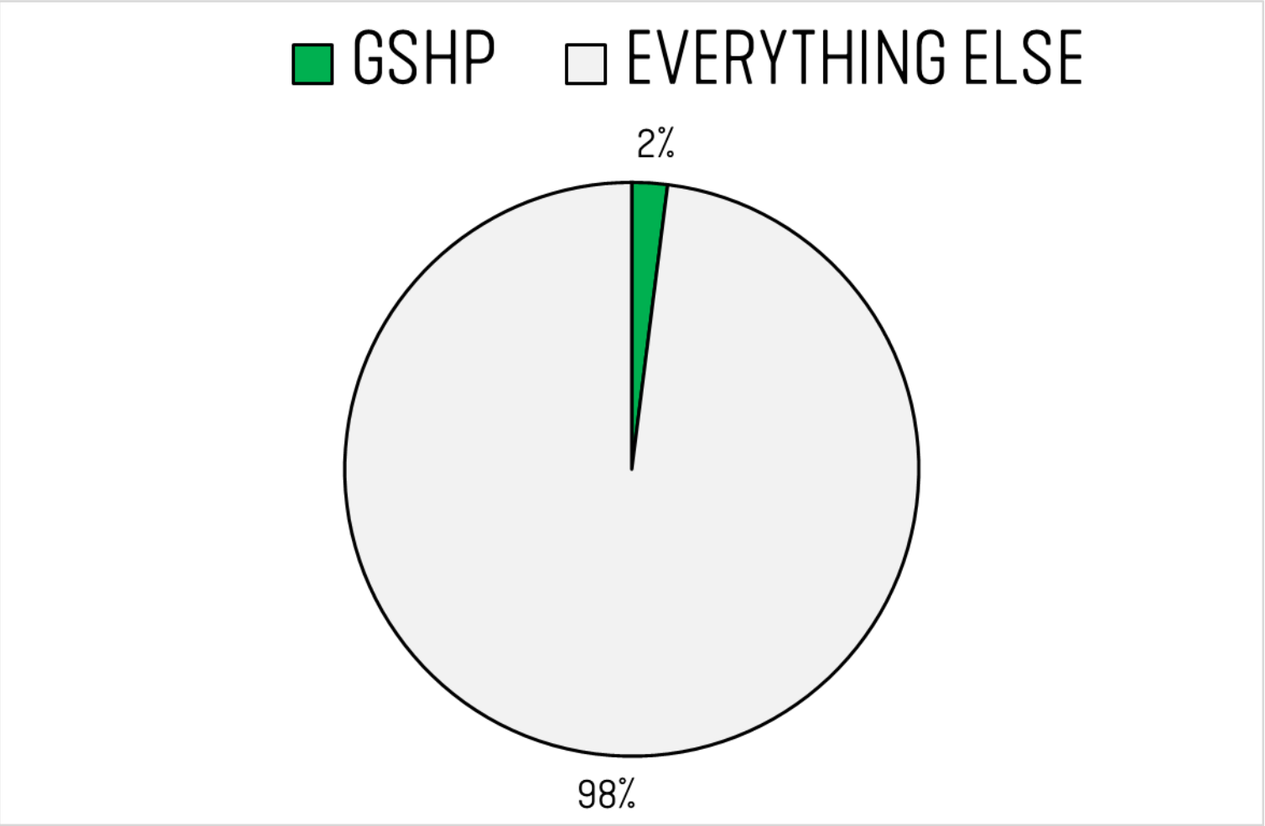


ANALYSIS VALUE – CREATE A SOLUTION MATRIX

	CASE 1X	CASE 2X	CASE 4X	CASE 6X	CASE 8X
BOREFIELD SIZE	1X	2X	4X	6X	8X
PREMIUM GSHP REQUIRED?	Y	N	N	N	N
PLANT ENERGY USE SAVINGS	0%	18%	32%	44%	46%
DUAL USE: QUALIFIED ENERGY	79%	81%	90%	97%	99%

