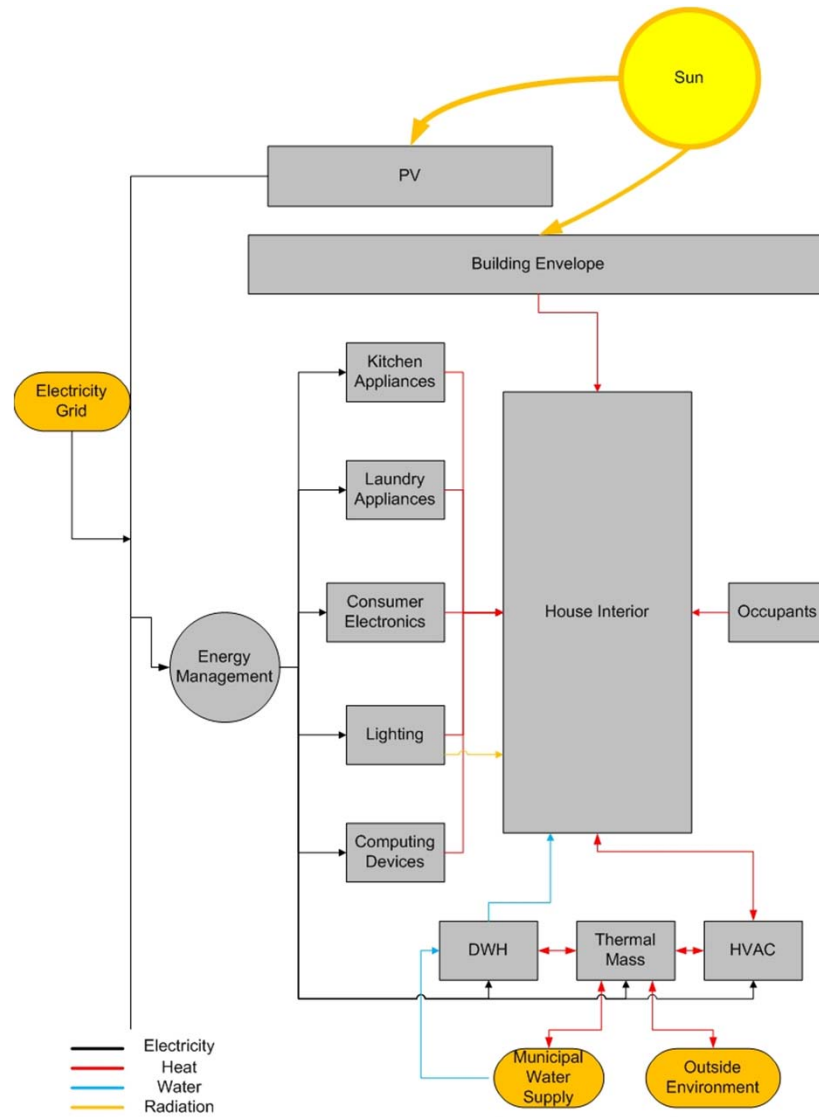


CALIFORNIA INSTITUTE OF TECHNOLOGY
CS/EE/ME 75 - Introduction to Multidisciplinary
Systems Engineering
Solar Decathlon 2011

