

Case Study 45 The Integrated Wetland System Project



Objective: To treat sewage and waste water by use of an integrated wetland system

Location: Various

Website: <http://info.tve.org/ho/doc.cfm?aid=572>

Description:

Wetlands in urban areas are natural receptacles for wastewater because they harness the nutrients available in waste through fisheries and agriculture. The integrated wetland system project aims to provide a low-cost, ecologically balanced and community linked sanitation option for the poorer cities of the world with ample sunshine. It is a system that frees the river from domestic contaminants and can at the same time recover the wastewater nutrients with remarkable efficiency to grow fish. The system costs less than other technologies for treating sewage and recycling waste.

There are two types of IWS - the flow-through system and the abstracted flow system. The primary objective of the flow-through system is the treatment of wastewater and for the abstracted flow system, it is resource recovery. In the flow-through system, the entire wastewater is transported through a pre-treatment system and is then detained in the recycling ponds for further treatment and for growing fish. Subsequently, the effluent from the recycling ponds is used for irrigation in downstream areas. The flow-through system needs less land to ensure adequate wastewater treatment and is particularly effective where cost of land is high.

The Mudiya Fishermen's Cooperative Society (MFCS)

Drawing support from the experience of the wetlands of eastern Calcutta, the MFCS have been successful in transforming a waterlogged area into a resource recovery eco-system in the south western fringe of the city of Calcutta and in demonstrating the sustainability of wetland option for wastewater treatment and resource recovery. There are 15 ponds of various sizes in the MFCS wetland area. Of these, 9 smaller ponds are used for improving the water quality before it enters the bigger ponds where the fish grow and further improvement of water quality takes place.

About 100 members of the MFCS produce about 5.6 tonnes of fish per hectare per year from about 50 hectares of water area which once was a wooded area. In the process about 23 million litres of composite sewage is treated each day in the wetlands. The entire eco-system has been built without any financial help. The money earned from the sale of fish has given a gross per capita income of about US\$3 per day which is more than three times the minimum daily agricultural wage in India. Municipal sanitation does not need to be a facility for which the government has to provide public money to run the system.

The information in this case study has been reproduced from the original manual on *Integrated wetland systems for wastewater treatment and recycling - for the poorer parts of the world with ample sunshine* prepared for RHUDO/New Delhi, USAID by Dr. Dhrubajyoti Ghosh.

Case Study 46 Energy Efficient Street Lighting



Objective: To improve the energy efficiency of street lighting to save energy and money.

Location: Sundsvall, Sweden

Website: <http://www.caddet-ee.org/infostore/details.php?id=2775>

Description:

Despite measures such as turning off the lighting in certain streets and complete turn off during summertime, expenditure would have had to decrease by 11,5 million SEK to maintain the budget for the Sundsvall municipality. The old street lighting, where it worked, did so poorly. In the technical office in Sundsvall the staff began investigating the possibility to run the street lighting in a more energy efficient way. However changing all electric fittings would demand a major investment. How should this investment fit in the municipal budget?

The answer was life cycle cost analysis (LCCA) and third party financing. With guidance from a methodology produced by the Swedish National Energy Administration, OPET and branch organisations, the LCCA for several options were calculated. The option of changing the fittings to more energy efficient ones had the lowest LCCA. Politicians were positive when they were informed about the possibilities of third party financing and the LCCA analysis. A procurement for 16,200 fittings was made. The evaluation did not only take the price and energy efficiency into account but also several other measures. After a detailed evaluation the choice fell on Thorn Lightings fitting "Streetus".

The Municipality of Sundsvall received several financing options but chose the municipal internal banks concept. Sundsvall is now installing energy efficient street lighting with lower energy and maintenance cost. A part of the energy savings covers the financing.

The energy use for street lighting before was 14,5 GWh/year. After it is 9,7 GWh which corresponds to energy savings of 4,8 GWh/ year or 33%.

The investment for the 16,200 street light fittings was 16,6 million Swedish crowns (SEK). 1 USD = 8,60 SEK. The cost for each fitting is 1,050 SEK.

