## Building Technologies Program

# Tax Deduction Qualified Software
## EnergyGauge Summit version 3.21

On this page you'll find information about the EnergyGauge Summit version 3.20 (incorporating DOE-2.1E (v120)) 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:  3 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. | |
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| (1) The name, address, and (if applicable) web site of the software developer; | Florida Solar Energy Center<br>1679 Clearlake Road<br>Cocoa, Florida  39922<br>http://www.energygauge.com |
| (2) The name, email address, and telephone number of the person to contact for further information regarding the software; | Dr. Muthusamy Swami<br>swami@fsec.ucf.edu<br>+1 (321) 638-1410 |
| (3) The name, version, or other identifier of the software as it will appear on the list; | EnergyGauge Summit version 3.21 |
| (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— | "On behalf of the EnergyGauge development team I certify the following:" |
| (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 DOE-2.1E (v120) building simulation engine that is incorporated in EnergyGauge Summit 3.20 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— | "The EnergyGauge software is fully compliant with ASHRAE 90.1-2001 and meets all of the below requirements." |
| (i) 8,760 hours per year; | "Yes." |
| (ii) Calculation methodologies for the building components being modeled; | "Yes." |
| (iii) Hourly variations in occupancy, lighting power, miscellaneous equipment power, thermostat setpoints, and HVAC system | "Yes." |

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| operation, defined separately for each day of the week and holidays; | |
| (iv) Thermal mass effects; | "Yes." |
| (v) Ten or more thermal zones; | "Yes." |
| (vi) Part-load performance curves for mechanical equipment; | "Yes." |
| (vii) Capacity and efficiency correction curves for mechanical heating and cooling equipment; and | "Yes." |
| (viii) Air-side and water-side economizers with integrated control. | "Due to limitations of the DOE-2.1E (v120) simulation engine, only air side economizers can be modeled. **EnergyGauge Summit 3.20 cannot, therefore, fulfill the water-side economizer requirement, and may not be used in such cases.**" |
| (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. | "Yes, except multi-zone hydronic loop." |
| (ii) Packaged Terminal Heat Pump (PTHP) (air source), single-zone package (through the wall), air-to-air DX coil heat/cool. | "Yes." |
| (iii) Packaged Single Zone Air Conditioner (PSZ-AC), single-zone air, air-to-air DX coil cool, gas coil, constant-speed fan. | "Yes." |
| (iv) Packaged Single Zone Heat Pump (PSZ-HP), single-zone air, air-to-air DX coil cool/heat, constant-speed fan. | "Yes." |
| (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. | "Yes, except hot water sources for VAV terminal boxes and hydronic loop." |
| (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. | "Yes, except parallel fan powered boxes." |
| (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. | "Yes, except hot water source for VAV terminal boxes." |
| (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. | "Yes, except parallel fan powered boxes." |
| (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 | "Yes." |
| (ii) Design load calculations to determine required HVAC equipment capacities and air and water flow rates. | "Yes." |
| (e) The software can explicitly model: | "None, some of the features listed |

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| | under this section will be available in future versions." |
| (i) Natural ventilation. | |
| (ii) Mixed mode (natural and mechanical) ventilation. | |
| (iii) Earth tempering of outdoor air. | |
| (iv) Displacement ventilation. | |
| (v) Evaporative cooling. | |
| (vi) Water use by occupants for cooking, cleaning or other domestic uses. | |
| (vii) Water use by heating, cooling, or other equipment, or for on-site landscaping. | |
| (viii) Automatic interior or exterior lighting controls (such as occupancy, photocells, or time-clocks). | |
| (ix) Daylighting (sidelighting, skylights, or tubular daylight devices). | |
| (x) Improved fan system efficiency through static pressure reset. | |
| (xi) Radiant heating or cooling (low or high temperature). | |
| (xii) Multiple or variable-speed control for fans, cooling equipment, or cooling towers. | |
| (xiii) On-site energy systems (such as combined heat and power systems, fuel cells, solar photovoltaic, solar thermal, or wind). | |

Effective Date: 3 September 2009