Business Energy Conservation Assessment

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Abstract: Good Company is a research and consulting firm based out of Eugene, Oregon. Their aim is to help clients measure, manage and market their environmental performance. Many of the environmentally sound practices they recommend to clients have also been incorporated into their business model. These include utilizing energy efficient appliances, using building design for passive energy savings, participating in carbon offset programs and supporting alternative transportation for employees.

Through an informational interview with a Good Company associate and by reviewing the results from two data logging devices placed in their offices for a week's time, I have found that Good Company makes successful efforts toward conserving energy. In this way as well as others, Good Company is a model of an environmentally responsible business.

Introduction

Good Company is a research and consulting firm which focuses on practical solutions for encouraging sustainability. They have worked with academic institutions such as Vassar College and the University of California at Berkeley to address environmental and social concerns of faculty, students and other stakeholders, and to find cost-effective means to solve these problems while enhancing learning opportunities. They work with government agencies such as the Eugene Water and Electric Board in a similar fashion, helping them take action to improve their environmental practices without getting caught up in bureaucratic squabbling. Good Company also works with corporate clients including Hewlett-Packard, with whom they developed a sustainability strategy which was integrated into the corporation's business practices.

Good Company occupies one half of a 3,500 square-foot business office which it shares with a green architecture firm called Habitats. The two businesses share one heating system and some light fixtures, which compromises Good Company's ability to fully control the energy usage of their site. Further complicating matters is the fact that they do not own their building, and as such must have any changes to the building authorized by their landlord, which they have had trouble with on at least one occasion. Still, they have taken advantage of numerous opportunities to decrease their environmental impact, both at their site and in their business practices in general.

Site Characteristics

Due to most of their work centering on communication and ideas, rather than sales of products, Good Company does not take up a lot of physical space. They occupy half of a 3,500 square-foot building which they share with another environmentally-minded company. Good Company has just five employees, each of whom occupies a small desk area in the office. One employee's desk is in the front room, which doubles as a lobby, and the other four employees' desks as well as a small computer/printer/fax area are stationed along the wall in the main room, which is really more of a hallway. The adjoining company, Habitats, has eight employees and is set up in a similar pattern, and there is a conference room between in the center of the building

which the two companies share. The walls within the building do not reach the ceiling and many of them feature large windows, so there is total air circulation and some lighting exchange between the two business areas.

Lighting

Despite the constraints of sharing an office building, Good Company has been able to find practical ways to decrease its energy consumption. They have, for instance, been able to find numerous ways to use lighting creatively in order to reduce their energy requirements. The front doors of the building are sliding glass doors, which on sunny days provide significant day-lighting to the front room/lobby. This can be seen in Graph One. At the opposite end of the building is a large window, which also provides day-lighting to the desk it overlooks. Two employees have their work areas within these areas of high natural lighting. At no point in my visits to Good Company's offices did I see either of these employees using artificial lighting, because it simply wasn't necessary; their areas were sufficiently lit by the available sunlight.

Unfortunately, day-lighting can't be taken advantage of by all of the employees, because even on the brightest days, the sunlight is unable to penetrate into the center of the hall-shaped building. This is illustrated by the lack of variance in lighting, as can be seen in Graph Two. For the employees in the middle, then, the choice is to use compact fluorescent bulbs at their desks. Since the overhead lights are less energy efficient, they are utilized less, and often kept at very dim levels. They are bright enough to light the room well enough for it to be safe, but not for it to illuminate the employees' work areas. Also, since the schedules of Good Company's employees vary throughout the week, there may only be two of them in the office at a given time, so it is unnecessary to use less efficient lighting to light up the entire area. When the employees are in, they use more efficient bulbs in their specific areas, cutting down on wasteful unnecessary lighting. Similarly, certain areas of the building that are infrequently occupied, such as the hallway to the bathroom, are typically not lit in order to reduce wasteful lighting.

When asked what changes they would make to the building, three of the employees indicated that they would like more natural lighting at their workstation. The illumination levels shown by the data loggers are widely different, despite other data being relatively uniform. The imbalance in natural lighting causes illumination levels read by the data logger in the front of the building to be, in certain weather, nearly triple the levels of the one in the core of the building.

Heating

Due to the shared nature of the site, Good Company is not always in charge of the decisions on heating the space, but they are impacted by temperature decisions made by Habitats due to the open-air state of the building. When asked about their general feelings toward the temperature of the room, employees primarily indicated that it was just right or too cold. Those who felt it was uncomfortable indicated that they favor passive methods of heating or cooling

themselves, such as adjusting their apparel or opening the doors for ventilation, and one made a point of saying that while they always have the option to adjust the thermostat, no one ever really does.

