

# IBPSA

## The International Building Performance Simulation Association

*"The professional association devoted to improve the built environment  
through computer simulation and analysis"*

**Mission** The International Building Performance Simulation Association (IBPSA) was founded to advance and promote the science of building performance simulation in order to improve the design, construction, operation and maintenance of new and existing buildings worldwide.

**Goals** Along with building designers, owners, operators and developers, identify problems with the built environment that may be solved by improved simulation tools and techniques. Identify the performance characteristics of buildings on which simulation should be focused. Identify building performance simulation R & D needs and transfer new developments to the user. Promote standardization of the building simulation industry. Inform and educate its members and the public regarding the value and the state-of-the-art of building performance simulation.

### MEMBERSHIP APPLICATION      Effective date: January through December

- Sustaining member      US\$ 500/year. An individual, company, or institution in related practice.
- Member      US\$ 75/year. A graduate from a college or university, or a registered professional engineer or architect.
- Student Member      US\$ 25/year. An individual who is a full-time student (Include copy of current enrollment i.d.).

Name: \_\_\_\_\_

Organization: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State, Zip, Country: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ e-mail: \_\_\_\_\_

Please send Check or International M.O. to:  
IBPSA c/o Larry Degelman,  
College of Architecture,  
Texas A&M University,  
College Station, TX 77843-3137, USA.

[You may pay by credit card.  
Fax this form to Larry Degelman  
(409) 845-4491]

## IBPSA: PUBLICATIONS

Proceedings of IBPSA's *Building Simulation* conferences are available from the Secretary as long as stocks last. Price list follows:

| <i>Building Simulation</i><br>Proceedings | No. of Papers/Pages | Prices   |              |
|---|---------------------|----------|--------------|
|   |                     | Member * | Non-Member * |
| BS-85 (Xerox copy)                        | 59 / 416            | US\$ 40  | US\$ 75      |
| BS-89 (Xerox copy)                        | 54 / 300            | US\$ 40  | US\$ 75      |
| BS-91 (in stock)                          | 85 / 675            | US\$ 55  | US\$ 90      |
| BS-93 (in stock)                          | 71 / 570            | US\$ 55  | US\$ 90      |
| BS-95 (in stock)                          | 81 / 717            | US\$ 70  | US\$ 105     |

\* Orders for two or more sets of proceedings are US\$ 37.50 each for members or US\$ 70 each for non-members

**NOTE:** Add 15% to all orders shipped within North America.  
Add 15% to all orders shipped overseas via surface mail.  
Add \$25 for shipping overseas via air mail.  
Specify shipping method when ordering.

Circle the items you wish to order from the list above, and check the method of shipping:

Domestic N.A. mail     Overseas surface     Overseas Airmail

Amount Enclosed: US\$ \_\_\_\_\_

Name: \_\_\_\_\_

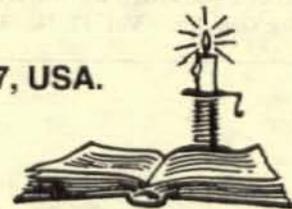
Organization: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Country: \_\_\_\_\_

Please pay by Check or M.O. to:

IBPSA c/o Larry Degelman, College of Architecture,  
Texas A&M University, College Station, TX 77843-3137, USA.  
Tel:(409)845-1221, Fax:(409)845-4491  
e-mail: larry@archone.tamu.edu.



*Program Related Software and Services*

Contact vendors of DOE-2 Related software for prices and ordering information

**Mainframe and Workstation Versions of DOE-2**

|  |   |
|--|---|
| <p><b>DOE-2.1D and 2.1E</b> (Source code, executable code and documentation)<br/>                 For 2.1E DEC-VAX, Order #000158-DOVAX-02<br/>                 For 2.1E SUN-4, Order #000158-SUN-0000<br/>                 For 2.1D DEC-VAX, Order #000158-D6220-01<br/>                 For a complete listing of the software available from ESTSC order their "Software Listing" catalog ESTSC-2. [See <i>User News</i> Vol. 16, No. 3, p. 21]</p>   | <p>Energy Science and Technology<br/>                 Software Center (ESTSC)<br/>                 P.O. Box 1020<br/>                 Oak Ridge, TN 37831-1020<br/>                 Phone: (615) 576-2606<br/>                 FAX: (615) 576-2865<br/>                 email: ESTSC@ADONIS.OSTI.GOV<br/>                 www: <a href="http://www.doe.gov/html/osti/estsc/estsc.html">http://www.doe.gov/html/osti/estsc/estsc.html</a></p>                          |
| <p><b>FTI-DOEv2.1E</b> (Source code and documentation)<br/>                 Combined source code package for both VAX and SUN versions of DOE-2.1E. Available on most distribution formats and for most operating systems (1/4" QIC tape, TK50 tape, 3.5" floppy, etc). Note: this is the distribution package only, no executables. Complete documentation for DOE-2.1E, digitally reproduced, spiral bound, and separated into multi-volume sets. [See <i>User News</i> Vol. 12, No. 4, p. 16]</p> | <p>Finite Technologies, Inc<br/>                 3763 Image Drive<br/>                 Anchorage, AK 99504<br/>                 Contact: Scott Henderson<br/>                 Phone: (907) 333-8933<br/>                 FAX: (907) 333-4482<br/>                 email: <a href="mailto:info@finite-tech.com">info@finite-tech.com</a><br/>                 www: <a href="http://www.finite-tech.com/fti/home.html">http://www.finite-tech.com/fti/home.html</a></p> |

