Water Inventory and Use - Reduction Strategy

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GE collects water-usage data from the top water-consuming GE sites on an annual basis. This includes water used for potable, process and sanitary purposes, as well as once-through cooling waters from freshwater sources. GE sites that withdraw salt/brackish water for once-through cooling purposes are excluded from our water inventory and are not included in our water-reduction goal. Instead, we focus on freshwater sources, with the rationale that salt/brackish water employed for once-through cooling purposes poses less of an environmental impact than freshwater use. We adjust the data each year to reflect acquisitions and divestitures.
Water-Use Inventory Process

The GE water-use inventory follows the principles articulated in the World Resources Institute/World Business Council for Sustainable Development (WRI/WBCSD) “Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, revised edition” (the “Protocol”). For its operational inventory, GE follows the “control” approach and includes freshwater use from “Criteria Sites” over which it has operational control. Criteria Sites are those sites that have used or will use a total of 15 million gallons or more of water per year, in the 2011 baseline year and/or in any subsequent year in the inventory, which captures approximately 90% of our total freshwater consumption.

Current progress toward the 2020 water goal was baselined in 2011. The baseline data is adjusted to reflect changes to the GE portfolio as outlined in the Protocol. GE also reports progress since the start of the Ecomagination water program with a baseline year of 2006. Since it is not practical to adjust baselines over such long periods where sufficient data may not be available, a hybrid approach is used. The 2006 baseline was adjusted for the 2011 reporting year data. Current progress from a 2006 baseline is calculated by taking the performance from 2006 to 2011 as a fixed value (35% absolute reduction) and further reducing that result by the additional reduction between 2011 and the current reporting year.

GE created an Eco Inventory Survey intranet-based database in Gensuite®, a proprietary Web-based EHS management system, to collect the necessary water-use-inventory data. The Eco Inventory Survey database is integrated with GE’s greenhouse gas- and energy-inventory processes.

The number of Criteria Sites may change year over year due to divestiture, closure or consolidation with other facilities and due to facilities added to the inventory because they were acquired, newly established or met the reporting criteria for the first time.

The Eco Inventory Survey database allows each site to enter quantities of water withdrawn in consistent units from each of the following source categories:

- Public/commercial
- River/canal
- Lake
- On-site groundwater wells
- Ocean (not included in water inventory or in water-reduction goal)
- Other

These data represent total facility water use for all purposes. A site then enters the total quantity of water withdrawn for once-through cooling purposes. The Eco Inventory Survey is programmed to calculate a facility’s total water use by adding together the water withdrawn from each source category and to calculate the quantity of once-through cooling water. The combined quantity of potable, process and sanitation water use can be calculated by subtracting the once-through cooling water use from the total water use. The Eco Inventory Survey is also programmed to separate water-use data from the database into total water use, water use by source category, and once-through-cooling-water use by business unit, site, country and region.
Quality Assurance
GE continues to work toward increasing the accuracy of its water-use inventory. It has modified its Eco Inventory Survey database to simplify it and to reduce opportunity for errors. In addition, GE developed guidance documents and an internal guidance website for, and has provided extensive training on, the water inventory and the use of the Eco Inventory Survey. Finally, GE performs data-quality reviews on the water-use inventory, including side-by-side comparisons of water-use data to identify and understand the reasons for significant differences (such as changes in production, changes in processes, water-use-reduction projects, or other factors). Data anomalies are identified, analyzed and corrected where necessary through this process. For specific circumstances, if a significant deviation in water use emerges in a given year, a third-party environmental engineering consulting firm may be engaged to validate restated water-use values.

Reduction Strategy: Water Kaizen Blitz
GE has found water “Kaizen” events to be an especially effective tool for analyzing and reducing water use at our facilities. Adopted from Toyota in 2009, and subsequently optimized to suit the manufacturing needs and culture of GE, the Water Kaizen Blitz is a process that we have widely leveraged across our top water-using sites. GE teams with a precise combined set of skills systematically evaluate processes that use water at our manufacturing sites and identify opportunities, or Kaizens, for water reduction. Through deep preparation, teams work with the sites to ensure a thorough engineering analysis during the Kaizen event.

A Kaizen event generally lasts about three days. The team starts by learning the Kaizen process and tools, and then walks a plant’s floor, visiting each of the water-using processes and talking with operators to develop an understanding of how, why and when water is used. During this stage, the team will develop a mass balance on the water use of each piece of equipment and develop very rough concepts of potential opportunities for water reduction. This step often involves flow measuring with GE Sensing clamp-on ultrasonic flow meters. Water flow through a facility is not intuitive, so facility engineers and others must locate and identify piping conveyances, helping the team understand how and where water enters and leaves each process. The Kaizen team will then take its list of water-saving ideas and expand on them, determining any technical limitations, costs, savings and other issues. A strong emphasis is placed on ensuring that costs for potential reduction efforts are realistic. At the end of the event, the site is provided with the package of identified opportunities, as well as corresponding cost-and-benefit information. Typically, Kaizen events provide sites with an opportunity to reduce water usage by 30% to 50% that can be paid for in less than two years.

In 2011, GE developed the Virtual Kaizen Blitz, which is tailored to new construction sites. To provide maximum benefit, this event is ideally conducted during the early- to-mid-design stages for a new site. The Virtual Kaizen focuses on design, identifying optimizations to reduce, reuse and recycle water. Also, because the site it is assessing is not yet built, associated project costs tend to be much more favorable than those for existing sites, opening up greater opportunities for water reduction.