

Maximize Smart Building Value with Multiple Initiatives

Give stakeholders the data they need to drive action in building efficiency, portfolio management, sustainability, and business intelligence.

“Our mission is to provide entire organizations a single point of access to optimize energy costs, comfort, and productivity.”

Vladi Shunturov
Lucid CEO

Making Building Management Simple

Better building management requires diverse teams to have access to intuitive tools that allow them to streamline operations and make informed, data-driven decisions about building efficiency, finances, tenants, and their portfolio as a whole. Putting the right building data in the hands of stakeholders across the enterprise makes it easier to support a wide range of initiatives, such as:

- Operations management teams need a centralized view of building data and the ability to use analytics to find new ways to conserve resources.
- Real estate asset managers can better optimize real estate portfolios and facilities management with the right data.
- Corporate responsibility and sustainability teams want to show occupants how their behavior impacts energy and water usage, recycling programs, and other environment-related activities.
- C-Suite executives could utilize big data analysis to increase productivity and profitability across the organization.

But for many companies, building data is complex, fragmented, and difficult to access, creating huge barriers for those who rely on that data to make important resource decisions. Fortunately, the new Internet of Things (IoT) era can help tackle these challenges head-on, resulting in smarter decisions and reduced costs across the board.

For organizations just starting a smart building program, Intel and Lucid identify some key initiatives that can benefit from the program and maximize its value over the short and long term.

Smart Building Initiatives

When scoping a smart building program, many companies start by focusing on energy management—and for good reason. Energy savings on the order of 10 to 30 percent can often be achieved with no-cost or low-cost energy efficiency measures and operational adjustments,¹ producing a return on investment in anywhere from several months² to two to three years.³

Once the requisite smart building infrastructure for energy management is in place, (more on that follows), it can easily be leveraged for a diverse set of business initiatives, including building efficiency, portfolio management, and business operations, as shown in Figure 1. This diversity exemplifies how companies can get broad value from their smart building program and enable staff from across their organization, including building operations, real estate, finance, sustainability, and corporate planning teams, to use building data to make better decisions.

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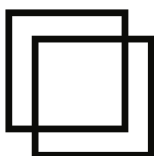




Figure 1. Smart building programs typically support a number of initiatives.

Building efficiency

As previously mentioned, increasing energy efficiency is often the “low-hanging fruit” of a smart building program. To make this happen, operations and energy management teams need visualization tools that allow them to understand how energy is being consumed, and data analysis tools that allow them to identify opportunities to save energy.

To improve energy efficiency, smart building programs should consider areas such as:

- **Operations:** Centralize performance data and use analytical insights to reduce consumption.
- **Behavior:** Educate tenants in good habits and best practices, and create a feedback mechanism.
- **Capital improvements:** Where necessary, replace inefficient systems, using building data to effectively prioritize capital improvements across large portfolios.

Portfolio management

In order to make accurate forecasts about operational spending, asset management teams need data from across the organization. This includes a portfolio-wide view of building performance, costs, occupant comfort indicators, and much more.

Smart buildings enable the optimization of real estate portfolios and facilities management processes, such as:

- **Increased efficiency:** Benchmark building performance across the portfolio to identify best known practices (BKPs) that should be applied universally.
- **Occupant retention:** Invest in new systems (e.g., smart parking lots) that could improve lease renewals, using occupant engagement programs to assess their satisfaction level.
- **Bundled spends:** Identify common equipment needs (e.g., elevator replacement) across multiple locations in order to negotiate a volume discount.
- **Expense timing:** Decide whether to replace an expensive building system (e.g., HVAC) on a property that will be put up for sale, based on the system’s performance history, resale value, and downtime risk.

Sustainability

Corporate responsibility and sustainability teams want to drive occupants to contribute to energy savings, giving them a visual way to see their energy and water usage, recycling impact, and other behavioral patterns that could be modified in a positive way.

An example is a leading biotech firm that used Lucid BuildingOS* to transform their energy and resource management processes to meet ambitious 5-year corporate climate and sustainability goals.⁴ The company centralized data from 55 buildings and connected more than 380 meters and utility accounts from four systems. The solution linked meters to 48 different pricing schedules to automatically calculate real-time utility spends, thus eliminating manual data collection time and errors. The project engaged facilities, finance, sustainability, and consultants. In the first two years, the program saved \$2.6 million, reduced resource use, improved prioritization of capital projects, and made tenants happier.