The value of the 4,8 GWh annual energy savings is calculated to 2 million SEK/year. This gives a payback time of 8 years. The new fittings also demands less maintenance, the decreased cost however is not calculated.

The investment was made available by third party financing by the municipal internal bank. A part of the decreased cost for energy is financing the payment of the investment, interest rate and credits.

Case Study 47 Retrofitting Public Sector Buildings



Objective: To retrofit government buildings.

Location: Various in Australia and California

Websites: <http://www.ncc.nsw.gov.au/enviro/index.cfm>

<http://www.lgc.org/freepub/energy/newsletter/jun2001/page04.html>

Description:

Newcastle City Council achieved a reduction of electrical usage by almost 40% at the major works depot by replacing inefficient compressed air systems and lighting systems, and by controlling its water and space heating systems. 400 downlights in City Hall were replaced with compact fluorescent lamps. Energy consumption for the lighting system was immediately cut by 75%, and a 30 kW heat load was removed from the building, thus reducing HVAC requirements. Refurbishment of the Council's Central Administration Centre involved provision of power factor correction equipment, installation of automatic lighting control for 14 toilet suites, and retrofitting 1200 fluorescent office light fittings with low energy ballasts which reduced the lighting system energy consumption by 47%.

Department of Transport and Regional Development Buildings, Australia

Department of Transport and Regional Development has four buildings in Civic, Canberra. The department has established a refurbishing program that as each floor is due for refurbishment:

- replaces existing lighting systems with better quality and more energy efficient light globes;
- establishes block lighting patterns that enable sections of each floor to be lit rather than the whole floor
- installs light sensors on conference and training rooms

The cost of changing over to more energy efficient systems should be repaid in approximately two years. Whilst savings have not been formally accounted for at this stage, as the refurbishment is still under way, it is estimated that the Department should save around 10% on its electricity bill over the next 12 months.

Cool Roofs Help Schools and Local Governments

The Local Government Commission is helping to coordinate the California Energy Commission's Cool Savings Program. The focus will be to help local governments, schools, colleges and universities install cool roofs this year. What's a cool roof? While most roofing materials absorb heat, a cool roof reflects at least 65% of the sunlight hitting it, significantly reducing the amount of heat penetrating the structure. Cooling energy savings resulting from a cool roof can be 20% or more. The amount of savings will depend upon your geographic location (hotter climates mean more savings) and the condition of your building (less efficient buildings will save more with a cool roof). Cool roof rebates are available for air conditioned spaces throughout most of California. Most approved cool roof products are for flat roofs, including coatings and membranes. For peaked roofs, there currently is only a clay tile, but a cement tile manufacturer is also seeking approval

Case Study 48 Electrical Energy Savings in a Government Ministry Building



Objective: To reduce energy costs in government buildings by a range of measures including no or low-cost strategies.

Location: Accra, Ghana

Website: <http://www.ase.org/ghanaef/MOME.PDF>

Description:

Electricity supply in Ghana suffered a serious decline in 1998 as a result of several factors but mainly due to the poor inflows of water into the Volta basin, which until then accounted for 95% of Ghana's electricity supply. The shortage also coincided with a period when the Public Utilities Regulatory Commission had initiated tariff adjustments aimed at removing priced subsidies to enable the utilities to meet the high cost of power production and distribution and also attract private investments into the Power Sector.

These recent electricity tariff adjustments and a high incidence of electrical energy waste have been identified as some of the primary causes of high government recurrent expenditure. Government Ministries, Departments and Agencies are making efforts aimed at reducing expenditure on utilities especially electricity. For this purpose, the Ministry for Mines and Energy has since February 1998, undertaken measures aimed at eliminating waste, improving efficiency and reducing electricity consumption in its building in Accra.

The measures included:

- Energy Auditing
- Educational Campaigns
- Power Factor Improvement
- Lighting Improvements
- Retrofitting of Windows for Draught Proofing
- Relocation of Air Conditioner
- Installation of Occupancy Sensors

These measures resulted in a reduction of electricity consumption in the building by 26,907kWh and maximum demand savings of 351kVA in 1999. The total cost saving in 1999 was c9.84million. The PIR sensors alone saved 14% of the total energy consumption or 21% of consumption due to air conditioning and internal lighting.

