

State of Wisconsin Department of Administration Division of Energy

Focus on Energy II Pilot Study

Final Report:
***Interim Evaluation of Demand Side
Applications of Renewable Energy***

August 17, 2001

Evaluation Administrator: PA Consulting Group

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TABLE OF CONTENTS

I.	Executive Summary	I-1
	A. Snapshot	I-1
	B. Program Goals	I-2
	C. Program Budget and Support Offered	I-2
	D. Evaluation Methods	I-4
	E. Results, Findings, and Recommendations	I-5
II.	Introduction	II-11
III.	Project Financing	III-13
	A. Overview	III-13
	B. Low Interest Loans	III-16
	C. Summary and Recommendations	III-23
IV.	Cost-Shared Grants	IV-26
V.	Daylighting Collaborative	V-28
	A. Overview	V-28
	B. Program Manager's Views	V-28
	C. Second Look Design Assistance	V-29
	D. Review of Internal (ECW) Evaluations	V-31
	E. Summary and Recommendations	V-45
VI.	Project Facilitation	VI-47
	A. Overview	VI-47
	B. Facilitators	VI-47
	C. Summary and Recommendations	VI-51
VII.	Training and Education	VII-53
	A. Midwest Renewable Energy Association Training	VII-53
	B. WEEB Renewable Energy Education Grant Program	VII-53
	C. Summary and Recommendations	VII-56

I. EXECUTIVE SUMMARY

A. SNAPSHOT

The second phase of the Demand Side Applications of Renewable Energy (DSARE 2) program had two major goals: 1) to continue market preparation activities, and 2) to acquire renewable resources by providing increased amounts of financial assistance. Project financing accounted for 47 percent of the total DSARE 2 budget. Cost sharing grants were 19 percent of the total, the Daylighting Collaborative 15 percent, and training / education and project facilitation were each ten percent of the budget.

Two of the four financing efforts stimulated renewable installations. Low interest loans for residential customers supported 131 installations and installation rewards were given to 81 projects. The detailed evaluation of the low interest loan program shows that borrowers were very satisfied with the features of the loans and the service they received. The other two efforts—interest rate buydowns and the Energy Efficiency Performance program supported no and one project, respectfully.

The cost sharing grants supported 17 business / marketing, technical assistance, and demonstration projects. However, the grants are not reaching enough new market actors: 59 percent of applicants and 53 percent of grant recipients had received prior grants in one or more of the first three grant cycles.

The Daylighting Collaborative delivered two training courses, arranged for three additional demonstrations, publicized earlier demonstrations through case studies, and provided second look design assistance for three new projects. The detailed review of the internal (ECW) evaluations of Daylighting training sessions showed participants rated courses highly (grades of A and B), except in the time allowed for the training sessions. Participants want more time to discuss the concepts with instructors and other participants outside of the lecture sessions.

Project facilitation benefited from obtaining qualified leads referred by the MREA and RENEW. Renewable vendors provided useful on-site consultations. The financial facilitator tracked 27 potential projects between May 2000 and June 2001 yet was unable to arrange financing for any construction. The size and nature of the Pilot area market are believed to limit the opportunities for greater numbers of innovative renewable projects.

Training and education continued their prior successes. MREA conducted seven workshops in 2001 for 140 participants, awarded 17 scholarships, and sponsored the Midwest Renewable Energy Fair drawing 15,300 people from 49 states and 37 countries. MREA is assembling technical advisory teams and developing criteria for certifying residential and commercial/industrial renewable energy site auditors. The WEEB Renewable Energy Education Grant program funded 28 projects with \$162,000.

In summary, the continuing attempts to experiment with many efforts to stimulate the renewable energy market have identified several successful approaches. However, it appears that an investment of more time in selecting and managing a smaller number of efforts might produce greater results.

B. PROGRAM GOALS

The Demand Side Applications of Renewable Energy component of the second phase of the Wisconsin Focus on Energy (FOE II) pilot program had two major goals: 1) to continue market preparation activities—by continuing information, training, education, technical assistance, business, marketing, and demonstration support activities; and 2) to enhance renewable energy implementation—by significantly increasing the amount and types of financial assistance for renewable energy projects.

C. PROGRAM BUDGET AND SUPPORT OFFERED

A review of the program budget shows the new emphasis placed on providing financial support for renewable energy installations; the continuing support of cost sharing grants, the Daylighting Collaborative, training and education, and project facilitation.

Table E-1. DSARE Program Budget

Program Component	Budget	Percent of Total
Project Financing	\$375,000	47%
Low Interest Loans	\$100,000	
Installation Rewards	\$140,000	
Interest Rate Buy Downs	\$135,000	
Energy Efficiency Performance	Other program ¹	
Cost Sharing Grants	\$150,000	19%
Business & Marketing	\$50,000	
Technical Assessment	\$50,000	
Demonstrations	\$50,000	
Daylighting Collaborative	\$120,000	15%
Training and Education	\$80,000	10%
Project Facilitation	\$80,000	10%
Total	\$800,000	100%

¹ The energy efficiency performance program budget was part of the commercial / industrial program budget.

As shown in Table E-1, largest portion (\$375,000) of the \$800,000 budget funded a new resource acquisition component of DSARE—project financing. The second largest portion of the budget (\$150,000) was allocated to cost-sharing grants providing three types of support: a) the development of renewable energy business and marketing plans, b) provision of technical assessments (feasibility studies), and c) funds for demonstrations of renewable technology applications. The third largest portion of the budget (\$120,000) supported continuation of the additional activities of the Daylighting Collaborative in the Focus area

I. Executive Summary

(beyond the statewide activities). A total of \$80,000 funded training potential customers and employees of renewable energy business and developing educational programs for schools. Another \$80,000 funded program delivery and facilitation services providing project support—ranging from information to on-site consultation and assistance with project financing.

The \$375,000 budgeted for project financing includes three DSARE programs and one Focus on Energy commercial and industrial program to stimulate renewable energy resource acquisition. These programs included:

- Low interest loans—using \$100,000 to provide below market rate loans to the owners of single-family and duplex homes. These loans had the following features: four percent (APR); unsecured; terms of 3, 4, 7, or 10 years; and principal amounts ranging from \$1,000 to \$20,000 per customer. These loans were called Wisconsin Renewable Energy Loans (WREL).
- Installation rewards—using \$140,000 to provide financial rewards for renewable energy produced by large projects or contractor-aggregated smaller projects. Rewards would generally be amounts between five and 20 percent of installed cost from a minimum of \$5,000 to a maximum of \$50,000.
- Interest rate buy downs—using \$135,000 to provide reductions of four percentage points from the customer's best rate. These were available for commercial, industrial, and agricultural projects needing loans ranging from \$20,000 to \$500,000.
- In addition, DSARE 2 placed additional emphasis on making another Focus on Energy program, the Energy Efficiency Performance Program, more easily available to contractors installing renewable energy technologies.

Project facilitation continues to provide project support services from two firms. DSARE funds Asset Renewal Services and Franklin Energy Services to answer questions and provide other support to potential customers and renewable suppliers. A notable enhancement to the Franklin Energy's services was the addition of on-site consulting by renewable energy dealers, contractors, and consultants.

- Asset Renewal Services applies its financing expertise to helping customers and contractors find and apply for financing for renewable energy projects.
- Franklin Energy provides information, answers technical questions, and facilitates contact between customers interested in renewable energy and contractors who supply design and construction services.
- In addition, Franklin Energy coordinated on-site consultation with potential customers. Franklin staff referred requests for information and assistance to knowledgeable renewable dealers, contractors, and consultants. These experts responded to the questions of potential customers by telephone and by visiting the customer's site. Many of them provided energy efficiency recommendations as well as information on the feasibility of using different renewable technologies to help meet the customer's needs.

D. EVALUATION METHODS

1. DSARE 2 Components Evaluated

As shown in Table E-2, the evaluation included reviewing program documents, interviewing the DOA program managers, several sub-contractor managers, and conducting interviews and surveys with participants. By April 2001 the evaluators identified activities for detailed evaluation that met two criteria: first, they had generated significant participation; and second, they had not been evaluated during the first phase of the Focus on Energy pilot. We identified three program efforts meeting these criteria: the low interest loan program, and two aspects of the Daylighting Collaborative—"second look design assistance" and the 11 completed training courses. These detailed evaluations add to what had been learned through earlier, detailed interim and final evaluations of the DSARE 1.¹

Table E-2. DSARE 2 Program Evaluation

Program Component	Participation	Evaluation
Project Financing		
Low Interest Loans	131 loans	Survey with loan recipients
Installation Rewards	81 projects	Interviewed Consolidators
Interest Rate Buy Downs	None	None
Energy Efficiency Performance	1 project	May become ineligible, not interviewed
Cost Sharing Grants		
Business & Marketing	8 for \$82,950	Reviewed applications and awards, Interviewed Program Mgrs.
Technical Assessment	5 for \$35,965	
Demonstrations	4 for \$37,500	
Daylighting Collaborative	Many	Reviewed internal evaluations and reports, Interviewed Program Mgrs. and sub-contractors
Training and Education	Many	
Project Facilitation	Many	

2. Data Collection

For the low interest loan program we completed 53 surveys from a total sample of 70 people who had received their loan payments by early April. For the second look design assistance

¹ DSARE 1 evaluations were based upon pre- and post-program surveys with renewable suppliers and lighting designers; interviews with grant applicants and recipients; surveys with program participants; a review of most reports submitted by grant recipients; interviews with many grant recipients; and several interviews with DOA program managers and sub-contractor managers.

program we completed in-depth interviews with one building owner and one architect.² We obtained and reviewed reports of the internal evaluations the Energy Center of Wisconsin staff conducted for eleven of the Daylighting Collaborative training sessions. We also interviewed DOA program managers and program contractor managers.

E. RESULTS, FINDINGS, AND RECOMMENDATIONS

For each program component we review the results obtained, the significant findings of our evaluation and list recommendations. Because the Wisconsin Focus on Energy Pilot is nearing completion and the nature of the demand-side applications of renewables program is changing significantly, we have tried to make recommendations that may apply to statewide program efforts. However, in many cases the nature of the statewide renewable energy program will be so different from the pilot program that recommendations are not appropriate.

1. Project Financing

A. OVERALL

Results: Two of the four financing efforts have stimulated renewable energy system installations. One hundred thirty-one people used the low interest loans for owners of single-family homes and duplexes. Eighty-one projects received installation rewards amounting to only 57 percent of the total budget for this type of financing. The interest rate buy-down for aggregations of smaller projects or larger, individual commercial or industrial projects was not used. The Energy Efficiency Program was used for one biogas project that may not be eligible as a demand side project.³

B. LOW INTEREST LOANS

Summary of Findings: Most respondents learned of the low interest loan program from a contractor. The program made a major difference to three-fourths of respondents' decisions. The low interest rate was the key feature, followed by no fees, points or closing costs, and being able to finance all the installation costs. Finding an approved contractor was not difficult, and almost all respondents were satisfied with other aspects of the loan and renewable installation.

Recommendations: DSARE managers should continue using this successful program. Managers should adjust interest rates for different types of systems, using even lower rates to boost participation of underutilized technologies and somewhat higher rates to save money on the more widely used technologies.

² After receiving a list of eight participants we realized several customers and architects had been interviewed for other aspects of their projects, or were just starting the design assistance.

³ Installation rewards have been approved for two other biogas -to-electricity projects for the thermal energy recovered from the generators and used on-site. No installation rewards were approved for the electricity produced by these projects because it is being sold to a utility.

I. Executive Summary

C. INSTALLATION REWARDS

Summary of Findings: The installation rewards program is being used, but only associations, foundations, and other organizations are aggregating smaller projects to meet the minimum reward requirement. No contractors aggregated projects, as originally envisioned. Only 57 percent of budgeted funds were awarded.

Recommendations: Reduce the minimum level for installation reward applications. This should remove a barrier to direct participation by contractors and vendors.

D. INTEREST RATE BUYDOWNS

Summary of Findings: The interest rate buydowns and the Energy Efficiency Performance program had the least participation. The financing facilitator believes the cost of capital is not important to any except the largest customers. He also reports knowing of only one of 27 projects he tracked that might have been influenced by the availability of lower cost capital. Only one contractor used the Energy Efficiency Performance Program.

Recommendations: Additional funding mechanisms should be explored for larger projects through consultation with members of the financial community.

2. Cost-Shared Grants

Results: The cost-shared grant solicitation attracted 32 proposals and awarded 17 grants in three categories. Business and marketing grants received 17 proposals for \$237,932 and awarded eight grants for \$82,950. Technical assistance grants received seven proposals for \$79,113 and awarded five grants for \$35,965. Demonstration grants received eight proposals for \$79,290 and awarded four grants for \$37,500. The recipients of these grants will complete their projects during the period from January 2001 until December 2002.

The grant program is not supporting a broad group of vendors or customers: 59 percent of applicants and 53 percent of recipients for the latest grant cycle had participated in one or more of the three prior cycles.

Summary of Findings: These grants continue to be an attractive and useful means of supporting a variety of projects that develop the renewable energy infrastructure and demonstrate successful installations to a wider public. This solicitation continued a trend that has become apparent across the four cycles of grants: fewer newcomers apply in each successive cycle.

Recommendations: The renewable administrator should explore ways to increase the pool of qualified applicants by clarifying requirements, describing prior successful grant-funded projects, simplifying the application process, and providing advice and screening to first time applicants.

3. The Daylighting Collaborative

Results: The Collaborative delivered two training courses, made formal arrangements for three additional demonstrations, drafted case studies for earlier demonstrations, provided second look design assistance for three new projects, and made four presentations in the

I. Executive Summary

Focus on Energy Pilot area. The Collaborative also began a strategic planning process outlining their efforts for the next few years.

Summary of Findings: In the Collaborative manager's opinion, the additional funding (above the level for the statewide program) produced significantly greater results. Specifically 75 percent of all Wisconsin activity occurred in the Focus on Energy Pilot area and only 25 percent in the rest of the state. The manager also noted the need to identify projects as early as possible to ensure that recommendations and design assistance would be provided when changes were most likely to be made.

The Second Look Design Assistance was valuable to one owner and one architect we interviewed. The architect stated that once contact had been made, assistance was provided in a timely manner, the assistance made sense technically, and it allowed the project to be completed within the client's original budget. Early involvement is important, although the architect noted that, "some in the profession will find it difficult to ask for advice." The owner (of another project) began working with the Collaborative early and emphasized that, of several green building concepts he wished to incorporate, daylighting was "the easiest to do."

Recommendations: Collaborative staff should improve monitoring of new building projects in order to identify projects as early as possible. This will make recommendations and offers of design assistance more likely to be effective. They must continue to stress timely and responsive service.

Summary of Findings: The only internal evaluation scores for the nine "Daylighting Goes Mainstream" courses falling below 70 percent positive ratings were participants' satisfaction with the amount of time allowed for training. Other scores were all B to A- or 80 to 90 percent. The scores for the two "Advanced Tools and Techniques of Cool Daylighting" were B to B+. Three-fourths of attendees felt the course covered all they expected and felt it provided useful handouts. Other scores were generally higher, with the best scores for "using teaching methods that worked for me." Again, participants gave their lowest ratings for the amount of information provided and the time to interact with instructors outside of the session and time for the entire training. Attendees at the four Decision-Maker Luncheons gave high ratings to the luncheon talks and tours. Almost all respondents were enthusiastic about using daylighting on their next building project, even though only two-fifths had used daylighting before.

Recommendations: Collaborative training designers should provide more time for training. This will almost certainly require making the Daylighting Goes Mainstream into a two-day course.

4. Project Facilitation

A. FRANKLIN ENERGY SERVICES

Results: Franklin Energy Services obtained more qualified leads from RENEW and MREA than when inquiries came from the 800 Number. The inquiries being passed along after people had received some assistance were "more realistic." The engineer handling most inquiries identified four projects he was working on that he considered viable. The engineer noted that the people and organizations interested in these projects had already identified specific, clear needs. Earlier callers, referred from the 800 Number, had made rather vague inquiries, had little idea what they needed, or were just looking for rebates.

I. Executive Summary

Summary of Findings: Having more leads reaching the Franklin Energy as referrals from renewable organizations (MREA and RENEW) and fewer inquiries in response to general advertising means a greater proportion of leads seem more "serious" about using renewable energy. This conserves the project facilitator's valuable consulting time.

Coordinating the tracking of customer leads and contractor responses appears to enhance following up the better opportunities. While few opportunities have progressed to implementation, the project facilitator identified several current viable prospects.

Recommendations: Providing sources of qualified leads and continuing to improve the "customer relationship management" should capture more viable prospects for facilitation. The renewable administrator should expand the use of trusted sources of information to receive and process initial inquiries about renewables. These "clearinghouses" could then pass qualified leads on to the project facilitator. In the statewide program it will be critical to identify and support organizations that can fulfill this role.

