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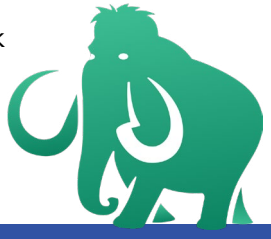
SkySpark 4: The Foundation for What Comes Next

Deep Xeto integration, native AI through Woolly, and an expanding Haystack community signal a broader new phase for SkySpark® and operational intelligence.

SkySpark 4.0.6, the first production release of SkySpark 4, opens an important new chapter. More than a product milestone, SkySpark 4 is deeply integrated with **Xeto**, establishing a stronger foundation for the next generation of operational intelligence.

The clearest example is **Woolly, SkySpark's native AI harness**, now in beta. Woolly helps users work faster—writing functions, creating rules, building views, and finding help. It brings AI closer to the real work of SkySpark users. Operating inside SkySpark, it can use project context and draw on the full Haystack, Xeto, Haxall, and SkySpark documentation. This combination of product knowledge, operational awareness, and native access makes Woolly more useful than a generic AI assistant—and points toward a new way of working with operational data and applications.



SkySpark 4 also delivers practical advances for partners. Arcbeam Crawl can efficiently learn massive Niagara Supervisor databases, create a local working file, and avoid repeated network calls or costly in-memory caching. **Project Haystack** remains the community-defined semantic foundation, while Xeto strengthens how shared models are typed, validated, and reused. Keep an eye out for xeto.dev, a centralized public repository where the Haystack community can discover, share, install, and update reusable Xeto libraries.

The SkySpark 4 story is still unfolding. Ion UI, block programming, and 3D visualization are on the horizon. The entire SkyFoundry team looks forward to what comes next—and to seeing the community at SkyPosium 2026.

For more in-depth information regarding updates read the SkySpark Tech Corner on page 12.

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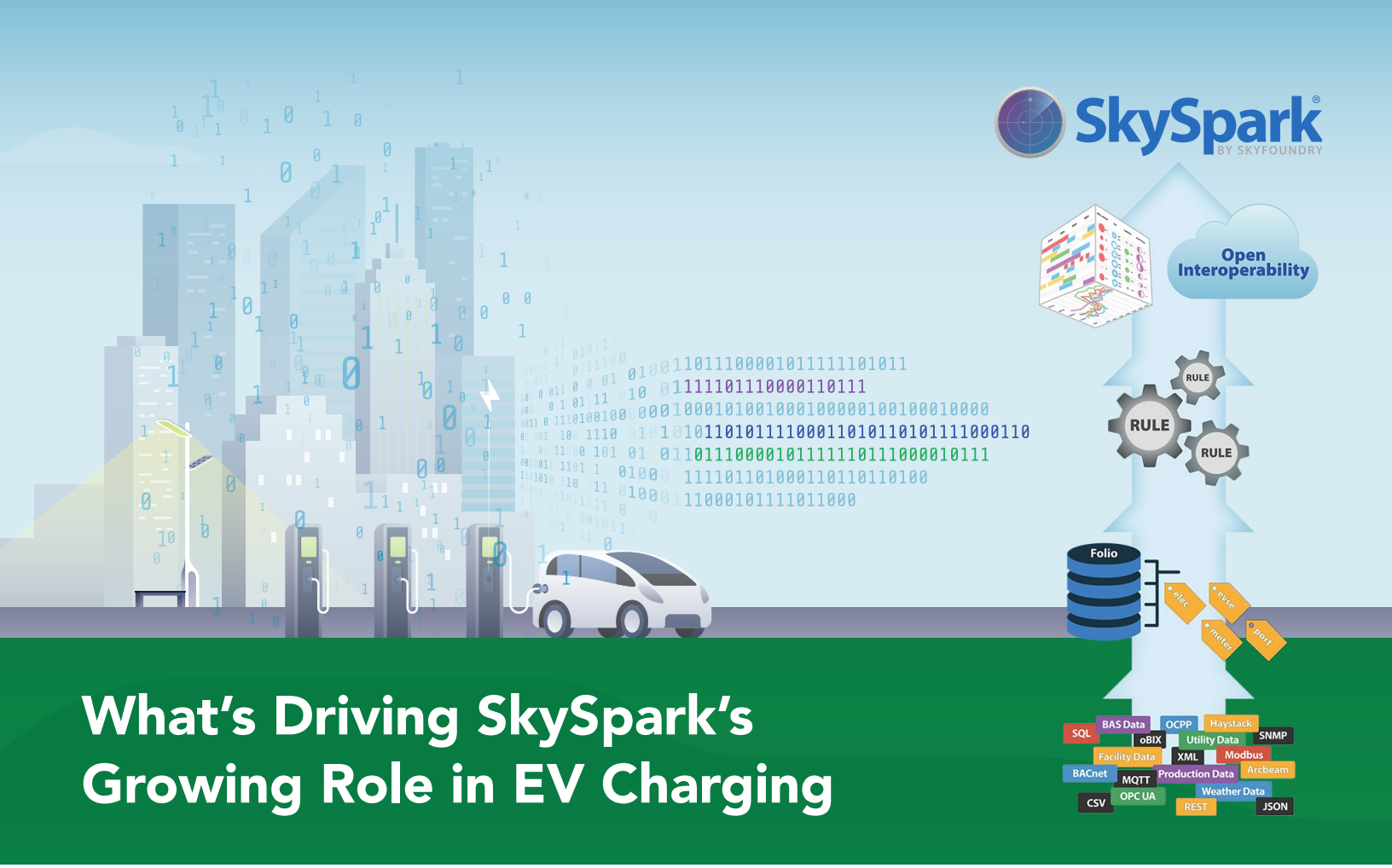

