

## Project Benefit and Xeto Update

The multi-company team has made significant strides with the Department of Energy (DOE) funded *Benefit Project*. As a reminder, the objective of the *Benefit Project* is to create a validation and accreditation framework for semantic metadata templates and models with associated open-source tools and deploy an accreditation system for semantic interoperability.

In year 1 of the three-year initiative, Xeto was created. The focus has been to develop a tool to upload and store specs (templates and models) in a public library in year 2. The team will turn their attention to early-stage commercialization potential of the tools in products and real buildings. They will also evaluate potential model validation and accreditation processes.

Elements of Xeto were first incorporated into SkySpark beginning with release 3.1.8. SkySpark updates 3.1.9 and 3.1.10 have continued to expand and harness the power of Xeto. Please see the [Build Notes](#) of each release for additional information.

The [Xeto Technical Session](#) from [SkyPosium 2023](#) can provide more details. And, for a deeper dive you can go to Github ([Project-Haystack/xeto](#)) for more technical details.

Xeto is a data-only type system. Xeto defines a simple plain text format used to declare types and to exchange typed data. It is designed to build and validate Project Haystack data models. But Xeto is general purpose enough to use with any structured data including CSV, JSON, or SQL data.

Individuals interested in contributing to the development of Xeto or interested in keeping updated on its development are encouraged to join the Xeto WG at [Project Haystack](#).

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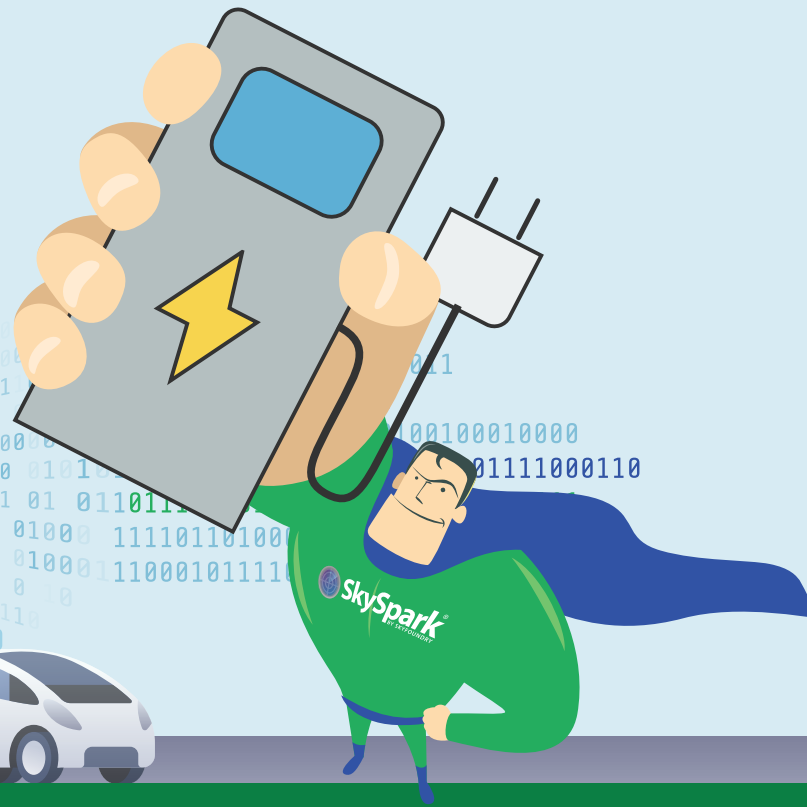
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# DATA to the RESCUE for EV Charging Operators



**M**otivated by upset EV drivers, sleepless nights, excessive electric utility and maintenance costs, and lost revenue caused by faulty EV chargers, EV charging operation managers are seeking solutions to improve the status quo and meet customer expectations. Hidden in the data exchanged with EV chargers, surge protection devices (SPDs), circuit breakers, and electric meters are answers to questions to address these problems. The challenge however has been how to extract the data and use it to “find what matters” so that corrective actions can be taken to improve EV charger operations.

Constructing EV charging infrastructure in the first place is not simple! Electric utility interconnections are costly and often take a significant time to source, which can make deploying EV charging infrastructure infeasible. Leveraging on-site battery energy storage, an Energy Management System (EMS), or excess electrical capacity from a facility’s

