

## 1.1.1 BUSINESS ENERGY SERVICES

In 2005, Efficiency Vermont helped Vermont businesses lower their annual energy costs by a combined \$3.4 million at 780 project sites. These efforts will reduce annual electric energy use by 27,394 megawatt hours (MWh), annual summer peak demand by 4,000 kilowatts and annual winter peak demand by 4,200 kilowatts. Over the lifetime of measures installed in 2005, these businesses are expected to receive, in energy cost savings, a 42% rate of return on their energy efficiency investments. Since Efficiency Vermont's 2000 inception, business-sector resource savings have reached a total lifetime economic value of more than \$115 million. (Lifetime economic value is defined as the present value of the electricity, fossil fuels and water that are saved over the lifetime of the efficiency measures.) Of the more than 787 projects completed in the Business Energy Services sector in 2005, 41% were prescriptive and 59% were custom. Percentages in 2004 were 41% prescriptive and 59% custom.

Savings realized in 2005 were the result of Efficiency Vermont's ongoing daily efforts to build awareness, maintain relationships and provide resources in a timely manner. Efficiency Vermont's efforts in this sector continued to include a range of technical, financial, educational, training and informational services designed to increase the use of energy-efficient equipment, design and construction approaches by Vermont's businesses. We conducted these activities directly with business customers and with the suppliers, tradespeople, manufacturers, distributors and design professionals who serve the business community.

We also continued our involvement with trade and business associations through a range of activities, including one-on-one engagement, presentation of training sessions, attendance at their meetings and trade shows and placement of articles and ads in their publications. Our regular, personal contact with and support of these market players was key to our success in strengthening the network of Vermont's increasingly knowledgeable service and product providers. This long-term effort also played a vital role in bringing about the business resource savings realized in 2005.

Discussions of activities and results in business submarkets can be found in ensuing sections of this report. Efficiency Vermont's 2005 market-wide business activities included the following:

- We strengthened our existing efforts to help Vermont's colleges and universities realize the energy-saving opportunities particular to this market sector. Discussion of this effort can be found in the "Targeted Markets" section of this report.
- We saw positive results of our partnerships with the State Department of Economic Development and the 12 private economic development organizations throughout Vermont. This was our second year of a drive to support business recruitment, retention and expansion within Vermont. Due to our relationships with these entities, we were included as part of the economic development teams that met with new and potential Vermont businesses. In a successful effort to draw a manufacturer to our state rather than to New York, for example, we were presented as a resource unique to Vermont. We also were able to engage business owners prior to their moves into their business spaces, resulting in energy-saving facility upgrades.
- We launched the Facility Operational Efficiency Initiative, designed to ensure that systems in new or existing buildings are designed, installed, operated and maintained to optimize energy performance. This included the following elements:

- We created the document *Commissioning for Better Buildings in Vermont*, scheduled for 2006 distribution. This publication defines commissioning and covers the critical elements of this quality-management tool for the designers and owners of commercial buildings and schools.
- We established a pilot partnership with Hallam Engineering and Kilowatt Partners to explore the feasibility of energy savings through no-cost and/or low-cost efficiency improvements in existing buildings, using a performance-based fee structure. This effort is designed to optimize facility energy-management systems through assessment of current building systems operations and improved training of facility staff.
- During the public comment period of the State's process of identifying an administrator for Efficiency Vermont's next contract period, we became aware of 14 letters of concern regarding our performance. We seized this as an opportunity to improve our service to and communication with the business sector. The Vermont Public Service Board requested that we obtain feedback from three of these letter writers. However, we personally contacted all 14 to hear their thoughts on ways that we could better serve them. Ensuing discussions proved to be very positive. We presented our findings from these discussions to the Board and to the Vermont Department of Public Service.

In 2005, RLW Analytics and KEMA Incorporated, in its *Phase 2 Evaluation of the Efficiency Vermont Business Programs*, reported the following key findings about our service to this market. Relative findings are compared with evaluations performed in 2002. Wording in brackets is added by Efficiency Vermont for clarity.

