Greener Buildings Help Reduce Greenhouse Gas Emissions

Each year, buildings throughout California are the second largest contributor to the state's greenhouse gas (GHG) emissions, using enough energy to account for nearly 125 million metric tons -- roughly 25 percent -- of the state's annual GHG emissions. Taking action to make buildings more energy efficient and environmentally friendly helps conserve resources and lower a community's share of the emissions that lead to climate change.

Construction of a typical 2,000-square-foot new home, for example, generates at least eight tons of landfill waste. That same house uses electricity and natural gas for heating, cooling and appliances, adding to the nearly 14 percent share of GHGs generated statewide from households alone. Furthermore, water used by homes for indoor and outdoor purposes adds to the demand for precious water resources and to the energy required to move water from source to end user.

In recent years, interest has developed in making buildings more energy, water and resource efficient, or "green."

Compared to traditional structures, green buildings offer multiple advantages and savings. Green buildings:

- Use less energy and water;
- Rely more on recycled and renewable materials;
- Cost less to operate;
- Produce less construction waste; and
- Provide a healthier indoor environment.

Typical green building guidelines require that at least 50 percent of construction waste be recycled or reused. These guidelines also seek to make homes and commercial buildings at least 15 percent more energy efficient than otherwise required by California's Title 24 Energy Code. They further encourage use of paint made with low volatile organic compounds (VOCs), water-efficient plumbing, recycled content materials and wood grown in a sustainable way.

The California Climate Action Network (CCAN), a program of the Institute for Local Government, has developed a list of best practices (www.ca-ilg.org/bestpractices) offering local agencies various options for achieving energy and resource efficiency in new and existing buildings.

Leading the Way With Public Buildings

Leading by example is a good place to start with green building programs. Many cities and counties showcase the possibilities for "greening" buildings by constructing a new library or civic structure to green standards. For example, San Jose built its West Valley Branch Library to use 30 percent less energy and 50 percent less irrigation water, and it received Leadership in Energy and Environmental Design (LEED) certification. Pasadena undertook a renovation and seismic retrofit of its 1927 Beaux Arts city hall and also incorporated enough green measures to earn a LEED Gold rating. (For more information about LEED, visit www.usgbc.org.)

Apart from new construction, dozens of cities and counties throughout the state further position themselves as role models by retrofitting existing civic buildings with new lighting, heating and cooling systems for energy efficiency -- with the added benefit of significant savings on annual utility bills. They have also implemented measures to reduce water for landscaping, reduce office waste and establish internal recycling programs.

Green Building Ordinances and Private Sector Programs

The greatest impact from green building will ultimately come from greening private sector buildings. More than 75 California communities have adopted green building programs for private sector residential and commercial construction. Cities and counties can participate in existing programs like Build It Green, California Green Builder, LEED and EnergyStar or customize a program to fit their needs. In either case, there are some important points to consider.

Because development patterns and the residential-commercial mix in California communities vary widely, a green building program should be designed to meet city- or county-specific growth plans. Local agencies should take time to assess their local development plans and trends to make sure their program targets the widest cross section of building projects for maximum environmental benefit and GHG reduction.

For example, the City of Calabasas initially focused its green building program solely on commercial buildings, requiring that they meet LEED Silver standards. Since adopting the program in 2003, the city has gone through a considerable learning curve, according to Maureen Tamuri, the Calabasas community development director.

Five years later, Calabasas has regrouped to design what staff anticipates will be a program better tailored to its 20,000 residents. City officials are evaluating how best to assist green building applicants. They plan to focus on residential remodels, which constitute the majority of the city's building permit requests.

Voluntary Versus Mandatory

Soliciting input on a potential green building program from a wide variety of public as well as private sector stakeholders -- business owners, local builders and residents -- is the best way to start. Local preferences help determine whether the most suitable program for the community is voluntary or mandatory.

The City of Irvine, for example, decided on a voluntary program with separate green building checklists for single-family residential, multifamily and commercial projects to address local development considerations. Applicants are strongly encouraged, but not required, to follow the city's green guidelines when applying for a building permit. An extensive green building resource guide helps steer residents and builders to local suppliers of green building products, making it easier to comply with the guidelines.