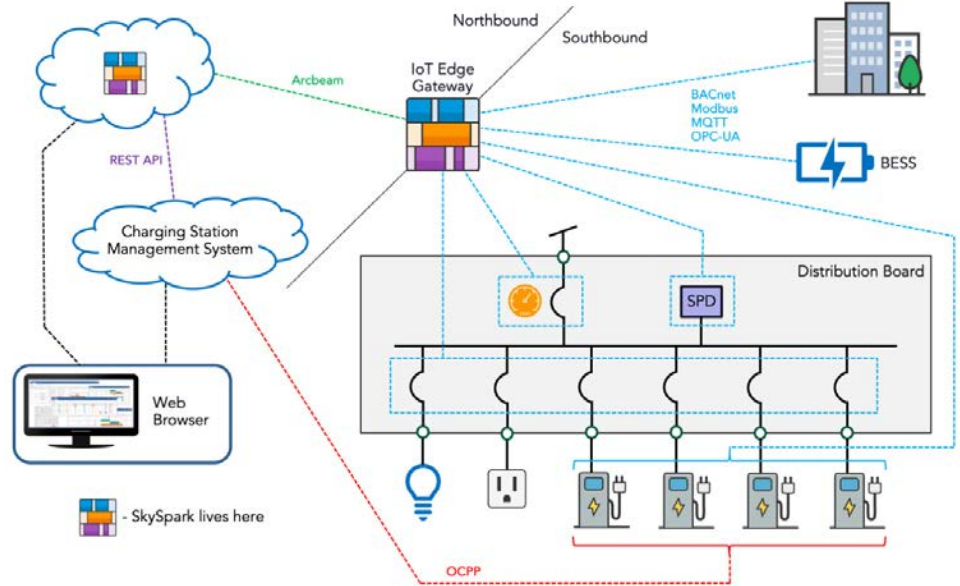


*Rick Jennings at the 2024 ACT Expo SkyFoundry booth*

existing electrical system can help but requires the integration of disparate systems from various manufacturers. In other words, now is the opportune time for the birth of the EV charging system integrator to help accelerate vehicle electrification!

Fortunately, the SkyFoundry community has vast experience in the integration of diverse equipment systems. Recently SkyFoundry has exhibited at

EV industry events, MOVE America, EV Charging Summit & Expo, and ACT Expo, to share how our data-centric software platform, SkySpark, can help improve both CapEx and OpEx aspects of EV charging projects. The reception to our message has been phenomenal. We are seeing interest in SkySpark being used in areas including EV charger uptime, system integration, load management, KPI tracking, and distributed computing.



*Opportunities for an EV charging system integrator.*

The perception of the amount of faulty EV chargers has contributed to consumers reluctance to purchase an EV and is contributing to political tension undermining society's critical climate objectives. Consequently, ensuring high EV charger uptime is often considered the number one priority for EV charging operation managers. There are untapped opportunities to use SkySpark to detect fault patterns early and perform real-time KPI reporting by retrieving and combining data from EV chargers and upstream electric power equipment. For a variety of other reasons, including avoiding hardware or service vendor lock-in, having a software platform that integrates well-established open communication protocols, including BACnet, Modbus, MQTT, OPC-UA, and OCPP, is essential to bring together disparate systems for analytics and controls applications. SkySpark is up for the task!

Many existing EV charging deployments rely on a cellular modem within each EV charger to communicate with a cloud-hosted Charging Station

Management System (CSMS). This network design introduces unnecessary cellular service fees and latency and failure points that can negatively impact equipment uptime. SkySpark can be deployed on-premise to provide the benefits of local control and analytics thereby augmenting existing cloud-hosted CSMS offerings. Also, SkySpark can operate as a simple CSMS deployed fully on-premise to meet stringent cybersecurity or uptime requirements that cannot be achieved with cloud-only systems.

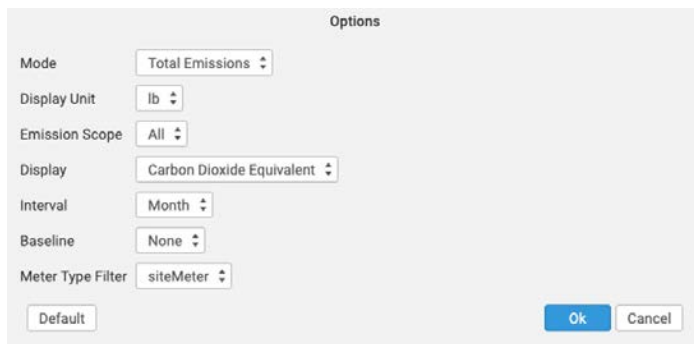
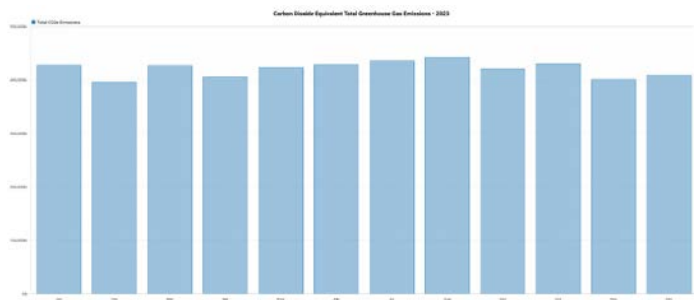
In conclusion, fault detection, KPI reporting, system integration, load management, and robust networking are essential software features for EV charging operators. SkySpark has all these features. System integrators can take advantage of SkySpark's clever design and flexibility to differentiate their business, reduce their training requirements, and be more productive on projects. Meanwhile the EV industry can benefit from the SkyFoundry community's data-centric solutions to help address critical needs.

