Washington State Energy Office

Energy Savings for Nonprofits

Profile #49

Executive Summary

The nonprofit sector has historically been overlooked by energy management programs. Energy Savings for Nonprofits (ESFN) was one of the country's first state-sponsored energy conservation programs offered specifically for day care centers, food banks, senior centers, health care centers, family shelters, and other human service nonprofit agencies. The state of Washington contains about 1,200 human service agencies. A 1987 study found that 92% of these spent approximately 20% of their operating budgets on energy.

The Washington State Energy Office (WSEO) in cooperation with Seattle City Light, Tacoma Public Utilities, and Snohomish County PUD, designed the ESFN program in 1987 to reduce operating costs for nonprofit organizations. By using fluorescent lights, wrapping hot water tanks, caulking windows, and installing other energy efficiency measures, WSEO knew that nonprofits could greatly reduce their energy bills and thus enhance and even expand their services. The ultimate goal of the ESFN program is to have nonprofit agencies spending their money on human services instead of energy-inefficient buildings.

The program provides a combination of technical, financial, and educational assistance. Fuel-blind energy audits are performed, typically by the local utility. Based on the audits, efficiency measures are recommended. The nonprofit chooses which measures to install, and after successful completion of the retrofit an inspection occurs prior to WSEO's reimbursement of applicable costs.

Over the program's history a number of funding requirements have been used. For instance, initially grants of $4,500 were offered in select counties for buildings of 5,000 square feet or larger, $2,000 for buildings less than 5,000 square feet, and no-interest loans were available up to $30,000. In 1993, ESFN was budgeted to provide grants of up to $20,000 requiring a 50% match. Large fluctuations in the grant and loan amounts offered each year have been due to the different amounts of money received by WSEO from the oil overcharge funds, the principal source of funding for the program.

Through November 19, 1992, 175 nonprofit human service agencies had completed projects through the ESFN program. Annual electric energy savings for the program total 5,255 MWh. Electric energy savings per participant were greatest in FY 1991 with 88,073 kWh saved and lowest in FY 1989 at 21,383 kWh.

The costs of the retrofits that have resulted from the ESFN program are borne by three different parties: WSEO, participating utilities, and the actual nonprofit organizations. All these costs combine to create gross program costs over the lifetime of the program of $1,854,700. WSEO expenditures are made up of grants and administrative costs and total $917,800. The utilities' share of the program costs (in grants only) total $602,300. Customer contributions (which includes loans) have totalled $334,600.

Energy Savings for Nonprofits

Agency:	Washington State Energy Office
Sector:	Nonprofit human service organizations
Measures:	A wide range of energy conservation measures (as chosen by the nonprofit agency) are installed for nonprofit agencies unable to participate in other C&I programs.
Mechanism:	Previously WSEO offered grants or no interest loans to finance installations. For FY 1993 only grants are available.
History:	The program was first announced in November 1987. It continues today, having already reached 175 nonprofits.

FY 1992 Program Data

WSEO cost:	$94,600
Electric energy savings:	0.373 GWh
Lifecycle energy savings:	3.7 GWh
WSEO grants:	$44,700

Cumulative Data (FY 1988 - FY 1993)

WSEO cost:	$917,800
Electric energy savings:	22.5 GWh
Lifecycle energy savings:	52.6 GWh
WSEO grants:	$520,000
Participation rate:	15%

Conventions

For the entire 1993 profile series all dollar values have been adjusted to 1990 U.S. dollar levels unless otherwise specified. Inflation and exchange rates were derived from the U.S. Department of Labor's Consumer Price Index and the International Monetary Fund's International Financial Statistics Yearbook: 1991.

The Results Center uses three conventions for presenting program savings. **Annual savings** refer to the annualized value of increments of energy and capacity installed in a given year, or what might be best described as the first full-year effect of the measures installed in a given year. **Cumulative savings** represent the savings in a given year for all measures installed to date. **Lifecycle savings** are calculated by multiplying the annual savings by the assumed average measure lifetime. **Caution:** cumulative and lifecycle savings are theoretical values that usually represent only the technical measure lifetimes and are not adjusted for attrition unless specifically stated.

Agency Overview

The Washington State Energy Office (WSEO) was created by state Executive Order in 1975 in the aftermath of oil supply interruptions and amid concerns over the long-term supply of electricity in Washington. WSEO is an agency that employs 175 people and is located in Olympia, Washington and operates extension offices in Seattle and Spokane. WSEO's responsibilities were broadened by statute in 1976 and again in 1981 to include reporting to the state legislature on energy issues, emergency management for both oil and electricity interruptions, provision of energy information to the public, and administration of federally-funded state energy conservation activities.[R#1,2]

WSEO's activity was significantly influenced by the passage of the Pacific Northwest Electric Power and Conservation Act in 1980 which mandated least-cost regional electricity planning. Throughout the 1980s WSEO played a technical support role for regional electricity conservation and demonstration programs. Most of the funding for these programs came from Bonneville Power Administration (BPA) while U.S. Department of Energy funding for state energy conservation programs declined over the 1980s.