On the other hand, some cities establish a mandatory program from the outset. In Rohnert Park, residential projects must meet Build It Green standards (www.builditgreen.org), and commercial projects must comply with LEED standards. The city requires and pays for early input on a project from a green building professional and retains certified outside consultants to provide the preliminary green building review and final certification inspection to verify compliance.

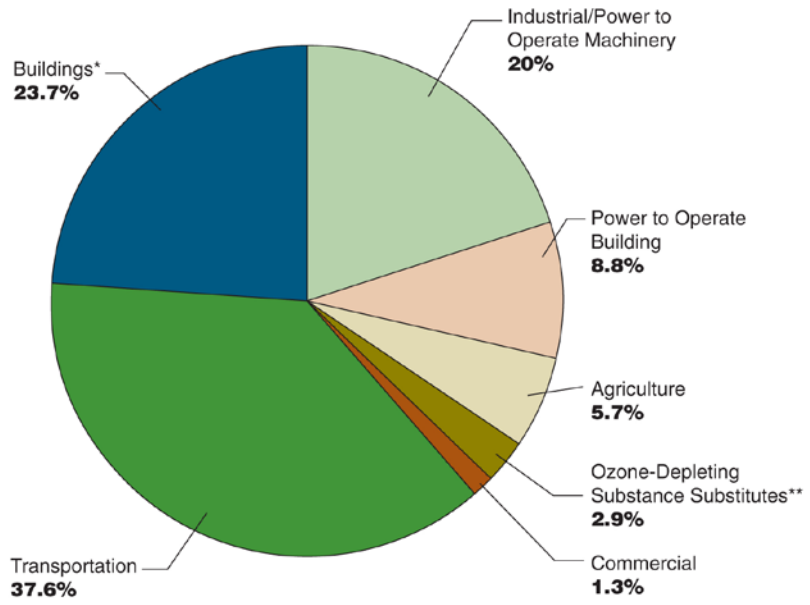
When establishing mandatory green building requirements that exceed those specified by state law, a formal written request for a local amendment to the state Energy Code and the California Building Standards Code is necessary to remain in good legal standing. (For more information on green building legal considerations, see "Building Green With Carrots and Sticks," May 2008, *Western City*, online at www.westerncity.com.)

The Phasing-In Option

Another option is to begin with a voluntary program -- or one with low threshold requirements -- and then gradually ramp up to mandatory requirements after the local construction community has had a chance to adjust to the new green building expectations.

For example, San Francisco (www.sfenvironment.org) is phasing in its newly adopted green building standards. Beginning in 2008, all new large commercial projects are required to be LEED certified, but starting in 2009 all such commercial projects must meet the higher LEED Silver standards, and by 2012 must be built to still higher LEED Gold standards. Similarly, all new residential projects with less than four units must initially meet Build It Green's lowest level standards, but over the next four years will be required to meet higher standards.

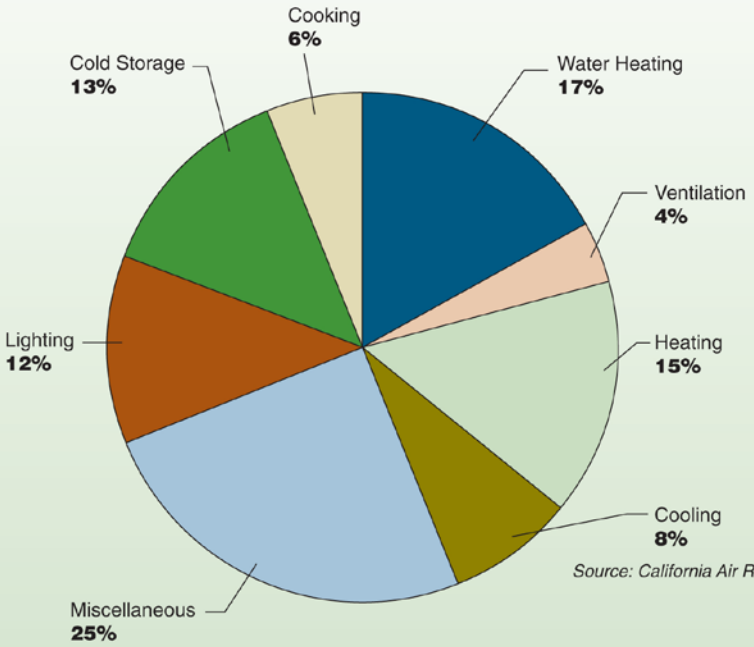
California GHG Emissions



Source: California Air Resources Board

California Building GHG Emissions Breakdown By Uses

This chart provides detail of the "Buildings" portion of the chart above.



