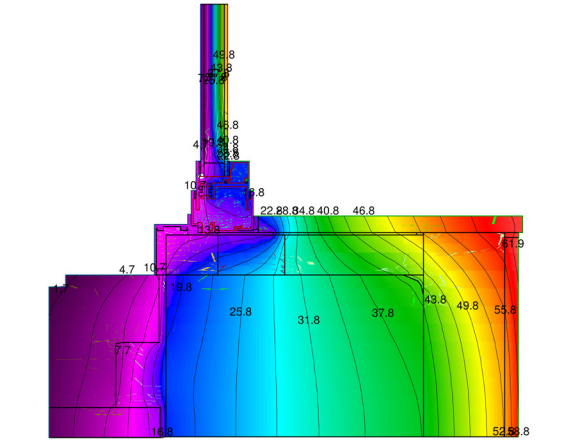
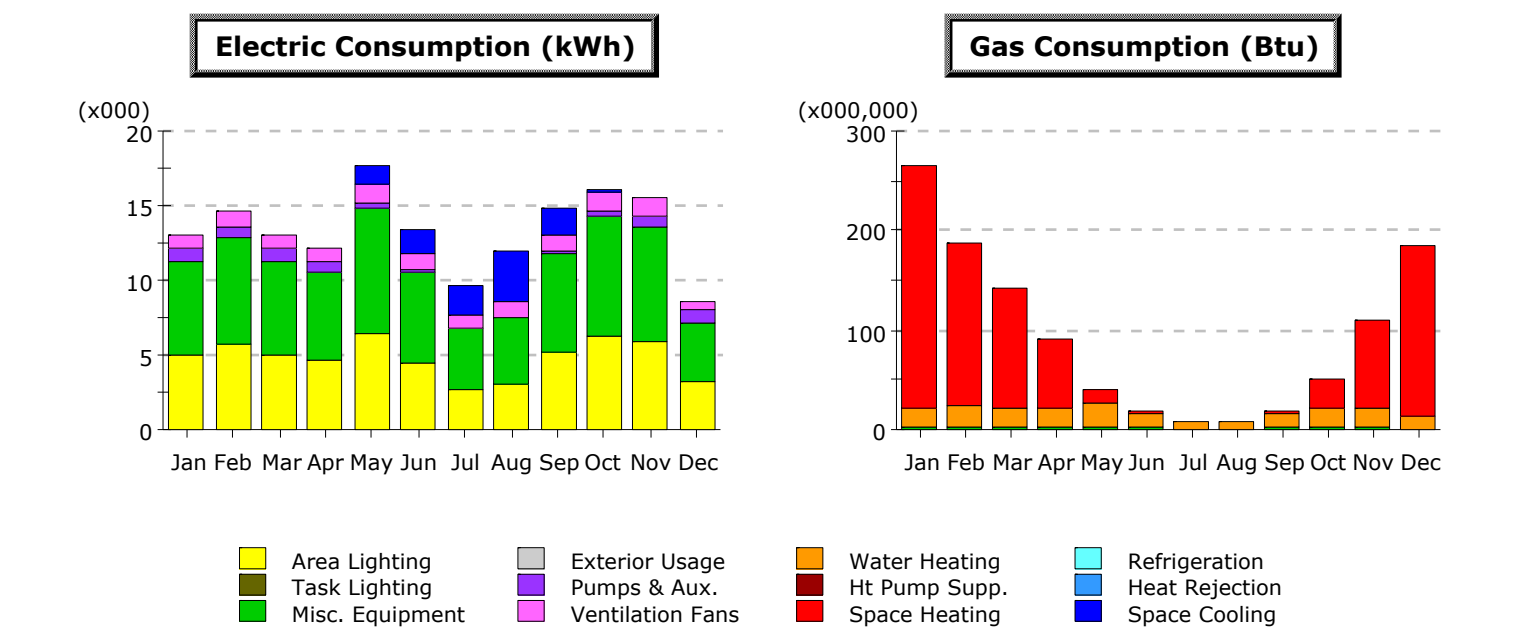


