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# Employee Engagement Best-Practices for Energy Efficiency

Executive Summary

Programs and practices that companies use to encourage energy-efficiency behaviors among their employees were explored through a combination of internet research and selected interviews. Several decentralized (individually pursued and generally not mandated) and centralized (mandated and centrally-administered) practices were identified that encourage such behavior in employees.

The types of programs that encouraged energy-efficiency behaviors among employees with the highest participation among the companies researched included commuting assistance, operational changes, employee recognition for energy-efficiency projects, communication and dissemination of best-practices, and incentive programs.

Introduction

The Pew Center's report "From Shop Floor to Top Floor: Best Practices in Energy Efficiency" (from which several case studies in this report are drawn) included in its survey a query about companies' greatest challenges in effecting energy-efficiency solutions. The responses were as follows:

Greatest Challenges to Implementing Energy Efficiency Strategies

Source: Pew Center 2009.
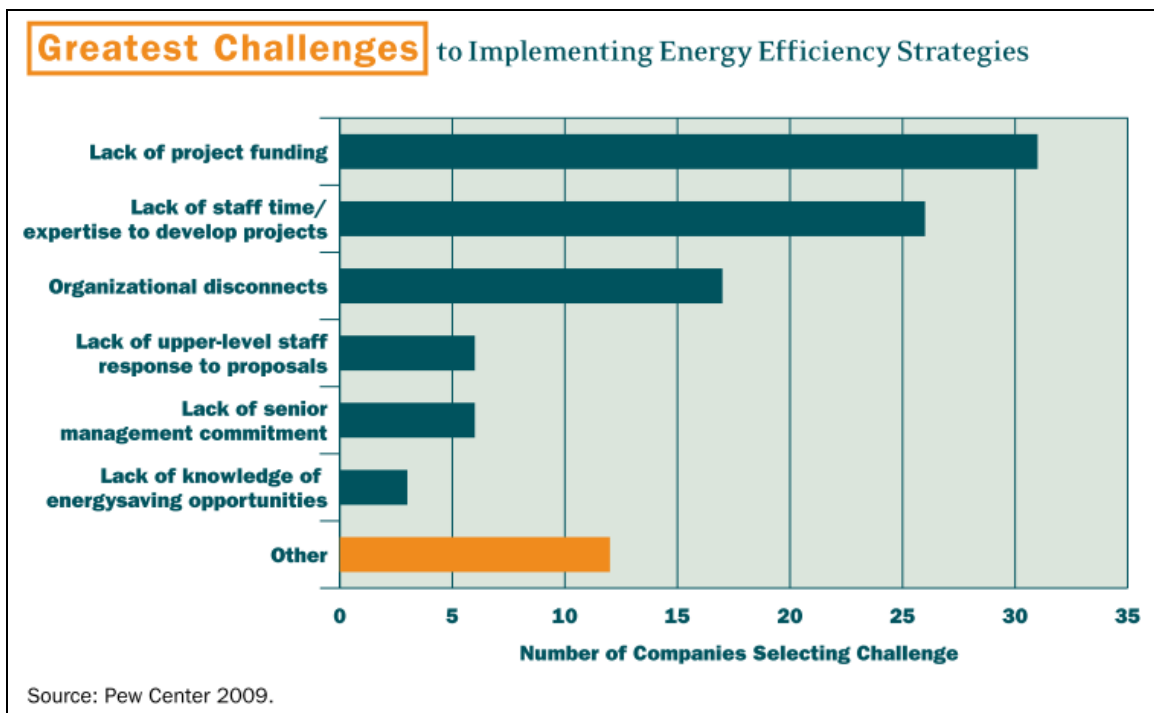
Environmental Defense Fund can significantly improve energy-efficiency results by providing best-practices that address some of these challenges. In this report, many of the above challenges, such as lack of project funding, organizational disconnects, lack of senior management commitment, and lack of knowledge can be alleviated by best-practices for employee engagement around energy efficiency found at many of the researched companies.

Findings

Corporate energy efficiency measures were found to fall into two categories: *decentralized* practices and *centralized* practices. Decentralized practices are those that offer assistance with or the option to participate in energy-efficient practices, but are up to individuals to take part in; centralized practices are those controlled or mandated by the organization as a whole at the company or business-unit level.