B. RENEWABLE VENDOR CONSULTING

Results: Six renewable energy consultants and vendors provided telephone and on-site consultations in response to 22 inquiries referred to them by Franklin Energy. Franklin coordinated the consultations through MREA and RENEW and maintained records of the support provided and results obtained.

Summary of Findings: The renewable energy vendors offer consulting as part of their business, most charge more for their consulting than the DSARE program reimbursement, their fees help them qualify potential customers who are serious, and some offer to count the fee as part of the system installation price for customers who proceed. Consultants' opinions about the usefulness of this service ranged from suggestions to spend the money on the installation rewards instead of consulting, to concerns that anyone providing this consulting must have excellent qualifications. Another experienced consultant recommended that different levels of support be made available as customers move from scoping an opportunity to verifying the potential and then to design and construction.

Recommendations: The program should continue to provide on-site consulting by experienced renewable energy vendors. The fees paid to the vendors should be reviewed, as should the possibility of charging the customers something for the service. The customer co-payment could be refunded if the customer proceeds with an installation.

C. ASSET RENEWAL SERVICES

Results: Between May 2000 and June 2001 the financial facilitator tracked and offered assistance to 27 projects. However, no projects were financed with their assistance.

Summary of Findings: The financial consultant noted that there is a lack of good renewable energy projects that need investors, and the financing tools available through DSARE 2 are not enough to make a difference to the projects that are available. Most of the projects were too small to attract investors. The larger projects were being pursued by people capable of obtaining their own financing. Importantly, the downturn in the economy dampened interest in projects that were not a part of firm's primary business. The cost of capital is not important to any but the largest corporations. An additional factor in testing financial facilitation in northeastern Wisconsin is that the market is very small and not too innovative.

Recommendations: A statewide program will offer more innovative, potential projects that could benefit from financial facilitation. With a larger number and a greater variety of prospects, it should be possible to develop project screening tools that will identify projects with the best potential. These projects could then receive additional assistance.

5. Training and Education

A. MIDWEST RENEWABLE ENERGY ASSOCIATION TRAINING

Results: The Midwest Renewable Energy Association continued a variety of activities including offering residential renewable energy workshops, providing scholarships to residents of the Focus on Energy Pilot area, sponsoring the 2001 solar homes tour, sponsoring the Midwest Renewable Energy Fair, developing four public service announcements for radio, delivering a renewable energy training session at the WEI-2 conference, and developing a renewable energy auditor certification program. We have not evaluated the MREA training activities again for DSARE 2 because we completed an extensive evaluation as part of the final DSARE 1 evaluation.

Summary of Findings: The MREA filled all the 2001 training workshops, and some were overfilled. The director believes quality suffered from having too many participants and MREA will strictly limit enrollment in the future. MREA exceeded its goal for PSAs and the auditor certification program is proceeding on schedule.

Recommendations: MREA continues to deliver valuable support for the public, renewable customers, dealers, contractors, and consultants. The Focus on Energy Program should continue to support MREA training activities.

B. WEEB RENEWABLE ENERGY EDUCATION GRANT PROGRAM

Results: The Wisconsin Environmental Education Board Renewable Energy Education Grant program provided cost-sharing funds through their grant process and to the Wisconsin K-12 Energy Education Program. With the Focus on Energy Pilot program and statewide public benefits program funds, WEEB conducted two cycles of grants, with each cycle offering renewable energy education and energy education grants. WEEB awarded a total of \$162,000 to support 28 projects.

Summary of Findings: The WEEB has developed sound procedures for soliciting and managing education grants. Both the Pilot and statewide grant programs were forced to employ a shorter time for teachers and administrators to prepare and submit proposals than WEEB's normal annual grant cycle. The Pilot grant program also allowed recipients a much shorter time to complete their projects. Energy equipment is more expensive than the supplies required for other types of education. Grant limitations did not recognize this fully and some teachers and administrators chose not to submit proposals because they did not have sufficient funds for the projects they wanted to pursue.

Recommendations: The renewable administrator should continue to support renewable energy education grants through the WEEB. The administrator should work within the WEEB's normal time schedule. Providing students in primary and secondary schools with an understanding of the potential of renewable energy will be ever more important as these students become adults.

6. DSARE 2

Summary of Results and Findings: The DSARE 2 program fielded five program components that include 14 discrete sub-components. In addition to the Program Director and Program Manager, several other DOA employees helped manage some of the cost sharing grants. Two of the new financing programs provided significant support to renewable energy installation projects. However, the other two provided little or no support. In their fourth cycle, the cost sharing grants awarded 17 projects \$156,415. However, more than one-half of the applications and awards were from individuals or organizations that had received awards in one or more of the first three grant cycles. The Daylighting Collaborative, MREA, and WEEB continued their activities. Project facilitation contractors improved their services and saw greater promise across the group of projects they assisted.

Recommendations: As with the evaluation of the first phase of the DSARE program, the evaluators are left with the sense that trying so many discrete approaches is, in theory, a justifiable approach. However, with the limited management resources available, and some approaches that failed to produce expected results, we must question the continuing use of this strategy. It appears that spending more time selecting and managing a smaller number of program approaches might produce greater results.

II. INTRODUCTION

This evaluation summarizes the activities conducted in the second phase of the Focus on Energy Demand Side Applications of Renewable Energy program component (DSARE 2) and the results that have been achieved through June 30, 2001. This phase of DSARE provided seven major efforts to support market development and stimulate the use of renewable energy resources. A total of \$800,000 was budgeted for efforts beginning in September 2000 and continuing until December 2002.⁴

The largest budget item was "special project financing." DSARE 2 provided four types of financing programs budgeted at \$370,000. These included low interest loans, installation rewards, interest rate buydowns, and access to the Energy Efficiency Performance program.

The second largest item in the DSARE 2 budget was \$150,000 to continue the market development grants for business and marketing, demonstrations, and technical assistance. The budget for each of these three grant programs was \$50,000.

The third largest budget item was \$120,000 for the Daylighting Collaborative program. Specifically this funding continued additional support in the Focus on Energy Pilot program 23 county area beyond the statewide level of funding. This program encourages architects and building owners to employ Cool Daylighting™ to reduce lighting and air conditioning loads. A total of \$120,000 supported training, demonstrations, and design assistance.

DSARE 2 provided \$80,000 to fund training and education efforts. The Midwest Renewable Energy Association (MREA) offered renewable energy training for customers and contractors interested in learning to use or install renewable energy systems. The Wisconsin Environmental Education Board provided grants to support the K-12 Energy Education Program and projects proposed by teachers and administrators from schools in the 23 county area served by the Focus on Energy Pilot program.

A total of \$80,000 provided continuing funding for two firms supplying financing and project facilitation services. Asset Renewal Services assisted potential renewable customers and system suppliers locate and apply for financing. Franklin Energy provided information, technical and project assistance to customers and contractors with potential renewable energy projects.

Beginning in September 2000 and continuing until June 2001 the evaluators conducted several interviews with the DOA Program Director and Program Manager, and with managers and staff at the principal sub-contractors. Initial interviews identified the new directions established with DSARE 2. Mid-program and later interviews tracked progress and results.

By April 2001 the evaluators identified activities for detailed evaluation that met two criteria: first, they had generated significant participation; and second, they had not been evaluated during the first phase of the Focus on Energy pilot. At that time, one of the financing programs—the low interest loan program—was generating enough participation to allow evaluation of customer reactions. In addition, the Daylighting Collaborative had provided

⁴ The Wisconsin Division of Energy allocated all funds within the first few months. Recipients of grant funds have until December 31, 2002 to complete their projects.

II. Introduction

"second look design assistance" to eight projects. The Collaborative had also accumulated internal evaluation data for nine sessions of its main training course and two sessions of its advanced tools and techniques course. We evaluated each of these three efforts in more detail by conducting additional in-depth interviews and surveys. These efforts built upon what had been learned through several detailed interim and final evaluations of the DSARE 1.

Data collection for the low interest loan program consisted of completing 53 surveys from a total sample of 70 people who had applied for loans, been approved, had renewable energy systems installed and received their loan payments by early April.

Data collection for the second look design assistance program involved completing in-depth interviews with one building owner and one architect. We chose not to re-interview individuals who had already been interviewed in connection with other DSARE 1 or DSARE 2 services. We also chose not to interview owners or architects who were in the initial stages of receiving design assistance.

We reviewed reports for the internal evaluations the Energy Center of Wisconsin staff conducted for eleven of the Daylighting Collaborative training sessions, including nine sessions of the Daylighting Goes Mainstream course and two sessions of the Advanced Tools and Techniques course.

In the next five sections we present our evaluations of the new and continuing services designed to help potential customers identify opportunities for using renewable energy and, ultimately, install a renewable energy system. Section III reviews the special project financing, primarily the most successful program—the low interest loans to homeowners; Section IV reviews the projects proposed for grant funding and those selected; Section V reviews the second look design assistance and the ongoing training activities of the Daylighting Collaborative; Section VI reviews the project facilitation services provided; and Section VII reviews the training and education activities. We summarize the key findings and present recommendations at the end of each.

III. PROJECT FINANCING

A. OVERVIEW

The "special financing programs" include four programs designed to serve different customer types and needs. The four programs are: Low Interest Loans, Installation Rewards, Interest Rate Buydown, and the Energy Efficiency Performance Program. As Table III-1 shows, they provide different offerings for different customers. The following descriptions summarize the results of each of the four program offerings.

Two of the four programs supported significant numbers of renewable energy installations. The low interest loans supported a total of 131 installations, most of which were wood stoves and a few geothermal heat pumps. The installation rewards supported 81 installations, which included a small number of wind and PV installations and 70 geothermal heat pumps. As noted earlier, we began a detailed evaluation of customer reactions to the details of the low interest loan program in April. This was before any "aggregators" had submitted bundled applications for installation rewards.

The next sections describe the results achieved by each of the four financing programs.

1. Low Interest Loans

The low interest loans targeted owners of single-family and duplex homes and provide streamlined application procedures, an attractive interest rate of four percent APR, flexible terms from three to ten years, no application or other fees, a non-secured loan, and coverage of any type of renewable energy system.

These loans were the most heavily used. A total of 131 loans were sold or approved by June 25. This exhausted the \$100,000 that had been budgeted for buying down market rate loans to the four percent APR. In fact, a total of \$104,769 of DSARE funds was used to make \$479,450 available to customers.⁵ Promotion by two types of renewable energy system vendors—wood stoves and ground source heat pumps—was a key factor in the use of this program.

2. Installation Rewards

The installation rewards program provides two payments to customers installing renewable projects: 50 percent upon purchase of the equipment, and 50 percent upon completion of the project. The rewards are based on the renewable energy produced by an installation, and are limited to a total of \$50,000 or 20 percent of the project cost. The minimum reward payment for the first year's output is \$5,000. If this threshold cannot be met by individual projects, a contractor or other party may aggregate several projects until their first year's output will support at least a \$5,000 reward.

⁵ In fact, the loan disbursements are made to the contractor who performed the installation.

Table III-1. Characteristics of Special Financing Programs

	Low Interest Loans	Installation Rewards	Interest Rate Buydown	Energy Efficiency Performance Program
Eligible Customer Type(s) or Project Size	Owners of existing single-family or duplex homes	Aggregated small projects or larger projects by any type of customer	Aggregated small projects or larger commercial, industrial, or agricultural projects Vendor or customer may apply	Systems installed by a performance contractor, acting as a project "sponsor"
Loan, Award, or Reward Size	\$1,000 to \$20,000	\$5,000 to the smaller of \$50,000 or 20% of costs. Award based on useful energy produced.	\$20,000 to \$500,000	1) 75% of projected savings after project meets annual savings goal. 2) 150% of projected savings after meeting first annual goal and guaranteeing 2 more year's savings.
Interest Rate	4 Percent APR	NA	Reduced by four percentage points from applicant's approved rate	NA
Terms	3, 5, 7, or 10 years	NA	Lender determines	NA
Features / Requirements	No application, points or closing fees Non-secured Not tax deductible A "participating contractor" must install system	All except solar and wind projects must have a pay back less than 10 years. Solar thermal and wind < 20 years. PV, no payback requirement	Applicant obtains best loan interest rate and terms from a lender of their choice. Applicant must provide five percent private equity.	Projects must: Produce verifiable electricity or natural gas savings Demonstrate savings through measurement and verification for a one-year period.
Eligible Renewable Energy Measures	Passive Solar Solar Space / Water Heating Wood Space / Water Heating Ground Source Heat Pump PV Solar Electric Systems Wind Electric System Hydro Electric System	Solar energy systems (PV, passive or active thermal) Wind energy used for demand reduction Ground source heat pump Production and use of biogas Wood energy system for process or space heat	Solar Wind Geothermal Biomass (wood and biogas) Hydro	Any meeting above requirements

III. Project Financing

A modest number of customers used installation rewards. By the June 20 deadline the DSARE program manager had applications covering a total of 81 installations. These applications included 1 kilowatt of wind power, for an incentive of \$1,019; eight photovoltaic (PV) systems with a total capacity of 13 kilowatts for a total incentive of \$18,815; 70 geothermal heat pumps for a total incentive of \$32,819; and two biogas projects for a total incentive of \$24,499. Thus, DSARE 2 paid a total of \$77,152 of installation rewards. That was 57 percent of the total rewards budget of \$135,000.

Three "facilitators" aggregated, or "bundled" small projects into applications large enough to meet the \$5,000 minimum reward amount. WisconSUN has bundled one set of wind and solar projects for DSARE 2 and may bundle an additional group for DSARE 3. WisconSUN obtained assistance from Franklin Energy, including having one of their engineers sign the estimated energy production for these systems. The Wisconsin Geothermal Association bundled a group of 70 geothermal heat pump projects. The Wisconsin Public Service Community Foundation bundled three PV projects. To date, no individual renewable contractors have bundled groups of projects.

3. Interest Rate Buydowns

The interest rate buydown program targeted larger projects involving commercial, industrial, or agricultural customers needing loans from \$20,000 to \$500,000. After the customer obtained their desired terms and the most favorable interest rate possible, this program would buy down the interest rate by four percentage points. Applicants were required to provide at least five percent equity in their projects.

No customers used this program. The financial consultant for the renewable program suggests two reasons: first, the cost of capital is not of major importance to most business borrowers, and second, the availability of lower cost capital would have had a possible positive effect on only one project he was tracking.

4. Energy Efficiency Performance Program

This is the most complex appearing financial program. A contractor, or program "Sponsor," must apply for a project at a customer, or "Host," site. The performance program offers business development support and downstream incentives to the contractor. For projects where the contractor has entered into a guaranteed savings contract with the customer, the EEP program will share one-half of the risk that the project does not provide the estimated savings in the first year. For projects that achieve the guaranteed savings in the first year, the EEP contract provides the contractor an incentive equal to three year's annual guaranteed energy cost savings. That whole amount is paid at the end of the first year. For non-guaranteed savings projects that produce the promised first year savings, the EEP contract provides an incentive equal to one year's guaranteed energy cost savings.

Although the DSARE program emphasized the EEP program, only one project has used this complex approach. This is a waste digestion / biogas / electricity generating project at a dairy farm. Franklin Energy and Schiller Associates have entered into an EEP contract to guarantee a demand reduction to the project host, a large dairy operation (which is providing both the project site and the supply of manure).

However, it has been learned that the entire electricity output is contracted to a utility. Thus, this project will, in fact, be an Independent Power Producer. Thus, at least 50 percent of the

energy produced will not be used on the site. And, the electricity output of this project will no longer meet the fundamental requirements of the *Demand-Side Applications* of Renewable Energy Program. It is possible that a modified application for on-site use of waste heat from the engines driving the generator may be possible, as shown by two other projects that received installation rewards for this energy.

B. LOW INTEREST LOANS

This section provides a detailed description of the features of the Wisconsin Renewable Energy Loan (WREL) Program and a review of customer reactions to the program features and service obtained. We chose to explore this, the most successful financing program in more detail to support its continued success. These reactions were obtained through telephone interviews with more than three-fourths of the customers who had obtained loans by early April.

1. Program Component Description

The Division of Energy began providing low interest financing to stimulate renewable energy resource acquisition in September 2000. The Division arranged for Energy Finance Solutions (EFS) to provide loan servicing and authorized EFS to provide renewable energy loans at a four percent annual percentage rate (APR). DSARE funds were provided to buy down the interest rate to the four percent level. Loans were available with three-, five-, or seven-year terms with a minimum loan amount of \$1,000 and a maximum amount of \$20,000. Customers using these loans were estimated to save approximately 19 percent of the cost of their projects, based upon a comparison with conventional loans.