# Washington County Housing Types



|                                    | Annual Fuel Use, Btu/s | Cost/Unit        | BTU/Unit   | Cost/Unit  | Annual cost  | Percent of base case |
|------------------------------------|------------------------|------------------|--|------------|--------------|----------------------|
| Classroom size                     | 812 s.f.               |                  |  |            |              |                      |
| Peabody                            | 123844 s.f.            |                  | 152.52 Multiplier from single classroom to Peabody |            |              |                      |
|                                    |                        | Cost of Gas      | \$7.43   |            |              |                      |
|                                    |                        | Annual Fuel Use  | Cost/Unit  | BTU/Unit   | Cost/Unit    | Annual cost          |
| Base Case - Existing               | 90,586,480 Btu         | \$7.43           | 1,000,000 kBTU                                     | \$0.000007 | \$673        | 100%                 |
| Peabody                            |                        |                  |  |            | \$102,652.88 |                      |
|                                    |                        | Annual Fuel Use  | Cost/Unit  | BTU/Unit   | Cost/Unit    | Annual cost          |
| Fix: Leaky                         | 71,155,256 Btu         | \$7.43           | 1,000,000 kBTU                                     | \$0.000007 | \$529        | 79%                  |
| Peabody                            |                        |                  |  |            | \$80,633.36  |                      |
|                                    |                        | Annual Fuel Use  | Cost/Unit  | BTU/Unit   | Cost/Unit    | Annual cost          |
| Fix: Exterior walls, Leaky         | 62,389,960 Btu         | \$7.43           | 1,000,000 kBTU                                     | \$0.000007 | \$464        | 69%                  |
| Peabody                            |                        |                  |  |            | \$70,700.50  |                      |
|                                    |                        | Annual Fuel Use  | Cost/Unit  | BTU/Unit   | Cost/Unit    | Annual cost          |
| Fix: Exterior walls, Windows       | 47,911,004 Btu         | \$7.43           | 1,000,000 kBTU                                     | \$0.000007 | \$356        | 53%                  |
| Peabody                            |                        |                  |  |            | \$54,292.90  |                      |
|                                    |                        | Annual Fuel Use  | Cost/Unit  | BTU/Unit   | Cost/Unit    | Annual cost          |
| Fix: Roof, Exterior walls, Windows | 39,151,080 Btu         | \$7.43           | 1,000,000 kBTU                                     | \$0.000007 | \$291        | 43%                  |
| Peabody                            |                        |                  |  |            | \$44,366.13  |                      |
|                                    |                        | Base case        |  | Improved   |              |                      |
|                                    |                        | Air changes/hour | Leaky (1 ACH)                                      | 50 ACH     |              |                      |
|                                    |                        | Windows          | R=1  | R=3        |              |                      |
|                                    |                        | Walls            | R=3  | R=12       |              |                      |
|                                    |                        | Roof             | R=10   | R=30       |              |                      |

Project/Run: FOUNDERS ENVELOPE - Baseline Design Run Date/Time: 03/04/12 @ 17:43



|               | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul  | Aug   | Sep   | Oct   | Nov   | Dec  | Total  |
|---------------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|------|--------|
| Space Cool    | -     | -     | -     | 0.05  | 1.29  | 1.50  | 2.04 | 3.44  | 1.90  | 0.13  | -     | -    | 10.36  |
| Heat Reject.  | -     | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     | -    | -      |
| Refrigeration | -     | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     | -    | -      |
| Space Heat    | -     | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     | -    | -      |
| HP Supp.      | -     | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     | -    | -      |
| Hot Water     | -     | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     | -    | -      |
| Vent. Fans    | 0.90  | 1.06  | 0.90  | 0.84  | 1.23  | 1.11  | 0.92 | 1.05  | 1.07  | 1.17  | 1.12  | 0.50 | 11.87  |
| Pumps & Aux.  | 0.88  | 0.80  | 0.88  | 0.69  | 0.32  | 0.11  | -    | 0.01  | 0.09  | 0.50  | 0.78  | 0.87 | 5.93   |
| Ext. Usage    | -     | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     | -    | -      |
| Misc. Equip.  | 6.29  | 7.22  | 6.29  | 5.93  | 8.33  | 6.13  | 4.04 | 4.51  | 6.72  | 7.99  | 7.62  | 3.92 | 75.00  |
| Task Lights   | 4.96  | 5.63  | 4.96  | 4.68  | 6.47  | 4.47  | 2.69 | 2.95  | 5.12  | 6.22  | 5.94  | 3.21 | 57.31  |
| Area Lights   | 13.03 | 14.71 | 13.03 | 12.19 | 17.63 | 13.33 | 9.69 | 11.97 | 14.90 | 16.01 | 15.46 | 8.51 | 160.46 |
| <b>Total</b>  |       |       |       |       |       |       |      |       |       |       |       |      |        |