The results shown from the data loggers show that the room does go through cycles of increased temperature corresponding with indications of high use of the building. These correlations can be seen in Graph Three, showing the interior of the building, and Graph Four, showing the front room. If Good Company's employees' indications are correct, it can be inferred that the majority of this temperature change is due to the sun shining into the building, the presence of numerous people in the building, and perhaps some artificial heating on the part of the workers in the building. Indeed, if we can take Sunday's early afternoon temperature to represent the building absent of people, we can see the temperature rise between one and two degrees at the same time the lights have been turned on later that day, indicating that this rise is simply from the presence of a person in the office for three or four hours.

One very positive aspect of Good Company's heating requirements is that because their building's floor is made of concrete, and because there is a layer of concrete in the ceiling as well, the space stays very cool during the summer, and virtually no air conditioning is needed. The employees have found that, while using the front doors for ventilation would be a good idea for passive heat regulation, the building actually stays significantly cooler than the outside temperature due to their floor and ceiling. Indeed, they have sometimes opened the front doors to warm the space if it is too chilly inside in the summer!

Appliances, Office Supplies & Other Efforts

Good Company makes every effort to purchase appliances and supplies with impressive environmental records. For example, two of their six computers are certified Silver by the Green Electronics Council's system for rating the environmental performance of electronics (Silver is the highest rating achieved so far; no computers have been certified Gold yet), and as they replace their older ones they will continue to purchase Silver-certified models. Their printer is also noted for its energy efficiency and environmentally friendly ink. Good Company practices recycling of paper and printing onto both sides of a page before disposing of it, effectively doubling each page's lifespan before it must be reprocessed. All desk lamps and the overhead lamps in the shared board room contain compact fluorescent bulbs in order to save energy. Other office supplies, whenever possible, should be produced and purchased locally to reduce necessary shipping of the items. Supplies should also be durable and reusable in order to reduce damage and waste.

Good Company employees feel they are a part of a culture of sustainability, and this is evident not only in their business goals and business practices, but their daily lives as well. Some of the employees' personal choices reflect their commitment to environmental excellence,

and have in turn influenced the culture of their company. For instance, Good Company employees typically take alternative transportation to get to work. This is supported by the company through the offering of bus fare or stipends to purchase bicycling gear. Additionally, regardless of how an employee gets to work, any greenhouse gas emission produced is added to the company's carbon offsetting program. For the last five years there has been 100% participation in the company's Employee Commute Challenge, a rally for alternative transportation. Food waste brought into the building is composted if possible, including food waste from the annual holiday party.

Carbon Offset Program

Perhaps the greatest effort Good Company makes toward decreasing the negative environmental impacts of their energy use is their participation in carbon offsetting programs. These programs involve the measuring of greenhouse gas (GHG) emissions and the support of organizations which work to offset these emissions. As the offsetting organization Climate Trust puts it:

> A greenhouse gas offset is generated by the reduction, avoidance, or sequestration of GHG emissions from a specific project. Offsets are so named because they counteract or offset greenhouse gases that would have been emitted into the atmosphere; they are a compensating equivalent for reductions made at a specific source of emissions.

Common techniques for offsetting greenhouse gases include utilizing clean methods of energy generation, neutralization of GHGs through reforestation, or decreasing energy requirements through increase in efficiency. The primary purpose of offsets is to fund the generation of more renewable energy, which is traditionally more costly. The amount of renewably-generated energy that enters the nation's electrical grid is quantified, and in purchasing carbon offsets, an organization is basically receiving a receipt for the amount of renewable, non-polluting energy that their investment helped put into the grid.

Participation in these programs is voluntary and the amount of emissions an organization chooses to offset is up to them. The emissions calculated into Good Company's total include emissions from numerous sources, including: the generation of electricity used in their office; from office natural gas use; emissions from employees' methods of commuting to work, including individual autos and public transportation; those from business-related travel and from rental vehicles used while on business trips. Since 2003, Good Company has tracked and annually quantified their GHG emissions and participated in various offset programs in order to neutralize the impacts of these emissions. They now offset 100% of their emissions annually, which in 2005 alone accounted for 21.3 metric tons of carbon being kept out of the atmosphere. 16 tons of this carbon was offset through Climate Trust, an offsetting organization based in

Portland, OR, and 5.3 tons was offset through Renewable Choice Energy, a wind power company from Colorado. The recently-calculated 2006 emissions were calculated to be 8.4 metric tons (a noticeable decline due mainly to reduced air travel), which will again be offset through Climate Trust, Renewable Choice and also Native Energy, a Native American energy company from Vermont.

