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8 September 2009

Commercial Software List
Department of Energy
Office of Building Technologies, EE-2J
1000 Independence Ave., SW
Washington, DC 20585-0121

To Whom It May Concern:

Enclosed herewith is our DOE-2.2 submittal for Qualified Computer Software for calculating Energy Savings for Purposes of Energy-Efficient Commercial Building Tax Deduction under Internal Revenue Section §179D.

Software Developer:	James J. Hirsch & Associates
	12185 Presilla Road
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	www.doe2.com
Contact Person:	James J. Hirsch
	Jeff.Hirsch@DOE2.com
	805-553-9000 (phone)
	805-532-2401 (fax)
Software Version:	DOE-2.2 v47d

The software has been tested according to ANSI/ASHRAE Standard 140-2007 Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs. The enclosed CD contains files that include all test results, input files, output files, weather data, modeler reports, post-processor programs, and a complete installation program from which eQUEST 3.63b (build 6510) can be fully installed. Additional information, as required by Internal Revenue Bulletin: 2008-14 (April 7, 2008) Section 4, is provided in the accompanying Attachment 1 and electronic (MS Word) format on the enclosed CD (see Attachment 2 for a list of the contents of the CD).

Please contact me at the phone or email address provided above if I can answer any question.

Cordially,

Marlin S. Addison

Attachment 1

Tax Deduction Qualified Software
DOE-2.2 version 47d

On this page you'll find information about DOE-2.2 version 47d qualified computer software (buildings.energy.gov/qualified_software.html), which calculates energy and power cost savings that meet federal tax incentive requirements for commercial buildings.

Date Documentation Received by DOE: 24 September 2009

Statements in quotes are from the software developer.

Internal Revenue Code §179D (c)(1) and (d) Regulations Notice 2006-52, Section 6 requirements as amplified by Notice 2008-40, Section 4 requirements.	
(1) The name, address, and (if applicable) web site of the software developer;	James J. Hirsch & Associates 12185 Presilla Road Camarillo, California 93012-9243 www.doe2.com
(2) The name, email address, and telephone number of the person to contact for further information regarding the software;	Jeff Hirsch James J. Hirsch & Associates Jeff.Hirsch@DOE2.com 805-553-9000 (phone) 805-532-2401 (fax)
(3) The name, version, or other identifier of the software as it will appear on the list;	DOE-2.2 v47d
(4) All test results, input files, output files, weather data, modeler reports, and the executable version of the software with which the tests were conducted; and	Provided to DOE.
(5) A declaration by the developer of the software, made under penalties of perjury, that—	
(a) The software has been tested according to ANSI/ASHRAE Standard 140-2007 Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs;	"The software has been tested according to ANSI/ASHRAE Standard 140-2007 Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs."
(b) The software can model explicitly—	
(i) 8,760 hours per year;	"The DOE-2.2 v47d software complies."
(ii) Calculation methodologies for the building components being modeled;	"The DOE-2.2 v47d software complies."
(iii) Hourly variations in occupancy, lighting power, miscellaneous equipment power, thermostat setpoints, and HVAC system operation, defined separately for each day of the week and holidays;	"The DOE-2.2 v47d software complies."
(iv) Thermal mass effects;	"The DOE-2.2 v47d software complies."
(v) Ten or more thermal zones;	"The DOE-2.2 v47d software complies."
(vi) Part-load performance curves for mechanical equipment;	"The DOE-2.2 v47d software complies."
(vii) Capacity and efficiency correction curves for mechanical heating and cooling equipment; and	"The DOE-2.2 v47d software complies."
(viii) Air-side and water-side economizers with integrated control.	"The DOE-2.2 v47d software complies with the air-side economizer requirements and with

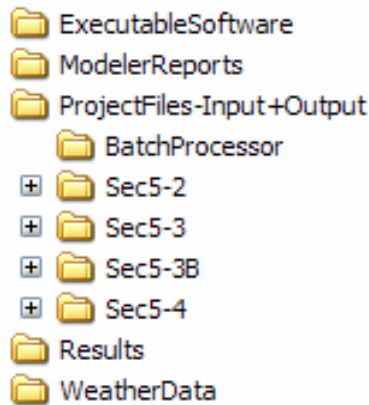|	two forms of water-side economizers (WSE): dedicated WSE coils in air handlers and 'parallel' (i.e., non-integrated) WSE such as a strainer cycle. The DOE-2.2 v47d software cannot model 'parallel' WSE (i.e., with integrated control) and shall not be used for projects with that technology."
(c) The software can explicitly model each of the following HVAC systems listed in Appendix G of Standard 90.1-2004:	
(i) Packaged Terminal Air Conditioner (PTAC) (air source), single-zone package (through the wall), multi-zone hydronic loop, air-to-air DX coil cooling, central boiler, hot water coil.	"The DOE-2.2 v47d software complies."
(ii) Packaged Terminal Heat Pump (PTHP) (air source), single-zone package (through the wall), air-to-air DX coil heat/cool.	"The DOE-2.2 v47d software complies."
(iii) Packaged Single Zone Air Conditioner (PSZ-AC), single-zone air, air-to-air DX coil cool, gas coil, constant-speed fan.	"The DOE-2.2 v47d software complies."
(iv) Packaged Single Zone Heat Pump (PSZ-HP), single-zone air, air-to-air DX coil cool/heat, constant-speed fan.	"The DOE-2.2 v47d software complies."
(v) Packaged Variable-Air-Volume (PVAV) with reheat, multi-zone hydronic loop, air-to-air DX coil, VAV fan, boiler, hot water VAV terminal boxes.	"The DOE-2.2 v47d software complies."
(vi) Packaged Variable-Air-Volume with parallel fan powered boxes (PVAV with PFP boxes), multi-zone air, DX coil, VAV fan, fan-powered induction boxes, electric reheat.	"The DOE-2.2 v47d software complies."
(vii) Variable-Air-Volume (VAV) with reheat, multi-zone air; multi-zone hydronic loop, air-handling unit, chilled water coil, hot water coil, VAV fan, chiller, boiler, hot water VAV boxes.	"The DOE-2.2 v47d software complies."
(viii) Variable-Air-Volume with parallel fan powered boxes (VAV with PFP boxes), multi-zone air, air-handling unit, chilled water coil, hot water coil, VAV fan, chiller, fan-powered induction boxes, electric reheat.	"The DOE-2.2 v47d software complies."
(d) The software can—	
(i) Either directly determine energy and power costs or produce hourly reports of energy use by energy source suitable for determining energy and power costs separately; and	"The DOE-2.2 v47d software complies."
(ii) Design load calculations to determine required HVAC equipment capacities and air and water flow rates.	"The DOE-2.2 v47d software complies."
(e) The software can explicitly model:	
(i) Natural ventilation.	"The DOE-2.2 v47d software can model simple single-zone natural ventilation using air changes per hour (user-defined) or Sherman-Grimsrud (calculated)."
(ii) Mixed mode (natural and mechanical) ventilation.	"The DOE-2.2 v47d software does not explicitly model this feature and shall not be used for projects with that technology."
(iii) Earth tempering of outdoor air.	"The DOE-2.2 v47d software does not explicitly model this feature and shall not be used for projects with that technology."
(iv) Displacement ventilation.	"The DOE-2.2 v47d software does not explicitly model this feature and

