

# Measuring Energy Savings

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For me, not a week goes by without a call from a salesperson touting a new, revolutionary technology that will slash utility bills and pay for itself in no time flat. It's not easy to separate the truth from the hype, especially when it comes to technologies that lack any kind of verifiable track record. On the other hand, we want to make sure POAH remains an industry leader when it comes to conservation and that requires experimenting with new technologies and systems.

When evaluating these new technologies we consider how they fit in the context of property operations, not just their utility savings potential. We ask how they impact resident comfort and maintenance costs and what level of operational expertise is required. As the building systems we use grow in sophistication (and expense), our ability to monitor and measure them must proceed apace.



Over the last five years we have collected and analyzed thousands of utility bills from across the POAH portfolio. The data contained therein reveals energy and water conservation opportunities and gives us a sense of the effectiveness of prior conservation efforts. Utility bills, though, only come once a month (and in some cases, once a quarter) and don't provide much insight into the consumption patterns of individual building systems. It's difficult to make an informed decision regarding a complicated system on the basis of only twelve (or four) data points a year. As POAH continues to invest in high efficiency equipment as part of our commitments to the Big Reach and Better Buildings Challenge, utility bills alone will not supply the level of detail necessary to insure that those investments result in expected energy savings and improved building operations. To address this data gap we are evaluating more sophisticated energy monitoring systems at several sites as part of a push toward increased technical appreciation of building operations and maintenance.

To aid in our pursuit of more building data we have installed an energy monitoring system called SiteSage at five POAH Properties. This system measures circuit level electric use, HVAC performance, and building temperatures. The data also reveals usage patterns that can reduce the useful life of site equipment (e.g. boiler short cycling, overloaded pumps, and outdoor lighting running 24/7). This monitoring serves dual purposes: reducing utility consumption and extending the life of critical on-site assets. As a quick example, by monitoring the electric use at one building we found several pumps running unnecessarily. Turning those pumps off will save over \$1200 a month in electric costs plus the wear and tear on that equipment. Without the electric circuit monitoring system in place, we wouldn't have been alerted to this opportunity.

Over the last couple of years the cost of energy monitoring systems has come down and the variety of options increased. If you are considering installing this equipment, I would encourage you to think about the following:

1. How much does the equipment cost relative to how much the building spends on utilities?  
We targeted buildings that spend over \$100,000 annually.
2. Do you want remote access to the building data?  
If so, be sure to consider the costs of getting an internet connection to your mechanical room or the other parts of the building you'd like to monitor.
3. How will you make use of the data on a day to day basis?  
These systems produce a ton of data so make sure you have the time to figure out what is useful and how to communicate what you're seeing.

The SiteSage equipment provides us with another tool to optimize the performance of our buildings. It has alerted us to conservation opportunities and other operational issues. Like any tool, though, it takes time to learn how to use it properly. We are still learning but see continued value in the pursuit and application of building performance data.