Case Study 49 Rooftop Gardens: Urban Heat Island Initiative



Objective: To reduce the urban heat island effect through the creation of rooftop gardens.

Location: Chicago, USA and Toyko, Japan

Websites: <http://w4.ci.chi.il.us/environment/AirToxPollution/oldUrbanIslands.html>
<http://www.cityofchicago.org/Environment/html/RooftopGarden.html>
http://jin.jcic.or.jp/trends/article/011003bus_r.html

Description:

Chicago's Urban Heat Island Initiative is designed to ameliorate the effects of dark surfaces and reduce pollution by:

- using alternative paving
- constructing light-colored roofs
- using alternative energy sources
- increasing greenspace
- installing rooftop gardens

The Chicago Department of Environment (DOE) is testing the benefits of rooftop gardens as part of its Urban Heat Island Initiative. Chicago is one of the few cities in the country to use rooftop gardens to reduce energy demand and lower area temperatures. The 20,300 square foot garden will started with 20,000 plants of more than 150 varieties including 100 shrubs, 40 vines and 2 trees. The plants were selected for their hardiness on a roof, where wind and watering are two challenges. The low-maintenance garden relies on a special blend of compost, mulch, and spongelike ingredients that weighs less than regular topsoil and retains more water. The rooftop garden will decrease City Hall's air conditioning and heating bills and also reduce ozone pollution and smog, and improve air quality. Temperature, stormwater run-off and other data will be measured against the adjoining Cook County building, which has a conventional black tar roof. Local high school students will get to participate in collecting and measuring data.

Many of Japan's leading general contractors are putting efforts into the development and sale of products related to rooftop greenery, which involves planting trees, flowers, and other plants on top of condominium and other buildings so as to absorb heat. And some home furnishing companies are selling rooftop-greenery systems for individual homes. It is hoped that rooftop greenery will lessen the "heat-island" effect, cut air-conditioning costs, and reduce noise pollution. The national and local governments are beginning to take up the challenge of encouraging the spread of this technology. The Tokyo metropolitan government passed a law requiring new buildings to make use of rooftop greenery beginning in April 2001.

Similar projects, some of which also incorporate food production, are listed below:

Roofwater Fish Farm (Australia) <http://www.cityfarmer.org/fishfarm.html#fishfarm>. An Urban Rooftop Integrated Microfarm For Mt.Gravatt's Commercial Buildings (Australia) <http://www.cityfarmer.org/rooftopmicrofarm.html#microfarms>. Singapore's Aero-Green Pioneers Tropical Aeroponics <http://www.cityfarmer.org/aeroponics.html#aeroponics>

Case Study 50 Employee Education Program



Objective: To save energy in municipal facilities by a range of measures including educating and involving employees in developing appropriate strategies.

Location: Saskatchewan, Canada

Website: <http://www.emtfsask.ca/studies/northbattleford.htm>

Description:

The North Battleford Energy Management project grew out of the successful Destination Conservation (DC) Project for schools run in Saskatchewan by the Saskatchewan Environmental Society (SES). The DC program combines education, practical energy savings measures, and innovative financing. Savings from one year's investment in energy management are re-invested in further retrofits. Limiting the first year measures to low cost/no cost measures, and running the program for three years means significant savings are achieved without any capital investment.

One major component of the programme was a survey. The purposes of the survey were to:

- Determine attitudes toward energy efficiency,
- Establish baseline measures of employee awareness and practice of energy savings activities
- Determine preferences for the type and sources of information, training and other tools and techniques to encourage and build awareness of energy savings options.

The result of the first questionnaire formed the basis of comparison for employee awareness, practices, and attitudes against which the results of the second questionnaire, distributed toward the end of the project, were compared. The second questionnaire was a slightly simplified version of the first questionnaire, so that the main focus would be on comparing employee attitudes, awareness and practices in regards to energy conservation. It was felt that it would be redundant to reassess preferences for types and sources of information and training at the end of the project.

