A SPECIAL ISSUE

SkyFoundry Insider

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In This Issue

Introducing the Next Step in Point-and-Click Data Visualization – SkySpark® Chart Customization

In 2018 SkyFoundry introduced **SWIVEL**, a revolutionary new tool for visualizing and analyzing analytic "sparks" and equipment data. Swivel enables simple, point-and-click customization of SkySpark's data visualization Apps - with absolutely **no coding** required.

SkyFoundry is excited to announce the next advance in data visualization which brings **point-and-click customization** features to all data charting views across **all** of SkySpark's Apps. The new charting features allow users to quickly and easily adjust color, style and weight of chart lines, choose between line, area, scatter, bar, donut and other chart types, and drag-and-drop items to create multi-axis charts, and overlays.

Coupled with all-new data importing tools SkySpark dramatically enhances the data analysis features of SkySpark available to users with **NO CODING** required. By simplifying data importing and chart customization SkySpark brings advanced data analysis tools to a new set of users. In this issue of the SkyFoundry Insider we will explore these important new features.

(cont. on page 2)

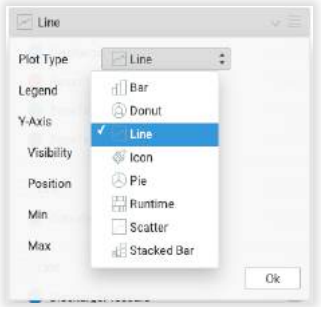
Point and Click Chart Customization

Quick Overview of Chart Customization Features

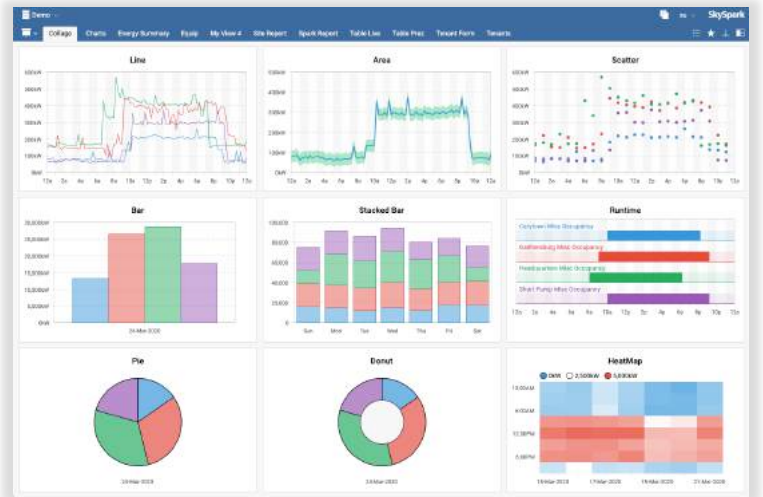
So, what can you do with the new chart customization features?

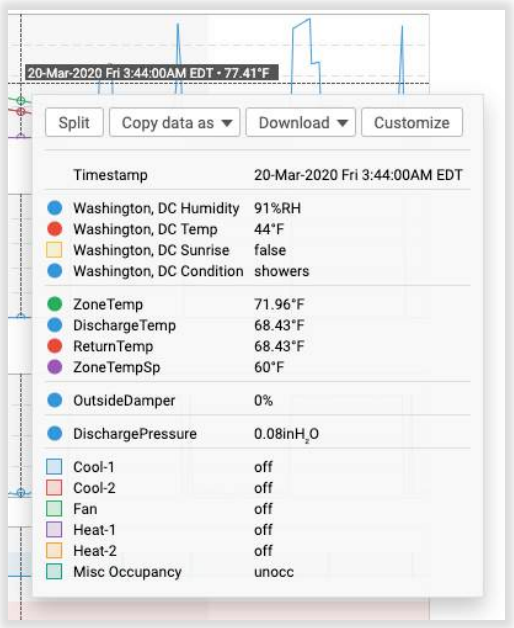
- Adjust color, style and weight of chart lines
- Choose between line, area, bar, donut, pie, scatter and runtime chart types
- Drag-and-drop items to create multi-axis charts
- Overlay multiple chart types