# Updates on Major New SkySpark Features and Capabilities

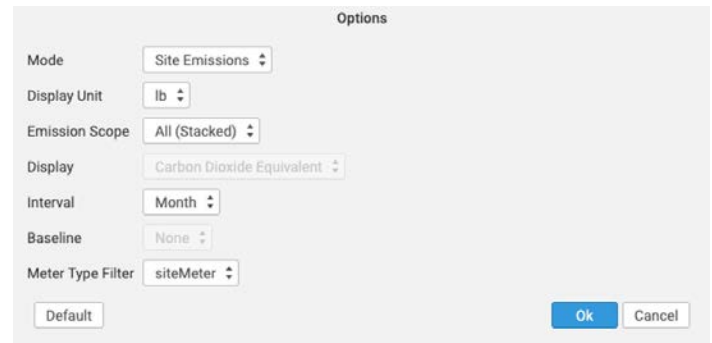
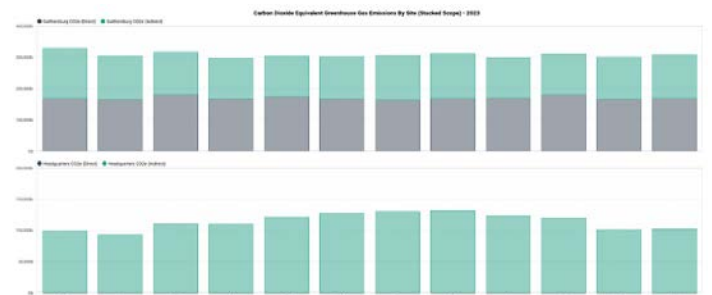
## GHG App

The GHG | Emissions view has been enhanced with a few new options: Total Emissions Mode and Stacked Scope Option

The Total Emissions Mode provides a simple way to look at the total of all emissions for the selected targets instead of grouped by site, equip or emission source. This built in visualization provides a convenient way to track total emissions over time without having to build a custom view.

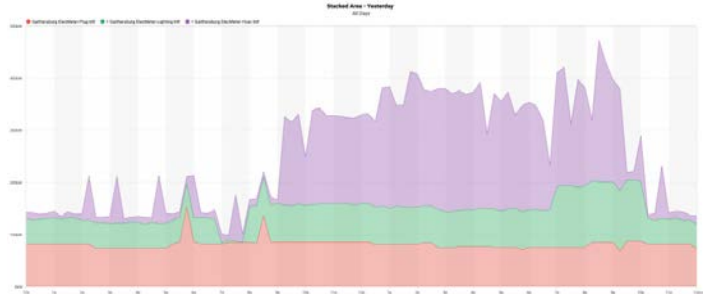
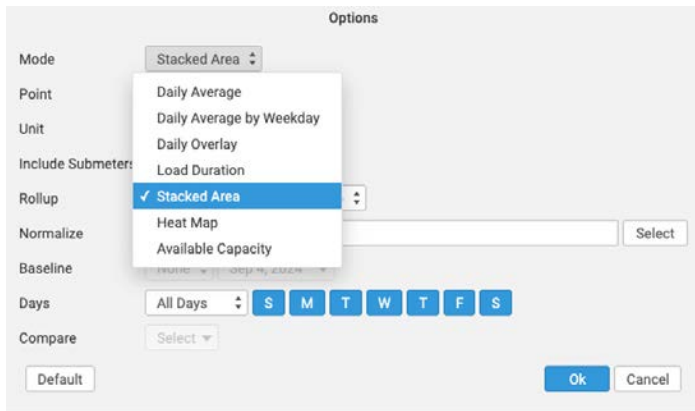
The Stacked Scope Option makes it easier to see what changed when analyzing emissions over time. Knowing which scope changed makes it quicker to diagnose the cause and focus on implementing improvements to mitigate the change if necessary.

