

## Benchmarking Commercial Building Performance

The U.S. Environmental Protection Agency's (EPA) voluntary energy-efficiency programs have been helping large corporations, states, and other building portfolio owners reduce energy costs and associated pollution since 1990. These programs have been a unique and successful analog to EPA's regulation and compliance activities. From the start, ICF Consulting has assisted EPA with tools and financial messages to help participants make *investment* decisions that save energy.



In the commercial building sector, *benchmarking* has become a buzzword for comparative performance assessment, and EPA is leading current efforts to provide this capability for buildings. EPA has developed benchmarking algorithms for offices, schools, and retail buildings and is working with ICF Consulting and Oak Ridge National Laboratory to add hospitality, healthcare, and other algorithms. Benchmark development involves using U.S. Census or other nationwide data and regression analyses to determine energy performance drivers. These data are used to develop algorithms that compare a building's performance against the rest of the U.S. commercial stock regardless of size, location, or type.

Owners provide energy-use data, location, size, and several specific characteristics to get a benchmark score between 1 and 100. In the most effective use of building performance benchmarks, organizations benchmark their entire building stock to identify different categories of opportunity:

- Buildings with scores of 75 or above are eligible for the ENERGY STAR® label, a plaque that acknowledges exemplary performance. This reward has been very well received by the commercial real estate sector, where ICF Consulting has worked to sign up 2 billion square feet of U.S. leased space for benchmarking. These participants also are using exemplary scores to find lessons learned and as contractual collateral during contracting and sales.

- Buildings with below-average scores (50 is an average score) are the best candidates for aggressive investment in energy savings. This might include chiller replacement—which also addresses units using refrigerants that do not comply with federal chlorofluorocarbons (CFC) legislation—lighting upgrades, and other more involved projects that can be very profitable in these buildings. There is also an opportunity to target these facilities for operational training using the lessons learned from the upper quartile performers.
- Buildings with average to good performance may benefit from more specific operation and maintenance procedures, which also might be gleaned from the exemplary performers. In many cases, low-cost operational measures will significantly improve performance, so that many of these buildings might be eligible for the ENERGY STAR label.

Thousands of buildings have been benchmarked and are being tracked over time at EPA's Portfolio Manager Web site, which also can be used to print a Statement of Energy Performance and apply for the ENERGY STAR label. The Statement of Energy Performance is being used increasingly as a transactional component in financing, purchasing, and energy services contracts so that owners can request, verify, and obtain exemplary performance. ICF Consulting developed and administers the site, as well as the Commercial and Industrial Branch site that introduces participants to the tool.

ICF Consulting helped EPA develop benchmarking capability specifically for new building design. This tool, Target Finder, can help owners request designs that will become exemplary performers and help design teams set realistic goals for designing to high-performance standards. This has always been a challenge in an environment where codes only set good baseline performance standards and national comparative metrics for whole building performance do not exist. Owners that use a benchmark during



design can track building performance using the same benchmark after construction to verify that it met the intended performance. Results may lead to lessons learned for the architects and engineers or periodic adjustment to keep the building tuned for maximum efficiency.

EPA continues to provide innovative and market transforming tools for commercial buildings and is currently working to integrate earnings per share and shareholder

value messages so that building benchmarking becomes an extension of a high level corporate decision to invest wisely in efficiency. For more than a decade, ICF Consulting has helped EPA present investment opportunities and the tools required to make wise investment decisions. The building benchmark is an exciting new metric that uniquely gives large portfolio holders a national perspective from which to make good investment decisions. 