

## To LEED or not to LEED?

### Answer the “green” question faster with SITEOPS<sup>®</sup> technology

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The U.S. Green Building Council’s (USGBC) Leadership In Energy and Environmental Design (LEED) program has brought “green building” principles to the forefront of architecture, engineering and construction projects. Growing public demand for projects designed with sustainability and conservation in mind has helped elevate LEED certification to a sought-after designation that brings prestige and financial rewards for both designers and developers. Many local governments award tax credits, reduce fees, provide grants and loans, expedite permitting, and offer other incentives for projects earning LEED certification.

While private and government bonuses provide incentive, the up-front costs of meeting environmentally-friendly standards can be extremely difficult to quantify. Without the ability to know the true cost of “going green,” a developer may pursue LEED Certification based on rough estimates, or may spend extra time and money on research and design only to discover that certification is simply not feasible within the available budget.

The more quickly a land developer and design team can determine whether to seek LEED certification, the more smoothly the overall approval process is likely to go. The hardest part of deciding whether and to what level of LEED certification to attempt is in knowing how much that decision will cost. Determining the increase in the *vertical cost* of a project can be done quite accurately with current technology. However, determining the *land development cost* and how LEED certification will affect the construction budget is a challenge.

Fortunately, a new breed of CAD technology enables engineers to present developers with multiple optimized possibilities for site design, and to know the cost impact of design choices. By using SITEOPS<sup>®</sup> software in the conceptual design stage, developers and designers can arrive at the best LEED decision faster, and can identify more cost and design options earlier. Because of its powerful optimization ability, SITEOPS is known as “CAD with a Brain.<sup>®</sup>”

## How SITEOPS helps land developers

Many land developers believe that attaining LEED certification means spending lots of extra money. This is not necessarily true: studies in 2004 and 2006 by Davis Langdon concluded that “there is no significant difference in average costs for green buildings as compared to non-green buildings.” A major key to keeping a LEED project within budget is pursuit of LEED points that cost little to nothing, and avoidance of expensive ones. Another important success factor is working with design teams experienced with LEED certification projects, who understand that a green design is sometimes achievable within a similar budget to that of a standard design.

SITEOPS helps land developers make better decisions in the conceptual design stage by providing the cost of construction of site layouts to be submitted for LEED certification. Design professionals use SITEOPS to quickly and easily produce and compare designs and accompanying cost reports for the developer. Imagine being able to look at many different designs for a site in minutes and to see detailed takeoff costs for each individual design! This is the convenience and speed SITEOPS brings to a project.

The cost of LEED certification can skyrocket if decisions are not made at the right time. The ideal time to make project changes is in the conceptual stages of a project, not during final design or when construction has begun. Changing plans in the final design stage or stopping construction will add to a project’s cost. Of course, sometimes the decision to pursue LEED certification must be determined late in the design process, or even during construction. For example, if a specific tenant requires that the project become LEED certified to sign a lease, then the necessary changes may be justifiable if the land developer will see a return on the extra money invested. SITEOPS can help a developer know with certainty how much those revisions will cost, and therefore makes the ROI easier to calculate.

The power to ask “what if...” over and over, and to provide answers in minutes, sets SITEOPS apart from any other software used for land development design. A design team using SITEOPS can consider multiple LEED point options in the time it normally takes to review a single LEED point option. When a land developer has the best information possible in the shortest amount of time, he or she can make the best decisions about the project.

## How SITEOPS helps design professionals

The most difficult aspect of deciding whether a project should attempt LEED certification is not determining vertical structure cost and design, but determining cost and layout for the site construction. Buildings are relatively predictable to construct, but sites may have unforeseen surprises in the dirt. SITEOPS provides complete conceptual solutions that include the cost of construction, 2D images, 3D images, and DWG/LAND XML files which the design team can later use to produce a detailed design. Too often, the design team for site construction cost must base their design recommendations on historical data. SITEOPS helps the design team produce accurate cost of construction data, usually in hours rather than the traditional days or weeks. As a firm builds a reputation for delivering their clients the best data possible to make decisions, it is positioned well for new and repeat business.

