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EARTHRISE OBSERVATORY

Commentary on energy & environmental technology industry developments



Efficiency, Intelligently

Energy efficiency has long been an area of interest at Earthrise Capital, as evidenced by investments in materials, hardware and software. The economic and environmental benefits of energy efficiency are obvious. Indeed, the energy intensity of the US economy (i.e., the amount of energy required to produce one unit of GDP) since 1980 has fallen by roughly half, the result of more efficient vehicles, appliances, lighting, industrial processes, and the like.

Even so, opportunities for further progress are substantial. Studies by McKinsey, Deutsche Bank and others claim that investment in simple energy-saving measures could reduce demand by 20% or more, and yield net returns totaling \$500 billion - \$1 trillion over the next ten years. But which sectors are more likely to embrace energy efficiency solutions?

In the residential market, we believe the low cost of electricity and natural gas relative to other household goods is a major energy efficiency obstacle. US Department of Energy survey data found that the average household in 2009 spent \$2,024 on home energy, representing about 3% of average income of \$62,857. Meanwhile, housing consumed 24%, transportation 12%, and food 10% of income. Households spent more money on entertainment (\$2,693), and away-from-home dining (\$2,619) than on home energy. In fact, energy expenses were near the bottom of the list, alongside clothing and charity.

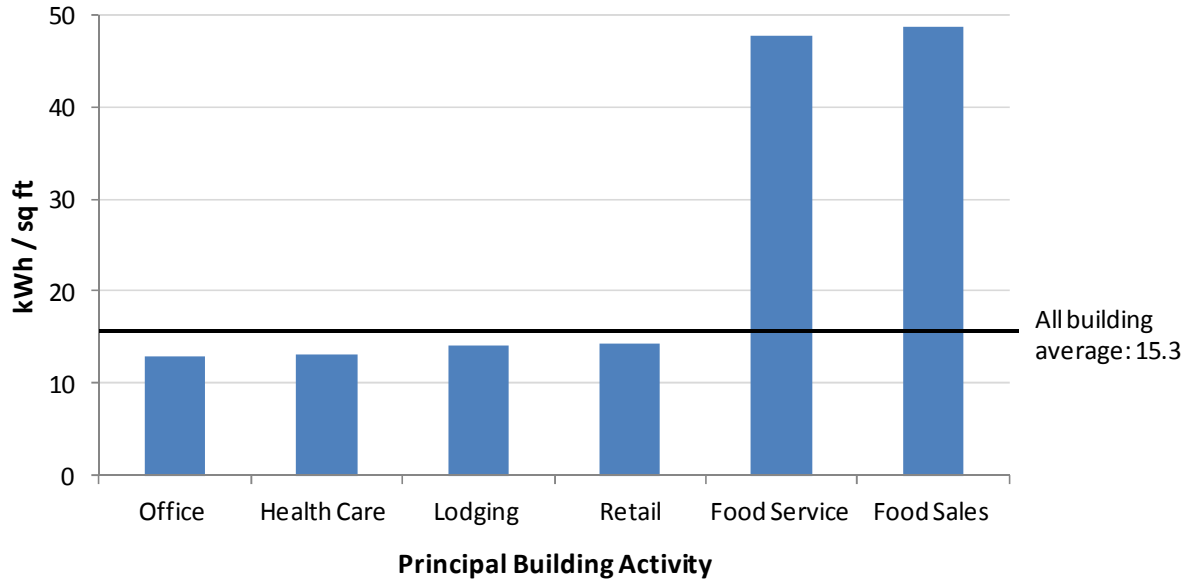
With limited economic motivation to reduce energy costs, we are not surprised that households may be reluctant to spend real money on energy efficiency today in order to save hypothetical money tomorrow. As a result, subsidies such as Energy Star rebates and weatherization programs represent a sizable share of household investment in energy efficiency.

In the commercial sector, cost-cutting opportunities get more attention, but incentives can be murkier. For example, in a typical REIT-owned office tower or shopping mall, each occupant is responsible for its own energy bill, but none have the ability or motivation to invest in a more efficient central HVAC system that would benefit the entire building. Also, in most businesses, energy is a small percentage of overall costs.

What, then, is a good commercial target market for energy management solutions? First, one might look for businesses located in owner-occupied or single-tenant buildings. The list would include certain retail stores, bank branches, restaurants, gas stations, and health clinics. Next, one might screen the list for energy intensity.

Figure 1 below shows the electricity intensity, in terms of kilowatt-hours per square foot, of different types of businesses located in small buildings (1,001 – 10,000 square feet).

Figure 1. Commercial Building Electrical Energy Intensity
(in kilowatt-hours per square foot)
Building size 1,001 - 10,000 sq. ft.



Source: US Energy Information Administration, *Commercial Buildings Energy Consumption Survey 2003*.

