Redesign America

Group Project
4 people in your house

Reference 1950s space use @ 500sf per person = 2000 sf house
Demographic fact – Portland's affordability of housing declined more than any other city in the United States. low income households have moved into renter options, little more than tenements. *Phillip Langdon, Urbanist March 12, 2005 http://ti.org/vaupdate52.html*

1. What are your materials options to save the forest in Oregon?
    a. Make a list of viable options and what part of the house you would replace? (perhaps draw a sketch of a house w/ arrows)
    b. If you replaced the wood frame in your house at (13,127 bd ft) per 2,000 sf house. How many trees can you save if you replaced 2,200 new house permits issued in 2004?
    c. How many acres are you saving? use this web link to determine the spacing http://www.state.sc.us/forest/nurspa.htm
    d. what is the cost of the trees if a forester sells at $12 per thousand board feet?

Information: Cost of timber: $12 per thousand board feet. The tree is worth about three times more as sawtimber than as pulpwood. (2.8 cords per 1,000 board ft. 4 trees per cord.) Given 13,127 bd ft of framing lumber per 2,000 sf house = 13.13 x 2.8 cords = 36.7 cords x 4 trees per cord = 147 trees at 12" diam x 60 feet tall a standard second growth pine tree) http://www.aces.edu/pubs/docs/A/ANR-0263/ANR-0263.html

2. Energy options – 50% space heating; 25% water heating; 25% appliances

3. Offset elec. water heating to solar – size the system
    a. to size the flat plate ollector add 20sf for person 1, 20 sf for person 2, 12 for each person thereafter.
    b. water storage needs to be 1sf to 1.5 gallons of water
    c. find your electric bill, deduct 25% of the cost that you are not using for water heating, how much money can you save?
    d. Use estimated cost of $1500 for a 4 person system

4. Photovoltaic options – size the system as grid tie (use handout sheet)
    a. size for 30 kwh average household in America first
    b. look at the list of appliances and make some changes
    c. recalculate your daily kwh consumption and resize your system
    d. does your system payback in 20 years?
    e. do you have enough space on your roof for your system? (how large is the south facing side of your roof?)

f. what is your final cost w/ the energy trust incentive? deduct $3.25 watt from your total retail cost of the system? and then 1500 for the state tax credit

5. Water options – calculate your RWP for the house above
   a. how much water can you offset by collecting your potential
   b. find your water bill, 1 CCF = 748 gallons = $ per CCF
   c. multiply that same cost by the number of gallons you collect in your RWP, how much money can you save?
   d. Are you a conservative water user @ 40 gal pp or conventional at 75gal? you choose according to your group.

Bring all of your equations and work to class on Monday, we'll add one more part to it with our work in class on Monday and turn it all in. Each group will compare and we'll see how we did. Have fun. There are lots of links at the bottom of your webcalendar that will help.

Enjoy!