What's Driving SkySpark's Growing Role in EV Charging

SkySpark® has directly managed more than 120,000 EV charging sessions over the past year and a half in mission-critical fleet deployments, and adoption continues growing across a range of EV charging applications, with more projects underway. SkyFoundry also saw growing interest from key operators at this year's EV Charging Summit & Expo and ACT Expo. In this article, we highlight what is driving interest and adoption.

Connecting EVSE Directly to SkySpark with Native Support for OCPP

The EV charging industry has largely standardized on the Open Charge Point Protocol (OCPP) for integrating a Charging Management System (CMS) directly with Electric Vehicle Supply Equipment (EVSE) across manufacturers for charging session authorization, load management, remote monitoring, and asset management.

SkyFoundry's OCPP 1.6J connector allows SkySpark to act as a basic CMS, which often suits the needs of a fleet EV charging operator. The same connection feeds data to SkySpark's analytics and fault-detection engine—capabilities a basic CMS typically doesn't include.

Reaching the Electrical and HVAC Equipment Around the EVSE

SkySpark's role extends beyond the EVSE itself and can augment a classic CMS. Using Modbus, BACnet, and other protocols, SkySpark can integrate directly with the infrastructure around it—circuit breakers, surge protection devices, electric meters, Battery Energy Storage Systems (BESS), HVAC equipment—

for local control and monitoring. This matters to service organizations managing assets co-located with EVSE, where a large motor coming online can interrupt a charging session already underway, or a lost utility phase can keep one from starting at all.

Deployment Flexibility

SkySpark can be deployed fully on-premise, on customer-selected cloud infrastructure, or both. On-premise deployments avoid the latency and per-charger cellular fees that cloud-only CMS designs often carry, meet cybersecurity or uptime requirements a cloud-only system can't, and give enterprise customers full control over who has access to their data. Cloud deployments trade some of that for centralized management across sites. A hybrid approach can capture advantages from both: a local SkySpark instance keeps charging and fault detection running even if a site loses connectivity, and a cloud instance aggregates that data for fleet-wide reporting and benchmarking.

A New White Paper on Optimizing EV Charging Uptime

SkyFoundry recently introduced a new white paper, *Optimizing EV Charging Uptime: A Framework for Fault Detection and Diagnostics, Performance Monitoring, and O&M Workflows*. It defines an extendable hierarchy of charge events—from a basic **Charge Attempt** down to specific failure modes like **Charge Power Derated** and **EVSE Port Down**—and the KPIs derived from them, like **Charge Start Success** and **EVSE Port Uptime**, to support diagnostics and O&M workflows. The framework draws on the ChargeX Consortium's industry-standard, vendor-neutral KPI work, as well as real-world lessons learned from community SkySpark deployments running SkyFoundry's EVSE extension in the field.

Site	Connector Utilization	Energy Delivered	Attempt Count	Session Count	Charge Start Success	Charge End Success	Session Success	Port Uptime	OCPP Uptime
Los Angeles	23.91%	123,011kWh	3,660	2,277	62.21%	97.45%	60.63%	89.32%	100%
Boston	19.65%	92,964kWh	3,002	1,700	56.63%	96.24%	54.5%	82.69%	100%
Miami	19.53%	91,912kWh	2,934	1,685	57.43%	96.56%	55.45%	84.34%	100%
New York	32.26%	158,540kWh	5,379	3,053	56.76%	95.41%	54.16%	86.67%	100%
Denver	18.67%	92,347kWh	2,569	1,640	63.84%	97.2%	62.05%	82.0%	100%
Orlando	20.48%	101,929kWh	3,697	1,866	50.47%	97.75%	49.34%	82.96%	100%
Seattle	18.73%	89,820kWh	3,123	1,662	53.22%	95.61%	50.88%	82.42%	100%
Houston	31.05%	154,449kWh	4,996	2,962	59.29%	96.12%	56.99%	88.44%	100%
Richmond	19.19%	92,137kWh	3,200	1,656	51.75%	97.46%	50.44%	76.95%	100%
Chicago	23.94%	129,638kWh	4,080	2,386	58.48%	100%	58.48%	91.64%	100%
Dallas	26.49%	135,726kWh	4,208	2,517	59.81%	97.06%	58.06%	89.96%	100%

Figure 1: Custom KPI view in SkySpark's EVSE Demo, derived from SkyFoundry's EVSE extension.

Adapting Data Visualization to Operator Needs

SkySpark is a comprehensive data platform with built-in tools for custom data visualization, letting integrators build views tailored to an operator's needs.

For example, kW Engineering built Tower Mobility a real-time monitoring dashboard showing live status and state of charge for every EVSE port at the selected site, alongside KPIs for the site, viewable both combined across shifts and broken out by individual shift.

