

MASSACHUSETTS INTERFAITH POWER & LIGHT

Case Study: MacAusland Home, Dedham, MA



Steve MacAusland, cofounder and treasurer of MIP&L, is a prime example of how one can save the environment and save money. Steve drives hybrid cars, produces his own electricity and hot water, uses bioheat, and uses *EnergyStar* qualified appliances and CFLs. He has invested in every energy consuming area of his home and consumes very little outside energy.

Transportation

Steve owns and drives the two most fuel efficient cars in America: the Toyota Prius and the Honda Insight with 60 and 74 mpg highway respectively. Before owning these two cars, Steve owned a Toyota Landcruiser with an EPA rating of 12 city and 14 highway mpg. Steve bought a Honda Insight in 2000. This car averages 75 mpg on the highway. Actual use over the car's life is 64.5 mpg. Over the past seven years Steve saved enough money through gas mileage over his old car (SUV) to buy and install a 2.5 watt solar system on his home. He uses the Honda for long distance trips while he uses the Prius (bought in 2005) for every day driving. The Prius averages 60 mpg. Hybrid cars (cars with engines that replace, not add to the gas engine) last over 200,000 miles. Steve saves money because his cars last twice as long as the average American sedan, thus also reducing frequency and cost of purchase. See MIP&L's *Reducing Fuel Use EES* for more information.



Electricity - Solar

Steve currently produces 70% of the electricity he uses through his 2.5 watt solar electricity system on his roof. He received a grant covering 35% of the cost of the system through Massachusetts Technology Collaborative. The 65% of the cost that he paid came from the savings he earned through his cars. Although a solar electricity system may be expensive to buy and install, it is essentially free energy. Steve is also planning to install a small wind turbine on his property to become 100% energy independent from the electricity utility. Steve currently buys only 84 kWh a month from NStar for an average monthly bill of \$15. Steve has a grid-tied system which means that he still is tied into the power grid. See MIP&L's *Solar EES* for more information.

Electricity - Wind

Steve plans to install a wind turbine in the near future. This will make him completely electrically independent and carbon neutral. See MIP&L's *Wind EES* for more information.



Hot Water

After Steve installed his solar electricity system, he installed a solar hot water system. This heats glycol in pipes on the roof which then run through a tank and heat exchanger in the basement. This heats all of the hot water in the home. Solar hot water systems heat water just as effectively as conventional and on-demand systems that use fossil fuels. They also work in warm and cold climates. See MIP&L's *DHW EES* for more information.



Heat

Steve bought a new oil Viessmann boiler with an efficiency of 87%. This is the most efficient oil boiler he could find. Instead of using regular No. 2 heating fuel, Steve uses a mixture of 10% biofuel and 90% ultra low sulfur No. 2 heating fuel. Fisher-Churchill, where Steve buys his heating fuel, offers both B10 and B20 with regular sulfur petroleum fuel. Fisher-Churchill is a partner of MA Energy Consumers' Alliance, so Steve receives coop prices. This biofuel will clean and

lubricate the boiler which 1) keeps its efficiency high, 2) drastically lowers maintenance costs and chances of sudden break downs, and 3) extends the boiler's useful life. Oil repairmen have come into his home to maintain the boiler, open it up, blow off the dust, see that there was nothing else to do, close the boiler back up, and leave. See MIP&L's *BioDiesel EES* and *Heating EES* for more information.

Appliances

All of Steve's major appliances - boiler, clothes washer, refrigerator, dishwasher, DHW heater - are *EnergyStar* qualified. These all qualify for the many rebates from utility companies. By using all *EnergyStar* qualified appliances, Steve consumes approximately 50% the amount of electricity with non *EnergyStar* qualified appliances. Steve also has CFLs installed in every light fixture in the house cutting his electricity consumption used for lighting by 75%. In all, Steve only consumes about 3,300 kWh/year or 275 kWh/month. This is one third the electricity consumption compared to a home of the same size not using energy saving appliances. See MIP&L's *Appliances EES* for more information.