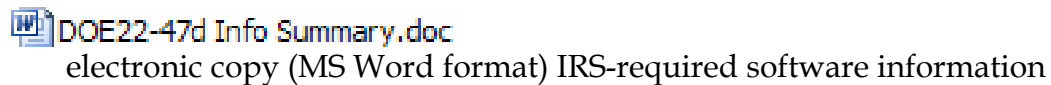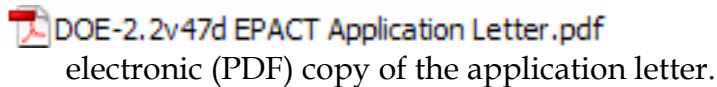|	
	shall not be used for projects with that technology."
(v) Evaporative cooling.	"The DOE-2.2 v47d software complies."
(vi) Water use by occupants for cooking, cleaning or other domestic uses.	"The DOE-2.2 v47d software does not explicitly model this feature and shall not be used for projects with that technology."
(vii) Water use by heating, cooling, or other equipment, or for on-site landscaping.	"The DOE-2.2 v47d software does not explicitly model this feature and shall not be used for projects with that technology."
(viii) Automatic interior or exterior lighting controls (such as occupancy, photocells, or time-clocks).	"The DOE-2.2 v47d software can explicitly model automatic interior or exterior lighting controls such as occupancy sensors or time-clocks, but cannot model photocells."
(ix) Daylighting (sidelighting, skylights, or tubular daylight devices).	"The DOE-2.2 v47d software complies."
(x) Improved fan system efficiency through static pressure reset.	"The DOE-2.2 v47d software does not explicitly model this feature and shall not be used for projects with that technology."
(xi) Radiant heating or cooling (low or high temperature).	"The DOE-2.2 v47d software complies with the radiant system requirements for low delta-t heating panel applications. The DOE-2.2 v47d software does not explicitly model radiant cooling systems or high temperature radiant heating systems and shall not be used for projects with that technology."
(xii) Multiple or variable-speed control for fans, cooling equipment, or cooling towers.	"The DOE-2.2 v47d software complies."
(xiii) On-site energy systems (such as combined heat and power systems, fuel cells, solar photovoltaic, solar thermal, or wind).	"The DOE-2.2 v47d software can model on-site energy systems including engines, gas turbines, steam turbine generators and photovoltaic arrays. DOE-2.2 v47d cannot model fuel cells, solar thermal, or wind systems and shall not be used for projects with these technologies."

Attachment 2

Contents of the enclosed CD

The following folders and files are provided on the enclosed CD:

📁 ExecutableSoftware
📁 ModelerReports
📁 ProjectFiles-Input+Output
   📁 BatchProcessor
⊞ 📁 Sec5-2
⊞ 📁 Sec5-3
⊞ 📁 Sec5-3B
⊞ 📁 Sec5-4
📁 Results
📁 WeatherData

At the root of the CD file structure:

📄 DOE-2.2v47d EPACT Application Letter.pdf
   electronic (PDF) copy of the application letter.

📄 DOE22-47d Info Summary.doc
   electronic copy (MS Word format) IRS-required software information

Folders and subfolders:

📁 ExecutableSoftware
   a complete DOE-2.2 v47d setup.exe installation file

📁 ModelerReports
   modeler's notes (MS Word docs)

📁 ProjectFiles-Input+Output
   📁 BatchProcessor
   a postprocessor (D2ResToXLS.exe) used to automatically retrieve the run results and populate the results spreadsheets plus input file scripts for the batch run process

📁 ProjectFiles-Input+Output
⊞ 📁 Sec5-2
⊞ 📁 Sec5-3
⊞ 📁 Sec5-3B
⊞ 📁 Sec5-4
   input & output files for each of the four Std 140 sections

📁 Results
   compiled results, one Excel spreadsheet file for each of the four Std 140 sections

📁 WeatherData
   ASCII and binary weather data files used in the simulation runs