Source: California Air Resources Board

Figure 1.

*Buildings category breakdown: 13.8% residential; 7.6% commercial; and 2.3% industrial.

**Ozone-Depleting Substance Substitutes: In the 1980s, chlorinated and fluorinated compounds were destroying the stratospheric ozone layer. These compounds were used in many applications, including refrigerants in air conditioning systems. Future production of them was controlled by the 1987 United Nations Montreal Protocol, and new substitutes were produced. While these substitutes don't deplete the ozone layer, they do act as global warming gases and are now being controlled as part of climate change programs.

San Francisco municipal staff projects that in 2012, when all the green building requirements are in force, an estimated cumulative 60,000 tons of GHG emissions will be eliminated (the equivalent of taking nearly 10,000 passenger vehicles off the road), and 220,000 megawatt hours of power and 100 million gallons of drinking water will be saved.

Education Helps Achieve Acceptance

Green building is still a relatively new concept, and many developers and building owners will need guidance. Green building programs are more likely to succeed when education and resource infrastructure are available to help locals understand what is expected and where to get the services and products to meet the new requirements.

Santa Rosa's green building program coupled its initially voluntary program with a big push to educate locals about green building practices. Green Building 101 workshops and a website with an extensive guide to green building products and resources made possible the city's move in June 2008 to mandatory requirements. The City of Pasadena has also embraced green building with informational brochures, a Green City website and its first annual Green Leadership Summit, held in June 2008.

Incentives Encourage Action

Many cities and counties use incentives to trigger interest in green building. The City of Costa Mesa offers a range of fee waivers for various green installations, including $40 for skylights, $300 for a solar hot water heater and $3,500 for a solar system on a commercial building. Santa Barbara County created an Innovative Design Review Committee to provide free upfront design assistance to help boost energy efficiency in buildings.

In West Hollywood, the city's green building ordinance requires all new commercial developments and residential projects with three or more units to earn a minimum of 60 points on the city's green building checklist. Those that score 50 percent higher than the minimum can take advantage of various additional incentives, from density bonuses to flexibility on open space requirements and parking, depending on circumstances.

Countywide Coordination Helps

As green building programs proliferate, many local agencies recognize the need for consistency among green building standards within a county or region. Consistency can help avoid having a variety of differing requirements that frustrate builders and applicants who work in multiple jurisdictions.

The cities in Sacramento County, for example, worked together with the Sacramento Municipal Utility District to offer a common permit application and eliminate fees for solar installations. In Sonoma and Alameda counties, the cities adopted common green building guidelines.

More recently, San Mateo County (www.recycleworks.org) adopted its own green building ordinance for the county's unincorporated area. It subsequently organized a roundtable of the county's 20 cities to share its experience with formulating and implementing the ordinance. County staff hopes the ordinance can help as a model for local cities still in the planning stages with green building. The convened cities also plan to collaborate on a joint green building cost-effectiveness study, file a joint request with the California Energy Commission for a local modification to the state Energy Code, and jointly host green building fairs.

New Green Code for California

On July 17, 2008, the state adopted a new Green Building Standards Code as an addition to its existing Title 24 California Building Standards. The new code increases minimum requirements for energy efficiency, water conservation and recycling of building materials, among other things. The Green Building Standards Code will be phased in between 2009 and 2011 and includes standards for the construction of single-family homes, health facilities and commercial buildings.

For More Information on Green Building

For detailed information on green building programs and a list of resources, visit www.ca-ilg.org/greenbuilding.

Green building practices will become mainstream with adoption of the new code. Some local agencies may want to rely solely on its requirements, but those that prefer more stringent green building requirements may continue to pursue their own locally designed programs. Either way, California communities are heading into a greener future with buildings that are friendlier to the environment by conserving natural resources and reducing climate-altering GHGs.

This resource is a service of the Institute for Local Government (ILG) whose mission is to promote good government at the local level with practical, impartial, and easy-to-use resources for California communities.

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The Institute welcomes feedback on this resource:

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