

Meftah

Jeff

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### Energy Consumptions:

Model	Energy Consumptions (with PV) [MMBtu/yr]	Savings (with PV) [%]
Baseline	529.5	0
Trial 1	311.3	41
Trial 2	315.7 (286.3)	40 (46)
Trial 3	320.2 (292.3)	39 (45)
<b>Trial 4</b>	<b>297.2 (237.6)</b>	<b>44 (55)</b>
Trial 5	300.9 (241.3)	43 (54)

### Key differences among the baseline and five other models:

#### 1. Walls

Baseline	Wood Stud (20) R-22 Fiberglass, 2x6, 24 in oc.	R-18.2
Trial 1	SIP (5) 9.4 in EPS Core	R-36.6
Trial 2	CMU (26) 6-in Perlite filled R-19 Fiberglass Wall shearing (5) R-15 XPS	R-22.9 R-15
Trial 3	ICF (4) 2'' EPS, 12'' Concrete, 2'' EPS Wall shearing (7) R-12 Polyiso.	R-23.1 R-12
Trial 4	Wood Stud (17) R-36 Closed Cell Spray Wall Shearing (7) R-12 Polyiso.	R-23 R-12
Trial 5	Wood Stud (17) R-36 Closed Cell Spray Wall Shearing (7) R-12 Polyiso.	R-23 R-12

#### 2. Roof

Baseline	Finished Roof (38) Baseline R-38 Fiberglass Roof Materials (20) Asphalt Shingles, Medium	R-34.6 Emissivity 0.91
Trial 1	Finished Roof (21) R-38C Fiberglass. Roof Materials (9) Metal dark	R-61 Emissivity 0.90
Trial 2	Finished Roof (21) R-38C Fiberglass. Roof Materials (1) Asphalt Shingles Dark	R-61 Emissivity 0.91
Trial 3	Finished Roof (20) R-38C Fiberglass.	R-60.3

	Roof Materials (10) Metal Medium	Emissivity 0.90
Trial 4	Finished Roof (20) R-38C Fiberglass. Roof Materials (11) Metal Light	R-60.3 Emissivity 0.88
Trial 5	Finished Roof (20) R-38C Fiberglass. Roof Materials (11) Metal Light	R-60.3 Emissivity 0.88

### 3. Windows:

Baseline	(11) Low-E Double Insulated	U-0.3
Trial 1	(23) Low-E Tripple Insulated	U-0.17
Trial 2	(23) Low-E Tripple Insulated	U-0.17
Trial 3	(23) Low-E Tripple Insulated	U-0.17
Trial 4	(23) Low-E Tripple Insulated	U-0.17
Trial 5	(23) Low-E Tripple Insulated	U-0.17

### 4. Space Conditioning (HVAC System)

Baseline	Central Air Conditioning (5) SEER 16 Furnace (7) Gas, 95% AFUE	SEER 16 AFUE 0.95
Trial 1	Central Air Conditioning (9) SEER 21 Furnace (1) Electric, 100% AFUE	SEER 21 AFUE 1.0
Trial 2	Central Air Conditioning (10) SEER 24.5 Furnace (6) Gas, 92.5% AFUE	SEER 24.5 AFUE 0.925
Trial 3	Central Air Conditioning (10) SEER 24.5 Furnace (7) Gas, 95% AFUE	SEER 24.5 AFUE 0.95
Trial 4	Central Air Conditioning (10) SEER 24.5 Furnace (7) Gas, 95% AFUE	SEER 24.5 AFUE 0.95
Trial 5	Ground Source HP (13) EER 20.2 COP 4.2	COP 4.2

