2.6.1 DOE Monitoring of Grantees (States)

The DOE monitors the Grantees based on their State Plan and associated Health & Safety Plan, required for annual WAP funding application. The DOE Project Officer's (PO's) job is similar to the agency's QCI. However, the PO is a DOE employee and reports his or her monitoring results to the State Grantee and the DOE but not the Subgrantee. DOE monitoring is more administrative and less technical. The PO need not be a certified QCI.

POs interact with Grantees in these ways.

1. Advise Grantee how to continue to meet WAP program requirements.
2. Resolve outstanding findings, concerns, and issues.
3. Identify training and technical assistance needs.
4. Document strengths or and weaknesses of the State program.
5. Document best practices for distribution to the WAP network, if appropriate.

The monitor issues a report and the Grantee must respond in writing. Major findings require the Grantee to tell the DOE how the Grantee plans to correct the problems and pay for the corrections.

2.7 Understanding Energy Usage

A major purpose of any energy audit is to determine where energy waste occurs. With this information in hand, the energy auditor then allocates resources according to the energy-savings potential of each energy-conservation measure. A solid understanding of how homes use energy should guide the decision-making process.

Table 2-1: Top Six Energy Uses for U.S. households

Energy User	Annual kWh	Annual Therms
Heating	2000–10,000	200–1100
Cooling	600–7000	n/a
Water Heating	2000–7000	150–450
Refrigerator	500–2500	n/a
Lighting	500–2000	n/a
Clothes Dryer	500–1500	n/a

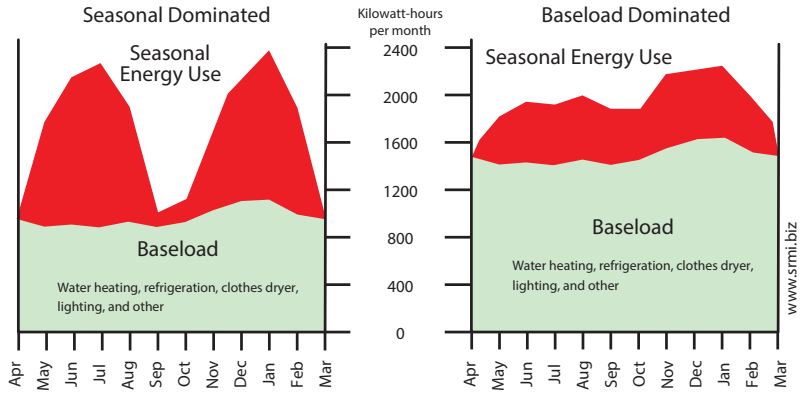
Estimates by the authors from a variety of sources.

2.7.1 Baseload Versus Seasonal Use

We divide home energy usage into two categories: baseload and seasonal. Baseload includes water heating, lighting, refrigerator, and other appliances used year round. Seasonal energy use includes heating and cooling. You should understand which of the two is dominant as well as which types of baseloads and seasonal loads are the highest energy consumers.

Many homes are supplied with both electricity and at least one source of combustion fuel. Electricity can provide all seasonal and baseload energy, however most often there is a combination of electricity and natural gas, oil, or propane. The auditor must understand whether loads like the heating system, clothes dryer, water heater, and kitchen range are serviced by electricity or by fossil fuel.

Total energy use relates directly to potential energy savings. The greatest savings are possible in homes with highest initial consumption. Avoid getting too focused on a single energy-waste category. Consider all the individual energy users that offer measurable energy savings.



Seasonal vs. Baseload Domination of Energy Use: Homes with inefficient shells or in severe climates have large seasonal energy use and smaller baseload. More efficient homes and homes in mild climates are dominated by baseload energy uses.

Separating Baseload and Seasonal Energy Uses

To separate baseload from seasonal energy consumption for a home with monthly gas and electric billing, do these steps.

1. Get the energy billing for one full year. If the client can't produce these bills, they can usually request a summary from their utility company.
2. Add the 3 lowest bills together.
3. Divide that total by 3.
4. Multiply this three-month low-bill average by 12. This is the approximate annual baseload energy cost.
5. Total all 12 monthly billings.
6. Subtract the annual baseload cost from the total billings. This remainder is the space heating and cooling cost.
7. Heating is separated from cooling by looking at the months where the energy is used — summer for cooling, winter for heating.

8. For cold climates, add 5 to 15 percent to the baseload energy before subtracting it from the total to account for more hot water and lighting being used during the winter months.

Table 2-2: Separating Baseload from Seasonal Energy Use

Factor and Calculation	Result
Annual total gas usage from utility bills	**1087 therms**
Monthly average gas usage for water heating Average of 3 low months gas usage (21 + 21 + 22) ÷ 3 = 21.3 therms per month	21.3 therms per month
Annual gas usage for water heating Monthly average usage multiplied by 12 12 x 21.3 = 256 therms per year	**256 therms** per year
Annual heating gas usage Annual total minus annual water-heating usage 1087 – 256 = 831 therms per year	**831 therms** per year
Annual total electric use from utility bills	**6944 kWh**
Monthly average usage for electric baseload Average of 3 low months electricity usage (375 + 372 + 345) ÷ 3 = 364 kWh per month	364 kWh per month
Annual electric usage for baseload Monthly average usage multiplied by 12 12 x 364 = 4368 kWh per year	**4368 kWh** per year
Annual heating and cooling electrical usage Annual total minus annual baseload usage 6944 – 4368 = 2576 kWh per year	**2576 kWh** per year

2.7.2 Energy Indexes

Energy indexes are useful for comparing homes and characterizing their energy efficiency. They are used to measure the

opportunity for application of weatherization or home performance work.

Most indexes are based on the square footage of conditioned floor space. The simplest indexes divide a home's energy use in either kilowatt-hours or British thermal units (BTUs) by the square footage of floor space.

A more complex index compares heating energy use with the climate's severity. BTUs of heating energy are divided by both square feet and heating degree days to calculate this index.

2.8 Client Education

Client education is a potent energy conservation measure. A well-designed education program engages clients in household energy management and assures the success of installed energy conservation measures (ECMs).