

Driving Down Energy Cost in Healthcare Through Analytics and MBCX: A Case Study on Analytics and MBCX with SkySpark®, kW Engineering, and Intermountain Health

Actionable Insights & Efficient Solutions

Data and advanced analytics play a crucial role in enabling organizations to make smarter business decisions. This case study explores how kW Link powered by SkySpark helped Intermountain Health turn raw data into actionable insights and support the successful implementation of an innovative vision.

1.9 Million

Square feet of MBCx

1.6 Million

Kilowatt hours (kwh) savings

2,335 tonsAvoided CO₂**23,000 MMBTU**

Avoided natural gas use

Average of 9%

Reduction in energy consumption

Background

Based in Salt Lake City, Intermountain Health is a nonprofit healthcare network with over 41,000 caregivers serving Utah, Nevada, and Idaho. Intermountain Health previously included 24 hospitals and 225 clinics but in 2023, it merged with SCL Health, adding 8 hospitals and 160 clinics in Colorado, Montana, and Kansas.

To adapt to post-COVID challenges and regional growth, Intermountain Health developed a vision to create a Remote Operations Center (ROC) to help them more effectively and efficiently manage how their network of buildings is operated and maintained. kW Engineering began working with Intermountain Health in 2022 to implement kW Link – the software upon which the ROC is built. kW Link powered by SkySpark is kW's enhanced analytics software designed to help organizations with portfolios of buildings make smarter choices by leveraging the power of data and advanced analytics.

Challenges in Facility Maintenance and Operational Efficiency at Healthcare Facilities

Maintaining hospital facilities to ensure they operate efficiently presents numerous challenges including:

- **Rising operational and energy costs:** Inefficient building operations due to poor maintenance can lead to increased energy consumption and operational costs. Limited resources often force maintenance teams into a **reactive mode**, addressing issues as they arise rather than preventing them. Without proactive maintenance, equipment might run inefficiently, leading to higher utility bills and unnecessary expenses. Preventive maintenance (PM) tasks are crucial for avoiding breakdowns and optimizing equipment performance.
- **Complex Building Systems:** The integration of advanced technologies and intricate systems within hospital buildings presents another obstacle. These sophisticated digital systems are prone to multiple failure points, making it difficult to maintain peak performance. Diagnosis and repair of these systems demand specialized expertise, adding complexity to the maintenance process.
- **Regulatory Compliance and Standards:** Meeting stringent regulatory standards and compliance requirements is paramount for hospital facilities. Continuous monitoring, maintenance, and upgrades are essential for compliance, but the endeavor becomes more challenging under tight budget constraints.

- **Skilled Workforce Shortage:** Turnover of skilled technicians poses a significant challenge as these experienced professionals carry extensive institutional knowledge vital for effective maintenance. As they leave, new hires might struggle to bridge these gaps.

Strategic Solutions: Leveraging kW Link to Overcome Hospital Facility Challenges

The ROC and kW Link significantly addressed the common challenges faced by hospital facilities in many ways including:

- **Early Issue Detection and Resolution:** FDD software continuously monitors various building systems and equipment, identifying potential faults or inefficiencies. By analyzing data from sensors and systems, it can detect anomalies or deviations from normal operation. This early detection enables proactive intervention, preventing small issues from escalating into larger, more expensive problems.
- **Remote Monitoring and Management:** The ROC, combined with FDD, allows for remote monitoring and analysis of building systems. It centralizes data collection from multiple sites, enabling real-time monitoring of critical systems. Remote operators can analyze trends, identify recurring issues, and even conduct initial troubleshooting remotely. This capability reduces the need for on-site personnel and enables swift responses to maintenance needs, especially in geographically dispersed facilities.
- **Optimized Performance and Efficiency:** MBCx utilizes data collected by FDD and the ROC to perform ongoing commissioning and fine-tuning of building systems. By continuously optimizing system performance based on real-time data, MBCx ensures that equipment operates at peak efficiency levels. This leads to reduced energy consumption, lower operational costs, and minimized downtime.
- **Predictive Maintenance and Resource Allocation:** FDD's ability to predict potential equipment failures combined with remote monitoring allows for predictive maintenance planning. The ROC can prioritize maintenance tasks based on criticality and urgency, optimizing resource allocation. This approach minimizes reactive maintenance, maximizes equipment uptime, and extends the lifespan of assets.
- **Compliance and Reporting:** The integrated system generates detailed reports and analytics on system




Revolutionizing Healthcare Building Operations

kW Link's Impactful Integration at Intermountain Health's Remote Operations Center



Background

kW Link, powered by SkySpark is a platform designed to help organizations with a portfolio of buildings make smarter choices by leveraging the power of data and advanced analytics. In 2022, kW Link played a pivotal role in supporting Intermountain Health's innovative vision of establishing a Remote Operations Center (ROC) to enhance the management of an extensive network of healthcare facilities, including 24 hospitals and 225 clinics.