The first self-administered questionnaire, which was distributed in August 1994, was responded to by 48 of 50 possible respondents. This represents a 95% return rate. 21 respondents returned the second questionnaire. Although the difference between the two sample sizes may be of some concern, it does appear that despite the smaller sample size, a good cross-section of employees was represented on the second questionnaire.

The first questionnaire found that there was quite high awareness of and positive attitude toward energy efficiency. The first questionnaire also found that energy conserving behaviour was well established at home.

The findings of the second questionnaire suggest that this high awareness, positive attitude, and active engagement has been modestly improved upon during the course of the project.

Case Study 51 City Energy Challenge



Objective: To motivate City operations to cut energy use and save money.

Location: Portland, Oregon, USA

Website: http://www.sustainableportland.org/energy_gov_challenge.html

Description:

It takes a lot of energy to run the City of Portland's parks, offices, sewage treatment plants, street lights, maintenance and repair vehicles, and much, much more costing the City several million dollars each year. In 1991, the City created the City Energy Challenge Program to cut energy use - and save money - in City operations. The program is a response to the City Energy Policy, which was adopted in August 1979 and updated in April 1990. The policy's goal is to: "Promote a sustainable energy future by increasing energy efficiency in all sectors by ten percent by the year 2010." The City has already exceeded that goal. Between July 1991 and July 2000, the program saved \$7.55 million. Currently, the savings equal \$1.38 million per year and, there are additional projects being considered that can save even more energy. By the end of 2001, we hope to have cut our annual energy use by nearly \$2 million per year - more than 15 %!

In 1995, the City signed an innovative contract with Portland General Electric (PGE) to purchase "green" power generated by wind or other renewable resources. The contract allowed the City to take advantage of wholesale rates for a 10 MWA minimum power purchase, and to require PGE to purchase five percent of that power from renewable resources. As a result, the City cut costs substantially for 95% of the purchase, and paid a premium for the five-percent of renewable power it received. Net savings: \$300,000 per year.

In July 1999, the City's Bureau of Environmental Services unveiled a methane-powered fuel cell at the Columbia Boulevard Wastewater Treatment Plant. The 200-kW fuel cell is one of only a handful of fuel cells in the U.S. that operates on a renewable fuel. It produces about 1.4 million kilowatt-hours a year.

Funding for this project was obtained through federal and state grants, including a \$200,000 grant from the U.S. Department of Defense. A rebate of \$247,000 from PGE in effect returned the green power premiums that the City had paid them earlier. The Oregon Office of Energy also provided a \$224,000 tax credit. Additional financing was provided by Western Bank, a subsidiary of Washington Mutual Savings Bank.

Just before Earth Day 2000, the City made another commitment to sustainable energy. City Commissioner Erik Sten announced that the City will buy electricity from renewable resources such as wind and solar (also known as "green power") through PGE and Pacific Power's green power programs. Today the City purchases over 600,000 kWh per year of green power for selected City facilities.

Case Study 52 Energy Management Programs



Objective: To assist local governments to reduce energy costs through appropriate energy management projects and practices.

Location: Victoria, Australia

Website: <http://www.sea.vic.gov.au/advice/government/local.html>

Description:

The Sustainable Energy Authority's Local Government Program is designed to assist councils to achieve reductions in recurrent energy costs through sound energy management projects and practices. The Sustainable Energy Authority provides a range of support and financial assistance programs to facilitate the implementation of cost efficient and greenhouse friendly energy technologies, renewable energy and energy management practices in all sectors of the Victorian community.

The Municipal Energy Management Support (MEMS) program consists of a series of workshops designed to help local governments gain an understanding of basic energy management principles. The aim of the MEMS program is to enable local governments develop and implement successful and sustainable energy management programs.

