

SkyFoundry Insider

Special Focus: The Energy Issue (Pg 1)

SkySpark Introduces Support for Energy Star Portfolio Manager (Pg 2)

Overview of SkySpark's Portfolio Manager Features & Capabilities (pg 3)

SkySpark Energy Star Integration A Real World Use Case (pg 4)

A Deeper Look at the Functions Provided by SkySpark's Energy Star Extension (pg 5)

Green Button - More and More Utilities Adopt an Open Format for Energy Data (Pg 6)

Project Haystack - Announcing a Educational Series of Webinars (Pg 7)

The Energy Issue: A SkyFoundry Special Focus

One of the primary uses of analytics is to support energy efficiency improvements. Initial "portfolio-level" analytics can be used to identify best and worst performing buildings and provide comparisons to benchmarks and baseline performance targets, while equipment-oriented analytics highlight issues and faults in the operation of specific equipment systems and identify correlations between equipment operation and energy performance.

But effective analytics don't just find issues, they provide operators with clear, understandable views showing issues that waste energy, their frequency, duration, location and even cost. This enables operators to prioritize their efforts and expenditures based on solid information – we refer to it as "data-driven facilities management".

Energy related tools play a key role in the overall analytics process, from initial review of data to detect anomalies and energy use patterns, to deeper investigation in response to analytic findings. In this issue of the Insider we focus on the SkySpark's newly released support for the **Energy Star Portfolio Manager**, as well as a review of SkySpark's support for the **Green Button** energy data format and how these capabilities support your efforts to improve efficiency and reduce operating costs.

In This Issue



SkySpark Now Supports
Energy Star
Portfolio Manager



**Green
Button**

Support for Green
Button Data



New Webinar Series

SkySpark adds Support for Energy Star Portfolio Manager®

An Introduction to Portfolio Manager

Developed by the EPA, ENERGY STAR Portfolio Manager®, is an online tool you can use to measure and track energy and water consumption, as well as greenhouse gas emissions. It can be used to benchmark the performance of one building or a whole portfolio of buildings. Use of Portfolio Manager is growing – today over 40 percent of U.S. commercial building space is benchmarked in Portfolio Manager.

Portfolio Manager is the tool of choice among cities such as New York, Seattle, Chicago, Boston and others that have passed mandatory energy benchmarking laws. And, Portfolio Manager is used by the Canadian Government as the platform for their national energy benchmarking program for existing commercial and institutional buildings.

You can use Portfolio Manager to manage the energy and water consumption of any building. Simply enter your consumption data, cost information, and operational use details. Portfolio Manager will then help you track more than 100 different metrics, which you can use to compare your building's performance against a yearly baseline, national medians, or similar buildings in your portfolio.



You can also use Portfolio Manager to get an Energy Star rating for your building. This score compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide. Buildings with scores of 75 or higher may be eligible for ENERGY STAR certification.

Portfolio Manager can also be used to calculate your building's greenhouse gas emissions from energy use data, and track avoided emissions from green power purchases or onsite renewable energy installations.

Portfolio Manager received a major upgrade this June and SkySpark has been integrated with the very latest version. You can get full details on Portfolio Manager at the Energy Star website at: <http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>

In the remaining pages of the Insider we provide more detail on SkySpark's new Energy Star Extension.