Built-in Tools for Ad Hoc Data Analysis

Pre-built dashboards catch known fault patterns, but not every issue fits a predefined view. SkySpark has built-in tools that operators may use for ad hoc data analysis, letting them dig into a specific problem as it comes up without waiting on a custom view to be built. What starts as one-off analysis can also shape what gets built next.

For example, when an EVSE port showed a charging session with excessive power oscillation, Tower

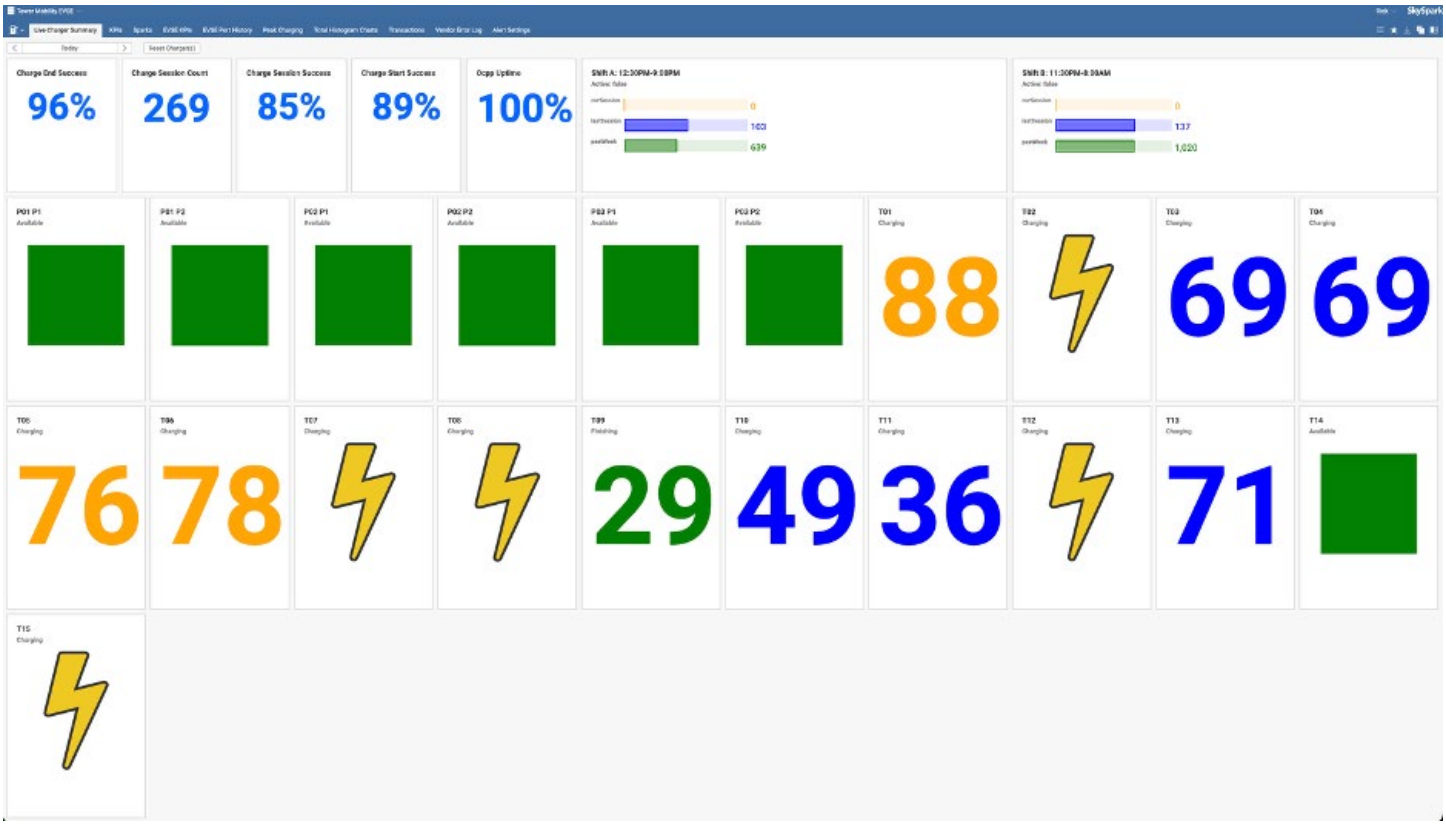

Figure 2: Custom monitoring dashboard developed by kW Engineering for Tower Mobility. Displayed on monitors at one of Tower Mobility's sites for technicians responsible for moving EVs and operating the EVSE.