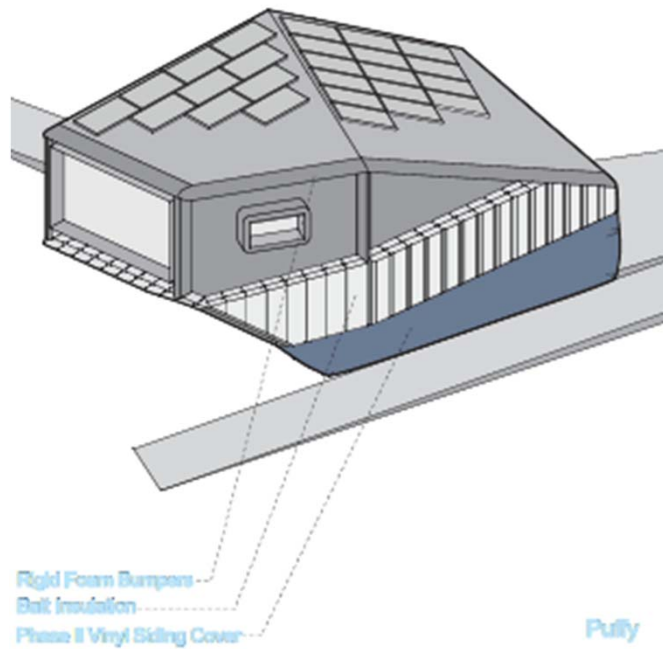
Engineering Baselines

Fei Yang
9/27/2010

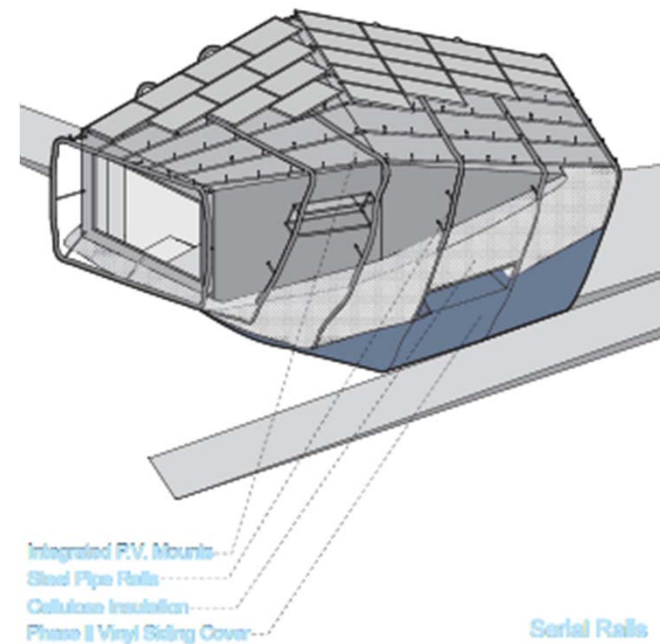
Engineering System



Building Shell

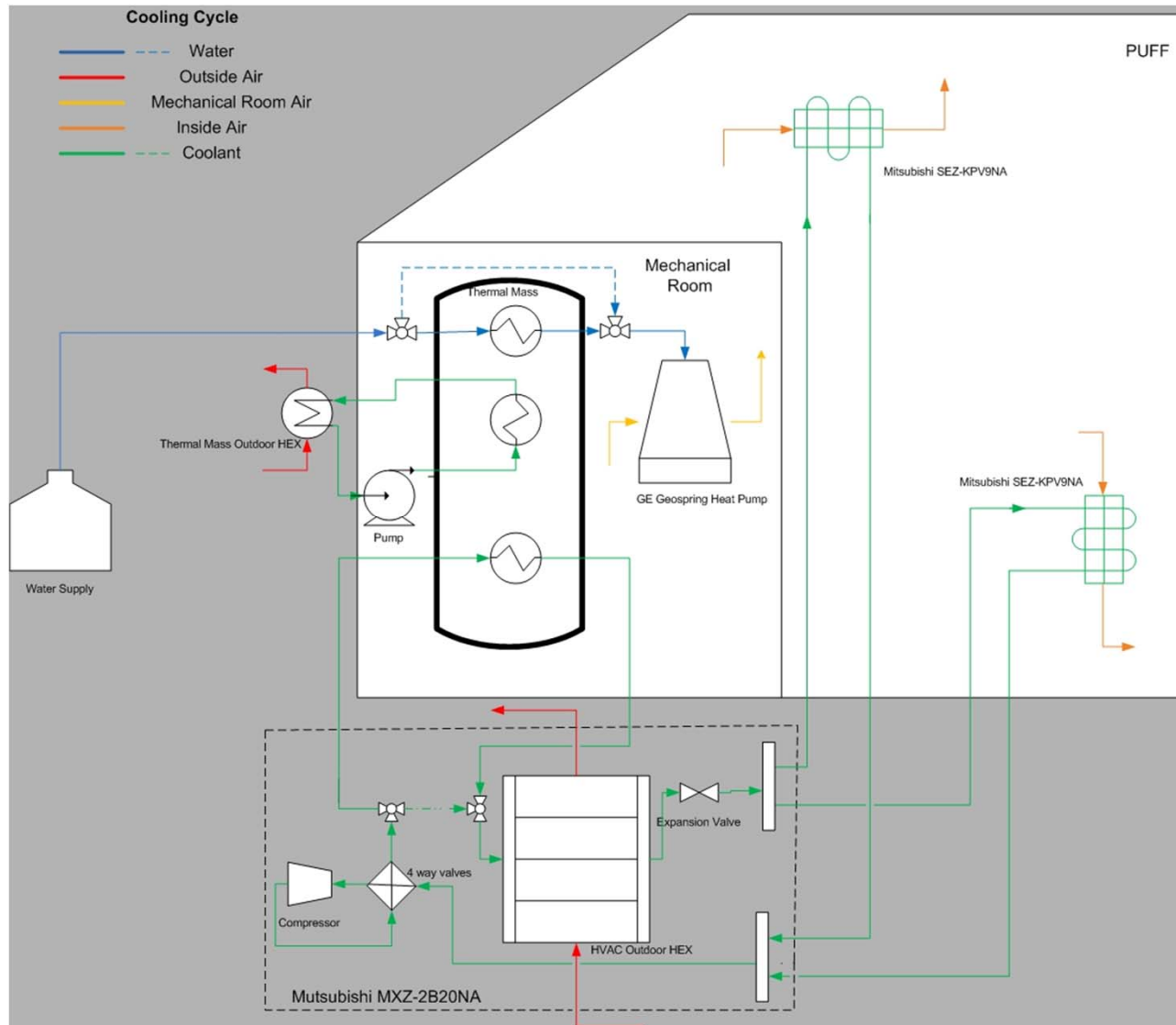


Option 1: Puffer



Option 2: Tenser

HVAC/Domestic Hot Water



Photovoltaics

- **39 Sanyo 205 Panels**
- **8.0 kW system**
- **16 panels mounted flat**
