

# 1670 Broadway

## Monitoring Based Commissioning Using SkySpark® Software

1670 Broadway is a 700,000 square foot, 35-story Class A high-rise office tower located in downtown Denver, CO. In 2012, the building management team embarked on a major initiative to reduce energy consumption in the building. The process began with a retro-commissioning study funded in part by Xcel Energy followed by a major upgrade of the building automation system (BAS). Commissioning of the BAS was completed in 2013 and measurement and verification (M&V) was conducted to verify the savings achieved. The improvements were verified to **save over \$180,000** in annual operating costs and they helped increase the **Energy Star score to 85**. These improvements also contributed significantly to achieving the USGBC’s **LEED-EB: O&M Gold** certification.



As part of the BAS upgrade, SkySpark® software was deployed to provide thorough monitoring based commissioning of the upgraded BAS. SkySpark® software was integrated with the Tridium Niagara AX control system with a live connection over the web. Near real time data is available via a cloud hosted version of the software and programmed rules monitor the operation of equipment at all times. There are 33 active rules programmed in the system that look for AHU schedule issues, temperature and pressure sensor errors, incorrect outside air damper control, equipment failures, zone temperatures out of range, and more. The system also continuously monitors hundreds of zone devices to look for common issues. The following images display trend analysis and automatic faults or “Sparks” identified with programmed rules.

Total	Annual Cost (\$)
Baseline - 2013	\$1,634,303
Current Year - 2014	\$1,451,641
<b>Savings</b>	<b>\$182,662</b>
<b>Percent Saved</b>	<b>11%</b>



Figure 1: Trend Data and “Sparks” Indicating Faults

SkySpark® is still active today and is used by the in-house facilities staff to troubleshoot issues, conduct preventative maintenance and perform ongoing commissioning to achieve continuous improvement. These efforts helped generate **another 4% in electricity cost savings** from 2014 to 2015 and continue to improve ongoing troubleshooting and increase energy efficiency year after year.