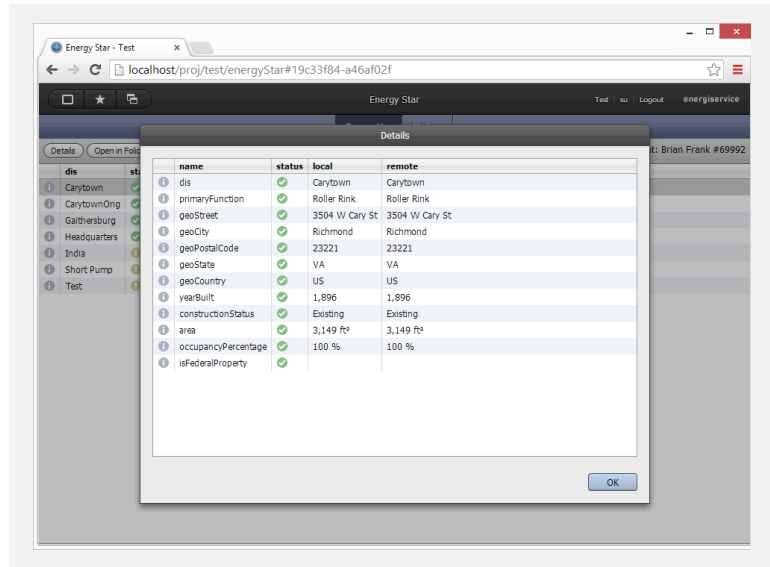
Con't on Page 3

An Overview of SkySpark's Portfolio Manager Features & Capabilities



So just what does SkySpark's integration with Portfolio Manager (PM) provide? Portfolio Manager offers an extensive API, known as the Portfolio Manager web service, which enables external software applications to interact with PM services. SkySpark's Energy Star extension supports a wide range of PM services. Here are a few examples.

Generate "Property" Accounts in Energy Star Directly from SkySpark. SkySpark's Energy Star App allows you to set up a connection to Energy Star and define an Energy Star "property" (referred to as a Site in SkySpark) and add tags to define required items like area, year built, address, occupancy percentage, & primary use function.



Push Energy Consumption Data to Portfolio Manager. Once an Energy Star "property" is setup, SkySpark can automatically push energy consumption data into PM on a continuous basis, or as a one-time batch. Uploading consumption data to PM is the first step in utilizing PM features for benchmarking your building performance against the PM "peer group" database of buildings. Portfolio Manager provides over 100 different metrics that give you insight into how your property is performing.

Pull Energy Consumption Data into SkySpark. Many owners have been entering energy consumption data into PM for some period of time. Typically this was done in a manual, batch-type process. All of that data can now be pulled into SkySpark to populate historic energy data for use in the SkySpark Energy App, Historian and KPI App. *Note: Energy Star deals with monthly energy consumption data. It doesn't support interval meter data at this point in time, or electric demand data.*

Energy Star Portfolio Manager is often used as the reporting mechanism to support new initiatives by major cities that have enacted energy reporting and disclosure requirements in their jurisdictions. Chicago and Boston recently joined the ranks of New York City, Philadelphia, Washington, D.C., Seattle, San Francisco in adding these reporting requirements. SkySpark's integration streamlines the process of complying with those requirements by automatically pushing energy consumption data collected from meters or BAS systems into PM. Today, over 40 percent of U.S. commercial building space is benchmarked in Portfolio Manager. And its not just for the US, Portfolio Manager is **used by the Canadian Government** as the platform for their national energy benchmarking program for existing commercial and institutional buildings.



You can get full details on the capabilities provided by Energy Star Portfolio Manager at: <http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>

SkySpark Energy Star Integration

A Real World Use Case



Bellevue College, located minutes from downtown Seattle, is the third-largest institution of learning in the state of Washington. Bellevue College was founded nearly 50 years ago as a part of a movement to provide affordable and accessible education to citizens of the suburbs of Seattle. Starting in 2012 Bellevue College undertook nearly \$3 million dollars in energy efficiency projects. Despite the college's significant investment in energy efficiency, individual building measurement and verification of the savings remained a challenge because of limited electrical and gas metering. Bellevue College, like many campuses, has nearly 20 buildings served by only a few electric and gas utility meters. Individual building electric and gas metering is critical for any campus serious about energy efficiency – you can't manage what you don't measure and benchmark.

The State of Washington has adopted a goal of reducing energy use in state buildings by 20 percent by 2020. The Washington State "Efficiency First Act" (RCW 19.27A.190) establishes targets for state agencies, colleges, and universities to implement energy efficiency projects in state owned buildings starting with energy benchmarking. Washington State requires state-owned facilities to benchmark and report using the EPA Energy Star Portfolio Manager® a free online tool used to measure and track energy and water consumption, as well as greenhouse gas emissions. Forty percent of the U.S. commercial building space is benchmarked in Portfolio Manager – making it the de facto industry benchmarking standard.



