



Sustainability Reinvestment: Recycling Revenue and Energy Savings



SYNOPSIS

This Information Brief provides U.S. Department of Energy (DOE) sites and programs with information concerning reinvesting revenues from recycling programs and savings from energy efficiency programs in site-based sustainability projects. This Information Brief also describes several successful reinvestment programs at DOE sites.

What is the purpose of this information brief?

This information brief explains the basics of implementing a sustainability reinvestment program in order to assist DOE sites and programs in making ongoing sustainability initiatives either revenue-neutral or revenue-positive.

What is a sustainability reinvestment program?

A sustainability reinvestment program directs revenue or savings generated from sustainability projects towards the implementation of new, or improvement of existing, sustainability projects. Revenue from recycling and savings from energy efficiency or renewable energy projects are the two most commonly targeted areas for sustainability reinvestment. This program is designed to leverage value and maximize resources.

What drivers and requirements apply to reinvestment programs?

Recycling Revenue

In accordance with the DOE's September 7, 1999 Memorandum, *Use of Recycling Revenue for Pollution Prevention*, authorized by the Chief Financial Officer and the Environmental Executive, Office of Energy Efficiency and Renewable Energy, which outlines authority originally granted by the *Treasury, Postal Service and General Government Appropriations Act, 1995* (Public Law 103-329, Section 608) and subsequently by annual Appropriations Acts, DOE is authorized to reuse revenue generated from recycling materials for the following purposes:

- Acquisition, waste reduction and prevention, and recycling programs as described in Executive Order (E.O.) No. 13423 (January 24, 2007), including any such programs adopted prior to the effective date of the order;
- Other Federal agency environmental management programs, including, but not limited to, the development and implementation of hazardous waste management and pollution prevention programs; and
- Other employee programs as authorized by law or as deemed appropriate by the head of the Federal agency.

Energy Savings

DOE Order 436.1, *Departmental Sustainability*, Section 4(d) requires verified savings from all energy savings and sustainability projects to be reinvested, consistent with Federal regulations and DOE guidance, to further additional sustainability projects at the site.

How does a sustainability reinvestment program work?

The design of a sustainability reinvestment program differs depending on the source of funds for reinvestment. Recycling revenue can be reinvested directly, whereas energy savings must be calculated and funded out of a site's budget. Policies and requirements vary among sites. This brief provides examples but specific guidelines and implementation will be determined by each site's budget office.

Recycling Revenue

All DOE sites have some type of recycling program, and many are comprehensive and mature. Revenues generated from site-based recycling programs can be used to fund the further development, expansion, and improvement of a site's recycling programs; the revenue need not be returned to the U.S. Treasury. However, not all recycling streams are revenue-positive in all locations, and the revenues generated by recycling programs vary based on market conditions and site activity levels.

Y-12 National Security Complex has successfully reinvested revenues from 7 out of its 40 different recycling streams, totaling over \$150,000 in Fiscal Year (FY) 2011. Revenue-positive streams include scrap metal, cardboard, office paper, and motor oil.

Energy Savings

To transform savings from energy efficiency or renewable energy projects into revenue that can be reinvested, the savings must be quantified, verified, and then allocated from a site's budget. The form of this allocation differs depending on a site's approach to energy savings reinvestment. Some sites establish an exclusive fund only for sustainability projects. Others authorize sustainability projects to compete for funding from general overhead funds up to the amount of savings.

Argonne National Laboratory (ANL) calculates the return on investment (ROI) for its energy savings projects. Estimated savings from the project as-built are verified upon completion of the project. Savings and payback period are documented. The budget office reviews and approves the ROI and adds a surcharge to lab-wide energy bills equal to the estimated savings of the project. This surcharge accrues to the energy savings project account annually until the project's simple payback period ends, at which point the surcharge is eliminated. After the simple payback period ends, continuing energy savings from the project reduces the energy costs for the site.

Where is a sustainability reinvestment program managed and operated?

The management and operation of a sustainability reinvestment program will depend on the management structure of a site and on the type of reinvestment program. Recycling revenue reinvestment can often be managed and operated entirely out of the office that manages and operates the recycling program (normally a facilities or environmental protection office), with cooperation from the site's budget office. Energy savings reinvestment requires interaction between the office(s) responsible for project selection, design, and installation and the budget officials responsible for funding the site's energy use.

How are funds redirected to sustainability projects?

Recycling revenues can be deposited directly into an account specified only for recycling or other sustainability projects. Energy savings must be calculated by a responsible party (e.g., the design engineer) and verified by the responsible financial officer. Those funds can be then directed from the site's energy budget to an account specified for energy savings or other sustainability projects.

How are sustainability projects selected?

Methods for selecting suitable projects to direct reinvested funds vary from the simple to the highly structured. Some sites make reinvestment decisions within the office that generates the revenue (e.g., a recycling office using revenue to purchase needed equipment). Others employ site-wide formal project identification and evaluation processes. Each site must determine what method best fits its resources, mission, and organizational structure. In general, no matter the selection process structure, projects that have low risk and short payback times are preferable because the business case is stronger.

