

was developed to capture the national impact of Standard 90.1. This approach uses prototypical building energy models representing the national commercial building stock that are simulated across all climate zones within the country. The results from the simulations are then aggregated to the national level using building construction weights. This approach was used to analyze the impact of Standard 90.1-2016 relative to Standard 90.1-2004 and showed that buildings meeting the requirements of Standard 90.1-2016 exhibit 34.2% energy and energy cost savings compared to Standard 90.1-2004 on a national basis. The simulation infrastructure developed to support the PI process enables the execution of several other DOE analyses, including the Standard 90.1 determination, state code cost-effectiveness, and future development of energy codes. In addition, prototype models developed during the PI process are a valuable resource used by industry and academia to perform numerous other analyses.

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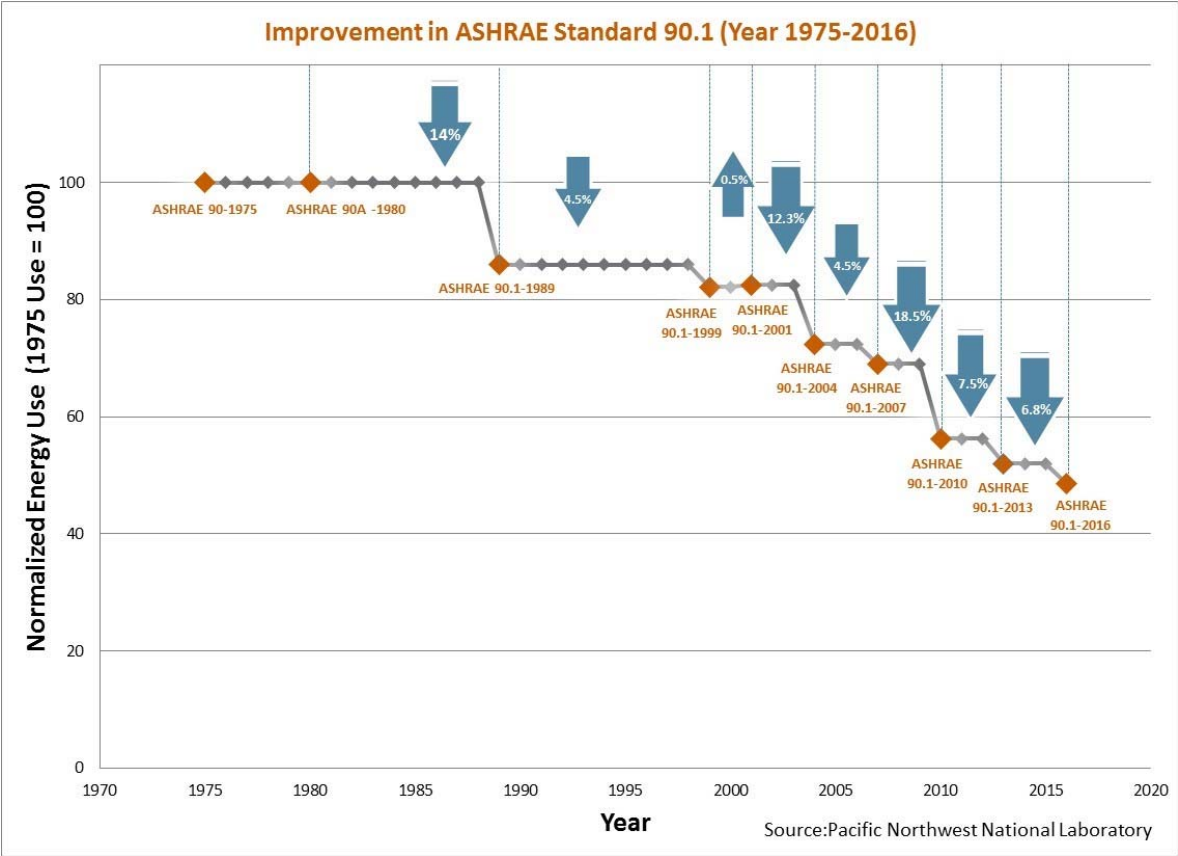


