REVIVE IN ACTION

Ranch REVIVE

Ranch REVIVE

Phius Design Certified

exp. 12/9/74

REMARKS

ENJOY YOUR OWN FISH STOCKED, SPRING FED POND AND THE ADJOINING NATURE PRESERVE.

THERE ARE TELEPHONE JACKS AND TV OUTLETS IN EVERY ROOM. ALL CLOSETS ARE CEDAR LINED.

THIS DELIGHTFUL HOME, IN A SETTING OF RUSTIC OPEN SPACE OFFERS PRIVACY AND MAGNIFICENT VIEWS.

WITH LAND BECOMING SCARCE - THIS IS A PRIZE PACKAGE.

REALTOR [redacted]

PROPERTY ADDRESS: Route 63 (R. R. 2), Barrington Hills, Illinois

Owner & Address Mr. & Mrs. Micheal Zemon Phone: 426-3054


BRUTE

PREVIOUS PROCESS

Phius CORE REVIVE 2021

Phius CORE REVIVE 2021 is Phius' legacy certification for retrofitting existing buildings. In order to achieve our carbon reduction goals, many existing buildings must be revived to meet passive building levels of performance. Enclosure focused passive building retrofits provide substantial benefits such as comfort, indoor air quality, lower utility bills, decreased impact on the electric grid, and less renewable energy necessary to get to ZERO.

→ More about Phius CORE REVIVE

→ Jump to Phius CORE REVIVE Standard Specifications

TBDA

2021 PHIUS CORE REVIVE PROJECTS

Carroll Center Addition & Renovation

Fair Oaks Phius Retrofit

Phius Zero Historic Retrofit

PHIUS ZERO HISTORIC RETROFIT (2021 CORE REVIVE)

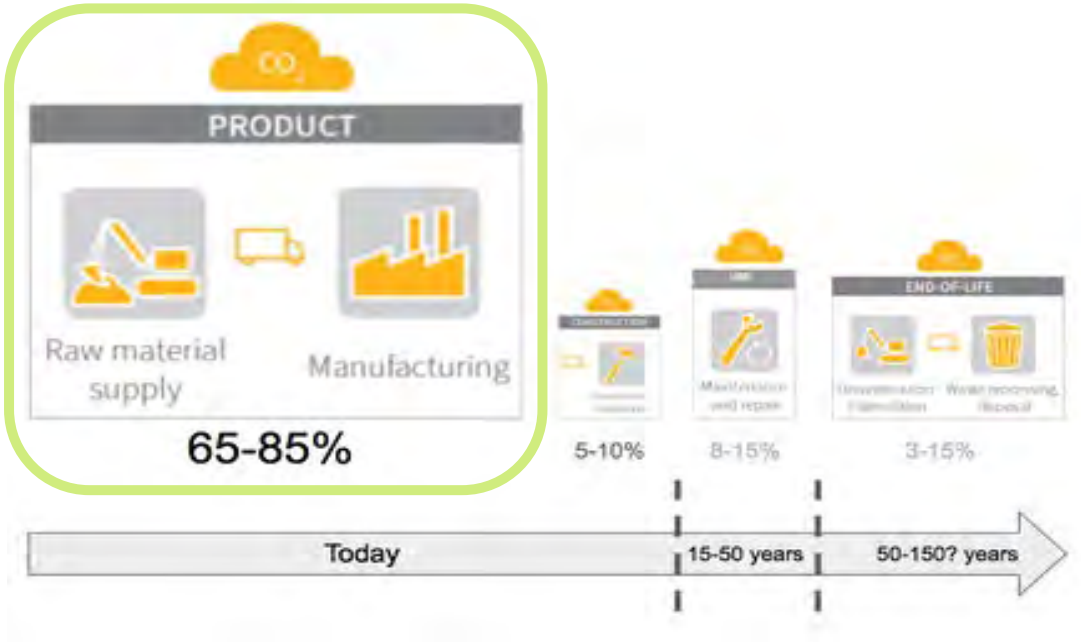
PHIUS ZERO HISTORIC RETROFIT (2021 CORE REVIVE)

CALCULATING CARBON

A1
RAW MATERIAL EXTRACTION

A2
TRANSPORTATION TO FACTORY

A3
MANUFACTURING



THE FULL LIFE CYCLE OF BUILDING PRODUCTS/MATERIALS SPANS FROM THE HARVESTING OF RAW MATERIALS THROUGH TO THEIR EVENTUAL DISPOSAL. BEAM IS FOCUSED ON THIS **"PRODUCT PHASE"** OF THE LIFE CYCLE.

THE RESULTS YOU SEE IN BEAM ARE **"CRADLE TO GATE EMISSIONS"** AS FOUND IN ENVIRONMENTAL PRODUCT DECLARATIONS (EPDS) OR, IF NO EPD WAS AVAILABLE IN A PRODUCT CATEGORY, FROM CRADLE TO GATE RESULTS FROM PEER REVIEWED LIFE CYCLE ASSESSMENTS (LCAS)

TBDA

BEAM: USING THE TOOL

Building Dimension Inputs (Excluding Garage)

DIMENSION NAME	QTY	UNIT	DESCRIPTION	USED TO CALCULATE TAKE-OFFS FOR
CONTINUOUS FOOTINGS VOLUME	13.4	yd³	Length (ft) 181.00 X Height (in.) 12.00 X Width (in.) 24.00 Exclude: garage	Continuous (aka "strip") foundation wall footings (exterior and interior)
COLUMN PADS & PIERS VOLUME	2.6	yd³	Total volume of discontinuous column footings, pad, piers, etc. Excludes: garage	Discontinuous footing elements aside from continuous footings (ext. and int.)
FOUNDATION WALL AREA	674.7	ft²	Total foundation wall surface area (centerline length x height) Includes: basement, party walls. Excludes: openings, garage foundation	Foundation & basement wall insulation (ext. and int.), interior framing, and wall cladding
FOUNDATION SLAB AREA	1608.7	ft²	Total foundation slab surface area Excludes: garage slab	Aggregate base, sub-slab insulation, slab, and basement flooring
EXTERIOR WALL AREA	2993.8	ft²	Surface area of exterior walls. Includes: gable ends. Excludes: window & door openings, party walls, garage walls	Framing, insulation, sheathing, exterior cladding, and interior cladding of exterior walls
WINDOW AREA	638.2	ft²	Area of window frames (preferrable) or rough openings Includes: full glazing area, skylights. Excludes: garage windows	Windows of main building
PARTY WALL AREA	0.0	ft²	Wall area that partitions this unit from others Typical for townhouses & apartment units	Party wall framing, insulation, sheathing, and interior cladding
INTERIOR WALL AREA	2334.8	ft²	One side only (i.e. centerline) of all interior walls. Includes: interior door area. Excludes: exterior, garage partition and party walls	Interior wall framing and cladding (assumes both sides of walls are finished by default)
FRAMED FLOOR AREA	2704.0	ft²	Above grade flooring area Excludes: basement floor slab, and floor openings	Floor framing, subfloor, floor insulation, finish flooring
FINISHED CEILING AREA	2906.0	ft²	Total finished ceiling area Includes: basement ceilings. Excludes: garage ceilings	Ceiling cladding
ROOF INSULATION AREA	1455.3	ft²	Area associated with roof insulation Typically equal to the ceiling area directly below the roof	Flat or sloped roof insulation
ROOF SURFACE AREA	2351.7	ft²	Roofing surface area. Calculated with roof pitch Excludes: overhangs	Roof framing, decking, roofing, and insulation parallel to roof surface
[illegible]	[illegible]	[illegible]	Total volume of wood in heavy timber posts & beams	[illegible]

Introduction | PROJECT | Footings & Slabs | Foundation Walls | Structural Elements | Ext. Walls | Party Walls | Cladding

FIRST, PROJECT DATA IS ENTERED IN THE "PROJECT" TAB.

WE USE BILLS OF MATERIALS FROM OUR BIM SOFTWARE (ARCHICAD) TO POPULATE THESE QUICKLY (OTHER TOOLS HAVE REVIT PLUGINS TO MAKE THIS MORE INTEGRATED).

TBDA

BEAM: USING THE TOOL

EXTERIOR WALLS

← + INSTRUCTIONS

SECTION COMPLETE? ☐

SUBTOTAL (kg CO_2e): -3,120

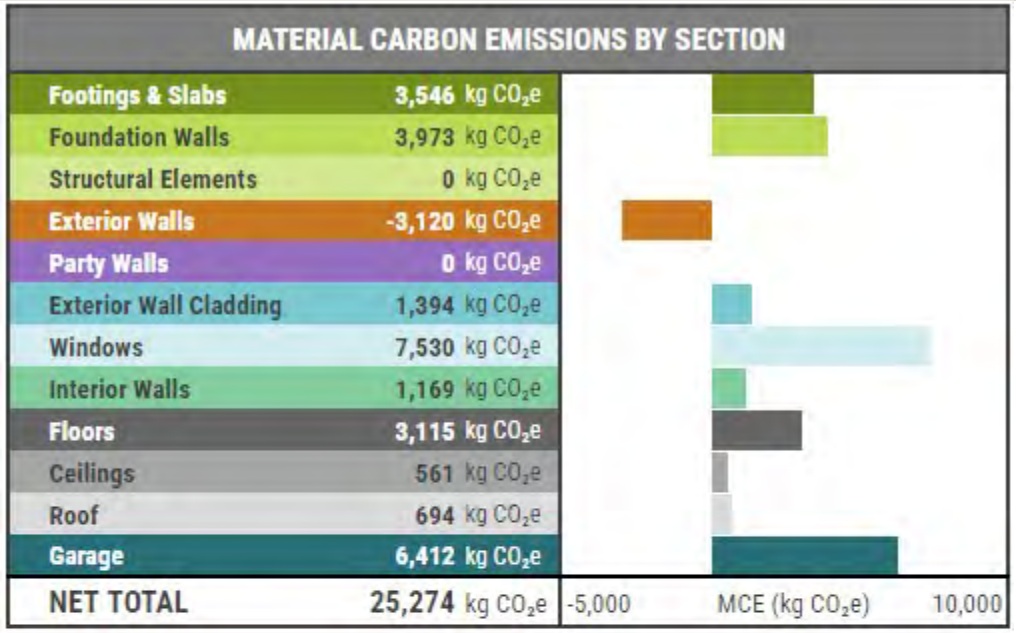
BUILDERS FOR CLIMATE ACTION | BEAM

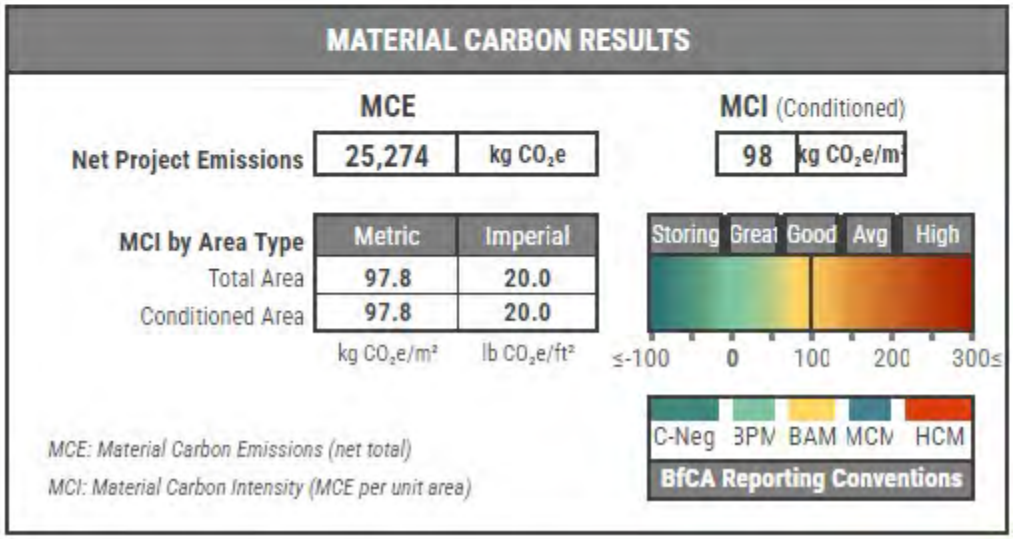
CATEGORY	MATERIAL	QUANTITY	UNITS	%	SELECT	NET EMISSIONS (kg CO_2e)	EMISSIONS (kg CO_2e)	STORAGE (kg CO_2e)	FOOTNOTE
CAVITY INSULATION		R-VALUE	41.8						
HIGH R-VALUE CAVITY INSULATION									
	Aerogel blanket / Aspen Aerogels / R9.6/inch	2,993.8	ft²	100%	☐	37,777	37,777	0	Expired 2020
SPRAY POLYURETHANE FOAM – HIGH DENSITY									
	Spray polyurethane foam - High Density (HFC gas) / R 6.3/inch / SPFA [Industry Avg | US & CA]	2,993.8	ft²	100%	☐	34,849	34,849	0	A1-B1
	Spray polyurethane foam - High Density (HFO gas) / R 6.5/inch / SPFA [Industry Avg | US & CA]	2,993.8	ft²	100%	☐	10,135	10,135	0	A1-B1
SPRAY POLYURETHANE FOAM – CLOSED CELL									
	Spray polyurethane foam - Closed Cell (HFC gas) / R 6.6/inch / SPFA [Industry Avg | US & CA]	2,993.8	ft²	100%	☐	26,946	26,946	0	A1-B1
	Spray polyurethane foam - Closed Cell (HFO gas) / R 6.6/inch / SPFA [Industry Avg | US & CA]	2,993.8	ft²	100%	☐	8,518	8,518	0	A1-B1
	Spray polyurethane foam - Closed Cell (HFO gas) / Huntsman / Heatlok Soya HFO & Heatlok HFO / R 6.5/inch	2,993.8	ft²	100%	☐	5,124	5,124	0	A1-B1
SPRAY POLYURETHANE FOAM – OPEN CELL									
	Spray polyurethane foam - Open Cell / R 4.1/inch / SPFA [Industry Avg | US & CA]	2,993.8	ft²	100%	☐	2,907	2,907	0	A1-B1
SHEEP WOOL INSULATION									
	Wool / Havelock Wool / Loose-fill / R 4.4/inch	2,993.8	ft²	100%	☐	1,577	3,604	2,027	
	Wool / Havelock Wool / Batts / R 3.6/inch	2,993.8	ft²	100%	☐	2,056	5,385	3,329	
MINERAL WOOL BATT INSULATION									
CELLULOSE INSULATION									
	Cellulose / loose fill / R 3.7/inch / CIMA [Industry Avg | US & CA]	2,993.8	ft²	100%	☐	-2,176	997	3,173	
	Cellulose / batt / CMS / EcoCell / R 3.6/inch	2,993.8	ft²	100%	☐	-3,652	997	4,649	
	Cellulose / spray applied / R 3.75/inch / International Cellulose Corp. / K-13, ThermoCon	2,993.8	ft²	100%	☐	-4,302	665	4,968	
	Cellulose / dense pack / R 3.7/inch / CIMA [Industry Avg | US & CA]	2,993.8	ft²	100%	☑	-4,351	1,994	6,345	
WOOD FIBER INSULATION									
	Wood fiber loose fill / GUTEX / ThermoFiber / R 3.6/inch	2,993.8	ft²	100%	☐	-2,981	1,235	4,216	Expired 2020
	Wood fiber batt / GUTEX / ThermoFlex / R 4/inch [EU]	2,993.8	ft²	100%	☐	-4,401	768	5,169	Expired 2023
	Wood fiber batt / Steico / SteicoFlex / R 3.8/inch [EU]	2,993.8	ft²	100%	☐	-4,823	896	5,719	Expired 2021
	Wood fiber batt / [BEAM Avg | EU]	2,993.8	ft²	100%	☐	-4,974	597	5,571	
	Wood fiber batt / Pavatex / Pavaflex / R 3.8/inch [EU]	2,993.8	ft²	100%	☐	-5,698	127	5,825	Expired 2019
HEMPCRETE INSULATION									
	Hempcrete / Cast in-situ / USA / R 2.1/inch, Avg. mix using NHL & PHL	2,993.8	ft²	100%	☐	-6,147	18,139	24,286	Peer-reviewed LCA, 2020
	Hempcrete / Cast in-situ / Europe / R 2.1/inch, Avg. of 9 mixes	2,993.8	ft²	100%	☐	-10,678	26,823	37,501	Peer-reviewed LCA, 2017
	Hempcrete / Cast in-situ / IsoHemp / Europe / R 2.1/inch	2,993.8	ft²	100%	☐	-12,287	11,999	24,286	LCA, 2018
STRAW BALE INSULATION									
	Straw Bale / Wheat & barley straw / SNaB (UK) / R 2.8/inch	2,993.8	ft²	100%	☐	-10,983	1,379	12,361	
	Straw Bale / Wheat & rye straw / (Germany) / R 2.8/inch	2,993.8	ft²	100%	☐	-15,669	829	16,499	Expired 2019

THEN, MATERIAL SELECTIONS WITH THEIR CORRESPONDING EMISSIONS AND STORAGE VALUES CAN BE SELECTED.

TBDA

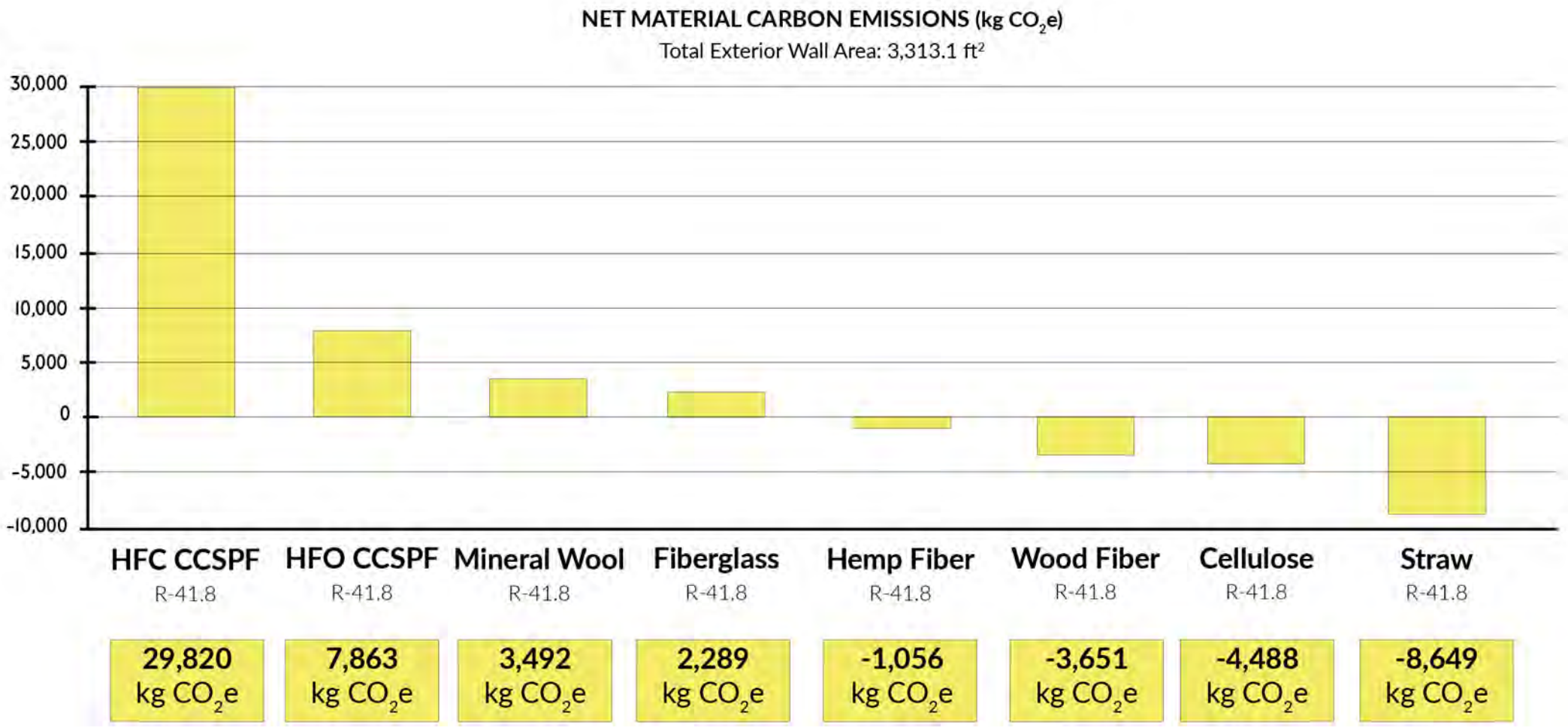
BEAM: USING THE TOOL





- ONCE ALL MATERIALS ARE SELECTED, A PROJECT SUMMARY ALLOWS YOU TO COMPARE PROJECTS PER S.F. OR M2 ETC.
- HOWEVER—YOU CAN ALSO USE THE TOOL TO SIMPLY COMPARE A PARTICULAR MATERIAL CHOICE, LIKE A CLADDING OR INSULATION OPTIONS.

INSULATION COMPARISON



OFFSETTING CCSPF

PHIUS ZERO HISTORIC RETROFIT

Exterior Wall Area | 3,386.0 ft²

HFO Blown CCSPF

R-7.0 per inch

2”

HFO Blown CCSPF

CCSPF Net Emissions:

2,070 kg CO_2e

Dense Pack Cellulose

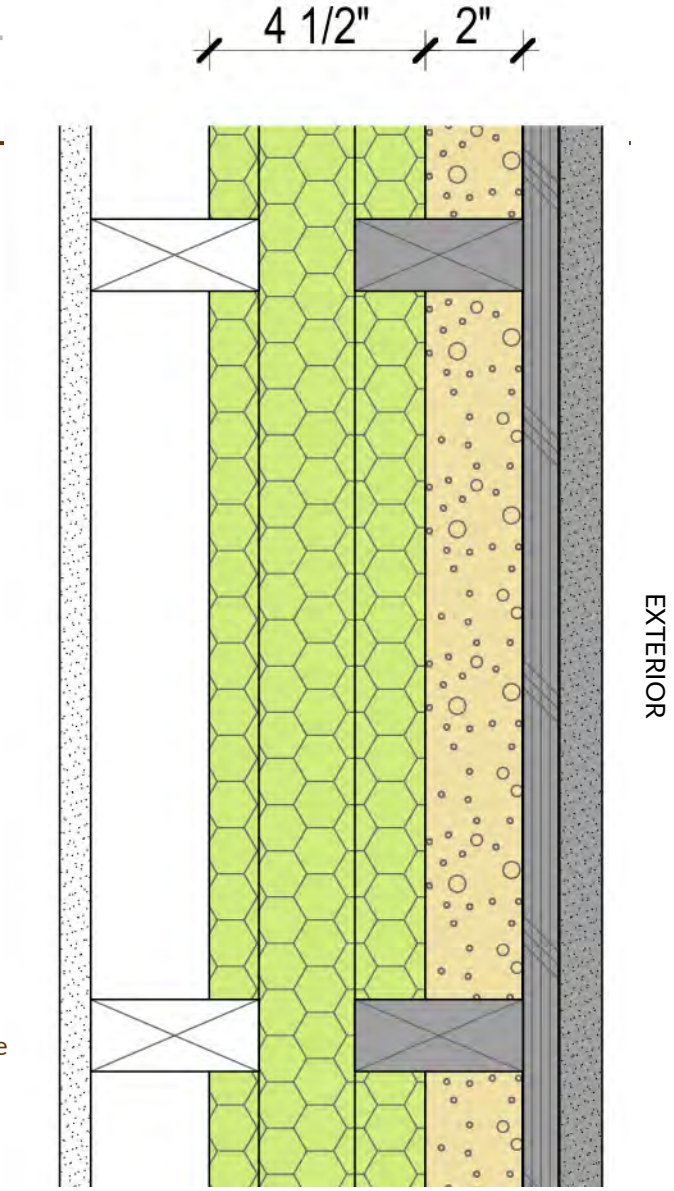
R-3.8 per inch

4.4”

Dense Pack Cellulose

Cellulose Net Emissions:

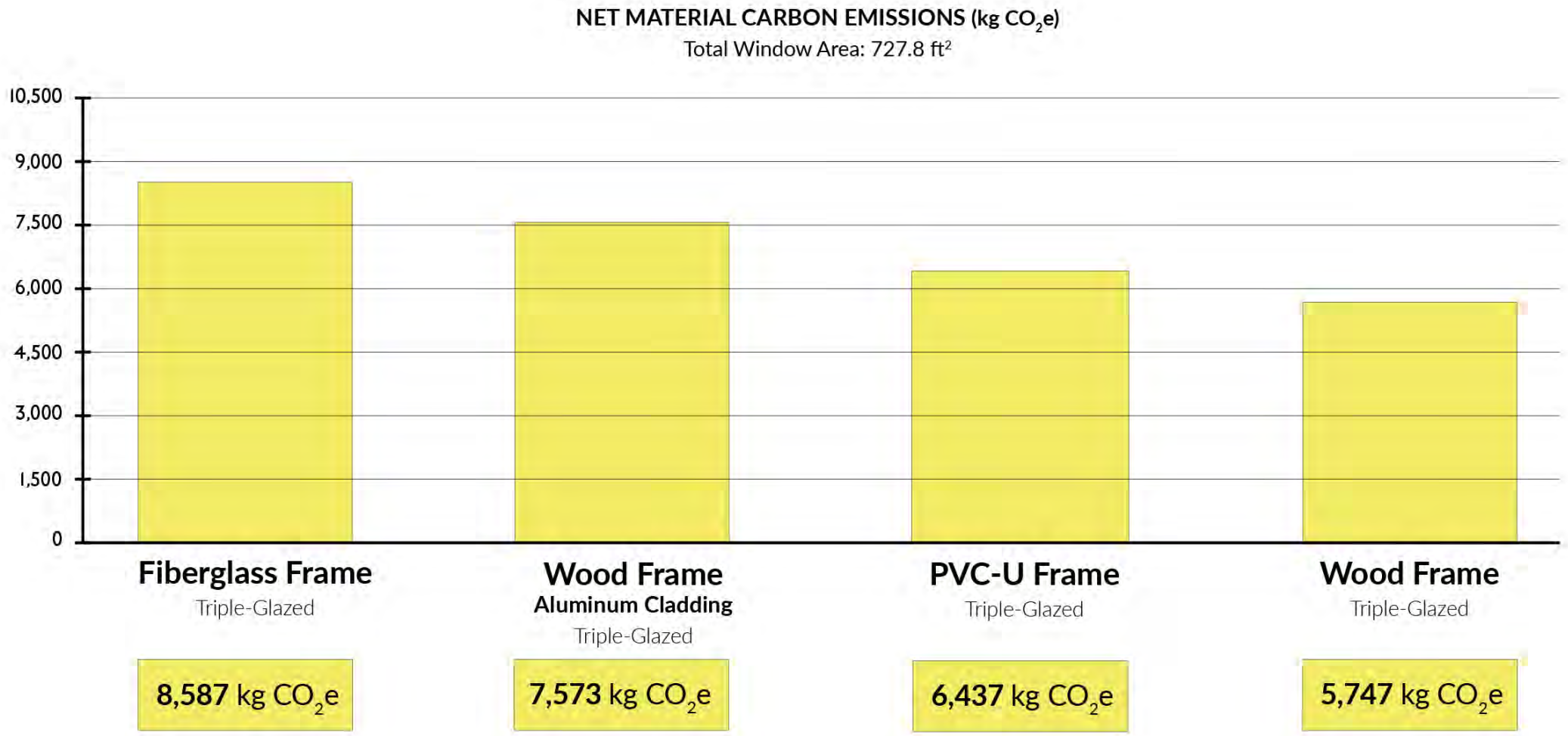
-2,070 kg CO_2e



WINDOW COMPARISON

Glenview House

Total Window Area | 727.8 ft²

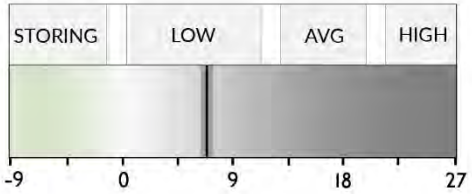


TBDA

PHIUS ZERO HISTORIC RETROFIT (2021 CORE REVIVE)

PROJECT EMISSIONS INTENSITY (MCI)

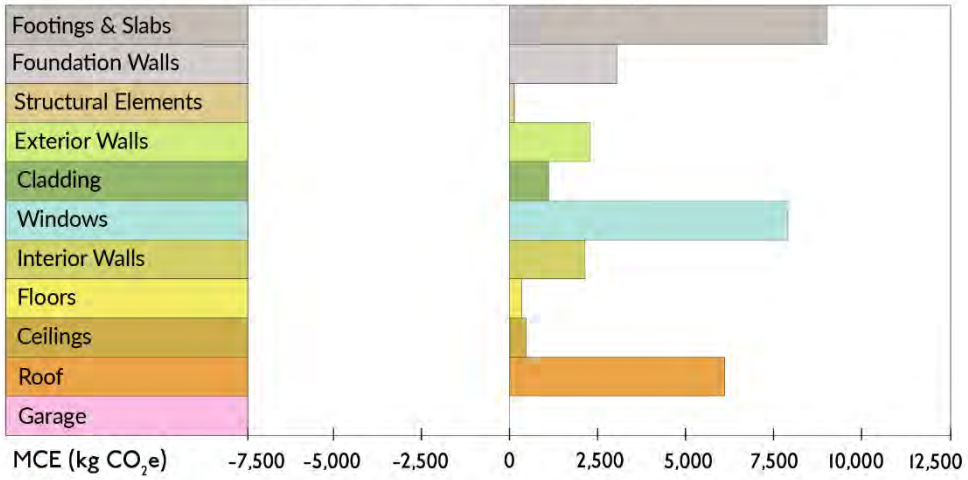
MCI (CONDITIONED FLOOR AREA)	6.6 kg CO_2e/ft^2
CONDITIONED FLOOR AREA	4,885 ft^2

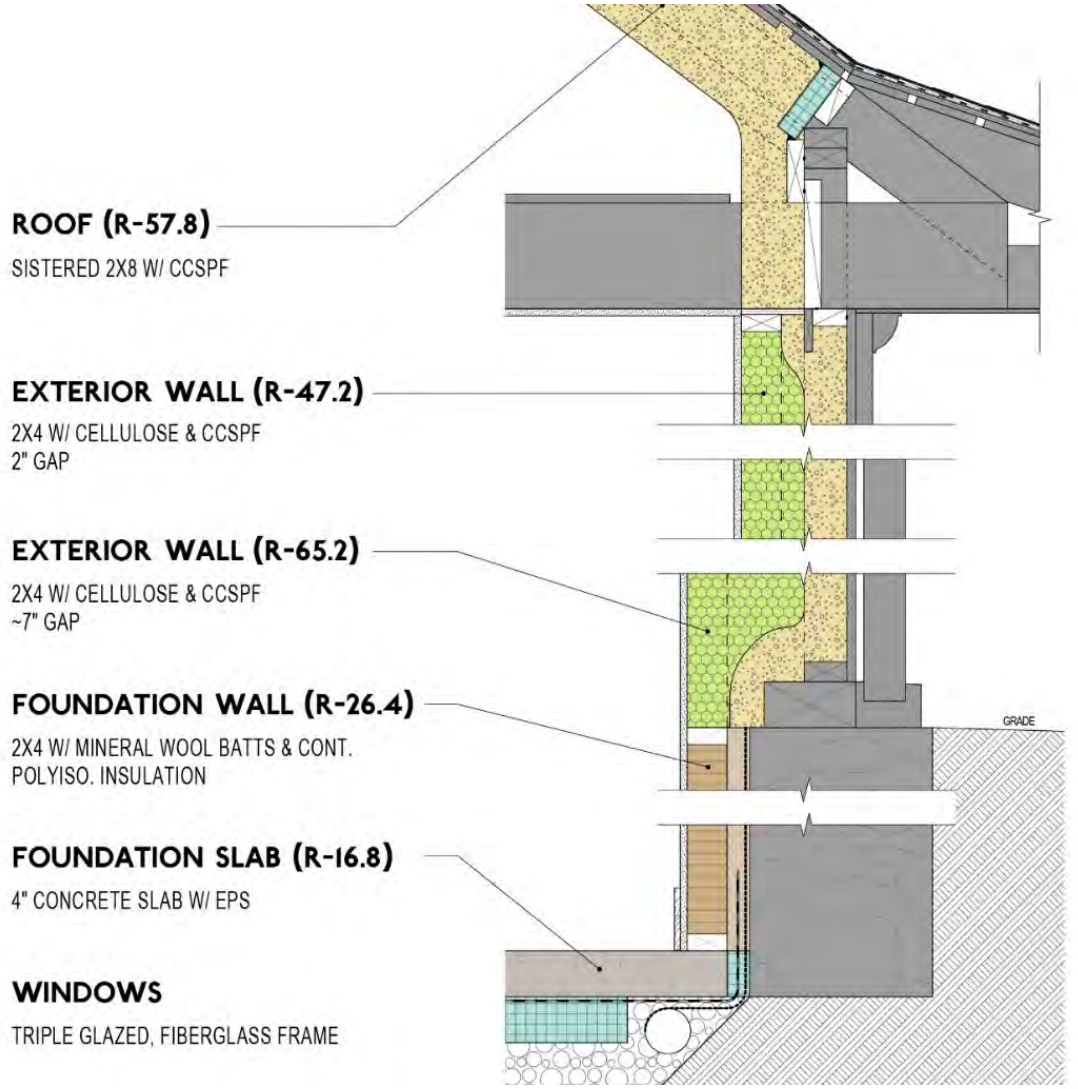


PROJECT EMISSIONS (MCE)

NET EMISSIONS	
32,398 kg CO_2e	GROSS EMISSIONS: 36,157 kg CO_2e
	STORAGE: 3,759 kg CO_2e

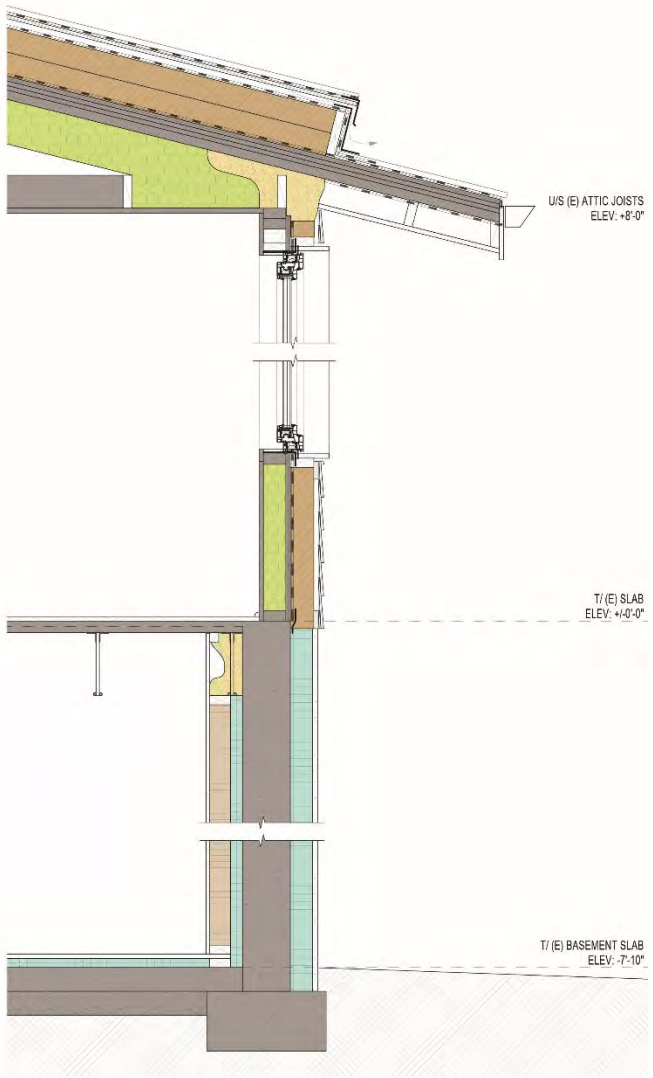
MATERIAL CARBON EMISSIONS BY ASSEMBLIES (kg CO_2e)





RETURNING TO THE RANCH

RANCH REVIVE 2021 CORE – WUFI RESULTS

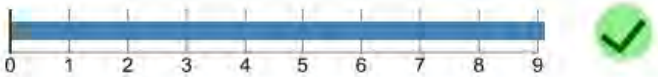


PASSIVEHOUSE REQUIREMENTS

Certificate criteria: Phius CORE 2021

Heating demand

specific:	**12.6**	kBtu/ft²yr
target:	**12.9**	kBtu/ft²yr
total:	33,231.9	kBtu/yr

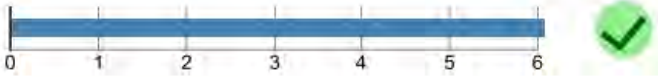


Cooling demand

sensible:	**3.29**	kBtu/ft²yr
latent:	**0.9**	kBtu/ft²yr
specific:	**4.19**	kBtu/ft²yr
target:	**7.8**	kBtu/ft²yr
total:	11,063.57	kBtu/yr

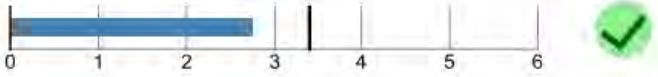
Heating load

specific:	**7.14**	Btu/hr ft²
target:	**8.1**	Btu/hr ft²
total:	18,827.24	Btu/hr



Cooling load

specific:	**2.75**	Btu/hr ft²
target:	**3.4**	Btu/hr ft²
total:	7,263.93	Btu/hr



REVIVE REVIEW

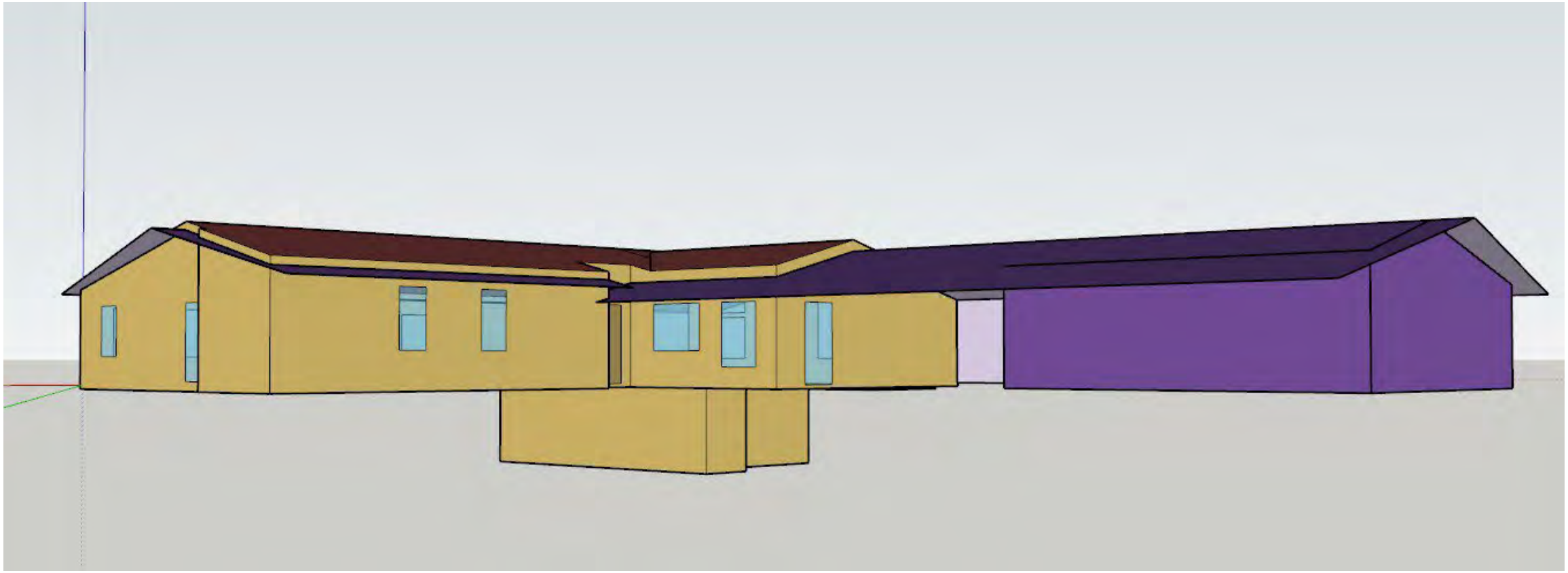
BRIEF OVERVIEW OF PROCESSES & PERFORMANCE METRICS

REVIVE 2024 PROCESS

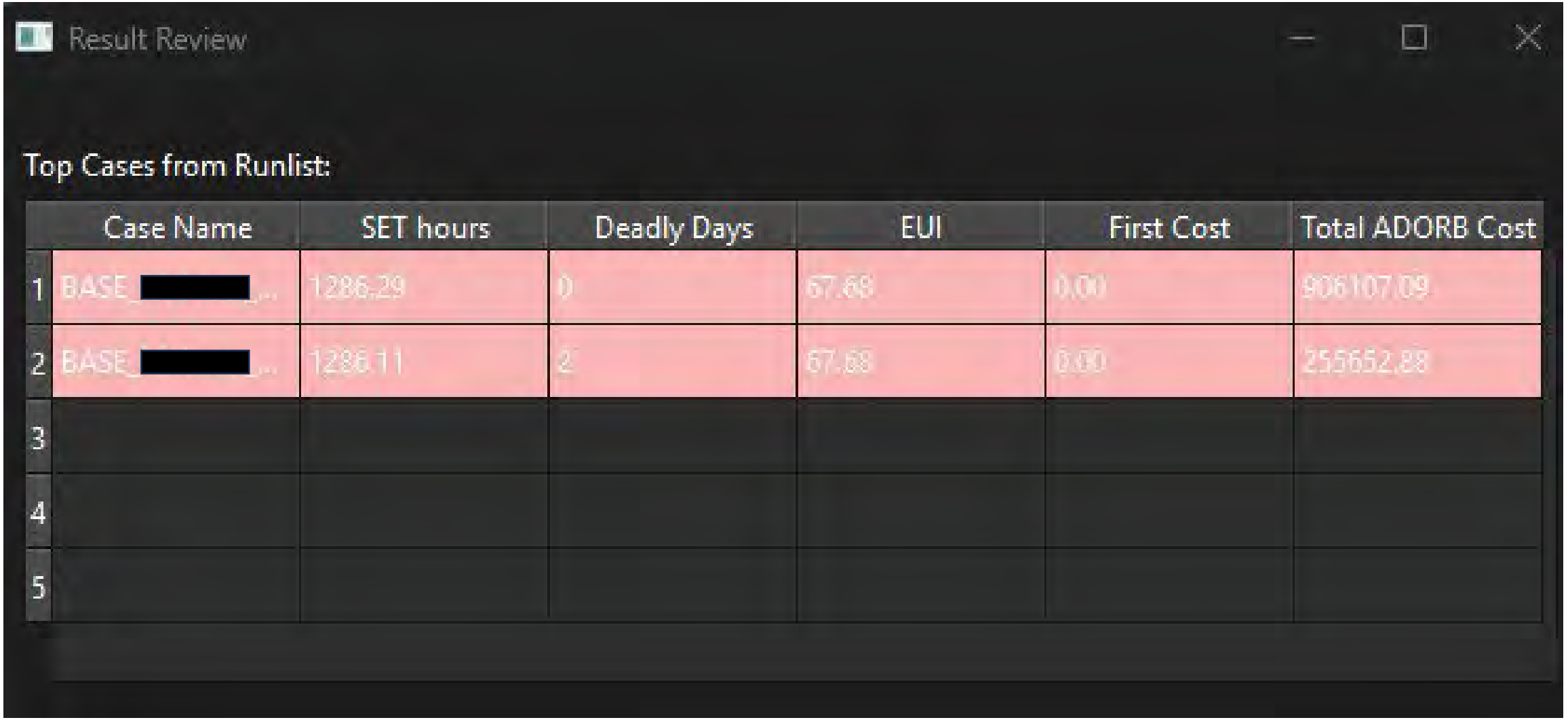
- PHASE 2, 2(3) ROUNDS
  - 10.24 CERTIFICATION CONTRACT
  - 12.09 FIRST SUBMISSION
  - 3.19 MODELING ERRORS
    - 4.7 LIFECYCLE REPLACEMENTS-ASSESSMENT APPROVED
- PHASE 3, 2 ROUNDS
  - 4.28 DESIGN START
  - 6.4 RECIRC PUMP & SPECIFICATIONS
  - 8.26-DESIGN CERTIFIED

Milestone 1 Project Registered	**3.1.3 Registration** -Invoice paid, contract signed, project number created. -The project is now publicly visible on Phius' Certified Project Database. -A project Dropbox folder is shared by Phius with the project team.
Phase 2 Assessment, Investigation & Review	**3.1.4 Assessment & Investigation** -Commissioning Provider (CxP) conducts existing building assessment and investigation, including creating and running the performance model **3.1.4 Assessment & Investigation Review** -CxP submits Assessment & Investigation deliverables to Phius -Phius Review & Feedback -CxP Revisions & Response -Repeat (as needed)
Milestone 2 Assessment & Investigation Approval	**3.1.5 Assessment & Investigation Approval** -Phius approves the Assessment & Investigation deliverables. An official letter of approval is sent to the design team.
Milestone 3 Design Certification	**3.1.7 Design Certification** -The design is certified by Phius. An official letter of design certification will be sent to the design team
Milestone 4 Final Certification	**3.1.9 Final Certification** -The as-built project is Final Certified by Phius when all project phases are complete. A digital certificate and physical plaque will be sent to the project team. -Building resumes typical or new intended operation

REVIVE 2024 INTERFACE



RESULTS

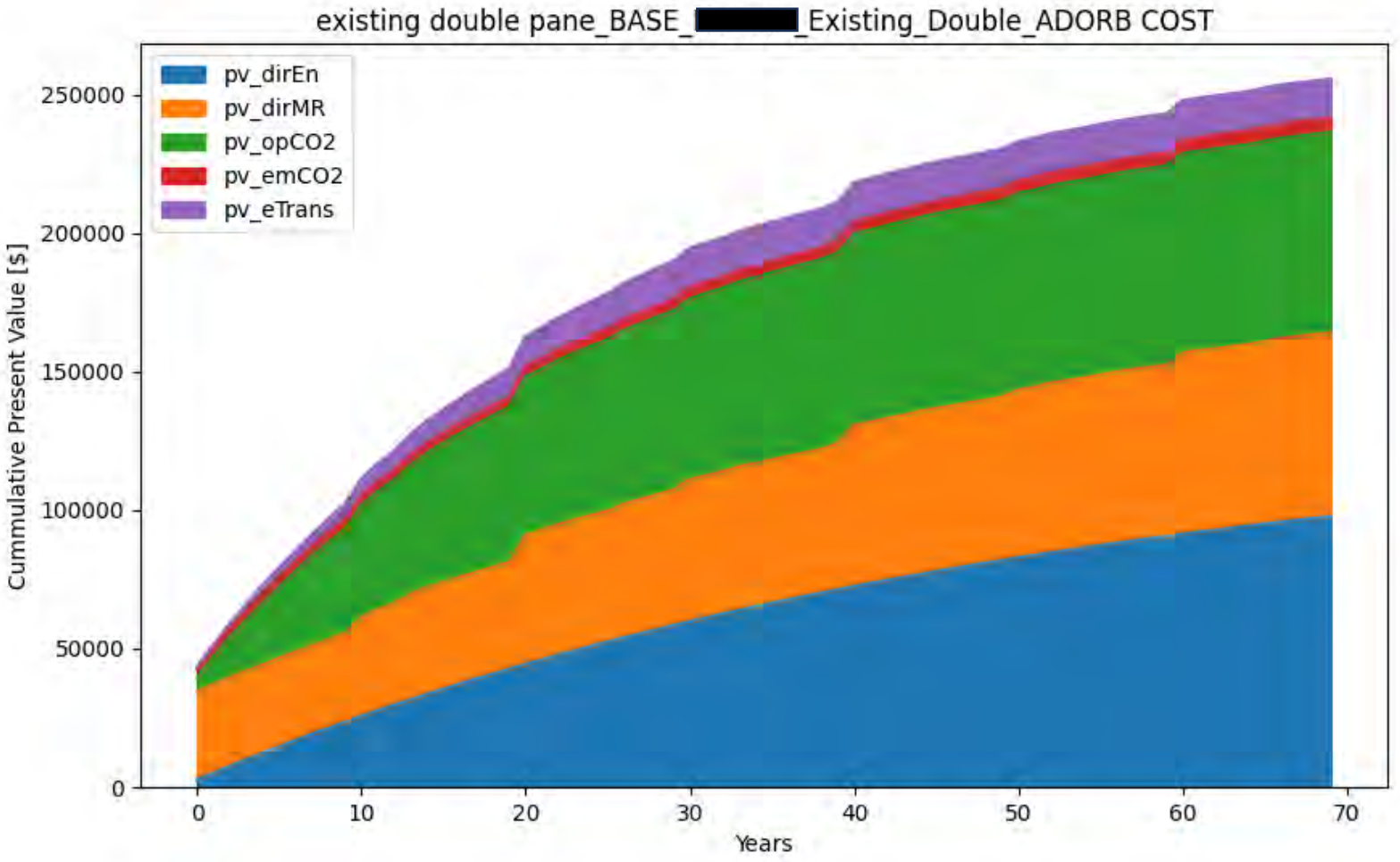

Result Review
Top Cases from Runlist:
Case Name
SET hours
Deadly Days
EUI
First Cost
Total ADORB Cost
1 BASE_[redacted]_...
1286.29
0
67.68
0.00
906107.09
2 BASE_[redacted]_...
1286.11
2
67.68
0.00
255652.88
3
4
5