## SITEOPS and LEED Certification points

The design team can use SITEOPS to generate site design options that will help the project qualify for LEED certification points. Without SITEOPS, this process is time intensive and designs are not optimized for cost.

Half of the required points (26) for LEED 2009 Silver certification (50-59) can be attained through the “Sustainable Sites” category. Using SITEOPS, many of these points may be more easily and cheaply won than points in other categories, such as those that require extensive documentation, expensive building materials, or complex energy efficiency systems.

**BROWNFIELDS** – Six LEED points can be gained by reusing a brownfield site – a large number of points for a single item. Land developers tend to avoid brownfield development due to the *perceived* cost and difficulty of dealing with site issues. Actually, not all brownfield sites are costly and hard to construct. But without using SITEOPS, the costs of brownfield cleanup are not usually calculated until late in the design process. If the design team uses SITEOPS in the conceptual stages, the land developer can more accurately know how much it would cost and how the cleanup issue could affect the remainder of site construction.

**PROTECT NATURAL AREAS** – SITEOPS allows a designer to specify protected natural areas. While SITEOPS is performing the layout, grading and stormwater piping design, defined natural areas are given special consideration, as determined by the designer. For example, he or she can allow the area to be graded, to have

stormwater piping installed, or to be completely untouched. The USGBC encourages the protection of as much natural area as possible. With SITEOPS the development team can easily weigh the cost of construction against the LEED points obtained by setting aside natural areas.

**MINIMIZE “CARBON FOOTPRINT”** – SITEOPS provides many ways to minimize the carbon footprint of a project, such as minimizing impervious area, reducing the amount of grading, and quickly analyzing site layout alternatives. As they work in SITEOPS, designers can see the amount of impervious area in a site. SITEOPS attempts to include as little impervious area as possible. Impervious areas cost more than natural or landscaped areas, and SITEOPS is designed to optimize for the lowest cost of construction. Therefore SITEOPS will look at lowering the impervious area on projects compared to layout created without SITEOPS.

SITEOPS helps lower carbon emissions in one way that most designers do not consider: lessening the amount of grading necessary on a site. SITEOPS will identify the grading plan that moves the least amount of soil while still meeting all the project’s parameters. When you reduce soil movement, you reduce movement of construction equipment, in turn reducing the amount of gas and oil used, but more importantly, reducing exhaust from running equipment.

Alternative site designs can be created in cases where the land developer is able to grant a design team the time and budget to create different concepts, but this is rarely done. With the speed of SITEOPS, a design team could consider ten different layout schemes in the time a design team normally looks at one or two. The ability to weigh alternative designs gives designers the flexibility to look for other ways to lower cost, and the time saved can be used to pursue other LEED points associated with the structure.

**PROJECT COMMUNICATION** – Communication between design team members and land developers is essential when dealing with LEED Certification. Decisions should occur during the conceptual design stage to help reduce the cost associated in the LEED Certification process. SITEOPS allows anyone logging into the project to work on or view solutions with ease. Because SITEOPS is online Software-as-a-Service (SaaS), everyone is using the latest available version of the software. Design processes historically suffer when designers, architects, and civil engineers use different versions of software or even different, incompatible programs. The ability for everyone on the design team to use the same software with ease, with no additional cost or need for software installation, is a major step forward. Designers can also send decision-makers the

solutions provided by SITEOPS in an easy-to-read PDF format, allowing the decision-makers fast access to the data they need.

There are other ways in which SITEOPS software can help win LEED points – for example, developers can use SITEOPS to quickly compare multiple site layouts prior to site selection, giving them basic feasibility and layout options even before they select and invest in a single site.

## **Conclusion**

While the use of SITEOPS land development optimization software is no guarantee of LEED point approval, it can help determine optimal choices from among millions of possible site options. Design professionals trained in SITEOPS can use it to produce cost of construction, layouts, grading plans, and stormwater piping plans in hours or days. SITEOPS enables land developers and design professionals to make more informed, intelligent site decisions regarding LEED certification.

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