



CASE STUDY: **VENTURE I**

THE BUILDING:

Venture I is a commercial office building on N.C. State University's Centennial Campus with 108,000 square feet. This building has six rooftop units with electric heat and evaporative cooling, serving five floors of office and research space. It is managed by CBRE Raleigh, and Piedmont Service Group (PSG), who took over the

HVAC maintenance in 2018. In an effort to further serve the building owners and tenants and potentially improve building operations, the CBRE and PSG teams elected to apply Piedmont Service Group's Building Sentinel analytics offering to this building, specifically targeting opportunities for operational savings.

FINDINGS:

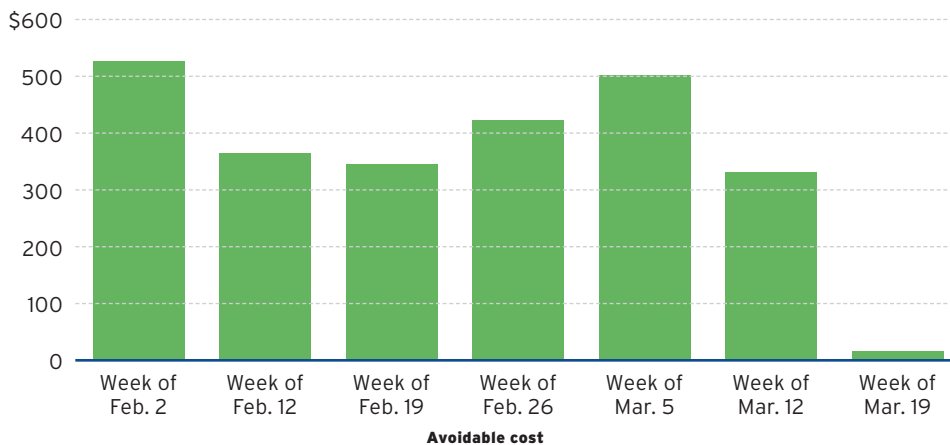
As we analyzed the rooftop and terminal units' operating patterns, we noted the following issues:

- Two of the rooftop units ran 24-hours a day, 7 days a week, despite the control system showing an operating schedule.
- About half of the terminal units did not follow the occupancy patterns of the air handling unit serving them. This meant that their fans and electric heat would run at night, even though the building was unoccupied.
- The actual operating schedule used for all 6 rooftop units was not the same one shown on the front-end, adding an extra 5-hours or so per weekday.

Based on round assumptions of 25HP fans on the rooftop units, and fan-powered terminal units with 3kW electric heat and 1/6 HP fans on terminal units, the customer was in a position to save anywhere from \$300-\$500 a week, with more opportunity on cold nights. This estimate does not include evaporative cooling energy, so the savings would be even better in summer months.

THE FIX:

Using remote access, our controls team reconfigured the schedule programming for the rooftop units and the terminal units to follow widened temperature setpoints at night. The building is equipped with optimal start/stop in order to make sure that it can recover from hot and cold nights. Below is a chart showing the estimated weekly avoidable cost, with the far-right column representing the week immediately following our fixes. These estimates are based on actual fan and electric heat runtime values. **Thus far, CBRE has noted electricity bill savings of \$2000-3000 a month in April and May of 2018, as compared with costs in 2017.**



NEXT STEPS:

Now that we have evaluated energy consumption, CBRE and Piedmont will use Building Sentinel's monitoring to stay on top of tenant comfort.

Key Take-aways:

- Building Sentinel systematically identifies operating deficiencies that are otherwise very difficult to see with conventional systems and approaches.
- Building Sentinel validates the effectiveness of any changes to the systems, such as tuning.
- Building Sentinel watches for "building drift" and ensures the facility is performing as designed at all times.
- Building Sentinel enhances the effectiveness of property managers and mechanical contractors - ultimately providing value to building owners and tenants.



Piedmont Service Group

1031 Nowell Road
Raleigh, NC 27607
(919) 851-5800
www.piedmontsg.com

BRANCH OFFICES:

Chesapeake, VA (757) 430-4483
Richmond, VA (804) 358-6794
Asheville, NC (828)-581-4045
Charlotte, NC (704) 568-4121
Conover, NC (704) 334-2552
Greensboro, NC (336) 294-1420
Greenville, NC (252) 355-5051
Swannanoa, NC (828)-581-4045
Wilmington, NC (910) 799-3890
Little River, SC (843) 399-9890