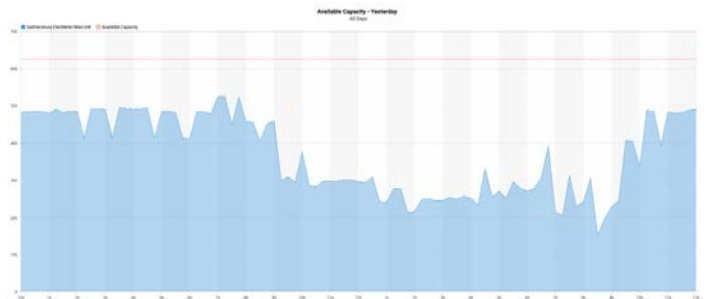
## Energy App

The Energy | Profile view has been enhanced with 2 additional modes: Stacked Area and Available Capacity

The Stacked Area Mode provides a new visualization that makes it easy to see the energy consumption for each submeter. No additional configuration is needed, just select a site meter and if the submeters are correctly configured with the submeterOf tag then the new visualization is automatically displayed.



The Available Capacity Mode provides a new visualization that makes it easy to assess available electrical capacity for electrified building loads such as electric vehicle charging. To leverage this new visualization, a new tag (availableCapacity) must be added to the existing siteMeter record and configured with the available capacity for that site.



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# Transforming Commercial Building Operations with SkySpark by SkyFoundry<sup>1</sup>

Lawrence Berkeley National Lab (LBNL) continues to provide leadership in areas of Fault Detection & Diagnostics (FDD) and controls optimization. This [whitepaper](#) highlights the first ever technology to automatically find and correct controls problems, optimize efficiency, and implement demand flexibility. And, as a benefit to the SkySpark community, LBNL has made SkySpark reference code available for all community members to utilize.

By integrating optimal control and analytics capabilities, we can provide much needed relief to service providers and operations and maintenance staff. Our solution automatically addresses control errors and eliminates the backlog of repetitive manual tasks. It ensures efficient in-tune building operations across various control systems, versions, and vendors; thus, delivering low-carbon load-flexible buildings through scalable SkySpark-based solutions.

Typically, in today's built environment, once a control fault is detected by an FDD tool, staff must initiate a request for the problem to be resolved. Another party then manually modifies the BAS programming. Once the work is complete, the FDD tool user can confirm the fault is no longer present. This process takes weeks to months (or longer) to complete. Now, with the availability of software that combines FDD and optimal control, users can push fault correction and improved control to their buildings within hours, in just one step.

**Easy Button.** Lawrence Berkeley National Lab has made [SkySpark reference code](#) available to fast-track



deployment of the techniques developed. Corrective logic for the most common and most readily addressable controls problems<sup>2</sup> has been developed, field tested and published for ready integration into commercial implementations. The code includes open specifications to:

- Correct zone temperature setpoints to operational intent
- Correct incorrectly programmed schedules to operational intent
- Optimize economizer high-limit lockout temperature setpoint
- Release unnecessary control overrides (spec only)
- Correct biased temperature sensors (spec only)
- Implement best practice AHU static pressure setpoint reset
- Implement best practice AHU supply air temperature setpoint reset
- Identify and suppress rogue zones in reset strategies
- Correct control hunting (PID loop tuning)
- Implement best-practice demand flexibility (coming soon)

<sup>1</sup> J. Granderson, *Transforming Commercial Building Operations with SkySpark by SkyFoundry*. Lawrence Berkeley National Laboratory, September 2023.

<sup>2</sup> Kramer, H., Lin, G., Curtin, C., Crowe, C., Granderson, J. *Proving the business case for building analytics*. Lawrence Berkeley National Laboratory, October 2020. <https://doi.org/10.20357/B7G022>.

# REGISTER TODAY

**SkyPosium (EU and US)** is designed for the entire community of **SkySpark** users—reseller partners, end users, engineering consultants, and SaaS providers—everyone that uses or applies SkySpark. Attendees will benefit from enlightening presentations, insightful discussions and productive networking.

## SkyPosium

**2024** | The Worldwide SkyFoundry Community Event

**October 16-17, 2024**

**Denver, Colorado**

**The Inverness Denver,  
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## SkyPosium-EU

**2024** | The Worldwide SkyFoundry Community Event

**September 30-October 1, 2024**

**Brussels, Belgium**

**Novotel Brussels City Centre**

SkyPosium provides 2 program tracks—one for hardcore developers and the other focused on applications, with the majority of presentations provided by community members. A general session delivered by SkyFoundry opens the event to bring everyone up to speed on the latest features and capabilities and provide a preview of our roadmap.

In addition, a vendor showcase provides attendees with the opportunity to meet with companies that offer complementary products and services to the SkyFoundry community. This is a great opportunity to showcase the latest trends and innovations in the smart building industry.

SkyPosium-EU offers a program that covers everything from business topics, application examples, and detailed product demonstrations, to developer-level technical topics. The program will include presentations by community members as well as the SkyFoundry team—it's a true community event. Over the course of the two days, opportunities abound to network and collaborate with your peers.

Connect with key decision-makers in the smart building industry—join us for SkyPosium 2024.

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