

\$Two Billion and Counting: A Behind the Scenes Discussion on How Focus on Energy Has Successfully Impacted the Wisconsin Multifamily New Construction Sector

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ABSTRACT

The multi-family sector is often a “lost opportunity” due to its dual nature of residential and commercial features. This paper provides information about Wisconsin’s Focus on Energy Apartment & Condo Efficiency Services New Construction (ACES NC) program and a “behind the scenes” look at the development and utilization of the new ACES NC Multifamily New Construction Best Practices Guide.

Focus on Energy is the state of Wisconsin’s public benefits fund. Focus on Energy’s ACES NC program has provided technical and financial assistance to over \$2 billion worth of multifamily new construction projects in Wisconsin over the last three years. This paper discusses the ACES NC strategic approach and program structure.

To strengthen program participation and reduce cost per kilowatt, the ACES NC program is writing a Multifamily New Construction Best Practices Guide for Wisconsin (Guide). The Guide includes design principles, specific technical recommendations and case studies to illustrate cost-effective implementation of energy efficient and high performance green building technology. This paper discusses the Guide’s contents, its research and writing process, intended audiences and program strategies for implementation.

This paper outlines how the ACES NC program transforms the Wisconsin multifamily sector through education and technical support. The authors discuss how the ACES NC program uses the Best Practices Guide to increase program impact, energy savings and peak demand reduction. Lastly, the paper evaluates the Guide as a tool to enable the ACES NC program to transition out of the market when the program ends.

Introduction

Since 2002, the ACES NC program has been working with multifamily construction industry professionals to promote the use of energy efficiency and renewable energy. Although successful relationship building efforts during the first years of the program yielded energy savings, the program affected a relatively few number of projects at a relatively large cost to achieve savings. The first years of the ACES NC program can be categorized as program staff developing relationships with multifamily new construction industry professionals and achieving energy savings on a measure by measure basis. The investment in relationship building over the first years of the ACES NC program yielded dividends by providing program staff access to projects early in the planning process—a necessary element to achieve whole building energy savings due to the lead time of typical new construction projects.

During FY2004 and FY2005, the ACES NC program gained more acceptance in the multifamily new construction industry and provided technical advice to a requisite number of projects. During this time, the program developed an “institutional memory” about measures

that provided cost effective energy savings over a wide range of opportunities in multifamily applications. With this institutional memory, the program is promoting a series of cost-effective energy efficiency and renewable energy recommendations through the publication of *Design & Build for Energy Efficiency: Multifamily New Construction Best Practices Guide (Best Practices Guide)*. The *Best Practices Guide* marks a transition for ACES NC program from relationship building to new construction design modeling of individual projects to best practices recommendations for the multifamily sector in general.

Behind the Scenes of the ACES NC program

The ACES NC program targets multifamily industry professionals to meet with owners and developers and their construction teams to discuss a project's goals and objectives. Depending on the timing of the project, the ACES NC program can provide technical assistance and evaluate energy savings opportunities on the following aspects of multifamily building construction:

- Building envelope/orientation
- Mechanical/HVAC equipment
- Water heating equipment
- Lighting
- Appliances
- Equipment commissioning
- Renewable opportunities
- Tenant education

Incentives are available on a case by case basis and are supported by the estimated amount of energy saved, estimated payback periods, types of technologies installed and recommendations from staff or consultants.

The ACES NC program used FY2003 to reach out to more developers, influence more projects and achieve greater energy savings. As ACES NC program staff members were able to establish relationships with key contacts in the multifamily new construction industry, they often found that current projects were “too far along” to benefit from certain design assistance, such as building orientation consultation, which requires early involvement. Instead, the ACES NC program provided technical recommendations for measures that they were still able to influence, such as lighting or appliances. Although the investment in relationship building yielded energy savings benefits in FY2003, the ACES NC staff found that they were behind the curve on many projects—the program missed out on many energy savings opportunities from potential participants due to limited resources and staff. As a result, ACES NC staff began to consider the idea of a Best Practices Guide--a document that would capture the institutional memory of the program and be distributed widely to audiences that were not cost effective to reach.