**PC Versions of DOE-2**

|   |  |
|---|--|
| <p><b>ADM-DOE2</b><br/>                 ADM-DOE2 (DOE-2.1E) is compiled for use on 386/486 PCs with a math co-processor and 4MB of RAM. It runs in a DOS or Windows environment and is a highly reliable and tested version of DOE-2 which contains all of the 1994/95 enhancements to the program. The package contains everything needed to run the program: program files, utilities, sample input files, and weather files. More than 300 weather files are available (TMY, TRY, WYEC, CTZ formats) for the U.S. and Canada. [See <i>User News</i> Vol. 7, No. 2, p. 6]</p> | <p>ADM Associates, Inc.<br/>                 3239 Ramos Circle<br/>                 Sacramento, CA 95827<br/>                 Contact: Marla Sullivan, Sales<br/>                 Phone: (916) 363-8383<br/>                 FAX: (916) 363-1788</p>   |
| <p><b>CECDOEDC (Version 1.0A)</b><br/>                 A microcomputer version of DOE-2.1D integrated with a pre- and post-processing system designed strictly for compliance use within the State of California. It generates some of the standard compliance forms as output. Order P40091009 for the CECDOEDC Program with Manuals. Order P40091010 for the DOE-2.1 California Compliance Manual. [See <i>User News</i> Vol. 12, No. 4, p. 13]</p>   | <p>MS: 13 -- Publication Office<br/>                 California Energy Commission<br/>                 P.O. Box 944295<br/>                 Sacramento, CA 94244-2950<br/>                 Phone: (916) 654-5106<br/>                 www: <a href="http://agency.resource.ca.gov/cectext/ETEC.html">http://agency.resource.ca.gov/cectext/ETEC.html</a></p> |

*Caveat:* We list third-party DOE-2-related products and services for the convenience of DOE-2 users, with the understanding that the Simulation Research Group does not have the resources to check the DOE-2 program adaptations and utilities for accuracy or reliability.

PC Versions of DOE-2 (continued)

**MICRO-DOE2™**

MICRO-DOE2 (2.1E), which runs in a DOS or Windows environment, is a widely used, reliable, and tested PC version of DOE-2. It includes automatic weather processing, batch file creation, and a User's Guide with instructions on how to set up a RAM drive. System requirements: 386/486 PCs with 4 MB of RAM and math co-processor.

Also from Acrosoft International, Inc.:

**NETPath**, a network edition of MICRO-DOE2 allows you to store and run DOE-2 application files on one machine using input files from another machine. The result is improved space usage and project file management.

**POWERPath**, for single machines, allows you to keep MICRO-DOE2 application files in one directory and submit input from any other directory.

**BDL Builder**, is a pre-processor for DOE-2.1E that allows you to describe specific building and HVAC characteristics by preparing databases, or "building blocks", and then selecting records from the databases to assemble a complete input.

[See *User News* Vol. 7, No. 4, p. 2; Vol. 11, No. 1, p. 2; Vol. 15, No. 1, p. 8; Vol. 15, No. 3, p. 4; and Vol. 16, No. 2, p. 1.7]

Acrosoft International, Inc.  
3435 South Yosemite St., #220  
Denver, CO 80231

Contact: Gene Tsai  
Phone: (303) 696-6888  
FAX: (303) 696-0388  
email: 102447.2611@compuserve.com

**PRC-DOE2**

A fast, robust and up-to-date PC version of DOE-2.1E. Runs in extended memory, is compatible with any VCPI compliant memory manager and includes its own disk caching. 377 weather data files available (TMY, TRY, WYEC, CTZ) for the U.S. and Canada

Also from the Partnership for Resource Conservation:

**PRC-TOOLS**, a set of PC programs that aids in extracting, analyzing and formatting hourly DOE-2 output. Determines energy use, demand, and cost for any number of end-uses and periods. Automatically creates 36-day load shapes. Custom programs also available.

[See *User News* Vol. 13, No. 4, p. 11, Vol. 14, No. 2, p. 9, and Vol. 15, No. 1, p. 5]

Partnership for Resource Conservation  
140 South 34th Street  
Boulder, CO 80303

Contact: Paul Reeves  
Phone or FAX: (303) 499-8611  
email: paulreeves@aol.com

**VisualDOE for Windows™**

VisualDOE, which uses DOE-2.1E as the calculation engine, enables architects and engineers to quickly evaluate the energy savings of HVAC and other building design options. Program is supported by context-sensitive on-line help. Program includes climate data for the 16 California weather zones. [See *User News* Vol. 15, No. 2, p. 10]

Eley & Associates  
142 Minna Street  
San Francisco, CA 94105

Contact: Charles Eley  
or John Kennedy  
Phone: (415) 957-1977  
FAX: (415) 957-1381

## PC Versions of DOE-2 (continued)

### DOE-24/Comply-24

DOE-24 is a special DOE-2 release which is both a California-approved compliance program for the state's 1992 non-residential energy standards, and a stand-alone version of DOE-2.1E that includes a powerful yet easy-to-use input preprocessor. A demonstration program is available upon request. [See *User News* Vol. 12, No. 2, p. 2]

Gabel Dodd Associates  
1818 Harmon Street  
Berkeley, CA 94703-2416  
Contact: Rosemary Howley  
Phone: (510) 428-0803  
FAX: (510) 428-0324

### DOE-Plus™

DOE-Plus, a complete implementation of DOE-2.1D, is used to interactively input a building description, run DOE-2, and plot graphs of simulation results. Features include interactive error checking, context-sensitive help for all DOE-2 keywords, a 3-D view of the building that can be rotated, and several useful utilities.

Also from ITEM Systems:

**Demand Analyzer™**, uses templates of building types and vintages to simplify DOE-2 input requirements. Online help feature.