RESULTS-ENERGY MODELING

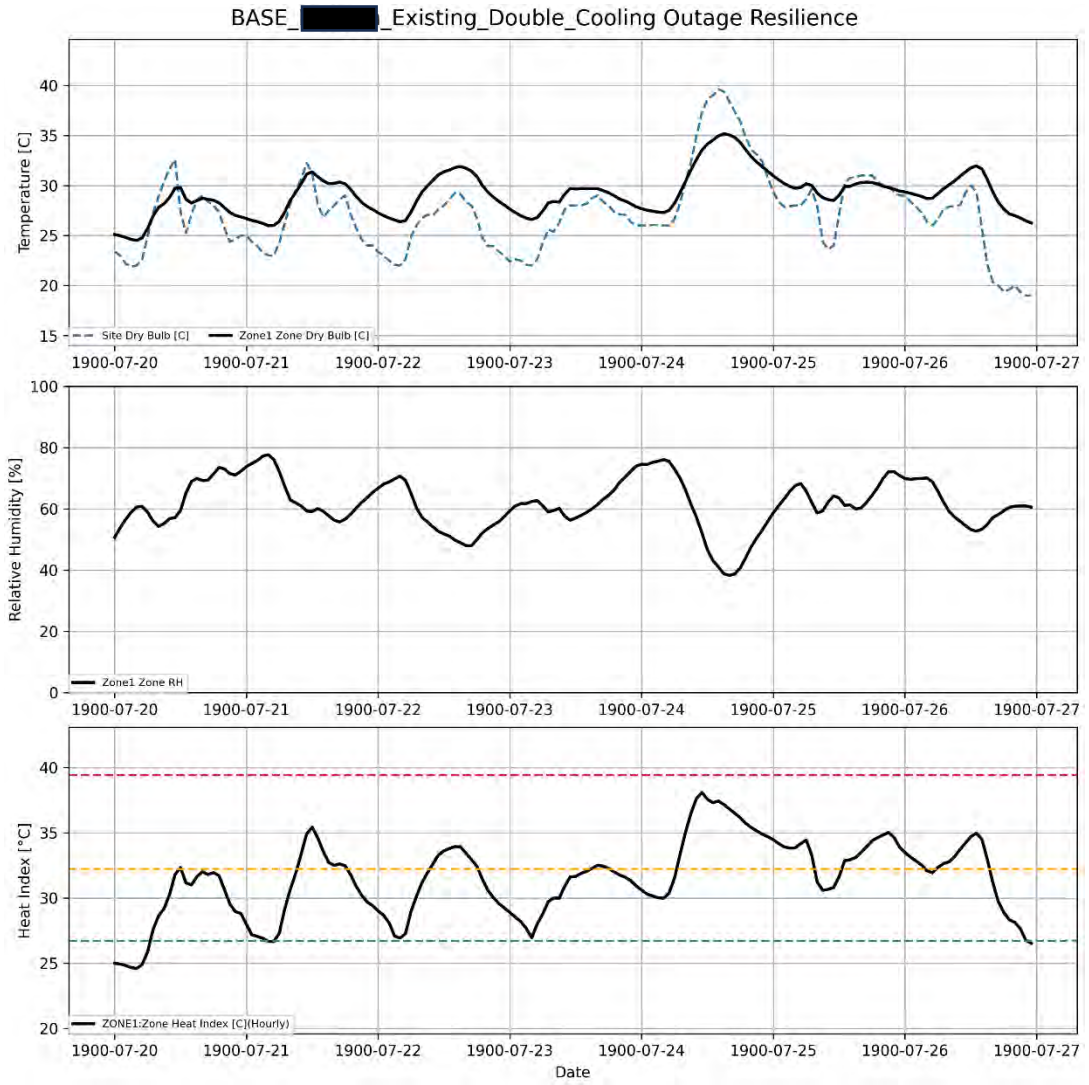
Run Name	EUI	Peak Electric Demand [W]	Heating Battery Size [kWh]	Cooling Battery Size [kWh]	First Year Electric Cost [$]	First Year Gas Cost [$]	Total ADORB Cost [$]	pv_dirEn_tot	pv_dirMR_tot	pv_opCO2_tot	pv_emCO2_tot	pv_eTrans_tot
BASE_[redacted]_Existing_Double	67.68	6774.87	8.6706515	8.6238091	1497.6554	1106.1064	255652.88	97637.47	66360.85	72406.92	5022.66	14224.98
BASE_[redacted]_Existing_Double_Battery	67.68	6774.87	8.6706515	227.58998	1497.6554	1106.1064	906107.09	97637.47	677194.08	72406.92	44643.64	14224.98

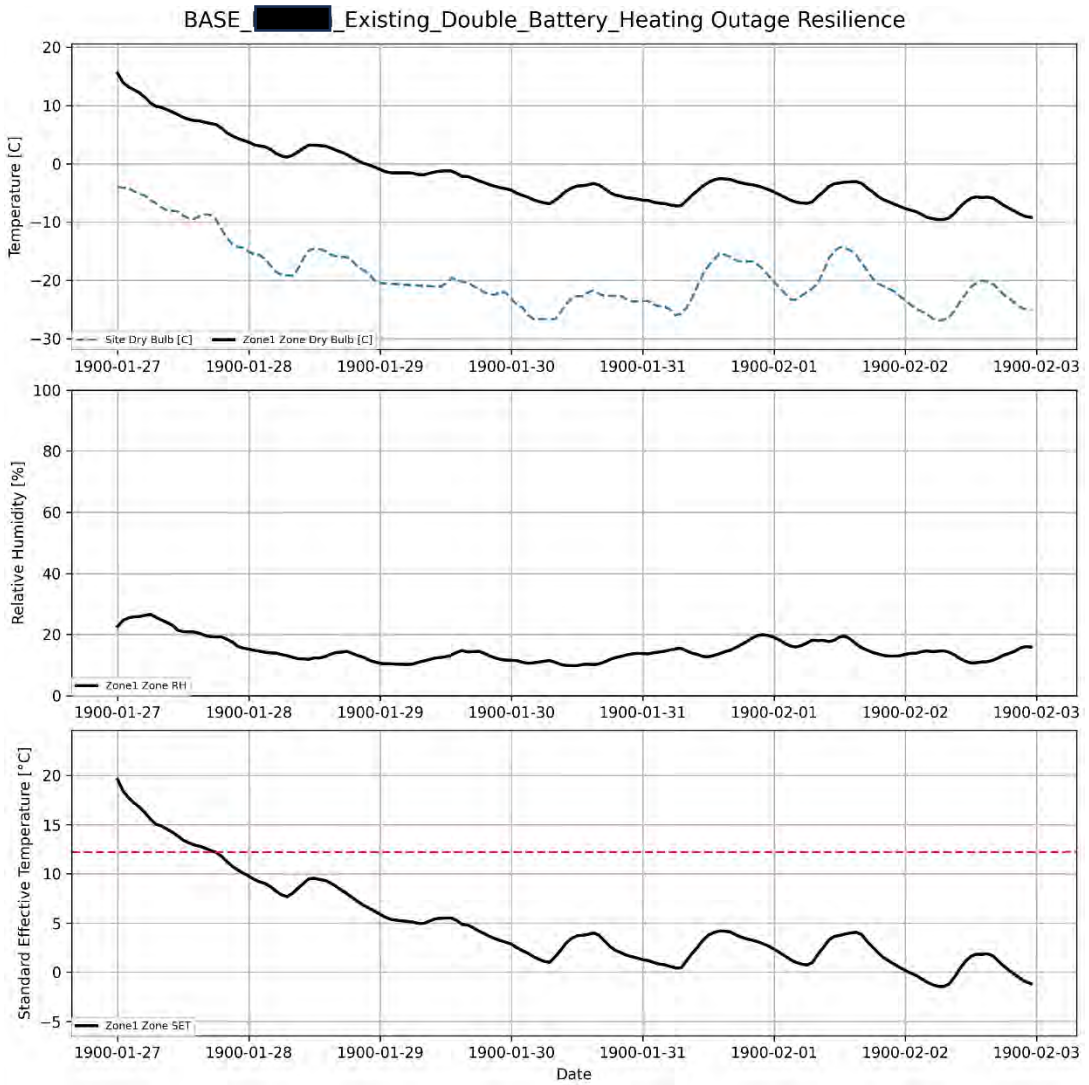
Run Name	EUI	Peak Electric Demand [W]	Heating Battery Size [kWh]	Cooling Battery Size [kWh]	First Year Electric Cost [$]	First Year Gas Cost [$]	Total ADORB Cost [$]	pv_dirEn_tot	pv_dirMR_tot	pv_opCO2_tot	pv_emCO2_tot	pv_eTrans_tot
20250701_[redacted]_Phase3_Adjusted Infiltraction Rate	14.41	6323.91	7.828413	25.62382	483.1311	0	519273.6	18116.75	437897.2	11364.86	38616.66	13278.11

RESULTS-LIFECYCLE COST

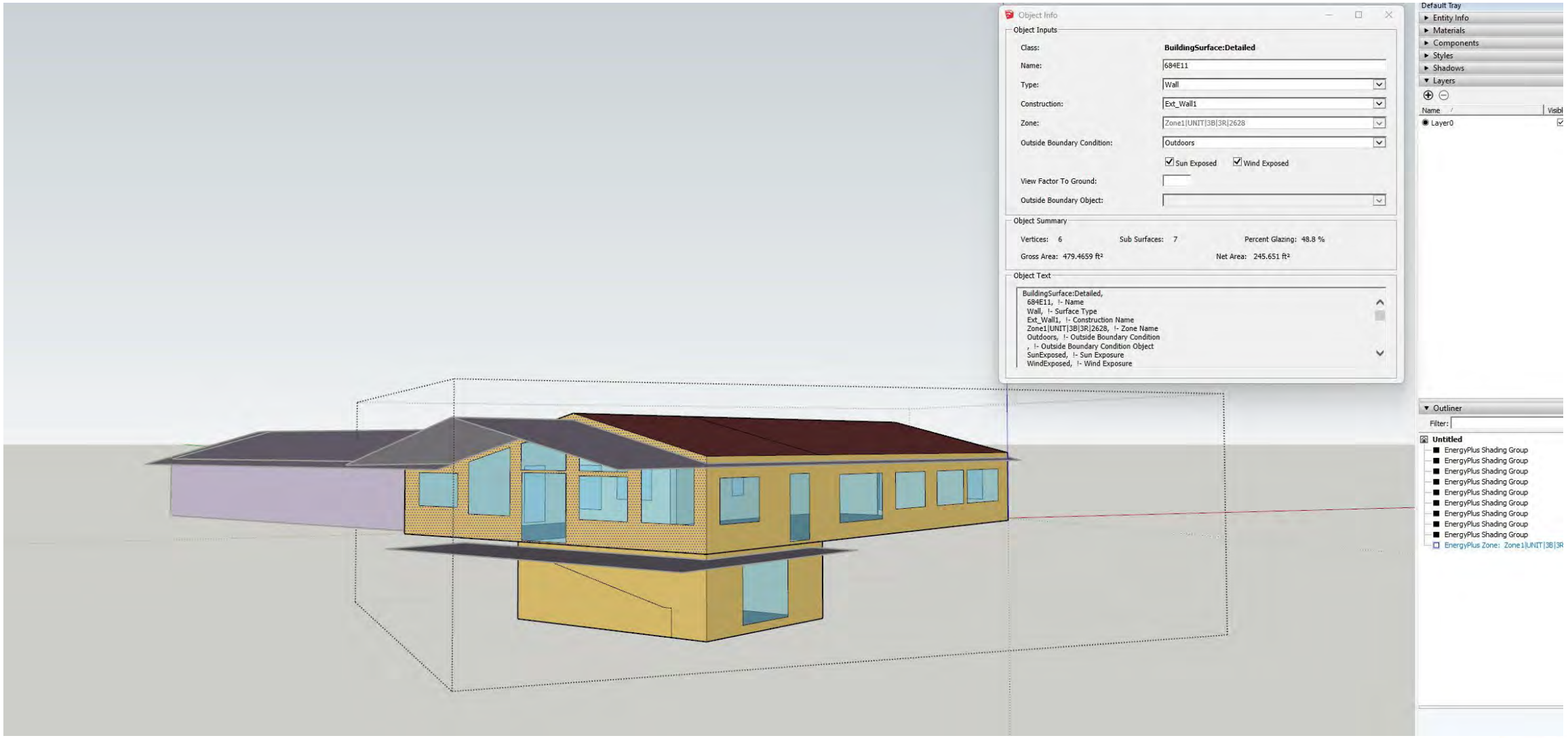


RESULTS-OUTAGE





MODELING


Object Info
Object Inputs
Class: BuildingSurface:Detailed
Name: 684E11
Type: Wall
Construction: Ext_Wall1
Zone: Zone1|UNIT|3B|3R|2628
Outside Boundary Condition: Outdoors
Sun Exposed
Wind Exposed
View Factor To Ground:
Outside Boundary Object:
Object Summary
Vertices: 6
Sub Surfaces: 7
Percent Glazing: 48.8 %
Gross Area: 479.4659 ft²
Net Area: 245.651 ft²
Object Text
BuildingSurface:Detailed,
684E11, !- Name
Wall, !- Surface Type
Ext_Wall1, !- Construction Name
Zone1|UNIT|3B|3R|2628, !- Zone Name
Outdoors, !- Outside Boundary Condition
, !- Outside Boundary Condition Object
SunExposed, !- Sun Exposure
WindExposed, !- Wind Exposure
Default Tray
Entity Info
Materials
Components
Styles
Shadows
Layers
Layer0
Outliner
Filter:
Untitled
EnergyPlus Shading Group
EnergyPlus Zone: Zone1|UNIT|3B|3R

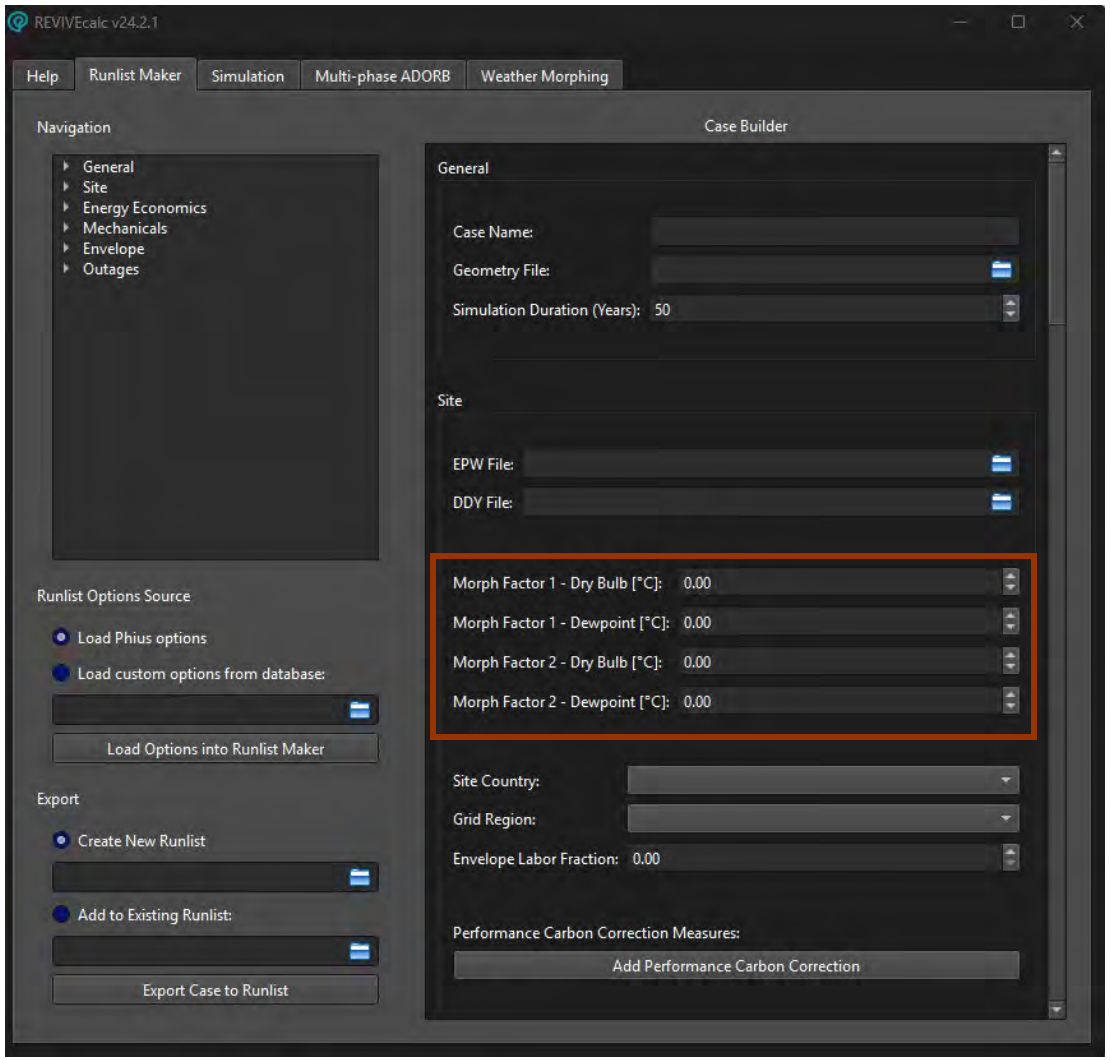
MATERIAL DATABASE

	NAME	ROUGHNESS	THICKNESS [m]	CONDUCTIVITY [W/mK]	DENSITY [kg/m3]	SPECIFIC HEAT CAPACITY [J/kgK]
0	M01 100mm brick	MediumRough	0.1016	0.89	1920	790
1	G05 25mm wood	MediumSmooth	0.0254	0.09	608	1630
2	F08 Metal surface	Smooth	0.0008	45.28	7824	500
3	I01 25mm insulation board	MediumRough	0.0254	0.03	43	1210
4	I02 50mm insulation board	MediumRough	0.0508	0.03	43	1210
5	G01a 19mm gypsum board	MediumSmooth	0.0159	0.16	800	1090
6	M11 100mm lightweight concrete	MediumRough	0.1016	0.53	1280	840
7	F16 Acoustic tile	MediumSmooth	0.0191	0.06	368	590
8	M15 200mm heavyweight concrete	MediumRough	0.2032	1.95	2240	900
9	M05 200mm concrete block	MediumRough	0.1016	1.11	800	920
10	Mass wood	MediumSmooth	0.065532	0.15	608.701224	1630
11	Foundation EPS	MediumSmooth	0.0508	0.02884	29	1210
12	EPS	MediumSmooth	0.0508	0.02884	29	1210
13	F11 Wood siding	MediumSmooth	0.0127	0.09	592	1170
14	R-11 3.5in Wood Stud	VeryRough	0.0889	0.05426246	19	960
15	Plywood (Douglas Fir) - 12.7mm	Smooth	0.0127	0.12	540	1210
16	EPS 1in	MediumSmooth	0.0254	0.02884	29	1210

CONSTRUCTION

	Name	Type	CO2e_Per_Area_[kg/m2]	Cost_Per_Area_[$/m2]	Outside_Layer	Layer_2	Layer_3	Layer_4	Layer_5	Layer_6	Layer_7	Layer_8	Layer_9	Lifetime	Labor_Fraction
0	Brick Wall	Exterior Wall	1.8	0	M01 100mm brick									30	0.15
1	Ext_Door1	Exterior Door	0.01	0.01	Door-Ikon									0	0.3
2	Thermal Mass	Thermal Mass	0.00018	0	G05 25mm wood									0	0.3
3	Interior Floor	Interior Floor	14.4	2	Plywood (	F05 Ceilin	G01a 19mm gypsum board							0	0.3
4	Exterior Slab UnIns	Exterior Floor	0.01	0.01	M15 200mm heavyweight concrete									0	0.3
5	Exterior Slab + 2in EPS	Exterior Floor	126	10	EPS 2in	M15 200mm heavyweight concrete								0	0.3
6	Exterior Wall	Exterior Wall	0.001	0.001	F11 Wood	R-11 3.5in	G01a 19mm gypsum board							0	0.3
7	Interior Wall	Interior Wall	12.6	5	G01a 19m	F04 Wall a	G01a 19mm gypsum board							0	0.3
8	Exterior Roof	Roof	18	5	FG Attic R-	Plywood (	G01a 19mm gypsum board							0	0.3
9	Exterior Door	Exterior Door	1.8	256.28	F08 Metal	I02 50mm	F08 Metal surface							0	0.3
10	Interior Door	Interior Door	3.6	125	G05 25mm wood									0	0.3
11	Exterior Wall +1in EPS	Exterior Wall	23.4	13.78	F11 Wood	EPS 1in	Plywood (	R-11 3.5in	G01a 19mm gypsum board					0	0.3
12	Exterior Wall +1.625in EPS	Exterior Wall	27	16.46	F11 Wood	EPS 1.625i	Plywood (	R-11 3.5in	G01a 19mm gypsum board					0	0.3
13	Exterior Wall +2in EPS	Exterior Wall	28.8	18.62	F11 Wood	EPS 2in	Plywood (	R-11 3.5in	G01a 19mm gypsum board					0	0.3
14	Exterior Wall +4in EPS	Exterior Wall	41.4	25.4	F11 Wood	EPS 4in	Plywood (	R-11 3.5in	G01a 19mm gypsum board					0	0.3
15	Exterior Wall +7.5in EPS	Exterior Wall	63	39.23	F11 Wood	EPS 7.5in	Plywood (	R-11 3.5in	G01a 19mm gypsum board					0	0.3
16	Exterior Wall +6in EPS	Exterior Wall	54	34.55	F11 Wood	EPS 6in	Plywood (	R-11 3.5in	G01a 19mm gypsum board					0	0.3
17	Exterior Wall +9in EPS	Exterior Wall	72	46.93	F11 Wood	EPS 9in	Plywood (	R-11 3.5in	G01a 19mm gypsum board					0	0.3
18	Exterior Wall +14in EPS	Exterior Wall	102.6	63.61	F11 Wood	EPS 14in	Plywood (	R-11 3.5in	G01a 19mm gypsum board					0	0.3
19	Exterior Roof R-30	Roof	0.01	0.01	FG Attic R-	Plywood (	G01a 19mm gypsum board							30	0.3
20	Exterior Roof R-38	Roof	21.6	8.15	FG Attic R-	Plywood (	G01a 19mm gypsum board							30	0.3
21	Exterior Roof R-49	Roof	25.2	8.4	FG Attic R-	Plywood (	G01a 19mm gypsum board							30	0.3
22	Exterior Roof R-55	Roof	25.2	15	FG Attic R-	Plywood (	G01a 19mm gypsum board							30	0.3
23	Exterior Roof R-60	Roof	27	21.53	FG Attic R-	Plywood (	G01a 19mm gypsum board							30	0.3
24	Exterior Roof R-75	Roof	30.6	39.4	FG Attic R-	Plywood (	G01a 19mm gypsum board							30	0.3
25	Exterior Roof R-100	Roof	36	69.32	FG Attic R-	Plywood (	G01a 19mm gypsum board							30	0.3
26	P+B UnIns	Exterior Floor	16.2	15	Plywood (	F05 Ceilin	Plywood (	G05 25mm wood						0	0.3

RUNLIST


REVIVEcalc v24.2.1
Help
Runlist Maker
Simulation
Multi-phase ADORB
Weather Morphing
Navigation
General
Site
Energy Economics
Mechanicals
Envelope
Outages
Case Builder
General
Case Name:
Geometry File:
Simulation Duration (Years): 50
Site
EPW File:
DDY File:
Morph Factor 1 - Dry Bulb [°C]: 0.00
Morph Factor 1 - Dewpoint [°C]: 0.00
Morph Factor 2 - Dry Bulb [°C]: 0.00
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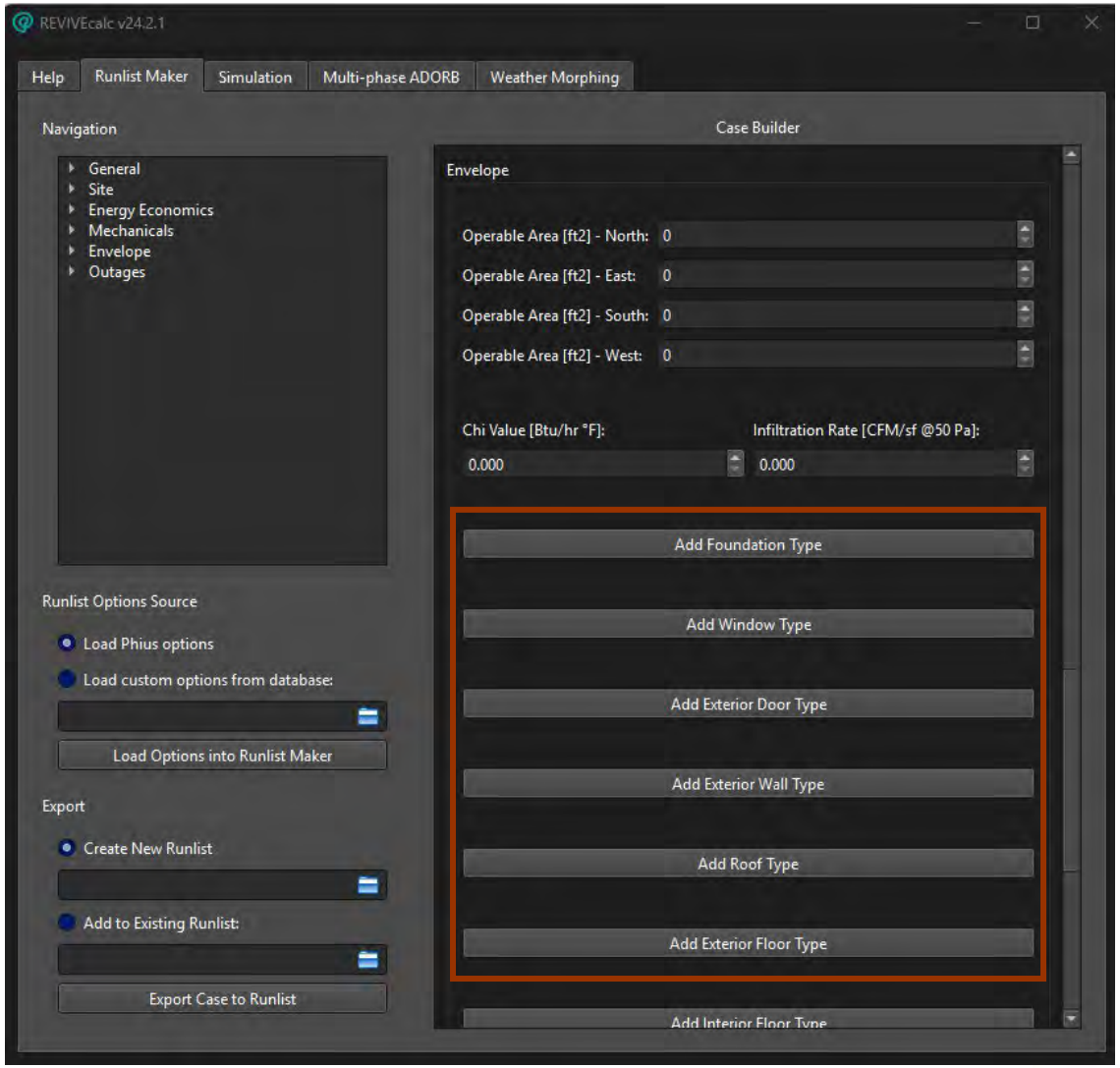
Site Country:
Grid Region:
Envelope Labor Fraction: 0.00
Performance Carbon Correction Measures:
Add Performance Carbon Correction
Runlist Options Source
Load Phius options
Load custom options from database:
Load Options into Runlist Maker
Export
Create New Runlist
Add to Existing Runlist:
Export Case to Runlist