An easy to use Municipal Energy Management (MEM) Tool software package has been developed to assist Councils track and report their energy consumption and greenhouse performance. This information provides the means by which energy trends can be analysed, tariffs reviewed and improvements monitored. The MEM Tool also contains benchmark data which allows councils to compare their relative energy performance against other Council sites.

The most important step in developing a realistic and workable municipal energy management plan is to identify energy saving opportunities through energy audits. An energy audit establishes where and how energy is being consumed, and provides an accurate assessment of the potential for savings.

The only effective way to manage energy consumption and costs is by assigning responsibility to an internal "Energy Manager" as part of an energy management program.

Once energy savings and renewable energy opportunities have been identified, it is important to prioritise them and develop an implementation plan. The plan should take into account the findings of any relevant energy audit reports, and should have senior management endorsement. It should also include project time frames, responsibilities and budgets.

Implementing a Staff Awareness Program

Another key ingredient for the success of an energy management program is to maintain a high level of awareness amongst staff. Sustainable Energy Authority can provide material for newsletters, case studies and a range of energy efficiency and renewable energy literature for council staff to help them save energy and money at home.

Case Study 53 Life-Cycle Costing



Objective: To use life-cycle costing to assist make economic decisions and plan for new buildings or retrofit existing ones.

Location: Washington, USA

Website: http://www.eren.doe.gov/cities_counties/elecpro.html

Description:

The State of Washington has used Life Cycle Costing Analysis (LCCA) since 1975. In Washington, LCCA must be used in the building design for new construction or renovation of any public building with more than 25,000 square feet (2325 square meters) of useable space. Renovation projects include additions, alterations, or repairs that exceed 50% of the value of the building and that affect any energy system. The state's Superintendent of Public Instruction also requires that a school's LCCA be approved by the Washington State Energy Office (WSEO) before a school district receives state matching funds.

According to a report issued by the state, next to personnel costs, energy costs are schools' dominant operating expense. But the catch is that school districts have limited capital and operating funds. That's where LCCA offers some help. LCCA gives the school districts information that can be used for making long-term economic decisions.

LCCA is used primarily for building envelope design and for systems that use energy, such as heating, ventilating, and air-conditioning (HVAC) equipment, domestic hot water systems, and lighting systems. State staff members routinely use computerized energy simulation models for calculating energy use and cost of various options. The state also maintains information such as service life, energy performance standards, energy use indices, and LCCA spreadsheets on all types of equipment.

WSEO does not force public agencies to purchase items or materials with the lowest LCCA, but, in the case of schools, the school boards must vote not to implement the results of the LCCA. "The fact that the vote takes place in a public setting acts as a deterrent because it's a type of public pressure," Sheridan explains. "The public forum makes the boards accountable."

Free software is available that makes LCCA easy and inexpensive. The software, Building Life-Cycle Costing Computer Program, Version 4.14, was developed by the National Institute of Standards and Technology for the U.S. Department of Energy Federal Energy Management Program.

Case Study 54 Buy Recycled Campaign



Objective: To contribute to energy savings through the purchase of recycled products.

Location: California, USA and Victoria, Australia

Website: <http://www.ciwmb.ca.gov/BuyRecycled/StateAgency/Default.htm>
http://www.ecorecycle.vic.gov.au/buy/buy_index.asp

Description:

The State Agency Buy Recycled Campaign (SABRC) is a joint effort between the Department of General Services (DGS) and the California Integrated Waste Management Board to implement State law requiring State agencies and the Legislature to purchase products with recycled content. It compliments the efforts of the Integrated Waste Management Act which was enacted as an attempt to reduce the amount of waste going to California's landfills.

Under the State Agency Buy Recycled Campaign, every State department, board, commission, office, agency level office, and cabinet level office is required to:

- purchase products that contain recycled material
- certify the recycled content of all suppliers' products
- submit an annual report on products purchased in reportable product categories

The State Agency Buy Recycled Campaign requires that the California Department of General Services (DGS), in consultation with the California Integrated Waste Management Board:

- Submit a report to the Legislature every year on the State's progress in buying recycled products.
- Develop a uniform reporting procedure for agencies to follow.
- Make recommendations on revising the procurement policies of any agency that has not met the buy recycled requirements. These recommendations will go to both the individual agency and the Legislature.

