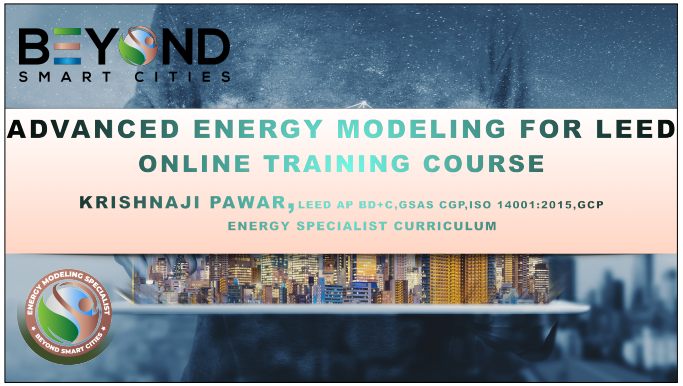
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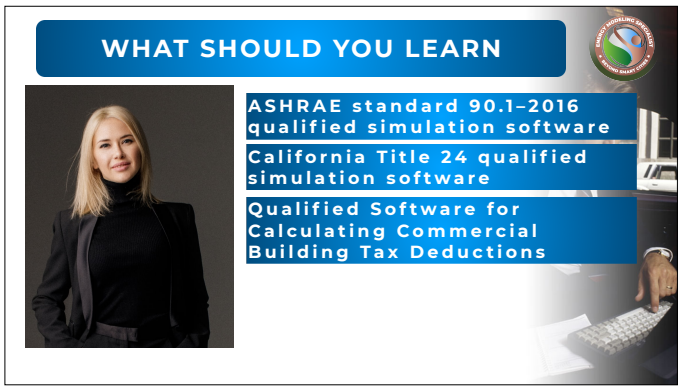

WHAT SHOULD YOU LEARN
ASHRAE standard 90.1-2016 qualified simulation software
California Title 24 qualified simulation software
Qualified Software for Calculating Commercial Building Tax Deductions

ASHRAE 90.1 QUALIFIED SIMULATION SOFTWARE

ASHRAE 90.1–2007, Section G2.2.1, requires that a qualified simulation program explicitly model all of the following:

- ☑ 8,760 hours per year;
- ☑ hourly variations in occupancy, lighting power, miscellaneous equipment power, thermostat setpoints, and HVAC system operation;
- ☑ thermal mass effects; • 10 or more thermal zones;
- ☑ part-load performance curves for mechanical equipment;
- ☑ capacity and efficiency correction curves for mechanical heating and cooling equipment;
- ☑ air-side economizers with integrated control; and
- ☑ baseline building design characteristics specified in ASHRAE 90.1–2007, Appendix G, Section 3.

The simulation program must be able either to directly determine the proposed energy use and code baseline energy use or to produce hourly reports of energy use, by energy source, suitable for determining the proposed energy use and code baseline energy use using a separate calculation engine.

ASHRAE 90.1 QUALIFIED SIMULATION SOFTWARE +

The simulation program must also be capable of performing design load calculations to determine required HVAC equipment capacities and airflow and water flow rates in accordance with generally accepted engineering standards and handbooks (e.g., ASHRAE Handbook of Fundamentals) for both the proposed building design and the code baseline building design.

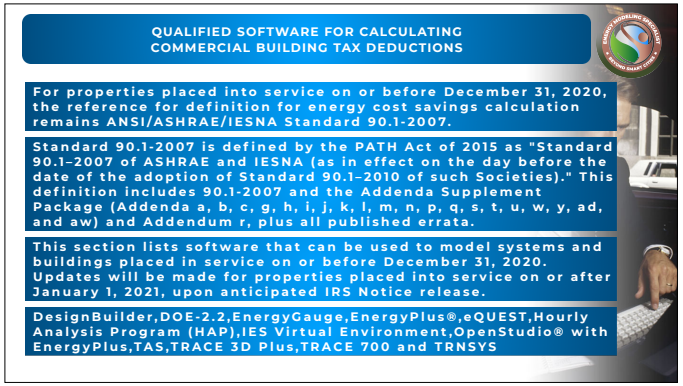
The simulation program must include calculation methodologies for the building components being modeled. For components that cannot be modeled by the simulation program, the exceptional calculation method requirements in Section G2.5 may be used. In addition, a thermodynamically similar component model that can approximate the expected performance of the component may be substituted (see Table G3.1.13).

Commonly used modeling software packages for ASHRAE 90.1–2007, Appendix G, include DOE-2-based modeling programs (eQuest, EnergyPro, and VisualDOE), TRACE, HAP, IES, VisualDOE, and EnergyPlus.

CALIFORNIA TITLE 24 QUALIFIED SIMULATION SOFTWARE

The current energy compliance software programs approved by California for use with the Title 24-2005 standards are EnergyPro and eQuest Compliance Module (D2comply 3.6, the DOE-2.2 component contained within eQUEST 3.6 to perform Title 24 compliance analysis) and Perform 2005.

These programs can automatically generate the energy budget for the standard design and calculate the energy use of the proposed case after the design inputs are complete. However, some post processing or additional software modules may be required to include the additional energy consumption required for LEED documentation (e.g., unconditioned lighting, exterior lighting, process loads) and to revise the metric to cost rather than time-dependent valuation (TDV) energy.


QUALIFIED SOFTWARE FOR CALCULATING COMMERCIAL BUILDING TAX DEDUCTIONS
For properties placed into service on or before December 31, 2020, the reference for definition for energy cost savings calculation remains ANSI/ASHRAE/IESNA Standard 90.1-2007.
Standard 90.1-2007 is defined by the PATH Act of 2015 as "Standard 90.1–2007 of ASHRAE and IESNA (as in effect on the day before the date of the adoption of Standard 90.1–2010 of such Societies)." This definition includes 90.1-2007 and the Addenda Supplement Package (Addenda a, b, c, g, h, i, j, k, l, m, n, p, q, s, t, u, w, y, ad, and aw) and Addendum r, plus all published errata.
This section lists software that can be used to model systems and buildings placed in service on or before December 31, 2020. Updates will be made for properties placed into service on or after January 1, 2021, upon anticipated IRS Notice release.
DesignBuilder,DOE-2.2,EnergyGauge,EnergyPlus®,eQUEST,Hourly Analysis Program (HAP),IES Virtual Environment,OpenStudio® with EnergyPlus,TAS,TRACE 3D Plus,TRACE 700 and TRNSYS

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