

| 5 - NEW CONSTRUCTION AND GREEN BUILDING

A community's energy consumption can be broken down into three sectors; the commercial sector, the residential sector, and the transportation sector. Setting aside industrial and agricultural activities, most of the energy used for the commercial and residential sectors has to do with heating, cooling, and powering buildings. When developing an energy plan, it is important to consider not only the existing buildings within the tribal community, but future building construction as well. With the right planning, the negative energy impacts of the construction process itself can be greatly reduced, and building an energy-sound building from the start is the easiest way to reduce long-term operating costs and the environmental footprint for the owners and occupants.

As many tribes face growth-- either in the demand for housing, or facilities to provide tribal services or commercial development, it is crucial to incorporate energy goals into broader development planning. Green building principles and frameworks can help establish goals and strategies for new construction.

What Is Green Building?

Green building incorporates design and construction practices that significantly reduce or eliminate the negative impact of buildings on people and the environment through:

- Sustainable site planning
- Water efficiency
- Energy efficiency
- Conservation of materials and resources
- Indoor environmental quality

The benefits of green building, when compared to conventional building practices, include:

- Environmental benefits: Conserve natural resources, reduce waste, improve air and water quality, protect ecosystems and biodiversity
- Economic benefits: Reduce operating costs, enhance asset value and profits, improve productivity and satisfaction, optimize life-cycle economic performance
- Health and community benefits: Improve air, thermal and acoustic environments, enhance occupant comfort and health, contribute to overall quality of life

New Housing

The importance of constructing safe, healthy, and efficient housing for growing tribal populations cannot be overstated. New construction provides a unique opportunity to get it right the first time- preventing the cost, inconvenience, and effort required for retrofit projects to improve living environments.

While “affordable housing” is often built at the lowest possible upfront cost, the truth is that poorly constructed and inefficient homes are not affordable. Energy costs, as well as building repairs are substantial factors in housing affordability, and are real contributors to mortgage defaults, evictions, and homelessness.

What Is LEED?

The US Green Building Council's Leadership in Energy and Environmental Design (LEED) program is a rating system for designing, constructing, operating and certifying green buildings. While there are many widely accepted green building or energy efficient construction programs including Built Green Washington and

Energy Star Homes, the LEED program provides a great framework for a broad range of building types. For this reason, much of the Green Building section in this guide focuses on (and draws from) the US Green Building Council's LEED program.

The LEED system was created by the US Green Building Council to:

- Define “green” by providing a standard for measurement
- Prevent false or exaggerated claims
- Promote whole-building, integrated design processes
- Establish market value with a recognizable “brand”
- Raise consumer awareness
- Transform the marketplace

LEED Programs include:

- New construction
- Existing buildings
- Commercial interiors
- Core and shell
- Schools
- Homes
- Neighborhood developments

Each LEED program involves a rating system and a certification process. It is important to note that the LEED point system, categories, and principles can be extremely useful to a building project even if that project is not going to apply for LEED certification. The building rating system includes “credits” earned for measures in 5+ categories including site, water use, energy use, materials and resources, indoor environmental quality, and innovation in design.

The LEED certification process involves attaining (and documenting) a minimum number of points earned for green building measures in each of the categories. With a total of 69 points available, the LEED system works like a menu. There are some prerequisites (required points in each category) and beyond that the building design team picks the points most feasible for their project to meet a certain level of certification: Certified, Silver, Gold or Platinum. Most construction projects will not have the ability to earn every point described, however, to qualify for certification a project must achieve all prerequisites and earn at least 26 out of the 69 available points. In addition to attaining and documenting these points for design and construction measures, the certification process also involves registering the project with the US Green Building Council, receiving technical support and going through building certification. LEED certification is voluntary, but does have significant costs associated with the steps. Certification fees are waived for projects that achieve Platinum certification.

Using Green Building Metrics As Guiding Principals (Even Without Certification)

One of the great things about the LEED point system is that it allows a building design team to review opportunities for green building in the context of a single project, and to set realistic goals using a pre-established framework. At an early planning meeting, a design team may scan a LEED checklist and be able to set goals of meeting certain metrics in siting, water use, energy use, etc. On an individual project basis, it is crucial that energy goals are established early

Case Study

In 2007 the Puyallup Tribal Housing Authority, partnered with several businesses to completed the first in a series of green homes demonstrating that elder housing could be provided in a sustainable and affordable way. The home was completed within budget and at the same cost as similar homes in the area. However, this home stood out from others with lower energy and water costs and better air quality. Some aspects of green design incorporated into the home included low VOC products, passive solar design, radiant flooring, Energy Star appliances and a solar hot water system. To learn more about the project visit www.elderhealthyhome.com/about.html.

just as the goals of building function type would be established. While a comprehensive energy plan for the tribe will likely not get down to specific goals for individual buildings, it can include broader principles and goals to encourage these green building practices.

An energy plan can set policy for tribal construction that will encourage, incentivize, or mandate individual green building measures, or the general practice of green building principles. Through energy planning, green building policies that can be established include:

- Codes to mandate certain practices for both private and tribal construction
- Monetary or social incentives to encourage

green building applications and professional education

- Commitments/Resolutions (i.e. all new buildings constructed by the tribe will meet certain measures)
- The following are planning-oriented green building examples from many different types of communities:
- Establish policy that all community-owned buildings must meet LEED certification standards
- Establish policy that all community-owned buildings have at least one LEED Accredited Professional on the design team
- Establish building codes for efficiency that exceed current guidelines
- Establish a reward system (ease of permitting or monetary incentive) for development with commitments to certain green building measures

Financing Green Building Projects

Most homes and buildings can achieve considerable energy savings by going beyond minimum compliance with local energy codes. When it comes to monetary metrics, new construction brings into the forefront the tradeoffs between upfront costs and long-term operating costs. Many green features cost the same or are less expensive than traditional features even on a first cost basis. In addition, the margin for more expensive green building features is decreasing steadily over time. While building “beyond code” when it comes to measures such as insulation or the efficiency of

HVAC equipment may increase the upfront construction cost, the decrease in monthly operating costs (primarily utility bills) will often make up for it. If costs are a concern, and they almost always are, it is important to define goals for cost-effectiveness of building practices (taking into account long-term costs of each decision) rather than simply defining a capital budget.

To allow for even more flexibility to build as green as possible, a design team can bundle construction features that vary in cost effectiveness. For example, if increased insulation will be moderately cost effective on its own and will also allow for a downsized furnace to meet the building's reduced heating load, the upfront cost of a furnace will be less, and the combined cost effectiveness of these measures will be great. If the building would also benefit from the use of sustainable materials (for the environmental impact of construction as well as the health of the occupants), but these cost more than the alternatives, then consider bundling the various measures. When looked at together the cost effectiveness of insulation above code, a properly downsized furnace, and certain sustainable building materials may pencil out within the design team's goals for cost-effectiveness.

Funding Opportunities

New construction projects have a large range of funding sources. Utilities, weatherization organizations, and other energy-focused funding sources mentioned throughout this guide (See Section 7 for more details), often have special programs for new-construction. Of course, new construction projects are not just energy projects. Therefore, funding sources include all of those that exist for housing, community

development, and the like. With commercial development, private financing is also a major funding source. Rolling green building measures into these "traditional" construction projects early, can provide extra justification when the project team starts looking for capital. In addition, there are organizations that provide additional funds exclusively for the incremental costs of green building. These organizations include:

- Enterprise Foundation and Natural Resources Defense Council- Green Communities Program
- Kresge Foundation- Green Building Initiative
- The Home Depot Foundation- Building Healthy Communities