Bellevue College used Portfolio Manager to "macro" benchmark the campus using data from the main electric and gas utility meters that feed the entire campus. This benchmarking provided little useful information (or measurement and verification) about individual building performance. In 2013 the college installed 32 electric and gas building sub meters to better understand individual building performance. The college chose SkySpark as the tool to provide the resource conservation manager, facility engineers, and even students advanced energy analytics along with energy reporting functionality.

Beyond the SkySpark energy analytic tools desired by Bellevue College, individual building integration to Portfolio Manager was a must have project requirement. SkySpark trends each building electric and gas meter and integrates directly with Portfolio Manager to upload totalized electric and gas consumption data on a monthly basis. SkySpark integration provides individual building benchmarking and measurement and verification for the college.

Information provided
courtesy of:



www.atsinc.org

The Details: A Deeper Look at the Functions Provided by SkySpark's Energy Star Extension



We know there are some programmers out there in the audience, so here's a brief overview of the functions supported by the Energy Star Extension. The Energy Star extension implements a client-type interface to the Energy Star Portfolio Manager web service. Features include:

- An Energy Star connector, which maps to an account and is used to manage your sites, meters, usage
- Ability to manage your Energy Star properties and map them to SkySpark sites
- Ability to manage your Energy Star meters and map them to SkySpark meter points
- Ability to manage your Energy Star meter usage data
- Push history data from SkySpark to Energy Star

These functions enable SkySpark to interact with the Portfolio Manager web service. Details on the web service can be found here: <http://portfoliomanager.energystar.gov/webservices/home>

Funcs

energyStarHisPull	Pull energy star usage into the given mapped meter points history.
energyStarHisPush	Push the daily rollup consumption of mapped meter points to portfolio manager.
energyStarMeterDelete	Delete the meter identified by the given meter id string.
energyStarMeterList	Read meters for given property as grid with following columns
energyStarMeterPull	Create or update a local meter point record from a meter in Portfolio Manager.
energyStarMeterPush	Create or update a meter in Portfolio Manager from a local meter point record.
energyStarMeterRead	Read the given meter and return as Dict.
energyStarPing	Asynchronously ping energy star connector to verify connectivity and account credentials.
energyStarPropertyDelete	Delete the property identified by the given property id string.
energyStarPropertyList	Read properties as grid with following columns
energyStarPropertyMetrics	Read a list of metrics for a specific property.
energyStarPropertyPull	Create or update a local site record from a property in Portfolio Manager.
energyStarPropertyPush	Create or update a property in Portfolio Manager from a local site record.
energyStarPropertyRead	Read the given property and return as Dict.
energyStarUsageDelete	Delete the given usage item from portfolio manager
energyStarUsageRead	Read consumption data for given meter.
energyStarUsageWrite	Write consumption data to portfolio manager for given meter.

In addition, the Energy Star Extension defines a range of standard tags, which correspond to elements in an Energy Star implementation:

Tags

energyStarConn	Marker tag for Energy Star connector record which stores the configuration for connectivity for a portfolio manager account.
energyStarConnRef	Used on a proxy object to reference its parent energyStarConn
energyStarMeter	Tag applied to a point record which marks the point as mapped to a meter in Portfolio Manager.
energyStarMeterType	String enum for EnergyStar meter type applied to energyStarMeter point records
energyStarSite	Tag applied to a site record which marks a site as mapped into Portfolio Manager.

SkySpark includes complete documentation on the use of the Energy Star Extension.

Green Button - An Industry Supported Standardized Data Format for Energy Consumption Information



There are other important standards in the energy management industry beyond Energy Star. **Green Button** is an industry-led effort that responds to a White House call-to-action to provide electricity customers with easy access to their energy usage data in a consumer-friendly and computer-friendly format via a "Green Button" on electric utilities' website. One key feature of Green Button is that it provides interval meter data and electric demand information.

