HELIOCENTRIC
ENERGY ENGINEERING • BUILDING SCIENCE • PASSIVE SOLAR

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STATEMENT OF ENERGY PERFORMANCE

Meehan Cabin 7914 E. Heartwood Drive Powder Mountain, UT	Architect: Lloyd Architects Date: 1/1/8/18

Year Built: Planned for 2018

I hereby certify the information contained in the enclosed simulation results for the proposed home are accurate and have been simulated with EnergyPlus 7.0, which has been validated against BESTEST ANSI/ASHRAE Standard 140-2004, and run in accordance with the IECC 2018 Section N1105.3 (R405.3) Performance Based Compliance.

The following IECC 2015 Section N1105.3 (R405.3) simulated performance analysis is a more thorough and accurate IECC compliance alternative to RESCheck and Manual J. If you have questions, feel free to contact me.

Analysis prepared by:

John Easterling
Heliocentric
206.679.5720

Building details

The table below outlines the building components used in our code compliant simulation and our as designed simulation.

	As Designed	Code Compliant
Walls	5” Rigid Roam (R25 Continuous)	2x6 with Fiberglass Batt + 1” Rigid (R20 + R5)
Roof	9-1/4” Fiberglass BIB + 4” EPS Foam (R54)	12” Fiberglass Batt (R49)
Windows	Triple Pane Low-E with Air	Double Pane 272 with Air
Window Layout	Per Plans	Per Table N1105.5.2(1) [R405.5.2(1)]
Doors	R2	R2
External Floor	3” Concrete over 2x10 with BIB Fiberglass (R37)	R30
Infiltration	ACH50 = 1.5 Guaranteed by Blower Door	ACH50 = 3.0 (per IECC)