NOT (GSH)PUMPED…



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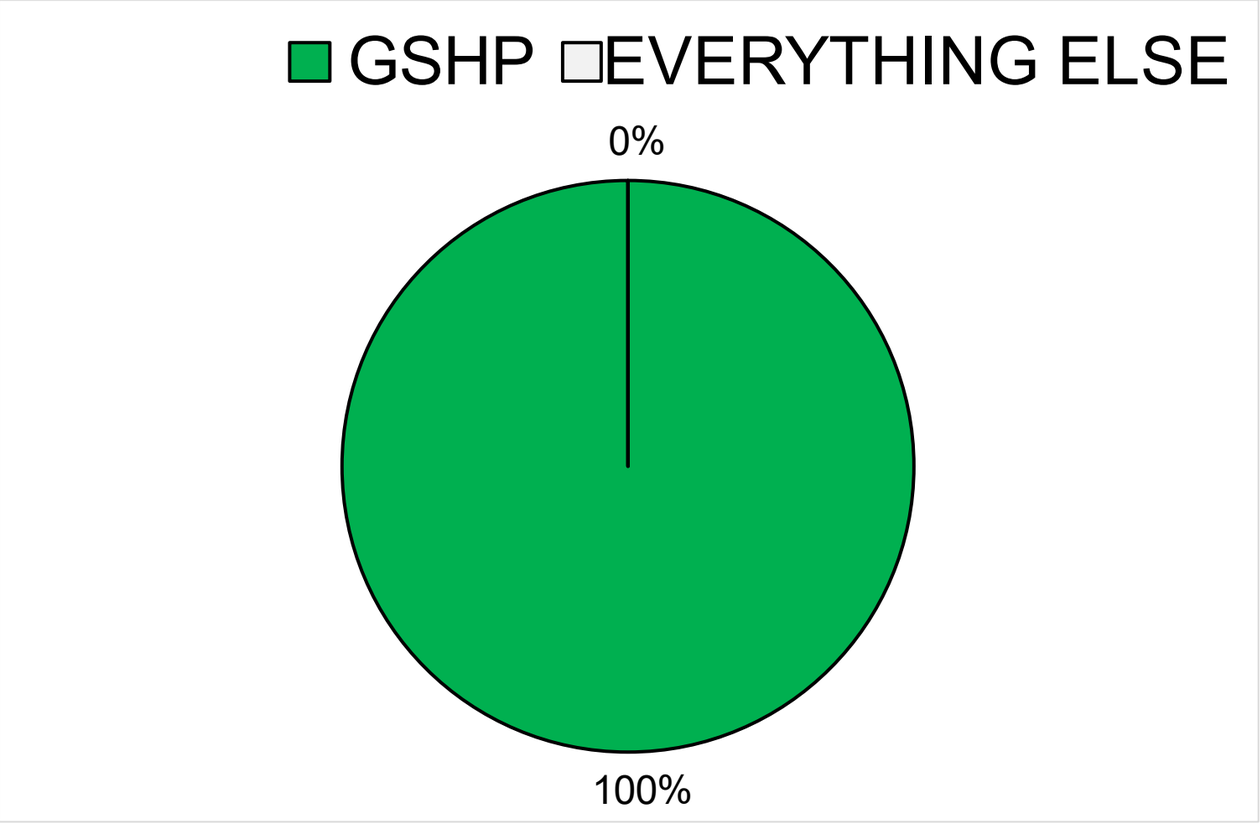