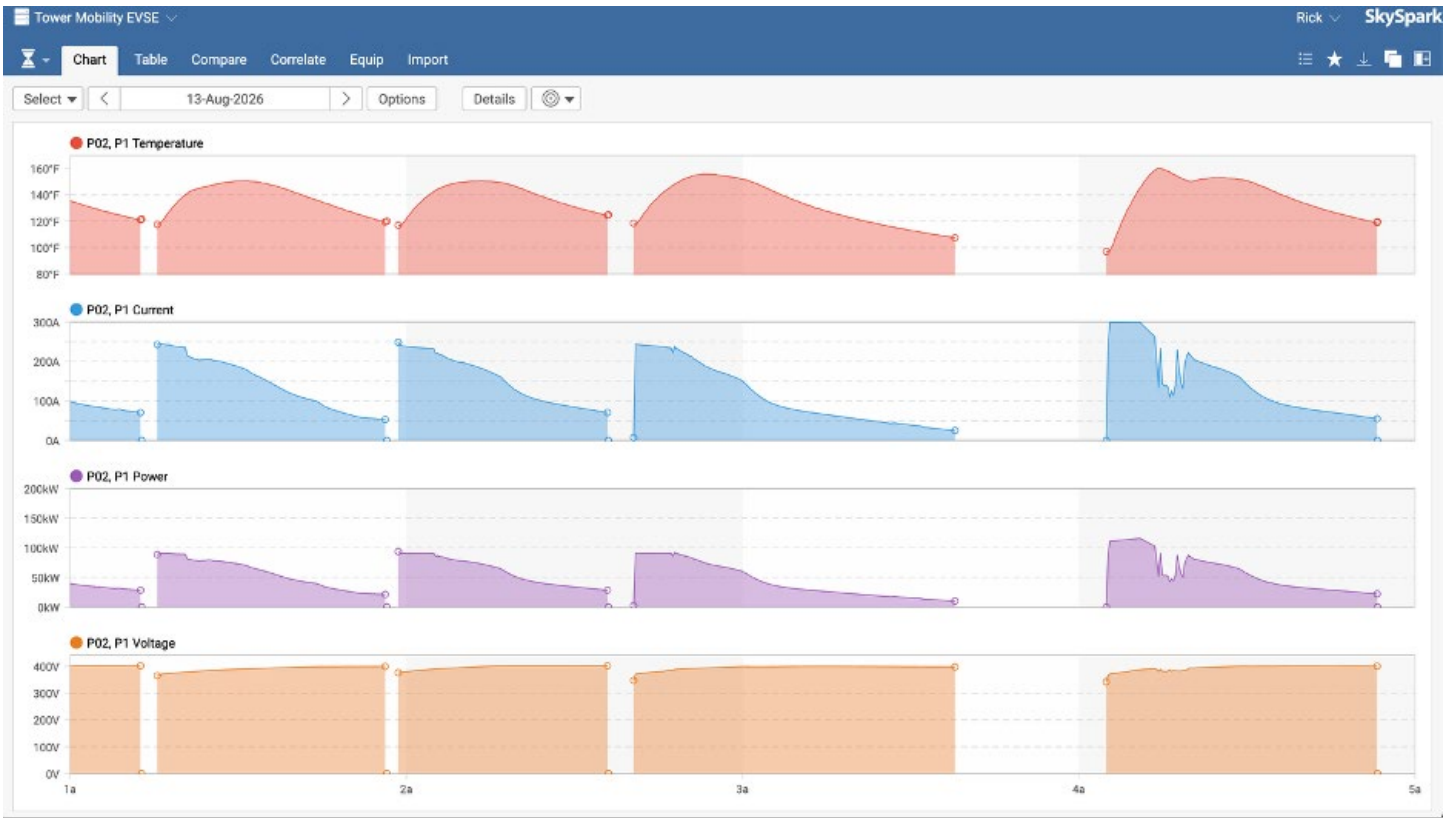

Figure 3: An example of how Tower Mobility used SkySpark's Historian | Chart view to compare a charging session showing excessive power oscillation against other charging sessions.

Mobility used the Chart view in SkySpark's Historian app to compare that charging session with other charging sessions on the same port. Figure 3 illustrates this concept by showing that the charging session with the highest charging current also had the highest temperature and experienced power oscillation—a pattern that also shows up at other moments in time not pictured here.

Conclusion

Operators need what SkySpark provides: a platform flexible enough to adapt to how they actually run their sites, and a community of integrators—like kW Engineering—who put that flexibility to work project by project. That combination is what's driving SkySpark's growing role in EV charging.

Learn More

- Optimizing EV Charging Uptime: A Framework for Fault Detection and Diagnostics, Performance Monitoring, and O&M Workflows—the new white paper discussed above.
- SkySpark: An Analytics-Driven Energy Management System for EV Charging—a companion white paper on how SkySpark may be applied across EV charging applications.
- Analytics-Driven EV Charging Station Management System for Fleet Applications—a case study on kW Engineering and Tower Mobility's fleet charging deployment.

SkyPosium

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October 13-14, 2025
Park City, Utah

Sheraton Park City

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SkyPosium brings together the **SkySpark** community for presentations, technical sessions, networking, and a vendor showcase. With dedicated developer and application tracks, attendees gain practical insights, product updates from SkyFoundry, and real-world best practices.

Why Attend?

- Discover the latest **SkySpark4** features, extensions, and roadmap
- Learn from real-world customer success stories
- Attend expert-led technical and application sessions
- Connect with SkySpark users, developers, and partners

You'll Learn

- Proven strategies for fault detection, machine learning, and digital twins
- Best practices for SkySpark deployment and scaling
- Strategies to scale across multi-site portfolios
- Ways to improve operational performance and accelerate ROI

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A Case Study with ABI Advantage and the U.S. Chamber of Commerce.

How a 100-Year-Old Landmark Achieved Modern Energy Performance

Can a century-old building meet today's demanding energy performance standards? The answer is yes—and the results are impressive.