|               | Jan   | Feb   | Mar   | Apr  | May  | Jun  | Jul | Aug | Sep  | Oct  | Nov   | Dec   | Total   |
|---------------|-------|-------|-------|------|------|------|-----|-----|------|------|-------|-------|---------|
| Space Cool    | -     | -     | -     | -    | -    | -    | -   | -   | -    | -    | -     | -     | -       |
| Heat Reject.  | -     | -     | -     | -    | -    | -    | -   | -   | -    | -    | -     | -     | -       |
| Refrigeration | -     | -     | -     | -    | -    | -    | -   | -   | -    | -    | -     | -     | -       |
| Space Heat    | 245.3 | 161.4 | 121.4 | 71.2 | 13.3 | 3.2  | -   | 0.0 | 1.3  | 28.7 | 87.2  | 171.4 | 904.4   |
| HP Supp.      | -     | -     | -     | -    | -    | -    | -   | -   | -    | -    | -     | -     | -       |
| Hot Water     | 19.0  | 22.4  | 19.8  | 18.3 | 23.3 | 14.4 | 7.7 | 8.0 | 14.6 | 18.8 | 19.4  | 11.5  | 197.1   |
| Vent. Fans    | -     | -     | -     | -    | -    | -    | -   | -   | -    | -    | -     | -     | -       |
| Pumps & Aux.  | -     | -     | -     | -    | -    | -    | -   | -   | -    | -    | -     | -     | -       |
| Ext. Usage    | -     | -     | -     | -    | -    | -    | -   | -   | -    | -    | -     | -     | -       |
| Misc. Equip.  | 2.1   | 2.5   | 2.1   | 2.0  | 2.9  | 1.9  | 1.1 | 1.2 | 2.2  | 2.7  | 2.6   | 1.2   | 24.5    |
| Task Lights   | -     | -     | -     | -    | -    | -    | -   | -   | -    | -    | -     | -     | -       |
| Area Lights   | -     | -     | -     | -    | -    | -    | -   | -   | -    | -    | -     | -     | -       |
| <b>Total</b>  | 266.4 | 186.3 | 143.3 | 91.5 | 39.5 | 19.6 | 8.7 | 9.2 | 18.1 | 50.2 | 109.2 | 184.0 | 1,126.0 |

**Type 1:**  
 Farmhouse, 150 yrs.  
 1,600 ft<sup>2</sup>  
 12,000 ft<sup>3</sup>  
 Window-wall ratios:  
 N:.25, S:.30, E/W: .17  
 Avg. Envelope U: .12  
 Annual Fuel Use: \$4,000  
 10-yr. Fuel Use: \$40,000  
 Typical Fix: \$10/ft<sup>2</sup>  
 Initial Cost: \$16,000.  
 10-yr. fuel use: \$18,000  
 Total: \$34,000  
 10-yr Simple Payback:  
 \$6,000/ 37.5%

**Type 2:**  
 Modular, 15 yrs.  
 1,000 ft<sup>2</sup>  
 8,000 ft<sup>3</sup>  
 Window-wall ratios:  
 N:.20, S:.20, E/W: .15  
 Avg. Envelope U: .17  
 Annual Fuel Use: \$3,000  
 10-yr. Fuel Use: \$30,000  
 Typical Fix: \$10/ft<sup>2</sup>  
 Initial Cost: \$10,000.  
 10-yr. fuel use: \$12,000  
 Total: \$22,000  
 10-yr Simple Payback:  
 \$8,000/ 36.4%

**Type 3:**  
 Cape, 120 yrs.  
 1,200 ft<sup>2</sup>  
 9,600 ft<sup>3</sup>  
 Window-wall ratios:  
 N:.20, S:.25, E/W: .20  
 Avg. Envelope U: .25  
 Annual Fuel Use: \$4,000  
 10-yr. Fuel Use: \$40,000  
 Typical Fix: \$25/ft<sup>2</sup>  
 Initial Cost: \$25,000.  
 10-yr. fuel use: \$18,000  
 Total: \$43,000  
 10-yr Simple Payback:  
 \$-3,000/ -15%



# A Public/Private Partnership

## Board of Directors

### Areas of Expertise:

- Initial Funding
- Organizational Development
- Existing Players
- Design/Construction
- Financial Controls
- Community Outreach
- Governmental Affairs
- Energy Services

## Kick-Off Steps

- Elevator Pitch
- Identify Requirements
- Initial Funding Sources
- First Hire!
- Incorporate
- Write Business Plan
- Federal/State Liaison

