

Summary of the Impactful Changes in the Energy Modeling Guidelines v3.0

1. The baseline is changed to 2018 CT State Building Code and is generally aligned with the ANSI/ASHRAE/IESNA Standard 90.1 2013. However, the simulation rules deviate from 90.1 2013 Appendix G in several areas, including but not limited to the baseline HVAC and service water heating systems, to reflect Connecticut standard design practice and incentive program funding rules. (Section 1 and throughout EMG to reflect differences between 90.1 2010 and 90.1 2013)
2. Addenda to 90.1 2013 Appendix G cannot be used. (Section 3.1.5 crossed out.)
3. eQUEST and TRACE software are pre-approved for use in the program. Other software tools may be approved on case by case basis. Modeling approach for non-typical measures must be coordinated with Utility. (Section 3.1.6)
4. Clarified that the new heating and cooling plants designed to serve multiple buildings may be eligible for incentives via prescriptive pathway, as coordinated with the Utility. (Section 3.3.1)
5. Clarified CHP system modeling (Section 3.5), including restriction on claiming savings from measures that reduce utilization of waste heat.
6. Updated the prescribed lighting schedules to account for savings from automatic controls required in 90.1 2013 (Section 3.9 and Appendix B).
7. Baseline window area determined based on the 90.1 2010 rules (based on the proposed design or 40% of above grade wall area, whichever is less). (Section 4.1.4)
8. Clarified that when both summer and winter U-factors are available for fenestration, winter U-factor must be modeled. (Section 4.2.2)
9. Proposed lighting wattage must be the greater of the actual installed fixture wattage or 85% of the maximum manufacturer's fixture wattage. (Section 5.2)
10. The baseline lighting in residential spaces is set as follows:
 - Dwelling units (e.g. apartments): reduced from 1.1 W/SF to 0.75 W/SF (Section 5.3.1)
 - Hotel-motel guestrooms: set at 0.91 W/SF per Standard 90.1 2013 (Section 5.3.2)
 - Dormitory-living quarters: reduced from 1.1 W/SF to 0.38 W/SF per Standard 90.1 2013 (Section 5.3.3)
11. Automatic lighting controls are required by 90.1 2013 in most spaces (90.1 Section 9.4.1 and Table 9.6.1). The performance credit opportunities for automatic controls other than daylighting are described in EMG Section 5.7.1. Modeling daylighting controls is described in EMG Section 5.7.2.

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12. Modeling requirements for commercial refrigeration equipment are updated to align with 90.1 2013 and PNNL Performance Rating Method Reference Manual (Section 6.2).
13. Baseline HVAC system map is substantially modified to align with Connecticut standard practice. (Section 7.1). The baseline HVAC system type may be determined using one of the following options:
 - The same system types as in the proposed design, but with the heating and cooling efficiency minimally compliant with Standard 90.1, to allow claiming credit for better than code heating and cooling efficiency.
 - Based on EMG Tables 7.1 and 7.2, to allow claiming credit for more efficient system type specified in the proposed design compared to Connecticut standard practice.
 - Pre-approved alternative baseline system types representative of the standard Connecticut design practice for new facilities of the similar type and size.
 - Baseline System 3 & 4 must be modeled as constant volume or variable volume, to meet requirements of 90.1 Section 6.5.3.2.1.
14. Baseline chillers must be modeled based on Path B performance. The appropriate performance curves are included in EMG Appendix C. (Section 7.2)
15. Engine-driven chillers must be modeled energy neutral and can be rebated through a separate state program. (Section 7.2)
16. Baseline water heater efficiency must be based on 90.1 2013 Section 7.4.2 or Federal Regulation §430.32 [10], whichever is more stringent. (Section 8.1)
17. Multifamily projects with electric resistance storage water heaters must meet the performance requirements in EMG Section 8.3.
18. Savings for low flow plumbing fixtures must be calculated relative to the maximum flow rates prescribed by 2015 International Plumbing Code (Table 8.1-2).