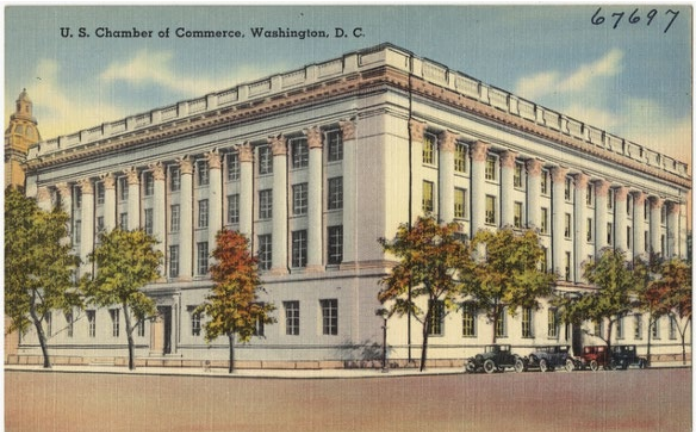
A recent case study from ABI Advantage highlights the transformation of the U.S. Chamber of Commerce headquarters in Washington, D.C. Constructed in 1922, this historic building faced a significant challenge: meeting the District of Columbia's Building Energy Performance Standards (BEPS) while operating as a large, complex facility.

With an ENERGY STAR® score of just 66—well below the required benchmark—the team needed more than a quick fix. They adopted a Monitoring-Based Commissioning (MBCx) strategy powered by SkyFoundry's SkySpark® analytics platform to uncover hidden operational inefficiencies and continuously improve building performance.

By combining advanced data analytics with close collaboration between facility teams and energy experts, they identified opportunities to optimize system performance, reduce waste, and sustain measurable improvements over time.

The results speak for themselves:

- ENERGY STAR score improved from 66 to 82
- Approximately 30% reduction in energy use

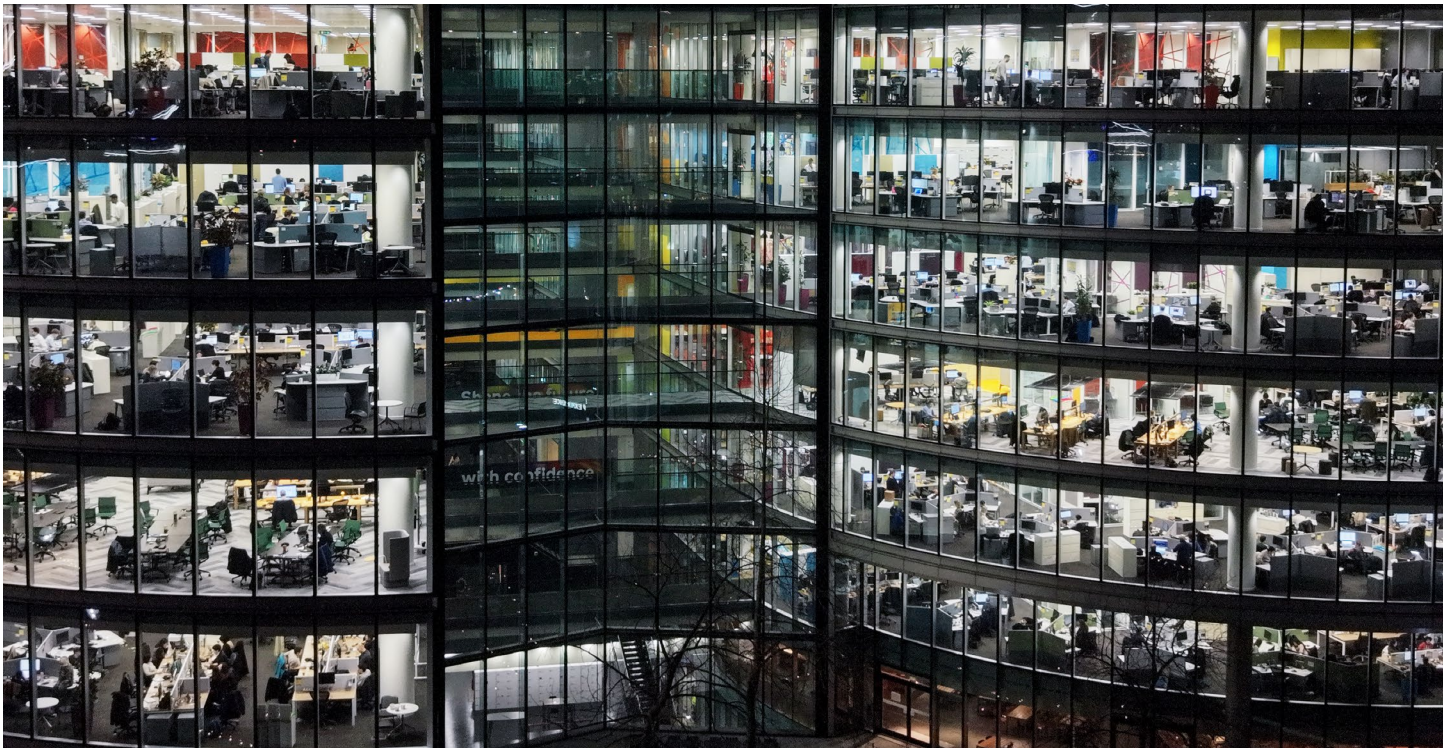


U. S. Chamber of Commerce, Washington, D. C. [Card]. (1930). Retrieved from https://ark.digitalcommonwealth.org/ark:/50959/r781wg25f

- Achieved 2024 ENERGY STAR Certification
- Established ongoing performance monitoring to maintain long-term savings

This success story demonstrates that even historic, complex buildings can achieve ambitious energy goals with the right combination of technology, expertise, and a data-driven operational strategy.