During the mid 1980s proceeds from oil company price control violation suits (commonly called oil overcharge funds) were allocated to each state, with Washington receiving a total of $62 million since 1985. These oil funds, which WSEO refers to as "Power Washington," were disbursed among many parties, including WSEO, for use in energy related programs. WSEO's share of the Power Washington funds have totalled $22 million since 1985. These oil overcharge funds are now steeply declining as few suits remain to be settled.[R#1,2]

In 1991 the state legislature added several responsibilities to WSEO's mandate, including a statewide transportation demand program, a public facility conservation and cogeneration program, and support for the development of the Washington State Energy Strategy (a plan to assure Washington of reliable quantities of affordable energy, while protecting the quality of the environment).[R#1]

WSEO is a recognized leader in conservation program development, implementation, and technical support. Much of the conservation work has been done on behalf of BPA. In fact about 40% of the agency's FY 91 - FY 93 budget is derived from BPA. Another 20% is provided by the oil overcharge funds. Of the agency's $55 million biennial budget (over half of which is passed through the agency in the form of grants and loans to local governments, public facilities, and other agencies and parties), less than $2 million is provided by Washington State general funds and much of the $2 million in direct state support is required to match federal funds.[R#1]

WSEO has been very entrepreneurial in the pursuit of funding. Currently WSEO has several other funding sources including dedicated state accounts to support specific project activities. In addition private foundations have provided financial support for specific programs.

Agency DSM Overview

Since the creation of the Washington State Energy Office in 1975 the office has helped provide and support dozens of DSM programs. Some of WSEO's current conservation programs that most directly relate to DSM include:

Appliance Efficiency Group: WSEO organized the Appliance Efficiency Group (AEG) to promote acceptance of energy-efficient appliances in the marketplace. Public and private utilities, utility associations, conservation groups, state energy offices, and Bonneville Power Administration participate. The group is working to make high-efficiency electric water heaters, showerheads, and refrigerators more available in the Northwest. WSEO shares the group's recommendations with appliance manufacturers, distributors, and retailers throughout the country. The AEG also works with the appliance industry to assure availability of product lines that meet or exceed the improved efficiency standards.

Energy Partnerships: This 10-year effort targets a 30 percent reduction in annual energy use in Washington's state facilities and public schools. Utilities are actively included in the state's plans to reduce energy consumption in existing facilities and to ensure that new state buildings and schools are built with energy efficiency in mind.

Computer-Assisted Conservation: WSEO has produced several software programs for utility planners, builders, architects, and engineers. In addition to MotorMaster (see Profile #45), BallastMaster is currently under production. Another software package, WATTSUN calculates code compliance for the 12 residential energy codes used in the Northwest. ENACT is software for commercial building oriented energy accounting. HeatMap analyzes the feasibility of district heating systems.

Commercial/Industrial Training: In conjunction with utilities, WSEO offers workshops on topics such as industrial energy auditing, energy-efficient motors, and industrial refrigeration. WSEO also conducts industrial energy audits. In the commercial area, the agency provides customized training to utilities and their customers on energy-efficient construction practices.

See The Results Center's Profiles #7, 30, and 37 for other conservation programs run by BPA which involve WSEO. With the Super Good Cents program (Profile #7) WSEO provides training for builders, subcontractors, and homeowners through workshops and community forums. Technical assistance is provided to utilities over the phone and with onsite visits. Through the Manufactured Housing Acquisition program (Profile #30) WSEO provides technical assistance and certifies that efficiency standards have been met. WSEO also coordinates BPA's Energy Smart Design (Profile #37) training advisory committee. This committee develops training programs for utility staffs operating ESD.

CASE STUDY: NORTHWEST CENTER INDUSTRIES

Washington's largest nonprofit agency energy conservation project had a humble beginning. Northwest Center Industries provides education and training for the physically and mentally handicapped. The center has several locations. When Jim McClurg, executive director for Northwest Center Industries, first heard about the program he was mildly interested. When he learned of the potential energy savings, he became very interested.

"My facilities director, Steve Lucas, first heard about the program and I encouraged him to get involved because I thought it would be good for him and his professional development," McClurg recalls with a laugh. "He finally got my attention when he showed me the potential energy savings. Then I realized the program would be very good for Northwest Center Industries."

McClurg's attention was captured by the more than $8,300 in potential annual energy savings. This savings forecast was based on an energy audit performed by Seattle City Light. Seattle City Light found that many of the facilities had heating systems that could easily be converted to heat pumps. Also installed was a state-of-the-art energy management system, along with replacements of incandescent light fixtures with compact fluorescent fixtures and lamps.

Jim McClurg feels that the program is a perfect match for Northwest Center Industries. "Many of our buildings are surplus U.S. Navy structures built before the days of energy worries. We've invested heavily to renovate them, but the mechanical systems needed updating. That's where we saw the savings with this program."

The total cost of the project was about $117,135. The total cost to Northwest Center Industries was $14,460, financed through a five-year interest free loan from WSEO. The remainder was paid by grants from WSEO and BPA's Commercial Incentives Pilot Program. Energy savings will pay off the loan in less than two years. The energy improvements will save 322,393 kWh annually (28% of the facility's annual consumption) worth $8,338 each year.