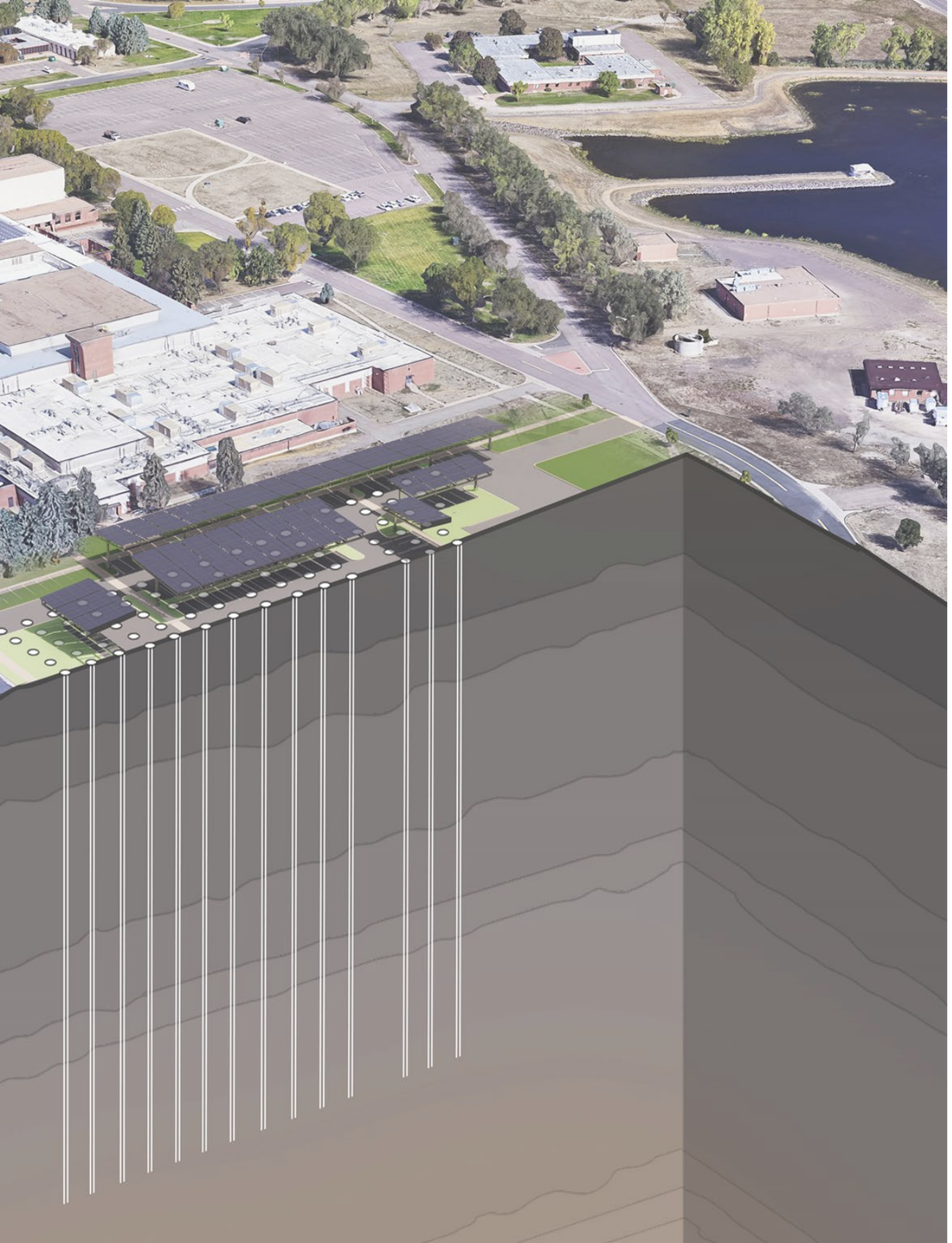

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Design a Better Future

WinnCompanies

NY GEO 2025: Project Scenario Planning

Christina McPike, Vice President of Energy & Sustainability

WinnCompanies by the Numbers

- WinnCcompanies is a long term-owner stakeholder, which has owned many properties for **30+ years**.
- Employs more than **3,500** hard-working and capable team members, including **318 veterans** of the United States Military, with more than 60% of employees identifying as minorities.
- Manages **121 Million** square feet, including housing, condos, commercial, retail, parking facilities;
- Provides homes to **330,000** residents;
- Has transformed 36 historic properties into **more than 3,600 units of mixed-income housing** in mixed-use communities.