Buy Recycled Campaign, Victoria, Australia

Each Victorian council has been given copies of the Buy Recycled Resource Kit. This is a comprehensive guide to understanding and planning how a council can implement a Buy Recycled Purchasing Program. Naturally, much of the information is relevant to many other organisations and for this reason the kit has been reproduced onto this site as PDF documents.

King County Recycled Product Procurement Policy, King County, Washington, USA , <http://www.metrokc.gov/procure/green/policy.htm>

Environmental Purchasing Policy

The Starter Kit includes program implementation strategies; case studies; model resolution and a resource list. <http://www.naco.org/programs/envirom/purchase.cfm> (form for purchasing, cannot be viewed online)

Case Study 55 Subsidies for Regional Energy Programs



Objective: To provide subsidies to local governments to assist them in implementing regional energy programs.

Location: Korea

Website: [http://wrweb.com/escap-ngo-profiles/ngo-profile-kemco.htm#Regional Energy Program](http://wrweb.com/escap-ngo-profiles/ngo-profile-kemco.htm#Regional%20Energy%20Program)

Description:

The Korea Energy Management Corporation (KEMCO) is a non-profit government agency in charge of implementing energy efficiency and conservation policies and programs.

Regional Energy Program

The Regional Energy Program supports various activities to stabilize demand and supply as well as the rationalization of energy by local government in the region. The Ministry of Commerce, Industry and Energy (MOCIE) provides local governments with subsidies to effectively implement the regional energy program. KEMCO provides education and training courses, technological consulting and information services for public servants charge of local governments' regional energy programs.

The Regional Energy Program consists of two sub-programs:

- Infra Build-up Program such as the establishment of regional energy planning, the feasibility study of unused and/or new renewable energy sources in the region, public relations and energy conservation education; and,
- Demo Project to invest in the facilities of energy conservation or the utilization of unused and/or new renewable energy.

Case Study 56 Performance Contracting



Objective: To save energy and use the cost savings to fund further improvements.

Location: USA

Website: http://www.eren.doe.gov/cities_counties/elecfin.html

Description:

A local government can increase energy efficiency without making any initial capital investment. A city or county can decrease energy costs and simultaneously reserve available capital for other projects.

This is called performance contracting, and it's a growing trend because it's a win-win situation. Everyone comes out ahead—business, government, and the taxpayer. Under such an agreement, a third party provides a city or county with a service package that typically includes the financing, installation, and maintenance of energy-saving capital improvements. The customer uses resulting energy savings to pay for the improvements. Performance contracts are often structured as a lease, but with a guarantee that payments will not exceed energy savings. This minimizes financial risk.

According to Ron Mutter, Director of Public Works for Redlands, California, that's exactly the type of arrangement that has worked for the city of Redlands. Honeywell, Inc., approached a city council member about replacing and updating the city's heating, ventilating, and air-conditioning (HVAC) equipment, wastewater pumps, lighting systems, irrigation systems, and sensors.

When everything is completed, improvements will have been made to 12 buildings and park irrigation systems.

In March of 1992, the city and Honeywell signed an agreement projected to save the city at least \$462,683 in energy and \$143,455 in labour and maintenance costs for the first year of operation. The equipment replacement project is financed with a municipal lease and a maintenance contract. Costs are covered by the energy savings and a Honeywell guarantee.

The city is already saving substantial amounts of money. "The city's energy use is about half what it was 2 years ago," says Mutter. In utility rebates alone, Redlands has received more than \$100,000 from Southern California Edison. "The wastewater treatment plant will be able to increase throughput without increased energy costs, while saving more than \$20,000 a year," Buckingham says.

For financing, a 7-year lease was structured; once it expires, savings will revert to either a city general fund or a utility fund. Although Honeywell guarantees the city that its savings will at least meet the sum of its lease payments and maintenance payments, the company anticipates that savings will exceed payments. If savings do exceed payments, the city keeps the extra money.

