

Facility Energy Decision System – FEDS 6.0

Decision-Making Software for Energy Efficiency



The critical need to reduce energy consumption, costs, and related emissions for companies, schools, state buildings, and federal facilities extends throughout the United States and beyond. The Facility Energy Decision System (FEDS) 6.0 software facilitates the assessment and analysis of energy efficiency opportunities in single and multiple buildings, providing a comprehensive method for quickly and objectively identifying energy improvements that offer maximum savings. FEDS provides an easy-to-use tool for identifying minimum life cycle cost retrofits, determining payback, and enabling users to prioritize options for meeting energy-efficiency goals. Users can also quickly compare energy savings potential across different sites through multiple FEDS runs.

FEDS 6.0 has been developed at Pacific Northwest National Laboratory (PNNL) with the support of the U.S. Army Installation Management Agency Southeast Region, U.S. Coast Guard, Tennessee Army National Guard, and the Canadian government. Previous versions of the software have been funded by a number of agencies including the U.S. Department of Energy's (DOE) Federal Energy Management Program (FEMP), DOE's Rebuild America Program, Defense Commissary Agency, U.S. Army Construction Engineering Research Laboratory, the Naval Facilities Engineering Service Center, and the U.S. Army Forces Command.

An Effective Project Planning Tool

Using readily available information, FEDS assesses the energy-saving potential for a wide variety of facilities, while featuring an interactive, flexible input format and energy and peak-demand modeling. As a user-friendly, Windows-based program, FEDS offers many benefits as an effective planning tool:

- ◆ Accepts detailed or high-level building data, reducing time and labor required for collection, input, and analysis
- ◆ Recommends the lowest life cycle cost-effective energy systems for all building types
- ◆ Delivers the information necessary for writing project funding proposals
- ◆ Provides a consistent basis for decision-making
- ◆ Serves as an integral part of a cost-savings program



Pacific Northwest
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A wide range of energy systems professionals can benefit from the FEDS software. Energy and facility managers, architect-engineers, utility planners, and energy consultants can use FEDS to identify, prioritize, and realize key facility upgrades. Monitoring and tracking energy-efficiency improvements as well as forecasting and estimating impacts of change are secondary uses of FEDS.

New Features for FEDS 6.0

FEDS 6.0 marks a substantial step forward in the continuing evolution of the FEDS software. FEDS can now analyze central energy plants and can determine:

- ◆ Which centrally served technologies should be replaced with distributed technologies,
- ◆ Which buildings should be decentralized, and
- ◆ Which thermal loops should be abandoned with all attached buildings becoming decentralized



Additional enhancements in FEDS 6.0 include:

- ◆ Over 1500 additional weather locations
- ◆ Advanced building geometry capability
- ◆ Replace on failure economics
- ◆ Enhanced seasonal occupancy inputs and 4-day workweeks
- ◆ Radiant and infrared heating systems
- ◆ And much more!

For a more complete listing of what's new in FEDS 6.0, or to order your copy, visit the FEDS web site www.pnl.gov/FEDS.



www.pnl.gov/FEDS

FEDS Software Works with You

FEDS determines the optimum set of cost-effective retrofits from a current database of hundreds of proven building technologies. These include retrofits for heating, cooling, lighting, motors, building shell, and hot water. Replacement or modification considerations vary from complete replacement to functional enhancements to fuel switching. Optimization can be targeted to a single end-use, single building, or entire installation including central energy plants, and retrofit cost data can be modified to better represent costs at your site.

FEDS relies on a minimum of user interactions and input to operate. It begins with your entry of readily available facility and energy price data. Next FEDS asks about your location, building types, characteristics, and operating hours. From this information, FEDS develops building prototypes and infers parameters not specified by the user. Using hourly weather data, sophisticated energy simulation and financial engines determine energy consumption, electric demand, and calculate the cost effectiveness of potential retrofits. Additionally, FEDS determines the impact of retrofit projects on emissions of CO, CO₂, NO_x, SO₂, hydrocarbons, and particulates.

FEDS also provides the user access to the engineering parameters necessary to perform a comprehensive analysis. For example, a review of results might reveal a need for refinement of inferred parameters. If better information is available, changes to the inferences are easily accomplished. Thus, FEDS allows detailed analysis of large installations with many buildings, but only requires a limited amount of information.

FEDS Possesses Unique Features

FEDS provides a unique set of capabilities found in no other energy-efficiency software:

Life Cycle Cost Optimization – selects the minimum life cycle cost retrofit for a single building or an entire installation considering the interactions not only between energy systems but also between buildings; second and third best retrofits can also be determined.

Technology and Fuel Independence – chooses the technology that provides the required service at the minimum life cycle cost; no technology or fuel bias.

Peak Tracking – determines the hourly contribution of each technology to the installation's peak demand allowing accurate determination of the value of the energy and demand savings associated with a retrofit.

Alternative Financing Analysis – allows a comparison of various financing mechanisms including leases, loans, and energy saving performance contracts (ESPCs).

Central Plants and Thermal Loops – optimizes buildings and decentralization simultaneously.

It is the best available software Systems Corp has seen for accomplishing the top-down management approach to making decisions for energy retrofit projects. — Systems Corp for the Office of the Assistant Deputy Undersecretary of Defense

Since attending the FEDS Workshop, I have used the program to model three types of county buildings...the time required using FEDS was the better part of 1 week; whereas, the macula audit took about 4 months. I know that I will find this to be a useful tool. — Jim H. Winslett, Energy Management Engineer for Fulton County, Georgia

I have been able to use the FEDS data for several energy reports, modifying billing estimates, and providing input to the Demand Side Management Program... I can prepare reports and do assessments now that were not being done in the past. — Rene Quinones, Fort Irwin, California

Product Support

FEMP and PNNL conduct FEDS training workshops, distribute the FEDS software, and provide technical assistance.

Workshops:

FEMP currently has no FEDS training scheduled. To inquire about the possibility of future FEDS workshops contact Joe Konrade at 202-586-8039. Individual agencies can also contract directly with PNNL to conduct FEDS training (if interested please contact Rosemarie Bartlett at 509-375-6606).

FEDS software is provided at no charge for use on federally funded projects and those projects funded and directly performed by a state government on a state owned facility. Copies of the software can also be purchased for other use.

To obtain copies of the software:

Visit the FEDS web site at www.pnl.gov/FEDS or contact the Energy Efficiency and Renewable Energy Clearinghouse (800) DOE-EREC.

For questions on using the FEDS software:

Visit the FEDS web site www.pnl.gov/FEDS or contact Rosemarie Bartlett, FEDS Information Administrator (509) 375-6606; FEDS.Support@pnl.gov.