Decentralized Energy-Efficiency Practices

Decentralized practices themselves fell into two typical categories: those that the company encouraged in the workplace, and those that the company encouraged in the home. Workplace practices typically revolve around assistance to help reduce energy and carbon associated with commuting:

- Several companies offered subsidies or rebates for public transportation. For example, companies such as GlaxoSmithKline, EMC, and IBM subsidize bus or van fairs up to a certain amount, typically the first $30 or $50 per month[1,2].
- Some companies go farther, such as NYC solar power firm altPower, which provides employees with a travel check that enables free subway and bus transportation throughout the five boroughs[3].
- Many companies, such as Adobe, encourage their employees to take public transportation[4].
- IBM encourages their employees to telecommute; more than 40% of IBM's employees work out of the office[5].
- Several companies offer incentives or rebates to their employees for the purchase of alternative transportation (such as hybrid or biodiesel vehicles), including EnerNOC (offers a $100/month subsidy for hybrid vehicles, used especially by their sales force)[6], Swiss Re (the rebate benefit can also be used for other carbon-reducing technologies)[7], CHEP USA[8], Clif Bar[9], and Bank of America. Bank of America, which reimburses $3,000 to associates purchasing a hybrid vehicle, has seen hybrid purchases by its associates quadruple during its three-city pilot program, and has expanded the program to all US associates[10].
- Some companies offer rewards or services for alternative transportation in on-site parking. Cisco Systems offers 36 VIP spaces for hybrid vehicles or vehicles that run on biodiesel or ethanol in its employee parking lot[11]; Adobe offers outlets in its employee garage for electric vehicles or plug-in hybrids[12].

Practices that are encouraged in the home focused mainly on helping employees find and afford residential energy-efficiency solutions:

- Several companies offered rebates for home energy-efficiency projects. For example, Swiss Re's rebate program mentioned above can be used for such home energy-efficiency projects as energy audits, heat-pumps, double-glazed windows, and more efficient air-conditioning. About 100 Swiss Re employees have received payouts of up to CNF5,000 ($4,073) under this program[13].
- NRG Systems offers employees $300 per year toward the purchase of energy-efficiency measures (and $1000/year toward renewable energy)[14].
- EnerNOC offers a three-tiered system for home energy efficiency, which must be undertaken in order. Tier one involves small appliances, such as replacing lighting; tier two involves the purchase of a major EnergySTAR-rated home appliance; and tier three involves subsidizing a home energy audit. Interestingly, the company also offers a cash bonus for influencing others to become more energy-efficient [15,16].

Centralized Energy-Efficiency Practices

Several of the companies researched or interviewed explicitly chose not to encourage its general employees to pursue energy-efficiency measures, trusting instead a smaller group of employees— usually a facilities group or internal sustainability team—to identify efficiency-gaining opportunities. As one company's Green Team leader put it, "our facilities team is so good at identifying opportunities that the general employees don't feel the need to do so." These centrally-mandated practices are discussed herein only to the extent that they affect employee behavior; centralized behaviors that effect energy-efficiency directly without the involvement of all employees, such as the installation of energy-efficient manufacturing or HVAC equipment, are not discussed in this report.

Centrally-mandated practices that encourage energy-efficient behavior fell into the following nine categories:

- changes to the company's *business models* to encourage more efficient behavior;
- changes to the company's *operations* resulting in more energy-efficient behavior;
- employee *recognition* of energy-efficiency efforts;
- *communication and dissemination* of best-practices around efficiency;
- efforts to increase *awareness* of energy-efficiency issues and habits among employees;
- the (often public) *tracking* of efficiency project results;
- the offering of individual *compensation incentives* for reduction of energy use and carbon emissions;
- specific *funding* set aside for energy-efficiency projects; and
- *events and competitions* revolving around energy and the environment.

Changes to Business Models

We found that one powerful way to encourage less energy use was to change the revenue/pricing structure associated with practices that consume energy.

At Microsoft's data centers, business units were traditionally charged for using the company's data centers based on the amount of floor space required for their server stack. This incentivized space minimization, often through the use of extremely dense servers, which require more power and cooling. Now, Microsoft charges business units based on the amount of energy consumed by the servers that host their services—from cost as a function of space to cost as a function of power.[17] Microsoft even releases the details of its chargeback model[18].