Figure 1 Standard 90.1 Improvement

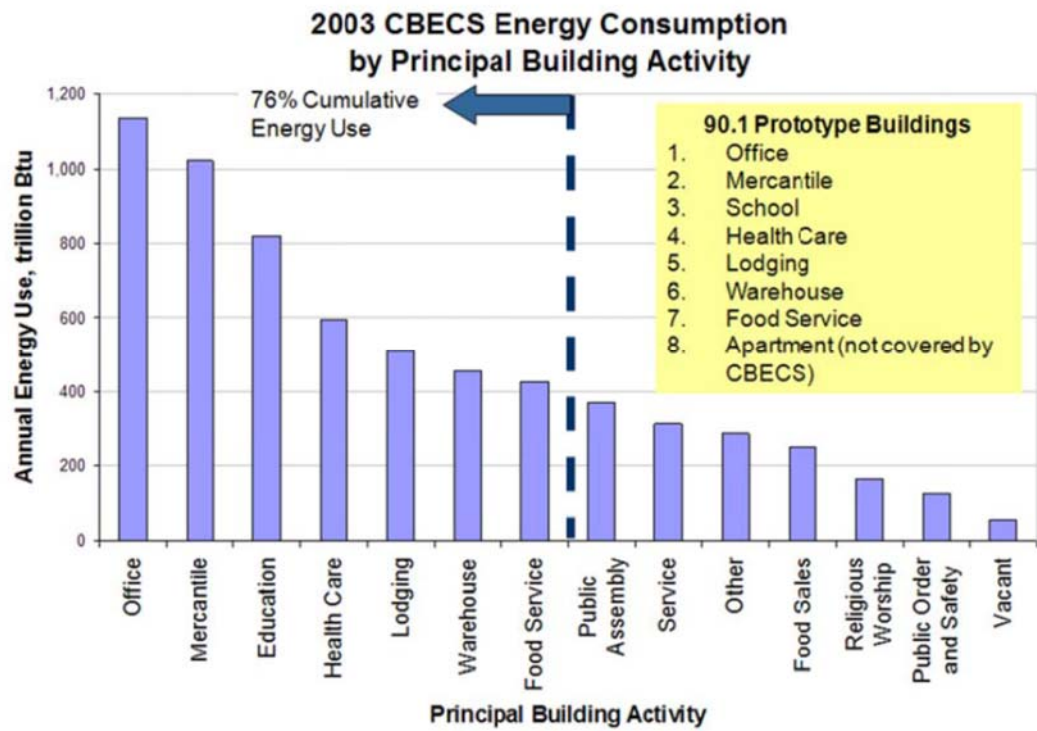


Figure 2 CBECS 2003 Energy Consumption

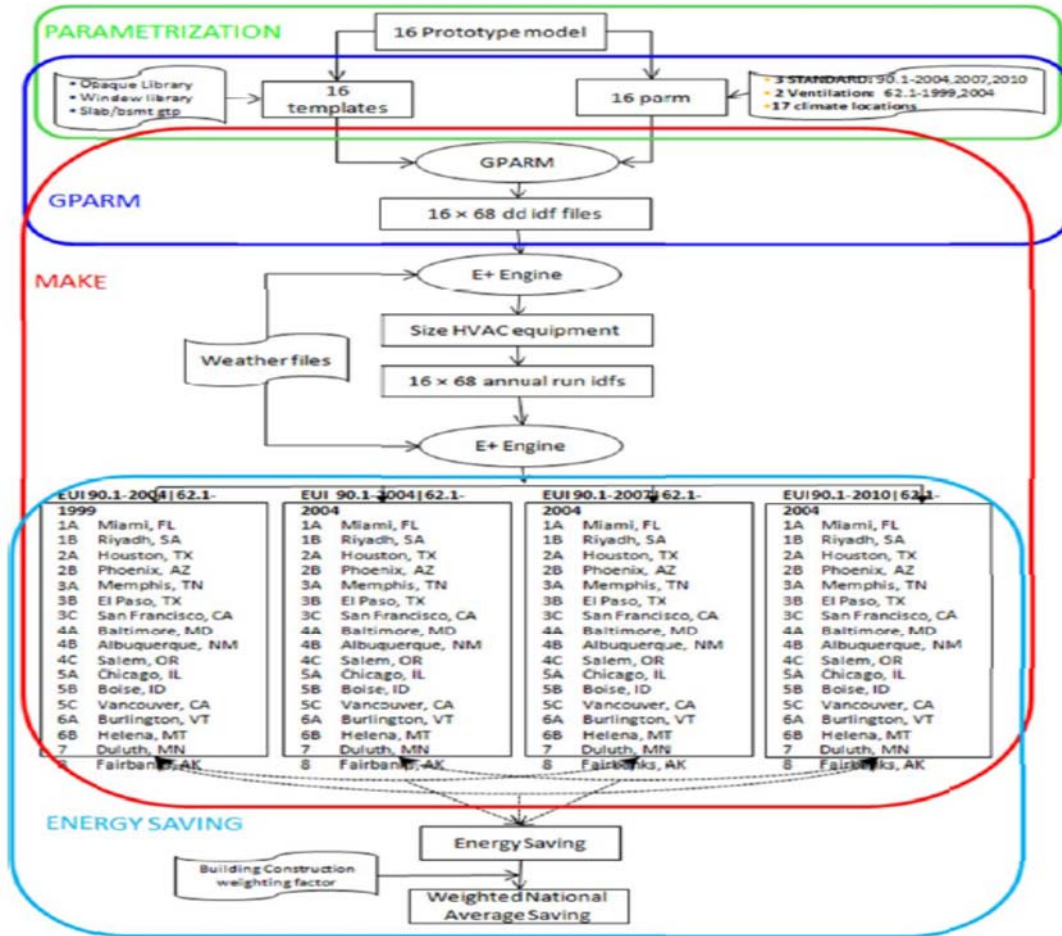