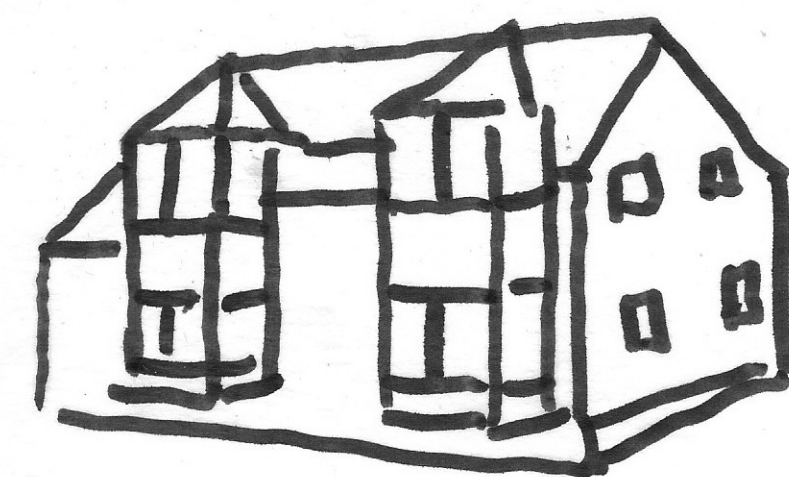
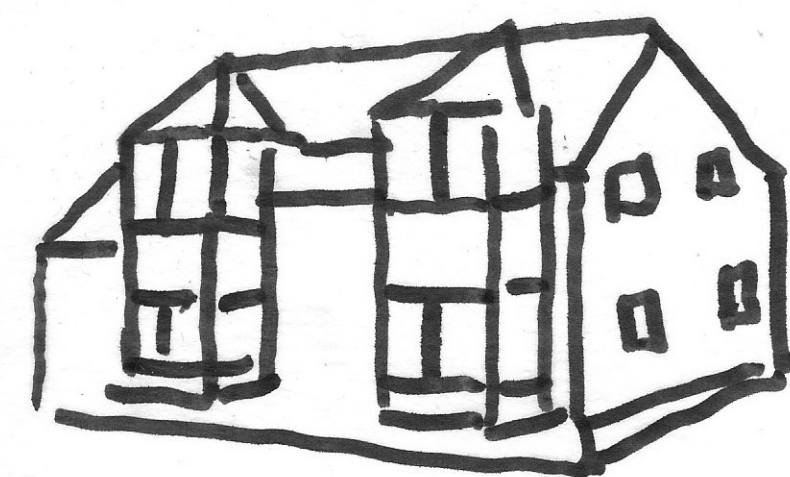
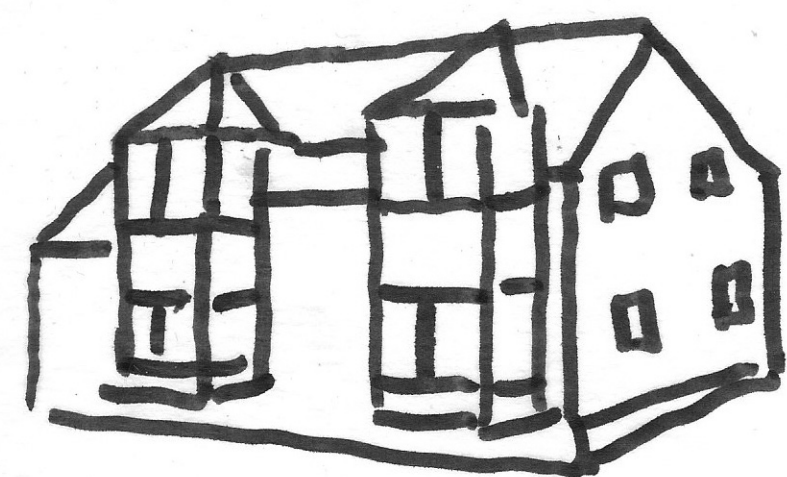
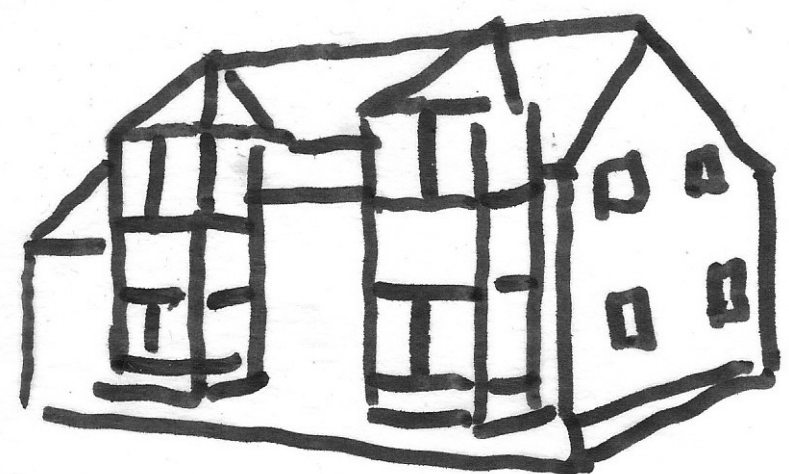
## Getting to Scale

### Identify Investors

- CEI
- Private Sources
- MDF
- MCF

### Crunch numbers:

- Survey Housing Stock
- Realistic Interventions
- Public Good Component



Net gain=  
Winners - Losers