- Efficiency Vermont has done a very good job of recruiting into the program customers in the targeted markets, as well as supply side actors, and of encouraging their ongoing participation in the program.
- Among architects, indicators of energy-efficient practice advanced strongly.
- For engineers, use of commissioning increased sharply.
- Among equipment suppliers, sales of less well-established efficiency technologies began to take off.
- Efficiency Vermont played a strong role in overall design for the (new construction) projects in which it was involved
- Efficiency Vermont exercised a high level of influence on the majority of [new construction] sample shell and lighting installations.
- A large number of engineers and architects reported increasing their use of energy efficiency measures over the two years prior to the evaluation.
- A majority of architects and engineers who reported increased use of energy efficiency measures indicated that Efficiency Vermont played a role in that change.
- In many instances, [electrical] contractors attributed high importance to Efficiency Vermont in regard to promoting new energy efficiency measures.
- [Electrical] contractors believe Efficiency Vermont is doing a good job in promoting high efficiency technologies.
- [Equipment] suppliers believed that the availability of Efficiency Vermont rebates greatly facilitated sales of high efficiency equipment.
- Many [equipment] suppliers changed practices in regard to recommending efficient equipment due to the availability of rebates.
- Customers' assessment of the quality, timeliness and professionalism of Efficiency Vermont services was almost universally excellent.

- Customers value Efficiency Vermont's technical services and report that those services are responsible for much of the overall program effect on measure implementation.
- Contractors and suppliers both report that Efficiency Vermont has influenced them to increase the frequency with which they recommend, specify and sell energy-efficient equipment.

## EXISTING BUSINESS FACILITIES

Efficiency Vermont served business operators who successfully replaced equipment, upgraded their processes or renovated their buildings at 643 project sites in 2005. This represents a 4% increase over the number of businesses served in 2004. Our services to this diverse market continued to include prescriptive incentives for businesses, contractors and suppliers, as well as a range of customized services. These custom services included technical analysis, cash flow analysis and financial incentives, as well as partnering with third parties providing design assistance and with financial institutions to help businesses obtain custom financing.

Notable activities as well as new and expanded efforts in 2005 included the following:

- In cooperation with Northeast Energy Efficiency Partnerships, Burlington Electric Department and Vermont Gas Systems, we continued to support the presentation of Building Operator Certification training on energy-efficient equipment and indoor air quality. The 25 attendees included school, college, municipality, hospital and private company maintenance staff.
- We provided 85 walkthrough energy audits for small commercial customers. This was the first year that we provided this service.
- In support of our trade partners, we increased the number of our web-based listings of companies serving this market. These lists include electrical contractors and suppliers, heating, ventilation and air conditioning (HVAC) contractors and suppliers, motor suppliers and refrigeration contractors.
- In addition to regular, personal visits to more than 30 commercial electrical suppliers, we conducted site visits to sales personnel to help increase their sales of efficient equipment. This effort included our providing information – for their use with customers – about Efficiency Vermont services, as well as our gaining a deeper awareness of their product lines and supply networks.
- We initiated an effort to improve our ability to help industrial businesses to install and optimally operate energy-efficient technologies. Through this effort, we investigated and identified key technologies that have common application across different sectors of the large industrial customer market, such as compressed air, injection molding and pumping. We then provided our staff with the training and resources needed to enable them to talk with customers and trade partners about efficient approaches to these processes.
- We saw the local impact of our regional and national efforts to increase availability of and demand for Super T8 fluorescent lighting in Vermont. This effort, conducted through relationship building with manufacturers, suppliers and distributors since 2000, came to fruition in 2005 when the degree of local availability of this technology reached levels sufficient to enable us to replace standard T8 lighting in our prescriptive incentive form with Super T8 lamps and ballasts. Vermont was the first state in the nation to take this action. The potential for energy savings through this technology in Vermont is considerable.