The new charting features work across **ALL** of SkySpark's Apps including, Energy, Historian and Equipment Views. (These examples from Historian)



Select any available chart type – ***all with a simple click.***

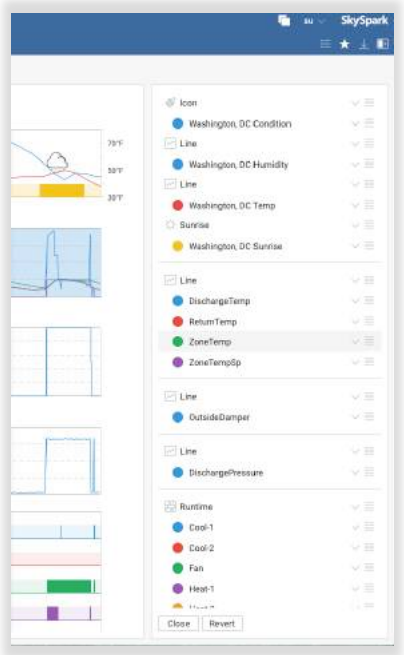




One click brings up the chart

Customize

option shown here in SkySpark Historian



Click

Customize

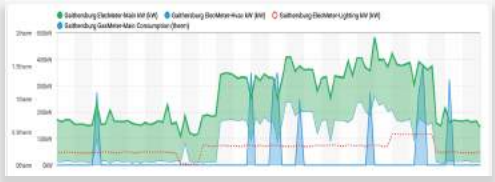
to bring up the chart customization "sidebar"

SkySpark's Point and Click Chart Customization

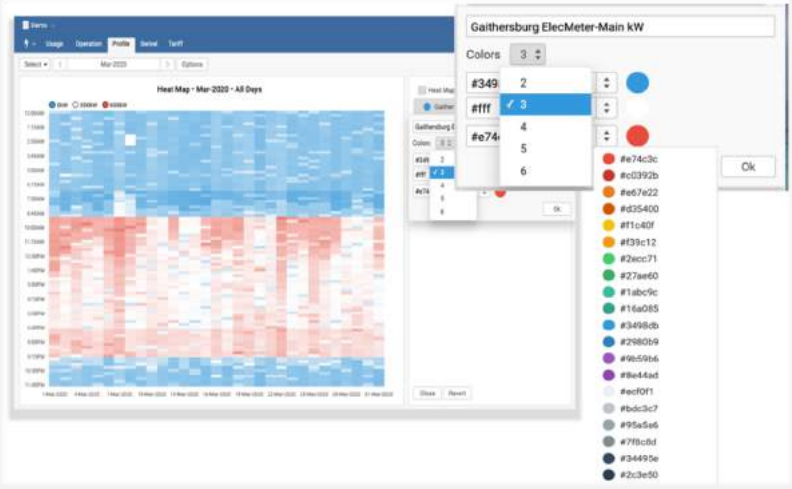
Let's explore a few more examples of Chart Customization…

Easily select "Area Mode" to clearly isolate items of interest and create confidence charts:

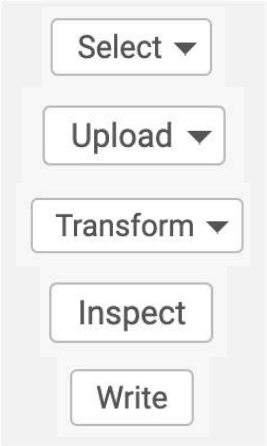
Overlay different items with different units onto a single chart, add bold dotted and dashed lines



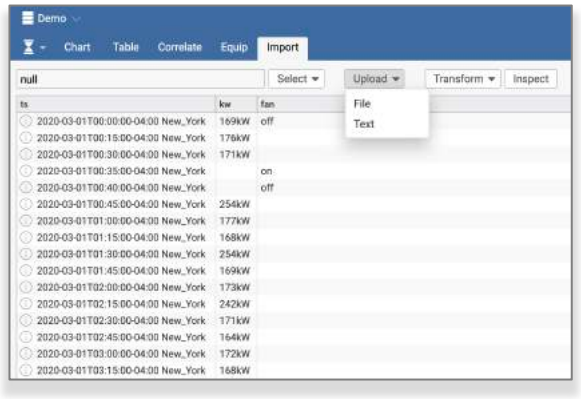
Choose number of color transitions and colors in Heat Maps