WinnCompanies
Development | Residential | Military

Geothermal Adoption

- Starting Point:
  - In-unit combi boilers
  - Central gas boiler, cooling tower, hybrid WSHP
- Where we were going:
  - Air Source Heat Pumps/VRF
- Opportunity for Geo:
  - Expansion of S48
  - (No longer relevant) A2L Code Frenzy
  - Operating Costs
  - Maintenance
  - MassSave Incentives
  - Solar

WinnCompanies
Development | Residential | Military

Feasibility & Financing

- ITC does not reduce LIHTC basis
- Longer Useful Life/Less Maintenance
- Lower Energy Usage –
  - Predicted, not proven (difficult to underwrite)
  - Negative impact in WUFI model
- ~ $50k/unit cost (union)
- MassSave: $1,000/unit incentive
- NY Clean Heat

Construction Costs	ASHP***	GSHP
Test well		$ 75,000.00
Ground loop cost		$ 1,505,000.00
Central pumps		$ 75,000.00
Interior Equipment & Distribution	$ 2,461,710.74	$ 925,000.00
Mitsubishi AHU	*$ 820,570.25*	
Rooftop condensers	*$ 820,570.25*	
Refrigerant line sets	*$ 820,570.25*	
ClimateMaster WSHP		*$ 450,000.00*
Hot & chilled water piping		*$ 475,000.00*
Total System Cost	**$ 2,461,710.74**	**$ 2,580,000.00**
ITC Value @ $0.90		$ 928,800.00
Net Cost (Excluding LIHTC)	$ 2,461,710.74	$ 1,651,200.00

Heating & Cooling Utility Costs	ASHP	GSHP
$/Unit/Year	$ 413.63	$ 249.89

Equipment Replacement Costs	Useful Life	# of Equipment
ASHPs	up to 15 years	94
Refrigerant - consider regulatory changes	2026 phase out	Still warranty for 10 years
Rooftop units	up to 15 years	Grouped
WSHPs	20-25 years	94
Ground Loop	100+	23

WinnCompanies
Development | Residential | Military

Mary Ellen McCormack Building A

Project Team:

The Architectural Team
RW Sullivan (MEP)
McPhail Associates
Lee Kennedy Co.
New Ecology Inc.

