

***The Field of Dreams EcoCommunity
in Kearns, Utah***

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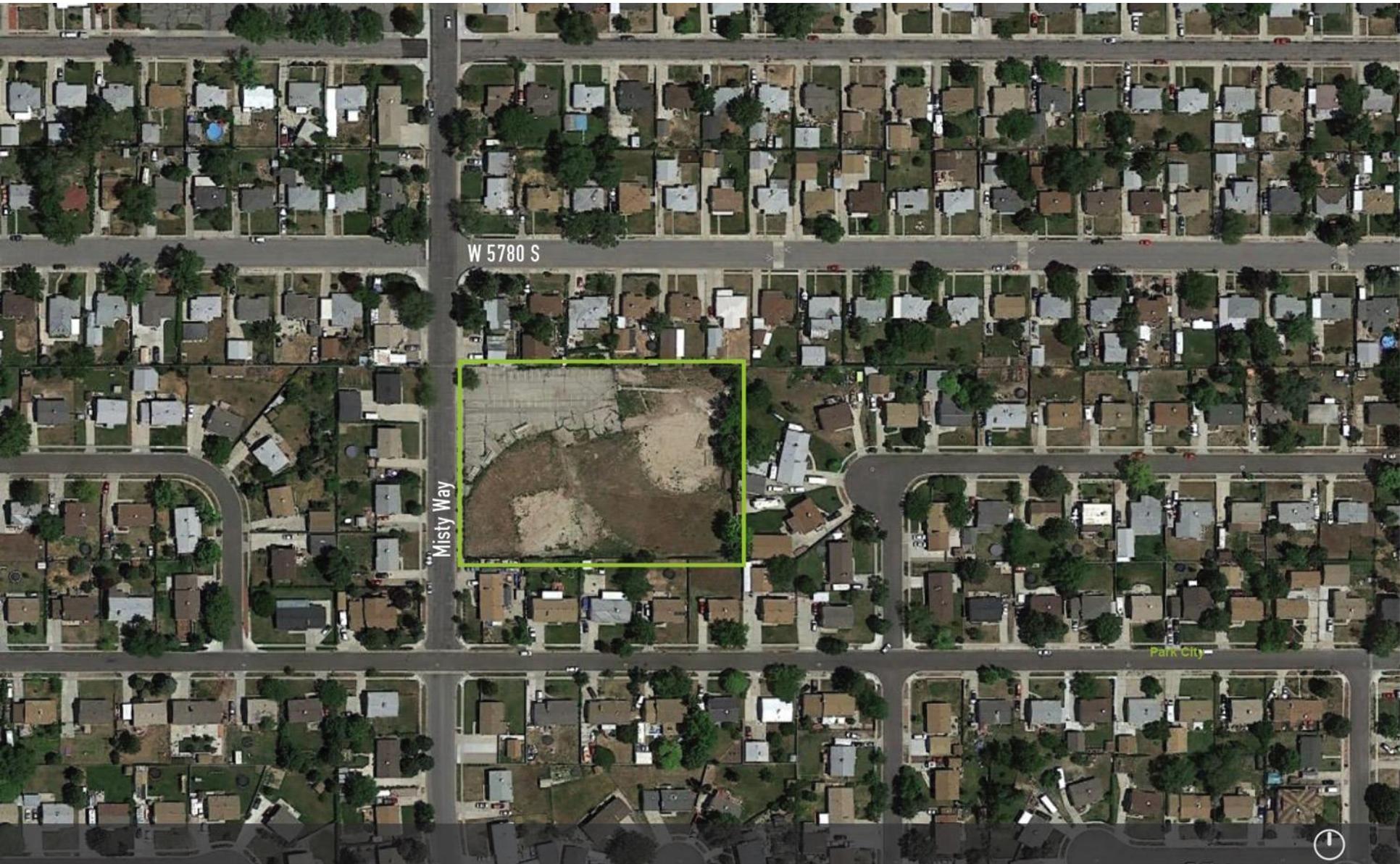
