

Addressing the Energy Challenge

—How Hitachi Consulting Bends the Energy Curve Better—

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Businesses across the international landscape are faced with rising energy rates, climbing consumption, and increased local government regulations. Coupled with the climate change agenda, these factors are driving corporations to take a harder look at their corporate energy strategy. Companies are investing in energy reduction initiatives to keep energy costs flat and consumption low, but are often faced with several challenges.

First, finding these energy reduction opportunities can be difficult. Many times, it takes the combination of hundreds of energy projects to bend the energy curve. Secondly, many companies have capital constraints,

aggressive 'rates of return' for project funding, and lack sufficient internal expertise, experience and resources to manage projects of this size and scope.

To address these challenges, Hitachi Consulting Energy Solutions sets out to help companies by providing an innovative and results-oriented approach which allows companies to reduce energy expenses with no upfront capital investments. We do this by bringing together the breadth of Hitachi, Ltd. capabilities and solutions, which pair cutting edge technologies with an end-to-end service model that allows companies to successfully bend the energy curve.

1. INTRODUCTION

INCREASING energy rates are decreasing corporate profits; The International Energy Outlook 2013* predicts that global energy consumption will grow by 56% between now and 2040. This immense increase and constrained supply will impact energy reliability and price rate volatility.

In response to these challenges, C-level executives are treating energy as an important aspect of business which impacts bottom line results.

1.1 Addressing the Energy Challenge

The energy challenge is not limited to organizations of a particular industry or region. Many businesses must manage rising energy costs with an increasing need for energy in order to continue delivering their products and services to an expanding global marketplace. Corporations

who see their bottom line most susceptible include those with a large facility footprint, intensive energy consumption, and in regions with high energy rates.

Companies investing in energy reduction initiatives aim to keep energy costs flat and consumption low. Despite the work of responsive energy managers and executives, major barriers remain in the way of improved energy performance. First, finding the right type and scale of energy reduction opportunities can be difficult. Many times it takes the combination of hundreds of energy projects to reduce consumption and cost in order to bend the energy curve effectively.

Secondly, many companies have capital constraints and aggressive 'rates of return' for project funding. Each business has only so much to invest each year, and energy projects, typically compete for funding against other projects that will help to expand the reach of the business or play a key role in market positioning. Thirdly, even with available funding, companies often do not have the deep

* Source: U.S. Energy Information Administration, www.eia.gov

subject matter expertise nor scale to manage large-scale retrofit projects that are required to make a substantial impact on the energy expense.

To help to address these energy challenges, Hitachi Consulting Energy Solutions sets out to provide companies with an innovative and results-oriented approach that allows reductions in energy expense with no upfront capital investment. We do this by bringing together the breadth of Hitachi, Ltd. capabilities and solutions which pairs cutting edge technologies with an end-to-end service model.

2. HITACHI CONSULTING ENERGY SOLUTIONS

Our approach allows companies to both optimize their energy consumption and keep costs down.

Hitachi Consulting Energy Solutions is offered by the types of power purchase agreements (PPAs) that many companies typically use to buy electricity. In this model, the client does not have to pay the full capital cost of an energy efficiency technology project upfront, but instead pays for it over time as savings are realized.

By combining the PPA service model with advanced energy saving technology, companies can protect themselves against fluctuating rates. This comes as part of a full-suite of energy management services from opportunity identification and business case development to implementation with project management, financing and support services.

2.1 How Hitachi Can Make It Happen Better?

When embarking on an energy assignment, project begins with the identification of energy performance measures (see **Fig. 1**). Consultants work with clients to evaluate the existing energy performance of their portfolios, identifying opportunities and conducting financial analysis. Armed with a comprehensive understanding of their actual energy performance portfolios, we identify specific energy opportunities where investments can yield

considerable results.

Team then identifies technologies that can be retrofitted across the company's entire real estate portfolio, and designs projects around each initiative. These may include Hitachi products and solutions as well as energy savings in areas such as:

- Facility lighting optimization including retrofits, smart controls sensors, and exterior solutions
- Variable frequency drives (VFDs) for heating, ventilation, and air condition (HVAC)
- Variable refrigerant flow (VRF) cooling and heating systems
- Absorption chillers
- Motors for air handler fans and pumps for chilled and non-chilled water
- Data center optimization
- Smart building management system
- Steam generation and distribution
- Compressed air
- Rectifiers [alternating current (AC) to direct current (DC) converters]

Team provides a value based service model through which service fees are based on savings achieved. Through careful monitoring and metering, both our clients and team will be able to track avoided kilowatt hours, giving a real-time understanding of the actual energy saved. Clients can then achieve cost savings by paying for these avoided kilowatt hours out of their existing utility budgets. In order to provide the necessary financing for this program, Hitachi Capital America Corp. (HCA) will work with clients as part of team. HCA's financing solutions help to save clients from the complexities of capital or financing leases, rental or direct purchases; payments are due when the actual energy savings are realized.