Figure 3 Flow Diagram of PI Simulation Framework

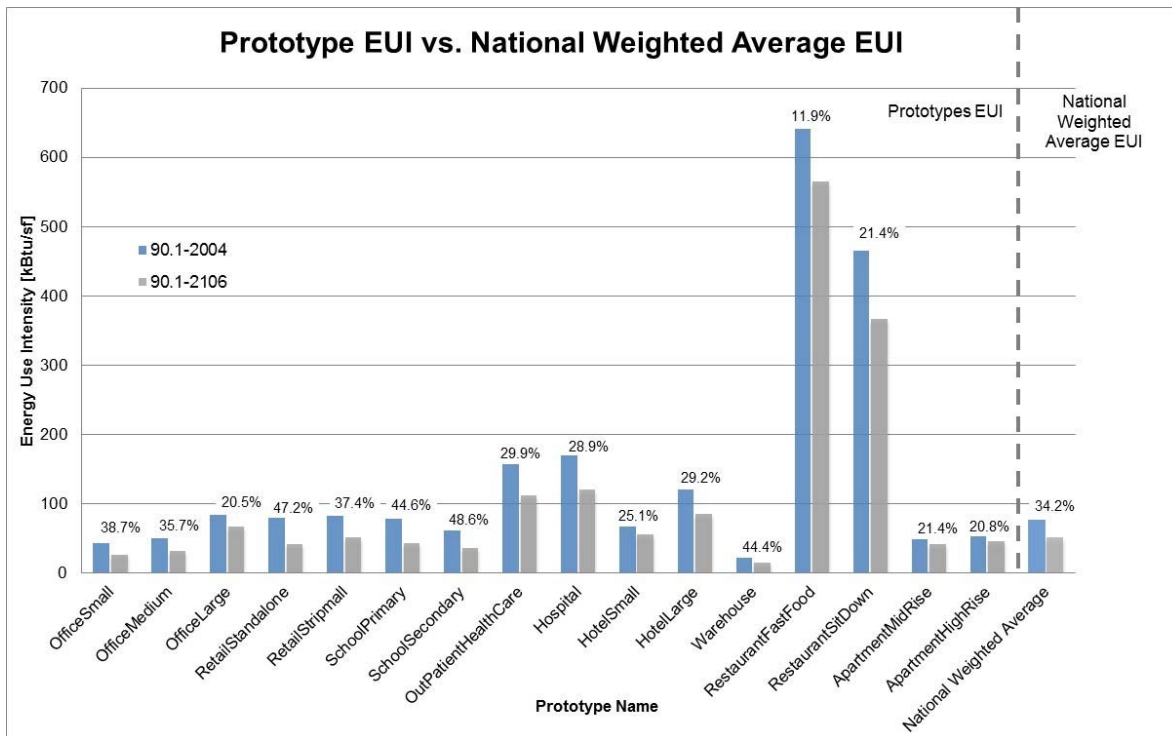


Figure 4 90.1-2016 Energy Savings by Building Type