- **23 panels mounted at 25 degrees facing South**
- **Expected to provide 25-26 kWh/day on average during the competition period**

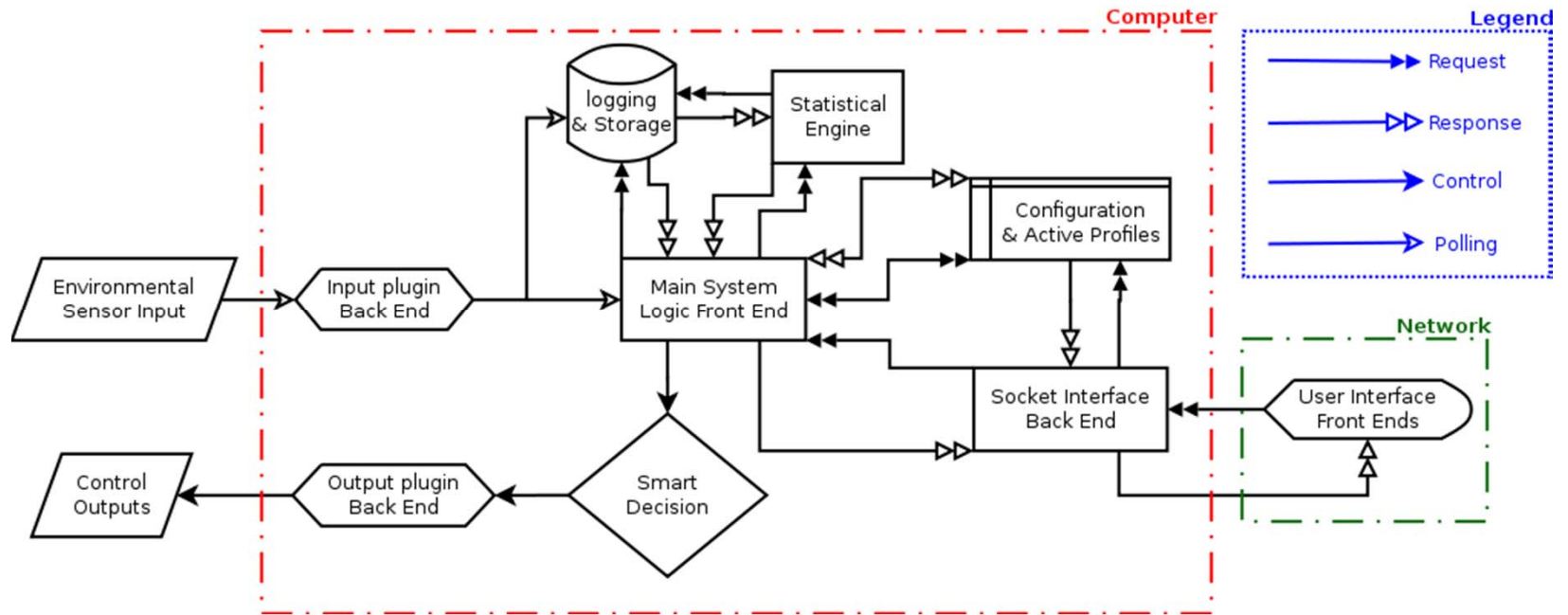
Appliances/Consumer Electronics

- **Kitchen Appliances**
 - 1 Refrigerator
 - 1 Freezer
 - 1 Dishwasher
 - 1 Range
- **Laundry Appliances**
 - 1 Clothes Washer
 - 1 Clothes Dryer
- **Home Electronics**
 - 1 TV
 - 1 Computer