Nine types of renewable equipment were eligible through the Wisconsin Renewable Energy Loan (WREL) program. These included three types of space heating systems, including 1) a furnace or boiler fueled with wood, 2) wood stoves (including pellet stoves and fireplace inserts) and 3) ground source (geothermal) heat pumps. Also included were solar water heaters, wood water pre-heaters, and passive solar for building heating. Finally, three types of systems that generate electricity were included, including 1) photovoltaic cells, 2) wind turbines, or 3) water (hydro) turbines.

2. Results of Loan Program

By June 25, 2001 a total of 131 loans were sold or approved with \$104,769 of DSARE funds buying down the interest rate. A total of \$479,450 had been or will be made available through these loans to owners of single family or duplex residences in the Focus on Energy area.

These loans paid for equipment and installation costs for two types of space heating applications: 124 high efficiency wood stoves, furnaces, and boilers; and seven geothermal / ground source heat pumps. None of the other seven types of eligible renewable energy systems were installed with funds from this program.

3. Sample and Data Collection

We obtained a sample of 70 customers with installations completed by early April 2001. Opinion Dynamics Corporation completed surveys with 53 of these customers during the period from April 11 through April 14. This is a completion rate of 76 percent. The average interview took 5.8 minutes and included 17 questions.

4. Equipment Purchased

Almost all people who had installed equipment and received their checks by April 6 had installed “wood” burning stoves, fireplace inserts, furnaces, or high efficiency fireplaces.⁶ As shown in Table III-2, two-thirds of respondents installed wood stoves and 15 percent installed pellet stoves. Only three people who used the Wisconsin Renewable Energy Loan (WREL) program by then had installed geothermal heat pumps. Overall, 94 percent of those receiving loans had installed wood burning units and six percent had installed geothermal heat pumps. By May 7 (when the program had committed all budgeted funds) the totals were 95 percent wood burning units and five percent geothermal heat pumps.⁷

Table III-2. Renewable Equipment Purchased Through the WREL Program

Equipment Purchased	Loans Sold by April 6		Status on May 7	
	Number	Percent	Number	Percent
Wood Stove	36	67%		
Pellet Stove	8	15%	Loans Sold = 106 <u>Approved = 18</u> Total = 124	Total = 95%
Fireplace Insert	4	8%		
Wood Furnace	1	2%		
High Efficiency Fireplace	1	2%		
Geothermal Heat Pump	3	6%	Loans Sold = 6 <u>Approved = 1</u> Total = 7	Total = 5%

⁶ We obtained a sample in early April for customers who had completed their loan application and their renewable project, and whose contractor had received the disbursement from the loan.

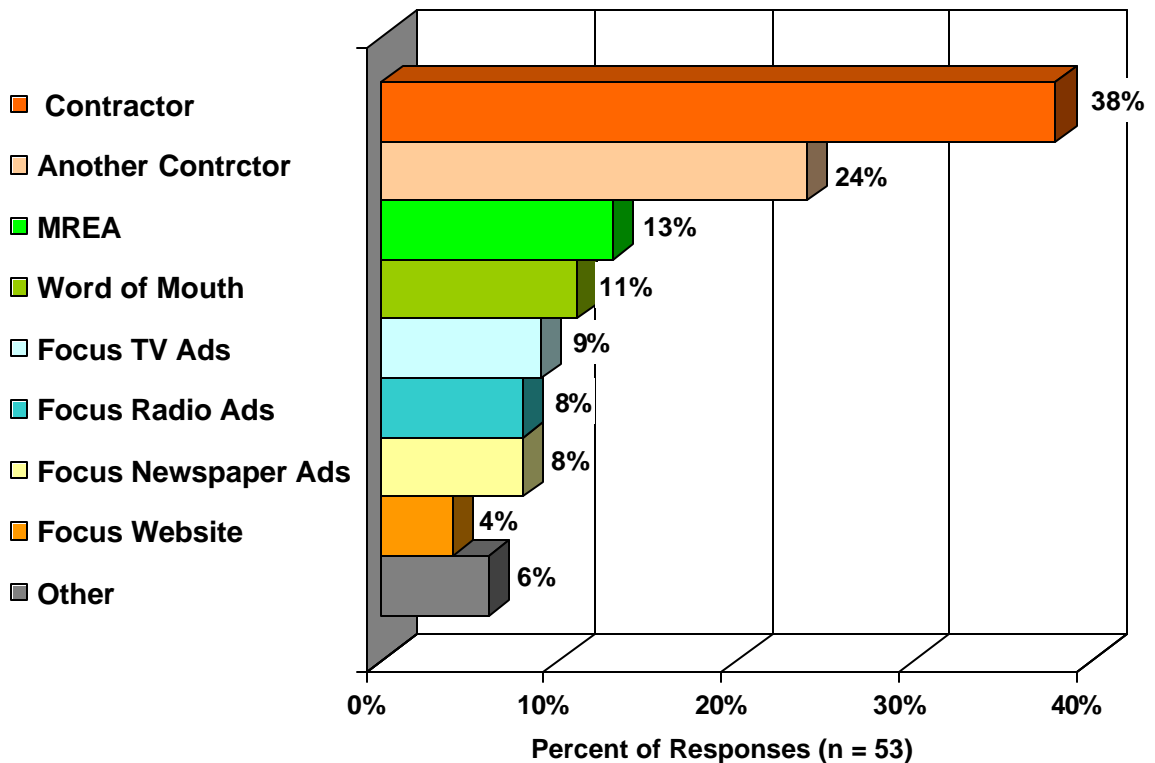
⁷ The detailed information on types of wood burning appliances purchased was obtained only for use in interviewing loan program participants.

5. Findings

A. HOW RESPONDENTS LEARNED OF LOANS

As shown in Figure III-1, the most often mentioned source of information about the loans was the contractor selling renewable equipment (38 percent).⁸ Second most often mentioned was “another energy services contractor” (24 percent), and third most often mentioned was the Midwest Renewable Energy Association (13 percent). Three other sources were mentioned by more than one respondent: word of mouth or an acquaintance by 11 percent, Focus on Energy TV ads by nine percent, Focus on Energy radio or newspaper ads eight percent each, and the Focus on Energy Website (four percent).

Figure III-1. Source of Information About Low Interest Loans

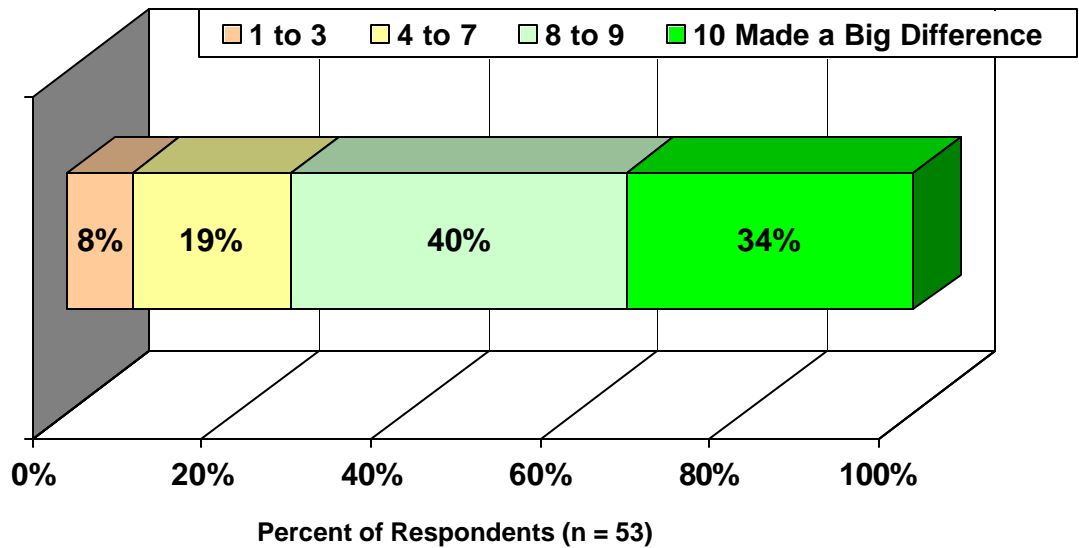


⁸ This was an “unaided recall” question asking, “I’d like to know how you found out about the Wisconsin Renewable Energy Loan Program.” The 53 respondents gave 65 responses.

B. IMPACT OF LOANS ON DECISION TO INSTALL RENEWABLE EQUIPMENT

As shown in Figure III-2, three-fourths of respondents rated the Renewable Energy Loan (REL) as making a major difference (8, 9, or 10 on a 1 to 10 scale) in their decision to install renewable equipment. More than one-third of respondents (34 percent) said the Renewable Energy Loan “made a big difference” (10). Another 40 percent rated the loan as making a difference of 8 or 9 on the 10-point scale. Only eight percent rated the Renewable Energy Loan as making little difference (1 to 3). The mean and median ratings for all respondents were both eight out of 10.

Figure III-2. Difference the Renewable Energy Loan Made in Decision



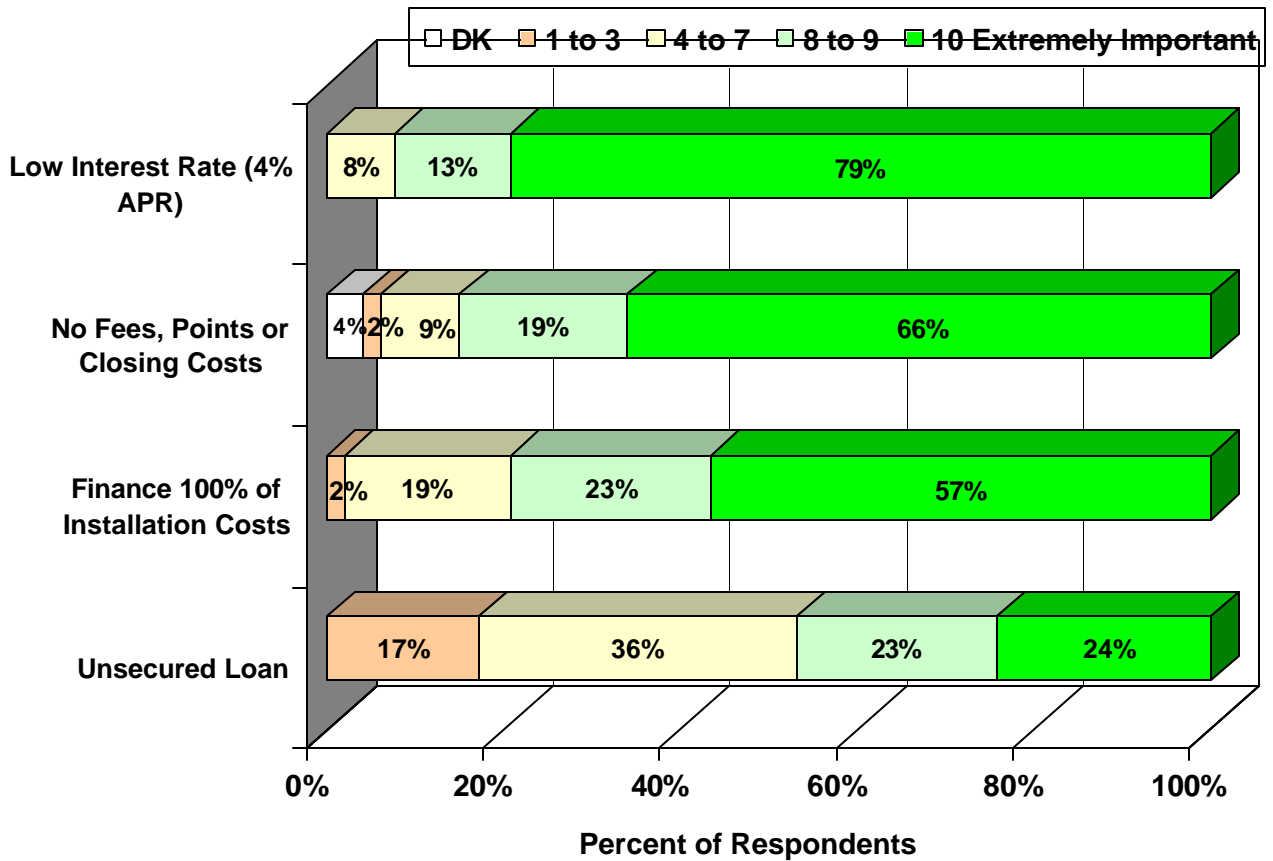
C. IMPORTANCE OF LOAN FEATURES

We asked respondents, “As you think back to getting the renewable energy loan, what features of this loan were important to you?”⁹ In answering this “unaided recall” question 92 percent of respondents mentioned the low interest rate as important. Twenty one percent of respondents mentioned that the quick approval process was important. Thirteen percent said being able to choose the loan term was important to them. Four percent or less of the respondents mentioned each of the eight other features of the loan offering.

⁹ In this multiple response question 53 respondents gave 82 responses.

Later, we posed individual questions asking each respondent to rate the importance of the four main loan features on a 1 to 10 scale.¹⁰ As shown in Figure III-3, the largest proportion of respondents judged the low interest rate (of 4 percent APR) to be most important. Almost four-fifths of respondents (79 percent) rated its importance as a 10 (on a 1 to 10 scale). An additional 13 percent rated it an 8 or 9, leaving only eight percent rating it neutral (4 to 7). Two-thirds of respondents (66 percent) rated the absence of fees, points, or closing costs as 10, with another 19 percent rating this feature as an 8 or 9. Fifty-seven percent of respondents rated the fact that they could finance 100 percent of the installation costs a 10, with another 23 percent rating it an 8 or 9. Almost one-half the respondents (47 percent) rated the fact that this loan was unsecured as an 8, 9, or 10. One-third of respondents rated this feature as neither important nor unimportant (4 to 7 on a 10-point scale).

Figure III-3. Importance of Loan Features

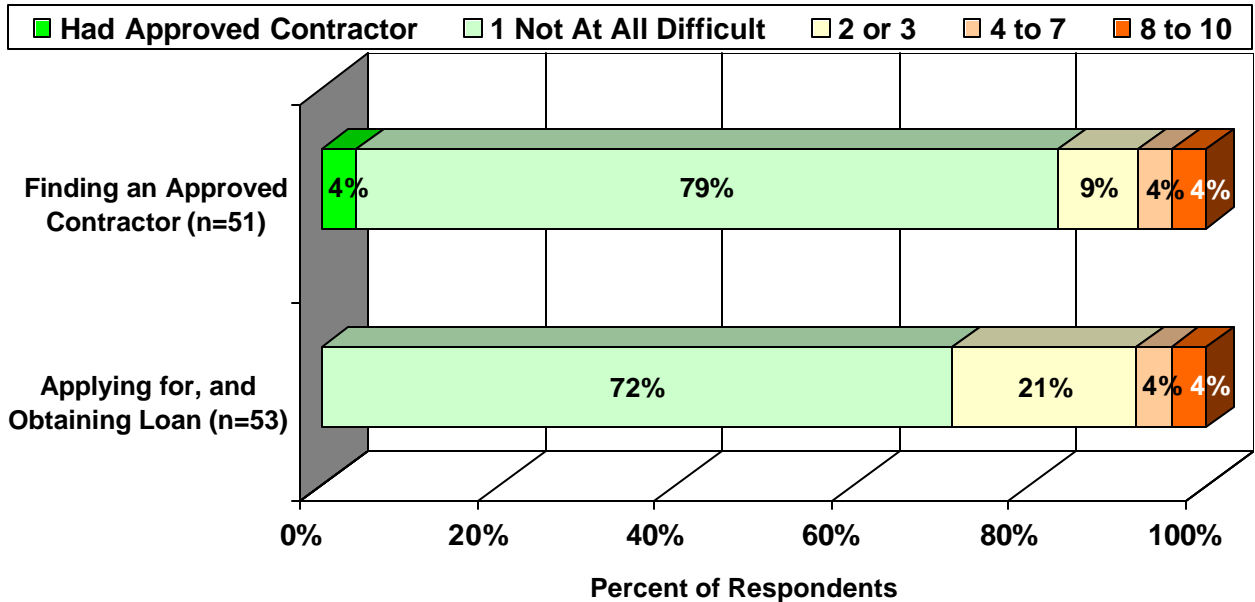


¹⁰ We rotated the order in which we asked about each feature to avoid biasing the responses.

D. DIFFICULTY OF FINDING CONTRACTOR AND APPLYING FOR LOAN

Nine of ten respondents rated both finding an “approved contractor” (92 percent) and completing the application and obtaining a Renewable Energy Loan (93 percent) as “not difficult” (1, 2, or 3 on a 10-point scale where 1 is “not at all difficult” and 10 is “extremely difficult”).¹¹ As Figure III-4 shows, 82 percent found it not at all difficult to apply for and obtain a loan, and 72 percent found it not at all difficult to find an approved contractor.

