One business can generate more than 1 million energy and sustainability related data points in 5 years

How this data can be harnessed to save money and reduce consumption

1011010
0100101
1001110

Corporate energy and sustainability data

Corporate energy and environmental data come from a number of sources. Energy and resource consumption, supplier information, weather and facility information, utility contract information, efficiency projects and corporate metrics, such as sustainability goals, are all used in reporting and decision making. Some businesses track this data manually, some data sources are easily automated, and some are much more difficult to collect.

Calls for transparency are getting louder

Demands from consumers, supply chain, stakeholders and employees are increasing the need to access enterprise energy and sustainability data. This data can be used for reporting, to encourage behavioral changes, to increase operational efficiency or reduce costs. Identifying, collecting and interpreting the millions of data points can be a real challenge.

Reporting requirements are increasing

Mandatory government and supply chain regulations and voluntary disclosure programs, such as the Carbon Disclosure Program, require thorough reporting of energy and environmental data. Consider these facts:
• Total corporate responsibility reports continues to increase from just over a 1000 companies in 2001 to 6500 in 2012
• More than 90% of the 250 largest companies in the world (G250) are currently publishing sustainability reports.

To respond to these increasing demands, company leaders need quick access to their energy and sustainability data. This data needs to be accurate and summarized for their entire organization.

DATA MANAGEMENT BEST PRACTICES

This article discusses the pressures enterprises face to report on energy and environmental data, and what data is required to be collected and aggregated.

Six clear steps to implement a corporate energy and environmental data platform are discussed.

Schneider Electric

What data can be collected?

Energy and sustainability data can be collected from a number of different sources including:

- Utility bills/utility data
- On-site meters/devices that collect resource consumption data
  (water, electricity, gas)
- Facility sub-metered interval data
  (such as lighting or HVAC if available)
- Facility and enterprise software application data
- Detailed supplier information and ratings
- Survey information
- Efficiency goals, performance
- Efficiency project details
- Energy cost metrics
  (budgets, price per kwh ,tariffs, rates)
- Other related data for analysis
  (production, financial, occupancy, weather)

How is data collected?

Most businesses are not collecting data, and when they start, they tend to use a manual process of entering data into a spreadsheet. Data is obtained either from paper utility bills or project teams. This method of collecting data is time intensive and error prone.

As companies progress in maturity, a common next step is to implement a software application with automated data collection, which includes more granular data than is available in manually collected data in spreadsheets. The most advanced enterprises have a system where data is automatically collected at every facility in a cloud based platform that integrates all this disparate data across an enterprise for analysis.

Typical progression of data collection process
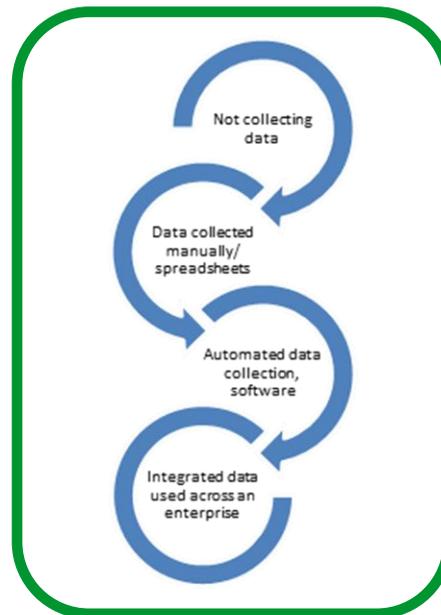
Example of how much corporate environment and energy data is generated

Consider the following example to illustrate the volume of data produced by a medium size business. This business has 2 manufacturing plants (under direct management),more than 200 retail locations, office buildings and logistics hubs. The data collection infrastructure varies from metered buildings with Building Management Systems to leased buildings with no access to metered data. At each facility weather information, energy costs and efficiency project information is also collected.

How much energy and sustainability data is generated? In this example **more than 100 million data points would be produced in 5 years!**

This massive amount of data translates into a requirement for robust data storage, redundancy and backups. If this data is located in separate applications or locations, performing analysis can be very difficult. A scalable cloud based platform eliminates on site data storage requirements.

Schneider Electric   www.schneider-electric.com

Recommended Best Practices

The most efficient method of data collection is to aggregate all required data sources in a cloud based platform. A centralized platform enables enterprise-wide metrics available anytime, from anywhere. This platform should also offer drill down capability into a single-site interval-level data in order to find inefficiencies that can be hidden in monthly data.