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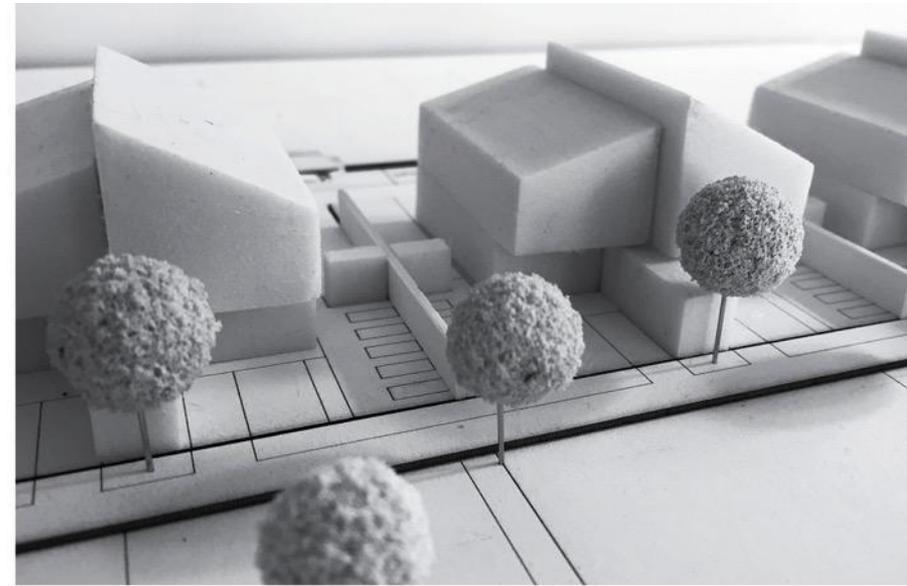
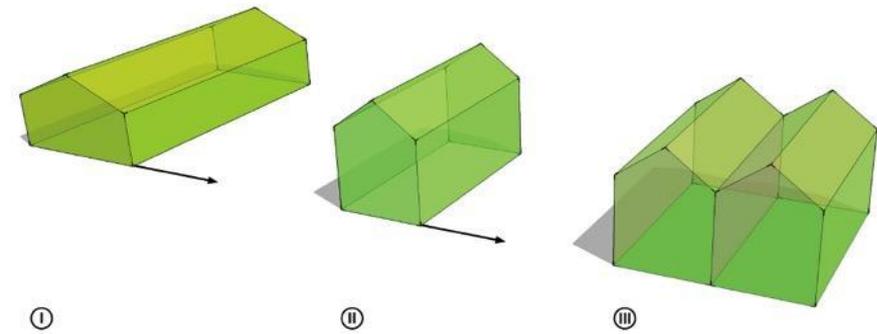
Abandoned Baseball Field as Site