Read the full case study to learn how the team transformed building data into lasting energy savings and operational excellence. SkyFoundry extends its thanks to ABI Advantage and the U.S. Chamber of Commerce for sharing their journey and demonstrating what's possible through continuous building optimization.



From Building Data to Building Performance: Using SkySpark in Post-Occupancy Commissioning

High-performance buildings are more complex than ever. Advanced HVAC systems, building automation, detailed control sequences, and increasingly ambitious energy goals have raised expectations for how buildings should perform. But good design and successful construction do not always translate into efficient, reliable operation.

The first year after occupancy is often when the gap between design intent and actual performance becomes clear. Systems begin operating under real weather conditions, changing occupancy levels, and day-to-day operating demands. Control sequences that worked during functional testing may behave differently over time. Sensors may drift or report inaccurate values. Equipment schedules may not match actual building use. Seemingly minor issues can persist for months, increasing energy use, affecting occupant comfort, and creating additional work for facilities staff.

Commissioning plays an important role in identifying and resolving these problems. However, traditional commissioning is generally limited to specific tests conducted during a defined project period. Those tests provide valuable information, but they offer only a snapshot of performance. Many operational issues are intermittent, seasonal, or dependent on conditions that may not occur while testing is underway. Building analytics can help fill that gap.

This article is based on the master's thesis *Successes and Hurdles in Embedding SkySpark During the Post-Occupancy Phase of New Construction Commissioning* by Tierney Kilgariff, MS, PE, and summarizes key findings and insights from that research.

SkySpark® by SkyFoundry is designed to analyze building-system data and identify conditions that may indicate equipment faults, control problems, energy waste, or unexpected operating behavior. Instead of requiring engineers and operators to manually review thousands of trend points, the platform continuously evaluates building data using defined rules. When it identifies a condition that warrants attention, SkySpark generates a "spark" that provides information about the issue and its potential impact.

This approach gives commissioning and facilities teams a more focused way to work with building data. Building automation systems already collect large amounts of information, but having access to data is not the same as knowing where to look or what needs attention. Reviewing trends manually can be time-consuming, particularly in large buildings with complex mechanical systems. Analytics can narrow the field by directing attention to specific equipment, operating conditions, or patterns that may require investigation.

Used during post-occupancy commissioning, SkySpark can extend system evaluation beyond scheduled functional tests. Continuous monitoring allows teams to see how equipment performs during normal operation and as conditions change.

SkySpark also adds context to building data. By organizing information around equipment, systems, and their relationships, the platform can evaluate performance across multiple data points rather than treating each sensor or command independently. That context is important because many building problems cannot be identified from a single value. A temperature may appear reasonable on its own, for example, but may indicate a control issue when compared with valve position, airflow, equipment status, or operating mode.

Used during post-occupancy commissioning, SkySpark can extend system evaluation beyond scheduled functional tests. Continuous monitoring allows teams to see how equipment performs during normal operation and as conditions change. It can help identify problems that occur only during certain weather conditions, operating modes, occupancy periods, or system transitions.

This can be particularly useful during the warranty period. Problems identified early may be easier to investigate while contractors, controls vendors, commissioning providers, and project teams are still actively involved. Analytics can also provide trend data and supporting evidence that help teams understand when an issue occurred, how often it occurred, and whether corrective work produced the intended result.

The benefits, however, depend on more than installing software. Analytics require reliable data, accurate system information, and clear processes for reviewing and acting on findings. Building automation data must be available early enough to support meaningful analysis. Equipment and data points must be organized consistently so analytic rules can interpret them correctly. Findings must be reviewed by people who understand the building and can distinguish between an actual problem, an

expected operating condition, and an issue that requires additional investigation.

Roles and responsibilities also matter. Identifying a fault is only the beginning. Someone must review the finding, determine its priority, coordinate with the appropriate team, track corrective action, and verify that the problem has been resolved. Without a clear workflow, even useful findings can remain open or fail to produce lasting improvements.

The timing of implementation is another important consideration. If analytics are introduced late in the post-occupancy period, teams may have limited time to evaluate performance across seasons or address issues before warranties expire. Earlier access to building data provides more opportunity to establish normal operating patterns, identify recurring problems, and resolve deficiencies while the original project team is still available.

The UC Davis thesis, *Successes and Hurdles in Embedding SkySpark During the Post-Occupancy Phase of New Construction Commissioning*, written by Tierney Kilgariff, MS, PE, Associate Engineer at Michaels Energy, examines these issues through a real-world implementation. The study looks at the use of SkySpark during post-occupancy commissioning, including work associated with the UC Davis Teaching and Learning Complex.

Rather than focusing only on the technical capabilities of the platform, the thesis considers the practical work required to make analytics useful. It discusses staffing, workload, data availability, monitoring costs, warranty timelines, and coordination among the people responsible for reviewing and resolving findings. These operational factors can have as much influence on the success of an analytics program as the software itself.