This resulted in an increased consciousness about energy usage, and even overspecified equipment; Ken Brill of the Uptime Institute estimates that "usually around 30 percent of servers in a data center can be turned off." In addition, Microsoft developers have begun writing their code to minimize the computing power, and thus energy in the data center, that their code requires.[19] The end result was that Microsoft realized a 22 percent improvement in the energy efficiency of its data centers[20,21].

Other datacenter operators, such as hosting company 365 Main, charges customers based on kilowatts rather than rack space[22].

DuPont has achieved a business-model change in the way it scopes capital investment projects by front-loading energy efficiency improvements, so that these are considered earlier in the design process.[23]

Changes to Operations
In parallel with changes to business models are changes to standard operating procedures designed to reduce energy use:

- Several companies mentioned implementing protocols mandating efficient procedures for everyday activities, such as equipment on/off protocols at Sodexo and its client sites[24] and defaults for double-sided printing at, for example, Sodexo[25] and Adobe[26].
- At Xerox, where Lean Six Sigma is a part of the corporate culture, several Lean Six Sigma teams are at work on changing procedures to be more energy-efficient using the Lean Six Sigma framework.[27]
- Sodexo utilizes its purchasing power to reduce operational energy use, through the purchase of energy-efficient copiers, light sensors, etc.[28]
- Many companies work with their partners to leverage specialized operational experience with efficiency. For example, EnerNOC is working with HP to increase the efficiency of its datacenters[29]; Dow's Energy Efficiency & Conservation (EE&C) team maintains a panel of outside energy and environmental experts to provide technical and strategic input[30].
- Some companies have mandatory reassessment periods for their practices. At DuPont, the top 40 sites receive a comprehensive energy assessment every 3 years, with the assessment's findings becoming a part of the site's annual energy savings target.[31]
- Verizon tracks the idling time of its technicians' vehicles, and reports any instance of idling time over 10 minutes as a deviation.[32]

Employee Recognition

Several firms identified employee recognition as a major component of their environmentally-focused business practices. In this report, such recognition—usually non-monetary—is considered separate from specific employee incentives, which are discussed elsewhere in this section. Examples of recognition programs include:

- IBM's Chairman's Environmental Award, a company-wide award that honors a division for leadership and achievement in environmental affairs. According to the announcement for IBM's 2008 award, which was awarded to its Global Technology Services division for its datacenter efficiency efforts and products, "recipients are selected based on their degree of leadership, results, innovation and integration with regard to their programs and initiatives in the areas of energy conservation and energy efficiency".[33]

- In addition, IBM publishes internally the energy-efficiency metrics of its top 100 sites; this is a coveted form of internal recognition, spurring competition to be among these top sites[34].

- DuPont has a similar environmental award program called the Sustainable Growth Excellence Award. These are awarded each year to individuals or teams, who are flown to DuPont's corporate headquarters to be honored at a presentation by the CEO and company president[35]. The award is broader than energy-efficiency; winning projects have included efforts in carbon emission reduction, bioengineered products, NGO engagement, and zero-waste manufacturing, in addition to energy-efficiency efforts[36].

- Xerox has an Earth Award program, in which the global environmental health and safety (EH&S) team chooses a winning project team from among nominated teams. The winning team receives a plaque and significant internal distinction, as well as having their story shared throughout the organization[37]. These awards are also broader than energy-efficiency measures; the 20 projects that received the award in 2009 combined for $7.3M in total savings, 1.3 million pounds of eliminated waste, and 500,000 kWh in energy reductions[38].

- Individual managers at Xerox also have discretion and budget flexibility to hand out lump sum rewards to individual employees for the completion of energy-efficiency projects[39].

- At Sodexo, employees who are pursuing energy- and water-efficiency initiatives are being rewarded in a number of ways. Those who develop leadership in these areas can become recognized as internal subject-matter experts (SMEs), who are asked to speak at a major Sodexo management conference attended by 1200 of its top managers. In addition, these SMEs can become a sustainability resource for their region, being highlighted for their contributions and expertise in the internal community. Finally, they can receive opportunities to receive formal sustainability education. Employees who take on these leadership roles often win promotions and professional development opportunities that other employees do not.[40]

- In addition, Sodexo also has the unique opportunity to recognize its employees in partnership with leading client sites that they manage. Winners of their Earth Day contest awards (described elsewhere herein) win the honor of bringing Sodexo's Vice President of Sustainability to a presentation at their client site[41].