Project team brings together the diverse skill sets needed to complement on-site energy teams, giving clients the resources they need to achieve savings on a portfolio-wide scale. The roles needed to facilitate these types of energy

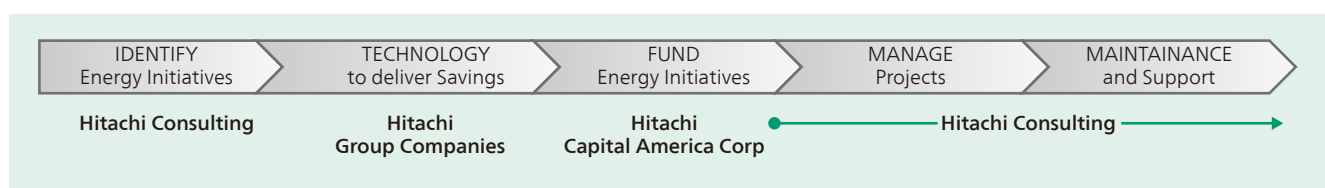


Fig. 1 | Hitachi Consulting Energy Solutions Process.

This overview shows Hitachi's services and capabilities that support an end-to-end energy solution.

saving initiatives may include:

- Energy engineers
- Energy managers
- Project managers
- Finance experts
- Analysts
- IT specialists
- Industry specialists
- Installers
- Technical support staff
- Organizational change management specialists

For ongoing management of the energy savings solution, we provide outsourcing services including full service help desk support as well as proactive monitoring and integration with existing service desk software. This service can be provided on a global scale, ranging from remotely delivered shared services to a dedicated on-site team. Ongoing monitoring of energy consumption allows for sustained energy savings and real-time assessments of how best to leverage and continuously improve the energy profile based on emerging technologies (see [Fig. 2](#)).

2.2 Tangible Benefits

This program solves a number of actual challenges faced by corporations today. First, it provides energy teams with

a partner that can scale to meet any energy management challenge bringing project managers, engineers, installers and analysts to bear on energy performance opportunities. Secondly, our approach to metering energy usage results in less complicated savings calculations. Detailed reporting on actual, delivered energy savings is provided throughout the engagement.

Our Energy Solutions via HCA provides a fixed rate for the actual energy savings. This gives customers more predictability and a greater ability to forecast and plan.

3. CLIENT CASE STORY

Like many global companies with a significant facilities footprint, our case study organization forecasted a significant and exponential increase in energy expense which impacted their bottom line profitability. In addition to honoring commitments that the company was making towards environmental sustainability, energy rate volatility and anticipated increases in energy consumption were forcing this global organization to focus on controlling the energy expense line item.

Though the organization had implemented a number of energy initiatives and had succeeded in holding energy expenses flat over several years, it had become more and more difficult to identify new projects of the appropriate