The investment in relationship building began to pay additional energy dividends in FY 2004, as developers that ACES NC staff had worked with in previous years started to plan for additional future projects and were willing to include ACES NC staff earlier in the planning process. However, many developers were still not aware of ACES NC and as a result, there were still many projects where ACES NC staff were involved too late to affect certain elements of the design process. Although outside engineering support was still utilized, ACES NC staff

recognized that certain energy efficiency recommendations could be made in many instances. During this time, the program gained some of the necessary experience and energy efficiency recommendations to create a Best Practices Guide.

The ACES NC program continued to provide new construction design modeling in FY2005. By this time, the ACES NC program staff had compiled enough institutional memory to provide some recommendations to use outside consultants sparingly. Outside consultants were still used to provide energy modeling services for some projects, depending on project complexity and staff work load. ACES NC program staff compiled information about cost effective energy efficiency measures over the past three years for the Best Practices Guide.

Interest in the ACES NC program continues to increase and the ACES NC staff is providing energy efficiency and renewable energy advice earlier in the planning process for many projects. Interest from the multifamily new construction industry surged during FY2006 to over 60 active projects for the ACES NC program due to previous program successes, word of mouth and targeted outreach efforts. The program brought on staff members with different qualifications to address the more complex and interrelated issues surrounding multifamily buildings including making the business case for sustainability, LEED Green building rating system® and in-house professional engineering support. The program was therefore able to perform energy modeling in house, reducing the cost per project when needed. Energy modeling is now reserved for larger, more complex projects. ACES NC staff will distribute and promote the Guide throughout eligible territories. Many smaller projects will only receive the Best Practices Guide, details of which are discussed below.

The table below illustrates the program’s transition from an emphasis on establishing relationships with multifamily new construction industry professionals and providing custom energy modeling services for a small number of projects to influencing a larger number of projects at less cost with a Best Practices Guide.

**Making the Multifamily Market:
ACES NC Energy Savings & Incentives from FY2003 to FY2006**

Fiscal Year	Number of different projects receiving technical and/or financial assistance	Average cost of technical assistance to program	kWh savings	therm savings	Average incentive per project to developer
2003	20	\$18,000	367,748	82,672	\$10,775
2004	28	\$ 8,000	1,050,000	73,000	\$ 4,877
2005	21	\$ 2,000	1,178,978	51,163	\$ 5,478
2006	62	<\$2,000	1,450,000 (projected)	109,000 (projected)	\$ 2,790

Source: Focus on Energy Annual Reports 2003-2005, internal reports, discussions with staff

The table demonstrates that, despite a trend of smaller average incentives, the ACES NC program has been able to achieve greater energy savings and collaborate with greater numbers of projects over time. The calculations above are based on engineering calculations using commercially available software (e.g. DOE-2). Energy savings are specific to each year—in order to be counted as energy savings during any given year, a project has to complete during the fiscal year in which the energy savings are claimed.

The next section will discuss the Best Practices Guide and the ACES NC strategy to use the Best Practices Guide to continue to affect greater numbers of multifamily projects in Wisconsin using less resources per project (both in staff time and financial incentives). Ultimately, the goal of the Best Practices Guide is to accomplish both marketing promotions and serve as a technical resource for the program. The Best Practices Guide is being rolled out in June 2006, to coincide with the start of the Focus on Energy fiscal year 2007.

Multifamily New Construction Best Practices Guide for Wisconsin

The multifamily sector is unique in that it comprises design strategies for both residential and commercial spaces that work together simultaneously. A designer cannot simply apply recommendations for energy efficient design recommended for one or the other. Research documents that owners and other decision-makers in this market, and in general, do not often respond to environmental messages encouraging attention to energy efficiency; owners in this market often need a direct and focused message based on the economic benefits of energy efficient design.¹

Therefore a specific strategy of the Best Practices Guide is to support existing efforts/brands and programs already in the marketplace as well as provide design and performance recommendations specific to the multifamily sector and potential economic benefits. A secondary focus included providing the end-user with information they wanted to hear rather than providing just what we wanted share with them. This necessitated including information and messaging on sustainable design in addition to the efficiency recommendations.

Using these strategies, the Best Practices Guide works to:

- Reduce potential confusion by utilizing existing resources
- Provide a cohesive message when conducting outreach to the multifamily sector by addressing economic, technical and environmental information and recommendations
- Provide specific performance recommendations to move beyond the WHY to the HOW

The Best Practices Guide utilizes the Advanced Buildings Benchmark as its technical recommendation basis and draws from the Advanced Lighting Guidelines. It also seeks to promote use of the LEED™ and ENERGY STAR® efforts for goal setting and benchmarking.

