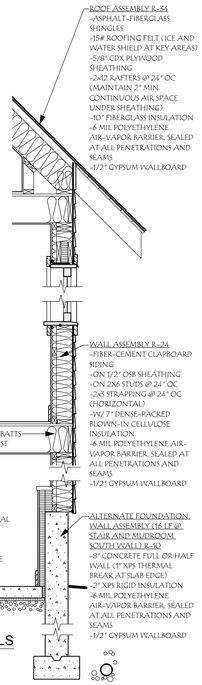
What Does It Take . . .

. . . to bring a well-built home to zero net energy? *Not much!*

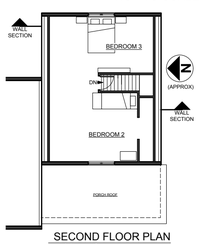
Starting point:

1

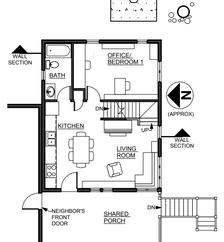
- small, energy-efficient duplex home
- built in 1994 for approximately $56/SF
- compact fluorescent lighting
- exhaust-only ventilation
- spacious feeling in a compact floor plan
- solar hot water already installed



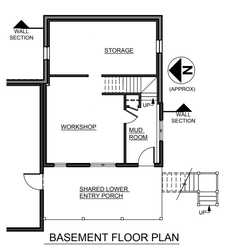
TYPICAL WALL SECTION DETAILS
NOT TO SCALE



SECOND FLOOR PLAN
not to scale



FIRST FLOOR PLAN
not to scale



BASEMENT FLOOR PLAN
not to scale

Better than zero net:

2

strategies:

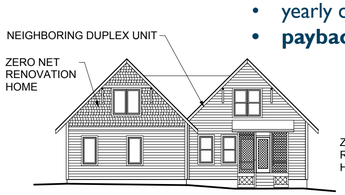
- careful modeling to determine strategies
- targeted air sealing
- reducing plug loads (old refrigerator and dehumidifier were energy hogs)
- new air-source heat pumps to replace propane boiler
- new HRV to replace exhaust-only ventilation
- super-insulated electric water tank as new backup for solar hot water
- 5.9 kw PV array to cover all energy uses

results:

- **exceeded zero net: net energy producing by 430 kwh/year**
- total energy use reduced by 23%
- new refrigerator alone saved ~40 kwh/month
- air leakage reduced by 110 CFM 50 (15% estimated improvement)
- basement dehumidification using heat pump is more efficient & effective
- comfort improved (pleasant heating system)

costs:

- total cost before rebates: $62,100
- cost after rebates & tax credits: $35,000
- yearly revenue from SRECs: $2,400
- yearly cost savings on utilities: $1,500
- **payback: 9 years**



EAST ELEVATION
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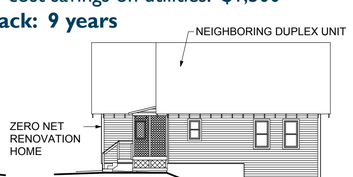

NORTH ELEVATION
not to scale

WEST ELEVATION
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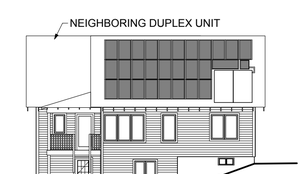

SOUTH ELEVATION
not to scale

Next steps...

3

- interior storm windows
- more air sealing
- LED lighting
- magnetic induction range
- further reduction in plug loads
- improved monitoring

Kraus-Fabel Renovation, Amherst, Massachusetts

ZNE project team:

KRAUS FITCH ARCHITECTS, INC
Home • Community • Planet
www.krausfitch.com

Marc Rosenbaum, PE Energysmiths
http://thrivingonlowcarbon.typepad.com/
www.energysmiths.com

NorthEast Solar
...going Green is easy
www.northeastsolar.biz

CET CENTER FOR EcoTechnology
www.cetonline.org