PROJECT GOALS

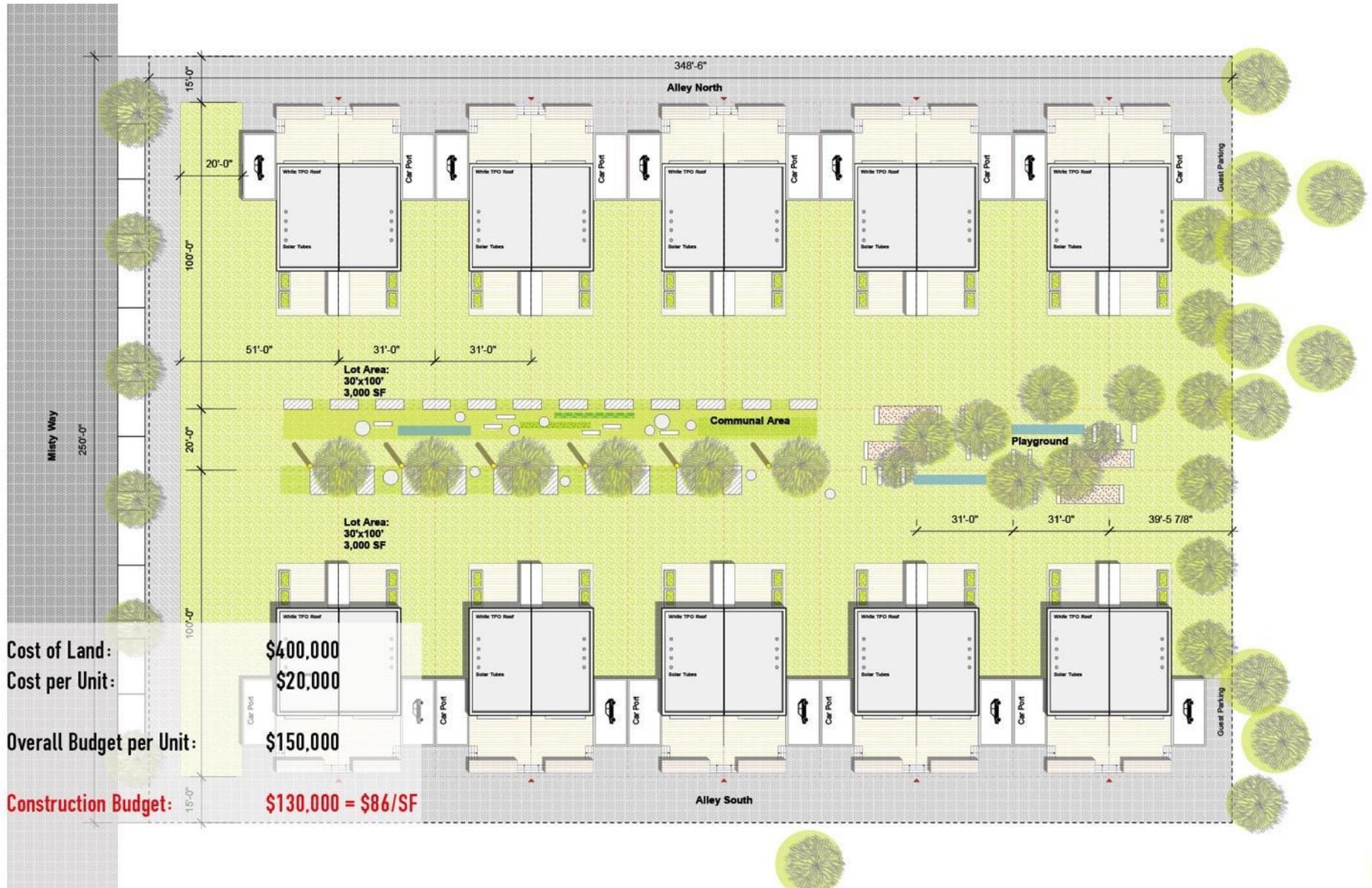
- Development of a **resilient, sustainable** and **affordable** micro-neighborhood on a pristine Baseball Field in Kearns, Utah
- Exploration new means of density in an existing part of the township
- **1,500 SF**, 3-bedroom housing for **people in need** (based on the standard Habitat Home in the region)
- **\$150,000** budget per unit including land
- **\$1.50 / day** for energy to operate the buildings (maximum)



Existing Zoning: R 1-6



Transition in Zoning: R 1-6 to R 1-3



Cost of Land:
Cost per Unit:

\$400,000
\$20,000

Overall Budget per Unit:

\$150,000

Construction Budget:

\$130,000 = \$86/SF

Proposed Existing Zoning: R 1-3 [Double Density]



HOME RUN DRIVE (5805 S)