REVIVEcalc v24.2.1
Help
Runlist Maker
Simulation
Multi-phase ADORB
Weather Morphing
Navigation
General
Site
Energy Economics
Mechanicals
Envelope
Outages
Case Builder
Envelope
Operable Area [ft2] - North: 0
Operable Area [ft2] - East: 0
Operable Area [ft2] - South: 0
Operable Area [ft2] - West: 0
Chi Value [Btu/hr °F]:
Infiltration Rate [CFM/sf @50 Pa]:
0.000
0.000
Add Foundation Type
Add Window Type
Add Exterior Door Type
Add Exterior Wall Type
Add Roof Type
Add Exterior Floor Type
Add Interior Floor Type
Runlist Options Source
Load Phius options
Load custom options from database:
Load Options into Runlist Maker
Export
Create New Runlist
Add to Existing Runlist:
Export Case to Runlist

RANCH REVIVE

EXISTING CONDITIONS

RANCH REVIVE

EXISTING CONDITIONS

RANCH REVIVE

EXISTING CONDITIONS

RANCH REVIVE

EXISTING CONDITIONS

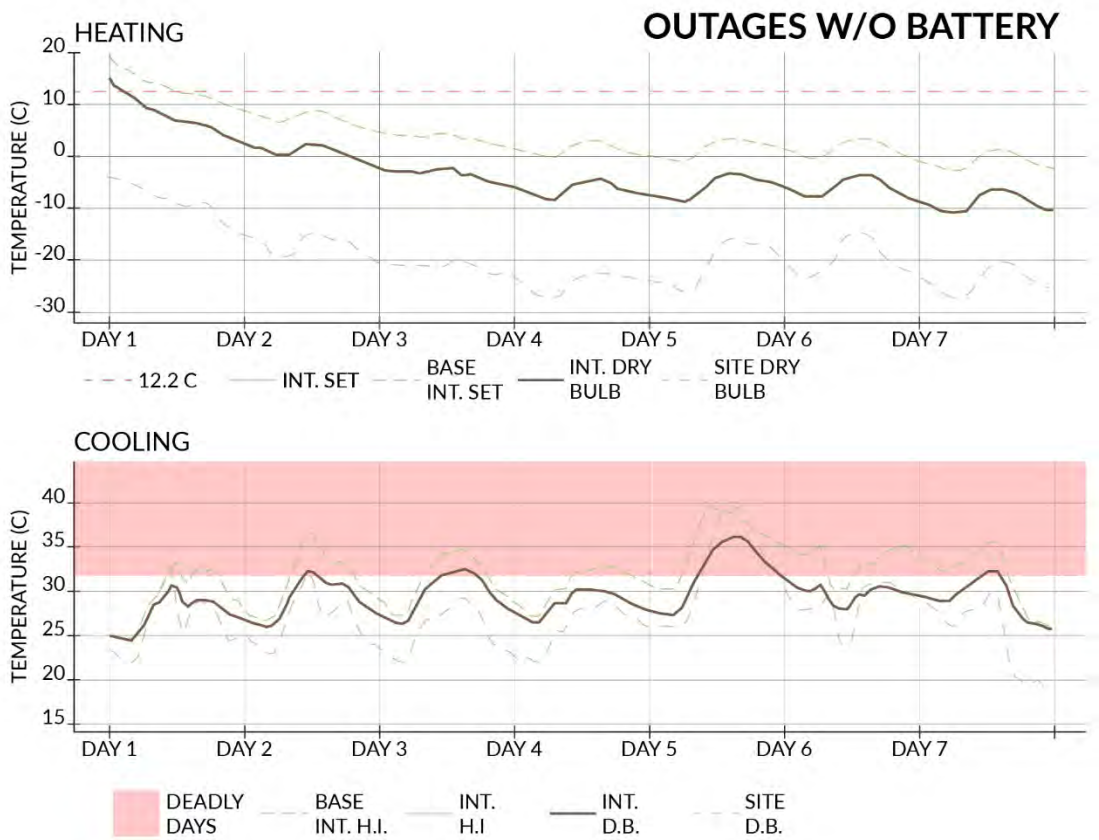
RANCH REVIVE

EXISTING CONDITIONS

EXISTING CONDITIONS

CARBON COST OF RETROFIT	0 kg CO_2e/ft^2
EUI	80.5 kBtu/sqft/yr
BATTERY SIZE FOR OUTAGE	268.64 kWh

EUI REDUCTION	0%
BATTERY SIZE REDUCTION	0%



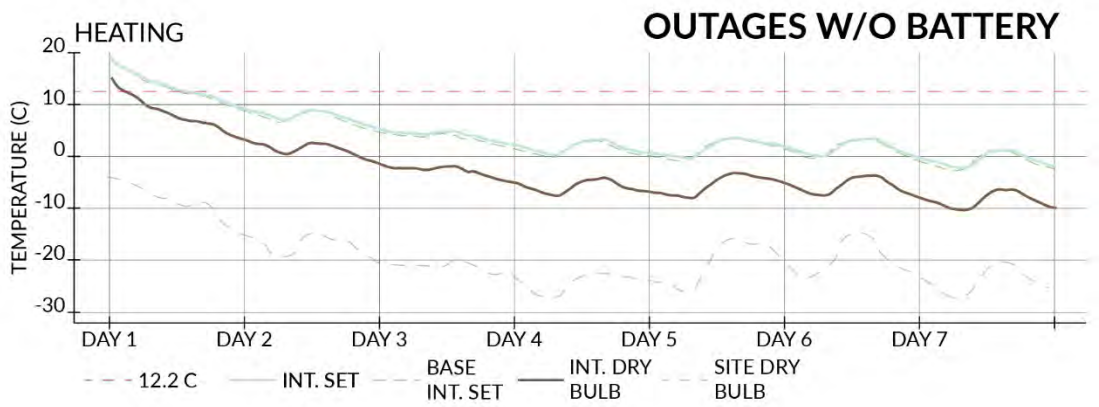
SINGLE PANE WINDOWS

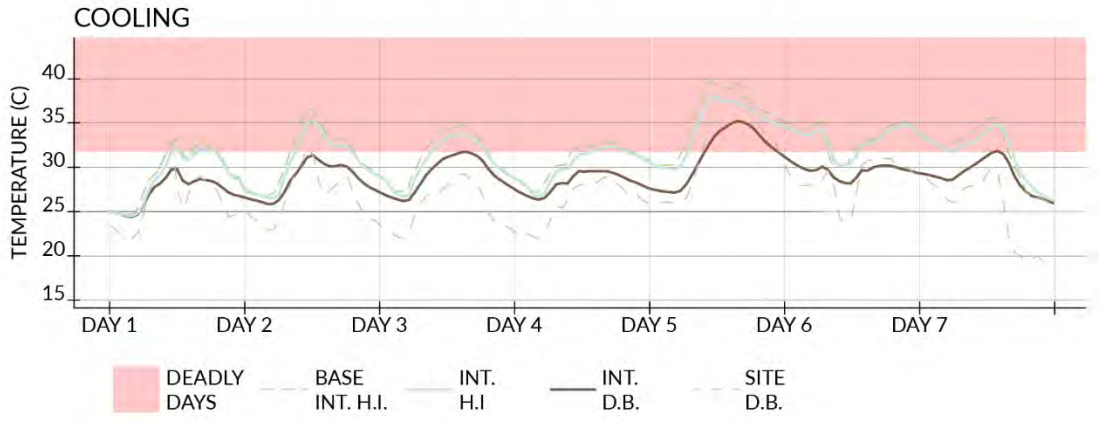
TBDA

REPLACING IN KIND

CARBON COST OF RETROFIT	3.36 kg CO_2e/ft^2
EUI	67.7 kBtu/sqft/yr
BATTERY SIZE FOR OUTAGE	227.6 kWh

EUI REDUCTION	15.9%
BATTERY SIZE REDUCTION	15.3%

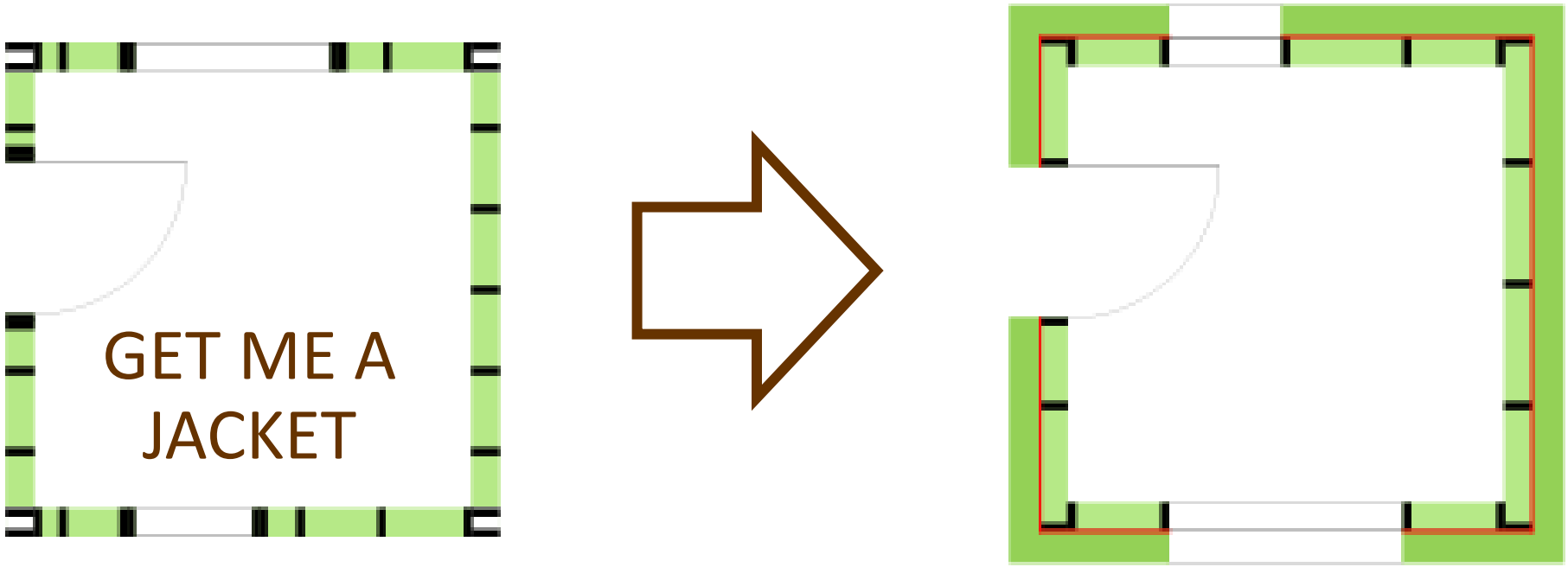




DOUBLE PANE WINDOWS

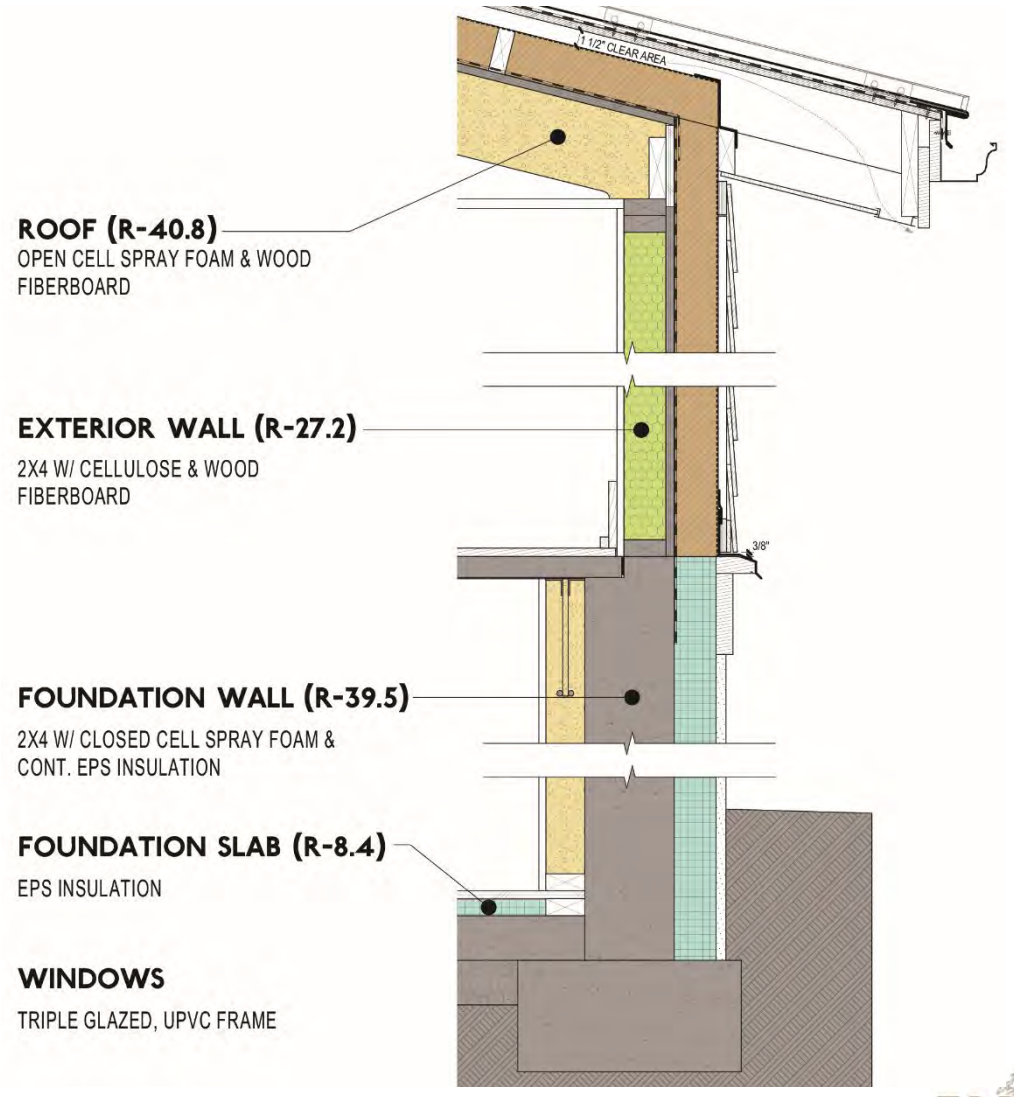
TBDA

ASSESSING ASSEMBLIES



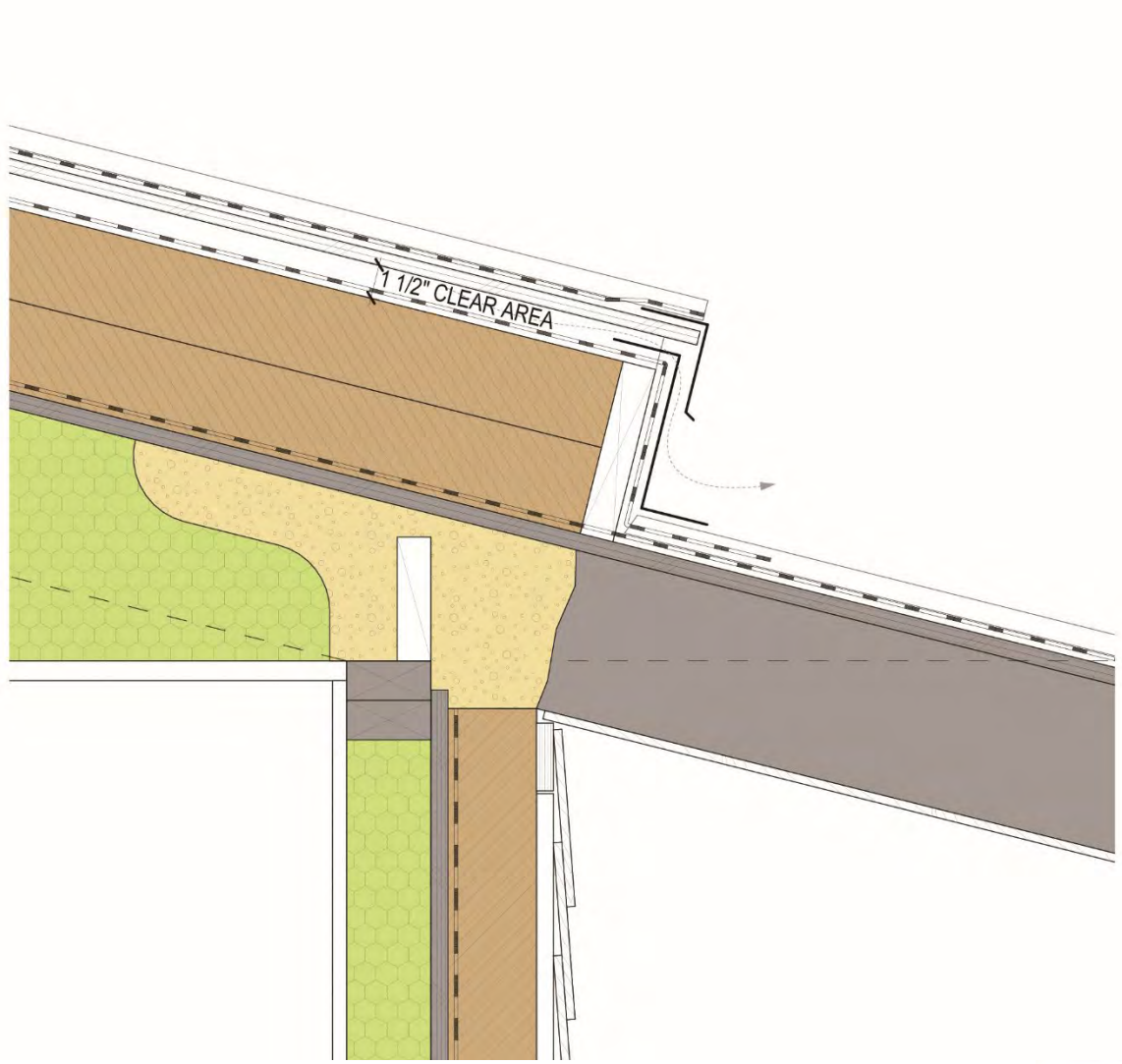
ASSESSING ASSEMBLIES

- INCREASE ON THE EXTERIOR
- CARBON CONSCIOUS MATERIALS
  - WOOD BASED (STEICO)
  - RECYCLED (DENSE PACK CELLULOSE)
- RETROFIT VS NEW CONSTRUCTION
- CONSTRUCTABILITY



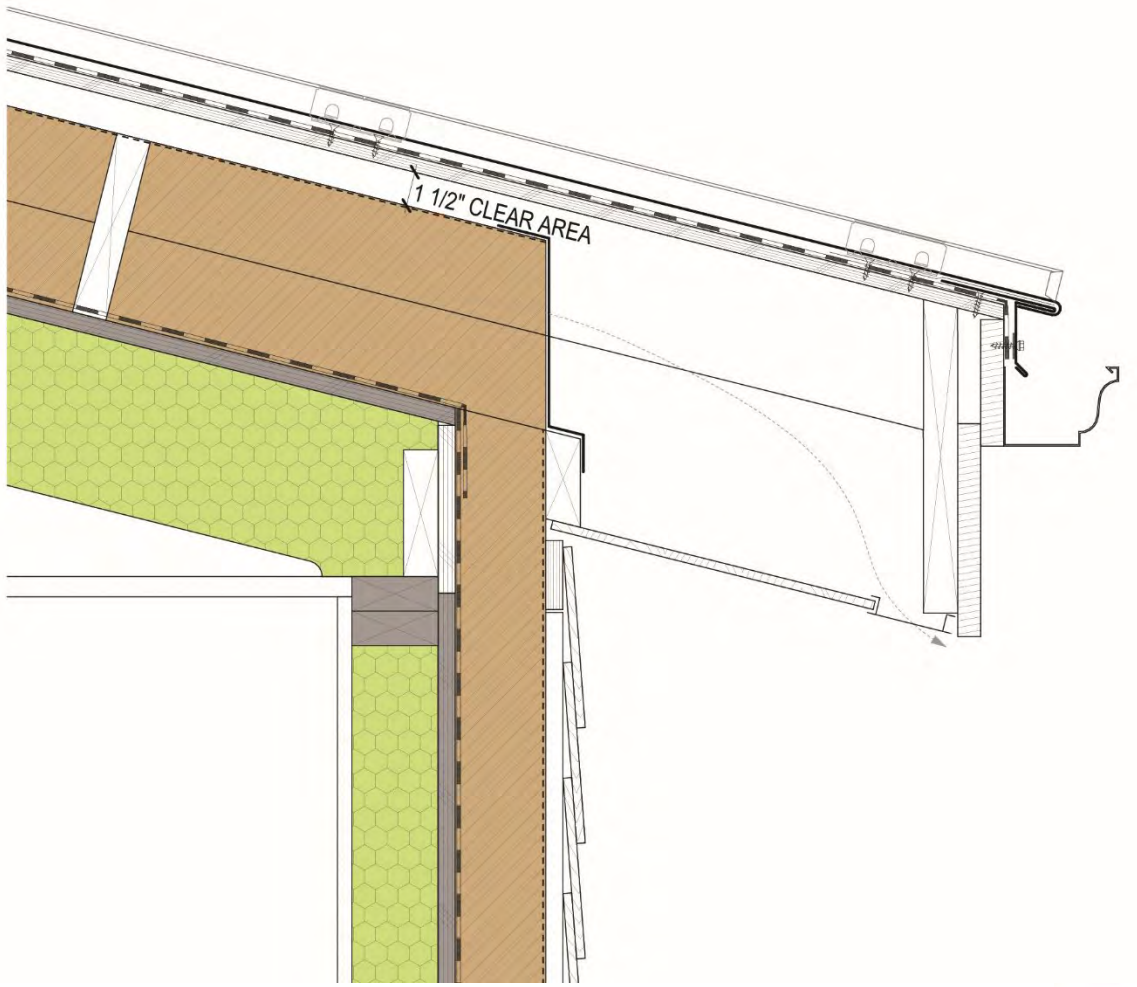
ROOF TO WALL TRANSITION – PERMITTED DETAIL

- KEEP AS MUCH EXISTING MATERIAL AS POSSIBLE
- EMBRACE THE “JACKET”
- MAXIMIZE DRYING POTENTIAL
- COMPLY WITH CURRENT CODE



ROOF TO WALL TRANSITION – CONSTRUCTION SET DETAIL

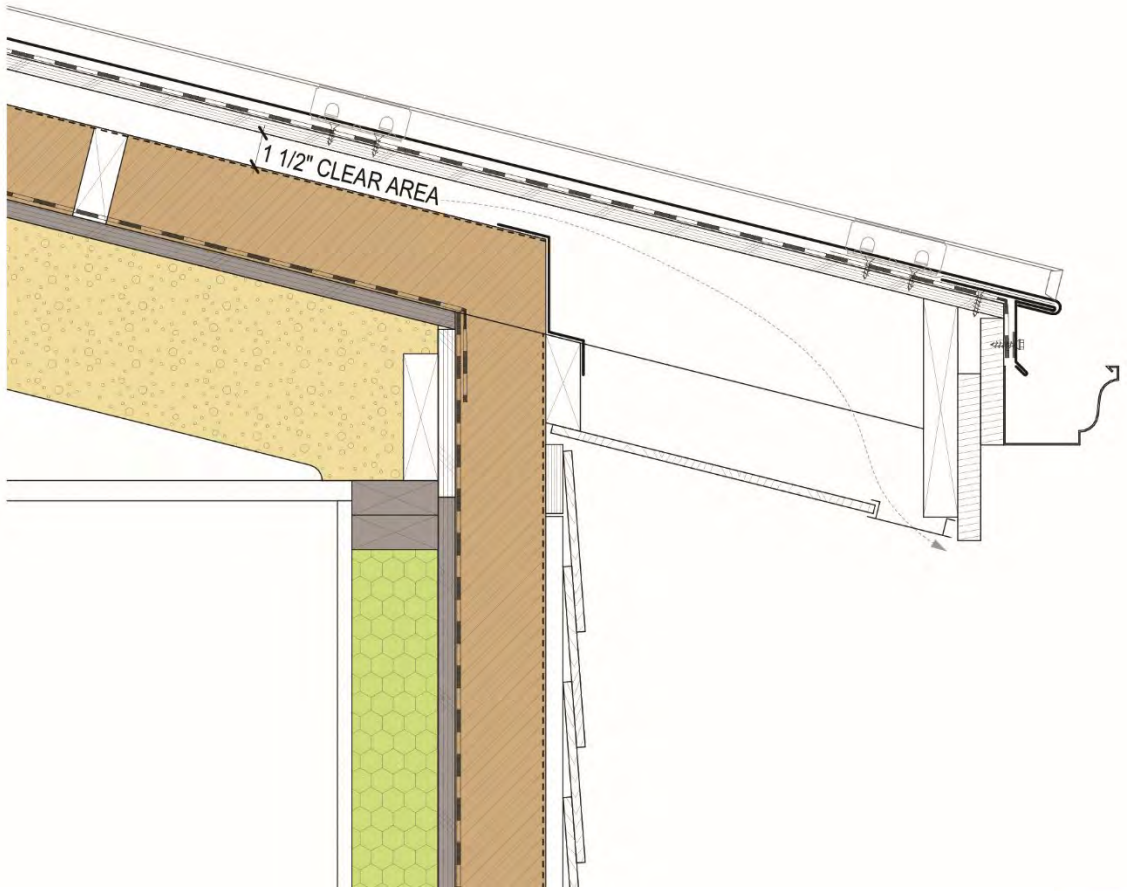
- IS IT POSSIBLE TO REGULARIZE THE EAVE
- REMOVE CCSPF
- ENHANCED / CONTINUOUS AIR BARRIER
- WAIT . . . CONSTRUCTABILITY??