Reflecting on the program Jim McClurg says, "Those savings can be translated directly into more human services – that's what I spend most of my time thinking about. The savings would fund a substantial portion of our in-service staff training program. Or it might pay for additional prosthetic tooling for some physically handicapped people. That would help them be more productive and increase their earnings in our sheltered workshop. And if the energy rates go up, our energy savings will be even more important in the future. This was a fantastic opportunity for us, and now we're reaping the rewards."[R#2]

Program Overview

Planning for the "Energy Savings for Nonprofits" (ESFN) program run by WSEO began in February 1987. ESFN was announced to the public in November 1987, and the first contracts were in place about three months later. WSEO, in cooperation with Seattle City Light, Tacoma Public Utilities, and Snohomish County PUD designed the program with the hope of reducing operating costs for nonprofit organizations. By using fluorescent lights, wrapping hot water tanks, caulking windows, and installing other energy efficiency measures, WSEO knew that nonprofits could greatly reduce their energy bills and thus enhance and even expand their services. The ultimate goal of the program is to have nonprofit agencies spending their money on human services instead of energy-inefficient buildings.[R#2]

ESFN was one of the country's first state-sponsored energy conservation programs offered specifically for day care centers, food banks, senior centers, health care centers, family shelters, and other human service nonprofit agencies. Washington contains about 1,200 human service agencies, and a 1987 Washington Energy Extension Service study found that 92% of these nonprofits spent approximately 20% of their operating budgets on energy. Before this program began, human service agencies were usually not eligible for or did not have matching funds to participate in any other commercial or institutional energy conservation programs. Initial funding came from Power Washington, a federal court settlement from oil companies who overcharged for their products in the 1970's.[R#2]

When the program started in early 1988, it operated in five Washington counties (Snohomish, King, Pierce, Thurston, and Spokane). The program provides a combination of technical, financial, and educational assistance. In Spokane, and parts of King, Pierce, and Thurston counties, a private consultant performed the technical component of the program. Initially the grant levels were $4,500 for buildings 5,000 square feet or larger, $2,000 for buildings less than 5,000 square feet, and no-interest loans were available up to $30,000. Loans had a one time 5% finance fee and were required to be paid back in five years.[R#2]

In May 1988 the governor directed state agencies to target economically distressed communities. Based on this direction, WSEO expanded the program into Benton and Franklin counties. In July 1989 the program was expanded statewide, and private consultants were no longer used. WSEO and utility staffs performed all technical work. Grant amounts were adjusted to $4,500 for all buildings while the maximum loan amount remained at $30,000. In June 1990, in an attempt to encourage small utilities to help nonprofits, WSEO offered small utilities a percentage of oil overcharge funds based on the number of nonprofits in their service area. Grant amounts under this arrangement (for all utilities) were $2,000 with no loans available. In FY 1992 grant amounts were increased to $3,000 per nonprofit.[R#2]

ESFN was budgeted to continue through June 1993 with grants of up to $20,000 available requiring a 50% match. Loans are not available through the program for FY 93. As of January 1993, funding for ESFN had already been depleted for the fiscal year. WSEO hopes to gain funding for FY 94 and continue the program. The large fluctuations in the grant and loan amounts offered each year have been due to the varying amounts of money received by ESFN from the oil overcharge funds.[R#2]

MARKETING

WSEO has not had to aggressively market Energy Savings for Nonprofits. The program was first announced at a November 23, 1987 press conference and then in January 1988, WSEO mailed information packets to several hundred nonprofits. These packets contained a cover letter, a fact sheet, a preliminary application, and a return envelope. Interested nonprofits filled out the application and returned it to the appropriate utility, contractor, or WSEO. No other formal marketing techniques were used to introduce the program. Many nonprofits have learned about the program by word of mouth and a large number have heard about the program from United Way. The United Way consists of locally governed organizations, providing planning, fund raising, allocating, and quality assurance systems for health and human care service organizations in their community.

Currently WSEO does not actively market the ESFN program. As the program is conducted on an almost statewide basis, the participating utilities market the program to nonprofit agencies in their service area. Also some contractors that have previous experience with the program suggest to their nonprofit clients that they might benefit from joining the program.

DELIVERY

Several requirements exist for program eligibility. Interested nonprofit agencies must provide a direct human service such as food, clothing, shelter, or training to be eligible. In addition, agencies must have a U.S. Internal Revenue Service 501(c)(3) status and pay their own utility bills. Furthermore, agencies must occupy at least 50% of the building space if they share a building. A group of nonprofits combining to occupy more than 50% of building space can qualify together, with financing arranged through the largest organization. Some religious organizations are eligible if the improvements are made to a structure that is used for solely secular purposes (e.g. a day care center in a separate building open to any child). Finally, the agency cannot be located on Indian reservation land because the reservations already have access to other oil overcharge funds.

Interested agencies fill out a preliminary application form including a signed release form for all energy utility records. WSEO approves the agency's admittance to the program based on the participating utility's recommendation, along with a review of the preliminary application form and utility data.

Upon acceptance into the program an energy audit is performed. The audit is fuel blind, in other words, all electric, gas, oil, and other fuel-saving energy conservation measures (ECM) and O&M opportunities are considered. Audits are performed primarily by the local utility's staff, but WSEO has performed audits in areas where the program is not supported by the local utility.

The type of audit performed varies with the size of the building. Large facilities often receive full engineering audits with computer modeling, while small facilities typically receive walk-through audits.

Funding is not necessarily available to implement all recommended ECMs. WSEO will only fund measures with a payback period of 15 years or less. When applying for funding, the nonprofit agency must provide the

calculations, assumptions, installation estimates, and specifications for each ECM along with ECM descriptions. The agency sends copies of the energy audits, contractor bids, and specifications to WSEO for review. The nonprofit must collect bids for ECM installations as follows: three written bids for work over $1,500, three documented phone bids for work costing $500 to $1,500, and no bids necessary for work under $500. For nonprofits needing assistance finding contractors, utilities usually can provide a list of approved contractors. Many nonprofits already are familiar with local contractors.