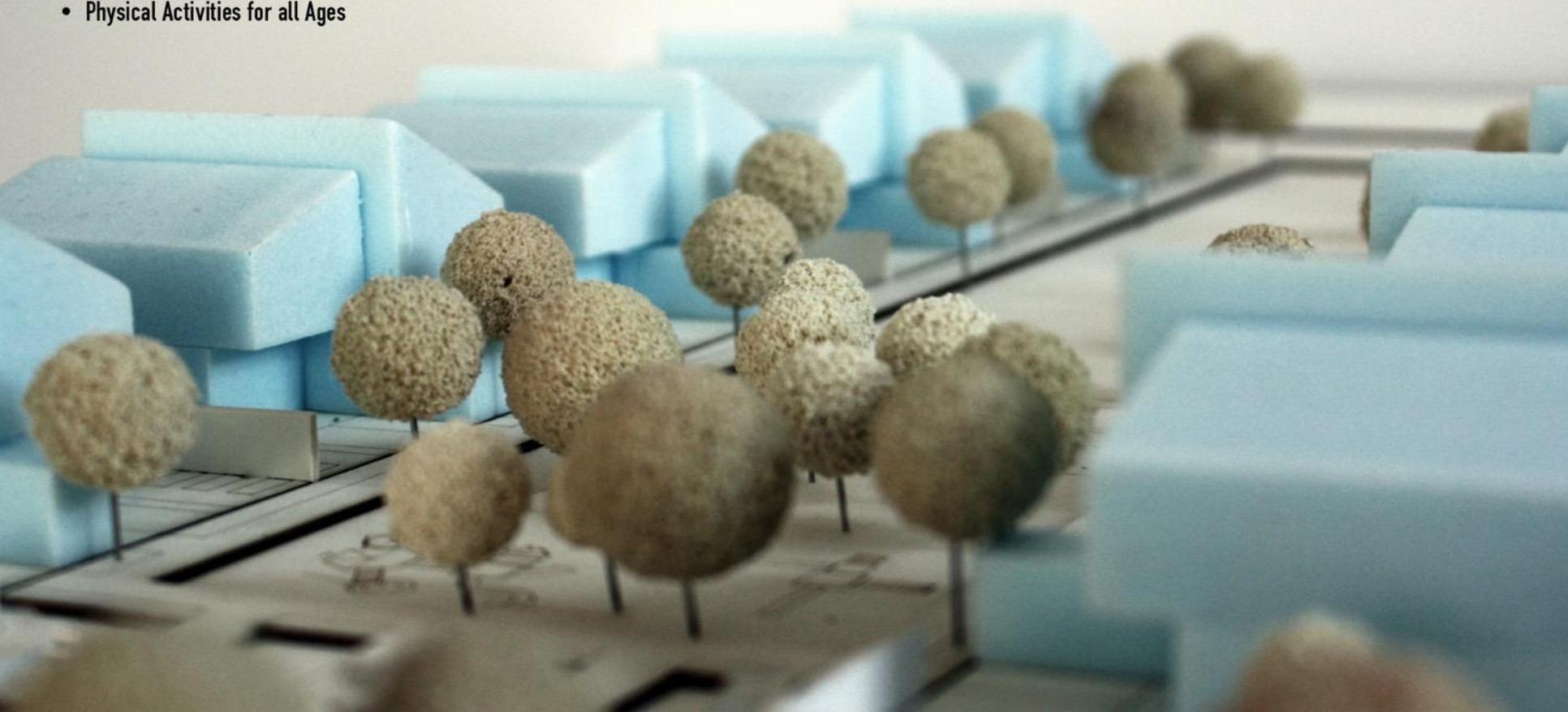
OUTFIELD DRIVE (5835 S)



BOCCIE COURTS
PICNIC PAVILION
TOT LOT
BBQ PAD
SAND BOX
PLAY SET

Community Green:

- Multi-functional Spaces
- Community Gardening
- Outdoor Gathering and Activities
- Views into a Common Green
- Physical Activities for all Ages



Community Green



Elevations South (Garden), North (Alley)

Field of Dreams Eco-Village HVAC Specifications

1) Envelope:

1.1 Walls:

R-40 [h·ft²·°F/Btu] / 0.14 W/(m² K) [Passivhausstandard > 0.15 W/(m² K)]

Assemblies to be explored for ease of construction and cost-effectiveness:

1. 8 ¾" SIPs Structural Insulated Panels with BASF Neopor. Exterior OSB to be air leakage control layer [R-40].

1.2 Roofs:

R-57 [h·ft²·°F/Btu] / 0.1 W/(m² K) [Passivhausstandard > 0.15 W/(m² K)]

Assemblies to be explored for ease of construction and cost-effectiveness:

1. 12" SIPs Structural Insulated Panels with BASF Neopor. Exterior OSB to be air leakage control layer. Open ceilings add to quality of interior spaces.

1.3 Floor Slab:

R-30 [h·ft²·°F/Btu] / 0.185 W/(m² K) [Passivhausstandard > 0.15 W/(m² K)]

Assemblies to be explored for ease of construction and cost-effectiveness:

1. 4" reinforced concrete poured in place on 8" EPS rigid foam insulation. Thermal bridges to be completely eliminated between foundation, stem walls and floor. Polished and sealed finish (if radiant heating).