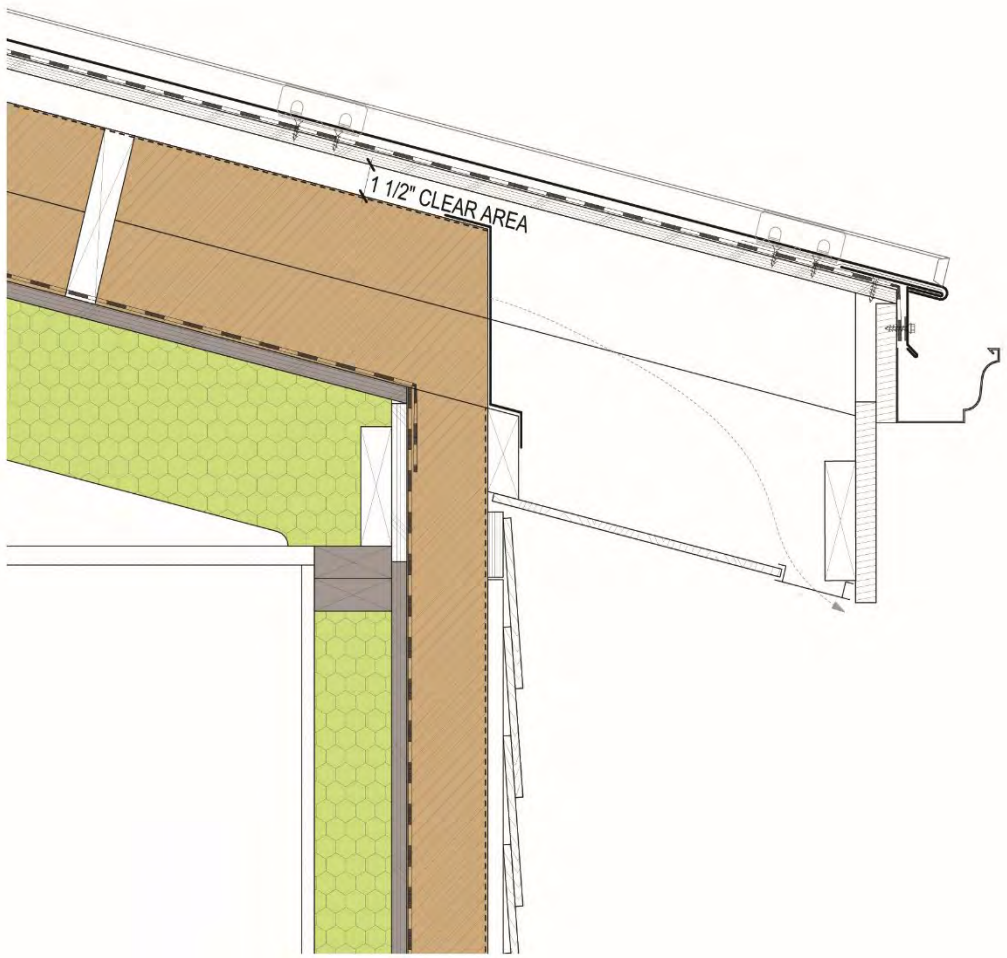
ROOF TO WALL TRANSITION – AS BUILT DETAIL

- RIGHT-SIZED R-VALUE

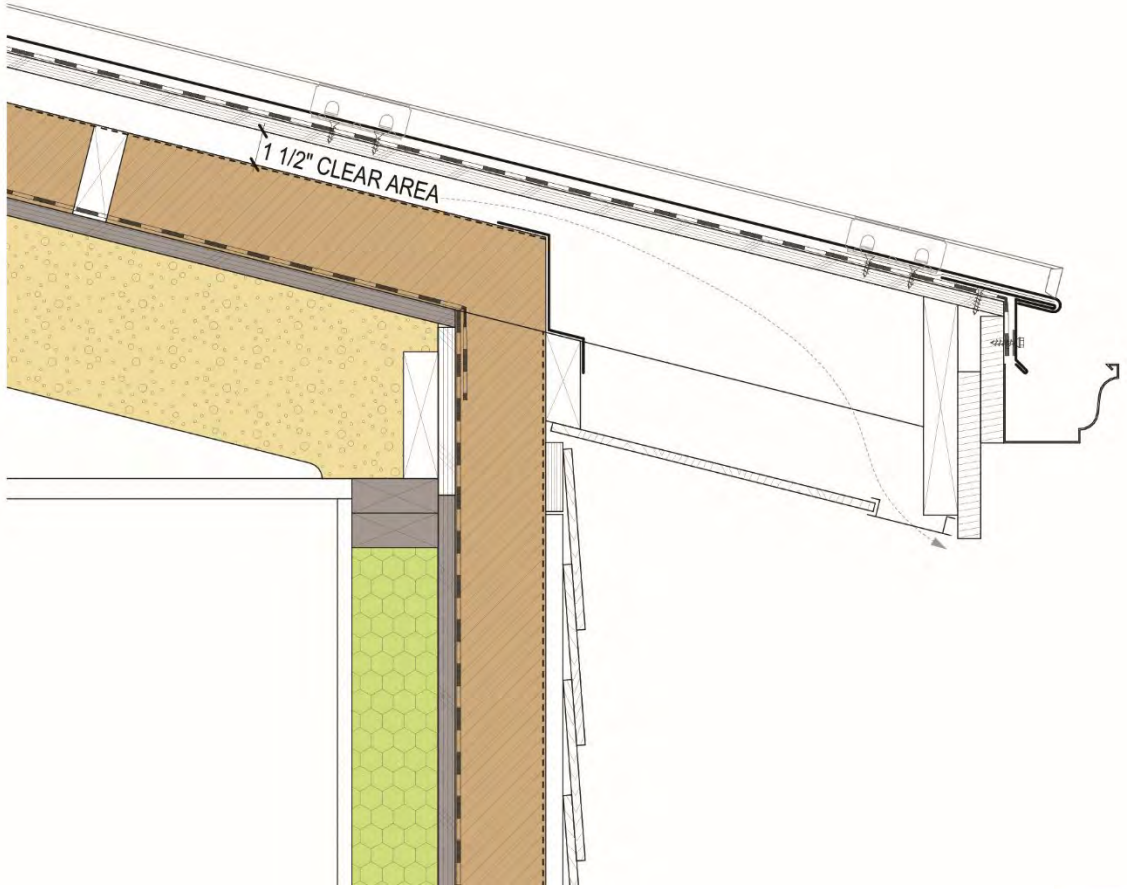
- ALLOWING FOR EXISTING CONDITIONS



CONCEPT VS CONSTRUCTABILITY



NO FOAM-200 mm ROOF OVERINSULATION

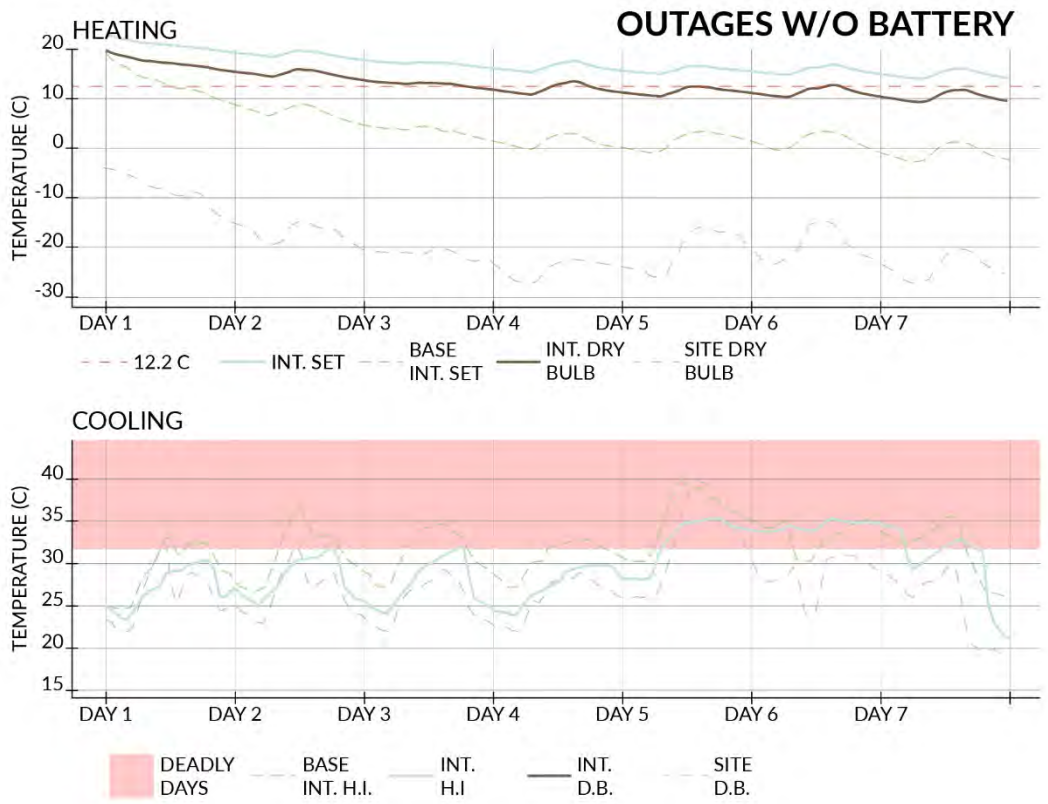


CONSTRUCTION REVISION – BUILT CONDITION

PERFORMANCE OUTPUT

CARBON COST OF RETROFIT	6.62 kg CO_2e/ft^2
EUI	13.1 kBtu/sqft/yr
BATTERY SIZE FOR OUTAGE	22.9 kWh

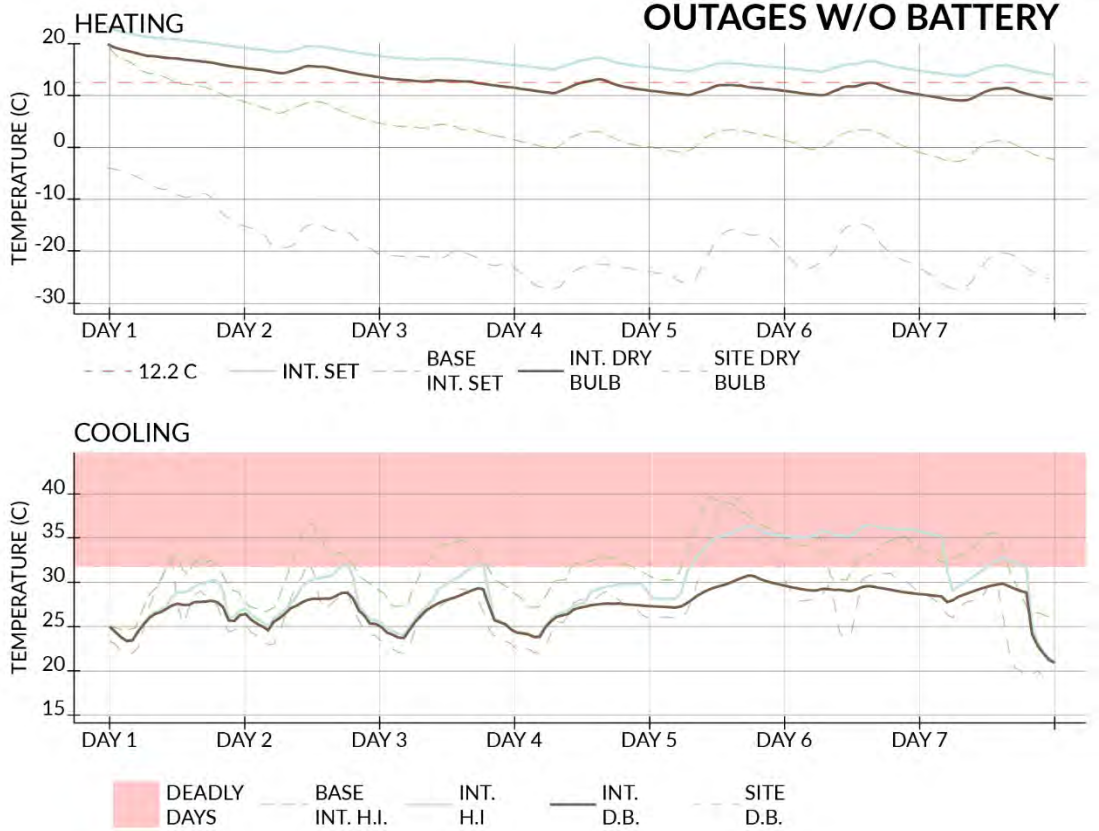
EUI REDUCTION	83.7%
BATTERY SIZE REDUCTION	91.5%



NO FOAM-200 mm ROOF OVERINSULATION

CARBON COST OF RETROFIT	7.13 kg CO_2e/ft^2
EUI	13.4 kBtu/sqft/yr
BATTERY SIZE FOR OUTAGE	24.7 kWh

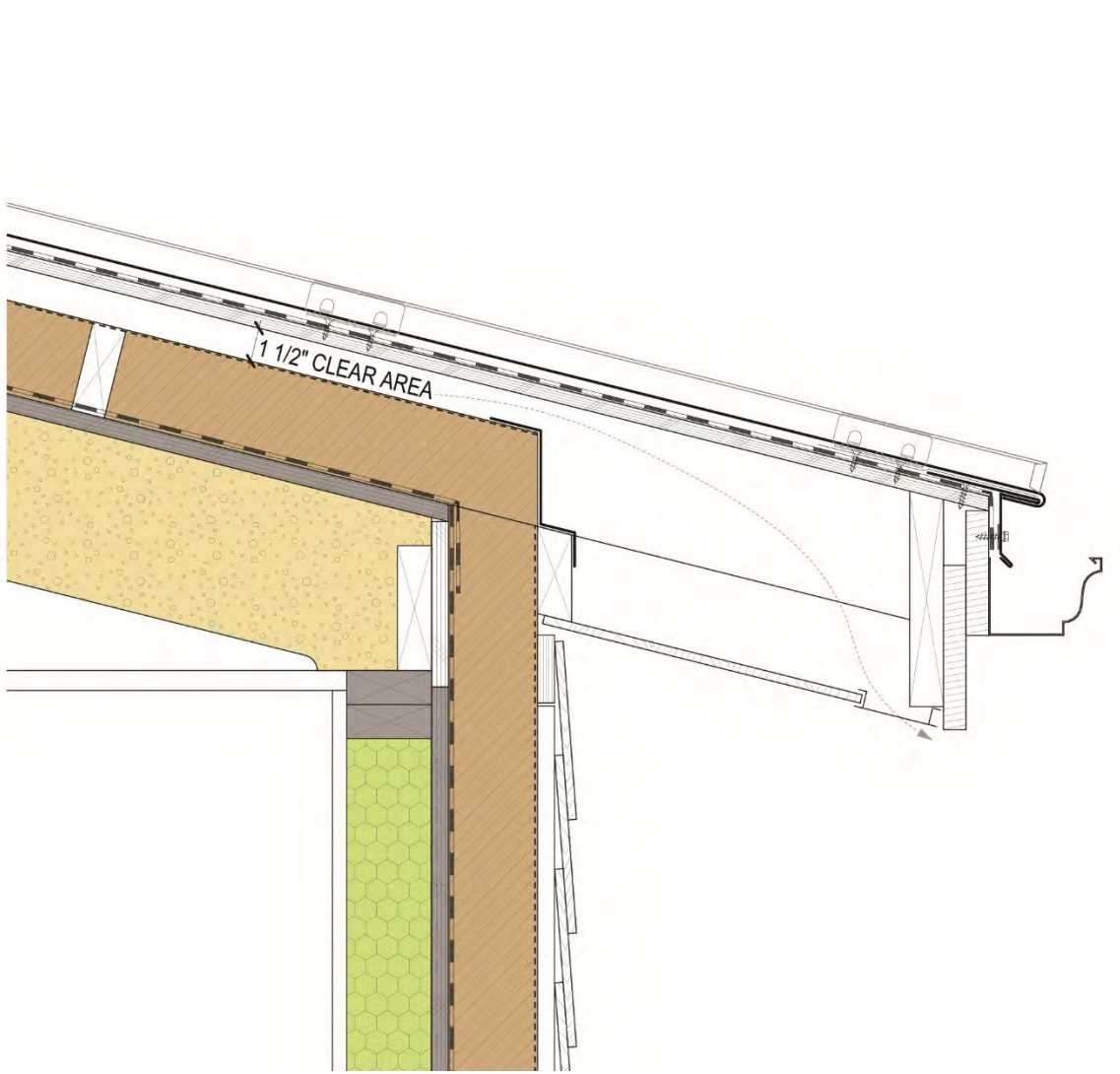
EUI REDUCTION	83.4%
BATTERY SIZE REDUCTION	90.8%