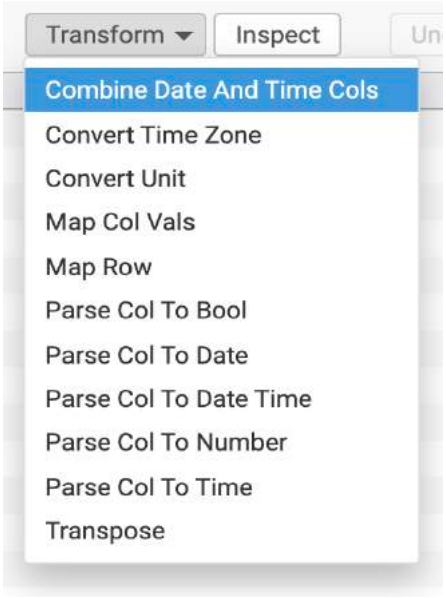
Point-and-Click Data Importing and Transformation



As much as we see opportunities to connect to live systems for equipment and sensor data, there is still a vast amount of data that is only available in CSV and text file format. SkySpark has always been able to work with CSV and text data but we have added an all-new **data importing tool** in the Historian App that provides **point and click transformation** of these files. This allows users to manipulate and "fix up" their data for easy import - **all with NO CODING!!!** An "inspect feature allows the user to view the modified data format and SkySpark automatically highlights data items needing to be fixed up. Then the transform feature provides the ability to modify the attributes of your file data, which typically is stored as simple text strings. The transform menu includes tools to:



- Combine Date and Time values when they are separated in the source data
- Convert time zones
- Convert units
- Map Column Values and Rows
- Parse column entries to Boolean (ON/OFF) values
- Parse column entries to proper Date formats
- Parse column entries to proper Date-Time entries
- Parse column entries to Numbers
- Parse column entries to Time
- Transpose file formats from column oriented to row oriented



The new tool allows the most common transformations encountered in the data import process to be done with simple point-and-click – *Did we mention **NO CODING**?*

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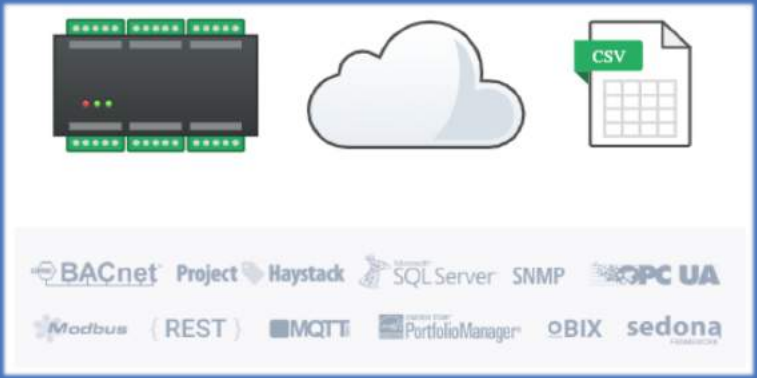
What data do you have? SkySpark works with it all – live data, batch data, historical data



See Real World Results in Our Many Case Studies

Proven in applications of all types

SkySpark is used successfully in all types of facilities with deployments across well over **1 Billion square feet** (over 92,000,000 m²) of space on 6 continents. Applications include:

- Commercial office buildings (owner occupied, REITs)
- Utilities (demand response, load management)
- Government and Military facilities
- Data Centers
- Industrial facilities
- Multi-site Retail and Quick Serve Restaurants
- Higher Education
- Indoor Agriculture
- Laboratories (Government, research and universities)
- Entertainment/Hospitality (casinos, shopping centers, hotels)
- Smart Cities
- Facility management service providers
- Oil Rigs

SkySpark is available through a worldwide network of authorized partners, providing maximum choice for best-of-breed implementation services.