**Prep™**, a batch preprocessor, ideal for parametric studies, that enables conditional text substitution, expression evaluation, and spawning of other programs. [See *User News* Vol. 11, No. 4, p. 4 and Vol. 13, No. 2, p. 54, and Vol. 16, No. 1, p. 28-32]

ITEM Systems  
1402 - 3rd Avenue, #901  
Seattle, WA 98101  
Contact: Steve Byrne  
Phone: (206) 382-1440  
FAX: (206) 382-1450  
email: byrne@item.com

### EZDOE

EZDOE is an easy-to-use PC version of DOE-2.1D. It provides full screen, "fill in the blank" data entry, dynamic error checking, context-sensitive help, mouse support, graphic reports, a 750-page user manual, extensive weather data, and comprehensive customer support. EZDOE integrates the full calculation modules of DOE-2 into a powerful, full implementation of DOE-2 on DOS-based 386 and 486 computers.

[See *User News* Vol. 14, No. 2, p. 10 and No. 4, p. 8-14]

Elite Software, Inc.  
P.O. Drawer 1194  
Bryan, TX 77806  
Contact: Bill Smith  
Phone: (409) 846-2340  
FAX: (409) 846-4367  
email: 76070,621@compuserve.com

### FTI-DOEv2.1E

Highly optimized version of DOE-2.1E software, available for most computing systems. Current support: MSDOS and Windows 3.x, Windows NT, OS/2, RS/6000 (AIX), NeXT, SUN, UNIX (most systems). Call for platforms not listed. Documentation and weather files are available. Also FTI-DOEv2.1E source code, highly optimized and portable version; will compile for most systems.

[See *User News* Vol. 12, No. 4, p. 16]

Finite Technologies, Inc  
821 N Street, #102  
Anchorage, AK 99501  
Contact: Scott Henderson  
Phone: (907) 272-2714  
FAX: (907) 274-5379  
email: scott@finite-tech.com  
www: <http://www.finite-tech.com/fti/home.html>

### DOE-2.1E Bug Fixes via FTP

If you have Internet access you can now obtain the latest bug fixes to DOE-2.1E by anonymous ftp. The procedure is as follows:

ftp gundog@lbl.gov (or) ftp 128.3.254.10  
login: anonymous  
passwd: your email address

After logging on, go to directory "pub/21e-mods"; bug fixes are in files "\*.mod". A description of the fixes is in file VERSIONS.txt in directory "pub". Each fix has its own version number, *nnn*, which is printed out as DOE-2.1E-*nnn* on the DOE-2.1E banner page and output reports when the program is recompiled with the fix.

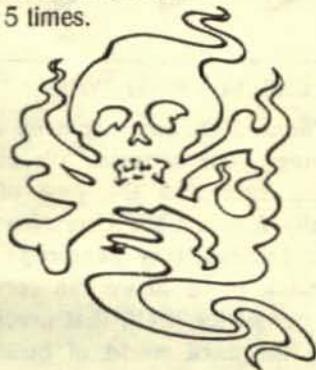
You may direct questions about accessing or incorporating the bug fixes to Ender Erdem (ender@gundog.lbl.gov).



## Pre- and Post-Processors for DOE-2

|  |  |
|--|--|
| <p><b>DOE123</b><br/>Uses Lotus 1-2-3 to graphically display DOE-2.1D output as barcharts, pie charts, and line graphs.<br/>[See <i>User News</i> Vol. 10, No. 3, p. 5]</p>  | <p>Ernie Jessup<br/>4977 Canoga Avenue<br/>Woodland Hills, CA 91364<br/>Phone: (818) 884-3997</p>  |
| <p><b>DrawBDL</b><br/>DrawBDL, Version 2.02, is a graphic debugging and drawing tool for DOE-2 building geometry; it runs on PC's under Microsoft Windows. DrawBDL reads your BDL input and makes a rotatable 3-D drawing of your building with walls, windows and building shades shown in different colors for easy identification.<br/>[See <i>User News</i> Vol. 14, No. 1, p. 5-7, Vol. 14, No. 4, p. 16-17, and Vol. 16, No. 1, p. 37]</p> | <p>Joe Huang &amp; Associates<br/>6720 Potrero Avenue<br/>El Cerrito CA 94530-2248<br/>Contact: Joe Huang<br/>Phone/FAX: (510) 236-9238</p>                                  |
| <p><b>Graphs for DOE-2</b><br/>2-D, 3-D, hourly, daily, and psychrometric plots<br/>[See <i>User News</i> Vol. 13, No. 1, p. 5]</p>  | <p>Energy Systems Laboratory<br/>Texas A&amp;M University<br/>College Station, TX 77843-3123<br/>Contact: Jeff Haberl<br/>Phone : (409) 845-6065<br/>FAX: (409) 862-2762</p> |
| <p><b>Pre-DOE</b><br/>A math pre-processor for BDL.</p>  | <p>Nick Luick<br/>19030 State Street<br/>Corona, CA 91719<br/>Phone: (714) 278-3131</p>  |

London is famous for its "pea soup" fogs. Before modern air pollution controls, the fog was a witches' brew. In 1952, stagnant air over a 4 day period allowed sulfur dioxide and particulates to increase to unprecedented levels. As the air cleared, 4000 were left dead. Deaths from bronchitis increased 10 times, from influenza 7-fold and from pneumonia 5 times.



### Help Wanted: Energy Engineer

Quantum Consulting of Berkeley, California, is looking for an **Energy Engineer** to provide support for engineers in the calculation of building energy consumption and peak demand. Candidates should have at least two years experience in the energy consulting industry. Knowledge of DOE-2 and experience in the UNIX environment a plus. When you write or fax, refer to job: HR/EE.