The study also points to a broader change in how building performance may be managed. Commissioning has traditionally been organized around defined project phases, testing activities, and closeout milestones. Building performance, however, does not follow a project schedule. Systems continue to change as occupancy patterns evolve, equipment ages, control sequences are adjusted, and operating priorities shift.

Tools such as SkySpark create an opportunity to carry commissioning principles into ongoing operations. Continuous analytics can help facilities teams identify emerging issues, verify system performance, and make better use of the data their buildings already

UC Davis Teaching and Learning Complex

A sample view of the "sparks" at the Teaching and Learning Complex

produce. The goal is not to replace commissioning providers, engineers, or operators. It is to give them better information and help them focus their time where it can have the greatest impact.

The full thesis includes the project background, implementation experience, case-study findings, lessons learned, and a proposed framework for incorporating SkySpark into future commissioning projects.

Kilgariff's work is grounded in the practical experience of introducing SkySpark into the post-occupancy commissioning process for the UC Davis Teaching and Learning Complex. By working alongside facilities and engineering professionals, Kilgariff was able to examine not only what the technology could identify, but also the day-to-day challenges involved in putting analytics into practice. The research considers the people, processes, costs, data requirements, and project timelines needed to turn analytic findings into measurable improvements in building performance.

That practical perspective is one of the thesis's strengths. Rather than presenting SkySpark as a stand-alone technology solution, Kilgariff examines how it fits into the broader commissioning process and where implementation can succeed or fall short. The result is a useful resource for organizations considering how fault detection and diagnostics can support new construction, warranty-period activities, and long-term facilities operations.

For building owners, facilities teams, commissioning providers, energy engineers, controls specialists, designers, and construction professionals, this thesis offers a useful look at what it takes to incorporate SkySpark into post-occupancy commissioning. It presents both the value of the approach and the challenges that must be addressed for analytics to become part of an effective, repeatable process.

About the Thesis Author

Tierney Kilgariff, MS, PE, Associate Engineer at Michaels Energy, wrote the white paper as part of the requirements for a Master of Science degree in Energy Systems at the University of California, Davis. Completed in 2024, the research grew out of work with the UC Davis Energy and Engineering team and the university's efforts to use its campus as a living laboratory for energy efficiency and building-performance research.

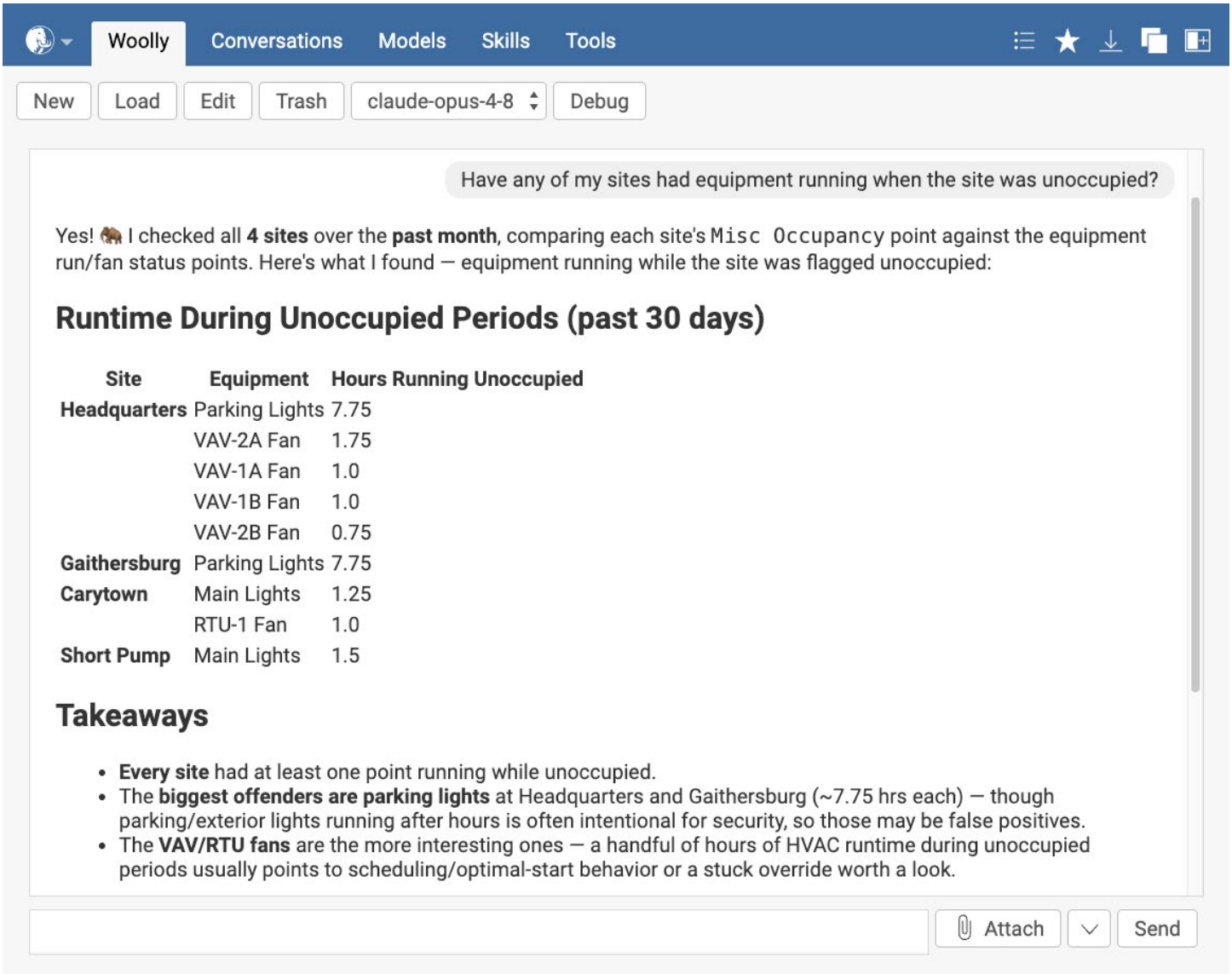
Updates on SkySpark 4 and Major New Features and Capabilities