CONSTRUCTION REVISION – BUILT CONDITION

TBDA

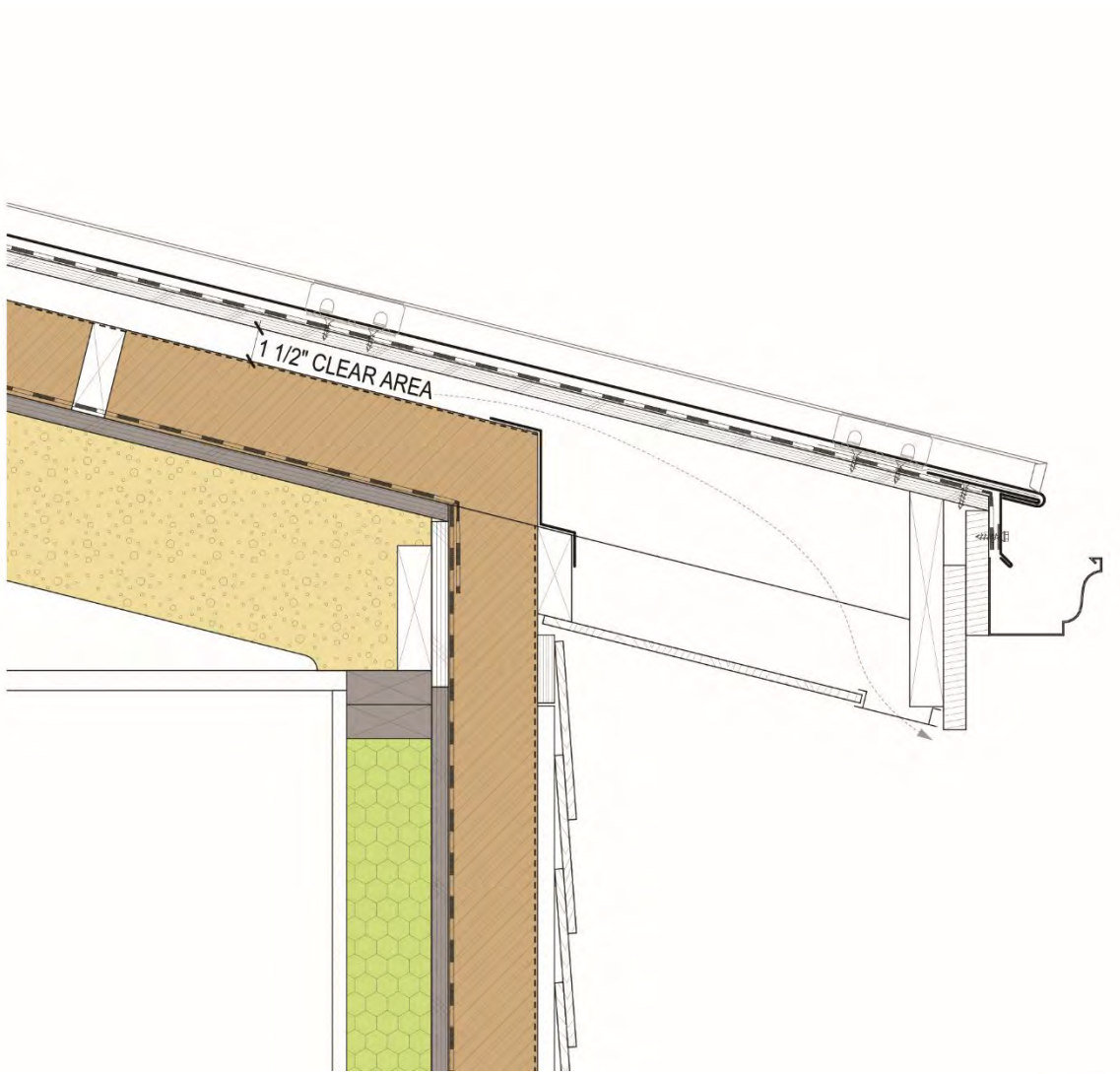
ROOF TO WALL TRANSITION



CONSTRUCTION REVISION

TBDA

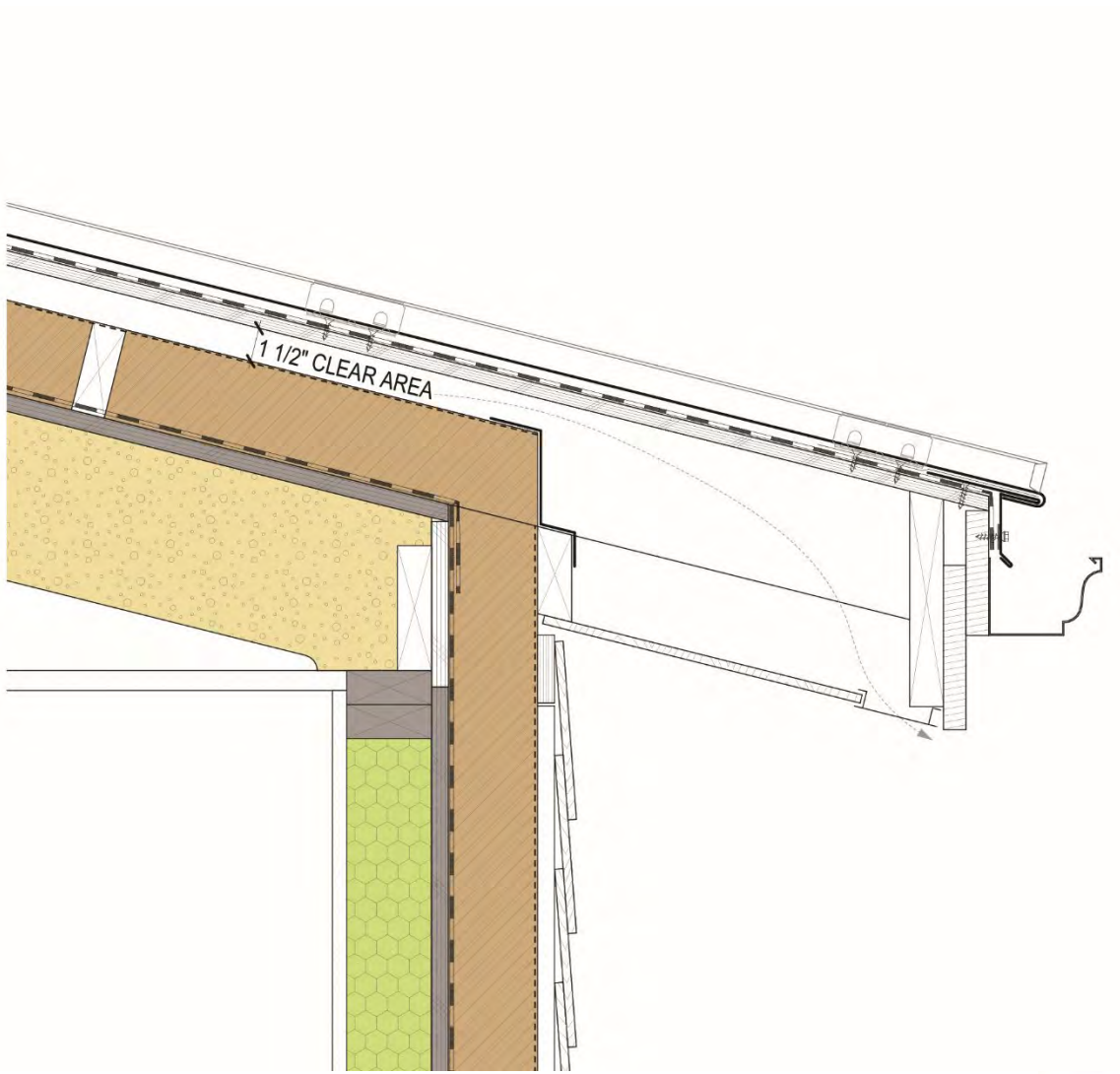
ROOF TO WALL TRANSITION



CONSTRUCTION REVISION

TBDA

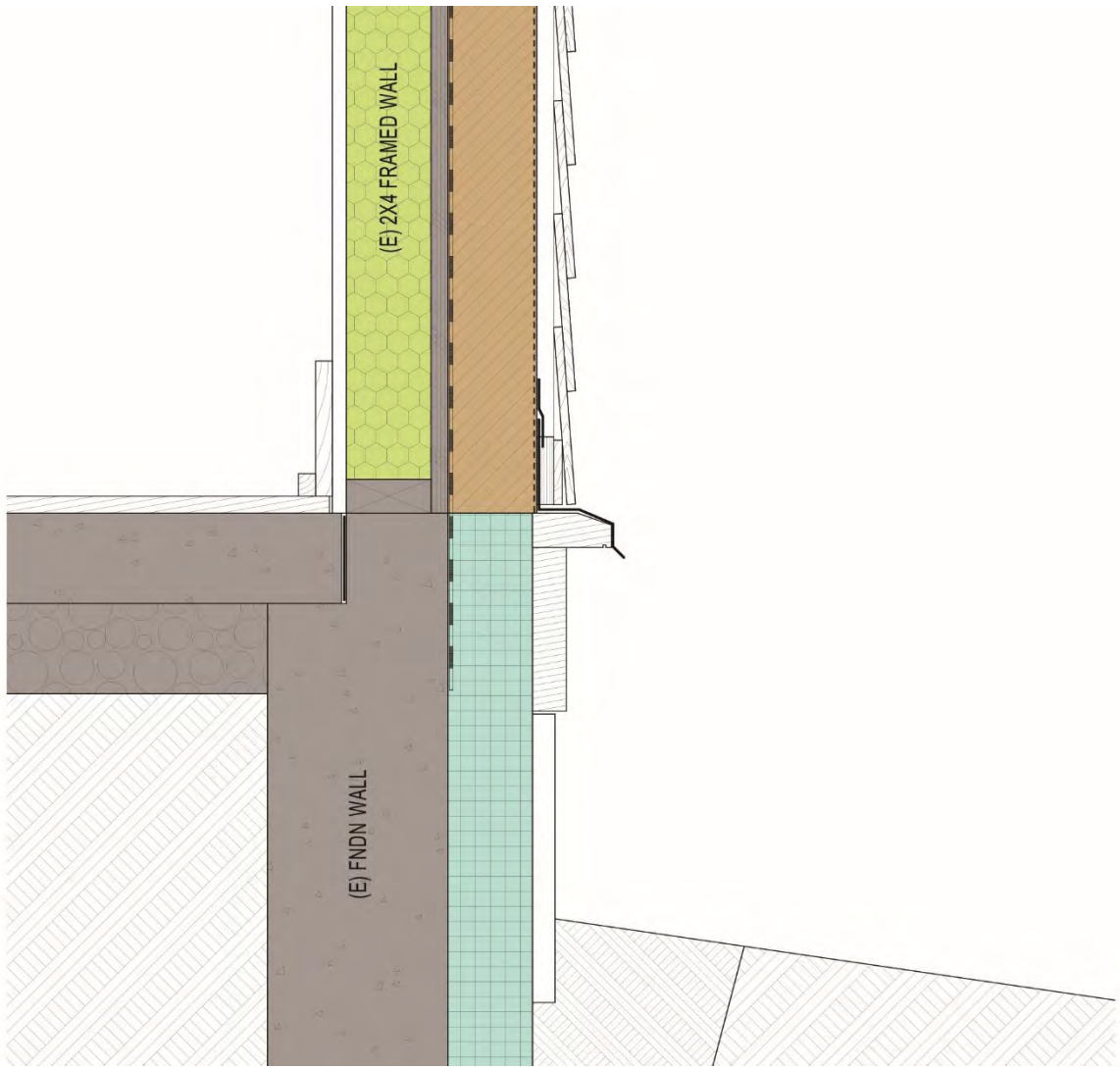
ROOF TO WALL TRANSITION



CONSTRUCTION REVISION

TBDA

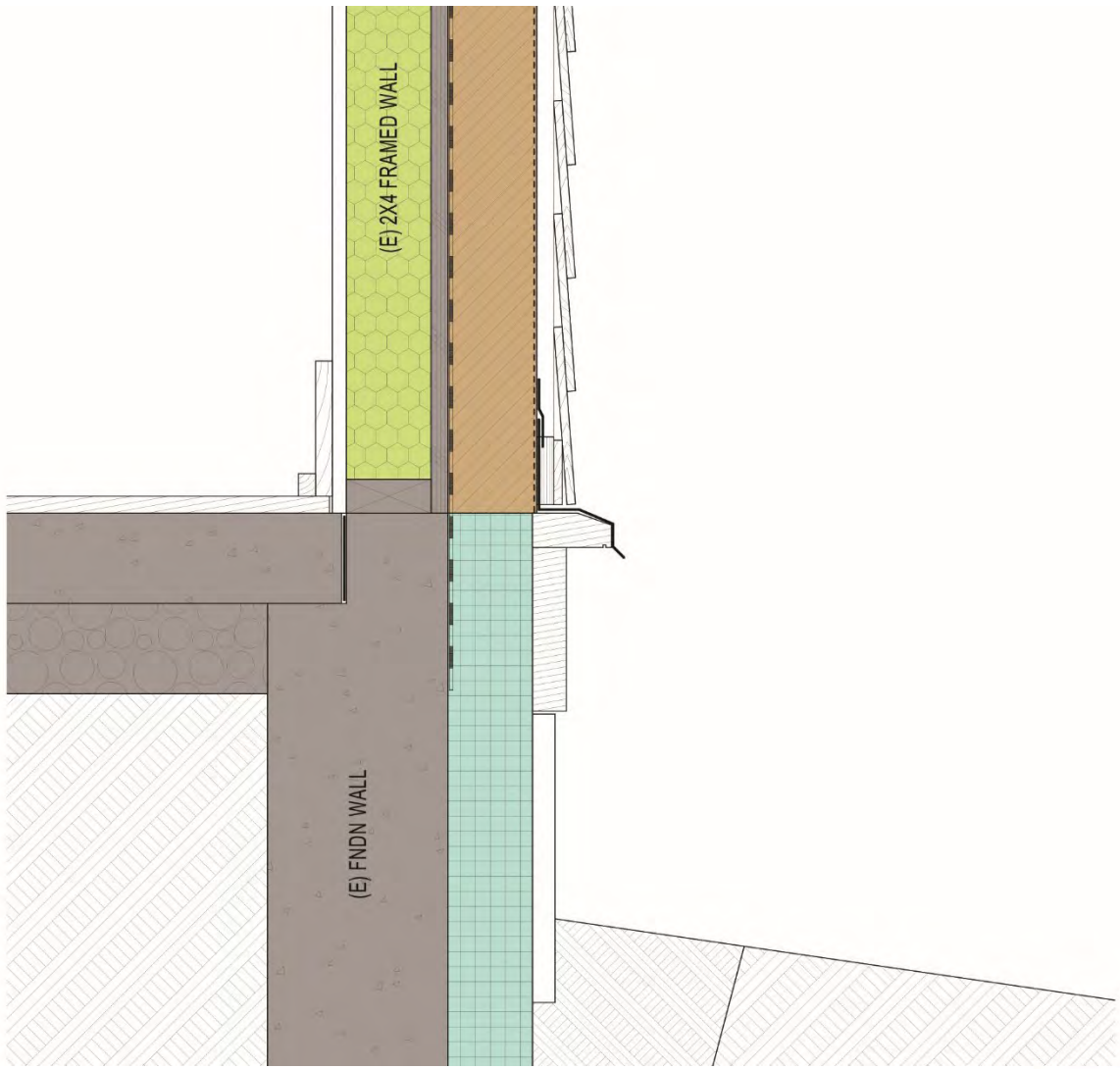
TYPICAL WALL



INITIAL

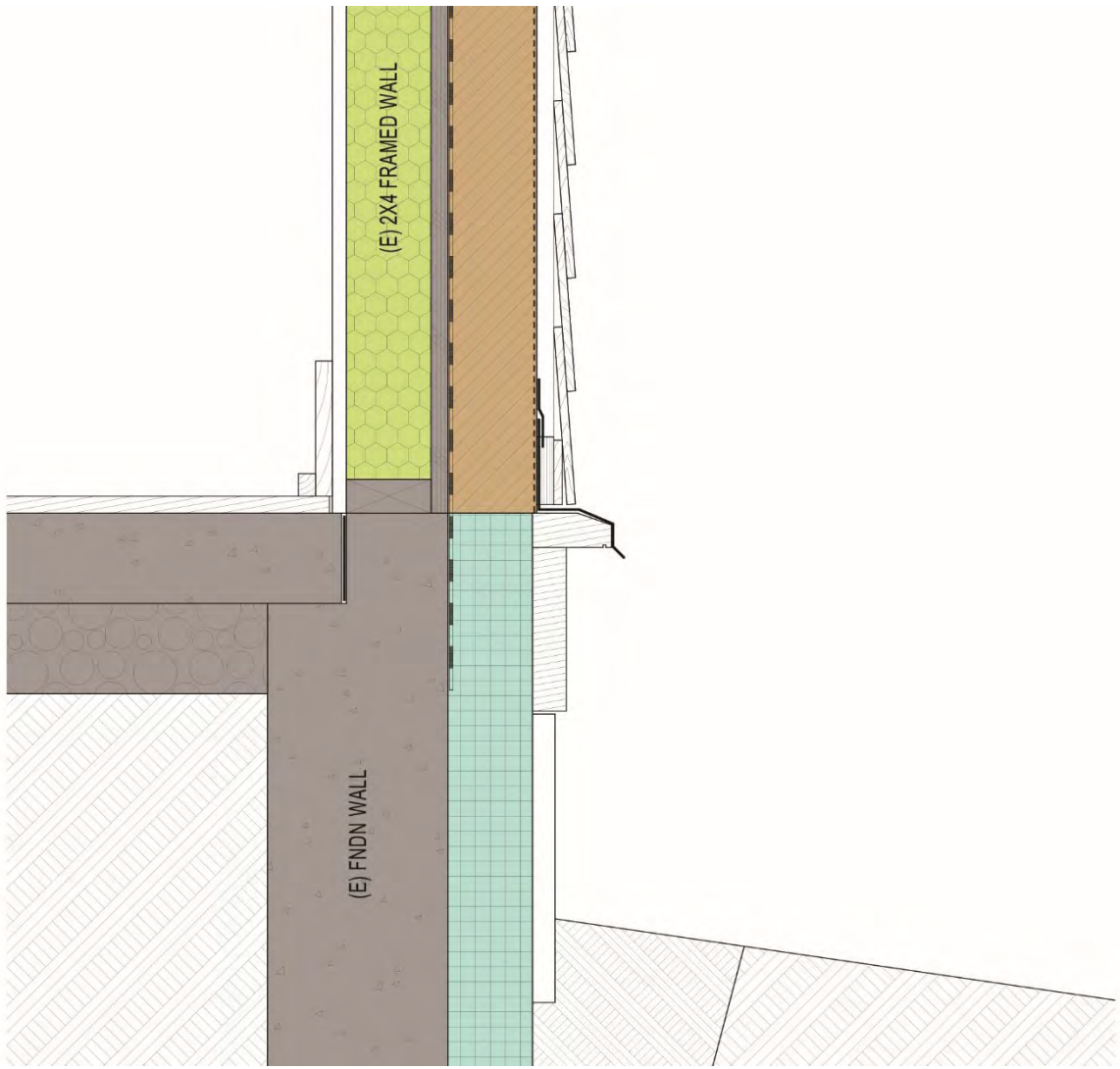
TBDA

TYPICAL WALL



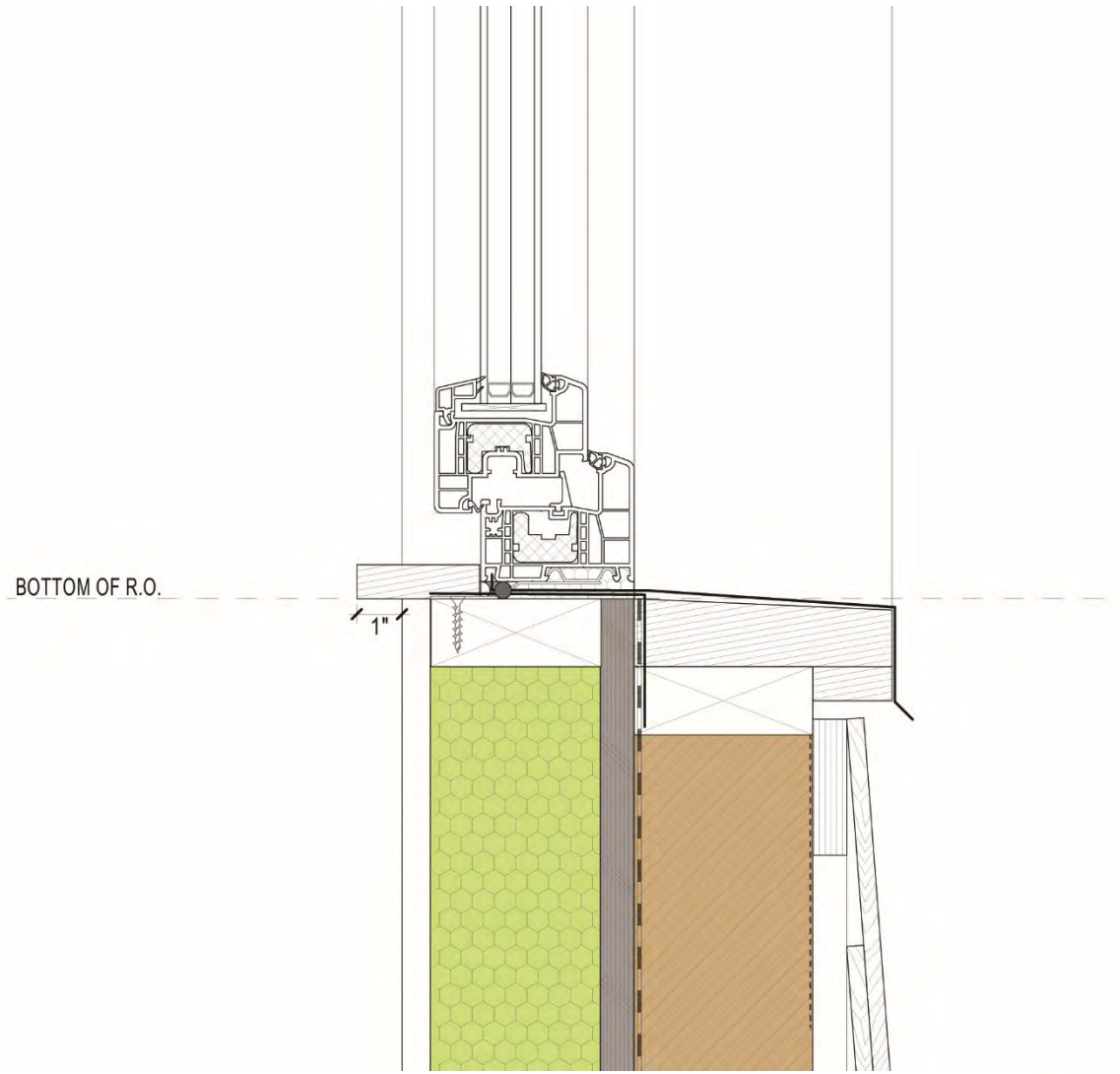
INITIAL

TYPICAL WALL

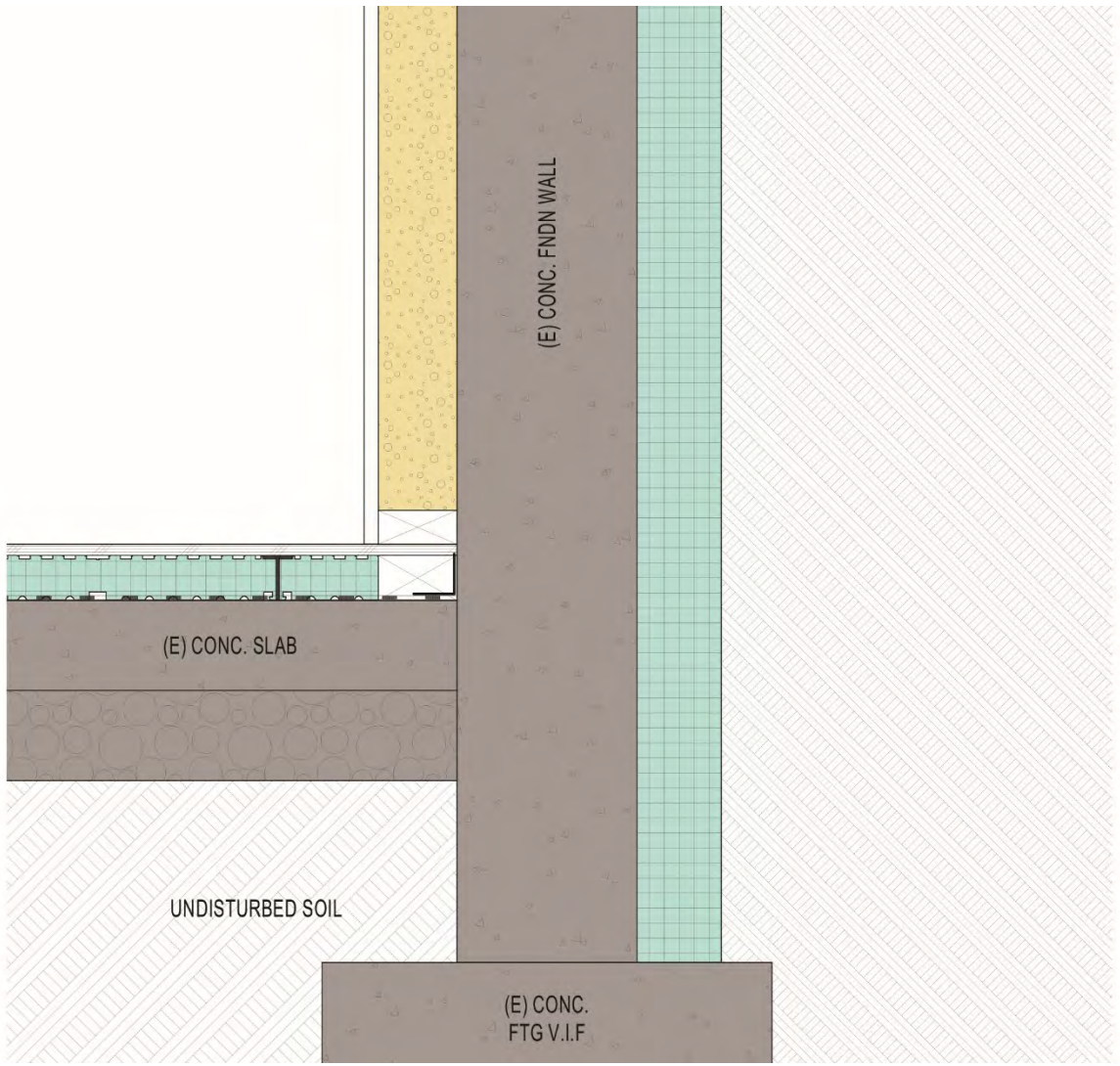


INITIAL

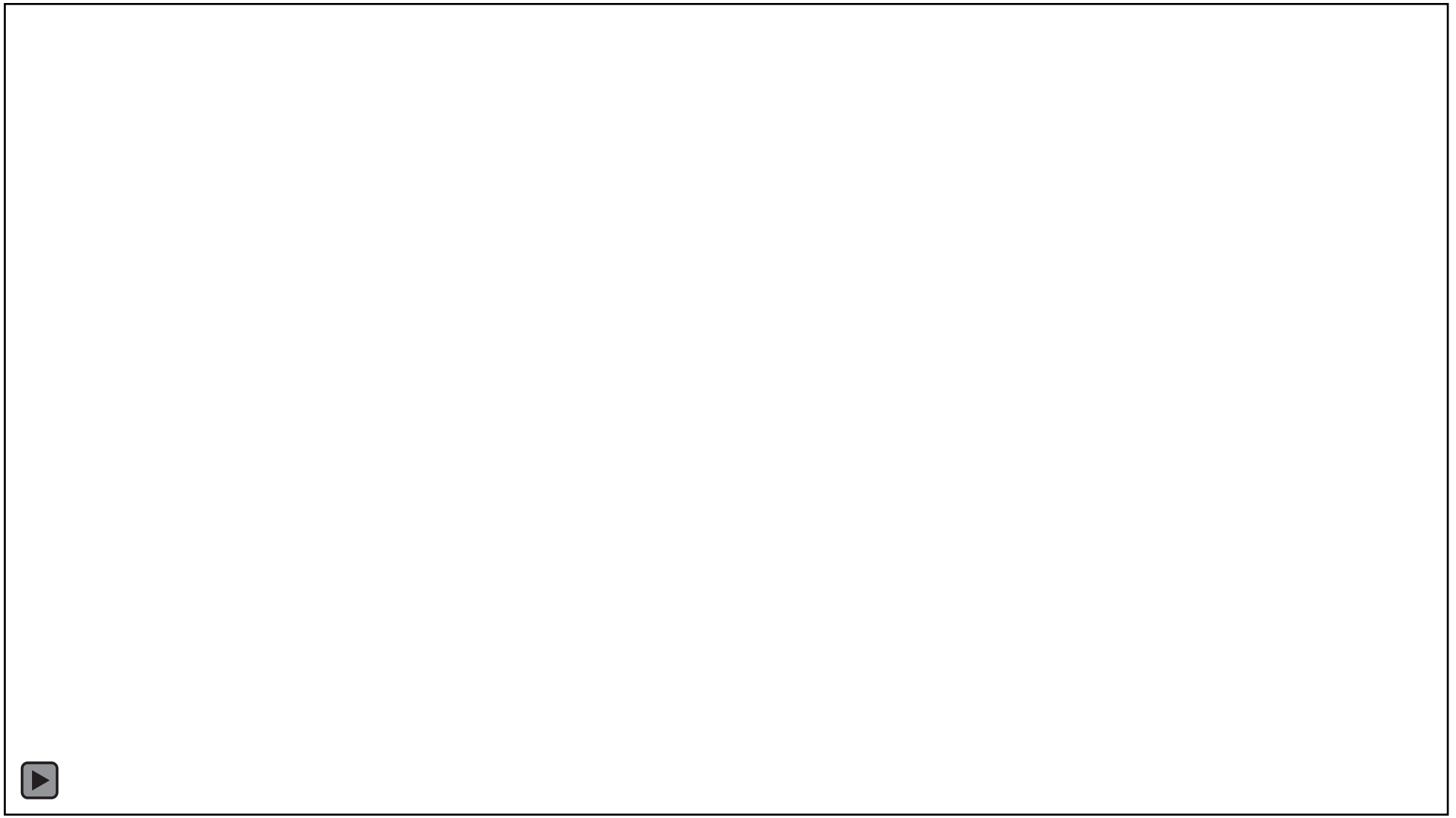
WINDOW DETAIL



BASEMENT SLAB



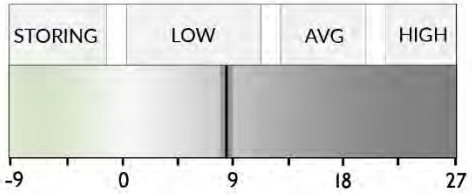
PUTTING IT ALL TOGETHER



RETROFIT STRATEGIES

PROJECT EMISSIONS INTENSITY (MCI)

MCI (CONDITIONED FLOOR AREA)	7.13 kg CO_2e/ft^2
CONDITIONED FLOOR AREA	2,709 ft^2



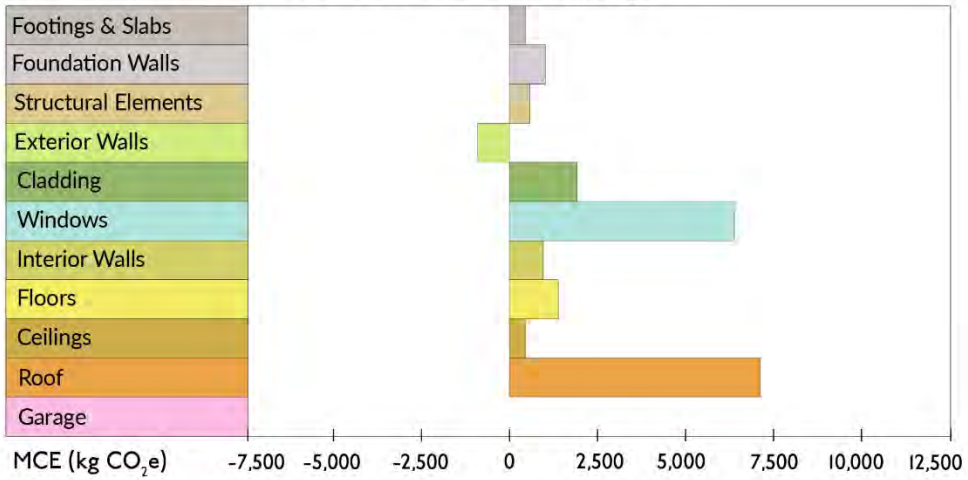
PROJECT EMISSIONS (MCE)