What immediately stands out is the energy intensity of food service (i.e., restaurants) and food sales (i.e., grocery stores) relative to other categories. Significantly, the number of food sales and service businesses is very large, and many are located in owner-occupied or single-tenant buildings. If food service is therefore an attractive market, the key is to develop energy management solutions at the right price and with the right features to help ensure adoption.

Earthrise recently completed an investment in a company we believe has just such a solution – Powerhouse Dynamics. In the following section, we present an interview with Powerhouse’s CEO, Martin Flusberg.

EARTHRISE CAPITAL PORTFOLIO OBSERVER

In our “Earthrise Capital Portfolio Observer,” we hope to provide a deeper understanding of our portfolio companies through management interviews, technology summaries and real-world examples of products at work.

Earthrise completed a Series A-1 investment in Powerhouse Dynamics, Inc., earlier this year. Powerhouse provides cost-effective energy management solutions for small commercial facilities and homeowners. The Company’s eMonitor system controls HVAC and other loads; tracks electricity use at the equipment level; and delivers actionable alerts and diagnostics for saving money and enhancing equipment performance. Customers include major regional and national brands, such as Arby’s, Wendy’s, Texas Roadhouse, Pizza Hut, and Au bon Pain.

Here we present an interview with Martin Flusberg, CEO of Powerhouse Dynamics. Flusberg has spent most of his career developing innovative technologies that address climate change. Most recently, he was co-founder and President of Nexus Energy Software, a pioneer in delivering on-line energy and carbon analysis to consumers and businesses. Nexus was acquired by ESCO Technologies (NYSE:ESE) in 2005 and is now part of Aclara Technologies. Flusberg was CEO of two other software companies and ran an energy software unit of TASC, which later became Lodestar Corp., since acquired by Oracle. He has also served on the faculty of the Department of Civil and Environmental Engineering at MIT. Martin has an MSCE from MIT and a BEE from City University of New York.



Earthrise: Please describe your company's products.

Flusberg: We provide a cost-effective energy management solution focused on smaller commercial facilities. Our systems help to save energy through intelligent control of key equipment, and actionable reports about how energy is being used in a facility. In addition to monitoring electricity use at the equipment level, we also track gas and water consumption.

Earthrise: What are the main markets you serve?

Flusberg: Our primary markets are restaurants and convenience stores – they use about three times as much energy per square foot as typical commercial establishments. We also market to small-box retailers, health clinics, municipal buildings, telecom facilities, multi-family housing properties, and larger residential homes.

Earthrise: How do you reach potential customers?

Flusberg: We sell through dealers and other third parties, like energy consulting firms or solar installers, who are already connected to our target customers. We also sell directly to restaurant and retail chains.

Earthrise: There are many other companies offering energy monitoring solutions. What is different about your company?

Flusberg: The majority of our competitors are focused on larger buildings, and their solutions do not cost-effectively scale down very well to our target customers. What we are doing differently, and hopefully better, is balancing the two elements of energy management – controls and intelligence. Some companies just do controls, typically for HVAC or lighting. Other companies just monitor energy use, but usually for the facility overall rather than at the equipment level. Powerhouse Dynamics offers data-driven efficiency analytics, as well as equipment management capabilities related to predictive maintenance, food safety and other applications.

Customers often complain that it is difficult to extract actionable information from an energy monitoring system. We focus on providing the best user experience – by way of a simple, user-friendly interface, and by highly responsive customer service.

Earthrise: Is it fair to say that “doing nothing” is often your toughest competitor?

Flusberg: Yes. Many businesses are doing little to nothing to really manage their energy costs. We work to reach those companies through referrals and testimonials from high-profile customers; describing the benefits of our solutions; and so forth. Typically we start out with a pilot installation at one or maybe a few locations, and then go from there.

Earthrise: What is your long-term vision for Powerhouse Dynamics?

Flusberg: We will deepen the product capability in current markets – restaurants, convenience stores – and expand into other verticals like telecom and health clinics; not necessarily with different products, but certainly with different packaging. We will add more functionality, like tracking

equipment maintenance, scheduling work orders, and validating utility billing. We will expand geographically into Europe, Australia and New Zealand. Lastly, we will look for ways to leverage all the data we are collecting on equipment performance and energy use.

Earthrise: Thank you Martin.

EARTHRISE ACTIVITIES

- Ann Partlow and Jim LoGerfo took part in the company selection process for the **26th Annual National Renewable Energy Laboratory Industry Growth Forum**, a premiere event for emerging energy technology companies and investors. Jim attended the NREL Growth Forum in Denver in December, and participated on the judges' panels there.



The comments expressed in this report reflect the opinion of Earthrise Capital as of the date of publication. The information, including historical data series, estimates and projections, contained herein is believed to be reliable and has been obtained from sources believed to be reliable, but Earthrise Capital makes no representation or warranty, either express or implied, as to the accuracy, completeness or reliability of such information.

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Earthrise Capital Fund is a venture capital fund which invests in resource efficient technologies, including energy efficiency, clean energy, power conversion, energy storage, alternative fuels, and green chemistry.