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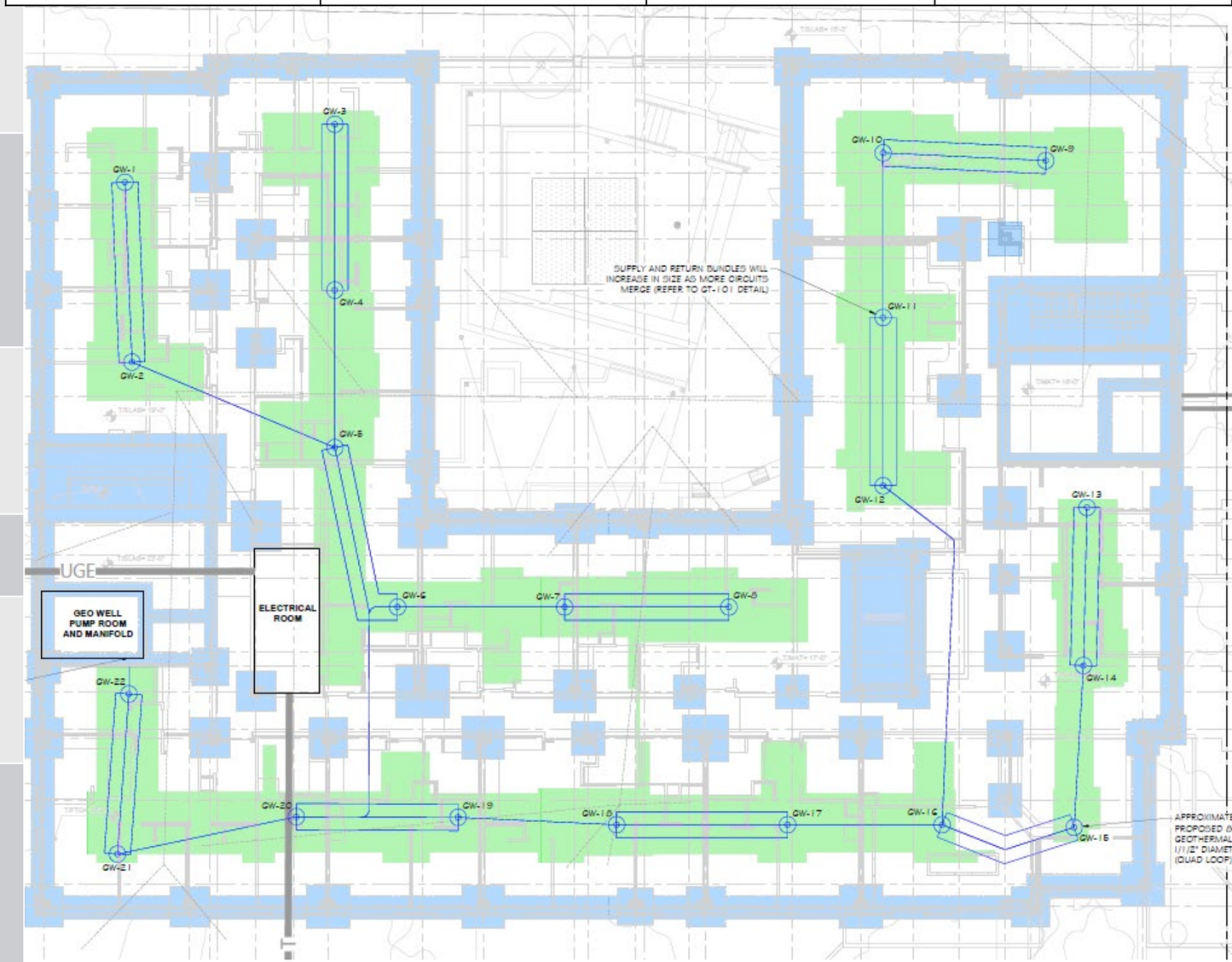
Parameter	Details
Thermal Conductivity	1.85 BTU/hr-ft-F
Borehole Diameter	8-3/4″ (0-200′), 6-1/2″ (200-824′)
Casing	8-5/8″ steel casing from 0-200′
U-Bend Size	1 ½″ DR11 HDPE Double U-Bend
U-Bend Depth	800′
Mix of clay, silt, sand, and gravel	0′-184′
Fine-grained metamorphic rock, argillite	184′-800′

Annual Heating (1000 BTU)	Annual Cooling (1000 BTU)	Peak Heating (Tons)	Peak Cooling (Tons)
793,091	1,217,632	65.3	81.3



Gordon H. Mansfield Veteran's Housing

- 84 Units
- 100% Low Income
- Phius Design Certified
- Soldier On Co-Development
- Project Team:
  - PS&S
  - Brightcore
  - Solar Design Associates
  - Del-Sano Contracting
  - MaGrann Associates