6 Steps to implement an energy and sustainability data platform

1. Develop Strategy
- Map out how data will be used to support sustainability strategy and energy reduction goals
- Agree on what needs to be measured, what data exists, and identify gaps
- Define frequency and level of granularity needed (monthly, daily, hourly or 15-minute data)
- Identify people to analyze data
- Identify audience and interval for data reporting

Common Pitfalls:
Just because data is generated does not mean you need it. Only collect what is required for metrics you actually use to keep costs down.

2. Collect & Aggregate Data
The following data should be collected in the enterprise energy and sustainability data platform:

- Manually enter project, supplier and financial data
- For facilities that do not have interval data, collect data directly from the utility
- Connect facility meters or sensor data
- If required, import data residing in separate software programs such as building management systems, ERP and weather data

Common Pitfalls:
Ensure data quality at this stage. As a point of reference at Schneider Electric, we have found up to 80% of customer data requires data "cleaning". If data quality is not maintained, problems can be overlooked and erroneous decisions made that have a significant financial impact on a business.

3. Develop Baseline, Reporting
Once data is aggregated, the next step is to develop a baseline of performance. This baseline can be used to ensure corporate goals set are realistic and achievable.

Data can be reported throughout the organization to generate awareness and foster collaboration. An enterprise energy and sustainability platform allows departments, such as Energy Procurement, Sustainability and Operations, to share and report on the same data set. An enterprise platform for energy and sustainability data simplifies and expedites voluntary reporting, such as Carbon Disclosure Project or U.S. EPA's GHG Mandatory Reporting Rule.

Common Pitfalls:
Understand what your current performance is before you set goals to ensure they are achievable.

4. Perform Data Analytics
Data on its own is useless. The real value is in the people who make sense of this big data and find patterns that help an organization make better business decisions. A recent Intel study found when presented with a list of big data challenges, respondents overwhelmingly selected "data analytics" as the most significant, followed by "big data expertise within the company." Enterprises often have data, but do not have the right resources to turn the data into actionable information.

It is essential to have the right internal team in place to manage data analytics or outsource this function to experts that can mine data to find efficiencies and deliver value.

Common Pitfalls:
Not having internal expertise to translate data into actions.

Big Data Challenges

1. Performing analytics, not just data collection
2. Finding expertise to perform analytics

5. Take Action

Once experts have uncovered inefficiencies or areas to improve, either behavioral improvements or investments that deliver value need to be acted on. Clear priorities and return on investment requirements need to be established to enable quick response to problems. If an internal team is not available to ensure action is taken based on prioritization, this function is outsourced to a team of experts that can ensure highest efficiency.

Common Pitfalls:
Not assigning responsibility for implementing facility efficiency initiatives to ensure maximum ROI.

6. Continuous data monitoring and improvement

Once actions are taken and improvements are made, results need to be tracked to ensure success, and to refine the strategy as necessary. Without continuous monitoring, many efficiency projects do not meet their expected return and, over time, progress made is often eroded. In fact, a recent study by Accenture found 50% of initial energy savings disappear within the first six to 12 months because of a lack of continuous monitoring, analysis and corrective action.

Common Pitfalls:
Not planning for continuous monitoring will erode efficiency gains.

Harnessing corporate Big Data to save money and increase efficiency

Corporate big data can be harnessed to drive value for an organization by analyzing the data, finding efficiencies to act on, monitoring and reporting on results and sharing best practices across an organization.

The following example demonstrates how corporate energy and sustainability data aggregated in a single enterprise platform can be used to save money and reduce resource consumption to meet goals.

Data Analysis and Action: An Example
Data Analysis

An update on corporate CO_2 emissions showed the enterprise is not on track to their reach goal of a 10% reduction by the end of the year. All facilities are benchmarked by energy consumption using data normalized by weather data to find outliers.

Poor performers are closely examined to find patterns in the data that reflect the root cause of overconsumption. Data shows that HVAC systems not optimized in poor performing locations.

Action

Site managers adjust improper temperature set-points resulting in 20% energy savings at each poor performing facility.

The benefits of energy and sustainability data management

As transparency into corporate sustainability metrics moves from a luxury to a requirement, most businesses will be required to collect, aggregate and report on this data.

Businesses must prepare for this fundamental shift by implementing an enterprise-wide platform that enables both corporate sustainability reporting and the ability to reduce resource consumption at each facility.

Benefits include:
- Single source of data fosters collaboration between departments that previously used different systems to analyze and report on data
- Reduced errors and ensure data reliability
- Benchmarked performance to ensure reduction targets are correct and sustainability projects are correctly prioritized to reach targets
- Reduced operating costs
- Lower risk of energy price volatility
- Increased market share and customer loyalty.