Recommendations

The biggest step Good Company could take toward increasing their environmental efforts would be to gain control of the facilities they have their offices in. Many of the efforts they would love to employ are subject to the approval of their landlord, and some requests have already been rejected. If this obstacle were removed they would have greater opportunities for making environmentally friendly decisions in the design, furnishing and use of their facilities. Further, sharing the site with another business brings problems, such as with heating of the space, which would be avoided if Good Company's offices were theirs alone. Short of moving to new facilities, which may not be financially feasible, Good Company can continue their efforts to conserve energy by utilizing increased passive methods of lighting and heating, and by encouraging Habitats employees to do the same. Increasing the amount of business that can be done over the internet would save both paper and travel, cutting down on pollution and waste. Purchasing the longest-lasting and most environmentally-friendly office supplies possible as older supplies break down is another practice that greatly reduces waste and energy use.

Conclusion

Good Company's business is environmental responsibility. They effectively hold a mirror up to their research and advice, incorporating many of their suggestions for others into their own business model. There are some limitations to their ability to enact all of the energy saving measures they may wish, primarily due to the fact that they do not own the building their offices are in and that their building is shared with another company. Still, they are able to effectively guide businesses of all sizes toward practical solutions to environmental concerns, and they serve as a great role model for their clients. They are a very small business that takes very large steps toward making the world a better place, and they can serve as an inspiration for companies both large and small to act responsibly toward the environment.

Sources

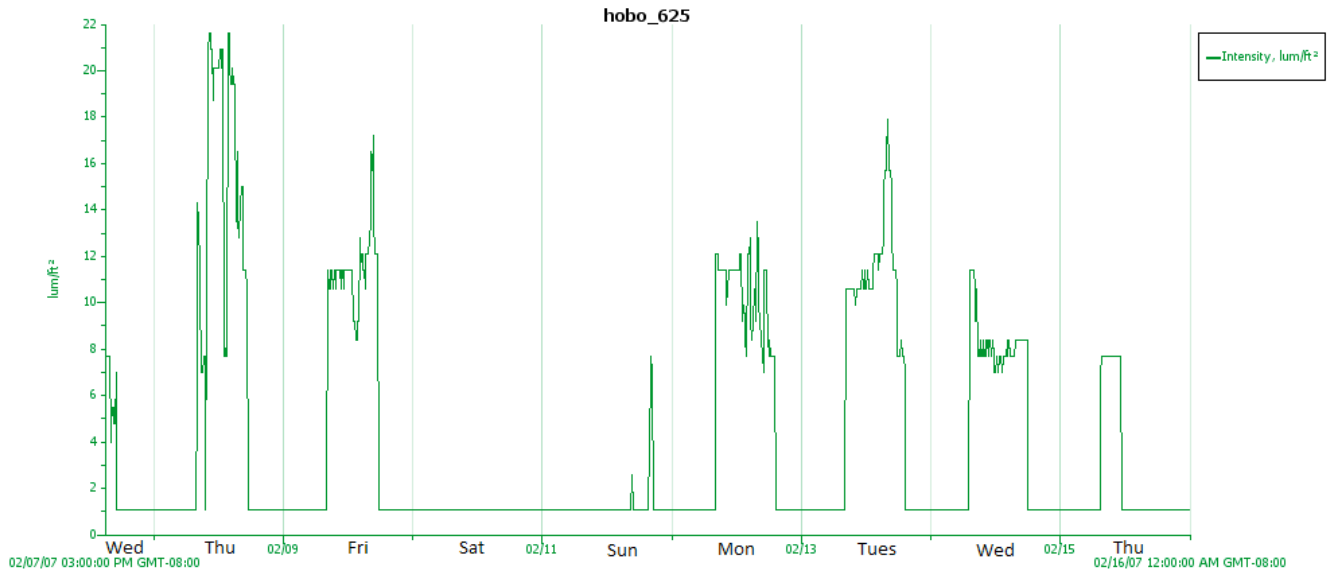
http://www.goodcompany.com/
http://www.climatetrust.org/
http://www.renewablechoice.com/
http://www.nativeenergy.com/
http://www.epeat.net/
http://www.meridiancyber.com/newmeridian/MDisplayproduct.aspx?PitemID=PI56

Interview with Kelly Hoell, Good Company Associate, 2/6/07 at Good Company office

