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Reduce operating costs up to 20% through building commissioning

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It is now the standard for newly constructed buildings to be equipped with complex, high-tech, power, lighting, comfort, communications, security, and life-safety protection. Many building developers go even further by achieving building certification through the U.S. Green Buildings Council's (USGBC's) Leadership in Energy and Environmental Design (LEED) rating system. Retro commissioning can be applied to existing buildings that have never been commissioned to restore them to optimal performance. The commissioning process is an effective tool in ensuring that new buildings are properly designed, constructed, and prepared for occupancy, and that operation and maintenance are performed to keep the building systems functioning as efficiently as possible. According to a study completed by Lawrence Berkeley National Laboratory, commissioning is one of the most cost-effective means of improving energy efficiency in commercial buildings. Commissioning can also result in fewer contractor call backs after construction is complete, and once the building is operational, improved system performance, lower operation and maintenance costs, increased thermal comfort and indoor air quality for building users, and enhanced asset value. While many building owners believe that commissioning is part of the typical construction process, commissioning goes beyond the typical testing, adjusting, balancing and inspections that occur when a building is constructed. Commissioning involves functional testing to determine how well mechanical and electrical systems work together, and how well system performance meets the owner's goals for building design and functionality. Specifically, the commissioning process will: identify issues, omissions, and conflicts in project design and specification; test equipment and controls to determine if they function on par with the building design goals; provide information for as-built plans and specifications; and result in building operators that are trained on equipment operation, control systems, maintenance schedules, and emergency protocols. Commissioning has been widely documented to typically result in 10 to 20% lower annual operating costs.

When the commissioning process starts is crucial to gaining the most cost savings from the process. The commissioning process, starting with consultation at the earliest conceptual design stages, establishes a connection between the initial project vision and the ultimate operation of the building. When commissioning is initiated at the onset of the project, it establishes clearly documented project goals for building design and performance. The goals should be captured in the Owners Project Requirements (OPR), a document defined by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) as "a written document that details the functional requirements of a project and the expectations of how it will be used and operated including project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information." LEED stipulates starting the commissioning process early in the project, and by utilizing the expertise of the commissioning agent in developing the OPR, project goals and

priorities are established and a foundation is set for the system verification process.

Fundamental commissioning is a prerequisite of LEED, but recent data shows there is often a gap between building design and construction and how some buildings actually perform. This difference in how a building was intended to operate and how it actually does may have been what led to the August 25, 2009 USGBC announcement that it has launched a Building Performance Initiative to collect data from all buildings that have achieved LEED Certification. Starting this year, USGBC will require all newly constructed buildings to provide energy and water bills for the first five years of operation as a condition for certification. Certification could be rescinded if the data is not produced. USGBC will analyze the data and inform building owners of the results in order for the owner to make adjustments or corrections to systems necessary to achieve actual building performance that is in line with the predicted performance.

The new LEED Version 3.0 also reflects USGBC's focus on the importance of building energy efficiency. Available credits for the Energy & Atmosphere category increase in V. 3 from 17 to 35, with most of the credits being shifted from the Indoor Environmental Quality category. Additionally, different weightings are now assigned to certain credits to provide greater potential points for design strategies that improve energy efficiency and CO2 reduction.

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