Learn more at: http://www.skyfoundry.com/partners/

Point-and-Click Data Importing and Transformation

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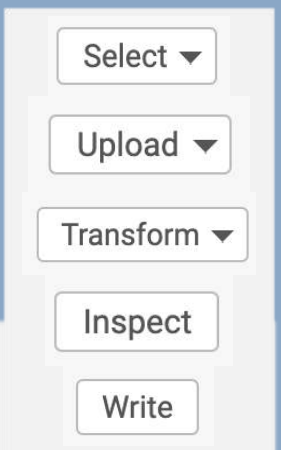
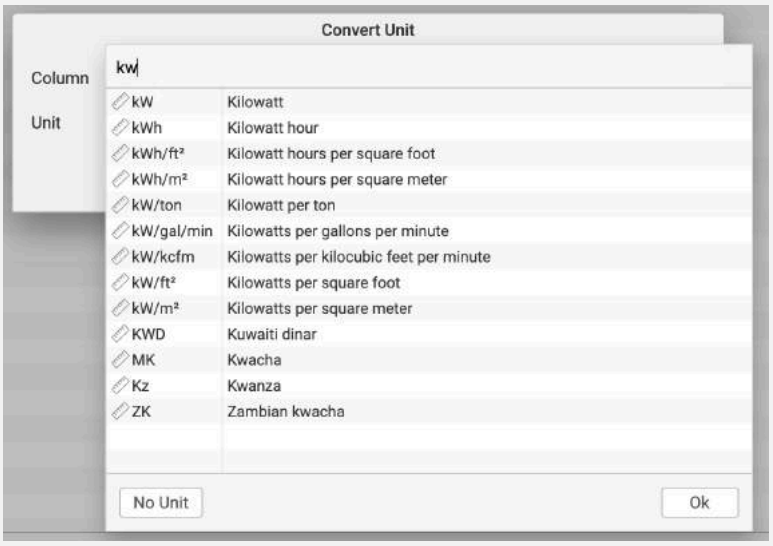
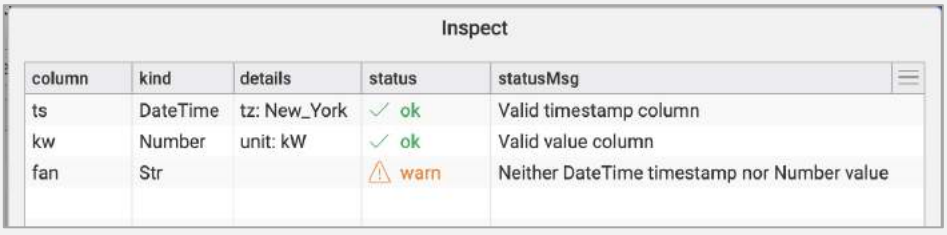


The new Import Tool is powerful, but the process is simple

- **Select** the point you want to write data to from the drop-down menu
- **Upload** the File that contains the data – it appears as a multi-column table
- Perform necessary **Transformations –** e.g., convert strings to number, modify date formats, select or change units, etc.
- **Inspect** the transformed results – the tool provides warnings to show you any issues
- **Write** the data to the history record for the **Point** – That's it!!!





The Import tool also includes the ability to undo each transformation step as you proceed through the process. (A handy feature when working with diverse data formats!).

The Import tool is just one more way SkySpark makes it easy to use data of all types.

Other Cool New Stuff!

Managing Users and Security Permissions. SkySpark has always offered an easy to understand user permission system via user roles (superuser, admin, operator) which determine read/write permissions. Read permissions can be further restricted with the use of access filters applied to the user. As the projects continued to expand and grow, the number of users that wanted to access the value created by SkySpark increased. This resulted in increasingly complex filters not only for cybersecurity purposes, but also to offer a better user experience. Applying and updating these filters was a manual process, that needed to be planned for in user management processes.