IT STARTS WITH DATA CENTRALIZATION

Regardless of which initiative is of interest to an organization, it will want to start by centralizing as much building data as possible by connecting all data sources to a single building management platform and uploading any available historic data sets. Building data that organizations typically look to centralize includes:

Portfolio data: building attributes, space attributes, tenant information, and utility pricing schedules

Business operations data: budgets, occupancy data, production data, goals, and baselines

Resource data: utility bills, resource-use interval data, IoT device and equipment data, renewables production data, Energy Star Scores, and waste production data

Environmental data: weather and indoor conditions data

One of the first steps is to connect building systems to a common network so their data can be collected and analyzed. This can be done with a gateway device designed to link the building management platform with building systems and devices such as submeters, building automation systems, and sensors.

In other cases, data can be transferred directly to the building management platform from a cloud-based server (e.g., utility company, building automation system, or renewables generation data set) without the installation of new hardware. Utility data can also be read directly from the meter, making it easy to analyze bill trends and ensure monthly bills are accurate.



Figure 2. Dashboard created through the use of Lucid BuildingOS* trend analysis application

Smart buildings can help empower occupants to become more active in energy management and other planet-friendly initiatives by facilitating:

- **Community dashboards:** Showcase real-time building performance data (Figure 2).
- **Occupant feedback:** Let occupants know when they are having a positive impact by communicating with them directly (e.g., color-coded feedback delivered via screens or Wi-Fi-connected light bulbs).
- **Competitions:** Host exciting, real-time energy reduction competitions.
- **Status updates:** Post data in a visually appealing way on the company website.

Business intelligence

C-Suite decision making is benefiting from "big data, which is changing how facilities are managed, energy is consumed, and businesses operate."⁵⁹ Connected buildings provide a key piece of the puzzle when analyzed along with data from systems for production, operations, enterprise resource planning (ERP), and

human resources, among others. When business data is brought into building management software, it can generate even more useful insights because it allows previously unexamined relationships to be visualized and analyzed.

Smart building programs provide valuable information to C-Suite executives, who are shaping their organization's future in many ways. Examples include increasing profitability by identifying new ways to reorganize business (e.g., move factory to a new location) to increase efficiency and/or lower product cost.

Lucid's Smart Building Solution

When deciding which of the previously mentioned initiatives to support with smart building technologies, organizations should be on the lookout for commercially-available solutions with the capabilities needed to support their initiatives. The alternative—developing a custom solution in house—can be extremely costly, slow, and lacking the robustness of an off-the-shelf platform.

Designed to support a wide range of initiatives, Lucid's BuildingOS is a leading building management platform used to optimize energy costs, comfort, and productivity. The platform integrates and aggregates portfolio-wide building and business data into a centralized view, and has advanced data processing engines to enable collaborative analysis. BuildingOS also scrubs, organizes, and translates building data across the portfolio, ensuring the data is high quality and easy to understand.

BuildingOS takes advantage of existing building infrastructure to collect data from any utility meter, sub-meter, sensor, or controls system and enables seamless access to that data from any device. Figure 3 shows how the Dell Edge Gateway 5000 Series* can collect data from a wide variety of building systems via multiple network types and send it to BuildingOS. Based on the Intel® IoT Gateway, the Dell Edge Gateway is purpose-built for the building management sector.