Surveys filled out by Good Company employees, collected 2/15/07

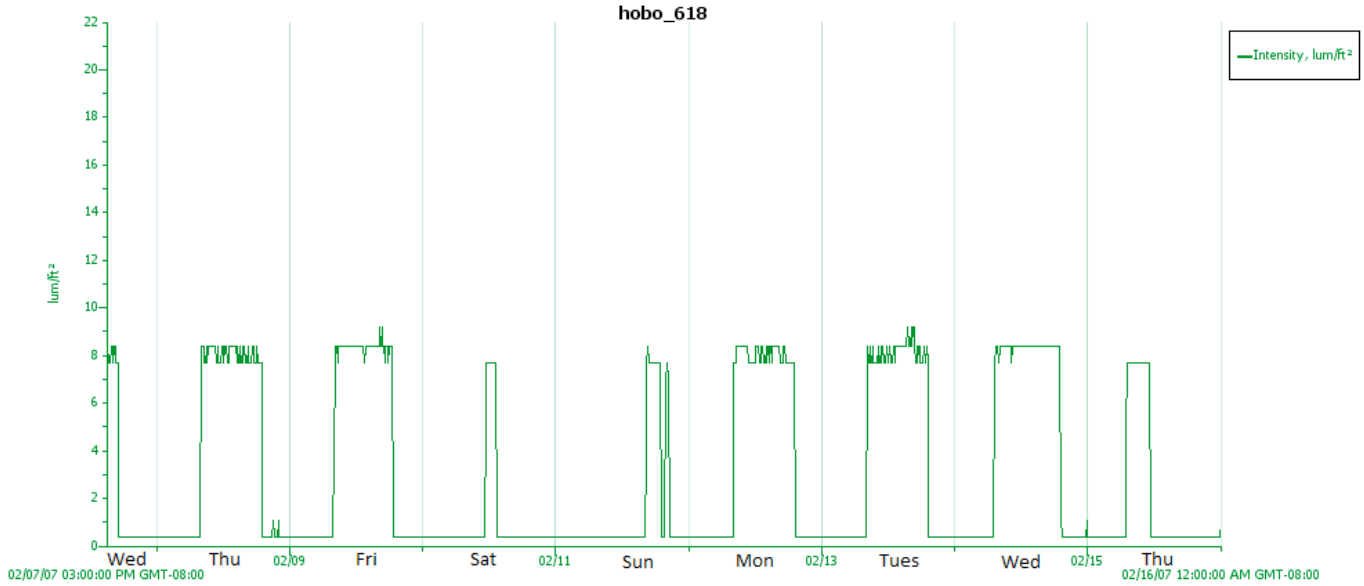
Appendix

GRAPH ONE



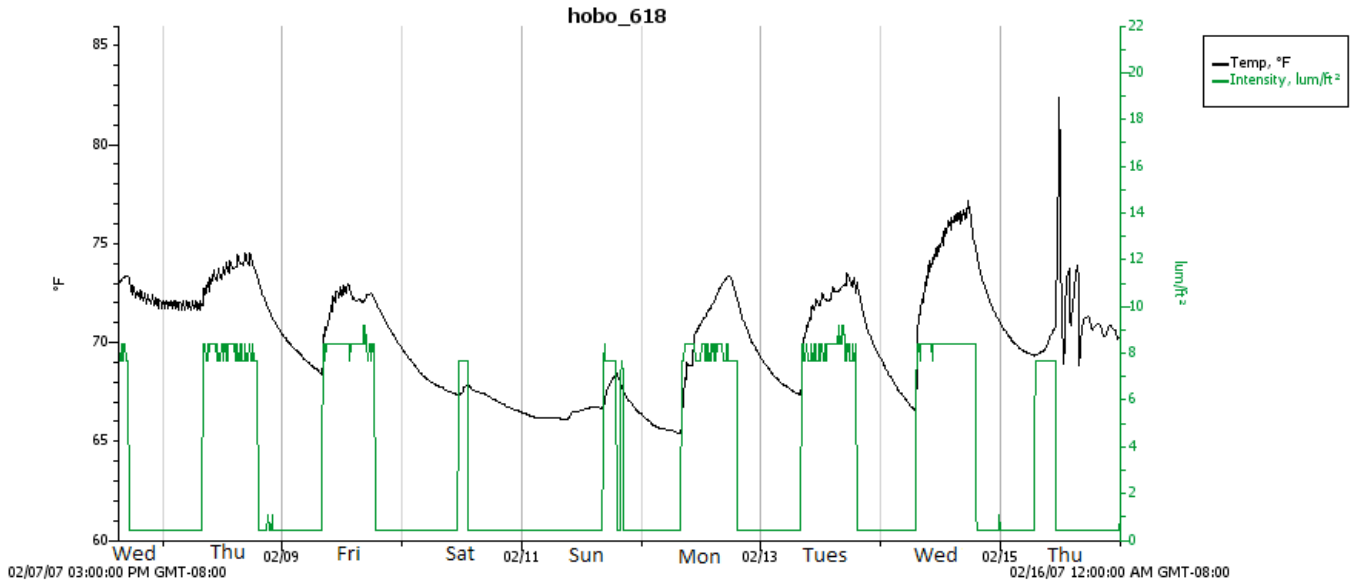
This graph shows the results of the data logger that was placed in the first room of the building. Note how widely the illumination varies here, due to the sunlight coming in through the glass front doors. Also notice how some fluorescent lighting is apparent, which was probably necessary due to weather.