Case Study 57 Energy Management, Matching Grants and Budget Incentives



Objective: To fund energy management programs through matching grants and budget incentives.

Location: Arizona, USA

Website: <http://www.commerce.state.az.us/newenergy/outreach.html#memp>

Description:

The Municipal Energy Management Program encourages the development and utilization of energy management plans in Arizona municipalities with populations under 70,000. A limited number of \$10,000 matching grants are available for cost effective energy upgrade projects. The energy office provides a software package that enables municipalities to easily track energy use and costs through their utility bills.

You can motivate department heads and employees to save energy through effective energy management. This process usually involves all city departments and often relies on the expertise of existing staff. There are at least two financial components of effective energy management: accounting and budget incentives.

Tracking energy costs is the first essential step. In some municipalities, energy costs are totalled for each department. In others, energy costs are listed as a series of unrelated expenses for each department. If this last type of accounting is used, which is often the case, city managers and department heads may not even know how much they spend on energy. In that event, the first step in effective energy management is to begin to monitor consumption and costs.

Budget incentives can play a key role in effective energy management. With budget incentives, the departments or city agencies participating in the program keep all (or a predetermined part) of the money saved from using energy more efficiently. This arrangement is quite different from typical local government budgeting, where dollar savings often lead to smaller budget allocations the following year. Because it could reduce their available funds, local government agencies often do not have an incentive to save money on energy. Budget incentives, on the other hand, are effective because they encourage initiative and because they establish a permanent funding mechanism for energy efficiency. The incentives can take several forms. In some cities, part of the savings is returned to the departments involved in the program, such as the Los Angeles Fire Department or the Philadelphia public schools. In other cities with a centralized energy office, such as Phoenix, the savings return to the general fund. Whatever its form, the incentive is effective when dollar savings from energy projects are in turn used to establish a permanent fund for financing other energy conservation and energy efficiency projects.

The fund is used to help departments purchase new energy-conserving capital equipment. For example, if a department needs to buy new energy-consuming equipment, such as a chiller for air conditioning, the fund can pay for the difference between an energy-efficient model and a cheaper model that is less energy efficient.

Case Study 58 Iowa Energy Bank



Objective: To use energy cost savings to repay financing for energy management improvements

Location: Iowa, USA

Website: <http://www.state.ia.us/dnr/energy/programs/bem/ebank/index.htm>
<http://www.state.ia.us/dnr/energy/pubs/bem/EnergyBank.pdf>

Description:

The Iowa Energy Bank is an energy management program using energy cost savings to repay financing for energy management improvements which targets public and non-profit facilities (public schools, hospitals, private colleges, private schools, and local governments). The Iowa Energy Bank is expected to facilitate more than \$250 million in improvements using private funds in combination with minimal state and federal support.

Starting with an initial energy audit, the Iowa Energy Bank helps manage the energy efficiency improvements and financing process every step of the way. Experts will customize solutions that meet the specific needs of an organization, with the assurance of high technical quality and the potential for attractive cost savings. Financing is provided through area lending institutions that create budget-neutral, affordable financial packages.

The Iowa Energy Bank (the Bank) provides the necessary technical and financial assistance for creating energy management improvements. The program offers a three-step program:

- A preliminary energy assessment is completed for the facility. This assessment may be an extensive energy audit, or for small facilities, a simpler assessment of energy consumption and potential improvements by Energy Bank program staff.
- If necessary, an engineering analysis is completed for the facility by a qualified consultant. A six-month, interest-free loan is available to pay the up-front expense of the energy audit and engineering analysis.
- Full-term, municipal lease-purchase agreements or capital loan notes from private lending institutions are available at interest rates negotiated for the client by the Iowa DNR. All clients of the program are eligible for financing of cost-effective energy management improvements.

Examples of energy efficiency improvements include:

- fluorescent lamps and ballast replacements
- lighting controls
- exit sign replacement
- pipe insulation
- new heating and cooling equipment
- water heater blankets
- insulation
- doors
- low-flow shower heads and toilets
- ground-source heat pumps
- wind energy