At this point financing is arranged. In FY 93 agencies may receive a grant of up to $20,000 with a 50% match requirement. This match may come from any other funding source. Typically, most of the matching funds come from the local utility. WSEO must validate the contract with a "Notice to Proceed" letter before installation work can begin. Finally, ECMs are installed, the project is inspected for measures installed, and funds are released for payment. Typically it takes one year from the time a customer expresses interest in the program until measures are installed and inspected.

Ideally, although not as often as WSEO would like, nonprofit staff are trained to maintain their building's energy-efficiency and are shown how to perform routine maintenance related to the energy efficient equipment. Maintenance training covers everything from changing furnace filters to cleaning light fixtures. Usually this training is provided by the contractors installing measures or maintenance contractors.

MEASURES INSTALLED

Over the history of the program, a wide variety of types and classes of energy-efficient technologies have been installed, as the following list suggests. Measures installed through the ESFN program include energy-efficient fluorescent lighting and fixtures, electronic ballasts, high pressure sodium lamps, exit signs, fluorescent reflectors, occupancy sensors, heat pumps, hot water tank wraps, caulking and glazing of windows, new thermostats, and roof and wall insulation.

STAFFING REQUIREMENTS

Staffing requirements at WSEO for the ESFN program have been rather moderate. The program has been handled almost solely by a program manager. In FY 1988 the program manager devoted half of her time to ESFN, and in FY 1989 the program required about 65% of her time. In FY 1990 the program reached its peak in terms of staffing requirements, with two full time equivalents (FTE) working on the program, including the program manager and various technical support staff. Staffing requirements have gradually decreased since FY 1990, with approximately 1.6 FTE devoted to the program in FY 1991, 1.37 FTE in FY 1992, and 0.5 FTE for FY 1993.

Of course there have been many others involved with this program as it is offered throughout the state of Washington. These people include utility and contractor staff, as well as the nonprofit agency staff. Because the program is so widespread and WSEO does not explicitly track non-WSEO staff involved with the program, it is difficult to quantify the number of FTEs involved with the program outside of WSEO.

MONITORING

WSEO has developed a database to monitor the ESFN program. Every installed measure along with the corresponding measure lifetime, estimated annual energy savings, building size, total project cost, WSEO grant amount, WSEO loan amount, utility share, and customer share are all tracked by WSEO. Entries in the WSEO database are separated by utility but are not separated by participation date. Therefore the data presented in the next two sections of this profile represents a good deal of manipulation of the WSEO database by The Results Center staff in order to reflect fiscal year results.

Before funds are released, a post-installation inspection of all measures is performed (usually by the local utility but on occasion by WSEO). This provides a check to make sure that stated improvements are properly installed.

EVALUATION

The only formal evaluation of ESFN took place in November 1988 and was called the Midstream Evaluation of ESFN. This report included a program description, energy savings estimates, lessons learned, participant reactions, marketing issues, and a copy of the participant survey used to help gather information for the evaluation. At the time the report was written, 72 nonprofit agencies had participated in the program. WSEO surveyed 25 of these participants to help target improvements in service. Almost all agencies found participation in the program to be very easy. The only recurrent problem was difficulty in getting three contractor bids on small jobs. Otherwise customers found barriers to participation minimal.

Currently there are no definite plans for future program evaluations, although an evaluation proposal will likely be included in the next funding request to be presented in the spring of 1993.

Program Savings

Savings Overview Table (FY)	Annual Electric Energy Savings (MWh)	Cumulative Electric Energy Savings (MWh)	Lifecycle Electric Energy Savings (MWh)	Annual Savings Other Fuels (mmBTU)	Cumulative Savings Other Fuels (mmBTU)
1988	883	883	8,833	2,462	2,462
1989	2,010	2,893	20,100	8,037	10,499
1990	761	3,654	7,609	1,124	11,623
1991	1,057	4,711	10,569	1,216	12,839
1992	373	5,084	3,735	843	13,683
1993	171	5,255	1,710	738	14,421
Total	5,255	22,482	52,555	14,421	65,527

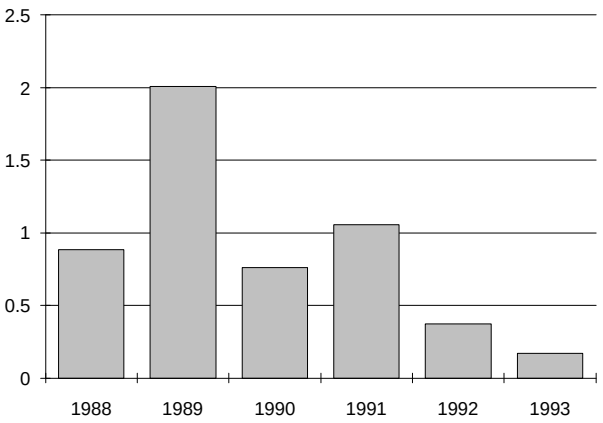
DATA ALERT: The program savings presented are gross numbers based on engineering estimates. Savings are not derated for free riders or other factors. Capacity savings are not available for this program. A total of 25 nonprofits joined the program at unrecorded dates; the annual electric energy savings (MWh) and annual mmBTU savings from these agencies have been divided evenly over the Fiscal Years 1988 through 1993. Similarly, in order to include these 25 agencies in the annual program participation figures, The Results Center added 4 participants to the annual participation figures for each of the five years 1988 to 1992, and added five participants to 1993 participation figures.