Communication and Dissemination of Best Practices

One simple, powerful way that companies can support its employees' energy-efficiency efforts is to provide systems to share best-practices among company sites and divisions, especially since, as Alcatel-Lucent has found, in-company examples of successful projects tend to be more believable[42]. Many of the companies interviewed have developed systems for the communication and dissemination of best-practices in energy efficiency:

- Many of the organizations discussed training programs for energy and environmental. Sodexo, in particular, placed significant emphasis on training through its Sustainability Education Expert Development (SEED) program, a community of practice of internal subject-matter experts (SMEs) managed by the Sr. Director for Sustainability & CSR[43]. United Technologies Corporation (UTC) also identified training as core to their successful practices[44].

- UTC also publishes a detailed Energy Management Guidebook that describes, for example, how to collect, understand, and use energy consumption and cost data; how to procure energy smartly; and how to manage electric loads[45].

- The UTC teams[46], Dow's EE&C team[47], Sodexo's SEED employees[48], and Xerox's energy-efficiency teams[49] hold regular meetings or conference calls to share best-practices and results.

- Adobe displays information on screens in its buildings, which is split between real-time usage data (energy, carbon, etc.) and hints for improving home and office energy use.

- Best Buy maintains a dedicated email box for suggestions of energy-efficiency and general sustainability ideas, which receives 50-100 emails a day from Best Buy employees.[50]

- Finally, several companies use an intranet or internal database to share opportunities and best-practices. Sodexo uses a Sharepoint site accessible by all SMEs, as well as an internal database that houses more than 300 energy best-practices[51]; DuPont shares a database of best-practices[52]; Xerox shares progress globally on an internal website, to implement best-practices and to inspire more employees[53]; and IBM maintains a shared global checklist for energy-efficiency best practices for lighting, datacenters, cafeterias, etc.[54]

Generating Awareness of Energy-Efficiency Issues

Many of the companies queried institute simple procedures to keep energy-efficiency in their employees' everyday consciousness:

- EnerNOC hangs EnergySTAR posters that feature reminders for energy-saving actions[55];
- IBM similarly uses reminder signage[56];
- Some companies utilize email reminders for energy-conscious actions, such as encouraging employees to use double-sided printing at EnerNOC[57], reducing energy use on peak-usage days at DuPont[58], and turning off equipment prior to holidays at Adobe[59].

Tracking of Results

Closely related to employee recognition is the real-time, often internally-visible, tracking of results vis-à-vis efficiency targets. These dashboards display company-wide information in various ways:

- Sodexo has developed its own sustainability metrics and reporting tool, which acts as a dashboard display for energy and water for both Sodexo offices and its client sites.[60]
- EnerNOC has begun exploring how to use its own energy and carbon tracking tools internally.[61]
- IBM uses enterprise-wide reporting to track how its real estate and site operations (RESO) managers are doing relative to the company's goal of 3.5% energy savings per year. Managers who are meeting the goal appear in green, while managers who are not meeting the goal appear in red, creating significant peer pressure to meet or exceed the company target.[62]
- UTC uses an identical "traffic-light" system to track managers who are meeting or not meeting energy goals.[63]
- Toyota-TMMK employs a highly-detailed monthly/quarterly/annual data collection and reporting system to enforce accountability at all management levels, including senior executives.[64]

Individual Compensation Incentives

As Microsoft's principal power and cooling architect Christian Belady puts it, "Until it's demanded and bonuses are paid on it, it's not going to happen."[65] Several of the more progressive companies use individual manager or employee incentives to encourage action on energy efficiency. These typically fell into two categories: consideration of energy efficiency projects during the employee's annual review process, and bonus structures tied to efficiency results.

The following are examples of companies that focus on energy efficiency projects during the annual review process:

- At Xerox, all employees write energy objectives that they're going to achieve in the performance objective process; these are then reviewed during the annual review process.[66]
- Employees are rated on their sustainability efforts through internal surveys at EnerNOC.[67]
- At Alcatel-Lucent, there is a focus from senior management on energy and environmental efforts; managers are asked during reviews, "What are you doing to be green?"