**Quantum Consulting**  
2030 Addison Street  
Berkeley, CA 94704  
Fax (510) 540-7268

### Personnel Changes at ESTSC

The Energy Science and Technology Software Center (ESTSC) at Oak Ridge National Laboratory distributes the mainframe and SUN workstation versions of DOE-2. Effective October 1, 1995, operation of the Energy Science and Technology Software Center changed from a contractor operation to operation by the U.S. Department of Energy's Office of Scientific and Technical Information (DOE/OSTI).

The new operations personnel are Walt Kelly, Director, with staff Delores Brabson, Wanda Parks, and Kim Buckner. The center address, phone, fax, Email, and URLs are listed below for your convenience.

P.O. Box 1020  
Oak Ridge, TN 37831-1020  
(423) 576-2606 Center phone  
(423) 576-2865 Fax  
(423) 576-1037 Director phone

email: [estsc@adonis.osti.gov](mailto:estsc@adonis.osti.gov)  
WWW (ESTSC Info.) <http://www.doe.gov/html/osti/estsc/estsc.html>  
WWW (ESTSC Catalog) <http://www.doe.gov/waisgate/estsc.html>

## R E S O U R C E S

### User News

Sent without charge to DOE-2 users, the newsletter prints documentation updates and changes, bug fixes, inside tips on using the program more effectively, and articles of special interest to program users.

Regular features include a directory of program-related software and services and an order form for documentation. In the summer issue an alphabetical listing is printed of all commands and keywords in DOE-2, and where they are found in the documentation. The winter issue features an index of articles printed in all the back issues.

Simulation Research Group  
Bldg. 90, Room 3147  
Lawrence Berkeley National Laboratory  
Berkeley, CA 94720

Contact: Kathy Ellington  
Phone: (510) 486-5711  
FAX: (510) 486-4089  
email: kathy@gundog.lbl.gov

### Help Desk - Bruce Birdsall

Call or fax our DOE-2 expert, Bruce Birdsall, if you have a question about using DOE-2. If you need to fax an example of your problem to Bruce, please be sure to telephone him prior to sending the fax. This is a free service provided by the Simulation Research Group at Lawrence Berkeley National Laboratory.

Bruce Birdsall  
Ph/Fx: (510) 829-8459  
Monday through Friday  
10 a.m. to 3 p.m. Pacific Time

### Training

DOE-2 courses for beginning and advanced users.

Energy Simulation Specialists  
64 East Broadway, Suite 230  
Tempe, AZ 85282  
Contact: Marlin Addison  
Phone: (602) 967-5278

DOE-2 training for small groups and individuals.

Gary H. Michaels, P.E.  
1512 Crain Street  
Evanston, IL 60202  
Phone: (708) 869-5859

### Instructional DOE-2 Video and Manual

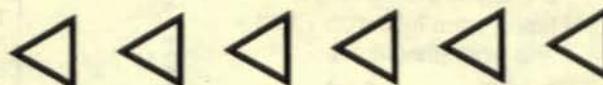
Takes you step-by-step in DOE-2.1D input preparation and output interpretation.

JCEM/U. Colorado  
Campus Box 428  
Boulder, CO 80309-0428  
Contact: Prof. Jan Kreider  
Phone: (303) 492-3915

#### Free Lighting Newsletter

The Rensselaer Polytechnic Institute is offering free subscriptions to their lighting research newsletter. The newsletter covers advances in the lighting industry, especially in technologies and techniques. The premier issue focuses on electrode-less lamps and examines their potential, background, performance characteristics, applications, and barriers to their use. Contact the Lighting Research Center, Rensselaer Polytechnic Institute, Troy, NY 1218-03590. Fax (518) 276-2999 or email lrc@rpi.edu.

*Courtesy of the CADET Energy Efficiency Newsletter, No. 3/1995.*



#### You Never Call, You Never Write

**P-L-E-A-S-E!!!** Phone, FAX, email or drop us a note when you change your address. We use a special low mailing rate and the post office doesn't automatically forward the User News to your new address. Instead, they photocopy the back page and send it to us so we can correct our records. The newsletter itself, that precious beacon of light in the dark world of building simulation, is discarded!

## RESOURCES (continued)

### Weather Data

TMY2 weather data for DOE-2. ENERGOS will provide TMY2 data for 239 cities converted for use with DOE-2 for PC versions of the program (DOE-2.1C through DOE-2.1E).

Kurmit Rockwell  
ENERGOS  
1705-14th Street, #401  
Boulder, CO 80302  
Phone: (303) 499-7907 / Fax: 449-7605

Comprehensive collection of weather files including the latest TRY, TMY and CTZ libraries from NCDC. All files can be used on all PC versions of DOE-2. Includes original source data and pre-formatted packed versions on a single IBM format CD. For Canadian users, the CD contains five weather files representing the five climate regions established by the Canadian energy codes. Individual sites available.

Jenny Lathum or Martyn Dodd  
EnergySoft  
100 Galli Drive, Suite 1  
Novato, CA 94949  
Phone: (800) 467-4738 / Fax: (415) 883-5970

### European Weather Files

Andre Dewint  
Alpha Pi, s.a.  
rue de Livourne 103/12  
B-1050 BRUXELLES  
Belgium  
Phone: 32-2-649-8359 / Fax: 649-9437

TMY (Typical Meteorological Year)

TRY (Test Reference Year)

National Climatic Data Center  
151 Patton Avenue, #120  
Asheville, North Carolina 28801  
Phone: (704) 271-4871 / Fax: 271-4876

### CTZ (California Thermal Climate Zones)

California Energy Commission  
Bruce Maeda, MS-25  
1516-9th Street  
Sacramento, CA 95814-5512  
1-800-772-3300 Energy Hotline

### WYEC (Weather Year for Energy Calculation)

ASHRAE  
1791 Tullie Circle N.E.  
Atlanta, GA 30329  
(404)636-8400 / Fax: (404)321-5478

### Canadian Weather Files in WYEC2 Format

Dr. Didier Thevenard  
Watsun Simulation Laboratory  
University of Waterloo  
Waterloo, Ont., Canada N2L 3G1  
Phone: (519) 888-4904 / Fax: 888-6197  
watsun@helix.watstar.uwaterloo.ca

The original long-term data sets (up to 40 years of data) from which the CWEC files were derived can also be obtained directly from Environment Canada.