### 5. Water Heating

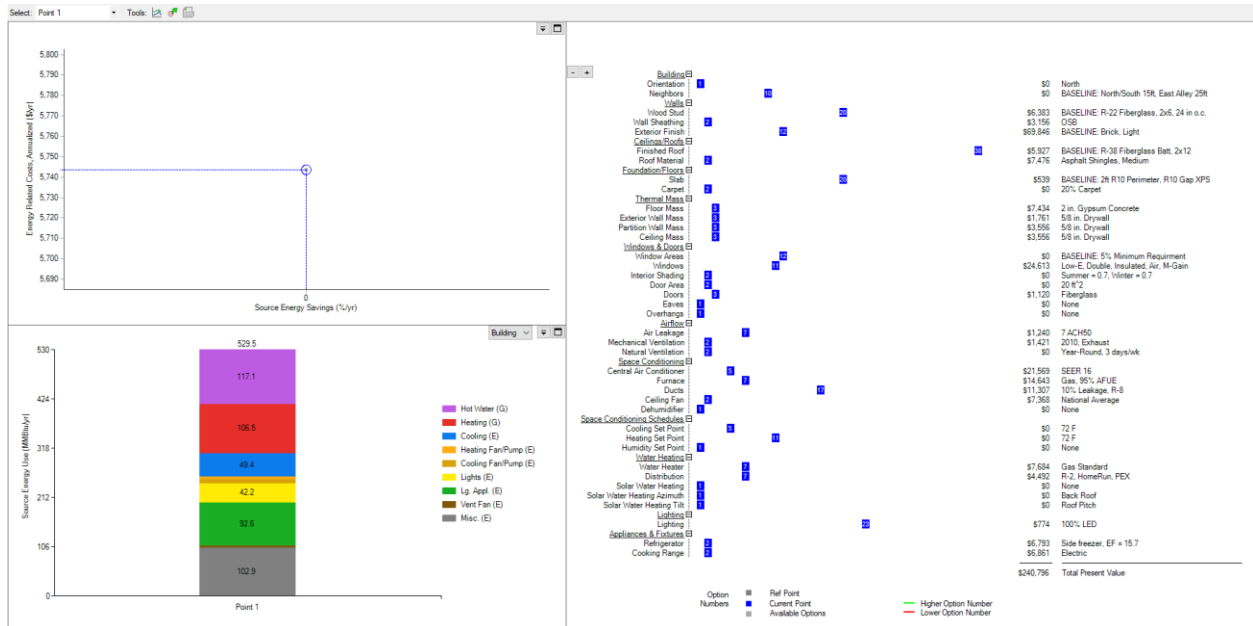
Baseline	Water Heater (7) Gas Standard	Energy factor 0.59
Trial 1	Water Heater (4) Electric Premium	Energy factor 0.95
Trial 2	Water Heater (5) Electric Trackless Solar Water Heating (2) 40 sqft/unit	Energy factor 0.99 Pumping Power 128 W
Trial 3	Water Heater (7) Gas Standard Solar Water Heating (3) 64 sqft/unit	Energy factor 0.99 Pumping Power 204.8 W
Trial 4	Water Heater (7) Gas Standard	Energy factor 0.99

	Solar Water Heating (3) 64 sqft/unit	Pumping Power 204.8 W
Trial 5	Water Heater (7) Gas Standard	Energy factor 0.99
	Solar Water Heating (3) 64 sqft/unit	Pumping Power 204.8 W