The second type of individual incentives for energy efficiency centered around bonus structures tied to such projects:

- At Sodexo, the president's council has announced that they will align bonus incentives around sustainability measures. There is precedent in diversity inclusion bonuses, which are awarded independent of company performance, unlike other Sodexo bonus structures; sustainability professionals at Sodexo expect the sustainability bonuses to work similarly.[68]
- Yearly bonuses for datacenter managers at Microsoft are tied to year-over-year efficiency improvements.[69]

- For utility company PG&E's energy efficiency team, bonuses are based on the efficiency savings generated in the team member's territory.[70]
- Perhaps the most interesting bonus structure found (though for carbon, not explicitly for energy) was an experimental one being tried in the Real Estate group of Alcatel-Lucent. In this division, 10% of managers' variable compensation is tied directly to carbon-footprint reduction. Managers that meet the minimum goal of 4% reduction receive 90% of their total bonus; managers that meet the target reduction of 6% receive 100% of their bonus; and managers who meet the stretch goal of 8% carbon reduction receive 110% of their bonus. The carbon reduction of this division was 9.5% against the target of 6%, compared to 5% overall[71] for the company.[72]

Funding for Energy Efficiency

Another centralized best-practice was explicit funding set-asides for energy-efficiency projects. Two such instances were found:

- A goal of $100 million in energy-efficiency projects at UTC was set in 2010, although this money was expected to come out of individual business units' budgets.[73]
- At DuPont in 2008, a pool of $25 million to fund energy-efficiency projects was allocated as an "Energy Capital Set Aside" for high-return projects (down to 25% IRR). This pool was not made available in the recession year of 2009; however, individual business units were still encouraged to fund high-ROI projects (to which the company's standard hurdle rate was applied).[74]
- At PepsiCo, 2% of the company's capital budget is targeted to a Sustainability Investment Fund, which funds both energy-efficiency and related environmental projects. Furthermore, every investment project of $5 million or greater is subject to a sustainability screening, which evaluates whether the project contributes to or inhibits progress toward sustainability goals.[75]

Events and Competitions

Lastly, many companies used events and competitions to encourage employees to pursue energy-efficiency opportunities. In addition to the classic "Energy Treasure Hunts" championed by Toyota[76] and GE, these other examples were identified:

- Sodexo sponsors an Earth Day competition, in which employees submit best-practices for waste minimization, water conservation, and energy reduction. The grand prize winner and one additional winner for each division are recognized via intranet and internal newsletter.[77]
- At least one IBM site (Burlington, VT) sponsors an Energy Idea Competition, in which the winner with the best energy-reduction idea is awarded a $500 cash prize.[78]
- At Xerox, the company sponsored an event at which they asked employees for their best ideas in reducing environmental footprint both at work and at home; the top five winners were awarded an Amazon Kindle.[79]
- PepsiCo sponsors a Sustainability Summit, which brought 400 employees from 14 countries to Chicago for four days in 2009.[80]

Best-Practices in Energy Efficiency

Leading companies have taken a multifaceted approach to encouraging employees to identify and implement energy-efficiency and energy-conservation ideas.

Wherever possible, specific results of these procedures have been identified, but in most cases sufficient data to disaggregate the effects of these various approaches are not available. Total energy-reduction results are also not reported in all cases, as some are instead measured as carbon reduction.

Company Personnel Interviewed

Interviewee	Position	Company	Interview	Contact information
Jay Dietrich	CEA Program Manager: Climate Stewardship; Senior Technical Staff Member	IBM	5/12/2010	jdietric@us.ibm.com; (802) 769-4046
Holly Fowler	Sr. Dir., Sustainability & CSR	Sodexo North America	5/10/2010	holly.fowler@sodexo.com; (781) 738-3886
Rich Goode	Sr. Dir. of Sustainability & CSR	Alcatel-Lucent	5/5/2010	richard.goode@alcatel-lucent.com; (978) 952-7288
Randy Knox	Sr. Director, Global Workplace Solutions	Adobe Systems	5/12/2010	rknox@adobe.com; (408) 536-6444
Brian Lapseritis	Business Development Associate	EnerNOC	5/4/2010	blapseritis@gmail.com
Catherine Reeves	Mgr, Environmental Mgmt Operations	Xerox	5/11/2010	Catherine.Reeves@xerox.com
Dawn Rittenhouse	Dir., Sustainable Development	DuPont	5/11/2010	Dawn.G.Rittenhouse@usa.dupont.com; (302) 774-8588
Emily Shem-Tov	Manager and Green Team Leader	Adobe Systems	5/12/2010	ereich@adobe.com; (408) 536-6508

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