GRAPH TWO



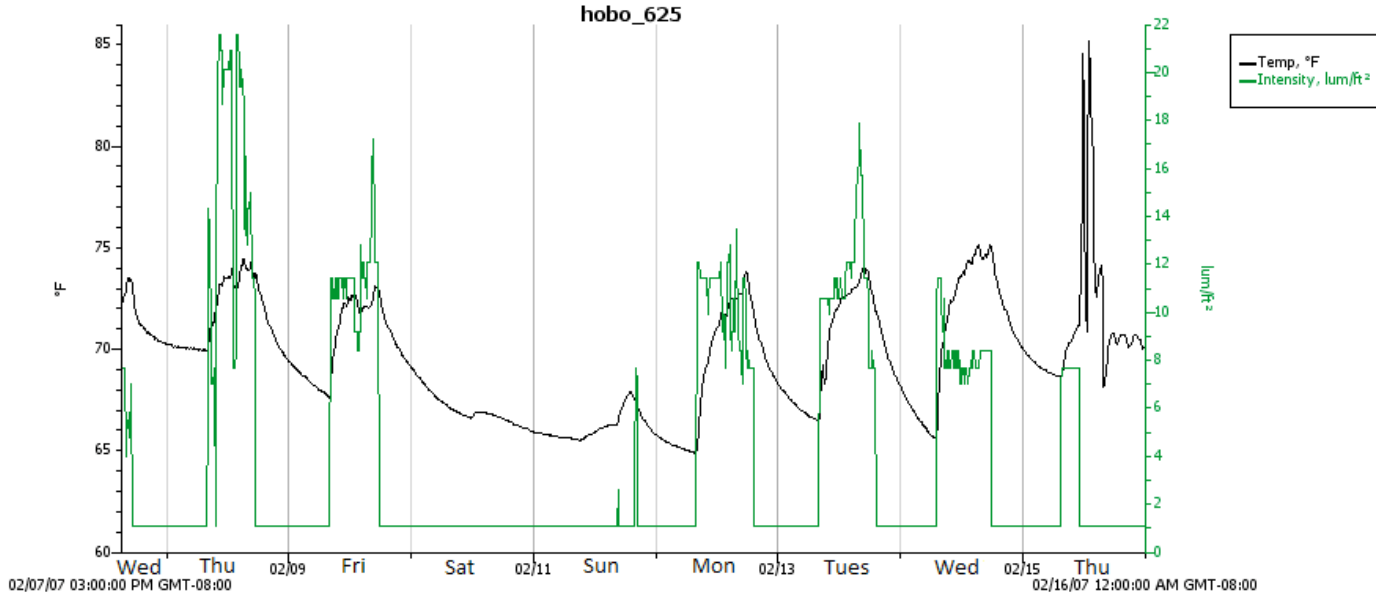
This graph shows the results of the data logger that was placed in the center of the building. You can see that, if there is significant light present, the level fluctuates between two or three specific points, indicating that the fluorescent lights are the only ones registering with the data logger. This clearly tells that sunlight is unable to penetrate into the center of the building, and that the lamps employees use at their desks make little or no change in the overall illumination of the room.

GRAPH THREE



This graph shows the tendency for temperature (in black) to rise when people are present. From the results for Saturday and Sunday it can be inferred that no artificial heating was used (due to the slightness of the increase), and that the rise in temperature is simply due to someone's presence in the office for the couple of hours they were there each day.

GRAPH FOUR



As you can see here, the tendency for temperature to rise during periods of building use is consistent in the front room as with the interior of the building. Also, you can see from this graph and the previous graph that temperature change is nearly always uniform across the whole building.