

GE's eco Treasure Hunt Checklist

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As a business leader, what would you be willing to do in order to shave 10% off your company's annual energy bills? Would you ask a team of employees and operational experts to examine your facility from top to bottom? Would you allow them to devote a few days to studying energy-efficient enhancements?

You can empower employees to seek ways to conserve resources – ideas that can be simple and nearly cost-free, or complex with long-term payback schedules. For example, to cut your water expenses, you could begin by repairing leaky faucets. If you want to reduce your overall reliance on municipal water supplies, you could implement a rainwater collection system. Using common sense repairs, behavioral changes and technological improvements, companies can increase the energy efficiency of nearly any kind of facility – a manufacturing plant, a retail store, even an office building.

Called a Treasure Hunt at GE, it's a cost-effective way to analyze energy usage and identify opportunities for improvement, called energy kaizens. GE has found 650 million tons of carbon dioxide reduction opportunities company-wide energy by conducting over 300 internal Treasure Hunts across a wide variety of GE businesses, saving \$150 million.

The Treasure Hunt is part of ecomagination, GE's business strategy to create new value for customers, investors and society by solving energy, efficiency and water challenges today. As part of that, we've made a strong commitment to reducing our own energy footprint, which we do by continually examining our resource consumption and greenhouse gas (GHG) emissions.

Since its launch in 2005, ecomagination has produced a 30% reduction in water use and a 22% reduction in GHG emissions. Those successes encouraged us to expand our targets. In 2010, we announced that we'd reduce water use by 25%, reduce GHG emissions by 25%, and reduce energy intensity by

Treasure Hunt Checklist

Step 1: Identify the resource streams

- Choose a project leader
- Walk the facility
- Map each resource stream
- Determine facility's annual baseline resource usage and expenses

Step 2: Assemble a team

- Experts on each resource in use: Lighting, motors, HVAC, etc.
- Third parties: Representatives of local energy providers, etc.
- Technical experts and process improvement experts
- Sustainability representatives from a company's other facilities

Step 3: Event planning

- Choose a continuous two-and-a-half day period
- Analyze operations at rest, at start up, and in full production mode

Step 4: Identify kaizens

- Identify and record waste
- Identify energy kaizens

Step 5: Analyze and report

- Analyze the findings
- Identify top three-five projects
- Report final results to management
- Implement kaizen opportunities



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50% over the next five years. To learn more, click here:
<http://www.ecomagination.com/progress/>

Ultimately, sharing the Treasure Hunt process helps drive awareness of a fundamental new reality: Companies can save money by implementing sustainable practices.

Based on a model originally developed by Toyota Motor Engineering & Manufacturing North America and later adapted for our own purposes, the following checklist outlines GE's Treasure Hunt process.

Step 1: Identify the resource streams

For companies that have identified sustainability and resource usage reduction as business imperatives, the Treasure Hunt process begins by selecting a project leader, perhaps a designated green initiative leader. Accompanied by someone who has a deep understanding of site operations, the project leader will walk through the facility weeks before the on-site event. The purpose: Identify all resource streams in use, ranging from water and steam to compressed air and electricity.

The leader will then map each resource stream. How does natural gas, for example, come into the facility? How is it metered? How is it consumed?

With that information in hand, the leader calculates spending on each resource type to create a baseline of the facility's annual resource usage and expenses. A generally accepted goal might be reducing resource consumption and spending by 10% annually, with a target payback of three-and-a-half years or less. For companies that have old facilities or those that haven't made resource consumption a priority, it's possible that annual savings could be higher.

Step 2: Assemble a team

Based on the resource streams used in the facility, the project leader can determine the number of people who need to be involved in the Treasure Hunt. Getting the right talent mix is crucial.

Participants should include at least one expert on each resource in use: Motors; water and/or steam; electricity; lighting; and heating, ventilation and air conditioning (HVAC), to name a few. If the company doesn't have in-house experts, it should consider bringing in third parties. In addition, it's

important to invite representatives of local energy providers, such as public utilities and other vendors. Not only do they understand resource conservation, but they may be able to provide information on government incentives for making specific investments in, for example, new lighting.

The Treasure Hunt is meant to be an objective search for improvement opportunities, so the assembled group should be relatively diverse in order to bring fresh perspectives. In addition to a technical expert who understands motor functionality, for example, it may be helpful to have a Lean Six Sigma expert who can look critically at processes and suggest ways to enhance efficiencies.