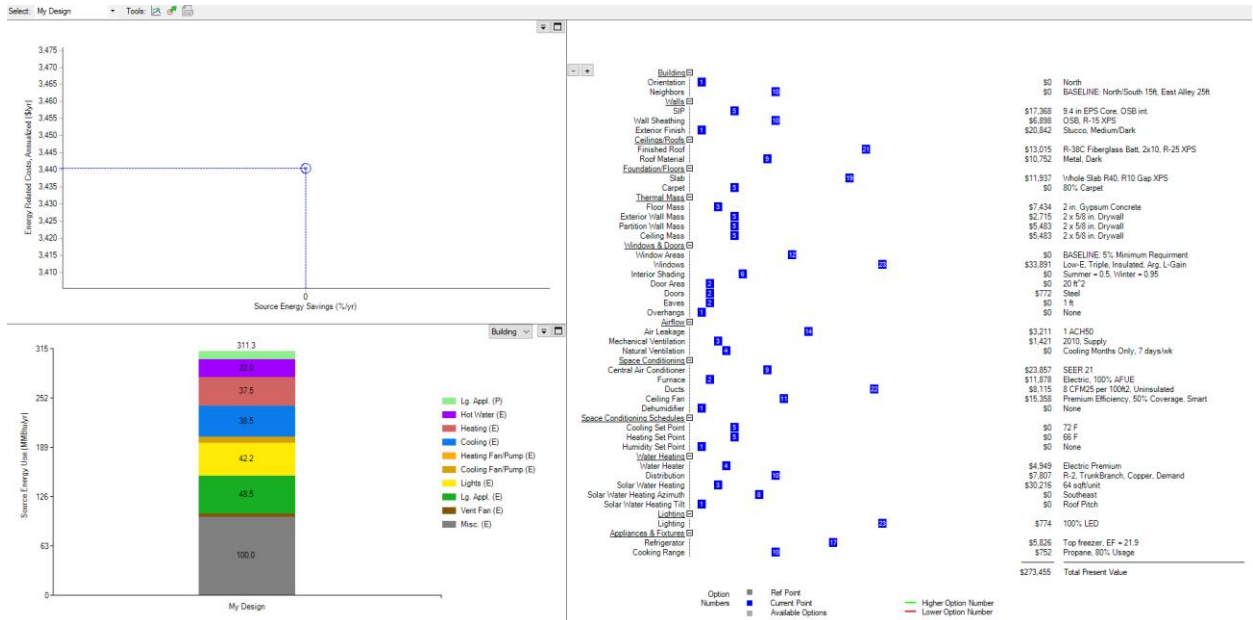
## 6. PV System

Baseline	No PV	
Trial 1	No PV	
Trial 2	2 kW	Tilt 23.8 deg
Trial 3	2 kW	Tilt 38.8 deg
Trial 4	4 kW	Tilt 38.8 deg
Trial 5	4 kW	Tilt 38.8 deg