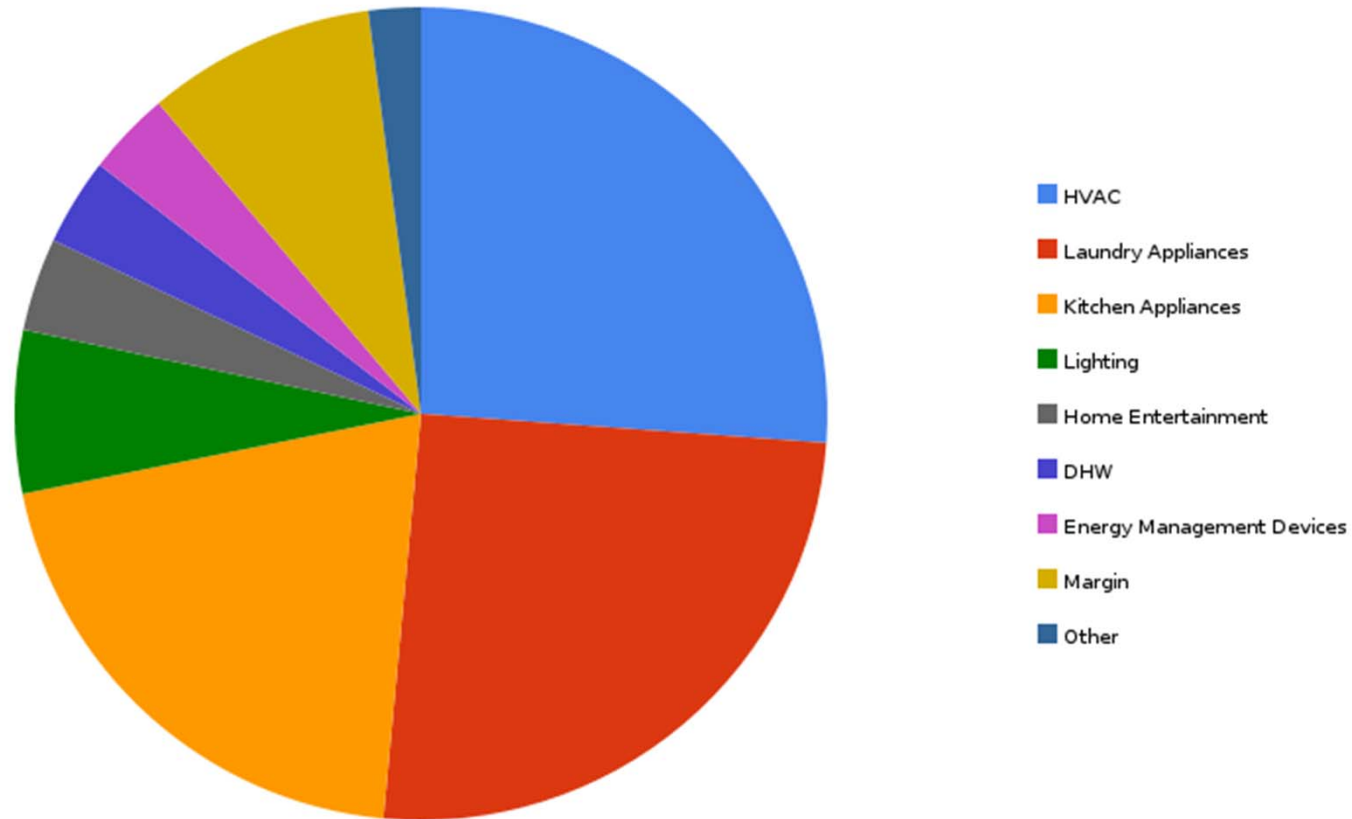
Lighting

- **Daytime:**
 - **5 Solar Tubes** evenly distributed on the roof space
 - **2 Light Louvers** for the windows
- **Nighttime:**
 - **Combination of LED fixtures and/or fluorescent tubes** to be determined based on costs, energy usage, and thermal output

Energy Management



Energy Budget



Total Energy Consumption: 22 kWh/day

Total Energy Generation Needed to Reach Net-Zero: 30 kWh/day