EcoHome

- Location? Boise, Idaho
- What abiotic factors are important to take into consideration at this home site?
    1. Taxes
    2. Natural disasters
    3. Land
    4. Precipitation and general weather patterns
    5. Culture
- What type of materials would you use to build your house?

My windows would be energy star windows. The Low-E glass has the ability to deflect heat and saves energy from leaving or entering the house. They are as low maintenance as the average window.

I plan to use recycled products in my house to reduce spending on the production of materials. I will use recycled rubber for my roof to reduce weight and maintenance. I would frame the house in recycled steel because the steel would be more durable than a typical wood frame. The steel would actually require less material too once repurposed.

For insulation, Plant-based Polyurethane Rigid Foam seems promising. It provides protection against mold and pests. It also has a higher R-value than fiberglass or polystyrene, meaning that it has a higher thermal resistance and insulates better.

The outer siding of the house will be made out of an interchangeable bamboo facade system. The design promotes cooling by natural ventilation. By positioning the bamboo in certain ways, it reduces the amount of heat released from the inside of the house. The bamboo is also extremely durable to the weather it will experience.

- How will you meet your electricity needs sustainably?

I will collect the rainwater from my roof and store it. I will then use my geothermal energy to heat it up, to create steam that will then turn a turbine to create electricity. I will also use my photovoltaic panels to convert the thermal energy to heat the ions in the grid. Those ions will then create enough energy to turn a turbine that will then generate electricity. A third source of electricity I would have on my property would be my own personal hygro pump. I would essentially create my own miniature dam. By utilizing the hill I could convert the potential energy to kinetic using a spinning wheel that would turn by dumping the water at the top of a basin into the buckets to pull the water down. This force of gravity would spin the wheel that would rotate a turbine. The turbine would then create electricity. In order for the wheel to continuously turn I would have the buckets pick up the water at the bottom of the bin and by using the inertia of the wheel the water would be carried up into a basin at the top.How will you meet your fresh water needs sustainably?

I will be connected to the public utilities of the city. I will not have enough water coming from the rain storage unit.

- How you meet you home heating needs sustainably?

I will use the geothermal unit to warm the house. If this is not enough, I have a fireplace in my living room to heat up the main plane of my house. As a last resort, I will have propane on sight to burn from my oven.

- How you meet you home cooling needs sustainably?

I will use the geothermal unit to cool the house. The electricity for that will come from the photovoltaic panels.

- How you prepare food sustainable?

I will have an in ground nursery. This way the ground can absorb the heat during the day, but in the cold months it could be covered against intense winds. That could apply year round too. By controlling the nursery better I could potentially grow my food longer than the average growing season in the area. To store food, I have a large storage room. If I learned to can my food I could make it last long into the winter months if my original plan of year long harvest fails. To cook food I would either use my fireplace to help smoke meats if I needed, but I plan to live off of a vegetarian diet. I may also use propane in my oven. When this process comes to an end I will have a decomposition garden. We use something like this at my current residence. In rotations I could change the gardens between a harvest ground to a decomposition ground. This will allow the soil to heal in between growing the crops.

- How will you handle your sewage water sustainably?

Some of the humanure will go to my garden. The rest of the will be sorted at the flush with the separate levers based on the kind of waste. One pump to flush solid waste and another to flush liquid waste. Those pipes will be connected to the city plumbing.

- Explain how you obtained your interior furnishing

Most of my furniture will be plant-based Polyurethane Rigid Foam. It will protection against mold and pests. It is insulated better, so it will be promising for the cold months when it should absorb the heat from the fireplace. I will mostly buy from Crate and Barrel. This is because Crate and Barrel is the first North American home retailer to work directly with the Tropical Forest Trust (TFT). The TFT ensures that certain hardwoods selected for the production of their furniture are from plantations that are responsibly and socially managed for their long-term conservation.

- Other features you've included in your EcoHome presentations.

I will use programmable thermostats to control indoor temperatures. All doors and windows will be sealed with weatherstripping and caulking to reduce air infiltration. If my personal renewable energy sources are not functioning properly I have a back up high-efficiency furnace that controls heating and cooling of rooms with considerable conservation. My house is facing south to maximize natural lighting in my home. My favorite part of the house would have to be the timers for water. The timers will be set to times when hot water is needed, so that energy is not being used 24 hours a day. This also helps to motivate cutting down on excessive water consumption. This ties with the low-flow showerhead to contribute to a lower energy bill. The dryer will have automatic sensors that can tell when the clothes are dry. The washing machine will be designed with a horizontal axis to maximize efficiency. I am extremely proud of my miniature hydro dam. It will take the idea of a massive dam and shrink the problems of having the take out large areas to harness the hydropower. With my dam, it can be better controlled and less destructive. I would be excited to put my humanure to use. This way I cut down on paying for the sewage maintenance and have personal fertilizer. It is a win- win situation.

Country	United States
State/region	Western Idaho
City	Boise
Latitude and longitude	43.6167 'N, 116.2000 'W
Elevation	2,730 ft (830 m)
Topography	River canyons, Mountainous, Great Basin

	Summer	Fall	Winter	Spring
Average Temperature	75.8 F	52.8 F	31.3 F	50.8 F
Average Precipitation	0.3 In	0.8 In	1.2 In	1.2 In
Average Humidity	34.3%	50.5%	76.1%	53.3%
Average Wind Speed	7.7 mph	7.3 mph	6.9 mph	8.9 mph

	Traditional method	Traditional demand	How you will meet your needs	2nd choice
Electricity	Fossil fuel-fired power	10,0000 Kilowatt-hrs/yrs or 25-30 kW-hr/day per household	Photovoltaic panels	Hydro dam
Heating	Air blows over coils that contain refrigerated fluid		Geothermal pipeline	Burning firewood
Cooling	Air blows over coils that contain refrigerated fluid		Geothermal pipeline	Open windows
Insulation	Fiberglass in walls and roof		Plant-based Polyurethane Rigid Foam	Straw bales
Clean water	Public water lines from city aquifer, lake, etc	200 l/day per person (includes hot water)	Rain runoff	Public pipeline
Hot water	Electric or gas water heater	100 l/day per person	Geothermal pipeline	Propane
Sewage Water	City pipe to municipal water treatment plant	Grey and sewage =220 gallons per day	Humanure	City pipeline
Trash Disposal	Public sanitation pick-up, goes to landfill	2 Kg/day per person	Decomposition garden	Public sanitation
Washing and drying clothes			Washing machine and clothesline	Washing machine and dryer when needed
Furnishing	Department store		Recycling	Crate and Barrel