A 4" layer of aggregate or sand with geotextile matting is installed below the floor slab. A radon piping system is installed to exhaust via the roof.

1.4 Air leakage:

Performance goal is 0.8 ACH₅₀ (220CFM₅₀) or better.

1.5 Façade Materials and Assembly:

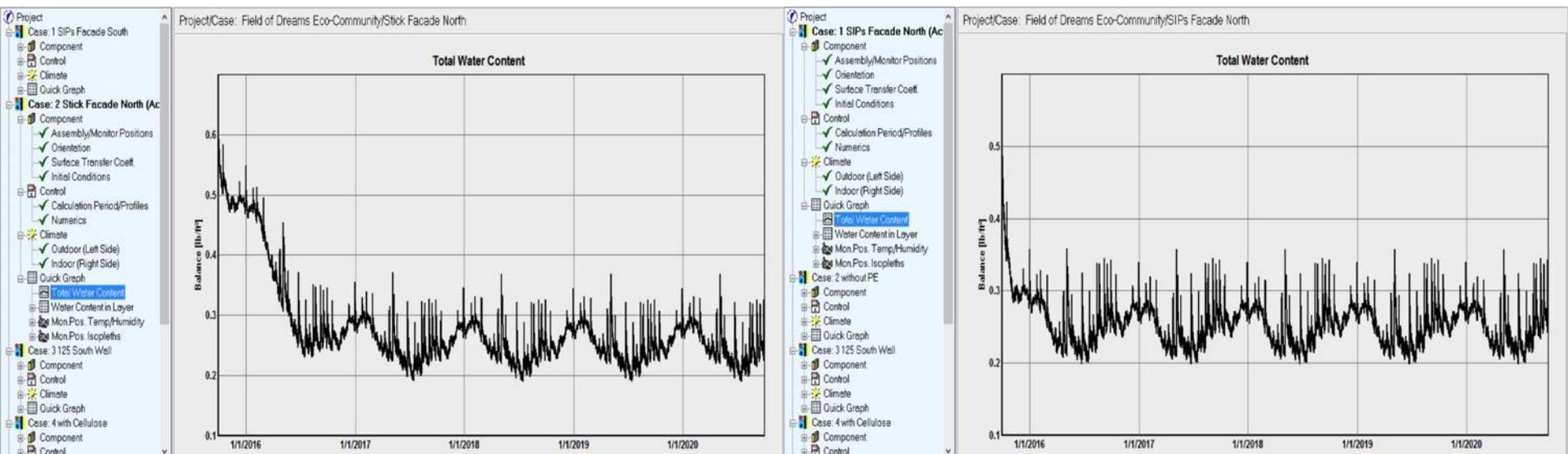
Assemblies to be explored for ease of construction and cost-effectiveness:

1.6 Windows:

U-Factor: 0.25 Btu/h·ft²·°F or better = 1.3 W/(m² K)
[Passivhausstandard > 0.8 W/(m² K)]

SHGC Solar Heat Gain Coefficient: 0.5 (south facing windows)
0.25 (all other orientations)

Component Performance Specification



Wufi Pro 5.2 Results for Moisture Content in a 12” Stick-Framed Wall and a 12” SIPs Panel

Field of Dreams Eco-Community

01.1.1 Code Baseline (Sefaira Plug-in Version)

ASHRAE 90.1 - 2013		Climate Zone 5 - Salt Lake City		Sefaira - Energy Plus			SUM
Heating kBTU/yr	Cooling kBTU/yr	Lighting kBTU/yr	Appliances kBTU/yr	Fans kBTU/yr	Pumps kBTU/yr		
74244	31384	69996	71838	0	0		247462
90% Gas; 10% Electricity		100% electricity	100% electricity	100% electricity	100% electricity	100% electricity	
kWh							
21758.77							
10% electricity kWh	kWh	kWh	kWh	kWh	kWh		
2176	9198	20514	21054	0	0		
DTH							
74.24							
90% Gas DTH							
66.82							
Cost per month per duplex		Cost per month per duplex		Cost per month per duplex			
		438.00					219.00
Cost per year DTH combined		Cost per day per duplex		Cost per day per duplex			
		14.40					7.20
Cost per year DTH combined		Cost per year kWh combined		Cost per year kWh combined			
\$551.93		\$4,704.03					
Conversions and Units				Cost			
1 kBTU =	0.29307106944	kWh	50.09	RMP 11/2015			
1 kBTU =	0.00099998957402	DTH (Dekatherm)	58.26	Questar 08/2015			