SkySpark TECH CORNER

The first production release of SkySpark 4 (4.0.6) is officially available! Let's take a look at some of the new features.

Woolly

This release includes the beta of Woolly, SkySpark's LLM agent harness. Woolly is an AI agent that lives inside your SkySpark instance, and it ships with an extensive skills library that gives it the competence to perform most SkySpark tasks: answering questions, writing Axon functions, creating rules, and building views. Enable the hx.ai extension to try it out.



Woolly supports three providers out of the gate: Anthropic Claude, Google Gemini, and OpenAI's family of models. You configure your own API key for one or more of them, so you stay in control of which model your data is sent to. By default, the hx.ai extension shares your transcripts so we can make Woolly better, but you can turn that off with the shareTranscript flag on the settings page.

Please note that Woolly ships with no guardrails or plan mode. We will be adding these features in the near future, but in the meantime take caution: Woolly has full access to invoke any Axon function your user account has permission to call. Even in this beta, Woolly is an incredibly powerful tool at your disposal.

During the beta, Woolly is free of charge. We are planning to price Woolly separately from SkySpark, and we will share pricing details at SkyPosium this fall.

Spark Silence

Anyone who has run a rule engine in the field knows the pattern: a rule is legitimately firing on a target, but you already know about the problem and are waiting for the implementation of the fix so you don't want it cluttering the Sparks view for the next two weeks. Previously your only real option was to disable the rule, which meant losing the analytics everywhere else.

Silencing works on a per rule/target basis, following the same semantics as ruleSparks(). A silenced spark won't show up in the UI or in spark queries, but the rule engine keeps computing sparks in the background and storing them in Folio. That means when the silence expires, your Spark history is intact.

You can silence until a specific date or indefinitely until you clear it, and you can attach metadata such as a note explaining why. The Spark views now display an icon when any sparks have been silenced, and a new **Spark | Silenced** view, along with dialogs in the existing views, lets you manage the configuration. Sparks can be programmatically silenced from Axon, using the ruleSparksSilence() function.

New ioHttp Func

We have added a new ioHttp() function that fills a gap for anyone integrating with third party REST APIs. When you need control over the HTTP request beyond a simple read, this single function lets you set the method name and request headers, and read back the response status and headers. Authentication tokens can be passed securely from the password database rather than hardcoded into your function source.

The URI, method, and request headers are passed as parameters, and the response is handled in a callback that receives the status code, headers, and body—the callback result becomes the overall function result.

Automated Certificate Enrollment and Rotation

SkySpark now supports automated certificate lifecycle management via Enrollment over Secure Transport (EST), specified in RFC 7030. SkySpark can enroll with an EST-capable Certificate Authority to install and automatically renew its TLS certificates.

This matters more every year. Major web browsers continue to tighten the maximum lifetime they will accept for a TLS certificate, which means the manual renewal chore that used to come around annually is headed toward a much shorter cycle. Automated

enrollment eliminates that recurring task for anyone running HTTPS on SkySpark servers.

Additionally, WISP has been enhanced so the HTTPS certificate can now be rotated without restarting SkySpark. No more scheduling a maintenance window just to swap a certificate.

Arcbeam Crawl

Learning a large Niagara database has been the slow part of an integration when using the Niagara Arcbeam Connector. We have added two new functions to make it much easier when working over the Arcbeam connector against Niagara: arcbeamCrawlWrite() and arcbeamCrawlReadEach().

The arcbeamCrawlWrite() function opens a separate websocket to crawl the remote system. It is stream based, so it handles large systems, like a Niagara Supervisor with 100K+ points, without timeouts and without requiring an expensive in-memory cache. This is a huge advantage of using the Niagara Arcbeam Connector to integrate with Niagara versus previous Haystack based integrations.

The crawl produces a local file in SkySpark so you can work with the data locally via the arcbeamCrawlReadEach() function, which efficiently iterates the file without loading everything into memory. Your learn workflow now runs against a local snapshot at local speed, instead of paying for slow and expensive network calls on every navigation step. Additionally, when you don't control the Niagara implementation, you can much more easily check for new points that get added in Niagara to determine if they need to be modeled in SkySpark.

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SkySpark® Analytics automatically analyzes data from building automation, metering systems, and other smart devices to identify issues, faults, and opportunities for savings.

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