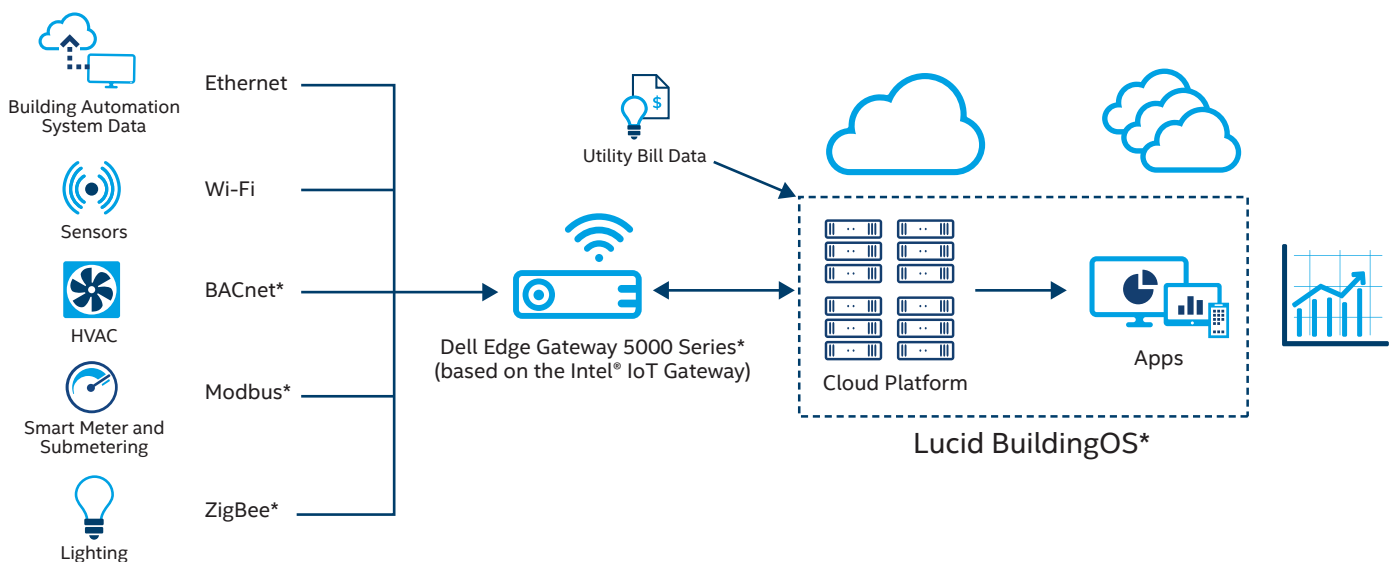


Figure 3. The Intel® IoT gateway collects building data and sends it to Lucid BuildingOS* for analysis.

WEBER STATE STREAMLINES ENERGY MANAGEMENT, SAVING \$3 MILLION IN TWO YEARS⁶

Weber State University in Ogden, Utah, has a strong focus on sustainability and put significant resources into transforming the way the campus consumes energy. First, Lucid's BuildingOS* was used to bring all campus metering and building systems online, enabling the sustainability team to identify ways to lower energy costs by \$3 million during 2013 and 2014. This effort reduced the annual energy budget by 33 percent, with a 9 percent reduction from scheduling optimizations and operational efficiency improvements alone.

Achieving Key Objectives

Smart buildings provide the data needed to make smarter decisions that reduce costs, improve occupant comfort, and accelerate team productivity. Lucid's BuildingOS helps make this a reality, enabling organizations to discover insights and act upon new opportunities to increase efficiency and performance.

Discover insights and opportunities

Automate, centralize, and analyze utility bill data:

Automatically collect meter-level consumption and cost data directly from utility providers instead of entering it by hand into spreadsheets, saving time and avoiding mistakes. Once in BuildingOS, visualize trends over time, understand what is driving costs, and verify monthly bill accuracy.

Easily manage building data across the portfolio: A centralized repository stores building information, historical bill and interval data, facility audits, asset information, equipment documentation, etc.

Identify building performance optimization opportunities:

Use heat maps to identify HVAC scheduling inefficiencies, detect changes to baseload energy usage, and tune buildings to keep them efficient over the long term.

Improve operations, efficiency, and performance

Increase visibility and collaboration: Customizable energy, financial, and sustainability reporting on key metrics and key performance indicators (KPIs) satisfies the special needs of diverse teams and encourages people across the organization to collaborate around shared goals. Easily share data across departments and the C-Suite by automating the email delivery of any report in the platform to any person in the company.

Make a compelling business case and allocate capital more intelligently: Access concrete ROI data to justify projects (to finance) and make updates with less effort.

Improve budget creation and tracking: Quickly create sophisticated budgets that include inputs such as the previous year's actuals, expected rate increases, and previous or expected rebates and credits. Then, understand which buildings are contributing to variance from budget and quickly estimate monthly spend before all bills are received.

Increase sustainability awareness: Showcase real-time building performance and green features on any Internet-enabled device, engaging occupants, tenants, and the public.

Smart Buildings Transform Organizations

When organizations begin a smart building program, energy management is typically top of mind, and rightfully so. But it is also important to consider the other powerful opportunities that come about from connecting buildings to people. Lucid's BuildingOS, which can use IoT technology from Dell and Intel, provides the tools to enable data-driven portfolio management, accelerate achievement of sustainability goals, and generate new business intelligence, ultimately increasing an organization's profitability and sustainability.

About Lucid

Lucid provides a data and analytics platform to make data-driven decisions to improve building efficiency and portfolio performance. A recognized pioneer in using data visualization to understand and quickly identify savings in energy, gas, water, and other resources, today Lucid's SaaS-based BuildingOS platform has over 500 customers, 11,000 buildings, and one billion square feet under management. The platform empowers teams across finance, operations, and sustainability to collaborate to get the best from their buildings. For more information visit luciddg.com. You can also follow Lucid on Twitter, Facebook, and LinkedIn.

For More Information

To learn about smart building solutions from Intel, visit intel.com/iot/smartbuilding.



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