While The Results Center prefers to focus on electric savings for purposes of comparison with other profiles, we do present separately the mmBTU savings from other fuels as they represent significant program savings.

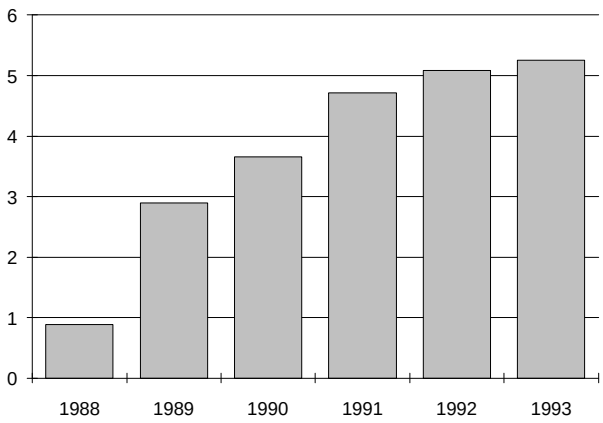
Annual electric energy savings for the program total 5,255 MWh, with a low of 171 MWh in FY 1993 and a high of 2,010 MWh in FY 1989. Lifecycle electric energy savings for the program are 52,555 MWh and cumulative energy savings are 22,482 MWh. Program savings attributed to other fuels totaled 738 mmBTU in FY 1993 and annual savings attributed to other fuels over the course of the program total 14,421 mmBTUs.

Program participants in the Seattle City Light, Snohomish County PUD, and Tacoma PUD service areas have accounted for the majority of total annual energy savings over the life of the program, achieving a combined annual electric savings of 4,391 MWh.

ANNUAL ENERGY SAVINGS (GWH)

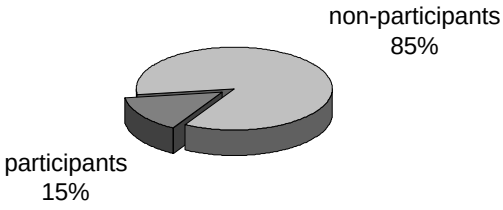


CUMULATIVE ENERGY SAVINGS (GWH)



PARTICIPATION RATES

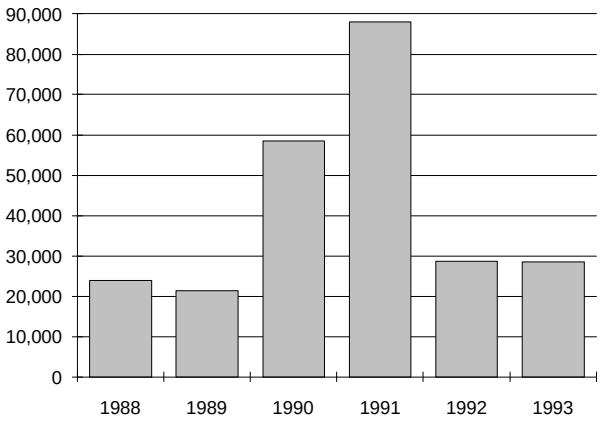
Participants are defined as nonprofits receiving installations of ECMs. Through November 19, 1992, 175 nonprofit human service agencies had completed projects



through the ESFN program. WSEO estimates there are 1,200 nonprofits in the state of Washington. Thus the program participation rate is roughly 15%. WSEO hopes to reach between 300 and 400 nonprofits during the life of the program, representing a planned participation rate of 25-33%.

Participation Table (FY)	Participants	Annual Electric Energy Savings per Participant (kWh)	Annual Savings per Participant Other Fuels (mmBTU)
1988	37	23,873	67
1989	94	21,383	86
1990	13	58,528	86
1991	12	88,073	101
1992	13	28,728	65
1993	6	28,500	123
Total	175		

ANNUAL ENERGY SAVINGS PER PARTICIPANT (KWH)



The program saw its highest participation in the first two years of the program with 37 participants in FY 1988 and 94 participants in FY 1989.

Electric energy savings per participant were greatest in FY 1991 with 88,073 kWh saved per participant and lowest in FY 1989 at 21,383 kWh. Savings per participant from other fuels ranged from 123 mmBTU in FY 1993 to 65 mmBTU in FY 1992.

Throughout the course of the ESFN program, nonprofits with a total agency space of more than 3 million square feet have participated in the program.

FREE RIDERSHIP

It is assumed by WSEO that free ridership is virtually non-existent for the ESFN program. WSEO believes (and many nonprofits will readily admit) that budgets at most nonprofits are so tight that they could not afford installation of energy-efficient measures without the financial help of WSEO and their local utility. (WSEO suggests it's possible that 5 of the 175 participants might have been able to afford the installation of energy efficient measures without the ESFN program but does not assign a free ridership factor to energy savings.)

Since the inception of the program, the average total cost incurred by each program participant (including WSEO, customer, and utility contributions) is $1,912. WSEO suggests that this figure is due primarily to a small number of agencies with funds budgeted for capital improvements who have been able to take out large loans. Most nonprofits have had to keep their investments low despite the attractive financing and grants made possible by WSEO.

