



Small Building Controls Innovation Success Story

Sheetz

Sheetz, Inc. is a collection of convenience stores and coffee shops that serve customers in Pennsylvania, Ohio, Maryland, West Virginia, Virginia, and North Carolina. Sheetz's goal is to provide customers with fast and friendly service and quality products in clean and convenient locations.



Controls Upgrade Project

The energy management team at Sheetz has long been a proponent of using technology to reduce energy consumption. In 2018, they began installing building management systems (BMS) across their stores. At the same time, they installed variable frequency drives in units that did not have one already. This allows them to control HVAC, exterior lighting and economizers. In addition, they can monitor refrigeration, energy consumption, and HVAC operating parameters. With a centralized view of the HVAC equipment at 700 stores (4.2 million square feet), they saw an average of 11% savings in whole building energy consumption.

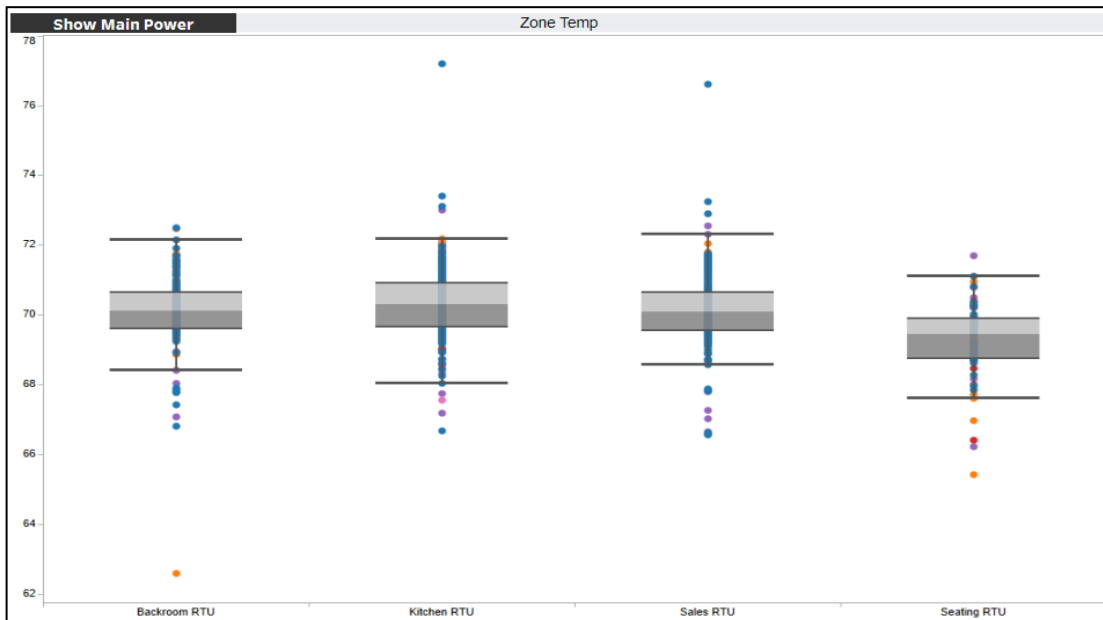
The HVAC auditing initiative transformed maintenance practices by leveraging data analytics and remote monitoring, resulting in significant cost savings and enhanced operational efficiency. This project aligns with our commitment to total customer focus by maintaining store comfort for both employees and customers through early issue identification and resolution.

*- Devin Messerschmidt
Energy Engineer
Sheetz Inc.*



Lessons Learned

Sheetz reached out to their local utility to propose their controls optimization project and worked with them to develop a custom rebate. To determine the rebate amount, the utility team reviewed the energy savings at pilot sites that already had the controls improvements. With that information, they were able to approve a rebate for the remaining projects which reduced install costs and improved the project payback.



Example of box-and-whisker plot in Tableau showing all RTUs at one location with Zone Temp

Early Detection

Sheetz has implemented an HVAC auditing process that enables the energy team to identify and resolve issues at sites before the BMS even alarms. Data from the BMS server, energy sub-meters, utility bills, and maintenance tickets are pulled into a central data warehouse and then visualized in Tableau. The team can then compare similar sites using filters like RTU size, square footage, or state. Creating a box and whisker chart using operating parameters like zone temp, humidity and kWh allows them to identify outliers. For example, the screenshot above allows the team to identify RTUs where the zone temperature is out of range. Upon further investigation, the team was able to determine that refrigerant was undercharged in one of the RTUs causing additional stress on the unit.

Co-Benefits

In addition to energy savings, the centralized controls:

- Streamlined maintenance
- Decreased site visits (truck rolls)
- Provided more insight into equipment
- Reduced equipment failures
- Increased consistency of store comfort

Sheetz's future plans include using the controls data to develop a proactive maintenance process in addition to estimating equipment degradation.

Quick Facts

Controls Provider:	ALC-WebCTRL
Project Location:	Mid-Atlantic
Building Type:	Convenience Store
Average Building Size:	6,000 ft ²
Buildings With Controls:	700
Average Energy Saved:	11% whole building

The Smarter Small Buildings Campaign is a program sponsored by the US Department of Energy to promote the implementation of enhanced controls and monitoring for small and medium commercial buildings. The Campaign accelerates the deployment of improved HVAC to advance comfort and savings through technical assistance, best practice resources, and peer exchange. Find out more at [SmarterSmallBuildings.Ibl.gov](https://www.smarter-small-buildings.gov)