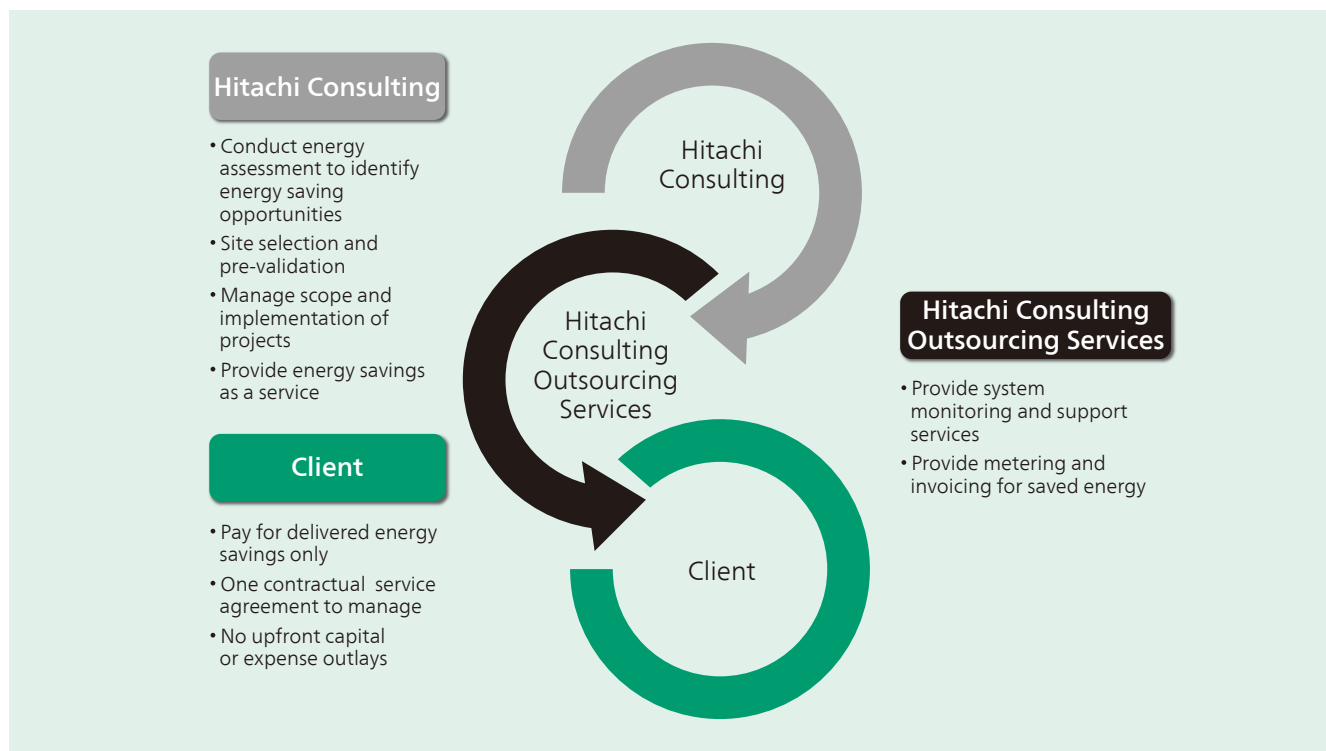


Fig. 2 | Roles of Hitachi and its Clients.

This high level overview shows how Hitachi Consulting works with its clients and outsourcing service capabilities to provide energy solutions.

scale and with an attractive internal ‘rate of return’ that could be addressed. Energy expense growth was beginning to outpace the organization’s ability to address it. Without near term action, the organization would see upwards of 20% increase in a billion dollar energy expense line item.

Hitachi Consulting Energy Solutions was instrumental to the success of this client’s energy program. Our team collaborated with the organization and HCA to identify, fund, and deliver on energy initiatives that would have been unachievable with conventional funding models. Our experienced professionals were able to supplement the organization’s existing resources and fill gaps in expertise and scale in order to allow for central management of these initiatives. Initiatives implemented over a four year period are yielding hundreds of millions of dollars in annual energy savings and today this company is ranked as the one of the top corporate citizens for environmental sustainability. With a value based model, the organization is about to manage its investment expenditure according to the savings accrued.

The reception at the client has been phenomenal and the creative methods of achieving cost reductions have generated much interest within and external to the client. The organization has achieved results beyond its original goals, plus generated improvements to environmental sustainability without upfront investment.

4. ENERGY SOLUTION AND SOCIAL INNOVATION

Hitachi Consulting Energy Solutions supports Hitachi, Ltd.’s commitment to Social Innovation, integrating cutting edge IT, products, and services that have been developed over many years to improve safety and security throughout the global society. With this innovative energy service approach, companies are able to optimize their energy usage, reduce their carbon footprint, and take action on energy initiatives that may not otherwise be achievable.

Our approach cuts through the complexity and offers measurable and sustainable energy savings. Designed in partnership with our clients, the strategy and services are geared entirely toward eliminating barriers to performance improvement. Our approach is not about selling equipment or making bets on energy futures; it is focused on turning energy savings into a commodity that our clients can buy through their existing utility budgets.

5. CONCLUSIONS

Hitachi Consulting leverages decades of deep industry experience to provide practical business strategies and technology solutions. Our collaborative, pragmatic approach enables superior operational performance, positive business change, and consistent measurable results. With Hitachi Consulting Energy Solutions, we continue to find ways to help our clients to eliminate barriers to their success.

ABOUT THE AUTHORS



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