Contact Mr. Robert Morris  
Phone: (416) 739-4361

\* \* DOE-2 ENERGY CONSULTANTS \* \*

|   |  |
|---|--|
| <p><b>Consulting Engineers</b><br/>                 Charles Fountain<br/>                 Burns &amp; McDonnell Engineers<br/>                 8055 E. Tufts Avenue, Suite 330<br/>                 Denver, CO 80237 (303) 721-9292</p> | <p><b>Consultant</b><br/>                 Greg Cunningham<br/>                 Cunningham + Associates<br/>                 512 Second Street<br/>                 San Francisco, CA (415) 495-2220</p>  |
| <p><b>Consultant</b><br/>                 Philip Wemhoff<br/>                 1512 South McDuff Avenue<br/>                 Jacksonville, FL 32205 (904) 632-7393</p>   | <p><b>Consultant</b><br/>                 Jeff Hirsch<br/>                 12185 Presilla Road<br/>                 Camarillo, CA 93012 (805) 532-1045</p>   |
| <p><b>Consultants</b><br/>                 Charles Eley, John Kennedy<br/>                 Eley Associates<br/>                 142 Minna Street<br/>                 San Francisco, CA 94105 (415) 957-1977</p>                        | <p><b>Computer-Aided Mechanical Engineering</b><br/>                 Mike Roberts<br/>                 Roberts Engineering Co.<br/>                 11946 Pennsylvania<br/>                 Kansas City, MO 64145 (816) 942-8121</p>               |
| <p><b>Consultant</b><br/>                 Steven D. Gates, P.E.<br/>                 Building HVAC Design/Performance Modeling<br/>                 11608 Sandy Bar Court<br/>                 Gold River, CA 95670 (916) 638-7540</p>  | <p><b>Consultant</b><br/>                 Donald E. Croy<br/>                 CAER Engineers, Inc.<br/>                 814 Eleventh Street<br/>                 Golden, CO 80401 (303) 279-8136</p>   |
| <p><b>Mechanical Engineers</b><br/>                 Chuck Sherman<br/>                 Energy Simulation Specialists<br/>                 64 East Broadway, Suite 230<br/>                 Tempe, AZ 85282 (602) 967-5278</p>           | <p><b>Energy Engineering: Commercial &amp; Institutional</b><br/>                 Michael W. Harrison, P.E.<br/>                 139 Bluebird Lane<br/>                 Whitehall, MT 59759 (406) 287-5370</p>                                     |
| <p><b>Consultants</b><br/>                 Shiva Subramanya<br/>                 Criterion, Inc.<br/>                 5331 SW Macadam Ave., Suite 205<br/>                 Portland, OR 97201 (503) 224-8606</p>                        | <p><b>Hourly Calibrated DOE-2 Analysis</b><br/>                 Jeff S. Haberl<br/>                 Energy Systems Laboratory<br/>                 Texas A&amp;M University<br/>                 College Station, TX 77843-3123 (409) 845-6065</p> |
| <p><b>Consultant</b><br/>                 Martyn C. Dodd<br/>                 Gabel Dodd Associates<br/>                 100 Galli Drive, Suite 1<br/>                 Novato, CA 94949 (415) 883-5900</p>                              | <p><b>Consulting Engineers</b><br/>                 Prem N. Mehrotra<br/>                 General Energy Corporation<br/>                 230 Madison Street<br/>                 Oak Park, IL 60302 (708) 386-6000</p>                            |
| <p><b>Energy Management Specialists</b><br/>                 Hank Jackson, P.E.<br/>                 P.O. Box 675<br/>                 Weaverville, NC 28787-0675 (704) 658-0298</p>  | <p><b>Consultant/Building Systems Analysis</b><br/>                 Robert H. Henninger, P.E.<br/>                 ElectroCom GARD Ltd.<br/>                 2070 Maple Street<br/>                 Des Plaines, IL 60018-3019 (708) 699-3252</p>  |