Figure III-4. Difficulty of Obtaining Loan and Finding Approved Contractor



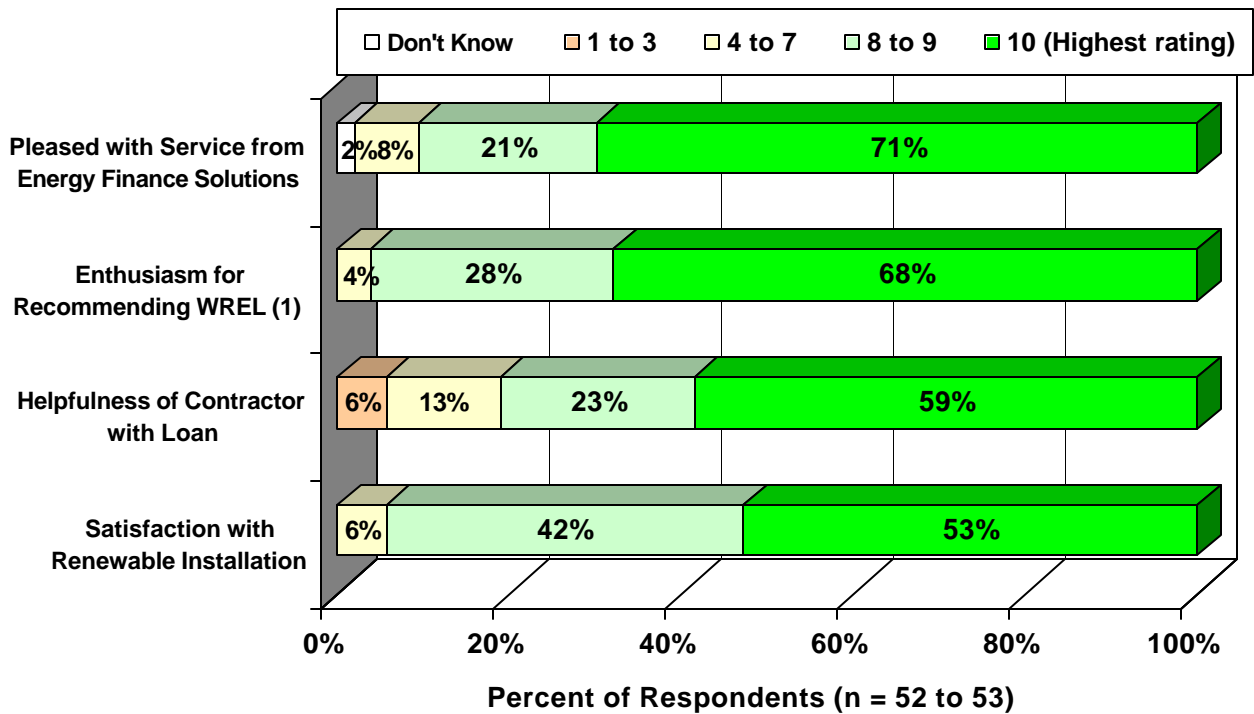
E. OTHER MEASURES OF SATISFACTION

We obtained four other measures of satisfaction from all respondents. These include the enthusiasm with which they would recommend the Wisconsin Renewable Energy Loan to others, their satisfaction with their renewable energy system they installed, how pleased respondents were with the service received from Energy Finance Solutions, and the helpfulness of their contractor with the loan.

As shown in Figure III-5, a total of from 96 to 82 percent respondents gave positive ratings (8 to 10 on at 1 to 10 scale) for these measures of satisfaction with four key aspects of their experiences with their renewable equipment purchase. With only one exception, the balance of the respondents (four to eight percent) gave neutral ratings (4 to 7 on the 1 to 10 scale). Thus, for these three measures of satisfaction there were no negative ratings.

¹¹ Included in the 92 percent who rated finding an approved contractor "not difficult" were four percent who already "had an approved contractor."

Figure III-5. Satisfaction with Loan Program, Contractor, and Installation



(1) WREL is the Wisconsin Renewable Energy Loan program.

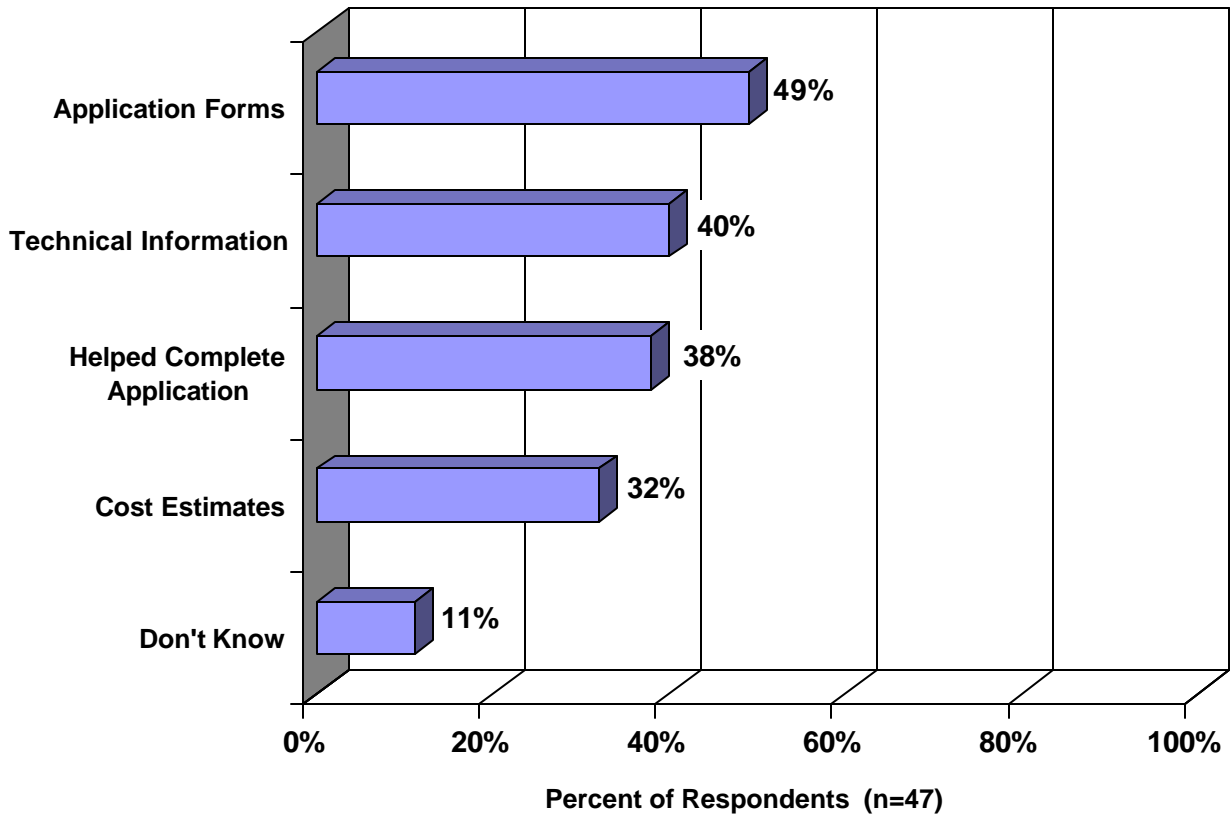
The exception was the 13 percent giving neutral (4 to 7) ratings and an additional six percent giving “not helpful” (1 to 3) ratings when asked how helpful their contractor was with the loan program.

F. HELP CONTRACTOR PROVIDED WITH LOAN

The 47 respondents who rated their contractor a “five” to “ten” on helpfulness with the loan were then asked what type of help their contractor provided.¹² As shown in Figure III-6, one-half of these respondents (49 percent) said their contractor gave them the application forms. Two-fifths of the respondents said their contractor provided technical information about the renewable equipment (40 percent), or helped them complete the application (38 percent). One-third of the respondents said their contractor provided cost estimates (32 percent).

¹² Forty-seven respondents provided 81 responses to this multiple response question.

Figure III-6. Help Contractor Provided with Loan



C. SUMMARY AND RECOMMENDATIONS

1. Low Interest Loans

Summary of Findings: Most respondents learned of the low interest loan program from their contractor or another contractor. Three-fourths of the respondents said the Renewable Energy Loan make a major difference in their decision to install renewable equipment. Nine of ten respondents mentioned the low interest rate as important when asked what features of the loan were important to them. When asked to rate each feature of the loan, "no fees, points or closing costs" rated second, and being able to "finance 100 percent of the installation costs" was rated third. Nine of ten respondents rated finding an approved contractor and applying for the loan as "not difficult." Eight or nine of ten respondents were satisfied with other aspects of the loan and renewable installation.

Recommendations: DSARE managers should continue using this successful and highly liked financial program. Managers could offer even lower interests rates for renewable systems that have not yet been financed through this program and somewhat higher interest rates for wood burning systems. Providing the lowest interest rates to make the financing attractive to

less popular systems and higher—but still very attractive—interest rates to more popular systems will allow the program managers to make the best use of the funds available for subsidizing interest rates.

2. Installation Rewards

Summary of Findings: The installation rewards program was used to support 81 projects. All but two of those projects were bundled by third parties. The need to aggregate smaller projects to meet the minimum reward of \$5,000 (probably for systems costing \$20,000 or more) appears to be a significant obstacle. No individual contractors bundled projects during the first nine months. It appears that contractors may be involved in too few projects or projects that are too small to be able to reach the minimum. Or it is possible that the work involved in aggregating many small- to medium-sized projects may be too time consuming.

Recommendations: Reduce the minimum to a level that will allow contractors to apply with smaller numbers of projects. This would shift the administrative burden to the renewable administrator and remove a barrier to participation.

3. Interest Rate Buydowns

Summary of Findings: The interest rate buydowns and the energy efficiency performance program had the least participation. The financing facilitator believes that the cost of capital is not an important factor to any but the largest customers. Further, the facilitator believes the availability of lower cost capital would have possibly influenced only one of 27 projects he had assisted or tracked from May 2000 through June 2001. Only one contractor used the energy efficiency performance program. That was for a large biogas electricity-generating project.

These financing programs appear to only be useful for larger projects because the transaction costs would be large. The financing facilitator and a developer of large renewable projects are discussing other types of financing mechanisms for such projects, including a renewable energy venture capital fund.

Recommendations: Additional funding mechanisms should be explored for larger projects. The renewable administrator for the statewide program should consult with members of the financial community to identify specific barriers and potential approaches to overcome these barriers.

4. Energy Efficiency Performance Program

Summary of Findings: This complex program requires a "Sponsor" (performance contractor) to apply for a project at a customer, or "Host," site. The EEP program shares the risk that the project will not produce the estimated savings. For programs that do meet guaranteed savings, the EEP program provides the contractor an incentive equal to three year's annual guaranteed savings. This incentive is paid at the end of the first year.

One project used the EEP program. However, the entire electrical output of this project has been contracted for sale to a utility. Thus, this project does not meet the requirements of the *Demand-Side Applications* of Renewable Energy Program.

It appears that the EEP program adds another layer of complexity to the already complex tasks of convincing customers that renewable energy systems are a reasonable investment.

III. Project Financing

While the risk sharing and potential for an incentive might appeal to some contractors, it is unclear that contractors and customers will be able to deal with the added complexity of this program.

Recommendations: The statewide renewable energy program administrator will be supporting only on-site electricity generation projects. Because these projects typically require greater investment than many other types of renewable projects, there may be a role for the EEP program. However, EEP still poses significant challenges related to the complex-appearing structure of the arrangements.

IV. COST-SHARED GRANTS

This section provides a description based on a review of the published summaries of the grant applications submitted and the grants awarded, and interviews with the program manager. Our purpose is to document the initial stage of the grant program. Recipients have until December 31, 2002 to complete work on their grants.

1. Grant Applications

Building on the awareness and interest generated by the three prior rounds of cost-sharing grants awarded in DSARE 1, the Wisconsin Division of Energy conducted a solicitation for proposals for grants to conduct three types of projects.

1. Seventeen proposals were submitted for *business and marketing assistance grants*. The total amount proposed was \$237,932. Of these, eight grants were awarded for a total of \$87,950.
2. Seven proposals were submitted for *technical assistance grants*. These proposals requested a total of \$79,113. Of these, five grants were awarded for \$35,965.
3. Eight proposals were submitted for *demonstration project grants*. These proposals totaled \$37,500. Of these four grants were awarded for a total of \$37,500.

In total, more than one-half of the applicants (59 percent) had applied in one or more of the three earlier grant cycles. Fifty-nine percent of the business and marketing applications were from prior applicants, 43 percent of the technical assistance applicants had applied before, and 75 percent of the demonstration applicants had applied before.

2. Grant Awards

Of the total grant monies awarded, business and marketing projects received 55 percent, technical assistance projects received 22 percent, and demonstration projects received 23 percent.

The eight grants for business and marketing assistance support a variety of activities.

- Three grants support individual businesses and/or their unique products and services. These products and services include anaerobic digestion of manure to produce methane, renewable architectural design services, and renewable residential design and construction services.
- Two grants support organizations providing marketing assistance to businesses offering (1) solar energy products, application / design, and installation services; and (2) geothermal heat pump products, design, and installation services.
- Another grant supports an organization that will market renewable energy to environmentalists.
- One grant supports an association that will develop installer certification.
- One grant supports the development of assessment tools and certification training for businesses seeking to apply renewables in the commercial and industrial sectors.

IV. Cost-Shared Grants

The five grants for technical assistance support feasibility studies and development of applications at two "scales."

- Two projects support organizations that will advise schools and businesses in determining the feasibility of using geothermal heat pumps and photovoltaic systems.¹³
- Three projects each support the review of the feasibility of the application of a specific technology or renewable resource at a specific site.

The four demonstration grants support the application of three technologies at facilities that are open to the public and include education in their missions.

- One grant supports demonstrating a geothermal heat pump installation at a high school.
- Another grant supports demonstrating a photovoltaic system and related program at a technical college's agricultural technology center.
- Two other grants support demonstrating a photovoltaic system installed on a wooden supporting / tracking structure and a wood-burning masonry heater at a regional renewable energy center.

One-half of the grants (53 percent) were awarded to individuals or organizations that had been awarded grants in the earlier cycles. Fifty percent of the business and marketing grant awards went to prior recipients, 40 percent of the technical assistance grants went to prior recipients, and 75 percent of the demonstration grants went to prior winners.

3. Summary and Recommendations

Summary of Findings: The cost-shared grants continue to be an attractive means for customers, contractors, and groups or associations related to renewable energy to obtain support. However, the grants are not reaching enough new market actors: 59 percent of the applications and 53 percent of the grant awards in the fourth grant cycle were from individuals or organizations that had received grants in the prior three grant cycles.

Recommendations: The renewable administrator should explore ways to increase the pool of qualified applications for these grants. Possible steps might include clarifying the requirements for proposals, listing the characteristics of successful projects supported by previous grants, simplifying the application process, and providing advice and screening to people considering applying for the first time.

¹³ One of these awards was declined in early June.

V. DAYLIGHTING COLLABORATIVE

A. OVERVIEW

The Daylighting Collaborative continued its ongoing efforts to promote Cool Daylighting™ under a contract for DSARE 2 issued on September 18, 2000. This contract provides funds for additional efforts in the Wisconsin Focus on Energy pilot territory through December 31, 2002. This Focus on Energy funding supplements the funds available for the statewide Daylighting Collaborative activities that end on June 30, 2001.

Through June 30, 2001 the Collaborative's key accomplishments in the Focus on Energy Pilot area include offering two training courses, concluding memoranda of understanding with three demonstration sites, drafting informational case studies for demonstrations, providing second look design assistance to three new projects, and making four presentations in the Wisconsin Focus on Energy Pilot Program area. In addition, the Collaborative has begun a strategic planning process that is outlining their efforts for the next few years.

This evaluation of the Focus II Daylighting Collaborative efforts included reviewing the internal ECW evaluations, interviewing the program manager, and interviewing individuals who used Second Look Design Assistance.

B. PROGRAM MANAGER'S VIEWS

In the program manager's view, the additional funding from the Wisconsin Focus on Energy (FOE) program's Demand Side Applications of Renewable Energy (DSARE) component produced significantly greater results in the northeastern portion of Wisconsin. In fact, the manager said that the efforts in the northeast 23 counties were 75 percent of the total daylighting "activity" while the rest of the state (49 counties) were only 25 percent of the total.

During the second program phase (September 2000 to present), key examples demonstrating spreading interest in Cool Daylighting include:

- Receiving inquiries from new design firms (not just those who have been involved before);
- Hearing of projects that include daylighting without involving any known contacts with the Daylighting Collaborative staff (for second look design assistance or other types of support); and
- Increasing mentions of daylighting, and especially Cool Daylighting, at conferences and in the trade press by others in the design community.