WinnCompanies
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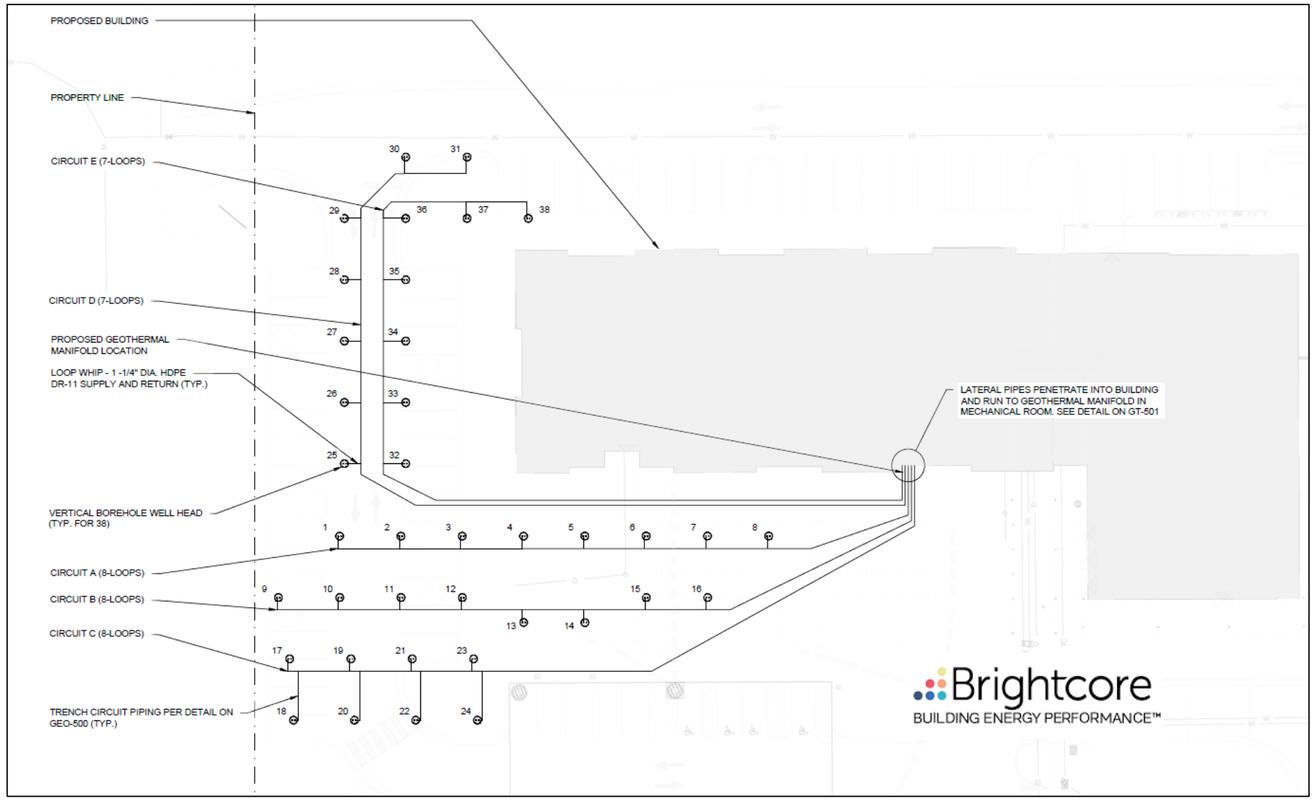
Gordon H. Mansfield Veterans Housing

Parameter	Details
System Tonnage	22
Thermal Conductivity	1.45 Btu/hr-ft-F
Borehole Diameter	6″
Casing	Not planned
U-Bend Size	1-1/4″ HDPE U-Bend
U-Bend Depth	325′
Sand/silt	0′-300′
Granite	300′-400′



Future Project Planning

- Projects under development: Safe Habor
  - Mary Ellen McCormack – 2025 start, 2026 placed in service
  - West Deptford – Q3 2025 start, Q4 2026/Q1 2027 placed in service
  - Harbor Vue, Hyannis – TBD
  - Overlook Ridge, Malden – TBD
- Pricing ASHP as alternative;
- Re-designing HVAC system;
- Removing ITC from underwriting if possible;

Thank you

Christina McPike

Vice President of Energy & Sustainability

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Project Scenario Planning During a Period of Uncertainty

Moderator: Derek Dwyer / *Enertech USA*

Panel: Jacob Goldman / *Energy Tax Savers*

Victor Braciszewski / *SmithGroup*

Christina McPike / *WinnCompanies*