



Prospectus

National Building Controls Information Program Initial Sponsors

United States Environmental Protection Agency
Iowa Energy Center



2521 Elwood Drive, Suite 124
Ames, IA 50010-8229
515-294-8819 or fax 515-294-9912
Email: iec@energy.iastate.edu
Web sites: www.energy.iastate.edu
www.ddc-online.org

National Building Controls Information Program: Prospectus

BACKGROUND

Energy use of buildings represents 36% of the total primary energy consumption in the United States.¹ Often this energy is used inefficiently. Since 1991, the United States Environmental Protection Agency has been developing and promoting the Energy Star Buildings program as a strategy for improving the energy efficiency of buildings. This strategy includes three key steps, namely, 1) planning and benchmarking, 2) building upgrades through an integrated five-stage approach, and 3) communicating success. Successful implementations of the program have led to energy savings of 10 to 30 percent.² Unfortunately, the goals and procedures of the Energy Star Buildings strategy are often defeated by the building control systems. Hardware failures, software errors, and human factors such as difficulty of use and understanding of control products all conspire to prevent buildings from achieving the energy efficiency that was envisioned when the Energy Star Buildings strategy was implemented. Meeting the goals of the Energy Star Buildings program will require significant improvements in the way buildings are operated. The first step toward this goal is to provide information to building owners and operators, facility managers, and engineers that will improve their understanding of building control systems.

PROGRAM OBJECTIVES AND OVERVIEW

The overall objective of the National Building Controls Information Program (NBCIP) is to develop a database of manufacturer-specific performance information as well as broad-based tutorial information on building controls. The program will be modeled after the National Lighting Product Information Program (NLPIP) that is run by the Lighting Research Center at Rensselaer Polytechnic Institute. For over 10 years, the NLPIP has provided owners, architects, and specifying engineers with manufacturer-specific performance data on lighting products. The NBCIP will also require a long-term commitment, initially weighted towards understanding what the most prevalent building control problems are, where they exist, and what their impact on energy use is. Many of these problems are known; however, this approach will help prioritize their importance and develop effective strategies for remedying them. It will also structure and prioritize long-term efforts in the program.

As evidenced by the program title, the primary deliverable of the NBCIP will be information. Demonstrating a commitment to the dissemination of information related to building controls, the Iowa Energy Center created the *DDC Online* resource and introduced it to the industry at the 2000 ASHRAE winter meeting.³ *DDC Online* provides unbiased information about products offered by more than twenty manufacturers of building controls and presents the information in a framework that makes comparison of the prod-

ucts more straightforward. The NBCIP will build on this effort to disseminate unbiased information related to building controls. The basis for obtaining the information and the nature of the information will take various forms, including but not limited to the following: 1) reports providing testing results of comparable products from different manufacturers; 2) reports describing energy efficient control algorithms tested against conventional and/or alternative algorithms at the Iowa Energy Center Energy Resource Station (see Qualifications section for a description of the facility); 3) white papers addressing control issues of pressing importance; and 4) updates to *DDC Online*.

PROGRAM STRUCTURE AND OPERATION

The NBCIP is envisioned as a long term, multi-sponsor program modeled closely on the operation of the NLPIP. The scope and complexity of the issues to be addressed mandate the development of a robust, sustained effort in order to have meaningful impact supporting Energy Star Buildings. A national program to address the issues is appropriate because of their pervasive nature. Program sponsors may offer program guidance and direction by suggesting projects of importance to their organization's goals and efforts, and through the selection of the work to be carried out. Program sponsors will also benefit by leveraging their funding support with that of other sponsors.

The NBCIP will be operated by the Iowa Energy Center, an energy research, demon-

stration and education organization administered by Iowa State University. Floyd Barwig, AIA, Director of the Iowa Energy Center, will function as the initial program manager for the NBCIP. As the program matures, a dedicated program manager will be recruited. John House, PhD, will serve as lead technical advisor to the NBCIP. William Haman, PE, will serve as program risk manager, operating under guidelines derived from the NLPIP. A board of directors will be created to provide program direction and priorities. It is proposed that, as with the NLPIP, each sponsor providing \$50,000 in annual funding will have one vote on the board of directors; each sponsor providing \$100,000 or more will have 2 votes. To maintain credibility, sponsorship will not be accepted from manufacturers. The board will meet every six months to review progress and set future direction. While the Iowa Energy Center will be the operator of the NBCIP, it will also be an annual sponsor of the program.

QUALIFICATIONS

The mission of the Iowa Energy Center is to conduct and sponsor research, development, demonstration and education on energy efficiency and renewable energy. Recognizing the opportunity to improve energy efficiency in buildings, the Iowa Energy Center constructed the Energy Resource Station (ERS) to enable testing and demonstration of energy-efficient building technologies. The ERS is a unique building, combining laboratory testing capability with real building characteristics. The ERS and its staff have been integral to

the successful completion of numerous projects and training courses related to the control of buildings.

The program manager, Floyd Barwig, has been active in the renewable energy and energy efficiency fields for over 20 years. Prior to joining the Center, he held positions at the Pacific Northwest National Laboratory, the New York State Energy Office and in the private sector. The lead technical advisor, John House, has been involved in research related to fault detection and diagnostics of HVAC systems and air-handling unit control strategies for seven years. The manager of the ERS facility, Curtis Klaassen, PE, has more than 20 years experience as an HVAC design consultant and has been instrumental in all the projects and training courses conducted at the ERS. The risk manager, William Haman, has over 20 years experience as an engineering consultant/facilities engineer and as a project manager in his current position at the Iowa Energy Center.

REFERENCES

- ¹ BTS Core Databook, Table 1.1.2 Buildings Share of U.S. Primary Energy Consumption, U.S. Department of Energy, August 2000
- ² EPA 430-F-97-007: available at <http://www.epa.gov/buildings/esbhome/about/background.html>
- ³ <http://www.ddc-online.org>



2521 Elwood Drive, Suite 124,
Ames, IA 50010-8229
515-294-8819 or fax 515-294-9912
Email: iec@energy.iastate.edu
Web sites: www.energy.iastate.edu
www.ddc-online.org