The program manager emphasized that the Daylighting Collaborative staff had spent additional time working with designers and potential customers in the FOE territory because of the additional funds available for them to spend on one-to-one meetings. However, another comment emphasizes the requirement for customer buy-in: the lack of Collaborative funds to support additional design costs led some customers to forego employing Cool Daylighting. They were eligible for second look design assistance and for funds to support publicizing their

building to attract building owners, managers and designers to public demonstrations of Cool Daylighting. They simply did not want to pay additional design costs.

Table V-1 shows a tabulation of Daylighting Collaborative training sessions, conference appearances, presentations, lectures/seminars/workshops, and media events that Daylighting Collaborative staff have made in Wisconsin. (We distinguish events targeting "All Wisconsin" from those specifically targeting the "FOE Pilot Area" in this tabulation.)

During the first phase of the Focus on Energy pilot program (FOE I), the total number of events was 20 for All Wisconsin and nine for the FOE Pilot Area. During the FOE II phase, the total number of events was six for All Wisconsin and seven for the FOE Pilot Area.

Table V-1. Training, Conferences, Presentations, and Other Events

Type of Event	Focus on Energy I April 1999 – June 2001		Focus on Energy II July 2000 – June 2001	
	All Wisconsin	FOE Pilot Area	All Wisconsin	FOE Pilot Area
Training	14	4	0	3
Conference	5	0	2	1
Presentation	0	1	4	3
Lecture, Seminar, or Workshop	2	2	0	0
Media event	0	1	0	0
Total events	21	8	6	7
Total <i>estimated</i> audience	1580	320	150	150

C. SECOND LOOK DESIGN ASSISTANCE

Daylighting Collaborative staff identified eight projects that had received "second look design assistance." We had already interviewed two of the individuals (responsible for three of the eight projects) in connection with other renewable energy evaluations. We contacted three individuals: two architects, and one owner. One architect said the design assistance had just commenced and he had not yet received any feedback. We then completed interviews with an architect and an owner who had completed the design review process.

The architect described a positive experience, with one initial problem. After sending e-mails and receiving no response from the Collaborative staff, he did not pursue the initial contact for some time. When he did contact the Daylighting Collaborative by phone, after a few weeks, he received assistance, a binder with examples, and a description of the design review process. The process proceeded as described. An experienced architect in Wisconsin reviewed the proposed approach, which was "mostly finalized" by then. The building

envelope, window placement, window specifications (glazing light transmittance), lighting design, heating and cooling (HVAC) design, and interior design were all between 85 and 90 percent complete. At that point the client—who would be moving employees into the new building from an earlier "daylit" building—had some concerns about the dark glass and light color of the interior finishes recommended as part of the Cool Daylighting™ approach.

The project architect had faced some challenges in finding good software to help study daylighting angles and light levels, and to support complete energy analysis that would allow downsizing the air conditioning to save money.

The design assistance was provided in a timely manner and made sense technically. The initial comments were made in a one to one and one-half hour conference call. The reviewer followed up with written comments and suggestions. Overall the reviewing architect communicated mostly by telephone, but also by e-mail and regular mail. The review was quite thorough for this relatively small (32,000 square foot) project. The comments were very pragmatic and based upon the reviewer's experience with his own projects.

The assistance allowed the project architect to complete the daylighting features within the client's original budget for the building. While the architect had proposed daylighting because the client had deeper pockets than some clients, the reviewer helped suggest ways to carry out the project design at lower cost than the project architect had envisioned. The reviewer suggested approaches costing \$100 to \$110 per square foot, while the project architect had thought the cost might be \$150 to \$160 per square foot.

The project architect made several additional comments about obtaining design assistance. First, earlier involvement with the Daylighting Collaborative would be better. This was a good client who, when informed that the project architect was obtaining assistance, was receptive. The fairly minor changes the reviewer recommended tended to confirm most of the choices that the project architect had already suggested. The confirmation by the reviewer helped the client feel more comfortable with the rather dark glazing and the use of light finishes in interior spaces.

The small size of the project made the choice of a smaller HVAC system a bit of a problem. The HVAC design already included a very efficient system, but the building size made moving to a smaller tonnage unit difficult. The existing design would provide 480 square feet per ton, while the Daylighting Collaborative goal is 500 square feet per ton. If a planned 4,000 square foot addition is made, no additional cooling capacity will be required. With the addition, the building would be over the 500 square feet per ton goal.

The project architect concluded that in his profession it is sometimes difficult to ask for advice. Some architects are not certain what they will get. This design assistance was professional and reinforced the direction the project architect had been trying. The client is very happy.

The owner we interviewed said that he and his architect started working with the Daylighting Collaborative early. The architect attended an early training session and the design assistance architect came and toured the site. The owner emphasized that of several green building concepts he wanted to incorporate, daylighting was "the easiest to do." The Cool Daylighting™ approach was "rigid" and that made it clearer than the flexible guidelines for other green building features. Many of them end up being unclear and complicated. As a business owner, he did not have time to make so many decisions so complicated.

While the decisions were straightforward in his situation (including a daylit office in a corner of a manufacturing building with high ceilings), getting the windows they selected was not. The windows were six weeks late. However, the design assistance was responsive to his architect and he liked how it worked.

D. REVIEW OF INTERNAL (ECW) EVALUATIONS

In this section we review the responses to several questions asked in the Energy Center of Wisconsin's course evaluations. We first present responses obtained at "Daylighting Goes Mainstream" courses starting on June 10, 1999 and ending February 22, 2001 (as shown in Table V-2). Five of the courses covered "How to Daylight Every Office Building," two courses covered "How to Daylight Every School," and two courses covered both offices and schools. Two of the courses were presented in the Focus pilot program territory, October 28, 1999 and February 22, 2001. Five courses were presented in various locations across Wisconsin as part of the statewide Daylighting Collaborative. And, two courses were presented in other states. We believe it is worthwhile examining attendees' ratings of several aspects of these courses over time and present the data graphically to explore trends.

Table V-2. Summary of Daylighting Goes Mainstream Courses

Title of Course: How to Daylight Every . . .	Date	Location	Loc. Code	Attendees	Responses	Response Rate
Office Building	June 10 99	Madison, WI	Statewide	89	75	84%
Office Building	July 14 99	Madison, WI	Statewide	53	32	60%
Office Building	Sep 17 99	La Crosse, WI	Statewide	32	25	78%
School	Oct 28 1999	Appleton, WI	Focus	62	54	87%
Office Building	Mar 16 00	Hudson, WI	Statewide	41	33	80%
School	Apr 5 00	Fort Collins, CO	National	50	33	66%
Office Building	Apr 26 00	Ankeny, IA	National	39	34	87%
Office Building and School	Dec 5 00	Milwaukee, WI	Statewide	56	42	75%
Office Building and School	Feb 22 01	DePere, WI	Focus	15	13	83%
Total / Overall				437	341	78%

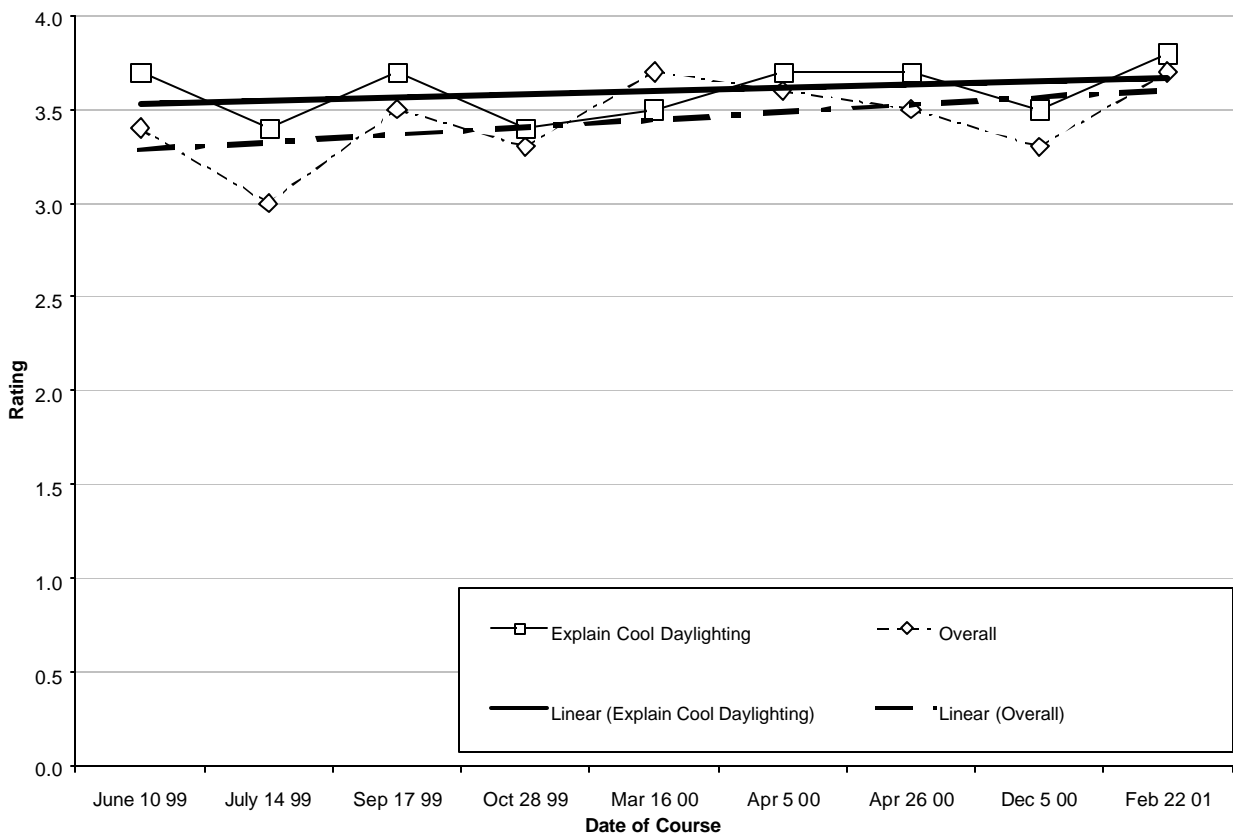
Following the review of evaluations of the Daylighting Goes Mainstream courses, we review the responses to two Advanced Tools and Techniques of Cool Daylighting courses, held on April 18 and 20, 2000. One course was offered in DePere, Wisconsin (in the Focus on Energy pilot territory), and the other was offered in Madison as part of the statewide program. We present the data for each course and the average ratings in tables.

1. Findings

A. DAYLIGHTING GOES MAINSTREAM COURSES

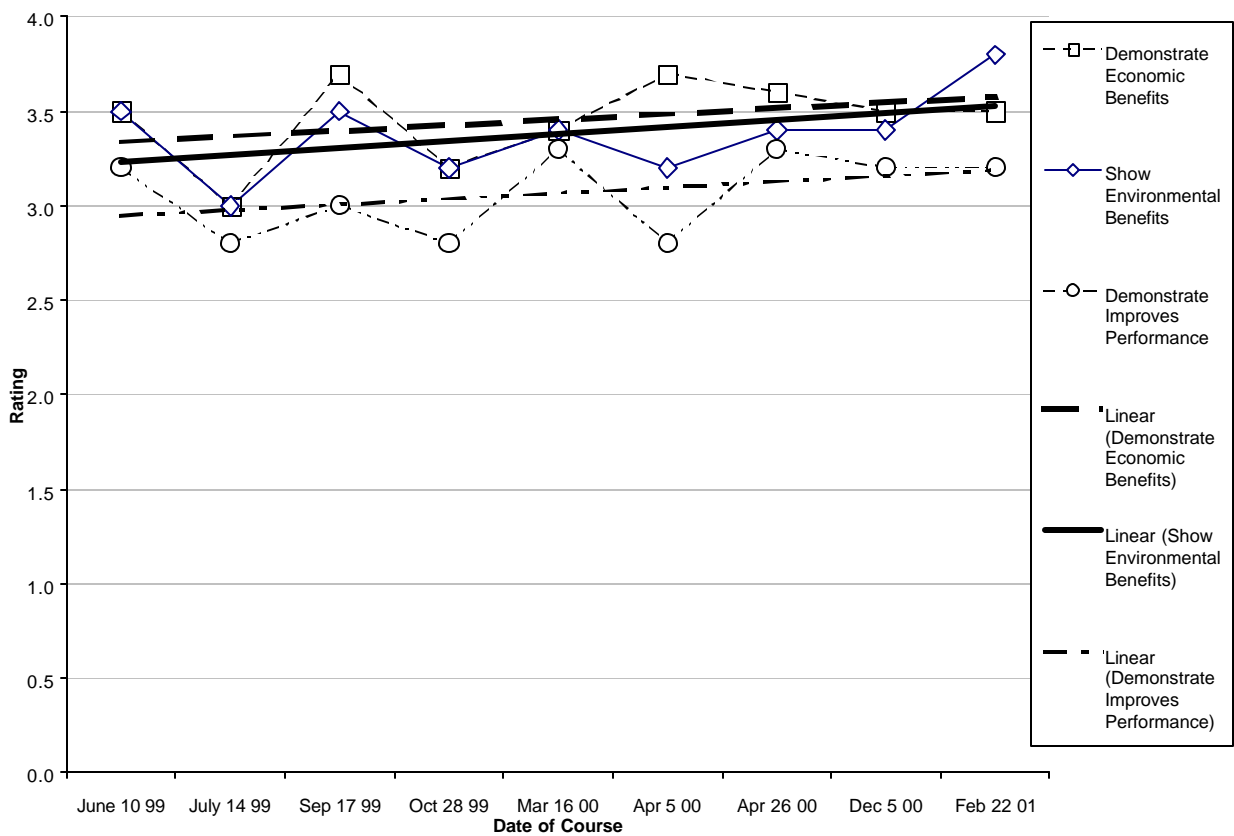
We present the results in the order the courses were presented to show the trends in scores over time. As shown in Figure V-1, respondents' grades for "How successful were we at explaining what Cool Daylighting is and how it works?" ranged from a B+ (3.3) to an A- (3.6). And responses to "Overall, how would you grade this training?" ranged from a B (3.0) to an A- (3.6). Importantly, the linear trend lines show that over the sequence of nine courses participants' ratings for these questions have risen.

Figure V-1. Explaining Cool Daylighting and Overall Grade



As Figure V-2 shows, the participants' "grades" for how successful the training was as demonstrating the economic benefits and showing the environmental benefits of Cool Daylighting range from a B (3.0) to an A- (3.7). In four cases the grades were the same, in four cases participants rated the demonstration of economic benefits higher than environmental benefits, and in the most recent course they rated showing environmental benefits higher than economic benefits. We have also included respondents' grades for how successful the instructors were at demonstrating how cool daylighting improves human performance. Here the grades are lower, ranging from a B- (2.7) to a B+ (3.3). The trend lines slope up to the right indicating respondents' ratings for the later training sessions are higher than for the earlier ones.

Figure V-2. Demonstrate Economic and Environmental Benefits

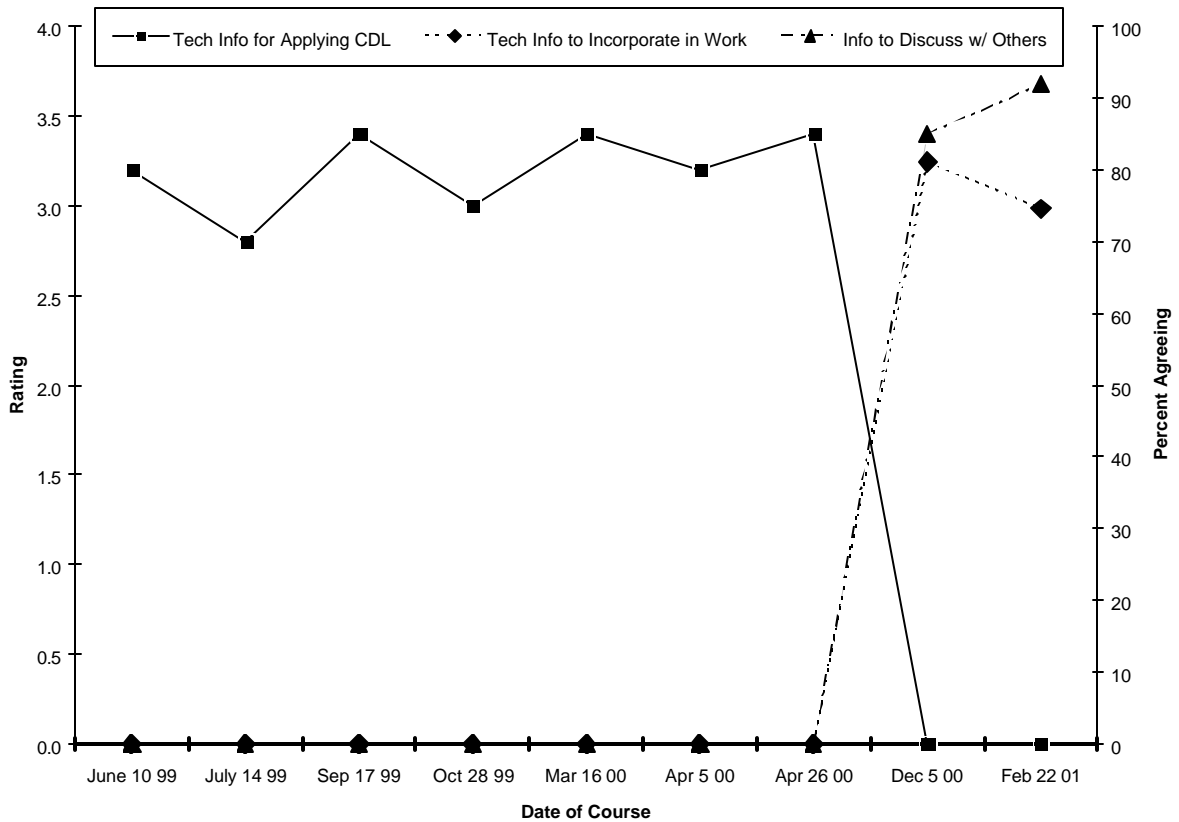


In Figure V-3 we examine the respondents' grades for just the first seven training sessions for how successful the instructors were in "giving you the technical information you need to apply cool daylighting in office / school building designs." These grades range from a B- (2.8) to a B+/A- (3.5).