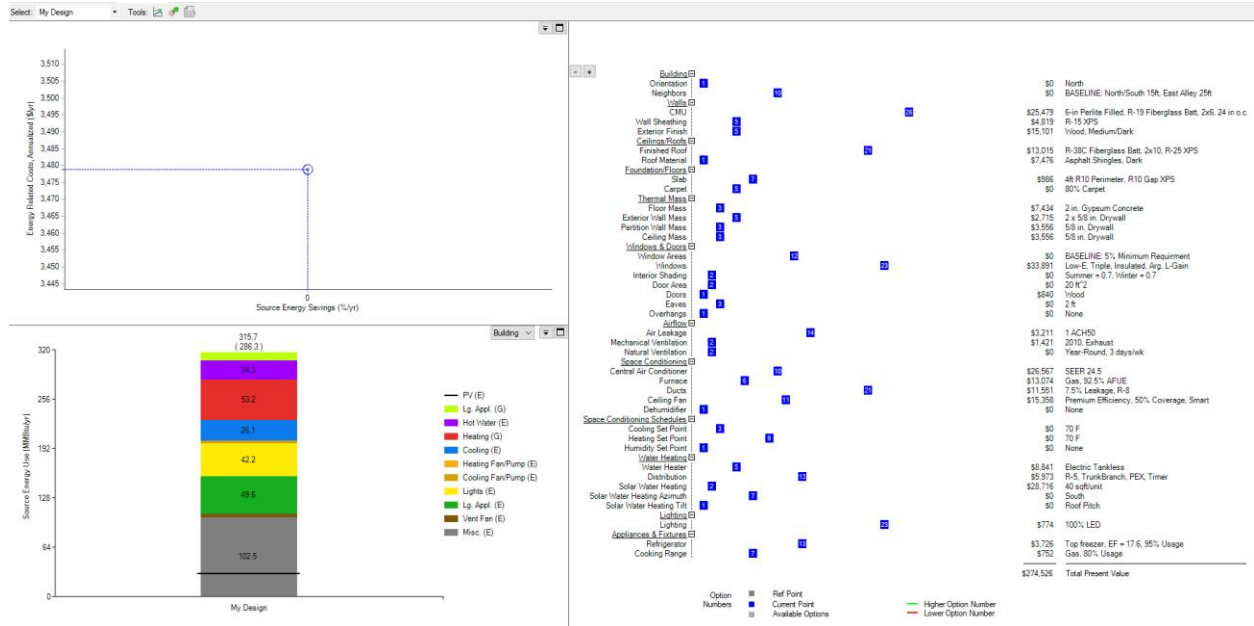
## 1. Baseline



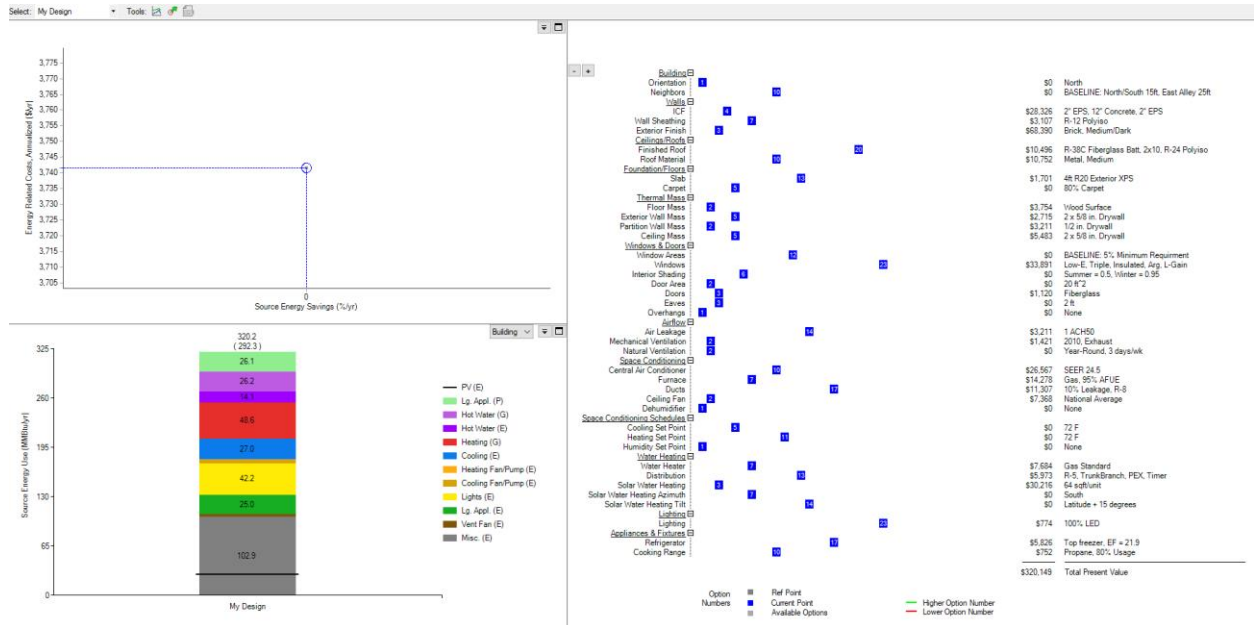
## 2. Trial 1



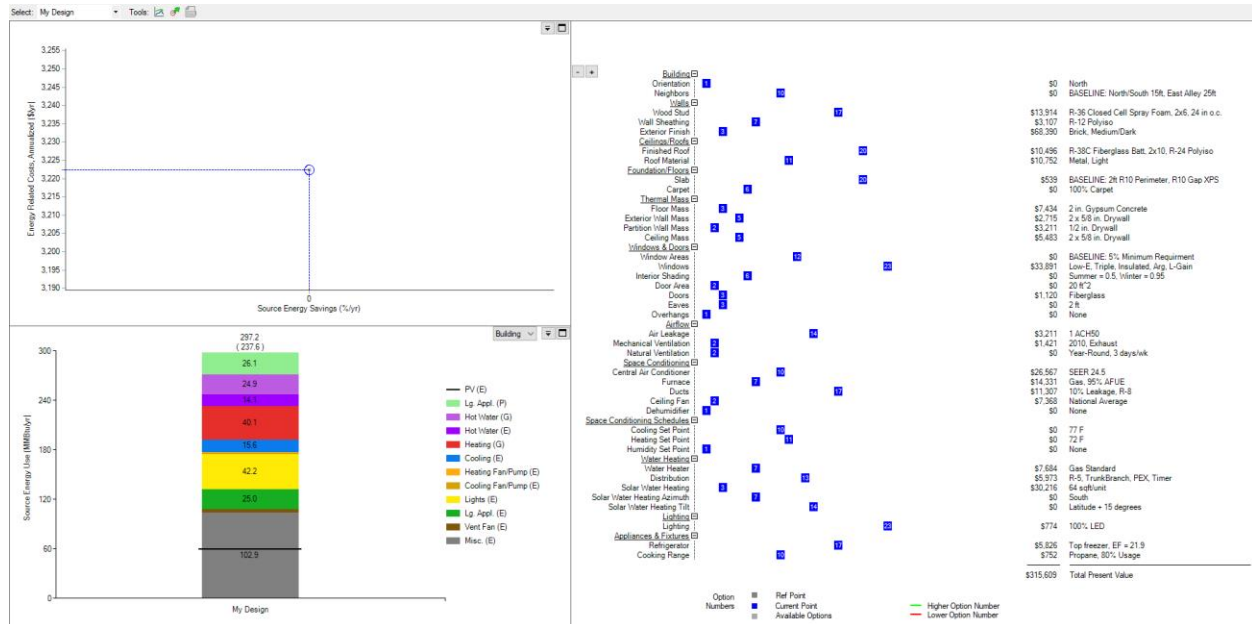
### 3. Trial 2



### 4. Trial 3



## 5. Trial 4



## 6. Trial 5