\* \* DOE-2 ENERGY CONSULTANTS (continued) \* \*

|  |  |
|--|--|
| <p><b>Consulting Engineers/Computer Simulation Sciences</b><br/>                 Robert E. Gibeault<br/>                 A-TEC<br/>                 5515 River Avenue, Suite 301<br/>                 Newport Beach, CA 92663 (714) 548-6836</p> | <p><b>Energy Consultants</b><br/>                 Gene Tsai<br/>                 Acrosoft International, Inc.<br/>                 3435 S. Yosemite, Suite 220<br/>                 Denver, CO 80231 (303) 696-6888</p>                  |
| <p><b>Consulting Engineers</b><br/>                 Susan Reilly<br/>                 Enermodal Engineering<br/>                 1554 Emerson Street<br/>                 Denver, CO 80218 (303) 861-2070</p>                                    | <p><b>Technical Real World Analysis</b><br/>                 David J. Schwed<br/>                 Romero Management Associates<br/>                 1805 West Avenue K, #202<br/>                 Lancaster, CA 93534 (805) 940-0540</p> |
| <p><b>Energy Codes - DSM</b><br/>                 Doug Mahone<br/>                 The Heshong Mahone Group<br/>                 4610 Paula Way<br/>                 Fair Oaks, CA 95628 (916) 962-7001</p>                                      | <p><b>Consulting Engineers</b><br/>                 Gregory Banken, P.E.<br/>                 Q-Metrics, Inc.<br/>                 P.O. Box 3016<br/>                 Woodinville, WA 98072 (205) 915-8590</p>                           |
| <p><b>Energy/DSM-Consultants</b><br/>                 Adrian Tuluca<br/>                 Steven Winter Associates<br/>                 50 Washington Street<br/>                 Norwalk, CT 06854 (203) 852-0110</p>                            | <p><b>Consulting Energy Engineers</b><br/>                 Gary H. Michaels, P.E.<br/>                 1512 Crain Street<br/>                 Evanston, IL 60202 (708) 869-5859</p>  |
| <p><b>Consultant/Building Systems Engineering</b><br/>                 Ellen Franconi<br/>                 1504 Grant Street<br/>                 Berkeley, CA 94703 (510) 559-8340</p>  | <p><b>Consulting Engineer</b><br/>                 Robert Mowris, P.E.<br/>                 606 Pelton Avenue<br/>                 Santa Cruz, CA 95060 (408) 454-0606</p>   |
| <p><b>Consultant Engineers</b><br/>                 David A. Cohen<br/>                 Architectural Energy Corporation<br/>                 2540 Frontier Avenue, #201<br/>                 Boulder, CO 80301 (303) 444-4149</p>               | <p><b>Modeling Specialist</b><br/>                 Norm Weaver<br/>                 Interweaver Consulting<br/>                 P.O. Box 775444<br/>                 Steamboat Springs, CO 80477 (970) 870-1710</p>                      |
| <p><b>Energy Engineering and Analysis</b><br/>                 Leo Rainer<br/>                 Davis Energy Group, Inc.<br/>                 123 C Street<br/>                 Davis, CA 95616 (916) 753-1100</p>                                | <p><b>Large Facility Modeling</b><br/>                 George Marton<br/>                 Consulting Engineer<br/>                 1129 Keith Avenue<br/>                 Berkeley, CA 94708 (510) 841-8083</p>                          |
| <p><b>Consulting Engineers</b><br/>                 Chandra Shinde, P.E.<br/>                 ENVIRODESIGN GROUP<br/>                 385 S. Lemon Ave., E-266<br/>                 Walnut, CA 91789 (909) 598-1980</p>                          | <p><b>Energy Simulation Consultant</b><br/>                 Joel Neymark, P.E.<br/>                 2140 Ellis Street<br/>                 Golden, CO 80401 (303) 384-0307</p>   |



**\* \* DOE-2 RESOURCE CENTERS \* \***

*The people listed here have agreed to be primary contacts for DOE-2 program users in their respective countries. Each resource center has the latest program documentation, all back issues of the User News, and recent LBNL reports pertaining to DOE-2. These resource centers will receive copies of all new reports and documentation. Program users can then make arrangements to get photocopies of the new material for a nominal cost. We hope to establish resource centers in other countries; please contact us if you are interested in establishing a center in your area.*

|  |   |
|--|---|
| <p><b>South America</b><br/>           Prof. Roberto Lamberts<br/>           Universidade Federal de Santa Catarina<br/>           Campus Universitario--Trindade<br/>           Cx. Postal 476<br/>           88049 Florianopolis SC<br/>           BRASIL<br/>           Telephone: (55)482-31-9272<br/>           Fax: (55)48-231-9770<br/>           email: Lamberts@ecv.ufsc.BR</p> | <p><b>Australasia</b><br/>           Dr. Deo K. Prasad/P. C. Thomas<br/>           SOLARCH<br/>           University of New South Wales<br/>           P.O. Box 1<br/>           Kensington, N.S.W. 2033<br/>           AUSTRALIA<br/>           Telephone: (61)-2-697-5783 (P.C. Thomas)<br/>           Fax: (61) 2-662-4265 or -1378<br/>           email: PC.Thomas@unsw.EDU.AU</p>  |
| <p><b>Portugal, Spain, Italy, and Greece</b><br/>           Antonio Rego Teixeira<br/>           ITIME<br/>           Azinhaga dos Lameiros a Estrada<br/>               do Paco do Lumiar<br/>           1699 Lisboa Codex<br/>           PORTUGAL<br/>           Telephone: (351) 1-716-4096<br/>           Fax: (351) 1-716-4305</p>  | <p><b>Singapore, Malaysia, Indonesia, Thailand, and the Philippines</b><br/>           WONG Yew Wah, Raymond<br/>           Nanyang Technological University<br/>           School of Mechanical and Production Engineering<br/>           Nanyang Avenue<br/>           Singapore 2263<br/>           REPUBLIC OF SINGAPORE<br/>           Telephone: (65)799-5543<br/>           Fax: (65)791-1859<br/>           email: mywwong@ntuvax.ntu.ac.sg</p> |
| <p><b>Australia</b><br/>           Murray Mason<br/>           ACADS - BSG<br/>           16 High Street<br/>           Glen Iris VIC. 3146<br/>           AUSTRALIA<br/>           Telephone: (61) 885 6586<br/>           Fax: (61) 885 5974<br/>           email:</p>   | <p><b>Germany</b><br/>           B. Barath or G. Morgenstern<br/>           BARATH and WAGNER<br/>           Rudolf-Diesel-Strasse 2,<br/>           40670 Meerbusch<br/>           GERMANY<br/>           Telephone: (49) 2159 528041<br/>           Fax: (49) 2159 528043<br/>           email:</p>   |

**Continued**

**\* \* DOE-2 RESOURCE CENTERS \* \* (cont.)**

**SWITZERLAND**

Rene' Meldem  
 gb consult ag  
 30-A, Chemin de la Fauvette  
 P.O. Box 106  
 CH-1012 Lausanne  
 Switzerland  
 Telephone: (41) / 21 653-5677  
 Fax: (41) / 21 653-2884  
 Email: 100713.3072@compuserve.com