For the last two courses, two measures of the percent of respondents agreeing with statements about the training were used. Between 81 and 75 percent agree "The training provided the technical information I need to incorporate Cool Daylighting in my work." And between 85 and 92 percent agree "The training provided the information I need to discuss Cool Daylighting with others on the project team."

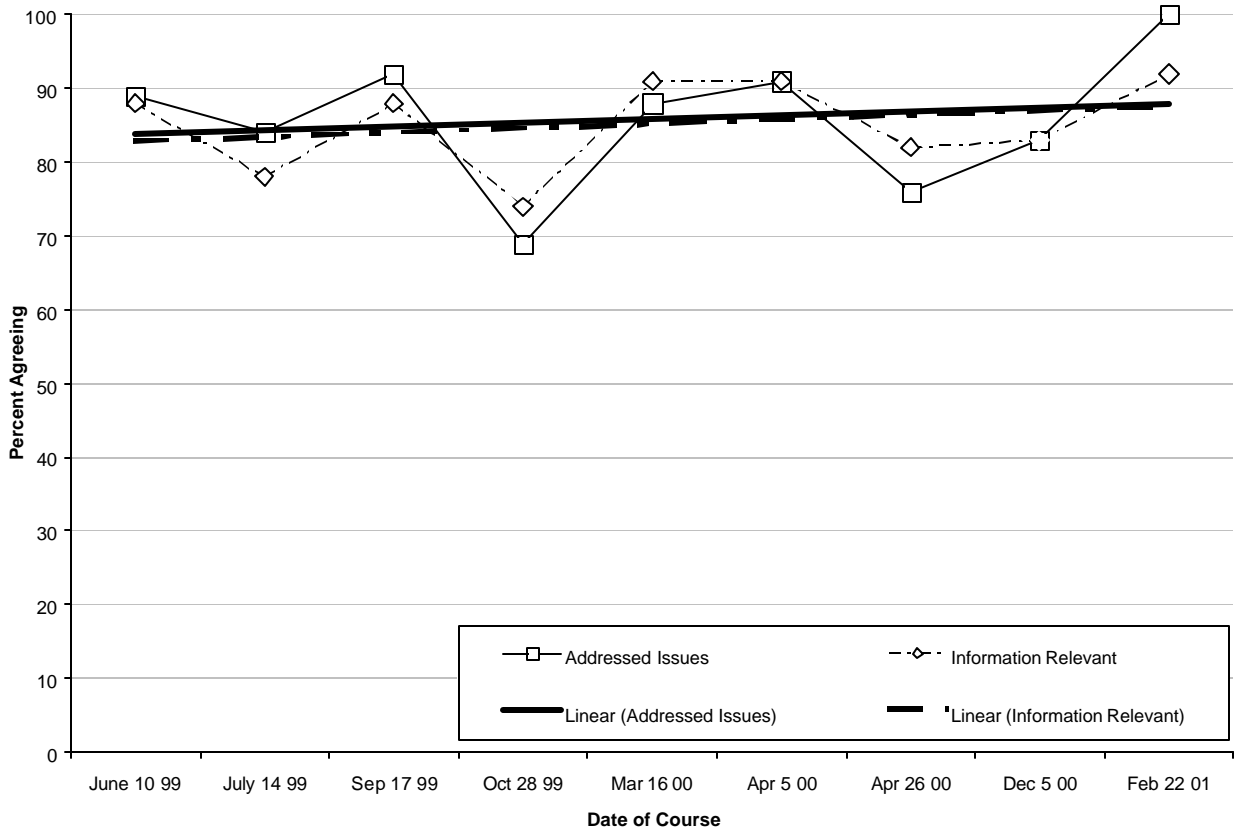
The available data from the two new questions is not sufficient to draw conclusions, primarily because there are only 13 respondents for the February 22, 2001 course.

Figure V-3. Information for Applying Cool Daylighting



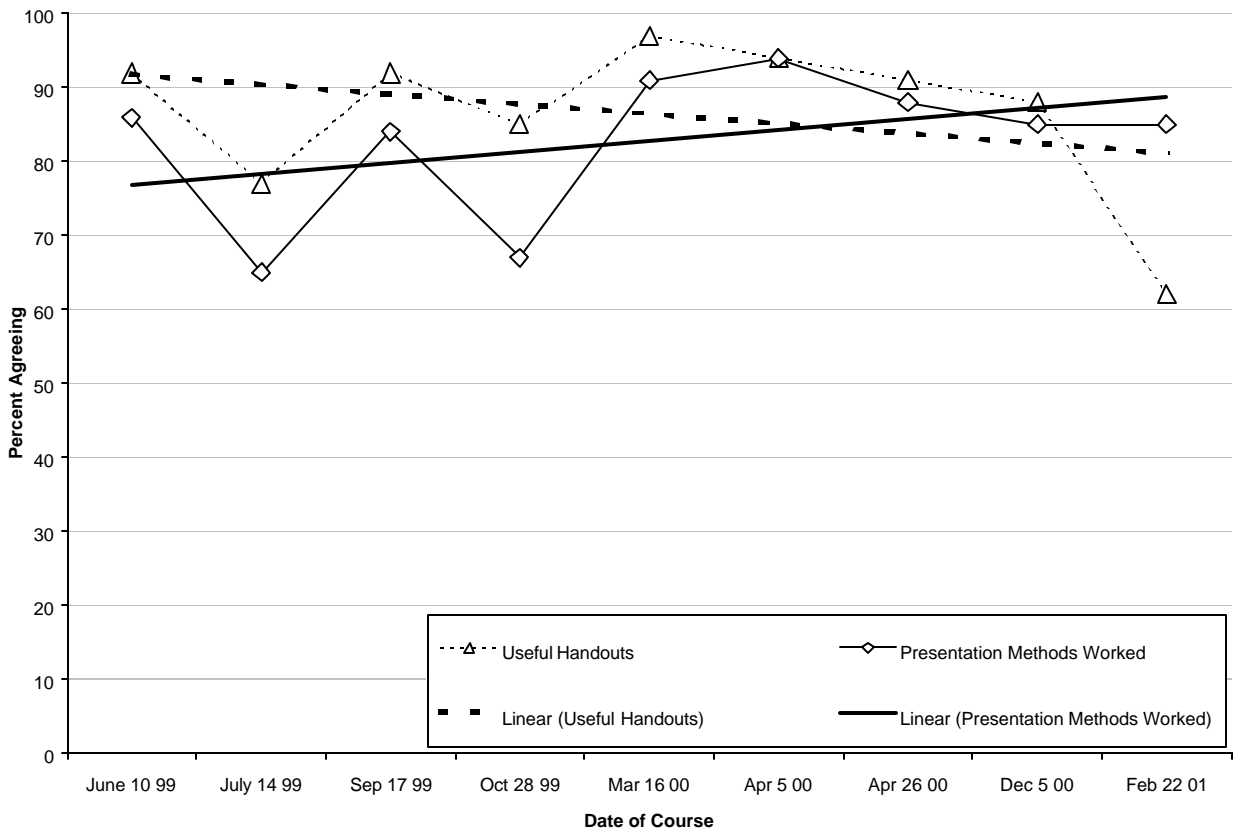
As we show in Figure V-4, 69 to 100 percent of respondents agreed that the training session "covered the issues I thought it would" and 74 to 92 percent agreed that it "covered information relevant to my business." The internal evaluation data shows modest improvement over time.

Figure V-4. Training Addressed Expected Issues and Information was Relevant



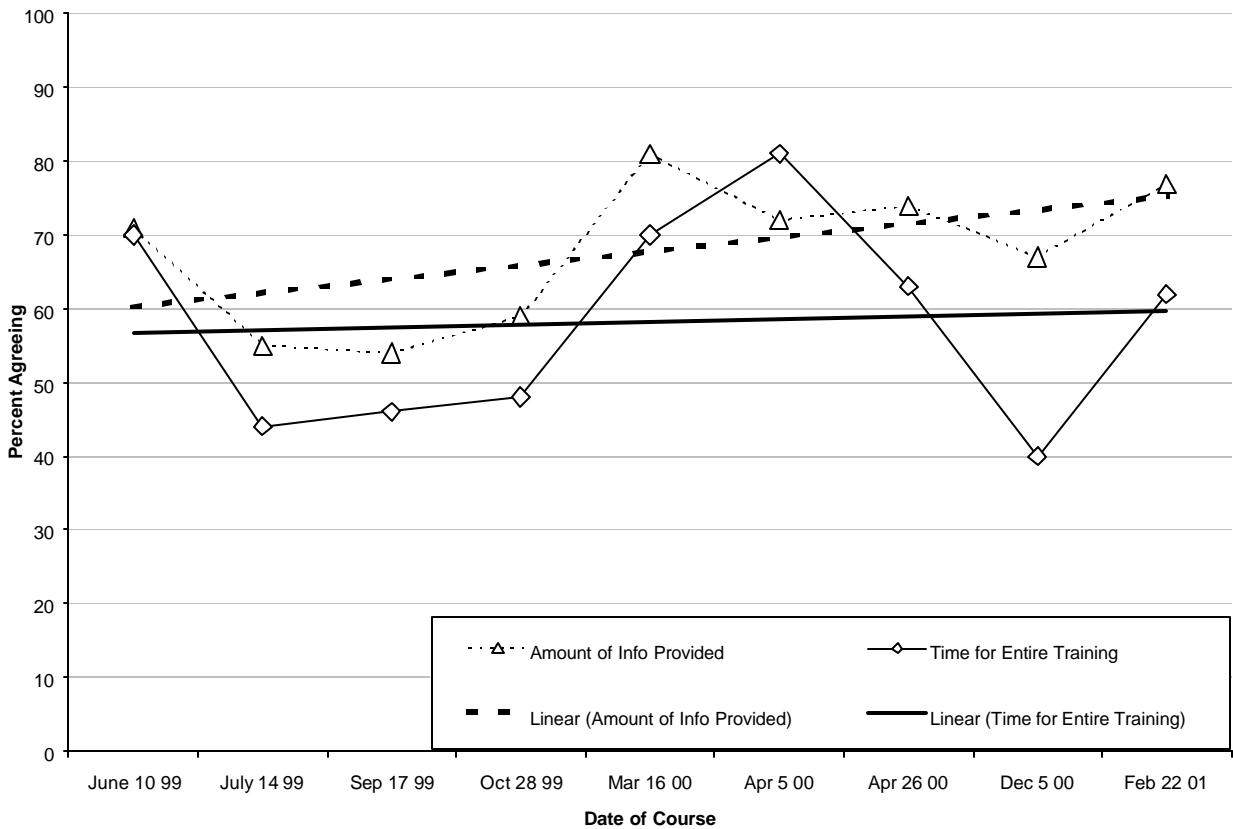
As we show in Figure V-5, from 65 to 94 percent of respondents agree, "The training used presentation methods that worked for me." And, with the exception of the last course, 77 to 97 percent of respondents agree, "The training provided useful handouts for future reference." The low agreement that handouts are useful (62 percent) may be an anomaly. However, it continues a decline in ratings starting in 2000.

Figure V-5. Handouts and Presentation Methods



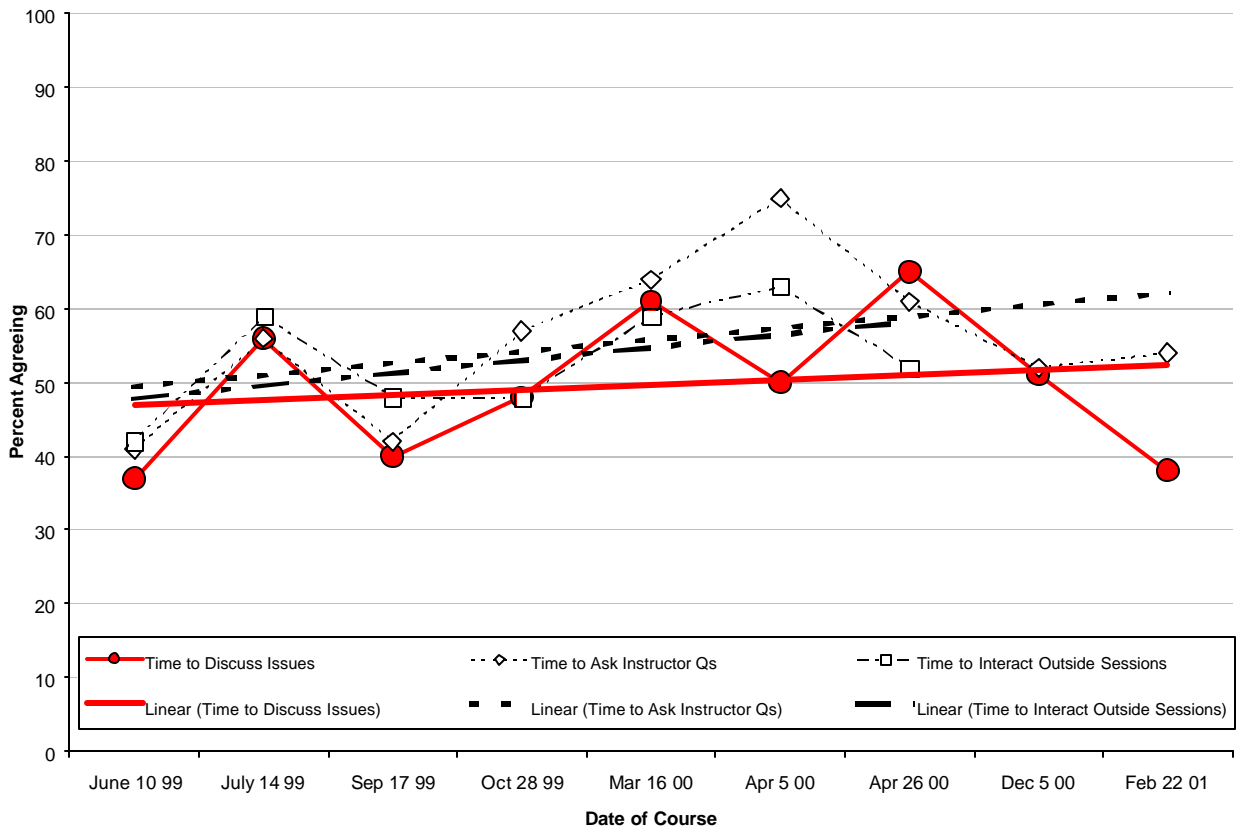
In Figure V-6 we show the percentage of respondents agreeing, "The training format was just right." From 54 to 81 percent of respondents agree, "The amount of information provided was just right." And, this trends upward over time. From 40 to 81 percent agree, "The time for the entire training was just right." While the trend line slopes upward over time, the agreement with this statement varies widely peaking in April 2000 and then plunging in December 2000.

Figure V-6. Amount of Information Provided and Time for Entire Training



In Figure V-7 we show respondents' agreement with three statements about the amount of time for specific learning activities. Their responses are among the lowest scores given to any aspects of the training, ranging from lows around 40 percent to highs of only about 70 percent agreeing that there was sufficient time to discuss issues with other attendees, to ask instructors questions, and to interact with instructors outside of sessions. Note that the agreement was lowest for "time to discuss issues," ranging from 37 to 65 percent (shown by heavier lines in the figure). The trend lines slope slightly upwards over time, but show that almost one-half of respondents do not agree there is enough time for learning about Cool Daylighting.