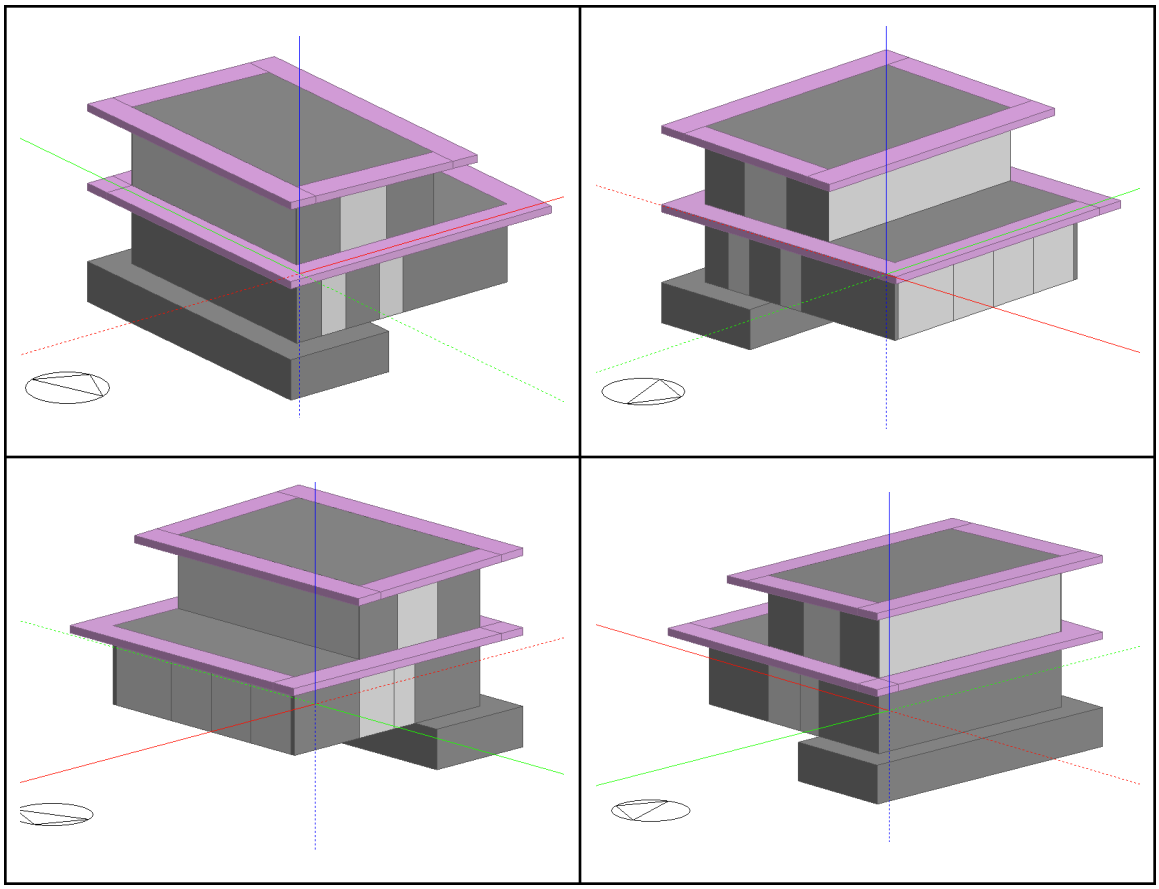
Building Energy Analysis

Below is the analysis from Energyplus 7.0 showing the energy requirements as compared to the IECC 2015 code compliant standards. The proposed building uses 9.0 MBtu/year versus the code compliant house at 25.1 MBtu/year – a 36% reduction in heating energy. The proposed build will use an electric boiler rather than a propane boiler. The table below requirements per N1105.3

	As Designed	Code Compliant
Heating Energy	9.0 MBtu/yr	25.1 MBtu/yr
Heater Efficiency	99%	90%
Energy Cost*	10.6¢/kWh	$2.40/gal
Annual Operation Cost	$280	$735

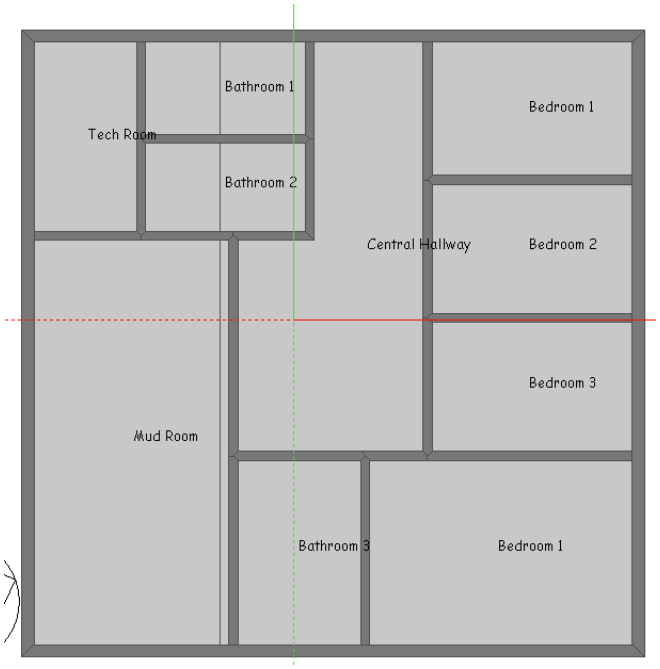
**Energy cost from the DOE Energy Information Agency*
***Propane**: https://www.eia.gov/dnav/pet/PET_PRI_WFR_A_EPLLPA_PRS_DPGAL_W.htm*
***Electricity**: https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a*

Simulation Model Picture

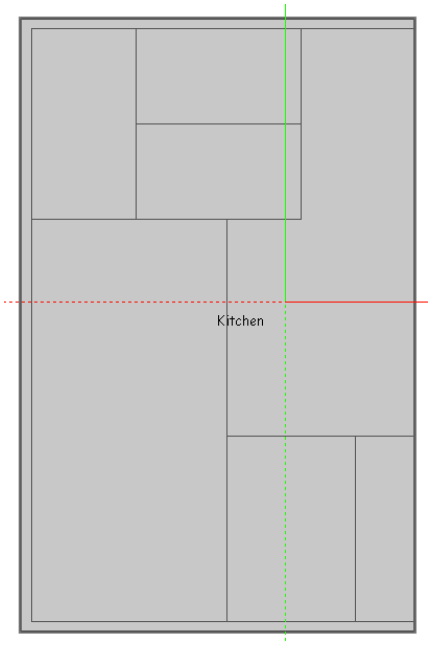


Model Zoning

Main Floor



Upper Floor



HVAC Sizing
Below the analysis from Energyplus 7.0 shows the HVAC sizing.

Zone	Heating Design Loads (kBtu/hr)
Bedroom 1	1.9
Bedroom 2	1.6
Bedroom 3	1.6
Bedroom 1	2.8
Central Hallway	1.9
Bathroom 3	1.1
Mud Room	2.6
Tech Room	1.0
Bathroom 2	0.4
Bathroom 1	1.0
Kitchen	15.3
Crawlspace	0.0

Total	31.1