Scope of Work

Across 8 buildings



1.9 million
square feet of MBCx.

Across 18 building integrated into SkySpark



4,542
pieces of equipment



50,000+
SkySpark points

performance, maintenance activities, and compliance with regulatory standards. This streamlines documentation for regulatory audits and ensures adherence to standards, reducing the risk of penalties due to non-compliance.

- **Training and Knowledge Transfer:** The centralized nature of the ROC allows for knowledge sharing and training opportunities. Experienced technicians can remotely guide less-experienced staff in troubleshooting and problem-solving, facilitating knowledge transfer and improving overall workforce competency.

“The partnership with kW Engineering has been central to the successful launch of Intermountain Health’s Remote Operations Center. kW brought a level of experience that would have taken decades to develop internally yet their approach was flexible enough to cater custom solutions for our specific needs. Their integration of a SkySpark based analytics and reporting platform for our Remote Operations Center program is the most powerful and compelling deployment of such a system I have seen in my career. I am proud of what the group has accomplished over the past 18 months and excited to see what is in store over the coming years.”

— Ross Snow, Director of Energy Management, Intermountain Health

Impact

Altogether, the team was able to identify, implement, and verify several features that resulted in impressive savings to date with many more projects on the horizon. Within phase one of this effort, kW has integrated 18 buildings and counting, 8 of which are on track to undergo the initial Monitoring-Based Commissioning (MBCx) effort throughout 2024. Across these 18 buildings, 4,542 pieces of equipment and 50,000+ SkySpark points were integrated from the respective building automation systems (BAS). The successful SkySpark integration allows for the use of kW Link in calculating the impact of their strategic interventions.

So far, the deployment of kW Link in conjunction with MBCx efforts saved a total of 1.6 million kilowatt hours for Intermountain Health and 23 thousand MMBTU of avoided natural gas use through year 1. This equates to 2,335 tons of avoided CO₂ emissions. Electricity and gas usage are on track to be reduced on average by 9% respectively, across the nine

buildings included in phase 1 of this effort. Phase two of the effort will add into the already impressive savings.

Riverton Hospital and Layton Hospital specifically, saw impressive success throughout this strategic effort. At both facilities, hardware issues were identified that once resolved allowed the central chilled water plants to operate more efficiently and reliably without the constant alarms and chillers tripping offline due to poor control. Additionally, kW Engineering worked with the team to reprogram the building pressure control sequences of the building’s air handling units to resolve building pressure issues that have affected the hospital since it was built. In addition to saving energy, this has positively impacted comfort for the buildings which has improved the patient experience.

Lastly, this project has laid the groundwork for the ROC. An innovative and collaborative approach to proactive maintenance helps to save energy and avoid premature equipment replacement while improving comfort. ■



kW Engineering

kW Engineering delivers well-engineered, energy efficiency solutions to lower operating costs, optimize building operations and achieve carbon reduction goals in commercial facilities. For more information visit their website at <https://kw-engineering.com/>



Intermountain Health

A non-profit organization based in Salt Lake City, Utah, Intermountain serves patients and communities in Utah, Idaho, Nevada, Colorado, Montana and Wyoming. For more information visit their website at <https://intermountainhealthcare.org/>



The new frontier is to efficiently
manage and analyze data to
find what matters™.



SkySpark® – Analytics for a World of Smart Device Data

The past decade has seen dramatic advances in automation systems and smart devices. From IP connected systems using a variety of standard protocols, to support for web services and xml data schemas, it is now possible to get the data produced by the wide range of devices found in today's buildings and equipment systems.

Access to this data opens up new opportunities for the creation of value-added services to help businesses reduce energy consumption and cost, and to identify opportunities to enhance operations through improved control, and replacement or repair of capital equipment. Access to the data is just the first step in that journey, however. The new challenge is how to manage and derive value from the exploding amount of data available from these smart and connected devices. SkyFoundry's SkySpark directly addresses this challenge.

SkyFoundry

About SkyFoundry

SkyFoundry's mission is to provide software solutions for the "Internet of Things". Areas of focus include:

- Building automation and facility management
- Energy management, utility data analytics
- Remote device and equipment monitoring
- Asset management

SkyFoundry's software helps customers derive value from their investments in smart systems. Learn more and request a demonstration at www.skyfoundry.com.