**\* \* DOE-2 PROGRAM DOCUMENTATION \* \***

*DOE-2 documentation is available from several sources. The National Technical Information Service offers a complete set of DOE-2 manuals, available for purchase separately. Kinko's Copy Center of Berkeley offers the DOE-2.1E updated documentation (BDL Summary, Sample Run Book, and Supplement) as a set; their price includes shipping within the U.S. [see the facing page for a faxable order form to Kinko's]. The Energy Science Technology Software Center at Oak Ridge, TN, offers the DOE-2.1E updated documentation at no charge but only when you purchase the mainframe or workstation version of DOE-2. And finally, many of the PC vendors of DOE-2 offer some or all of the documentation when you buy their version of DOE-2.*

**National Technical Information Service  
 DOE-2 Program Documentation**

| Document  | Order Number    | Price  |
|---|-----------------|--------|
| DOE-2 Basics Manual (2.1E)                          | DE-940-13165    | 44.50  |
| BDL Summary (2.1E)                                  | DE-940-11217    | 27.00  |
| Sample Run Book (2.1E)                              | DE-940-11216    | 91.00  |
| Reference Manual (2.1A)                             | LBL-8706, Rev.2 | 126.00 |
| Supplement (2.1E)                                   | DE-940-11218    | 91.00  |
| Engineers Manual (2.1A)<br>[algorithm descriptions] | DE-830-04575    | 52.00  |

**Order from:**

National Technical Information Service      Phone (703) 487-4650  
 5285 Port Royal Road                              FAX (703) 321-8547  
 Springfield, VA 22161

# DOE-2 COMPUTER PROGRAM DOCUMENTATION ORDER FORM

**FAX THIS PAGE TO KINKO'S COPY CENTER (510) 644-9704**

Dani Aalfs  
Kinko's Copy Center  
901 University Avenue  
Berkeley, CA 94710  
USA

Date of Order \_\_\_\_\_

Phone (510) 204-0781

Fax: (510) 644-9704

Please ship me \_\_\_ set(s) of DOE-2.1E update documentation. The set includes BDL Summary, DOE-2 Supplement, and Sample Run Book. Cost of all three manuals is \$125.00 US, includes local tax, shipping, and handling. For foreign orders, please fax Ms. Dani Aalfs to ascertain extra shipping costs.

(circle one)

VISA

MASTERCARD

Card Number: \_\_\_\_\_ Expires: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

Card issued to (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

## World-Wide Web and Internet Sites for Building Energy Efficiency

|   |  |
|---|--|
| Internet - sci.engrg.heat-vent-ac   | HVAC discussion group.   |
| Internet - eicbbs.wseo.wa.gov   | Washington State Energy Office bulletin board.   |
| Internet - sci.engrg.lighting   | Lighting discussion group.   |
| Web - <a href="http://energy.ca.gov/energy/cectext/ETEC.html">http://energy.ca.gov/energy/cectext/ETEC.html</a>                             | California Energy Commission's Energy Technology and Education Center. See <i>User News</i> , Vol. 16, No. 1, p. 42.   |
| Web - <a href="http://www.hike.te.chiba-u.ac.jp/ikeda/CIE/publ/110-94.html">http://www.hike.te.chiba-u.ac.jp/ikeda/CIE/publ/110-94.html</a> | The International Commission on Illumination - CIE. See <i>User News</i> , Vol. 16, No. 1, p. 44.  |
| Web - <a href="http://www.eren.doe.gov/">http://www.eren.doe.gov/</a>   | EREN: Energy Efficiency and Renewable Energy Network of the U.S. Department of Energy. See <i>User News</i> , Vol. 16, No. 1, p. 44.   |
| Web - <a href="http://www.doe.gov/">http://www.doe.gov/</a>   | U.S. Department of Energy. See <i>User News</i> , Vol. 15, No. 4, p. 1.  |
| Web - <a href="http://www.whitehouse.gov/">http://www.whitehouse.gov/</a>   | The White House home page contains an <i>Interactive Citizens Handbook</i> that lists U.S. Government servers by agency. Use this site as a jumping-off point to explore other Federal agencies. See <i>User News</i> , Vol. 15, No. 4, p. 1.  |
| Web - <a href="http://www.fedworld.gov/">http://www.fedworld.gov/</a>   | FedWorld is the U.S. Government's Federal Information Network home page. It lists web servers, ftp, gopher, and telnet sites and is organized by subject categories.   |
| Web - <a href="http://www.fedworld.gov/ntis/ntishome.html">http://www.fedworld.gov/ntis/ntishome.html</a>                                   | National Technical Information Service NTIS is part of the U.S. Department of Commerce; it gathers and markets scientific, technical and business-related information and disseminates it electronically, on paper copy, on diskette, or on CD-ROM. NTIS has access to more than two million documents, reports, studies, computer programs, and databases; it adds an average of 1,300 titles each week. Call (703) 487-4650 for info.                                |
| Web - <a href="http://www.ornl.gov/CADDET/caddet.html">http://www.ornl.gov/CADDET/caddet.html</a>   | Center for the Analysis and Dissemination of Demonstrated Energy Technologies CADDET is an International Energy Agency program responsible for collecting and disseminating information on demonstrated, energy-efficient and renewable energy technologies. See <i>User News</i> , Vol. 16, No. 2, p. 23.   |
| Web - <a href="http://solstice.crest.org/efficiency/aceee/index.html">http://solstice.crest.org/efficiency/aceee/index.html</a>             | American Council for an Energy-Efficient Economy ACEEE is a non-profit organization dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection. See <i>User News</i> , Vol. 16, No. 2, p. 23.  |
| Web - <a href="http://www.ashrae.org">http://www.ashrae.org</a>   | <b>American Society of Heating, Refrigeration and Air-Conditioning</b><br>ASHRAE is an international membership organization operated for the exclusive purpose of advancing the arts and sciences of heating, refrigeration, air conditioning and ventilation. ASHRAE sponsors research, develops standards for industry, publishes technical and scientific data, and organizes conferences and educational activities. See <i>User News</i> , Vol. 16, No. 3, p. ?. |
| Web - <a href="http://www.cisti.nrc.ca:80/irc/irccontents/html">http://www.cisti.nrc.ca:80/irc/irccontents/html</a>                         | [Canadian] Institute for Research in Construction IRC is an integral part of the National Research Council. Canada's premier science and technology agency. IRC is the leader in research, technology and innovation for the Canadian construction industry through the development of national construction codes. See <i>User News</i> , Vol. 16, No. 3, p. ?.   |

