A sample calculation of net fossil fuel BTU savings, converted to MWh

Asa Hopkins, Public Service Department, January 29, 2015

Round numbers chosen for simplicity – not intended to be exact!

Home uses 800 gallons of fuel oil per year (110 million BTU of raw energy), with an 85% efficient boiler system.

95 MMBTU of heat are used for comfort

Retrofit a heat pump that can provide half of this heat (47 MMBTU), and reduce fuel oil use by 400 gallons.

The provide this heat, the heat pump requires 5,750 kWh.

We know from Tier 1 Total Renewable requirement that over the 15 year life of this heat pump electricity will average 65% renewable.

This implies an average of 3,750 renewable kWh per year, and 2,000 fossil fuel-generated kWh.

Fossil fuel kWh correspond to 20 MMBTU (10,000 BTU/kWh).

So, we've gone from 55 MMBTU to 20 MMBTU of fossil fuel. This difference is 35 MMBTU, or 3500 kWh (3.5 MWh).

Over the 15 year life, the heat pump is work credit of 3.5*15 = 53 MWh credit toward "Energy Transformation" obligation.