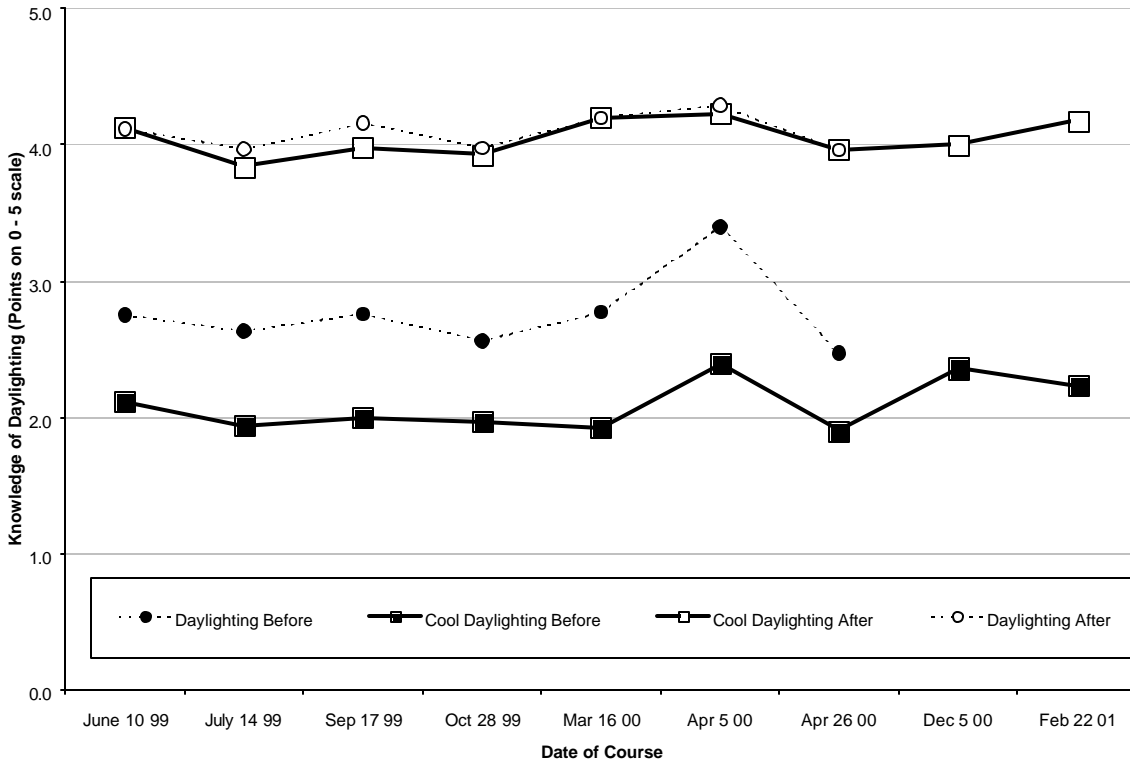
Figure V-7. Time to Discuss Issues, Ask Questions, and Interact



One of the most important sets of questions asks attendees to rate their knowledge of daylighting and Cool Daylighting before and after attending the training session. We present this information in two ways: first, the average pre- and post-training respondents' self-ratings, and second, the differences between these ratings, or their assessment of how much they learned at the training session.

In Figure V-8 we show attendees' mean before and after self-ratings of how much they knew about daylighting and Cool Daylighting.¹⁴ Clearly, respondents knew less about Cool Daylighting than about daylighting before the course. And, respondents mean ratings after the course were nearly the same for daylighting and Cool Daylighting.

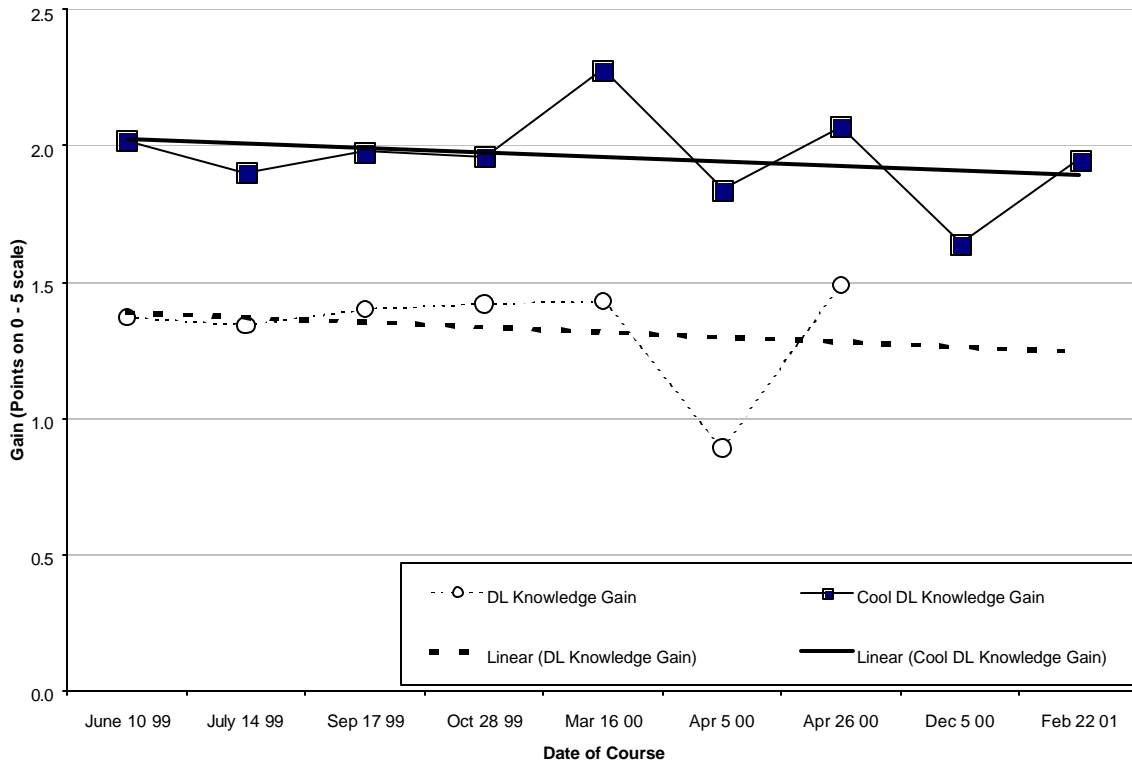
Figure V-8. Before and After Training Knowledge of Daylighting and Cool Daylighting



¹⁴ The questions about daylighting were dropped after seven training courses.

In Figure V-9 we show the gain in knowledge of daylighting and Cool Daylighting. These gains average 1.3 and 2.0 respectively (on a six-point, 0 to 5 scale).

Figure V-9. Gain in Knowledge of Daylighting and Cool Daylighting



2. Advanced Tools and Techniques of Cool Daylighting

Respondents were asked to give "grades" for each of four objectives and an overall grade for the training. They were asked to use a scale ranging from A to F. We have interpreted the graphs presenting the mean responses from seven (of eight) attendees at the April 18, 2000 training in DePere and sixteen (of 18) attendees in Madison. As we show in Table V-3, respondents' grades range from B (3.0) to A- (3.7).

Table V-3. Grades for Meeting Objectives and Overall Training (0 to 4 scale)

<i>How successful were we at . . .</i>	April 18 '00 (n=7)	April 20 '00 (n=16)	Mean
Providing you with the skills to develop customized daylighting strategies for your project?	3.2	3.3	3.2
Demonstrating the daylighting design tools available to you?	3.2	3.5	3.4
Teaching you how to select and use the appropriate daylighting design tools for your projects?	3.3	3.4	3.4
Enabling you to ensure appropriate HVAC sizing for daylight projects?	3.0	3.0	3.0
Suggesting ways to communicate daylighting concepts to building owners and other project team members?	3.2	3.7	3.4
Overall, how would you grade this training?	3.3	3.6	3.4

Next, attendees were asked to rate their agreement with five statements regarding the training content. The results are displayed in Tables V-4 and V-5. The ECW reports the percentage of those "agreeing" with each statement. For the April 18 course, agreement ranged from 57 percent to 100 percent. For the April 20 course, agreement ranged from 75 percent to 94 percent. Overall, the most respondents agreed that the course used teaching methods that worked for them (97 percent), provided information that they would apply at their workplace (82 percent), and covered information relevant to their business (80 percent).

Table V-4. Percent Agreeing with Statements Regarding Training Content

<i>The training . . .</i>	April 18 '00 (n=7)	April 20 '00 (n=16)	Mean
Addressed all the issues I though it would.	71%	75%	73%
Covered information relevant to my business.	71%	88%	80%
Provided useful handouts for future reference.	57%	94%	76%
Used teaching methods that worked for me.	100%	94%	97%
Provided information that I will apply at my workplace.	83%	81%	82%

As we show in Table V-5, from 17 to 100 percent of respondents felt different aspects of the training format were just right. The small number of participants at the April 18 training session (8 in total) led to the very low proportion of respondents (17 percent) agreeing that the number of training attendees is just right. The largest percentage across both courses (88 percent) felt the time to ask the instructor questions was just right. And, there was reasonable agreement on this from attendees at both courses (100 percent and 75 percent). However, more of those at the small course (83 percent) felt there was time to discuss issues with other attendees than those who attended the larger course (38 percent).

Table V-5. Percent Who Feel Training Format Was Just Right

	April 18 '00 (n=6)	April 20 '00 (n=16)	Mean
Amount of information provided.	33%	63%	48%
Time to discuss issues with other attendees.	83%	38%	60%
Time to ask the instructor questions.	100%	75%	88%
Time to interact with instructors outside of session.	50%	38%	44%
Time for the entire training.	33%	44%	38%
Number of training attendees.	17%	93%	55%

Participants in both courses knew a fair amount about Cool Daylighting coming into the advanced course, rating themselves as a 3.1, on a 0 to 5 scale. One-half or more of the respondents had attended earlier training courses on Cool Daylighting. Respondents reported significant increases in their knowledge of Cool Daylighting ranging from 0.8 to 1.2 points (mean from 3.1 to 4.1, on a 0 to 5 scale) by the end of the course.

3. Decision-Maker Luncheons

The internal evaluations of the luncheons and tours asked respondents how much they agreed with five statements about the luncheons and building tours. One question was changed for the fourth luncheon and tour.

As we show in Table V-6, nine (or more) out of ten respondents agreed with all five statements. (The one exception was the new question asked at the fourth luncheon. The wording of that question appears to have caused some minor confusion.)

- Ninety-five percent or more of the respondents found the lunch speaker(s) clear and effective, the event worthwhile, and the luncheon provided useful information.
- Eighty-seven percent or more of the respondents agreed the tour provided an effective demonstration and they learned something new about daylighting.

Table V-6. Percent Agreeing with Statements About the Luncheon and Tour

	June 27 '00 Phillips Plastic Corp. (n=38 of 50)	June 28 '00 Hoffman Corp. (n=11 of 13)	June 29 '00 Hoffman Corp. (n=24 of 26)	Mean (first three sessions)	Nov. 28 '00 Hoffman Corp. (n=31 of 42)
The lunch speaker was clear and effective.	97%	100%	100%	99%	100%
The event was a worthwhile use of my time.	89%	100%	96%	95%	93%
The luncheon provided information useful to me. The luncheon provided an effective demonstration of daylighting	89%	100%	96%	95%	86%
The tour provided an effective demonstration of daylighting.	87%	100%	90%	92%	100%
I learned something <i>new</i> about daylighting.	87%	91%	96%	91%	96%

The second set of questions ask respondents to rate their agreement / disagreement with several statements about daylighting in their organizations. Again, ECW staff used one set of four statements for the first three luncheons-tours and a different set of six statements for the last luncheon-tour.

As we show in Table V-7, while almost all respondents are enthusiastic about using daylighting, less than one-half of those in the first three sessions had used daylighting. In the fourth session three-fourths of respondents had used daylighting. (Note: that most respondents at the fourth session were from design firms.) Very few respondents (at the first three sessions) agreed with negative statements about daylighting. Most respondents from the fourth session agreed with four positive statements about daylighting.

Table V-7. Percent Agreeing with Statements about Daylighting in Their Organization

	June 27 '00 Phillips Plastic Corp. (n=38 of 50)	June 28 '00 Hoffman Corp. (n=11 of 13)	June 29 '00 Hoffman Corp. (n=24 of 26)	Mean (first three sessions)	Nov. 28 '00 Hoffman Corp. (n=31 of 42)
I am enthusiastic about using daylighting in our next building project.	86%	100%	95%	94%	na
My organization has used daylighting in past projects.	43%	44%	43%	43%	74%
I would not know where to begin to daylight our next building project.	19%	22%	10%	17%	na
Daylighting is not a feasible solution for my organization.	19%	0%	0%	6%	na
I expect to be involved in a building design project in the next 12 months.	na	na	na	na	82%
The benefits of daylighting would justify changes in our aesthetic design concept.	na	na	na	na	81%
I would make daylighting a high priority for [our] next building project.	na	na	na	na	81%
I am convinced that daylighting need not cost more.	na	na	na	na	75%

E. SUMMARY AND RECOMMENDATIONS

1. Effects of Focus on Energy Pilot Funding

Summary of Findings: In the Daylighting Collaborative manager's opinion, the additional funding for the Focus on Energy area has produced significantly greater results. Specifically, 75 percent of all Wisconsin activity has occurred in the Focus on Energy Pilot area and only 25 percent in the rest of the state.

Recommendation: The higher level of funding in the Focus Pilot area appears to have produced a disproportionate increase in results. This apparent effect should be considered in the strategic planning effort currently being conducted by the Daylighting Collaborative.

2. Second Look Design Assistance

Summary of Findings: The Second Look Design Assistance was valuable to the one architect and one owner we interviewed.¹⁵ The architect said that once contact had been made, the assistance was provided in a timely manner, made sense technically, and allowed the project to be completed within the client's original budget. The architect stressed that early involvement with the Daylighting Collaborative is important. It was difficult due to the modest size of this project to meet the HVAC equipment sizing guideline. The architect also commented that in his profession it is sometimes difficult to ask for advice. The owner (of another project) began working with the Daylighting Collaborative early and emphasized that of several green building concepts he wanted to incorporate, daylighting was the "easiest to do."

The Daylighting Collaborative manager noted one indication of the growth in interest in daylighting is the fact the Collaborative staff have heard of daylit projects about which they "knew nothing" during design and construction.

Recommendations: Collaborative staff should monitor new office and school building projects more actively. They should identify as many projects as early in the design phase as possible and offer their assistance. The Daylighting Collaborative must continue to stress timely and responsive service from its design assistance effort.

3. Review of Internal Evaluations of Daylighting Training

The internal evaluation scores for the Daylighting Goes Mainstream courses were below 70 percent positive ratings only for the amount of time allowed for the entire training, the time to discuss issues, and the time to interact outside sessions.

The internal evaluation scores for the two Advanced Tools and Techniques of Cool Daylighting courses gave the courses B to B+ grades for meeting objectives. Only three-fourths of attendees felt the course covered all the issues they expected and felt it provided

¹⁵ Of eight projects for which assistance had been provided, we had already interviewed two individuals responsible for three projects and we interviewed three other individuals involved in three other projects.

V. Daylighting Collaborative

useful handouts. Other scores were generally higher, with the best scores for "using teaching methods that worked for me." Respondents gave their lowest ratings to the amount of information provided and the time to interact with instructors outside the session and time for the entire training.

Attendees at the four Decision-Maker Luncheons gave high ratings to the luncheon talks and tours. Almost all respondents were enthusiastic about using daylighting on their next building project, even though only two-fifths had used daylighting before.

Recommendations: Collaborative training designers should provide more time for the entire training, for discussing issues, for asking the instructor questions, and for interacting with others outside sessions. The failure to allocate sufficient time for both the "mainstream" and "advanced tools" courses must be addressed to improve the effectiveness of the training sessions.

VI. PROJECT FACILITATION

A. OVERVIEW

During DSARE II, renewable energy vendors complemented the original facilitators—Franklin Energy and Asset Renewal Services—in supporting customers with interest in potential projects. The renewable energy vendors provided telephone and on-site consultations with homeowners and businesses.

B. FACILITATORS

1. Franklin Energy Services

Franklin Energy responds to inquiries about using renewable energy from customers in the 23 county Focus on Energy Pilot Program area. Inquiries are referred to Franklin from the Focus 800 Number, by the Division of Energy, by RENEW, by the Midwest Renewable Energy Association (MREA), and by others. Franklin provides information ranging from a general explanation of the DSARE program, to providing referrals to contractors, referrals to MREA or RENEW for a technical appraisal, to financing advice or a referral to Asset Renewal Services for more detailed financial facilitation services, to business plan development, to assisting with writing a proposal, and speaking to groups of interested residents or business people.

