

SkyFoundry Insider

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Getting Started with Analytics

It doesn't need to be complex or expensive to get results

Analytics is the new frontier in optimizing facility performance. Analytics enables you to drive operational improvements and reduce costs by automatically analyzing your operational data to identify waste and specific opportunities for savings. *Simply put, analytics enables you to turn the data from your building systems into money.*

With any new technology, understanding the capabilities and costs is key to assessing the potential benefits to your organization. With over 1200 buildings and 120 million square feet of facilities now using SkySpark analytics on a daily basis we can offer building owners real world examples of results and financial returns that analytics are delivering.

Analytics is about finding out how your buildings actually perform. It's an exploratory process and all great explorations begin with a single step. Your move into operational analytics is no different. In this issue of the Insider we provide the information you need to chart a course to get started with analytics in your organization - *Its easy to get started.*

Get Quick Wins that Generate Fast Financial Return... Then Go Deeper

Unlike energy conservation measures that involve the installation of major capital equipment, you can start small with analytics and generate returns in a very short period of time.

The results from those initial analytics generate the savings to go deeper into your operational data.

Analytics will show you how your buildings really operate, identifying exactly where opportunities for savings exist.

What Data Do You Have?

Start with data that's easy to get

It all starts with the data. But all data is not created equal. Some data is harder to get than others. Some data has greater value than others. When looking to get started with analytics in your organization it makes sense to drive the greatest value with the lowest investment. So how can you get the most value with the least initial cost? Start with easily available data.

Step 1: Assess your Available Data. Today's buildings have a wide range of equipment systems which can be great sources of data - Building Automation Systems, meters for electricity, gas, and water, lighting controls, utility provided energy data, etc. These are all good sources of data, but the work required to access the data can vary considerably. *So the very first step in planning an analytics implementation is to find out what data you have, where it is, how you can connect to it, and how well it is documented.*

Step 2: Consider an Incremental Approach that Drives Value at Every Step. Unlike the installation of a major piece of capital equipment, you can start with just a few pieces of data and get results that will drive operational savings. For example, consider starting with just interval meter data (electric demand) and occupancy schedules. See Page 3 for an example of what's possible with just these two pieces of data.

Step 3: Available Data Drives the Analytics. If you have thorough data on HVAC unit operation (fan status, temperatures, setpoints, etc.), SkySpark's analytics engine can identify HVAC related issues such as simultaneous heating and cooling, economizers open when they shouldn't be, short cycling, lack of adequate temperature drop across coils, etc. If you start with more limited data you will employ simpler analytics. But there is value at every step.

Sites	Rules
Gaithersburg 30 sparks	AHU Cool Failure AHU Cool/Heat Mode Cycling
Headquarters 2 sparks	AHU Cool Failure
Short Pump 10 sparks	AHU Cool and Heat AHU Cool/Heat Mode Cycling

Does It Have to be Live Data?

Another common misconception is that you can't derive value from data unless it's live and continuously updating in real time. This simply isn't true. Live data is great, but by no means essential to get started with analytics. You can get tremendous value from running analytics on a snapshot of "CSV" data. And, one of the benefits of using snapshot data is that you can avoid the costs and delays associated with gaining IT approval for network access to live systems. A great example is an initial portfolio assessment, but you can also do deep equipment analytics with historic data. *See Page 4 for a detailed example of a quick portfolio assessment.*

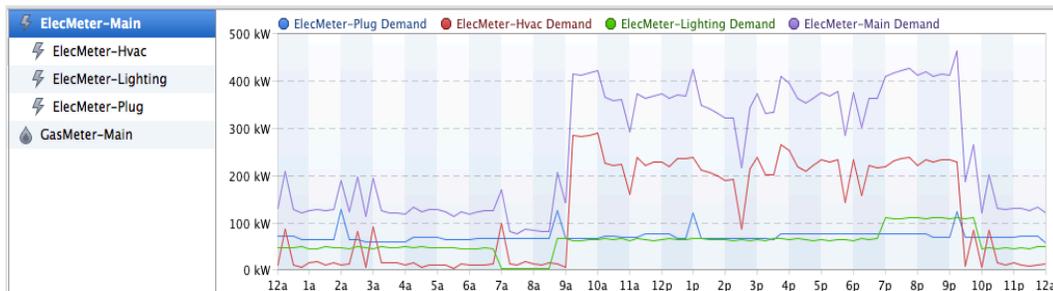
Starting With Just Two Pieces of Data

A path to rapid results and ongoing savings

Hmmm - Lets say the only data I can easily access is my interval meter data (kw demand), which is provided once per day by my utility company, and a list of occupancy schedule times in an Excel™ spreadsheet. Can I gain any valuable insight from that little amount of data? The answer is a resounding YES! With just that limited amount of data SkySpark can identify:

- Buildings starting early
- Buildings running late
- Buildings that operate continuously
- Demand peaks that occur outside of occupied times
- Peak Load, Annual & Monthly and Short Load Durations

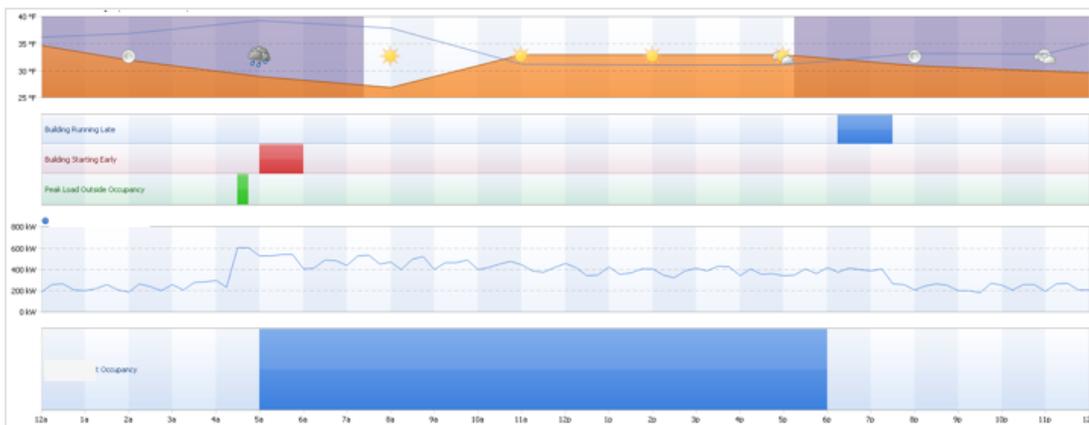
Here's how. Using the SkySpark Energy App I can easily identify my kw demand pattern for each day. By



looking at it manually I can determine whether the pattern follows occupancy times. **But who has time to do**

that manually? I don't! The solution - a SkySpark rule looks for a percentage change in kw demand at the transition to and from occupancy. The rule generates sparks whenever the

demand does not change by the expected amount, identifying exactly when buildings run late, and start early. A weekly view shows how many times the issue has occurred and the total cost. ***There's no need to hunt through the data manually!***

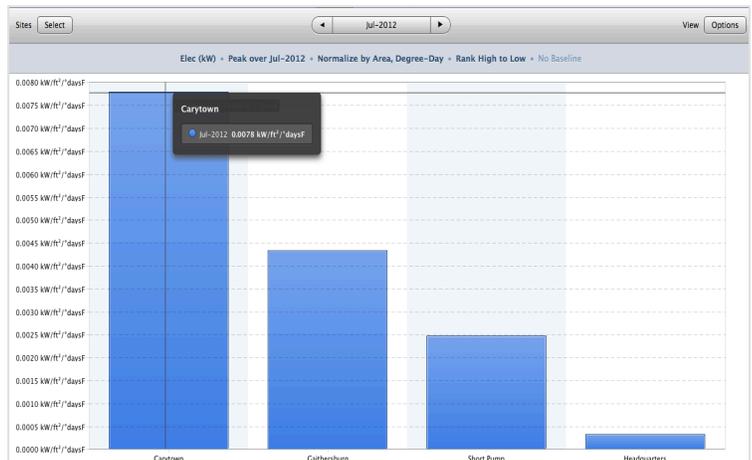


Rules	Cost	Dur	Timelines
Building Running Late	\$35.58	1.75hr	
Building Starting Early	\$82.13	4hr	
Peak Load Outside Occupancy		1.25hr	
			Sun 15th Mon 16th Tue 17th Wed 18th Thu 19th Fri 20th Sat 21st

Portfolio Analysis

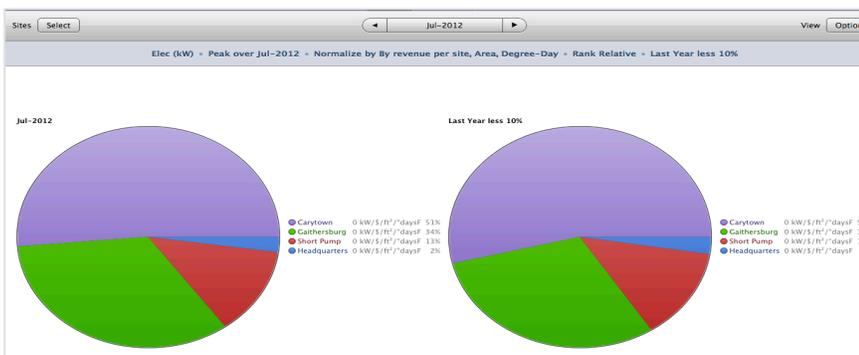
Getting an assessment of where you stand is an easy first step

We have a portfolio of buildings and want to understand which are our best performers and which are our worst. But lets look at more than just raw consumption or demand – lets normalize our data to understand true energy intensity - for example, kw per square foot per degree-day. This measure takes into account building size and climate conditions and tells us more than simple consumption values. We can quickly see that the Carytown site has the highest energy intensity.



