

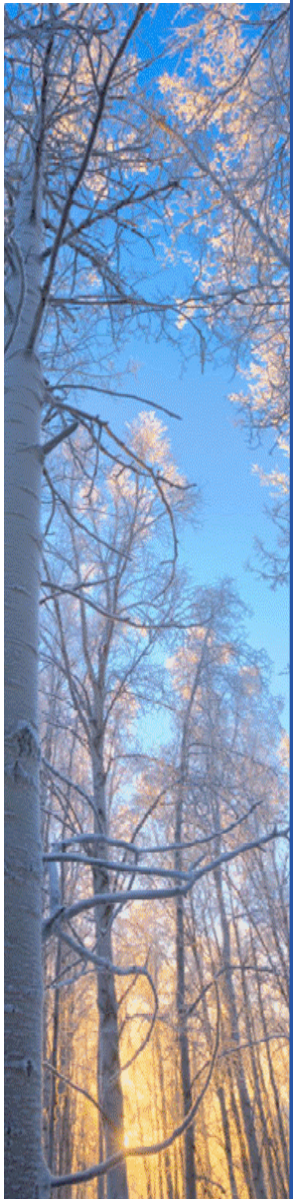
REMOTE Retrofit

Case Study

**Residential Exterior Membrane
Outside-insulation TEchnique
aka OIT**

Mike Musick

Cold Climate Housing Research
Center



Residential Energy Rating

1804 Caribou Way

Fairbanks, AK

Energy rating before retrofit: 3 Star
Air tightness as is: 7.3ACH @ 50 pa

Recommendations:

- Install R-14 rigid foam to exterior
- Install 2' rigid foam around foundation
- Caulk and Seal Home
- Install R-19 loose-fill insulation in attic
- Replace Furnace w/ AFUE 83%
- Replace Electric H2O Heater w/ .96 EF



Energy Rating after Retrofit

- Five Star (+)
- Air tightness 6.1 ACH @ 50 pa



Old forced air furnace



Forced Air Wars Electric water heater



Time for replacement



New demand water heater for heat and domestic hot water

Toyotami OM180 demand water
heater ~90% Efficiency

Burns #2 fuel oil

Air over hot water + filtration
Using existing FA ducting

Cost ~\$8,000



Southeast corner before retrofit



East wall before retrofit



Northeast corner before



South wall before retrofit



Particle board under cedar siding



2" EPS B.G. R&R w/ 4"EPS



Replacing particle board with OSB



East End Rip Wrap



**East wall 4" EPS (2 layers of 2")
All seams staggered**



Base coat east end



Northwest corner base coat



North wall Rip Wrap air barrier and drainage plane



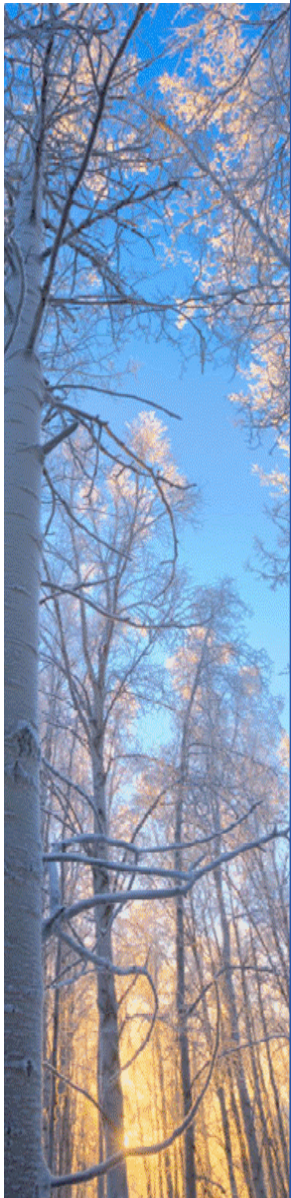
New windows North wall



North wall penetrations



North wall 4" EPS foam Rhino Mesh at window



South wall 4" EPS foam Rhino Mesh around openings



Smoothing base coat



Finishing returns on windows



**South wall finished
New continuous rain gutters**



Finished wall with color coat



Return on Investment

- Exterior Retrofit ~\$9,000 includes:
- New Low-E, Ar gas, triple pane windows
- New fiberglass door w/ Low-E glazing
- Plus \$8,000 heat, hot H2O & filtration
- Still need to finish attic air sealing
- Still need to blow in attic insulation
- Anticipate 40% to 50% energy savings with ~\$18,000 investment
- ROI to be determined
- 4 step Energy Rating increase = .75 interest rate reduction