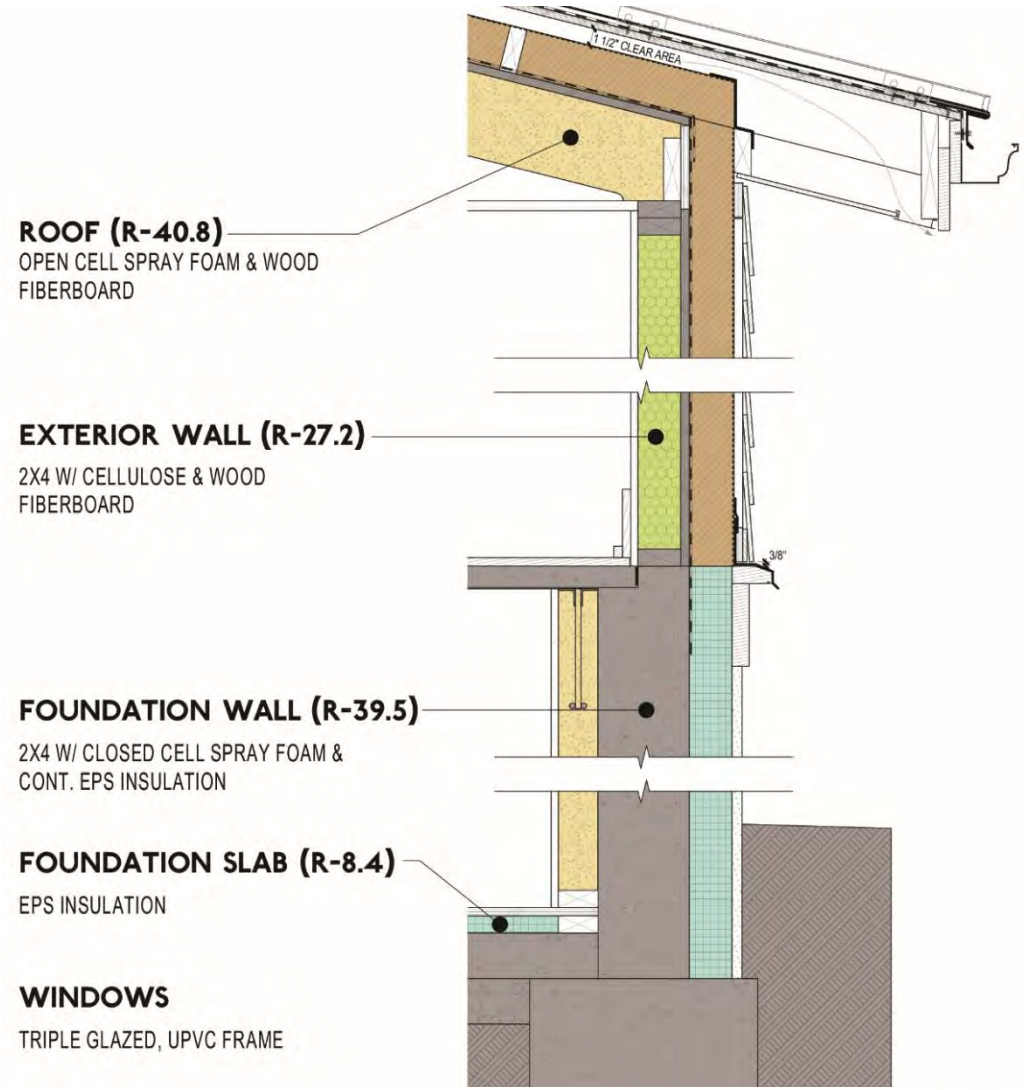
NET EMISSIONS

19,327 kg CO_2e

GROSS EMISSIONS	36,294 kg CO_2e
STORAGE	16,967 kg CO_2e

MATERIAL CARBON EMISSIONS BY ASSEMBLIES (kg CO_2e)





ROOF (R-40.8)
OPEN CELL SPRAY FOAM & WOOD FIBERBOARD

EXTERIOR WALL (R-27.2)
2X4 W/ CELLULOSE & WOOD FIBERBOARD

FOUNDATION WALL (R-39.5)
2X4 W/ CLOSED CELL SPRAY FOAM & CONT. EPS INSULATION

FOUNDATION SLAB (R-8.4)
EPS INSULATION

WINDOWS
TRIPLE GLAZED, UPVC FRAME

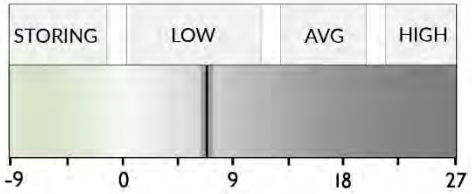
FINAL WALL ASSEMBLY

TBDA

PHIUS ZERO HISTORIC RETROFIT (2021 CORE REVIVE)

PROJECT EMISSIONS INTENSITY (MCI)

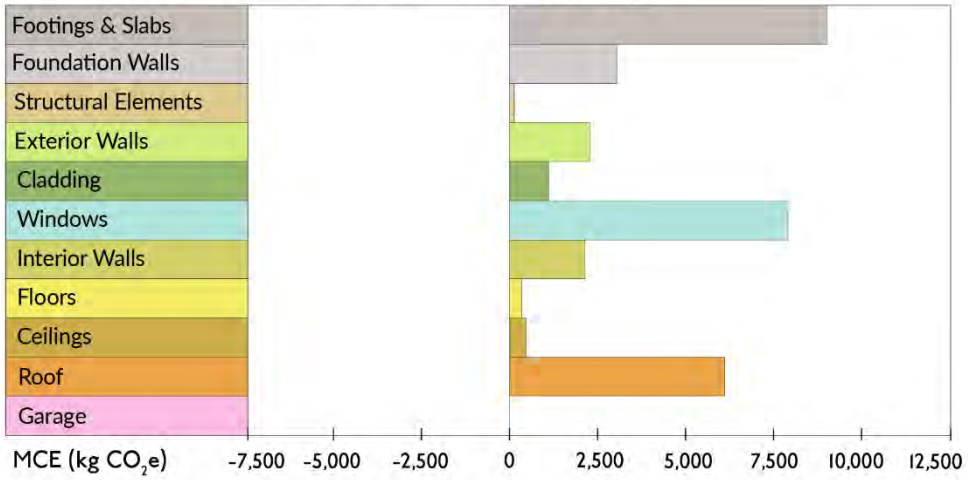
MCI (CONDITIONED FLOOR AREA)	**6.6** kg CO_2e/ft^2
CONDITIONED FLOOR AREA	**4,885** ft^2

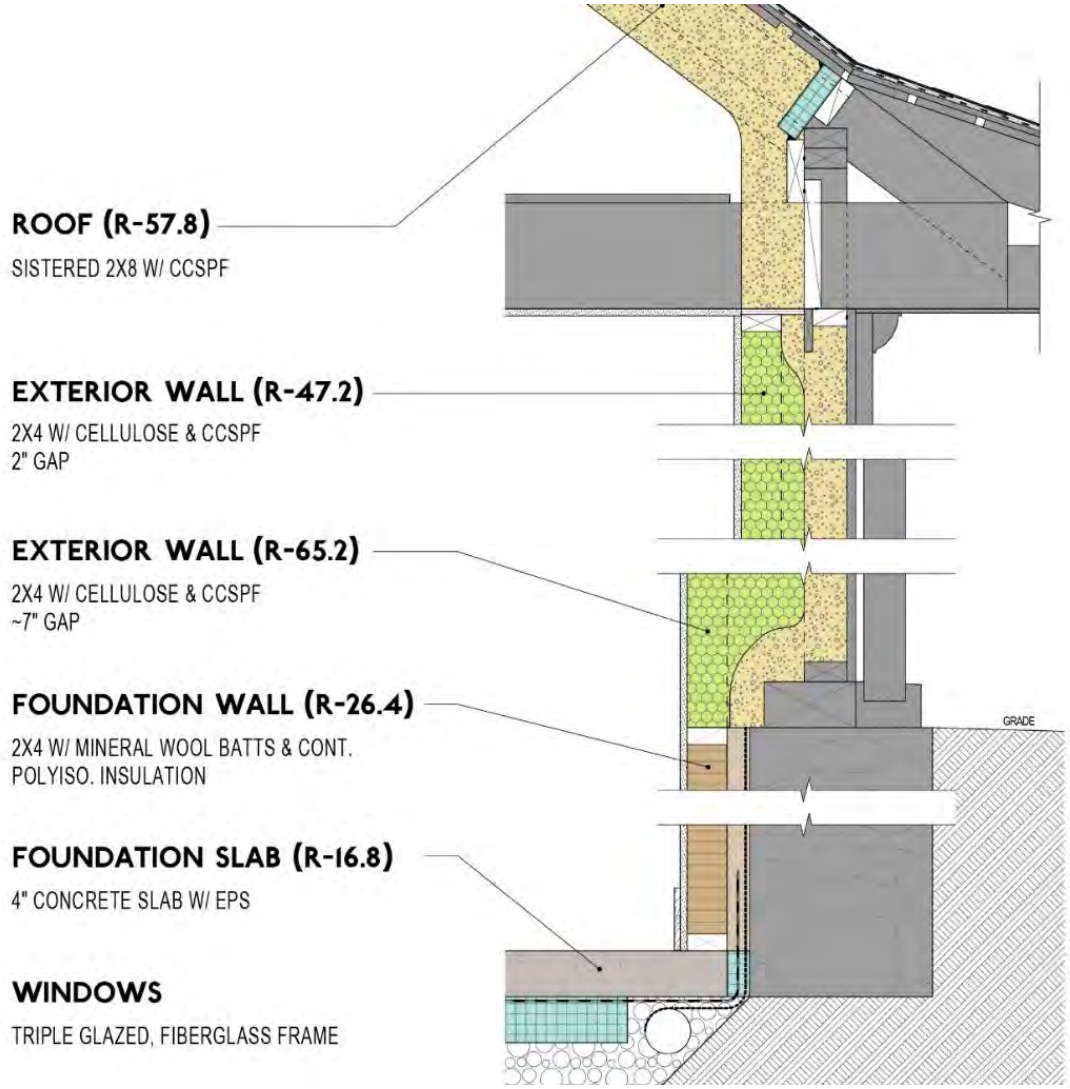


PROJECT EMISSIONS (MCE)

NET EMISSIONS		
32,398 kg CO_2e	GROSS EMISSIONS	**36,157** kg CO_2e
	STORAGE	**3,759** kg CO_2e

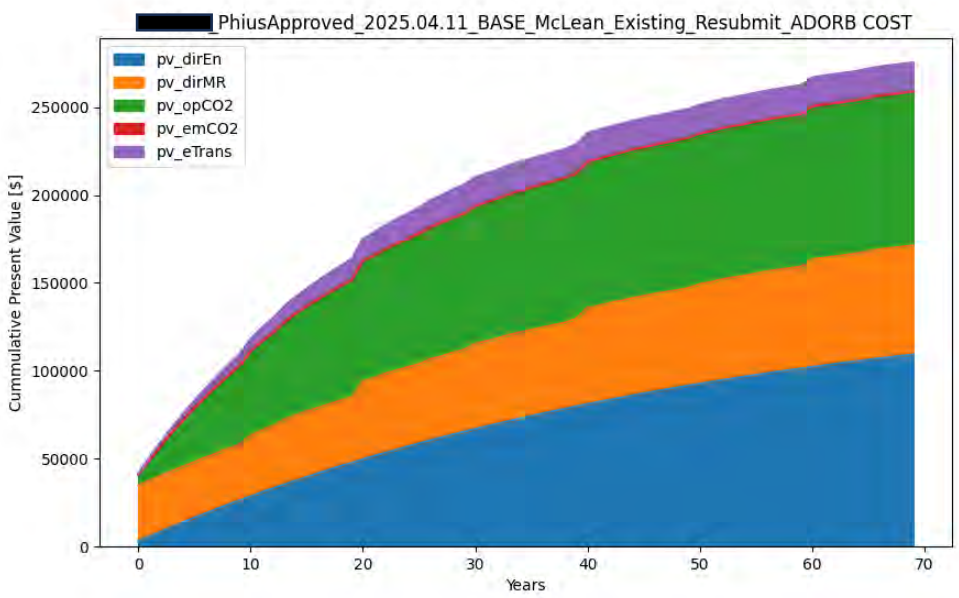
MATERIAL CARBON EMISSIONS BY ASSEMBLIES (kg CO_2e)



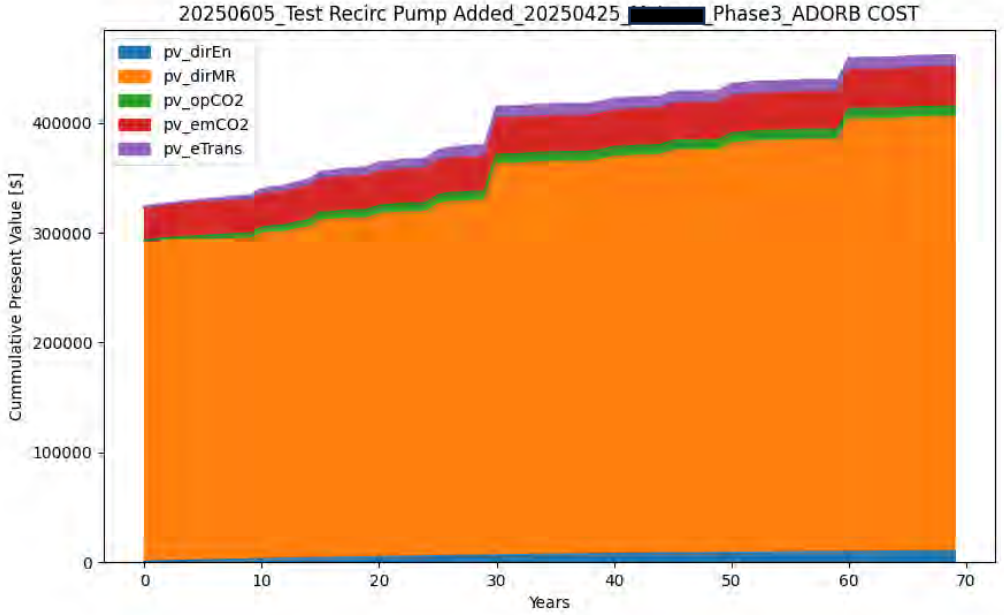


TBDA

ADORB RESULTS



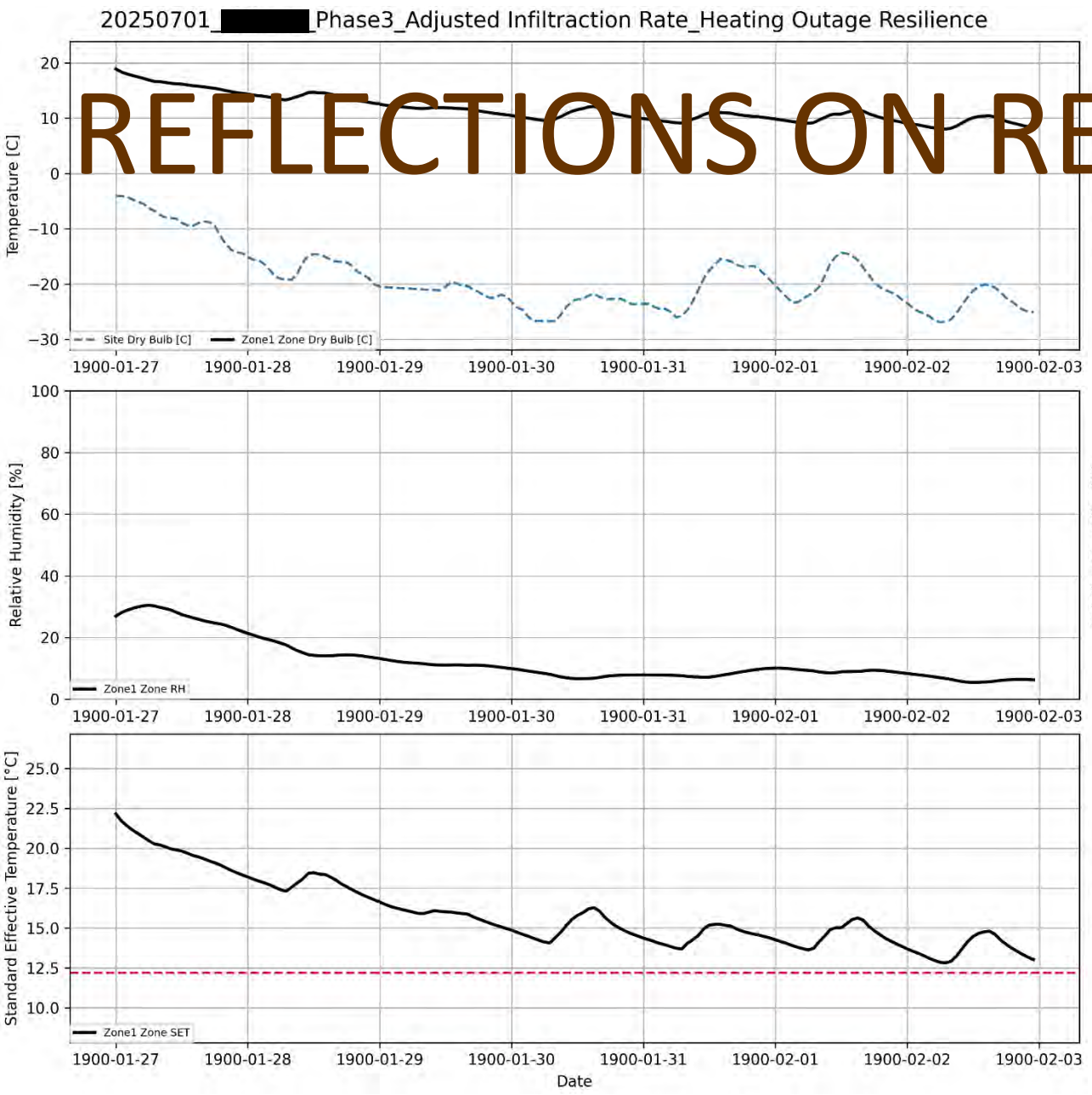
EXISTING CONDITION

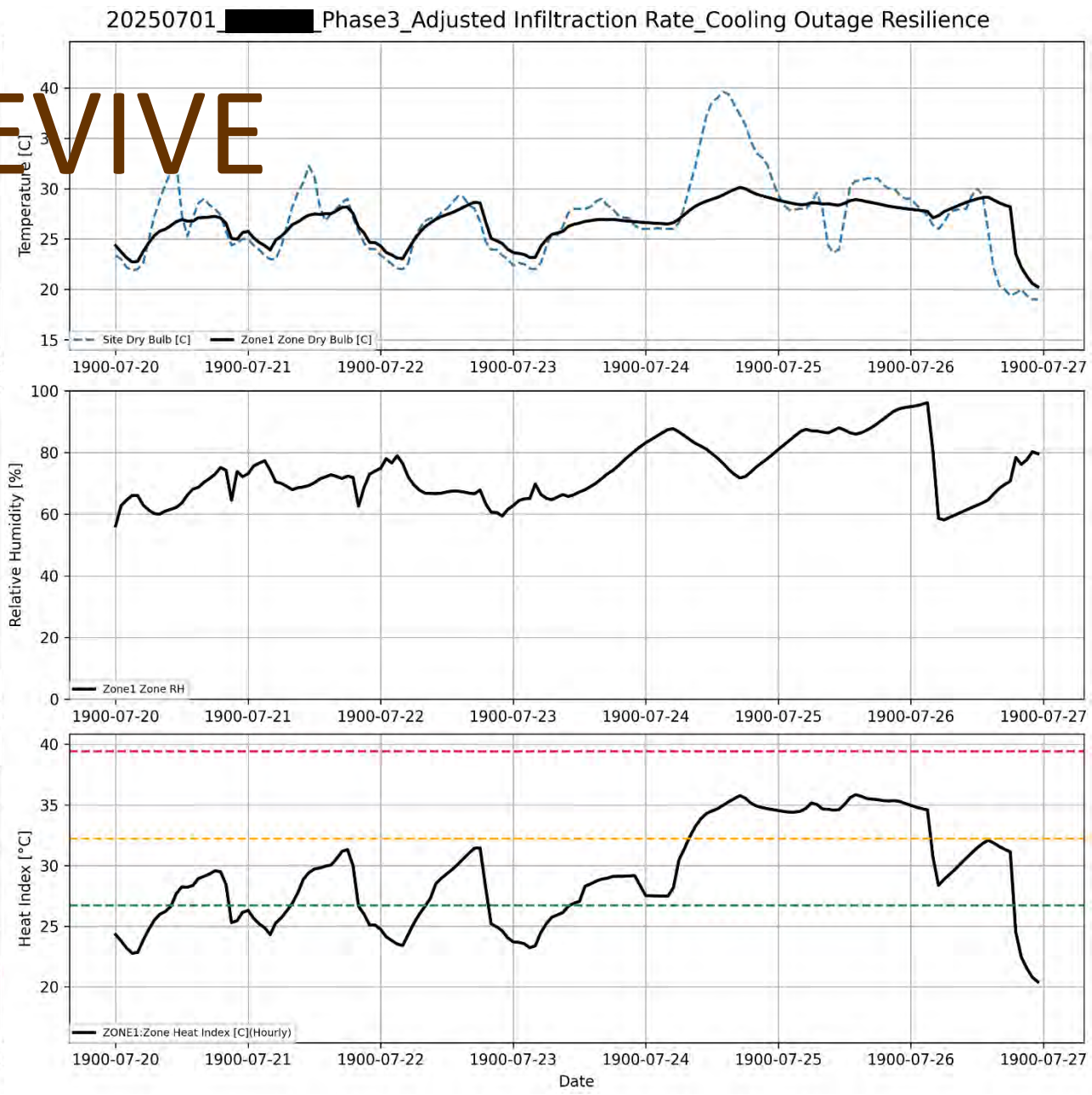


RENOVATION

TBDA

REFLECTIONS ON REVIVE



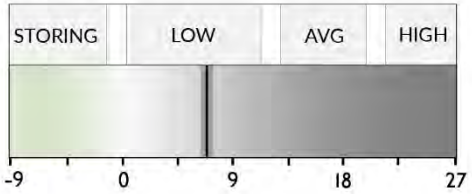


TBDA

RETROFIT STRATEGIES

PROJECT EMISSIONS INTENSITY (MCI)

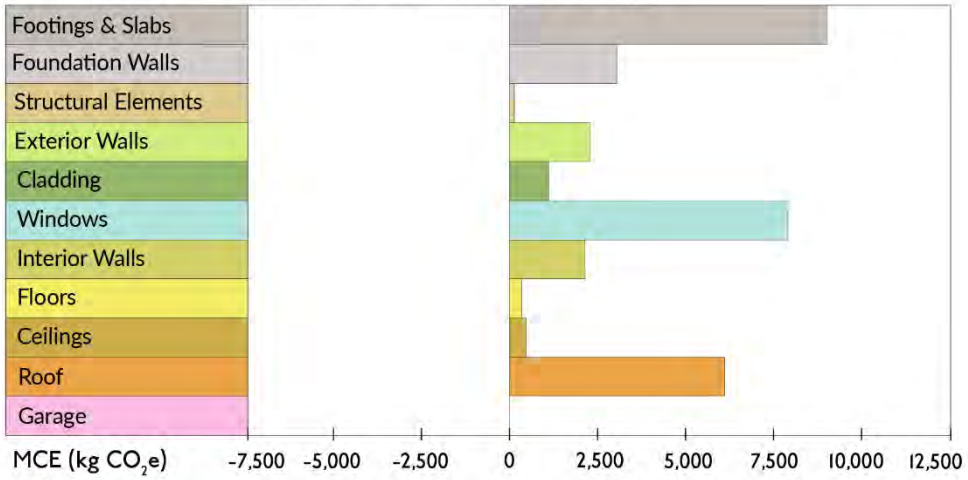
MCI (CONDITIONED FLOOR AREA)	6.6 kg CO_2e/ft^2
CONDITIONED FLOOR AREA	4,885 ft^2



PROJECT EMISSIONS (MCE)

NET EMISSIONS	
32,398 kg CO_2e	GROSS EMISSIONS 36,157 kg CO_2e
	STORAGE 3,759 kg CO_2e

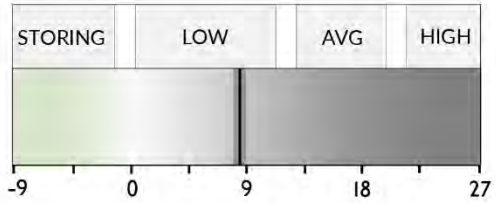
MATERIAL CARBON EMISSIONS BY ASSEMBLIES (kg CO_2e)



PHIUS ZERO HISTORIC RETROFIT

PROJECT EMISSIONS INTENSITY (MCI)