MEASURE LIFETIME

Measure Lifetimes for the ESFN program range from 1 year to 25 years. The Results Center used a conservative 10 year lifetime for calculating the cost of saved energy and lifecycle energy savings.

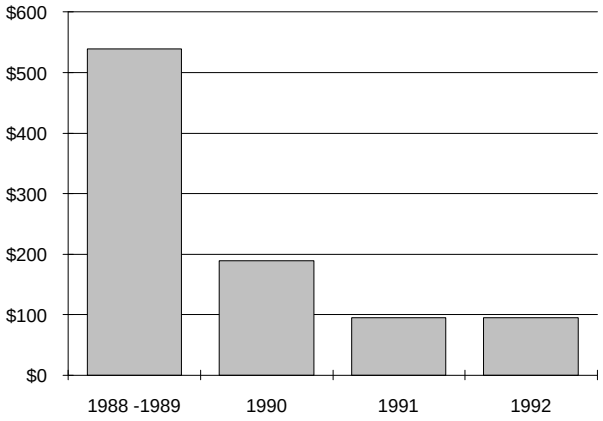
PROJECTED SAVINGS

Projected lifecycle electric energy savings for the program to date total 52,555 MWh.

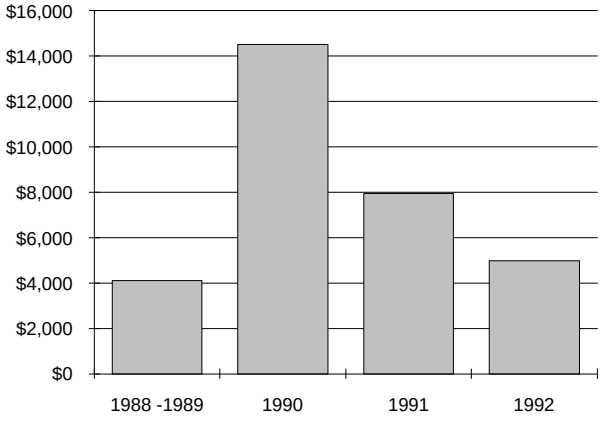
Cost of the Program

Costs Overview Table (FY)	WSEO Grants (x1000)	WSEO Administration Cost (x1000)	Utility Share (x1000)	Customer Contribution (x1000)	Gross Program Cost (x1000)	WSEO Cost (x1000)	WSEO Cost per Participant
1988/89	$409.0	$130.3	$441.7	$234.9	$1,215.9	$539.2	$4,116
1990	$38.9	$149.8	$46.3	$39.9	$274.9	$188.7	$14,515
1991	$27.5	$67.8	$75.8	$36.1	$207.2	$95.3	$7,942
1992	$44.7	$49.9	$38.5	$23.6	$156.6	$94.6	$4,977
Total	$520.0	$397.8	$602.3	$334.6	$1,854.7	$917.8	

WSEO PROGRAM COST (x1,000)



WSEO COST PER PARTICIPANT



Cost of Saved Energy (¢/kWh)	Discount Rates						
	3%	4%	**5%**	6%	7%	8%	9%
1988	2.18	2.30	2.41	2.53	2.65	2.78	2.90
1989	2.19	2.30	2.41	2.53	2.65	2.78	2.91
1990	2.91	3.06	3.21	3.37	3.53	3.70	3.86
1991	1.06	1.11	1.17	1.23	1.28	1.34	1.41
1992	2.97	3.12	3.28	3.44	3.61	3.77	3.95
(¢/kWh Equivalent: Electricity Plus Other Fuels)							
1988	1.20	1.26	1.33	1.39	1.46	1.53	1.60
1989	1.01	1.06	1.11	1.17	1.22	1.28	1.34
1990	2.03	2.13	2.24	2.35	2.46	2.58	2.70
1991	0.79	0.83	0.87	0.92	0.96	1.01	1.05
1992	1.79	1.88	1.97	2.07	2.17	2.27	2.38

Data Alert: Please note that FY 1988 - 1989 program costs also include allocations from FY 1987 for development costs. All WSEO funds for the program came from oil overcharge funds. Total program costs as calculated by WSEO are not yet available for FY 1993, nor does WSEO have specific cost breakouts for FY 1988 and FY 1989. There were, however, projects that took place in FY 1993. These costs for FY 1993 have been grouped with and are presented as FY 1992 costs in the accompanying Cost Overview Table. Costs for FY 1988 have been grouped with FY 1989. Similarly, when calculating the WSEO cost per participant figures, The Results Center grouped FY 1988 participants with FY 1989 participants and FY 1993 participants were combined with FY 1992 participants. Costs for the 25 agencies with unknown participation dates have been divided evenly among the six years FY 1988 through FY 1993.

The cost of saved energy and WSEO cost per participant calculations are based on WSEO costs. The Cost of Saved Energy Table reflects electric energy savings in the top half of the table and the bottom half of the table is based on program electric energy savings plus program savings from other fuels. The program savings from other fuels were presented by WSEO in the form of mmBTUs. The Results Center converted mmBTUs to kWh based on 1 kWh = 3,413 BTU.

Please note that in the Costs Overview Table utility share and customer contributions are direct payments toward installation of energy conservation measures and do not include administrative or other transaction costs.

The costs of the retrofits that have resulted from the ESFN program are borne by at least three different parties: WSEO, participating utilities, and the actual nonprofit organizations (both in direct contributions and loan repayments). All these costs combine to create gross program costs over the lifetime of the program of $1,854,700, ranging from a high of $1,215,900 in FY 1988 - 1989 to a low of $156,600 in FY 1992.