- After the first full year of implementation of our Financing Solutions service, commercial efficiency measures that received Efficiency Vermont's full economic analysis were at least 20% more likely to be installed than those not receiving such analysis. Of the 32 financing offers that we made to businesses, 18 were accepted, with 14 of these projects reaching completion in 2005. To improve this service, we developed a calculation tool to better enable us to evaluate the cost-effectiveness of a package of efficiency measures. The calculation tool included a cash flow analysis component that allowed for a more strategic application of incentive funds to overcome first-cost barriers to installation.
- In our second year of implementation of enhanced personalized services to trade partners, associations and businesses with high potential for energy savings, we expanded our efforts to include more than 140 entities. This approach assigns a single point of contact for customers, thereby preventing customer confusion and providing more efficient and effective service. The 140 entities served in this effort include more than 25 of Vermont's largest electricity users, as well as business associations, design professionals, contractors and suppliers. In 2005 we began work to expand our account management protocols to all 70+ commercial and industrial businesses in the state that have a peak load of 1 MW or more. This effort entailed regular contact with customers, with an aim to understand their particular approaches, players and decision processes connected to equipment and facility upgrades. In support of this expanded service, we established database protocols to enable easy recognition of companies under account management so that all staff can promptly connect customers with their Efficiency Vermont representative.
- To improve customers' experience with the prescriptive incentive process, we instituted a change in update protocols for application forms. We limited frequency of changes to once a year to provide greater clarity and ease of use for customers.

## BUSINESS NEW CONSTRUCTION

In 2005, Efficiency Vermont helped to lower energy use at 137 business new construction sites by utilizing energy-efficient design, construction and equipment. 131 of these projects were completed in 2005, while 35 had signed contracts for completion beyond 2005.

To acquire these savings, Efficiency Vermont continued to work with businesses, design professionals and construction tradespeople to provide plan and design review, energy analysis, financial incentives and informational resources. These services continued to be conducted with an aim not only to increase the use of efficient methods but also to increase the availability of high efficiency products and to support and inform the construction community.

Activities in service to this market during 2005 included the following:

- To increase the skills and knowledge of design professionals, we presented an all-day workshop on the design and construction process for achieving integrated high performance commercial buildings. This event drew approximately 70 attendees.
- We supported the effort underway by the Commercial Building Energy Standard working group, led by the Vermont Department of Public Service with support from the U.S. Department of Energy (DOE), Burlington Electric Department, Vermont Gas Systems and members of the design and construction community. This effort, funded in part by a DOE Code Grant with matching support from Efficiency Vermont, developed the new *2005 Vermont Guidelines to Energy-Efficient Commercial Construction*, which is based on a modified version of the 2004 International Energy Conservation Code. This is the first time that

Vermont has a single, integrated document rather than a set of Vermont amendments attached to a national codebook.

- In partnership with the American Institute of Architects (AIA):
  - We co-organized a walkthrough showcasing a renovated hall at Vermont Law School. Approximately 80 design professionals participated in the event. The project highlighted best practices in energy efficiency and sustainability applied to renovation and historic preservation. We also assisted AIA in a walkthrough of the newly constructed Winooski Downtown Redevelopment project, with approximately 40 design professionals in attendance.
  - Efficiency Vermont attended AIA's professional summit bringing together all the building-professional organizations in the state. A notable outcome was the coordinated establishment of regional centers, at host design firms, where numerous small firms can gather for Efficiency Vermont training sessions and other information-dissemination events. This expands our ability to reach the typically small firms operating in Vermont, while improving our operational efficiency.
  - After our 2004 development, with AIA, of the *Vermont High Performance Design Guide*, we identified a need for a similar guide for building owners. In 2005, we worked with AIA to create the *Owner's Guide to High Performance Buildings*. At the close of 2005, 5,000 copies had been printed in preparation for distribution.
- In-state and out-of-state design communities, utilities and energy efficiency organizations expressed great interest in our publications. We distributed more than 2,000 copies of the *Vermont High Performance Design Guide* and more than 1,500 copies of the *Energy Benchmark for High Performance Buildings*.

## TARGETED MARKETS

In 2005, Efficiency Vermont continued to target specific market areas that have unique opportunities for reducing energy use and energy costs. Because these targeted market initiatives include activities within existing and new business facilities, the project work that resulted from these efforts is integrated into the existing and new facility work described above. The following discussion highlights Efficiency Vermont's notable targeted activities undertaken in 2005.