SkySpark 3.0.24 drastically simplifies this process with the introduction of a new standalone User app along with User Prototypes. Typically, many users share a common configuration (e.g. role, access filters, etc.) and user prototypes allow this common configuration to be defined in one place. Once a user prototype is created, user configuration is as simple as assigning a prototype. The benefits for creating new users should be pretty obvious, but editing users is also now much simpler because only the user prototype needs to be changed and all users with that user prototype assigned are automatically updated.

The codeless LDAP Authentication introduced in the last version of SkySpark benefits from user prototypes as well. Starting in SkySpark 3.0.24, a configurable attribute in the LDAP server is used to define what user prototype is assigned to the user. For example, a common configuration will use a group in the LDAP server and each member of that group can now log in, without requiring an account to be manually created for each user in SkySpark.

Codeless Support for LDAP

Many organizations leverage Lightweight Directory Access Protocol (LDAP) authentication to provide a single login across multiple applications. It is important for users to have the same username and password across all their applications for a couple reasons. First, it offers a better user experience because it avoids having to remember and manage yet another username and password. Second, it ensures new processes don't have to be created for managing the user lifecycle and existing cyber security protections are automatically applied to each application.

As SkySpark adoption continues to grow, customers are increasingly finding themselves with a larger set of users to manage. These users all need their access filters managed for both security purposes and to streamline navigation. You can simplify user account management processes of your SkySpark deployments by using LDAP authentication – stop worrying about how to meet all the various password policies of each environment by letting that be handled automatically by an LDAP server!

Simplifying User Account Management and Security Settings:

New User App and User Prototypes

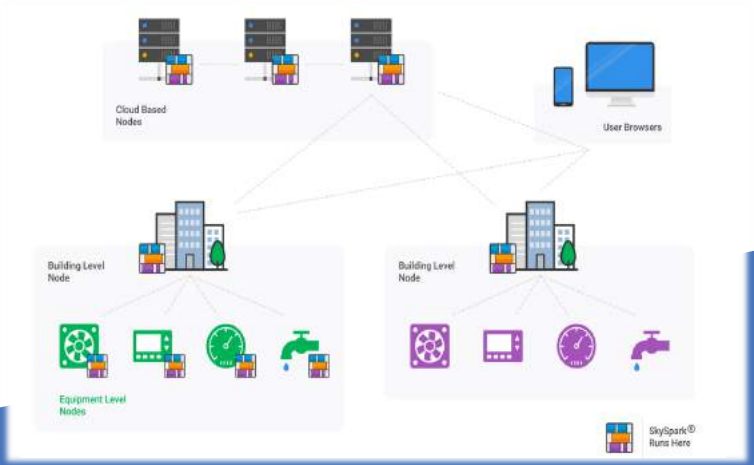
This issue of the Insider presents just a few highlights of the latest features added to the ever-advancing SkySpark Informatics platform.

Contact SkyFoundry for more information or a live demonstration

Distributed Architecture, Clustering, Replication and Provisioning – the What and the Why

A reprise article

SkySpark is unique in the world of software for device and equipment data because it can be applied from the "edge" to the "cloud" providing a fully distributed data and compute platform. Sounds cool, but what does that really mean and why is it important? Let's start with a brief look at **"what"** these terms mean.



Distributed Architecture – By this we mean that SkySpark can be deployed on multiple nodes (computing devices) distributing the work of data collection, analytics processing and presentation of results to users.

Clustering refers to the ability of distributed SkySpark nodes to be connected into a seamless unified system over SkyFoundry's highly efficient and secure Arcbeam protocol. Once connected into a cluster, users interact with their data, analytic results, reports and views as if they were interacting with a single computer and single database. The result is a seamless user experience even as data and processing are distributed across many computing nodes.

Replication is a SkySpark feature that enables copies of SkySpark databases from distributed nodes to be automatically copied (replicated) to one or more servers. But SkySpark replicas are not simple data backups. Rather SkySpark replicas are fully operational copies of individual distributed nodes. They provide the full user experience even when the original data source(s) are not available (offline) allowing users to work with the last available data and analytic results.

Provisioning. And finally, if I have a system made up of numerous individual nodes, I need an easy way to update them with new software revisions, new analytic rules, and other new features. That's the role of SkySpark's Automated Provisioning features.