WSEO expenditures for the ESFN program consist of grants along with administrative costs. These costs are considered the WSEO program costs and reach $917,800. WSEO spent a high of $539,200 in FY 1988 - 1989 and a low of $94,600 in FY 1992. A steady decline in program expenditures is due to a decrease in customer demand along with fluctuations in allocations from the oil overcharge funds. [R#2]

The utilities' share of the program costs total $602,300, with $441,700 spent in FY 1988 - 1989. Utility expenditures dropped off greatly in the following years with $46,300 spent in FY 1990, $75,800 spent in FY 1991, and $38,500 spent in FY 1992.

Nonprofit organization costs, or what might best be called the customer contribution (which includes loans plus project costs not covered by WSEO or the local utility), have totalled $334,600 and have varied from a high of $234,900 in FY 1988-89 to a low of $23,600 in FY 1992.

COST EFFECTIVENESS

WSEO has not yet performed any cost-effectiveness calculations for the program, however, The Results Center finds that the cost of saved energy based solely on electric savings and calculated at a 5% real discount rate, was 3.28 ¢/kWh in FY 1992. This figure represents the highest cost of saved energy for any fiscal year of the program. The lowest cost of saved energy at a 5% discount rate occurred in FY 1991 at 1.17 ¢/kWh.

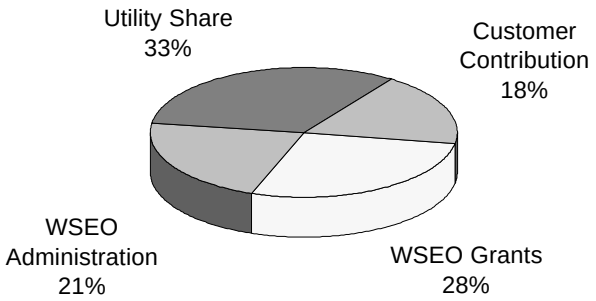
The cost of saved energy of electricity plus other fuels based on a 5% discount rate reached a high of 2.24 ¢/kWh in FY 1990 and a low of 0.87 ¢/kWh in FY 1991.

COST PER PARTICIPANT

The WSEO cost per participant has averaged $5,244 over the course of the program. The average customer cost per participant to date is $1,912. The average utility cost per participant over the program lifetime is $3,441.

COST COMPONENTS

Gross program costs of $1,854,700 include WSEO grants, WSEO administration and implementation costs, utility share, and customer contributions. WSEO costs (consisting of grants and administration costs) total $917,800. WSEO Administration costs include staffing, travel, printing, postage, marketing, technical review, and client training, and total $397,800. WSEO grants for the program total $520,000.



Environmental Benefit Statement

Marginal Power Plant	Heat Rate BTU/kWh	% Sulfur in Fuel	CO2 (lbs)	SO2 (lbs)	NOx (lbs)	TSP* (lbs)
Coal	**Uncontrolled Emissions**					
A	9,400	2.50%	48,471,000	1,150,000	232,000	23,000
B	10,000	1.20%	51,686,000	445,000	150,000	111,000
	Controlled Emissions					
A	9,400	2.50%	48,471,000	115,000	232,000	2,000
B	10,000	1.20%	51,686,000	45,000	150,000	7,000
C	10,000		51,686,000	297,000	148,000	7,000
	Atmospheric Fluidized Bed Combustion					
A	10,000	1.10%	51,686,000	136,000	74,000	37,000
B	9,400	2.50%	48,471,000	115,000	93,000	7,000
	Integrated Gasification Combined Cycle					
A	10,000	0.45%	51,686,000	92,000	15,000	37,000
B	9,010		46,492,000	33,000	11,000	2,000
Gas	**Steam**					
A	10,400		28,192,000	0	64,000	0
B	9,224		24,483,000	0	153,000	7,000
	Combined Cycle					
1. Existing	9,000		24,483,000	0	94,000	0
2. NSPS*	9,000		24,483,000	0	45,000	0
3. BACT*	9,000		24,483,000	0	6,000	0
Oil	**Steam--#6 Oil**					
A	9,840	2.00%	40,804,000	618,000	73,000	69,000
B	10,400	2.20%	43,277,000	613,000	92,000	45,000
C	10,400	1.00%	43,277,000	88,000	74,000	23,000
D	10,400	0.50%	43,277,000	257,000	92,000	14,000
	Combustion Turbine					
#2 Diesel	13,600	0.30%	54,159,000	108,000	167,000	9,000
Refuse Derived Fuel						
Conventional	15,000	0.20%	64,298,000	166,000	218,000	48,000

Avoided Emissions Based on 22,481,777 kWh Saved (FY 88 - FY 93)

In addition to the traditional costs and benefits there are several hidden environmental costs of electricity use that are incurred when one considers the whole system of electrical generation from the mine-mouth to the wall outlet. These costs, which to date have been considered externalities, are real and have profound long term effects and are borne by society as a whole. Some environmental costs are beginning to be factored into utility resource planning. Because energy efficiency programs present the opportunity for utilities to avoid environmental damages, environmental considerations can be considered a benefit in addition to the direct dollar savings to customers from reduced electricity use.