GE Capital approaches each Treasure Hunt as an opportunity to train the trainers. That's why it's important for each event to include sustainability representatives from a company's other facilities. Replicating the process at factories, distribution centers, research and development complexes and other facilities is the best way to cut consumption, reduce GHG emissions and improve efficiency worldwide.

It's also important to include production and maintenance workers – in other words, representatives of any groups that are part of the facility's regular operations.

Finally, senior management should participate in the Treasure Hunt. If that's not possible, a company leader such as the CFO should kick off the event in order to demonstrate its importance to all employees.

Step 3: Event planning

When should the event take place? The project team observes the facility at three phases over two-and-a-half days: Fully at rest, at start up, and in full production or full usage. A typical Treasure Hunt will kick off on a Sunday afternoon when the plant is shut down. The process will continue the next day as activity ramps up into full production mode.

Even in facilities that operate 24 hours a day, there may be discrete operations at certain periods. Times when some production lines are shut down for maintenance could be the equivalent of "sleep mode."

For example, when working with an automotive glass manufacturer, the Treasure Hunt team observed that a river of molten glass flowed around the clock but the process that fed sand into the furnace was intermittent. Also, the production line was shut down for extended periods of time on certain days in order to switch to differently colored glass. That provided the team with the opportunity it needed.



Even in facilities that operate all day every day, such as airports, there may still be opportunities to shut off lights and moderate the HVAC in terminals that are unused for hours at a time.

Step 4: Identify kaizens

Each team is assigned to study one of the resources used in the facility from beginning to end. Over the course of the Treasure Hunt, it's empowered to track down waste and suggest improvements. Ideally, teams will collaborate to examine the use of resources and brainstorm about possible process or technological improvements.

The key question: If a resource is being consumed but the output isn't being fully utilized, does it add value? For example, it may be unnecessary to leave a motor running overnight when the rest of the plant is shut down, or to allow the lights in the parking area to remain on during broad daylight. If the company and its customers don't benefit from the resource consumption in some way, then it's probably being wasted.

Some commonly identified energy kaizens include the following:

- Compressed air: Patch leaks; implement dust collector optimization.
- Lighting: Upgrade obsolete products to more efficient fixtures and bulbs; remove excess fixtures; install photocells and motion sensors.
- HVAC: Automate systems using an energy management system.
- Motors: Pre-plan shut down times to avoid continuous operation when unnecessary.
- Water: Stop leaks; use on-site sources of water or implement rainwater collection system to reduce reliance on municipal water supplies, where practical.

Step 5: Analyze the results and present final report to management

After aggregating all of the suggestions, each team should identify the top three to five projects that will result in the greatest return on investment. To help prioritize projects, teams should determine in advance the amount of funding available for improvements and the expected "hurdle" for these investments.

At this stage, the purpose isn't to quantify every penny that can be saved. Teams will probably choose a combination of projects that are easy and nearly cost-free to implement, and those that require significant investments of time and money but are likely to offer a large payback in a reasonable period of time.

There are some cases where a new motor or more efficient lighting will be the best solution. In other situations, a simple change to an entrenched process might yield major savings. For example, at a facility that bottles health and beauty care supplies, a team suggested using gravity at the end of the production line instead of pushing the bottles out using compressed air, a very expensive resource.

On the final day of the Treasure Hunt, team leaders present a final report, complete with project recommendations, to senior management. After that, it will likely be necessary to conduct a formal cost/benefit analysis of potential savings opportunities, with individual teams retaining responsibility for implementation. Inevitably, some projects will be completed immediately, some will require future budget allocations, some will require a deeper assessment of the costs involved, and some will drop off the list entirely for various reasons.

Ultimately, companies should be able to produce the same number of widgets or operate for the same number of hours as they did prior to the Treasure Hunt but at a lower cost.

GE Capital's Access GE Program

The eco Treasure Hunt process is led by GE Capital's Access GE team, which shares tools and insights from across GE's diverse operations with customers and other key partners. Over the past 10 years, Access GE has completed more than 8,000 projects for approximately 6,500 companies globally. Its work focuses on the following key areas: Revenue generation, operational efficiency, global and market expansion, and leadership development.

Through the Treasure Hunt process, GE Capital hopes to inspire its customers to reduce resource consumption while driving awareness of the need for energy efficiency. It's clear that there are economic and environmental benefits that can be realized on a large scale.