That's the "What". Now let's talk about the Why?

Why? Addressing Key Challenges for Next Era of the IoT With an Edge-to-Cloud Data Architecture

So why does any of this matter? The reasons are actually quite compelling…

- Greater fault tolerance
  - For data collection, storage & processing – Collect data, process analytics and create visualizations for users as close to the source as possible
  - Allow in-building personnel full access to their data and analytic results even if they cannot communicate to an external cloud
- Low latency
  - Provide near real-time data acquisition, processing of analytic rules and algorithms
- Support applications with "constrained networks"
  - IoT devices and equipment are often connected to slower, bandwidth limited or intermittent networks, or use cellular connections with high data transfer costs. By processing analytics at the edge, network traffic can be reduced by as much as 1000:1 !!!
- Security
  - Keep data on premise - Meet requirements for projects that cannot send data to an external cloud
  - Isolate in-building systems from the Internet – SkySpark acts as a security barrier to connected equipment with its Arcbeam, websocket-based protocol
  - Meet regulatory requirements for data storage location - keep data within a region or jurisdiction
- Save Engineering Costs – using SkySpark from the edge to the cloud means you engineer once – set up data acquisition and tagging once with one uniform set of tools
- Reduce hardware costs – eliminate gateways and security appliances in many applications
- Provide a Seamless User Experience – across multi-node systems that include data from multiple systems – they appear as a single system
- Digital Data Replication
  - SkySpark provides automated replication of the distributed nodes in clustered systems
  - Replication provides a fully operational replica of each node that users can interact with - EVEN WHEN the actual node is OFFLINE
  - User queries do not have to penetrate down to the actual nodes – can work with last available data – saving significant data transfer costs
  - Replication also provides a full automated backup of individual nodes – saves time and work

Trove Consulting Releases Tariff Builder App Integrated with RateAcuity™ Tariff Rate Service

Trove Consulting has announced the release of the Tariff Builder extension for SkySpark®. At a time when utility rate structures are only increasing in complexity, SkySpark users of all experience levels need access to accurate cost calculations in their analytics without wasting hours poring over tariff documents. The Tariff Builder App provides a streamlined workflow to quickly generate detailed and up-to-date electric tariff models for the SkySpark Tariff Engine.

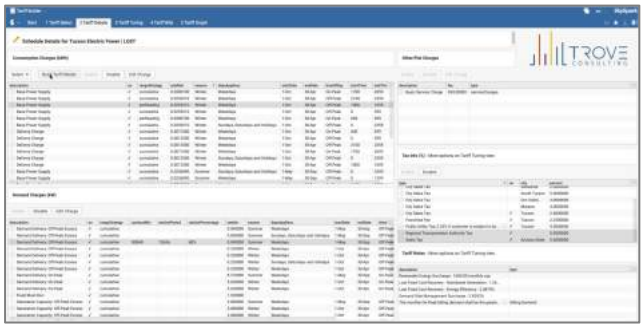
Tariff Builder leverages the RateAcuity tariff database to automate the entire data entry step of the process. RateAcuity provides access to 12,000+ unique tariff schedules from over 1,800 utilities directly within the Tariff Builder App. RateAcuity licensing is also conveniently included in the cost of Tariff Builder. After obtaining the details of a tariff from Rate Acuity, Tariff Builder walks through each step in the process of configuring a tariff for the SkySpark Tariff Engine. With little more than a single utility bill in hand, a user can easily select and configure all applicable charges, create billing histories, visualize charge schedules, and apply their new tariff model to utility meter data in SkySpark.

Tariff Builder is available for sale at StackHub.org in a range of license capacities. For a more detailed look at the extension, you can view our training video series at trove.consulting/training-center/tb

You definitely want to watch the 2-minute video overview – it's an awesome tool – and it's all built using SkySpark's native UI toolset – making it completely seamless!