That useful, but what additional factors can help us understand how our buildings perform? SkySpark can analyze energy performance as it relates to factors such as building age, location, type of construction or equipment systems, facility manager, service company, etc. And you can add benchmarks or baselines to compare progress vs. past performance. The charts below shows energy normalized for building size, climate, and revenue per site as a measure of building usage,

and compares current usage to a benchmark goal of the previous year's consumption less 10%. This quick portfolio analysis lets us see where we should spend our efforts to reduce costs.



What's needed to do this level of analysis

All of this can be accomplished with just the following data:

- Monthly energy data (typically in Excel or CSV file format)
- Building size data
- Past year energy consumption
- SkySpark's built in weather service provides the climate data (which goes back in time 2 years)
- A production measure like revenue per site for a restaurant

SkySpark Selected for major GSA Smart Building Contract



SkyFoundry is proud to announce that SkySpark has been selected in a major new GSA project. As part of its larger smart building strategy, the GSA will connect building management systems to a central cloud-based platform, to improve efficiency and save up to \$15 million in taxpayer dollars annually.

The contract for the project was awarded to IBM and will include Environmental Systems, Inc. (ESI), SkyFoundry and Tridium, Inc. as solution partners. The solution partners will work with Intelligent Buildings, LLC, which acts as owner's representative for the GSA. The contract is for the development and installation of advanced smart building technology in 50 of the federal government's highest energy-consuming buildings.

You can read the official press release about this exciting project here:

<http://www.marketwatch.com/story/leading-environmental-building-technology-companies-to-participate-in-gsa-smart-building-contract-awarded-to-ibm-2012-06-21>

How Much Can You Save???



We know... that's what it all comes down to. And that's just fine with us because SkySpark excels at delivering real, financial results and rapid ROI. So just how can data analytics save you money? Here are just a couple of real world examples.

The Business Issue: Exceptions happen - buildings need to be put into override mode for a variety of reasons - but how long do they stay overridden and how much does it cost?

Sites	Rules	Cost	Dur	Timelines
ⓘ Carytown 1 sparks	ⓘ Lights On and Unoccupied	\$29.87	12.45hr	

The Solution - Analytic rule tracks the number of hours sites are in override mode. Auto-generated report provides managers with a clear view of the number of hours of override by site and across the portfolio with costs

The Result - Actionable information that is being used to drive reductions in energy costs projected at **\$1.8 million annually across 925 sites through changes to operational practices to address just this one issue.**

The Business Issue: Equipment controls when improperly set up can waste money. Watching the operating characteristics of all systems is impossible to do manually.

Solution: Apply analytics to automatically detect improper operation, in this case, identification of periods of time when cooling and heating were operating simultaneously

Equipment	Rules	Cost	Dur	Timelines
ⓘ RTU-2 1 sparks	ⓘ AHU Cool and Heat		0.75hr	

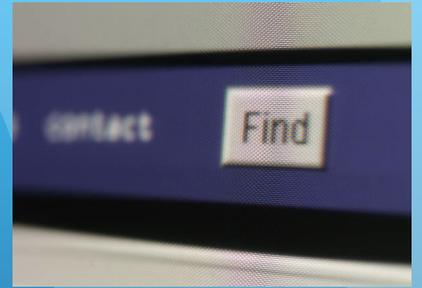
The Result: Control sequences were changed to correct the issues and a savings of over **\$325,000 annually was realized across 67 sites.** Its proven - you can create big savings using data analytics.

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 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 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 help businesses reduce energy consumption and cost and to identify opportunities to enhance operations through improved control, and replacement 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.



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

SkyFoundry Wins IBM SmartCamp North America - Competition for Technology Startups



SkyFoundry was selected as one of the two winners of IBM SmartCamp North American finals. SmartCamp is a global competition for startup companies. A key area of focus this year were companies that are using business analytics and big data technology to drive innovation in a variety of industries including retail, transportation, buildings and energy.

In its third year, the IBM SmartCamp program has proven a valuable event for IT startups. Past participants have captured the attention of the venture capital community and gone on to rapidly expand and drive innovation in their industry.

SkyFoundry is extremely proud to have been selected as a winner in this world recognized competition that brings together the very best new technology companies. SkyFoundry will go on to the SmartCamp Global Finals where they will face-off with winners from SmartCamp events in Europe, Asia and Latin America. The finals will be held in New York in February 2013.

Read the full story here: <http://www.skyfoundry.com/forum/topic/174>