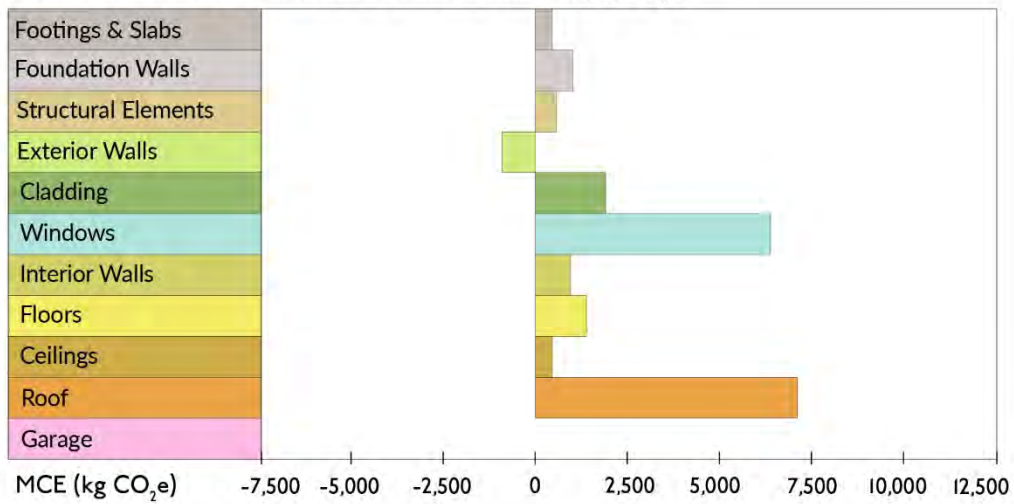
MCI (CONDITIONED FLOOR AREA)	7.13 kg CO_2e/ft^2
CONDITIONED FLOOR AREA	2,709 ft^2



PROJECT EMISSIONS (MCE)

NET EMISSIONS	
19,327 kg CO_2e	GROSS EMISSIONS 36,294 kg CO_2e
	STORAGE 16,967 kg CO_2e

MATERIAL CARBON EMISSIONS BY ASSEMBLIES (kg CO_2e)



RANCH REVIVE

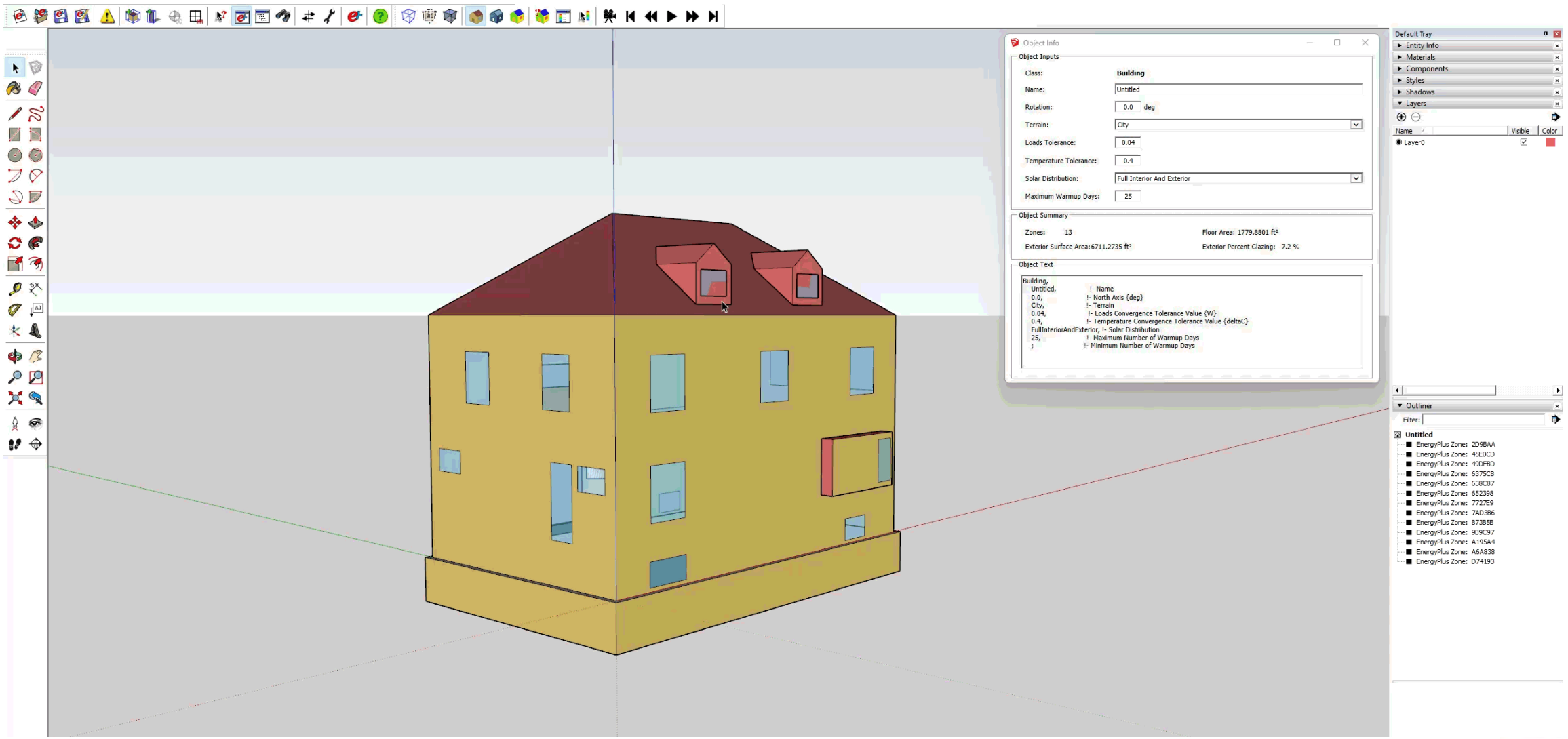
TBDA

PROJECT PHASING

PROJECT @ ASSESEMENT STAGE

PROJECT @ DESIGN CERTIFICATION

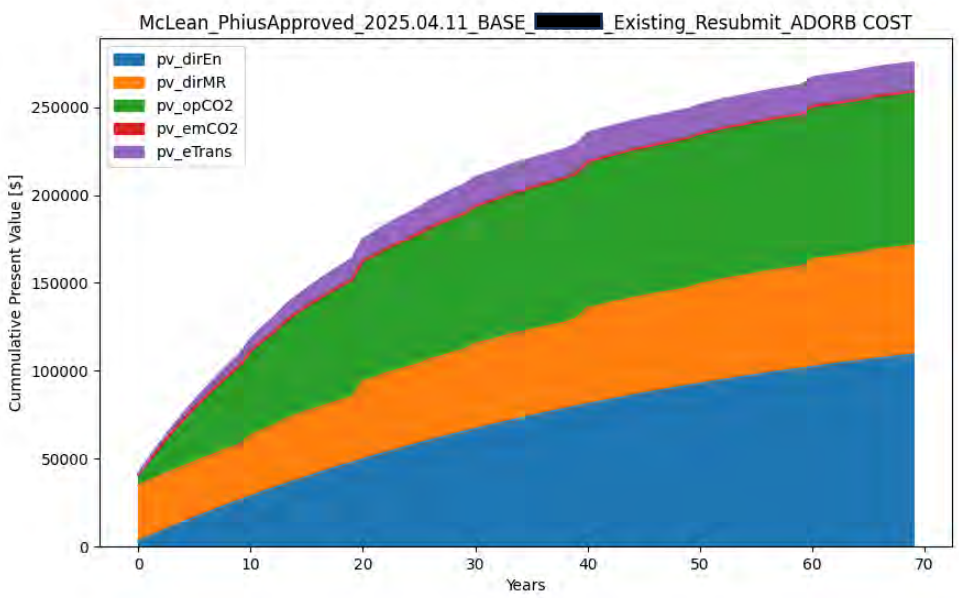
MODELING

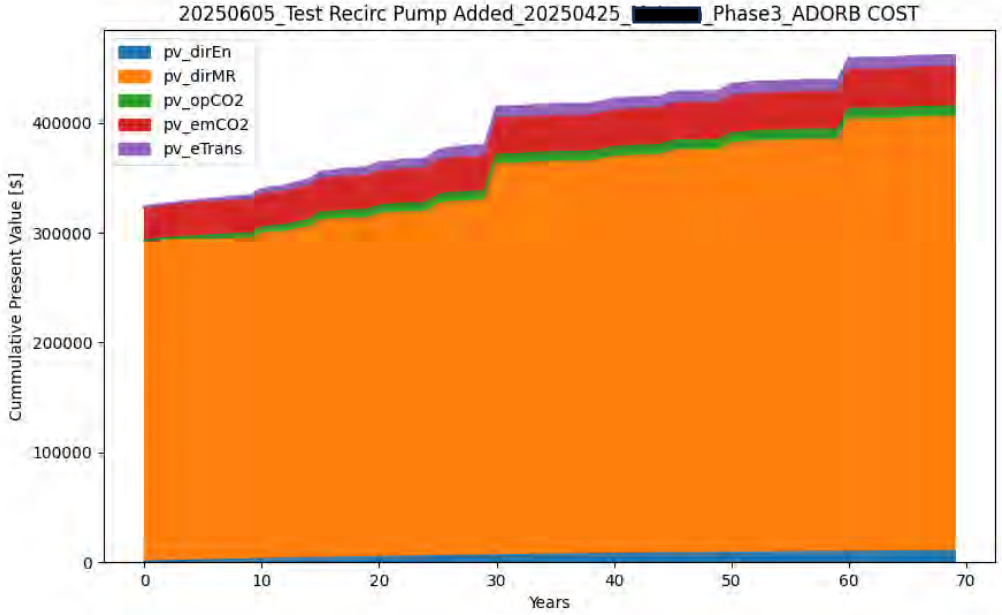


ATTEMPTED REVIVE MODEL OF PHIUS ZERO HISTORIC RETROFIT

TBDA

ADORB


McLean_PhiusApproved_2025.04.11_BASE_[redacted]_Existing_Resubmit_ADORB COST
pv_dirEn
pv_dirMR
pv_opCO2
pv_emCO2
pv_eTrans
Cummulative Present Value [$]
0
50000
100000
150000
200000
250000
0
10
20
30
40
50
60
70
Years


20250605_Test Recirc Pump Added_20250425_[redacted]_Phase3_ADORB COST
pv_dirEn
pv_dirMR
pv_opCO2
pv_emCO2
pv_eTrans
Cummulative Present Value [$]
0
100000
200000
300000
400000
0
10
20
30
40
50
60
70
Years

ADORB

Assembly Cost per sqft External Inbox × [redacted]

Summarize this email

Sage Duffey
Hi [redacted] Can you provide an estimated material cost for the wall, floor and roof assemblies per sqft? This is for phius certification. Labor cost doesn'

Sage Duffey
Hi [redacted] I know on Friday you said you would send out the cost of materials per sqft with the next progress report, do you have an estimate of when that will be

S [redacted]
[redacted] started working on it yesterday. She is on site there this morning to review things with [redacted] Hopefully by end of day tomorrow. [redacted]

K [redacted]
Sage, I wanted to give you a quick update on this. Unfortunately, [redacted] needs to work on this. I do not work on these types of calculations yet. He misunderstoo

Sage Duffey
Thanks for the update [redacted]

Sage Duffey
Hi All I wanted to follow up on this as we should be moving into the next phase of Revive soon. Karol had updated me a couple of weeks ago to update that Steve

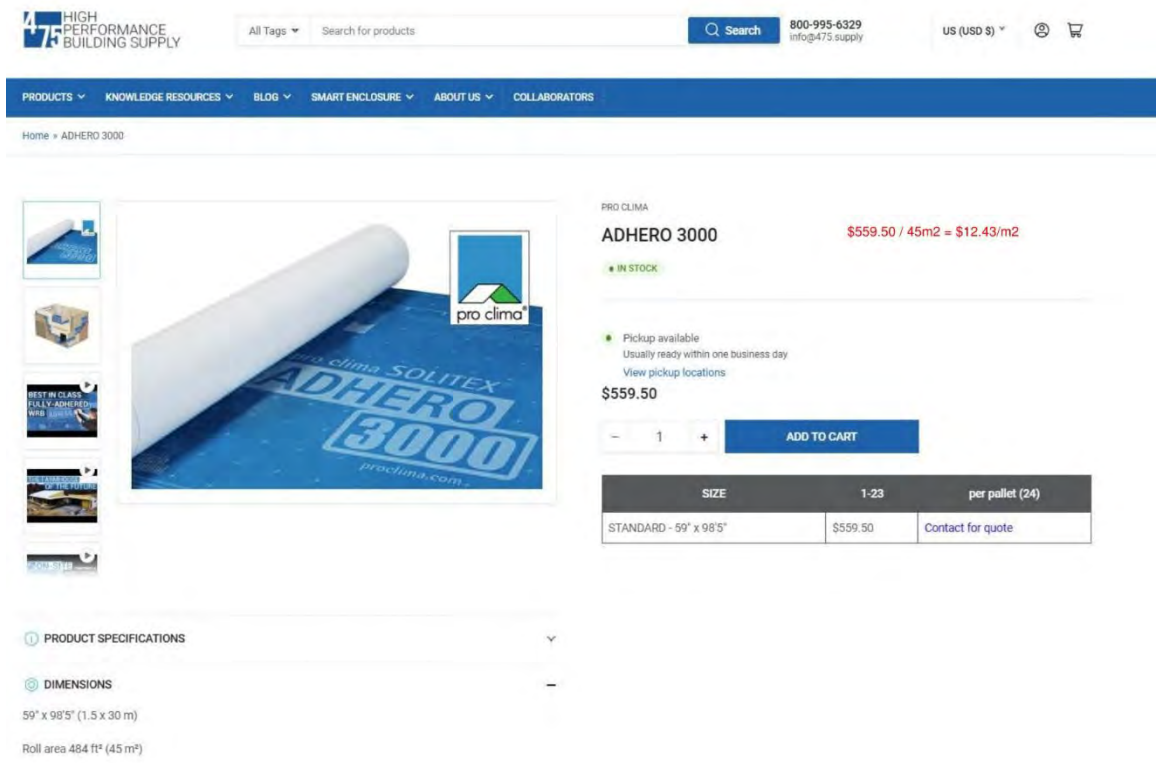
Sage Duffey
Hi [redacted] I wanted to follow up on this. We're moving into the next phase of certification. I will need the cost per sqft for this submittal. I understand with k

Sage Duffey <sage@tbdarchitects.com>
to [redacted] Denny

Good morning [redacted]

I was thinking over the weekend and I think we should include the roofing material cost. Do you have an estimate of when you'll have the material cost?

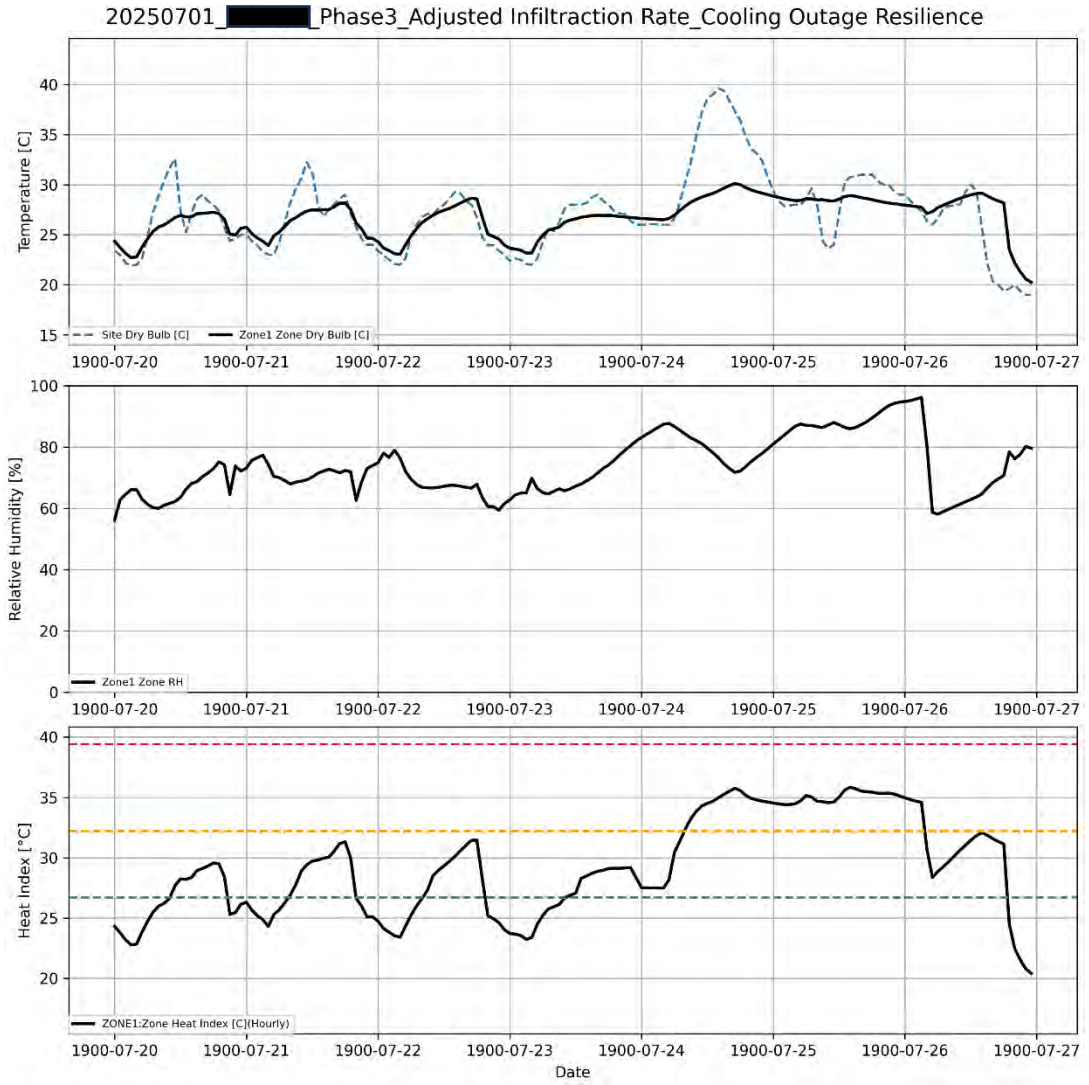
Sage

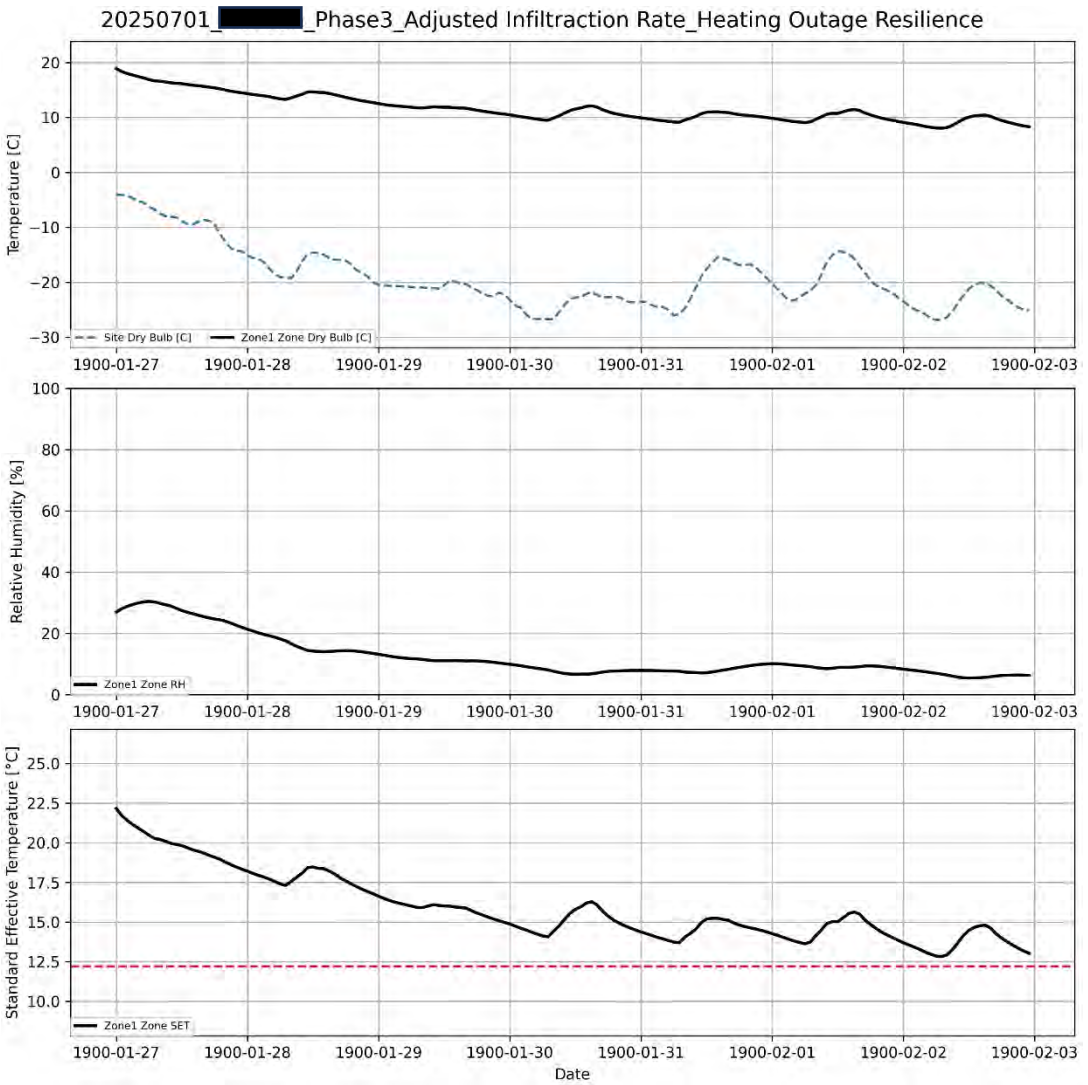


PHASING

CARBON

OUTAGE DATA


20250701_[redacted]_Phase3_Adjusted Infiltraction Rate_Cooling Outage Resilience
Temperature [C]
Site Dry Bulb [C]
Zone1 Zone Dry Bulb [C]
Relative Humidity [%]
Zone1 Zone RH
Heat Index [°C]
ZONE1:Zone Heat Index [C](Hourly)
Date


20250701_[redacted]_Phase3_Adjusted Infiltraction Rate_Heating Outage Resilience
Temperature [C]
Site Dry Bulb [C]
Zone1 Zone Dry Bulb [C]
Relative Humidity [%]
Zone1 Zone RH
Standard Effective Temperature [°C]
Zone1 Zone SET
Date

PHIUS FEEBACK

phius

REVIVE 2024

Good for the planet

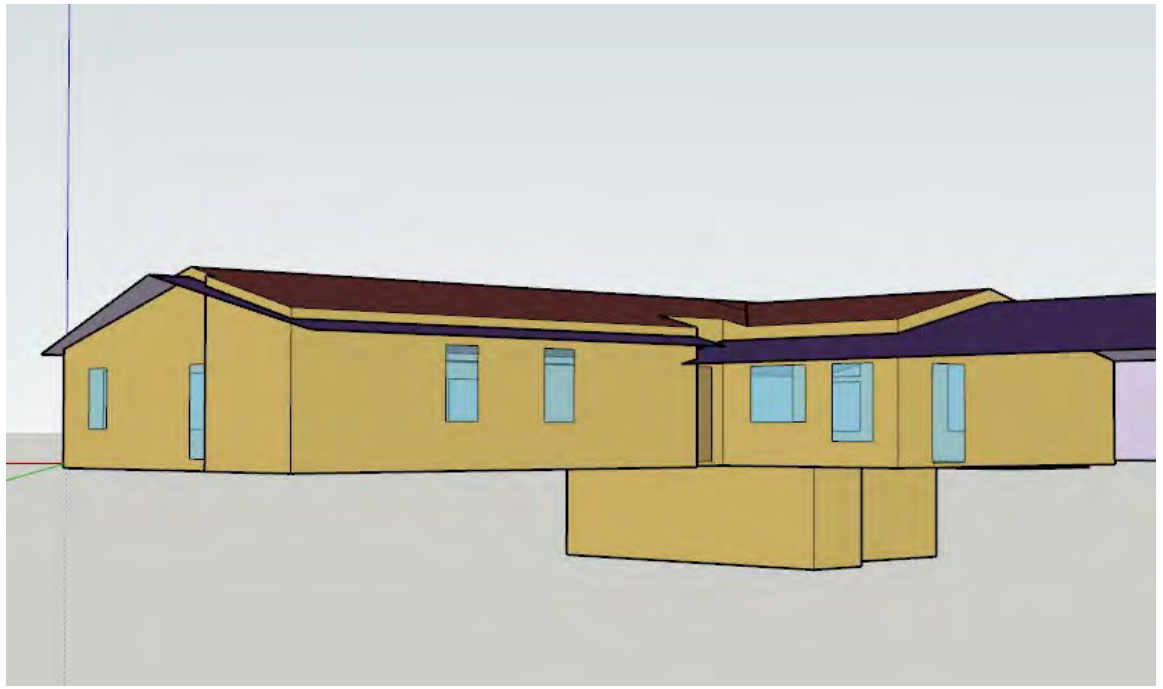
Good for your buildings

Quality assured results

REVIVE 2024 INTERFACE

- MODELING
  - SKETCHUP PLUG-IN
- NESTING (EXCEL SPREADSHEET) DOLLS
  - MATERIAL DATABASE > CONSTRUCTION DATABASE > RUNLIST > SIMULATION

- RESULTS



THANK YOU

QUESTIONS