ENERGY USAGE HAS long been a top priority for Housing Vermont for both environmental and economic reasons. Yet effectively addressing the many issues that surround electrical, heating, and water systems can be a challenge.

Enter the Parsons Platform. Named for Trevor Parsons, Housing Vermont's late Energy Project Manager, the Parsons Platform uses a unique combination of off-the-shelf hardware to collect data from heating and ventilating components, building management systems, and other energyrelated devices. The data are sent automatically to a web-based server where the information is saved and sorted before being displayed on a central dashboard that creates a visual assessment of how the components are operating. These key performance indicators are then used by Housing Vermont staff to optimize operations and guide future design decisions.

Development of the Parsons Platform began in response to the 2008 spike in energy prices. Initially, we reduced fuel consumption by about 20 percent through both simple steps such as correcting system control settings and larger projects like the installation of wood pellet boilers and solar photovoltaic systems. However, consumption savings were not consistent across the board, even when identical systems were being employed; we needed actual operational data to show us where the problems lay.

In 2011, we started small-scale data collection on a real-time basis — basic information on how boilers were cycling — that allowed us to respond to detected problems and make required adjustments. The information gained from that experience led to improvements in the Parsons Platform. Although similar systems are available on the market, a key benefit of the Parsons Platform is that its operation requires minimal programming. In addition, it can be customized to meet the needs of a particular energy system, even as such systems become increasingly sophisticated and diverse.

So if we want to know whether an auger is properly feeding wood pellets into a burner, or want to monitor the temperature of a loop that serves a water-sourced heat pump to prevent a burnt-out compressor and high electrical consumption, we are able to do that directly from our dashboard. It means we are capable of making targeted assessments — through continuous functional analysis of each piece of equipment — while viewing the broader



This large building was experiencing high electrical costs and lost 5 heat pumps to compressor failure within 4 years of opening. We acquired data showing that the loop temperature was running abnormally, putting undue stress on the compressors, and contributing to premature failures and higher electrical costs.

PARSONS PLATFORM BY SARAH ZOBEL

picture of an entire energy system's performance. Moreover, data from hundreds of apartments can be monitored from one central location.

The Parsons Platform plays a role in building design and development, as well, by providing specific benchmarks. Our 104-unit Applegate Apartments development in Bennington was slated to have a central heating plant with an output of 3.2 million BTUs. But when we shared the Parsons Platform data from a comparablysized building with the design team, they saw that the system as planned would have been significantly larger than necessary. In response, the plans were redesigned to incorporate a 1.8 million-BTU plant instead. The change saved \$200,000 in construction costs in the short term, and will continue to save both energy and money well into the future.

With its ability to access vital information throughout an energy system, the Parsons Platform is the newest tool in Housing Vermont's ongoing broad-scale commitment to decrease energy consumption and lower development and operating costs.



The Parsons Platform uses off-the-shelf hardware, cloud storage, and in-house analysts.



Adjustments were made to the control logic and the Platform was able to demonstrate that the adjustments worked. The loop temperature is now running within the set points that will put less pressure on the compressors and has already resulted in reduced energy consumption and maintenance costs.