A national laboratory of the U.S. Department of Energy
Office of Energy Efficiency & Renewable Energy

NREL National Renewable Energy Laboratory

Innovation for Our Energy Future

R&D 100 Award — TREAT with SUNREL™ Energy Analysis Software

TREAT Partners

New York State Energy Research Development Authority (NYSERDA)
Rick Gerardi
Andrew Fisk
Lee Butler

Performance Systems Development, Inc.
Gregory Thomas
Mark Lorentzen
Eric Woods
Ethan MacCormick

Taitem Engineering, Inc.
Ian Shapiro
Maria Karpman
Nayden Nechev
Rob Rosen
Mary Ellen Joy

National Renewable Energy Laboratory
Michael Deru
Ron Judkoff
Paul Torcellini

The National Renewable Energy Laboratory (NREL), along with the New York State Energy Research and Development Authority (NYSERDA) and its partners, created a tool that made it much easier for building professionals to perform accurate energy audits and reduce the impact of building energy use on the environment. That tool is TREAT (Targeted Residential Energy Analysis Tools) with SUNREL, which won a 2005 R&D 100 Award from R&D Magazine for being one of the most significant products introduced into the marketplace over the past year.

TREAT with SUNREL is a comprehensive energy analysis tool that models building energy consumption and identifies the most cost-effective energy efficiency upgrades for both single-family and multifamily buildings. Hundreds of auditors, engineers, and contractors have used it thousands of times to provide quick answers to energy use questions. Several innovations make TREAT with SUNREL stand out from other software; TREAT:

- Matches actual fuel bills with energy models
- Predicts occupant behavior so models are more realistic
- Uses hourly weather data for more precise predictions
- Offers whole-building solutions
- Incorporates gains from solar radiation, lights, and appliances
- Allows interactive energy savings calculations
- Provides energy ratings for models
- Provides room by room heat loss
- Reports on health and safety issues
- Tracks energy savings
- Links users to outside data resources.

NREL shares the 2005 R&D 100 Award for TREAT with SUNREL with NYSERDA and its partners Taitem Engineering and Performance Systems Development, Inc. NREL developed SUNREL—the building energy simulation engine in TREAT. NYSERDA sponsored the development of TREAT, a simple but sophisticated software interface, to make it easy for auditors to perform accurate energy audits and to prioritize building upgrades that improve the energy efficiency of buildings.

NYSERDA now requires auditors to use TREAT for their Home Performance with Energy Star® and New York Energy Star Labeled Homes

Programs. NYSERDA also uses TREAT exclusively for its Assisted Multifamily Program and its Residential Technical Assistance Program. But the use of TREAT extends beyond New York—auditors from California to New Hampshire use it. Washington State just selected TREAT for use in its low-income weatherization program. In addition, TREAT is the only pre-approved software suitable for all DOE Weatherization building types without reservation.

For more information about TREAT with SUNREL, visit: www.treatsoftware.com

Organization/Company Information

New York State Energy Research Development Authority (NYSERDA)
Develops innovative solutions to energy and environmental problems via research and development and energy efficiency projects.
Contact: Rick Gerardi
(518) 862-1090, ext. 3343
Web site: www.nyserda.org

Performance Systems Development, Inc.
Partners with national, regional, and local organizations to provide consulting, software development, and training to change the marketplace for energy and building performance services.
Contact: Greg Thomas
(607) 277-6240, ext. 201
Web site: www.psdconsulting.com

Taitem Engineering
A consulting engineering firm with extensive design, energy audit, software development, and residential energy research experience.
Contact: Ian Shapiro
(607) 277-1118, ext. 115
Web site: www.taitem.com

National Renewable Energy Laboratory
A leader in buildings research for the U.S. Department of Energy's effort to secure an energy future for the nation that is environmentally and economically sustainable.
Contact: Ron Judkoff
(303) 384-7520
Web site: www.nrel.gov/buildings

SUNREL

SUNREL is an hourly building energy simulation program that aids in the design of small energy-efficient buildings where the loads are dominated by the dynamic interactions between the building's envelope, its environment, and its occupants. The program is based on fundamental models of physical behavior and includes algorithms specifically for passive technologies, such as Trombe walls, programmable window shading, advanced glazings, and natural ventilation. In addition, a simple graphical interface aids in creating input files.

SUNREL is an upgrade of SERI-RES, which was released in the early 1980s by the Solar Energy Research Institute (now NREL). Proven to be accurate and reliable, SUNREL is used by researchers around the world. For more information about SUNREL, visit: www.nrel.gov/buildings/sunrel.

National Renewable Energy Laboratory
1617 Cole Boulevard, Golden, Colorado 80401-3393
303-275-3000 • www.nrel.gov

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