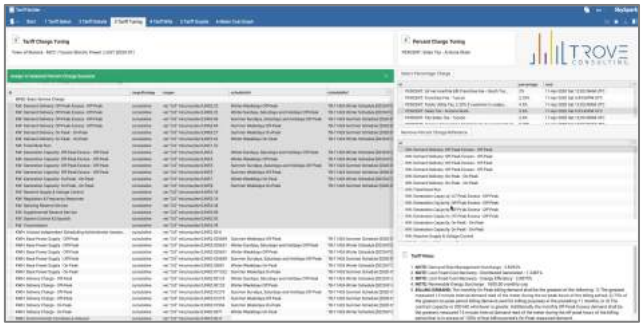
Visualize charges by schedule

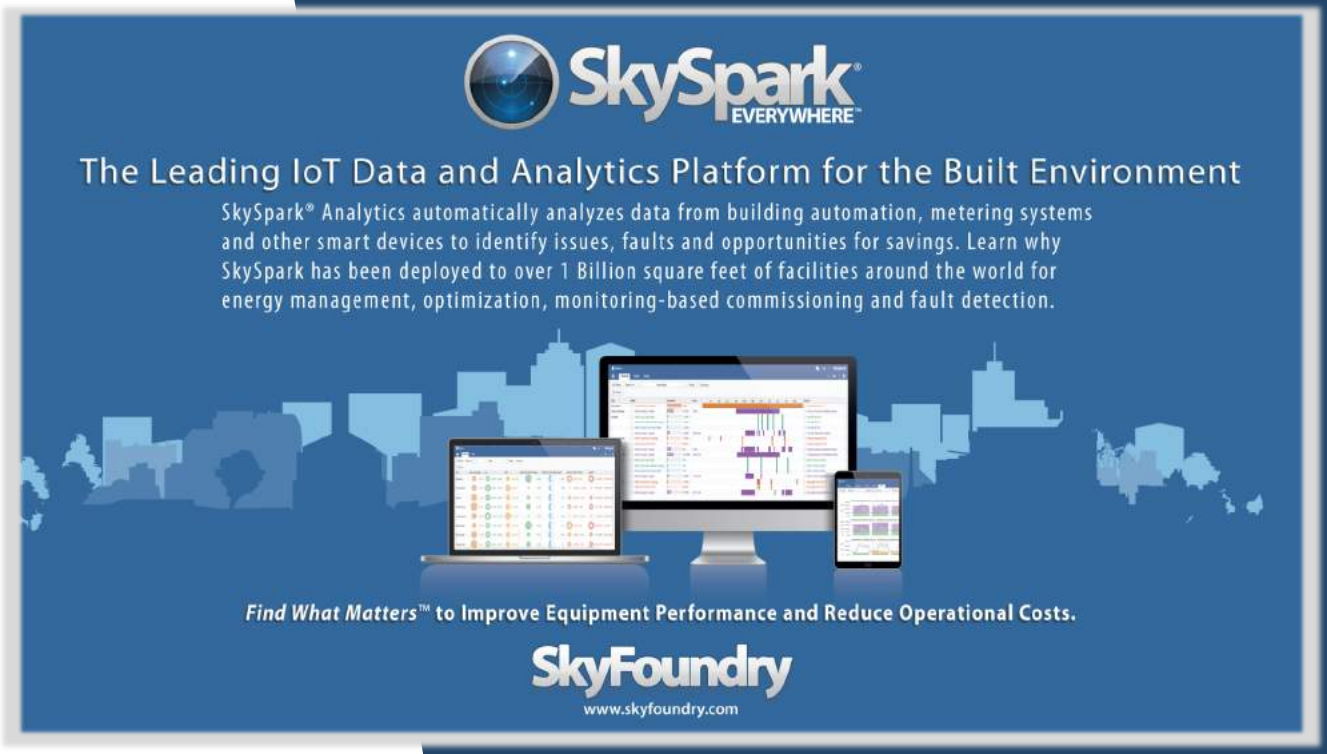
Easily configure tariff charges



Generate and assign bill histories

Quickly apply complex tax structures





Learn More About SkySpark® and How to Apply the Industry-leading Data Analytics Solution to Your Application

Join us for a comprehensive demonstration webcast

We publish our calendar of upcoming sessions and other events here: https://skyfoundry.com/calendar

Or contact us at: info@skyfoundry.com