FirstView Case Study: StopWaste

In March 2007, 31 staff at StopWaste.Org moved into a renovated building in downtown Oakland, California. Their goal was to transform a dilapidated, 14,000 SF, two-story structure into an attractive and environmentally responsible building. Built in 1926, the building is a certified LEED NC v 2.2 Platinum renovation.

StopWaste.org took a multipronged approach to reducing energy impacts. The first step was to design the building to be super-efficient. They received all 10 LEED available points for optimizing energy performance and calculations showed that the building would outperform Title 24-2005 by an impressive 40 percent. StopWaste.org didn't stop with building commissioning; they went further and monitored the building's energy and water performance over the first year to ensure the building was meeting performance expectations.

NBI analyzed the first 3 years of StopWaste building data using the FirstView™ tool. This analysis demonstrates how FirstView can be used to identify operational challenges commonly experienced during the start up phase of a new building. The following table summarizes the automated observations from FirstView over time.

FirstView Observation	Year 1	Year 2	Year 3*
Occupant Load	Low	Low	Low
Heating and Ventilation	Poor	Good	Good
Cooling Efficiency	Good	Good	Good
Controls	None	None	None
Reheat	None	None	None
Gas Baseload	High	High	Typical
Data Consistency	Orderly	Orderly	Orderly
Energy Use Index	50.5 kBtu/SF	41.4 kBtu/SF	39 kBtu/SF

* Year 3 is based on 6 months of data.

In Year 1, StopWaste conducted service on the rooftop air conditioning unit. With the damper previously stuck in place, the building was bringing in too much outside air during the winter that resulted in excessive heating demand. During mild weather, the economizer may not have been opening fully, thereby limiting the ability to get free cooling from outside air.

This change is easily observable when the Year 1 and Year 2 FirstView Energy End Use Breakdown graphs are compared. Notice the significant reduction in energy use during the colder months, along with a moderate reduction at warmer temperatures. In Year 1, simultaneous heating and cooling was observed between 50 and 60 degrees; this was reduced the following year.
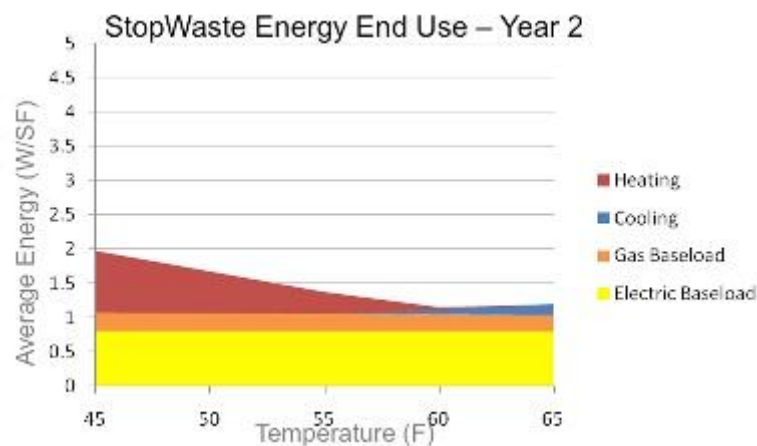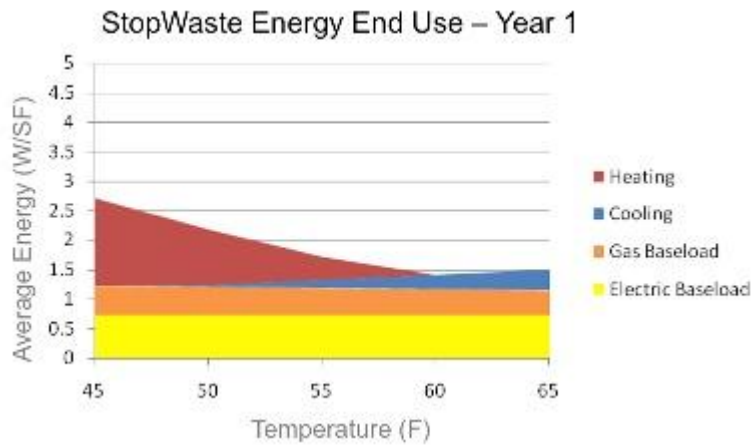
Looking at a partial third year of data, FirstView observations show the impact of a HVAC re-zoning effort. The re-zoning involved dedicating a single rooftop unit (RTU) to serve a computer space, which was previously served as a branch circuit of a larger RTU also serving other parts of the building. The relatively high and constant load of the computer room meant that in the original arrangement, temperature, energy use and comfort in the non-computer rooms were adversely affected by the computer room as the system tried to reconcile these diverse loads.

As shown in the FirstView comparison chart, the rezoning had a positive impact on the building's energy performance while also addressing thermal comfort problems inside the building. The rezoning successfully eliminated some overcooling and possible year-round reheat that was experienced with the original HVAC configuration.
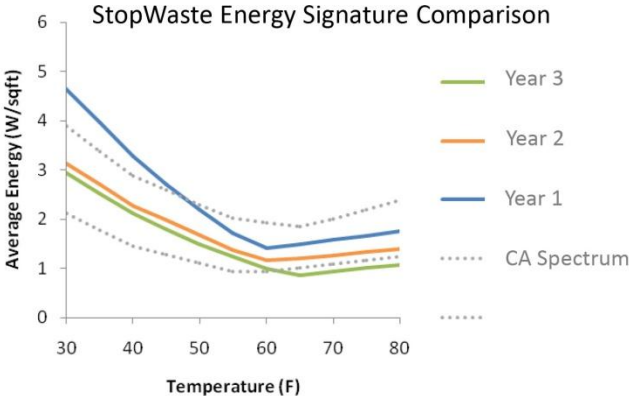
The California Spectrum as shown in the graph represents an aggregated data set from a group of other high performance buildings in California. This spectrum serves as a comparison of StopWaste's performance as shown in the FirstView Energy Signatures.