EFCOG Best Practice #156

Best Practice Title: Internal Energy/Water Savings Reinvestment Programs

Facility: Argonne National Laboratory

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Brief Description of Best Practice: Argonne National laboratory has created an internal energy and water savings reinvestment program. This program is structured similar to a traditional energy savings performance contract programs, however, it utilizes capital funding from the DOE National Laboratory itself instead of funds from an external Energy Savings Company. The energy savings from each project are re-invested annually until the project pays back the initial capital investment cost. After the investment of initial capital in the first few years, the program becomes "self-sustaining" through savings. Projects completed under the reinvestment program tend to have 2 features:

(1) Relatively low cost (<$100K per project), and,
(2) Non-complex technical measures – that is projects such as lighting replacement, steam trap replacements, insulation, and low flow water fixtures that require little engineering or project management overhead.

This second feature is especially important in keeping project overhead costs low (in contrast to traditional Energy Savings Performance Contracts [ESPC]) and, therefore, payback short. Many efforts can be performed using the Laboratory's own maintenance staff and therefore require only purchase of materials or equipment.

Why the best practice was used: The reinvestment program was used to complement the use of ESPC program for achieving energy/water savings, and Green House Gas reductions. It also allowed for quicker turnaround from project concept to completion.

What are the benefits of the best practice: Unlike ESPCs and [spell out] UESCs, which may take years to develop, the internal Energy Group framework facilitates quick identification, planning, implementation, and Measure &Verification (M&V) of projects within an accelerated timeline. In many cases, such as installation of variable frequency drives, lighting, or steam traps our mechanics are simply given a cost code and the work is completed within days or weeks of the project being identified. More complex projects are engineered in-house and sent out to local contract firms. Having the maintenance, design, engineering and budget personnel fully integrated in the team allows for accelerated planning and execution. Also, by developing in-house energy engineering expertise, staff have been able to provide suggestions and expert advice for incorporating sustainable design features into major building renovations and new construction.
Finally, having this program increased awareness among Energy Group members about common sustainability goals. Monthly meetings are also used as cross-pollination opportunities for discussing applicability of new technologies and other Operations & Maintenance issues.

What problems/issues were associated with the best practice: Initial investment in Laboratory overhead was required to kick-start the program. Another way of raising "seed money" is adding a surcharge to all users utilities bills equal to the amount of the savings (similar to what is done to fund ESPC payments). In theory, the customers see no increase or decrease in cost, because although their utility rate is higher, the amount of steam,

water, or electricity used is lower. At the point the project pays back the capital cost, the customers will then begin seeing a net decrease in their utility bills (for the same cost of utility).

When making a request for seed money a point should be made that it is not an expense, but rather an investment, since future energy and water savings hedge against ever raising utility costs.

How the success of the Best Practice was measured: A M&V engineer is assigned to the team to calculate and/or measure energy, water and Greenhouse Gas savings. Savings & requests for funding are reported to the Chief Financial Officer annually. Over a four year period (FY08-FY12), a total of approximately 62,000 million Btu, 51 million gallons of potable water, and over 12 million gallons of industrial water has been saved annually. That translated into $861,000 that has been requested for reinvestment into energy and water savings measures.

As the number of completed Energy and Water Conservation Measures has grown, the annual savings have risen to a level where the program is self-sustaining – savings from newly-implemented projects compensate for projects that fall off the list (since the initial, capital, investment is paid off from the project savings). In addition, only energy savings are counted; maintenance savings are not included, which is an additional benefit.

The program has established itself to a point of becoming a recurring line item in the budget of Argonne's Facilities Management and Services division. By keeping the program expenditures and savings on the general accounting ledger, the funding does not expire each year. This allows savings to accumulate over time and avoids budget competition with other Lab priorities every fiscal year.

Description of process experience using the Best Practice: Projects should be run lean in regards to overhead in order to put the maximum amount of dollars into equipment that can provide return on the investment. It also a good practice to focus on low-risk projects which can tolerate lower engineering and project management costs.

Eligibility of each project candidate for the state's incentives should be considered as well. A list of the states' incentive programs can be found at DSIRE website:
http://www.dsireusa.org/