The environmental benefits of energy efficiency programs can include avoided pollution of the air, the land, and the water. Because of immediate concerns about urban air quality, acid deposition, and global warming, the first step in calculating the environmental benefit of a particular DSM program focuses on avoided air pollution. Within this domain we have limited our presentation to the emission of carbon dioxide, sulfur dioxide, nitrous oxides, and particulates. (Dollar values for environmental benefits are not presented given the variety of values currently being used in various states.)

HOW TO USE THE TABLE

1. The purpose of the previous page is to allow any user of this profile to apply Washington State Energy Office's level of avoided emissions saved through its Energy Savings for Nonprofits to a particular situation. Simply move down the left-hand column to your marginal power plant type, and then read across the page to determine the values for avoided emissions that you will accrue should you implement this DSM program. Note that several generic power plants (labelled A, B, C,...) are presented which reflect differences in heat rate and fuel sulfur content.

2. All of the values for avoided emissions presented in both tables include a 10% credit for DSM savings to reflect the avoided transmission and distribution losses associated with supply-side resources.

3. Various forms of power generation create specific pollutants. Coal-fired generation, for example, creates bottom ash (a solid waste issue) and methane, while garbage-burning plants release toxic airborne emissions including dioxin and furans and solid wastes which contain an array of heavy metals. We recommend that when calculating the environmental benefit for a particular program that credit is taken for the air pollutants listed below, plus air pollutants unique to a form of marginal generation, plus key land and water pollutants for a particular form of marginal power generation.

4. All the values presented represent approximations and were drawn largely from "The Environmental Costs of Electricity" (Ottinger et al, Oceana Publications, 1990). The coefficients used in the formulas that determine the values in the tables presented are drawn from a variety of government and independent sources.

*** Acronyms used in the table**

TSP = Total Suspended Particulates
NSPS = New Source Performance Standards
BACT = Best Available Control Technology

LESSONS LEARNED

The nonprofit sector has historically been overlooked when it comes to energy management advice and dollars, and ESFN has been a step in the right direction. Clearly ESFN has done a fine job of providing funding and expertise to nonprofits who almost assuredly would not have been able to afford the energy-efficiency improvements made available through the program. The program has run very smoothly considering the number of service providers and the range of agencies involved.

Perhaps the most valuable lesson learned is that WSEO wishes they had begun ESFN with a database program that was more detailed and better designed to deal with future program developments. As a result it has been difficult to accurately track costs and savings.

In terms of program implementation, WSEO feels there are several lessons they have learned during the course of the ESFN program:

- Require a 50% match on all grants and loans. Such a funding setup stretches WSEO dollars much farther, and assures that utilities and the nonprofit agencies have a stake in the project.

- Establish standard technical requirements for audits and data reporting done by participating utilities. Include as part of the program an inspection of installed measures one year after installations have been completed.

- Make education of nonprofits regarding maintenance techniques of installed measures a standard component of the installation process. Similarly, it should be standard practice to present nonprofits with documented dollar and energy savings to encourage continued proper maintenance and replacement of installed measures.

- WSEO hopes to develop case studies of successful, completed projects to show to prospective participants.

- WSEO is proud of the fact that they have kept barriers to participation to a minimum. Most participants comment on the ease of program involvement from beginning to end.

- In terms of program financing WSEO was pleasantly surprised to discover that loans to nonprofits are actually very low risk. To date there is a 0% default rate with the ESFN program.

- WSEO has found that from a marketing approach, potential participants are not very concerned with energy savings. It has proven to be far more effective to present the benefits of participation in terms of freeing up extra money which can be used for added human services.

- WSEO believes that the ESFN program has been valuable to utilities because the program offers utilities a chance to provide an essential community service, even though nonprofit agencies are not a major customer base. WSEO particularly credits the utilities for their marketing efforts and their ability to reach the nonprofit agencies.

TRANSFERABILITY

For utilities or other state energy offices interested in planning a similar program, WSEO has several suggestions. First of all, it is a good idea to talk with other groups who have implemented programs of this nature. Similarly discussions with potential utility participants are useful for determining interest in the program. It is also important to consider the diversity of the nonprofit sector. There exists a wide range of human services and the quality of management at different agencies varies accordingly. Some agencies need to have "their hands held" throughout the entire ESFN process, while others need minimal assistance. WSEO also suggests using an advisory committee (as WSEO did) made up of utilities along with nonprofit representatives to help design the program.

Energy Savings For Nonprofits is clearly transferable to other service areas although there are a number of factors to consider. First, it is important to note that all funding for this program came from oil overcharge funds. Utilities spending their "own" money might not have the luxury of funding this type of program for such a small niche market. Many nonprofits are not eligible for C/I programs, and utilities may find that expanding eligibility requirements is a good first step in addressing this market niche. WSEO is very proud of running a program involving many parties that is virtually free of red tape. Other agencies or utilities designing a similar program should focus on keeping the program participation process as simple as possible to garner maximum savings with a minimum of hassle and administrative inertia.

References

1. Washington Energy Strategy Committee, "Washington's Energy Strategy: An Invitation to Action," January 1993.

2. Vicki Zarrell, Energy Specialist, Washington State Energy Office, personal communication including program fact sheets, press releases, and internal documents, January - March 1993.

3. Washington State Energy Office, "Programs and Services 1991 to 1992," August 1991.

4. Washington State Energy Office, ESFN participant database, 1993.

5. Patricia Gibbon, Commercial Program Manager, Washington State Energy Office, personal communication, February - March 1993.

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