



NAIOP Study Shows Levels of Achievable Energy Efficiency in Buildings Frequently Asked Questions

1. What is the basis for the building prototype that was modeled?

1A. The prototype is a real world speculative building that was recently constructed in California.

2. Why did you choose a class A, four story office building to be modeled? Is the information in this study also applicable to other types of buildings?

2A. We chose a class A, four story office building because it represents that majority of what our members are developing. Information from Co-Star shows that this building type accounts for more than 50 percent of new class A construction. We are considering modeling different building types in the future. One of the problems with developing energy efficiency mandates for buildings codes is that all product types are unique.

3. How did you come up with the energy costs that were used to determine the 10-year payback?

3A. The energy costs were determined using information from the Department of Energy-Energy Information System for each state.

4. Do the energy costs incorporate projected changes in the future?

4A. The study uses 2007 static energy costs. Because energy costs are not predictable we incorporated this energy data into our model.

5. How did you determine that a 10-year payback would be considered acceptable for developers?

5A. Actually, a 10-year payback is an extreme case for a developer to use in a business model. Many of our members have told us that they cannot include anything beyond a five-year payback in their business model. We are working with ConSol to get that data, but for the study purposes, we wanted to push the business model as far as possible to obtain the highest level of energy efficiency.

6. Can you explain why a modified use of ASHRAE 90.1 Appendix G was used for the study's analysis?

6A. The determination was decided by ConSol. It was deemed appropriate for this study to focus to solely on regulated loads as only they could be affected by jurisdictional energy codes. The difference between regulated load, what can be controlled by a developer, and unregulated loads, also known as plug-in loads, is approximately 75 percent to 25 percent. That means only 75 percent of the buildings total energy use can be affected by the development process.



7. Why did you choose those specific climate zones for your study?

7A. We chose them because they represented a large portion of the country and because of the distinct differences in climates for each city.

8. Does the study show that buildings can't achieve the 30 percent energy efficient or higher energy targets?

8A. Achieving 30 percent or higher is not economically feasible for all buildings including the building prototype used in this study. However, the study is not meant to characterize all buildings. The study does show that standard office buildings that are being developed to current codes can do much more to increase their energy efficiency. Many developers have chosen to go beyond that and employ non-standard measures into their buildings to achieve even higher rates of efficiency, including 30 percent or higher.

9. If developers have successfully achieved efficiency levels higher than those the study deemed achievable for the prototype modeled, then why does the study conclude that 30 percent more efficient is not practical?

9A. This study shows that not all buildings can achieve these targets, and therefore increasing codes would not be a practical solution. Many of the technologies and design elements that some buildings have employed are often not applicable for all buildings. Site areas, geographic locations, tenant lease rates, urban vs. rural buildings and the differences of built to suit vs. speculative buildings are all factors that must be considered before imposing a code that will affect everyone. Despite this, our study shows what is possible for the vast majority of new construction without having to redesign a typical office building, and the results were impressive. Obviously, the study was never intended to disprove that the higher efficiencies achieved by many showcase properties are not achievable because many of our members have successfully achieved these higher levels. The study does show that typical buildings, as opposed to showcase properties, can use readily available features and technology to become more energy efficient within a 10-year payback; in some cases more than 20 percent above current codes. We think that this is a positive message.

10. Has this study left out certain features that could significantly increase energy efficiency?

10A. The study analyzed more than 40 variances of different energy efficiency features, and includes the top eight effective features in the written report. The report is not intended to be an exhaustive index of every energy efficiency available. It looked at varying levels of 13 different efficiency measures (approximately 40 total variances evaluated). Features like landscape design were not included because they are not measured by building codes. Other features, including occupancy sensors, were already incorporated into the base model and were not included as additional energy savings.



11. The study mentioned that a holistic design approach could achieve significant levels above ASHRAE 90.1 (2004) but that was impractical for this building. What is the holistic approach, why was it not used for this building?

11A. Most buildings are designed to maximize leasable space. The holistic design approach is considered in the planning stages of a building and is used to solely achieve the most energy efficiency from a building. This approach sometimes conflicts with current development practices because it often sacrifices leasable space in order to achieve energy efficiency. The approach of the study was to look at a recently completed building that was designed to maximize leasable space and to include new design elements that would increase energy efficiency to the maximum extent possible within standard development practices. The study also looked at some of the technology used in many integrated systems, such as ground-source heat pumps, and concluded that they were not practical for this building given the site restrictions.

12. What do you want policy makers to do with the report?

12A. Our goal is to provide policy makers with economic data to show the highest level of energy efficiencies for typical buildings that are economically practical for developers. We believe that this study shows that significant energy efficiencies above current codes can be accomplished for an office building within a 10-year payback. We are encouraged by these findings as it adds value to the discussion.