ANL employs a highly structured energy savings project selection process involving engineers, building managers, an energy team (composed of energy and sustainability experts), the budget office, and the laboratory staff at large. It begins with an energy management meeting where engineers and building managers propose projects. The laboratory staff at large is also encouraged to submit ideas through an online sustainability idea message board. Costs are estimated and the ROI is calculated for each viable project idea. The most attractive projects are evaluated and selected by the energy team. Finally, the budget office verifies the ROI calculations, and gives approval for the projects.

What types of projects have been funded through sustainability reinvestment programs?

Projects that have been funded through sustainability reinvestment programs include:

- Purchasing of recycling equipment such as an outdoor recycling tent, roll-offs, dumpsters, bins, and a foam packaging densifier (Sandia);

- Purchasing of a compactor truck (Y-12);
- Replacing lighting with LEDs and T5 fluorescents and installing dimmers and occupancy sensors (ANL);
- Replacing cooling towers and chillers with controls upgrades and converting once-through to closed-loop systems (ANL);
- Installing low-flow restroom fixtures (ANL); and
- Insulating steam piping and installing condensate returns and steam traps (ANL).

What are some challenges with implementing sustainability reinvestment programs?

Challenges experienced by some sites include:

- Funding structures that require sustainability projects to compete with other site needs in the indirect overhead budget (Los Alamos National Laboratory--LANL);
- Perception that there is no benefit from implementing efficiency projects if operations budgets are not positively impacted (Idaho National Laboratory);
- Waste streams that are not cost-effective to recycle (Y-12);
- Availability of vendors to accept certain waste materials (Y-12);
- Vendor's negative perception of accepting legacy materials (Y-12);
- Site funding model does not allow for out-year planning and larger, multi-year projects (SNL); and
- Internal misconception that savings cannot be redirected to sustainability projects, but must be returned to the U.S. Treasury (widespread).

What are some successes with implementing sustainability reinvestment programs?

Successes experienced by some sites include:

- Focusing limited investment dollars on projects with small payback (LANL);
- 25 percent reduction over expected energy use (Sandia);
- Over \$150,000 in reinvested revenues in FY 2011 (Y-12);
- 47 projects completed since FY 2008 ranging in cost from \$5,000 to \$400,000 and totaling \$680,000 through the end of FY 2011 (ANL); and

- Reinvestment program becoming self-sustaining with no external funding in FY 2011 (ANL).

In FY 2012, the National Nuclear Security Administration negotiated a new electric utility contract for Sandia National Laboratories New Mexico (Sandia) and Kirtland Air Force Base. This resulted in nearly a 30 percent reduction in the cost of electricity and annual savings of up to \$7 million over the next four years at Sandia. Seizing upon this opportunity, Sandia leadership has decided to invest a portion of these savings in targeted energy conservation projects that further reduce energy consumption and generate additional long-term savings. By the end of FY 2017, these investments are expected to produce reductions of up to 25 percent in energy consumption, 11 percent in greenhouse gas emissions, and a sustained, additional reduction of \$5 million in annual utility costs across the entire laboratory.

Where is there more information?

More information can be found on a webpage of the Energy Facility Contractors Group (EFCOG) Environmental Subgroup: "Energy and Other Savings – Reinvesting and Retention Teleconference" (http://www.efcog.org/wg/esh_env/events/June_14_2012_telecon/Jun-14-2012-telecon.htm).

Contact information for knowledgeable staff at certain sites is provided below:

Devin Hodge
Sustainability Program Manager
Argonne National Laboratory
DHodge@anl.gov

Chris Ischay
Sustainability Program Manager
Idaho National Laboratory
christopher.ischay@inl.gov

Monica Witt
Site Sustainability Program Manager
Los Alamos National Laboratory
mwitt@lanl.gov

Ralph Wrons
Pollution Prevention Program Coordinator
Solid Waste Collection & Recycling Coordinator
Sandia National Laboratories, New Mexico
rjwrons@sandia.gov

Jan Jackson
Sustainability & Stewardship Manager
Y-12 National Security Complex
gilbertjm@y12.doe.gov

Links to the documents referenced in this information brief are located below:

Most recent Appropriations Act (authority granted in Section 706): <http://www.gpo.gov/fdsys/pkg/PLAW-112publ74/html/PLAW-112publ74.htm>

E.O. 13423: <http://www.gpo.gov/fdsys/pkg/FR-2007-01-26/pdf/07-374.pdf>

E.O. 13514: <http://www.gpo.gov/fdsys/pkg/FR-2009-10-08/pdf/E9-24518.pdf>

DOE Order 436.1:
https://www.directives.doe.gov/directives/0436.1-BOrder/at_download/file

The Office of Sustainability Support provides assistance to DOE elements on implementation of sustainable compliance matters. Please refer any questions and requests for assistance concerning the subject material covered in this Information Brief to:

*Shabnam Fardanesh
Office of Sustainability Support, HS-21
U.S. Department of Energy
1000 Independence Ave., S.W.
Washington, DC 20585*

*Phone: (202) 586-7011
E-mail: Shabnam.fardanesh@hq.doe.gov*