**\*\*\* Featured Sites This Issue \*\*\***  
**World-Wide Web and Internet Sites for Building Energy Efficiency**

**American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)**  
<http://www.ashrae.org>

ASHRAE is an international membership organization operated for the exclusive purpose of advancing the arts and sciences of heating, refrigeration, air conditioning and ventilation. Since its founding in 1894 ASHRAE has helped shape the growth of the industry to which its members belong and has made important contributions to the public. Through volunteer effort, ASHRAE sponsors research, develops standards for industry, publishes technical and scientific data, and organizes conferences and educational activities. Call ASHRAE International in Atlanta, GA, at (404) 636-8400.

ASHRAE  
1791 Tullie Circle N.E.  
Atlanta, GA 30329-2305  
Ph: 404-636-8400  
Fx: 404-321-5487

**Institute for Research in Construction [Canada]**  
<http://www.cisti.nrc.ca:80/irc/irccontents/html>

The Institute for Research in Construction (IRC) is the leader in research, technology and innovation for the Canadian construction industry, one of the country's largest industrial sectors. Through its research and in partnership with industry, IRC works with industry to develop innovative building materials and energy-efficient products. IRC coordinates the development of Canada's model construction code and works extensively with industry and the provincial and territorial governments to produce national building codes.

Institute for Research in Construction  
National Research Council of Canada  
Ottawa, K1A 0R6  
Canada  
Ph: 613-993-2607  
Fx: 613-952-7673

\*\*\*\*\*

## New LBNL Software: RESFEN, Version 2.4

### Description of the Program

RESFEN 2.4 is the latest version of a computer program for calculating the heating and cooling energy performance and costs of residential fenestration systems. This is a **prototype** and its form and content are currently being evaluated for possible use as part of a window rating system being developed by the National Fenestration Rating Council (NFRC). RESFEN 2.4 calculates annual heating and cooling energy use and cost and peak heating and cooling loads. The algorithms are based on multiple regressions that were derived from a database of DOE-2.1E building energy simulations of single- and two-story residences. Users can vary geographic location, electricity and gas cost, infiltration, HVAC, wall type and floor type, as well a window size, U-value, shading coefficient, window type. Results are given for two discrete sets of window orientations: north-east-south-west or northeast-southeast-southwest-northwest. Incremental changes due to obstructions, overhangs, and interior shades can also be calculated.

### Hardware Requirements

IBM-PC compatibles with Windows 3.1, VGA or SVGA monitor, and mouse.

### Distribution and Support Materials

The RESFEN software package includes one DS-HD 3.5" IBM formatted diskette and accompanying instructions. The program may be obtained free of charge from

|                         |                       |
|-------------------------|-----------------------|
| NFRC                    | Phone: (301) 589-6372 |
| Suite 120               | Fax: (301) 588-0854   |
| 1300 Spring Street      |                       |
| Silver Spring, MD 20910 |                       |

\*\*\*\*\* DISCLAIMER \*\*\*\*\*

This document was prepared as an account of work sponsored by the U.S. Government. Neither the U.S. Government nor any agency thereof, nor the Regents of the University of California, nor their employees, makes any express/implied warranty or assumes legal liability or responsibility for the completeness, accuracy, or usefulness of information, apparatus, product, or process disclosed, or represents that use thereof would not infringe privately owned rights. References herein to specific commercial products, process, or services by trade names, trademarks, manufacturers, etc., does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Government or any agency thereof, or the Regents of the University of California. Views and opinions of the authors expressed herein don't necessarily state or reflect those of the U.S. Government or agencies thereof, or the Regents of the University of California, and shall not be used for advertising or product endorsement.



## DOE-2.1E Documentation Update

-- Sample Run Book --



### Metric Input/Output Example

Recently, it was brought to our attention that Section 13 of the DOE-2.1E Sample Run Book was missing. Sure enough, due to an error on our part Section 13, the Metric I/O Example, was never sent to the printer. If you would like a copy of this example, please photocopy this page and fax it to Kathy Ellington at (510) 486-4089; be sure your mailing label is legible. You may also email me at [KLEllington@lbl.gov](mailto:KLEllington@lbl.gov)

LAWRENCE BERKELEY NATIONAL LABORATORY  
SIMULATION RESEARCH GROUP 90-3147  
UNIVERSITY OF CALIFORNIA  
BERKELEY, CA 94720  
U S A

Non - Profit Org.  
U.S. POSTAGE  
PAID  
Berkeley, CA  
Permit No. 1123

ADDRESS CORRECTION REQUESTED

77843-3123  
Jeff Haberl  
Energy Systems Laboratory  
Dept of Mechanical Engineering  
Texas A&M University  
College Station, TX 77843-3123