



FLORIDA SOLAR ENERGY CENTER

A Research Institute of the University of Central Florida

DOE Code Change Proposal
Simulated Performance Alternative

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State Building Energy Codes**

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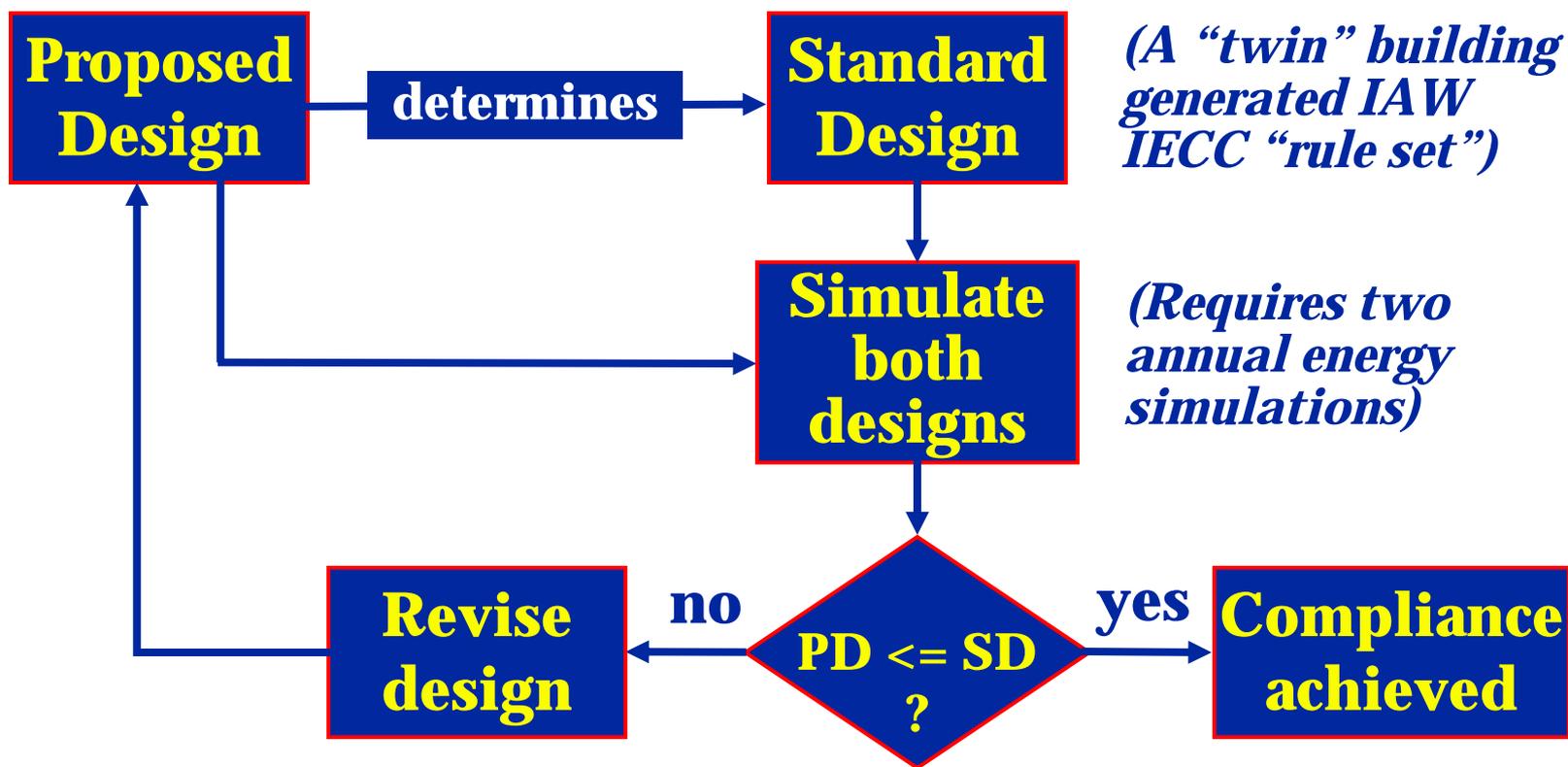


Performance Compliance

- ❖ Compares “proposed design” with a “standard reference design” using annual building energy simulation techniques.
- ❖ Standard reference design provides the minimum acceptable energy budget to achieve compliance.
- ❖ Compliance is achieved when the proposed design energy is equal to or less than that of the standard reference design budget.



Performance Method





Standard Reference Design

- ❖ Same size as the proposed design.
- ❖ Same geometry as proposed design.
- ❖ Same orientation as the proposed design.
- ❖ Same operating conditions as the proposed design.
- ❖ Energy feature characteristics by climate zone as specified by a detailed “rule set.”



Previous Code Versions

- ❖ Insufficient “rule set” specificity leading to large opportunities for gaming.
- ❖ A hodge-podge of changes occurring over many years led to a “rule set” that was difficult to understand and interpret.
- ❖ Little to no compliance guidance provided to code officials.
- ❖ Perceived as impossible to cost-effectively enforce in the field.



Improved Provisions

- ❖ Improved compliance guidance provided for code officials
 - Minimum standard compliance report elements specified
 - Computer generated field inspection checklist is required
 - Software tool documentation required
 - Improved software tool specification



Software Tool Specification

❖ Minimum Capabilities:

- Computer generation of standard reference design – no user modification allowed
- Calculation of equipment sizing for standard reference design
- Generation of official inspection checklist listing each of the proposed design component characteristics
- Calculations that account for effects of climate and equipment sizing on system performance.



The “Rule Set”

- ❖ Same component efficiencies as prescriptive compliance method
- ❖ Specification by individual building component
- ❖ Significant increase in specificity
- ❖ More understandable tabular format – standard reference design criteria presented side-by-side with the proposed design criteria



Components Specified

- ❖ Above grade walls
- ❖ Basements and crawlspace walls
- ❖ Above grade floors
- ❖ Ceilings
- ❖ Roofs
- ❖ Attics
- ❖ Foundations
- ❖ Doors
- ❖ Glazing
- ❖ Skylights
- ❖ Sunrooms
- ❖ Air exchange rates
- ❖ Mechanical ventilation
- ❖ Internal gains
- ❖ Internal mass
- ❖ Structural mass
- ❖ Heating systems
- ❖ Cooling systems
- ❖ Service hot water
- ❖ Thermal distribution systems



Significant Changes

- ❖ Climate and envelope efficiency changes as for the prescriptive method
- ❖ Significantly more specification detail throughout the “rules set”
- ❖ Air exchange rates – aligned to correspond with the new ASHRAE 62.2 Standards and account for mechanical ventilation systems
- ❖ Thermal distribution system efficiency specifications improved.