Green Button defines a standard, machine-readable format for energy use data, and SkySpark introduced support for Green Button data in January of 2013 with functions that streamline the importing of energy meter data provided in the Green Button XML format. The "greenButton Extension" provides a function to parse green button XML usage data into SkySpark.

As of July 2013, eight major utility companies have already implemented green button, and another 30 have committed to implement it, which together serve more than 27 million utility customers. Dozens of software apps and services have already been developed to utilize the data.

Green Button is based on a common technical standard developed in collaboration with a public-private partnership supported by the Commerce Department's National Institute of Standards and Technology. Adoption of the data format standard by utilities allows software developers and other entrepreneurs to leverage a sufficiently large market to support the creation of innovative applications that can help consumers make the most of their energy usage information.

You can find complete details on the Green Button initiative and data format to see if your utility company makes your energy usage data available in Green Button format:

<http://www.greenbuttondata.org/>

SkySpark's Green Button Extension enables SkySpark to parse Green Button XML data files and convert energy consumption and demand data into SkySpark data. Green Button data is stored as grid with following columns:

- ts:** DateTime of interval starting timestamp in UTC
- val:** usage value in native Green Button "uom" (unit of measurement)
- cost:** cost in USD

Green Button data can be associated with any appropriate data point (such as a meter) and is then fully available to the SkySpark **Energy App** for analysis and presentation, the **Historian App**, and to the **Spark** engine for automated analytics to detect peaks, load anomalies, and other patterns of interest.

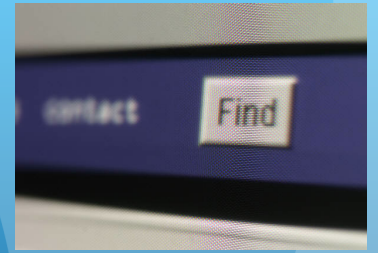
The Green Button Extension is just another way that SkySpark helps you move to data-driven facility management.

SkySpark® - Analytics for a World of Smart Devices

The past decade has seen dramatic advances in automation systems and smart devices. From IP connected systems to support for web services and xml data schemas, it is now possible to get the data produced by the wide range of systems and 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 reduce energy consumption and cost, and to identify opportunities to enhance overall facility operations.

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. *SkySpark directly addresses this challenge.*



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

Project Haystack Announces Educational Webinars



Project Haystack
Supporter

One of the key challenges in utilizing data to drive efficiency improvements is the effort involved in integrating data from a wide range of sources that utilize different formats.

*“Recent technology, market and policy drivers (smart meters, energy performance disclosure laws, etc.) are resulting in a rapid increase in the generation of building and energy data that has the potential to address these issues. But this data is still hard to access, aggregate, share and utilize because it is being housed in many decentralized databases, and in different formats. Stakeholders consistently reported that they spend more time on data formatting and cleaning than they do on conducting analysis. **The lack of standard data formats, terms and definitions is a significant ongoing barrier to realizing the full utility of empirical information about building energy performance.**”* (Building Energy Data Exchange Specification Scoping Report, August 2013, eere.energy.gov)

Project Haystack (www.project-haystack.org) was founded specifically to address this challenge and make it easier for software applications to consume, analyze and present building system data. Project Haystack is an open source initiative to develop tagging conventions and taxonomies for building equipment and operational data. The community-based effort defines standardized data models for sites, equipment, and points related to energy, HVAC, lighting, and other environmental systems. A simple REST API is defined to facilitate exchange of Haystack data over HTTP.

The Haystack community has announced an educational webinar to help industry professionals understand project-haystack, how it can be used to address the data definition challenge, and how to participate in the open source effort. Full details on the upcoming webinar can be found on the project-haystack.org web site in the discussion forum at: <http://project-haystack.org/forum/topic/125>

Or contact john@skyfoundry.com for more details.