Project approach. This project posed the unique challenge of producing a multifamily buildings guideline that targets both the project developer and building design and construction team.

When communicating with project developers, basic business models used in the real estate industry should be emphasized. Building developers are interested in positive economic and market impacts. The design team needs specific design strategies, performance recommendations and specification to deliver those economics and market impacts to their clients.

Since the Best Practices Guide addresses one specific building type, the program is able to take a hybrid approach that could effectively meet the program needs within a cost-effective

¹ Determined through secondary research and field interviews with multifamily developers in the Wisconsin market.

budget providing both technical recommendations and why-do rationale. The Focus on Energy ACES Program will benefit in the following ways:

- One document is produced to support the multifamily program
- The document is comprehensive and user-friendly, with content tailored for each target audience
- Technical content is based on the nationally reviewed Advanced Buildings Benchmark and Wisconsin project experience
- Case studies of Wisconsin projects illustrate the market attractiveness of building high performance multifamily buildings

This approach creates a Best Practices Guide targeted to two audiences: multifamily building design team and developers. Each part contains case studies to emphasize the points presented in each section. Technical recommendations will fall under owner/developer, architect, engineer (including civil, structural, HVAC, electrical and plumbing) and contractor. In addition, the technical information is formatted in a simple format that identifies the item, component, recommendation and where to find how-to information on applying the technology to a project.

Using the Best Practices Guide to support outreach efforts/program recruiting. Each section of the Best Practices Guide will be highlighted with sidebars and examples aimed at making a convincing case to multifamily developers to build high performance. Examples will include:

- Case studies of previous new construction design/technical assistance for multifamily buildings
- Testimonials from multifamily building developers
- Economic examples for multifamily building projects
- Design process testimonials from design teams
- Examples of commissioning multifamily buildings highlighting benefits
- Technical examples including building orientation, building envelope, mechanical, lighting, solar hot water and green features
- Links to Focus on Energy, ENERGY STAR and LEED programs

The Best Practices Guide will assist program implementers and field technical staff by providing links to:

- ASHRAE's Advanced Energy Design Guide
- USGBC's LEED 2.1 and 2.2
- US Environmental Protection Agency's ENERGY STAR brand
- Regional Market Transformation Programs in the Northeast, Midwest, and Northwest
- Federal Buildings through the US DOE's Federal Energy Management Program
- Federal Legislation aimed at tax incentives for new commercial buildings

The ACES NC program intends to track the delivery of the Best Practices Guide through targeted presentations to key multifamily construction industry professionals and other stakeholders (e.g. local governments, environmental organizations, etc.) throughout Focus on Energy territory. Presentations will include a description of the ACES NC program, introduction of program staff and information about the contents and appropriate use of the Best Practices Guide. ACES NC staff members will track Best Practices Guide distribution at the presentations. Future plans include tracking through internet access (e.g. an interested party would need to register on the Focus on Energy website in order to download a copy of the Best Practices Guide).

Ultimately, the success of the Best Practices Guide will be measured by the number of projects impacted by the ACES NC program, the amount of energy savings attributed, and the level of average financial incentives offered to developers. As stated previously, the ACES NC program intends to use the Best Practices Guide to increase the number of projects impacted, increase the amount of energy savings attributed and decrease the amount of average financial incentives offered to developers. The impact of the Best Practices Guide will be tracked by the ACES NC program staff and external program evaluators.

Conclusion

During the early years of the ACES NC program, investments in relationship building with multifamily new construction professionals yielded dividends in increased access to planning for future projects and opportunities for greater energy savings. In subsequent years, interest among multifamily new construction industry professionals increased and energy savings grew despite reduction in program incentive dollars available. As the ACES NC program gained experience in cost effective energy efficiency measures by working with outside engineering consultants performing energy modeling services, the program gained an institutional memory. This institutional memory provided the basis to create a Best Practices Guide that will promote cost effective energy efficiency and renewable energy recommendations. The Best Practices Guide marks a transition of the ACES NC program from relationship building to new construction design modeling to best practices recommendations.

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