Franklin Energy logs all inquiries and contacts it makes in response to these inquiries. They combined their contractor and customer databases so they can more accurately track their involvement in every project.¹⁶

The engineer providing initial support for most renewable energy inquiries provided insights into the nature of the inquiries Franklin has received and characterized those that were most promising as DSARE 2 was coming to a close. The following points summarize his overall characterization of the inquiries Franklin has received:

- With leads coming from RENEW and MREA there are better opportunities to pursue projects with more potential.
- The recent inquiries have been "more realistic." Earlier inquiries [during DSARE 1] included callers with no idea of what they needed, and callers looking for 50 to 100 percent rebates. These have included fewer callers who heard of renewable energy from ad campaigns or mailings and knew nothing specific about their needs or about the capabilities of renewable energy systems.
- Under the statewide public benefits "major markets" program, there will be more flexibility to respond to potential renewable energy projects.

¹⁶ The Program Director provided the evaluator with a copy of the March 9 report for the months of January and February 2001. It included detailed project tracking reports listing all customer and contractor calls related to specific projects.

The engineer identified several current projects he considered more viable:

- An FAA radio transmitter at the Green Bay airport—this transmitter needs a "clean," highly reliable power supply for the electronic equipment located at the transmitter tower. It is currently connected to the grid and provided with a conventional engine-driven backup generator. There is interest in using renewable energy to meet Federal directives to use renewable energy. This project may be able to obtain some funds through a Federal Energy Management Program grant.
- A group of people in Plainfield is proposing installing a wood-fired boiler to provide heat to the school in Plainfield. There are tentative plans to double the size of the school. Many area residents are in the wood industry and they have lots of oak logs available. Scrub oak in the area is not used when logging softwood for the paper industry. They believe they have a 20-year supply of oak to fuel a new boiler for the school. The concept is that the school district will own the boiler and the people involved in cutting wood will supply a reliable source of fuel. There is some uncertainty on the future of this project because expanding the school depends on passing a public referendum.
- Chambers Island in Green Bay is the site of a Catholic retreat facility. The facility needs to reduce its energy loads and only operate its conventional generators to meet peak electrical loads. This is being driven by environmental constraints on the delivery of diesel fuel to the island that are increasing fuel costs significantly. A PV system with battery energy storage is being evaluated.
- A graphic arts firm in Green Bay is restoring an historic downtown building. They are considering a ground source heat pump, but face site limitations. These include a small land area adjacent to the building and no available ground water until a depth of 400 feet. The Wisconsin Geothermal Alliance is assisting with an evaluation. This was identified through a C & I audit that was done as part of the Focus on Energy program.

The engineer also noted that there appear to be more specific, well-defined needs driving these recent project inquiries. Those inquiring are more aware of energy concerns including fuel availability and cost; the FAA is concerned with clean, reliable power and federal directives to use renewables; and the retreat on Chambers Island needs electricity, but is closed each winter and does not need space heat. Being asked about renewable options to meet more clearly defined needs will shorten the time Franklin has to spend defining these projects. That may allow additional time to explore better renewable solutions.

2. Renewable Vendor Consulting

Six individual renewable energy consultants and vendors provided telephone and on-site consultations to potential customers who inquired about the feasibility of using renewable energy at their homes or businesses. These *consultants*¹⁷ responded to 22 different inquiries. The consultants were limited in how much time they could charge to the DSARE program for each consultation. Franklin Energy coordinated the consultations through RENEW and MREA. Franklin was able to provide a complete summary of the contacts made with each individual or firm that inquired and received assistance. The following points summarize the consultants' responses to interviews conducted in early July:

- All of the consultants offer some consulting services as part of their normal business. Most charge more for the consulting they provide on their own than they received for this telephone and on-site consulting. Some normally charge twice what they were paid by the program. Most said they spent more time working with these potential customers than they were paid for.
- Several of the consultants would spend more time up front to better qualify the people inquiring about renewables before providing an on-site consultation. This is one way they obtain customers and generally a fee of \$250 for a consultation stops those who are not serious. Some offer potential customers a discount on a renewable energy system equal to the consultation fee if the customer buys a system from them.
- Other consultants felt the people they worked with through the program were very enthusiastic and were good possibilities as future customers.
- Most consultants provide energy efficiency advice first. They began by determining the existing energy use (loads). Then they advise potential customers that reducing their energy loads is almost always more cost-effective than trying to meet wasteful loads with renewable energy systems. Of course, some customers may tell them, "We don't want an energy audit."
- Most of the consultants then complete a renewable site survey to determine what types and quantities of renewable energy are available at the customer's site.
- The next step was to discuss possible systems that could meet the loads left after improving energy efficiencies with the renewable resources available on an annual basis at the customer's site.
- Consultants had several opinions about the usefulness of this service. One said he is doing well on his own and the money for these consultations would be better spent to offer more installation rewards. Another was concerned that while subsidized on-sites are a "good thing," well-qualified people must provide this consultation. He was concerned that some third-party certifies anyone offering similar consultation services. Another consultant wanted several levels of support available to provide the different types of consulting assistance a customer will usually need in moving

¹⁷ We use the term *consultants* to include renewable contractors and technical consultants.

from scoping an opportunity, to verifying the potential and cost effectiveness of alternatives, to design and construction.

3. Asset Renewal Services

Asset Renewal Services (ARS) assists entrepreneurs needing capital and investors looking for good returns find each other and establish mutually beneficial arrangements. However, during DSARE 1 and DSARE 2 no projects have been funded with the tools made available.

The principal of ARS identified two, intertwined difficulties facing these efforts:

1. There is a lack of good renewable energy projects looking to attract investors; and
2. The tools available through DSARE 2 are not enough to make a difference to the projects that are available.

Most of the projects that ARS was able to identify or that were referred to them were residential. The residential projects were too small to attract investors. The larger scale projects that were identified could be financed by those exploring / proposing them. In addition, several projects were not practical enough to proceed. A final barrier was the downturn in the economy. Renewable projects were not part of the primary business and, as the economy weakened, few firms were interested in funding such projects.

The tools available through DSARE 2, such as the four percentage point buydown on loan interest rates for loans of up to \$500,000, were not of critical importance to the firms with possible projects. Generally the cost of capital is important only to very large corporations. It is not critical to entrepreneurs or small to medium-sized businesses. Compounding that difficulty is the fact that larger corporations will not go to a separate bank just to finance a renewable energy project.

Finally, of all the projects ARS tracked, making capital available would have possibly made a difference to only one. In general, offering lower cost capital does not overcome the most critical barriers faced by those interested in applying renewable energy.

An additional factor in testing financial facilitation in northeastern Wisconsin is that the market is very small and not too innovative. It is not more than one-quarter to one-third of the total market in Wisconsin. Furthermore, the small base in northeastern Wisconsin is not very entrepreneurial, not technologically driven, and it is very conservative.¹⁸ Thus it is difficult to find many people who want to try renewable energy in northeastern Wisconsin. In addition, there are not a lot of new technologies emerging from institutions located in northeastern Wisconsin. In Milwaukee and Madison there is more innovation. The primary industries in the northeast tend to be insular (pulp and paper) and many are fragmented (wood products). A

¹⁸ The characteristics just described are not those of "innovators" or "early adopters" as described in by researchers who have studied technological innovation.

statewide market might make some difference. Milwaukee, Madison, and the Twin Cities provide more innovation and venture capital.

C. SUMMARY AND RECOMMENDATIONS

1. Franklin Energy Services

Summary of Findings: Having more leads reaching the Franklin Energy as referrals from renewable organizations (MREA and RENEW) and fewer inquiries in response to general advertising means a greater proportion of leads seem more "serious" about using renewable energy. This conserves the project facilitator's valuable consulting time.

Coordinating the tracking of customer leads and contractor responses appears to enhance following up the better opportunities. While few opportunities have progressed to implementation, the project facilitator identified several current viable prospects.

Recommendations: Providing sources of qualified leads and continuing to improve the "customer relationship management" should capture more viable prospects for facilitation. The renewable administrator should consider supporting the expansion of the capabilities of trusted sources of information—such as MREA and RENEW—to receive and process initial inquiries. Then these "clearinghouses" would pass qualified leads on to the project facilitator.

2. Renewable Vendor Consulting

Summary of Findings: The renewable energy vendors offer consulting as a normal part of their business, and most charge more for their consulting than the DSARE program reimbursement. They use their fees to qualify potential customers who are serious about renewable energy and some offer to count the fee as part of the price if the customer proceeds with an installation. Consultants differed on how serious the customers referred to them for consulting were. Most consultants provide tips on improving energy efficiency first, and then on using renewables. Consultants had several opinions about the usefulness of this service. One felt the money should be used for the installation rewards. Another was concerned that anyone providing this consulting must have excellent qualifications. Another consultant recommended that different levels of support must be available to provide the different types of support customers need as they move from scoping an opportunity to verifying the potential and on to design and construction.

Recommendations: The program should continue to provide on-site consulting by experienced renewable energy vendors. The fees paid to the vendors should be reviewed, as should the possibility of charging the customers something for the service. The customer co-payment could be refunded if the customer proceeds with an installation.

3. Asset Renewal Services

Summary of Findings: The financial consultant noted that there is a lack of good renewable energy projects that need investors, and the financing tools available through DSARE 2 are not enough to make a difference to the projects that are available. Most of the projects referred to the consultant were residential applications and were too small to attract investors. The larger projects referred to him were being pursued by people capable of obtaining their own financing. And, several projects were not practical. Importantly, the downturn in the economy dampened interest in projects that were not a part of firm's primary business. The

VI. Project Facilitation

cost of capital is not important to any but the largest corporations. An additional factor in testing financial facilitation in northeastern Wisconsin is that the market is very small and not too innovative.

Recommendations: A statewide program will offer more potential projects that could benefit from financial facilitation. With a larger number and a greater variety of prospects, it should be possible to develop project screening tools that will identify projects with the best potential. These projects could then receive additional assistance.

VII. TRAINING AND EDUCATION

The training and education component of the DSARE 2 Program includes additional funding for two efforts the Wisconsin Division of Energy supported in the first phase of the DSARE Program. The first is training provided by the Midwest Renewable Energy Association (MREA) and the second is a grant management process administered by the Wisconsin Environmental Education Board (WEEB).

A. MIDWEST RENEWABLE ENERGY ASSOCIATION TRAINING

MREA offered seven residential renewable energy workshops to a total of 140 participants, provided workshop "scholarships" to reduce the cost for 17 residents of the Wisconsin Focus on Energy Pilot area, sponsored the three-day Midwest Renewable Energy Fair drawing 15,300 people from 49 states and 37 countries, is sponsoring the 2001 solar homes tour, developed five public service announcements for radio broadcast, delivered a renewable training session at the WEI-2 conference, and begin developing residential and commercial/industrial "renewable energy auditor certification" program.¹⁹

B. WEEB RENEWABLE ENERGY EDUCATION GRANT PROGRAM

1. Background

The Wisconsin Environmental Education Board (WEEB) provides cost-sharing funds for educational projects through both the WEEB funding process and through the Wisconsin K-12 Energy Education Program (KEEP). In September 1999, the WEEB brought their experience with the Energy Education Grant Program to the process of administering the Renewable Energy Education Grant Program and a parallel Energy Education Grant Program. The WEEB manages a regularly recurring, competitive grant program that issues solicitations for proposals, accepts and reviews proposals limited to an Application Cover Page Form, a two-page Narrative, and a one page Budget Summary Form. A minimum of a 25 percent matching contribution to the proposed project is required. The review panel checks proposals for technical completeness and evaluates the proposed activities for their merit as projects.

As shown in Table VII-1, since September 1999 the WEEB has conducted two grant cycles for the Wisconsin Focus on Energy Pilot area, two grant cycles for the statewide Public Benefits program, and made one additional award (from other WEEB funds) for Waunakee, which is served by a utility that is not participating in the Public Benefits program. During this period, the WEEB has supported 28 projects with these funds.

In the first two, parallel grant cycles a list of 373 individuals were mailed solicitations. The list was comprised of individuals who had previously applied for a WEEB grant (with an energy related proposal), were on the KEEP or Midwest Renewable Energy Association mailing list, or who were enrolled in the UW-Stevens Point Environmental Education Masters Degree

¹⁹ Please refer to the more extensive evaluation of the MREA renewable energy training workshops in the "Focus on Energy I Pilot Study: Final Evaluation of Demand Side Applications of Renewable Energy Program" August 10, 2001.

Program for Teachers. In addition, a press release for the 23 Focus on Energy Pilot area counties was distributed.

As a result of the first grants for the Focus on Energy 23 county pilot area, six renewable energy education and seven other energy education projects were conducted. While the WEEB had funded energy education projects as part of their annual \$200,000 environmental education grant program, the additional funding provided greater opportunities for citizens in the 23 Focus on Energy Pilot counties to participate in a variety of educational programs.

2. WEEB Staff Concerns

Staff from the WEEB noted that these grants allowed a short time (from mid-September to November 1, about six weeks) to prepare and submit proposals. The normal WEEB proposal solicitation allows individuals from mid-October until mid-January (about 13 weeks) to prepare and submit proposals. Further, the normal schedule allows teachers and school administrators to begin work on their proposals after the busy first weeks of the school year, and allows them time in December—while on break—to focus all their attention on preparing a proposal.

Further time limitations were placed on those awarded grants. Recipients had to complete their supported work between December 20, 1999 and June 1, 2000, less than six months. The normal WEEB environmental education cycle was 12 months and, more recently, was extended to 18 months to allow recipients to complete a project, close financial accounts, and submit a report. WEEB staff found that while recipients tried to complete their proposed projects within this timeline, many of the projects were not completely finished by June 1.

The limitations of a maximum award of \$5,000 and no more than 50 percent designated for capital items may have limited participation. Teachers and administrators know that energy equipment is expensive and they may have felt that the effort to apply was not worthwhile.

3. Observations on Timing of Statewide Focus on Energy Grants

Monies were again made available for renewable energy education and energy education grant in the spring of 2001. The notice of this grant opportunity was issued in March and the proposals had to be post-marked by May 19, 2001. This allowed about 11 weeks for teachers and administrators to prepare proposals. In addition, projects were able to start on July 1, 2001 and were to be completed until December 31, 2002. This allows grant recipients eighteen months to complete the funded projects.

Table VII-1. Funding for WEEB Energy Education Grants and KEEP

Funding Source	Grant Program	Amount to KEEP	Amount Available for Grants	Proposal Due Date	Grant Projects Start Date	Grant Projects End Date	Number of Grants Awarded
Wisconsin Focus on Energy (Pilot)	Renewable Energy Education	\$5,000	\$22,500	Nov. 1, 1999	Dec. 10, 1999	June 1, 2000	6
Energy Center of Wisconsin (Pilot)	Energy Education	\$9,284	\$27,000	Nov. 1, 1999	Dec. 10, 1999	June 1, 2000	7
Dept. of Admin. Public Benefits (Statewide)	Renewable Energy Education	\$13,500	\$22,500	May 19, 2001	July 1, 2001	Dec. 31, 2002	4
WECC Public Benefits (Statewide)	Energy Education	\$0	\$90,000	May 19, 2001	July 1, 2001	Dec. 31, 2002	10
Other WEEB Funds	Other (non Public Benefits)	\$0	\$13,268			NA	1

C. SUMMARY AND RECOMMENDATIONS

1. Midwest Renewable Energy Association Training

Summary of Findings: The Midwest Renewable Energy Association filled all the 2001 training workshops. In fact, some were overfilled, the Director felt that training quality suffered and MREA will strictly limit enrollments in future courses. MREA exceed its goal for public service announcements. Work on the renewable energy auditor certification program is proceeding on schedule.

Recommendations: MREA continues to deliver valuable support for renewable customers, dealers, contractors, and consultants. The Focus on Energy program should continue to support MREA activities.

2. WEEB Renewable Energy Education Grant Program

Summary of Findings: The Wisconsin Environmental Education Board (WEEB) has successfully developed procedures for and managed four solicitations for energy and renewable energy education grants. These grants supported projects proposed by school teachers and administrators in the Focus on Energy pilot area and across the state.

The Division of Energy imposed unrealistic timing of the proposal cycles and time limits for proposal submission and completing projects. These timing issues made submitting proposals and completing projects difficult in the first round of grants and submitting proposals difficult in the second round.

Energy equipment is expensive and the grant limitations did not provide sufficient funds. These limitations on the funds available and the cost-sharing requirements kept some teachers from submitting proposals.

Recommendations: The renewable administrator should continue to support renewable energy education grants through the WEEB. The administrator should work within the WEEB's normal time schedule for soliciting and receiving grant proposals and for recipients to complete the work on their projects.