### *Colleges and Universities*

Efficiency Vermont began implementation of this new initiative, which is designed to provide resources and information to faculty, staff and students, with an aim to motivate energy-efficiency investments. We worked with 12 of the 25 colleges and universities in Vermont to reduce their combined annual energy costs by \$182,000. Toward this end, we actively partnered with Vermont Campus Energy Group, an organization funded through a Rebuild America grant. By coordinating our activities with VCEG, we were able to leverage the resources of each organization and provide a more comprehensive level of service to this market sector than it could have received from either organization separately.

To increase awareness of the benefits of energy efficiency and of Efficiency Vermont's services, we supported and participated in a technical seminar sponsored by the Vermont Campus Energy Group for college and university facility staff. Feedback was highly positive from among the approximately 65 attendees.

## *Dairy Farms*

We worked with 85 dairy farmers who will save an estimated \$67,000 in annual energy costs as a result of the energy efficiency upgrades completed in 2005. To expand financing options for cost-effective efficiency upgrades, we established a partnership with Yankee Farm Credit. This arrangement, prompted by feedback that we actively pursued as part of our aggressive statewide campaign of personal interactions with farmers, will provide greater loan options.

We completed our updating of promotional materials for this market sector and placed ads twice monthly in a statewide publication serving dairy farmers. A member of our staff appeared on the Vermont television call-in show “Across the Fence” and made contact with farmers through farm shows, expositions and meetings of organizations serving farmers.

In recognition of our effective service to dairy farmers, the American Council for an Energy Efficient Economy identified Efficiency Vermont as an Exemplary Program and asked us to present information about our success at a national conference on energy efficiency in agriculture.

## *Multifamily Housing*

Efficiency Vermont reduced annual energy costs by a total of \$415,000 in 1,622 multifamily housing units. Last year, 522 new multifamily housing units in Vermont received 5-star ENERGY STAR® ratings. This was the highest number of annual rated units of any year since Efficiency Vermont’s inception and placed Vermont second nationally for market share of ENERGY STAR rated multifamily units built in 2005. We have seen positive results of our efforts to promote advanced technologies such as heat recovery and foam insulation. Feedback and field practices show increased acceptance of spray foam as a good tool for strategic air sealing and insulation. Its use is increasing and we are being relied upon to conduct reviews before plans go out to bid. The use of multiport ventilation is also more common, compared with 2004.

As a result of our years of personal involvement with housing developers and our ongoing efforts to anticipate and respond to market changes, we were able to take advantage of two notable opportunities to enhance our service to this market sector:

- Using census data and speaking to private investment rental-property owners with whom we have ongoing relationships, we conducted a campaign to deepen our understanding of barriers to participation in the private rental market. In addition to our achievement of this aim, the process resulted in new relationships with associations of private property owners in the Barre, Rutland and Brattleboro areas. We conducted presentations to these associations as part of our effort to capture greater savings opportunities in privately owned facilities at the time of rehabilitation or sale.
- As the trend toward building larger multiunit developments continues, largely in Chittenden County, developers with whom we have worked on smaller-scale projects are increasingly moving into larger-scale efforts. Because of our existing relationships with these developers, we are able to be involved early in their new efforts, thereby enabling them to apply their knowledge of ENERGY STAR standards to larger buildings and to capture increased savings. It has been heartening to note these developers’ continued commitment to efficiency as they expand their scope, as evidenced by their turning to us as a resource and by their incorporation of ENERGY STAR approaches into their larger projects as a matter of course.

## *Schools*

In 2005, Efficiency Vermont worked with 41 Vermont K-12 schools to reduce annual energy costs by \$170,000. Notable efforts and results included the following:

- In addition to ongoing technical assistance services, we launched a grant initiative to defray the cost of scope-of-work studies done by architects or engineers as the initial step in an energy efficiency project. These grants, provided to schools, will cover 50% of the engineering cost, up to a maximum grant of \$1,000. This approach helps overcome participation barriers by defraying some initial costs. Offers have been made to 10 schools; two are under agreement.
- We enhanced our efforts with our ongoing partner, the School Energy Management Program (SEMP), whose main scope of work continued to be walkthrough assistance. In 2005, we introduced quantifiable performance goals regarding project development. SEMP interacted with 50 schools.
- We continued to coordinate with and support the efforts of the Vermont Energy Education Program (VEEP) to obtain leads on energy efficiency opportunities in school facilities and to encourage student participation in energy efficiency improvements in their schools. At the request of school districts, we began work with VEEP on three green schools projects. We also worked together to provide educational demonstrations at community-based energy efficiency events.
- We joined the Vermont High Performance Schools Initiative, which is a partnership of more than 17 organizations and groups with a common aim to create high performance school buildings.
- In cooperation with the Vermont Department of Education, Vermont Superintendents Association and the Vermont School Boards Insurance Trust, we continued to gather and organize data from the statewide school energy survey (launched in 2003 through this cooperative team). In 2005, we engaged a subcontractor to accelerate this effort. Approximately 100 schools had completed the survey by the end of 2005. This data is being used to determine current energy use and to educate school staff about areas of prospective improvement. By having a better picture of the conditions existing at schools across the state, we will be better able to target our services to meet their needs.
- We continued outreach to market decision makers through attendance at conferences and annual meetings of school boards, superintendents and custodians. At the request of school boards and architects, we attended school board meetings and town meetings to help answer questions about efficiency measures and about the benefits of energy efficiency. We also attended a workshop of the Vermont School Boards Insurance Trust.

## *Ski Areas*

This year, we worked with 11 ski areas to reduce their energy costs by a total of \$970,000 per year. Ski areas continue to present significant opportunities for energy savings in commercial, residential and industrial applications. Our ongoing partnerships with ski resort operators and with the Vermont Ski Areas Association (VSAA) have been vital to our ability to support this key Vermont industry's business objectives, while helping to fulfill resorts' commitment to energy efficiency and environmental stewardship. 2005 market activities included the following:

- By successfully promoting the use of low-energy snowmaking guns, we helped ski areas to increase the efficiency of their snowmaking systems. At the close of 2004, Vermont ski areas

were using a total of 865 low-energy guns. In 2005 alone, resorts purchased a combined 762 low-energy guns.

- Efficiency Vermont helped a major resort promote the environmental benefits of its energy-efficient efforts through the creation and prominent placement of educational signs in gondolas. These highly visible signs have prompted interest from other resorts in similar promotion.
- We continued to place great emphasis on maintaining our strong working relationship with VSAA, which in turn continued to urge its member ski areas to evaluate their energy use and to implement cost-effective energy efficiency improvements. We upgraded our 2005 VSAA membership level, attended association events and placed informational articles in VSAA's newsletter, thereby increasing our visibility both in person and in publications. At the VSAA's 2005 annual meeting, we introduced Efficiency Vermont's technical brief providing in-depth information on reducing energy use at ski areas.
- We expanded our efforts to encourage a comprehensive focus on all resort energy use, including commercial, residential and industrial applications. To capture opportunities among regional condominium builders without connections to Vermont trade associations, we provided these builders with complimentary entry to our Better Buildings By Design Conference.

### *State Buildings*

Our staff worked on energy efficiency projects in 18 State buildings in 2005, which are expected to lower annual energy costs by \$100,000. As part of our ongoing efforts to increase energy efficiency in new construction, renovation and equipment replacement in all State buildings, Efficiency Vermont further increased its engagement with the Vermont Department of Buildings and General Services (BGS). We met with BGS engineering teams and facilities managers, as well as district facility managers and procurement staff, and provided technical information and assistance on both a collective and individual basis. The positive impact of our efforts is evidenced by our increased inclusion in BGS project and planning efforts as a matter of course, including the following:

- To strengthen our ability to engage early in the process for new construction projects, we worked with BGS in the development of its contract requiring State projects to involve Efficiency Vermont before projects are finalized and go out to bid. The document recognizes the importance of energy planning and of working with Efficiency Vermont early in the process.
- To aid the State in performance contracting, we assisted BGS in its review of bids from energy-service companies for a State facility performance contract.
- To enhance energy efficiency awareness and knowledge among State staff involved in new construction, we provided them with complimentary registration to our Better Buildings By Design Conference.
- We assisted in negotiation of a State contract with a lighting distributor to include energy-efficient equipment.
- We provided input to the State Agency Energy Plan.
- We provided support in the implementation of a Rebuild America grant received by the Vermont Department of Public Service for State building audits. We attended site visits, provided data to energy auditors and accompanied them on audits.

























































































































