Total Floor Area =	2502.00	sq. ft.
Wall	R-13	ft ² *h*/F/BTU
Slab	R-19	ft ² *h*/F/BTU
Roof	R-31	ft ² *h*/F/BTU
Glazing U-Factor	0.32	BTU/ft ² *h*/F
Visible Light Transmittance	0.42	
SHGC	0.40	SHGC
Heating Efficiency	0.85	
Cooling Efficiency	3.00	COP
Infiltration Rate	0.40	cfm/ft2
Ventilation Rate	0.21	cfm/person
Appliances	1.45	W/ft2
Lighting	1.40	W/ft2
Daylight Response	0.00	%



Expected Performance Results per twin home (3,000 ft²) and per unit (1,500 ft²), based on Energy Simulations:

Overall energy consumption: 95 kBTU/ft²/year:

285,000 kBTU/year = 142,500 kBTU/year per unit

Heating: 74,244 kBTU/year = 37,122 kBTU/year per unit = 40 kWh/m²/a

Cooling: 31,334 kBTU/year = 15,667 kBTU/year per unit

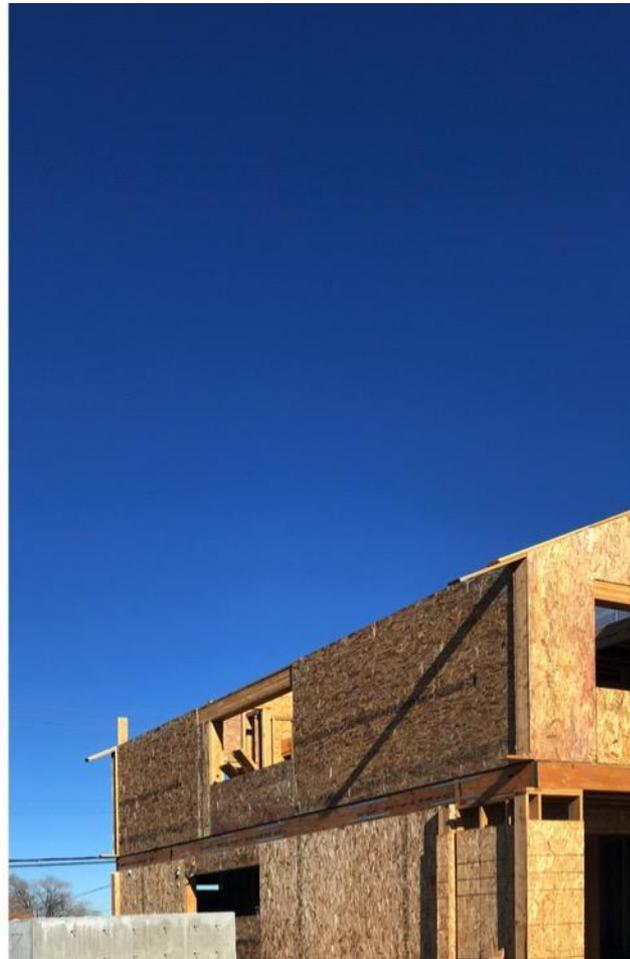
Lighting: 69,996 kBTU/year = 34,998 kBTU/year per unit

Equipment: 71,838 kBTU/year = 35,919 kBTU/year per unit

Sefaira Energy Modeling Results: Code Standard Building



Groundbreaking 09/2016



Construction Winter 2017-18





Volunteers on Site, August 2018



Blower Door Test, August 2018



Post-Occupancy Monitoring Equipment ready to be installed, July 2018



FOD at the Leonardo Museum, Salt Lake City



FOD at the Design Arts Utah Exhibit, Salt Lake City, September 2018



Dedication of the first two units, September 14, 2018



Almost done.....

? + !

Thank you very much!

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