

THE GREEN MOVEMENT IN THE BUILDING INDUSTRY

A Report Prepared for The American
Institute of Architects California Council
and The Capitol Forum

JANUARY 2009



AIA California Council

Sponsored by

CAPITOL FORUM

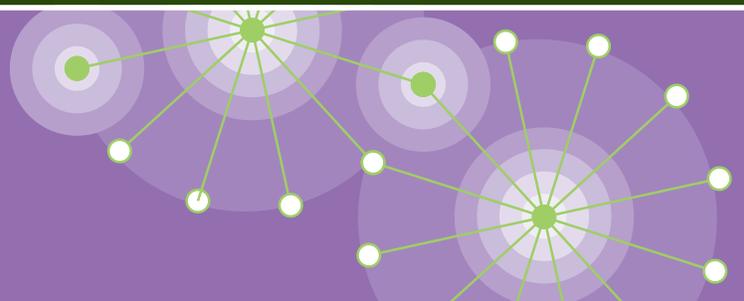


TABLE OF CONTENTS

PUBLIC SECTOR - CALIFORNIA	3
Governor's Office	3
Climate Action Team	3
Green Action Team	4
PRIORITY STATE AGENCIES INVOLVED IN THE GREEN MOVEMENT:	5
California Air Resources Board	5
California Energy Commission	7
Department of General Services	7
Division of the State Architect	8
California Public Utilities Commission	9
California Integrated Waste Management Board	9
Other State Agencies	10
THE BUILDING INDUSTRY - CALIFORNIA	10
AIA California Council	11
Collaborative for High Performance Schools (CHPS)	12
Developers and Corporate Clients	13
USGBC California	14
OTHER CALIFORNIA GROUPS OF SIGNIFICANCE:	15
BOMA California	15
California Commissioning Collaborative	15
Build It Green	15
CBIA	16
Global Green	16
OTHER INFLUENTIAL GROUPS:	16
THE BUILDING INDUSTRY - NATIONAL ORGANIZATIONS	16
AIA16	
USGBC	18
ASHRAE	19
BOMA	20
Green Building Initiative	20
OTHER ORGANIZATIONS OF SIGNIFICANCE:	20
OTHER ENTITIES OF INFLUENCE:	21
Cities/Building Departments	21
Community-based Organizations	22
Environmental Organizations	22
Research	22
What is Next?	23
APPENDIX: CLIMATE ACTION TEAM MEMBERS	25
LINKS AND RESOURCES	29
AIA SUSTAINABILITY RESOURCES:	29
BUILDING INDUSTRY:	29

INTRODUCTION

California is the fifth largest economy in the world. In spite of California's long history as a leader in energy efficiency, it remains the 12th largest emitter of carbon in the world.

Governor Schwarzenegger has made climate change and energy efficiency a top priority in his administration and over the past few years has signed executive orders and major legislation that has created significant momentum toward reducing greenhouse gas (GHG) levels over the next generation. He has mobilized state government at the highest level and created the Climate Action Team (led by the Cal EPA), charged with collaborating to radically curb greenhouse gases by the years 2020 and 2050, and the Green Action Team (led by the State and Consumer Services Agency), charged with implementing the Green Building Action Plan. Nearly every top state agency is dedicated to reducing energy consumption and curbing climate change on some level, through energy efficiency policies, research, new building standards, green purchasing, reducing air quality and other environmental toxins, consumer incentive plans, and public awareness programs.

The effect of climate change has an impact on every industry today, but perhaps none more so than the building industry. According to some studies, more than half of greenhouse gas emissions in the U.S. result from buildings and their construction. This includes energy used in the production and transportation of materials to building construction sites, as well as the energy used to operate buildings. Countless studies have demonstrated that significant savings can be derived from green buildings, including the reduction of energy, water, and waste; lower operations and maintenance costs; and enhanced user productivity, morale, and wellness. In addition, there is a "perfect storm" in the real estate market that is pushing developers and owners to advocate for green buildings, lowering energy costs and creating efficiencies to curb climate change. The economic reality of the market values green buildings more than standard buildings. Clearly, there is no better time for architects to become involved in these issues than now.

To begin the process of becoming more involved with the advocacy of green issues, the AIA California Council's Capitol Forum has conducted an internal study to identify the major stakeholders in green discussions, both within and beyond the building industry. Discussions were held with individuals in state government, architecture, planning, development, city government, and advocacy groups, to ask: who has the most influence in the green movement, and what are their strengths and weaknesses? Who are the key leaders within these agencies and organizations? Who and where are the most coordinated coalitions in the green industry? Where are the vacuums in coordination where architects can help? What are the motivations driving the green building movement? How can architects better participate in the green movement as advocates, both in the building industry and beyond?

Disclaimer: the "strengths" and "weaknesses" noted after some of the agencies and organizations below were voiced by the respondents in the study and are not the opinions of The AIA California Council or the author of the study.

PUBLIC SECTOR - CALIFORNIA

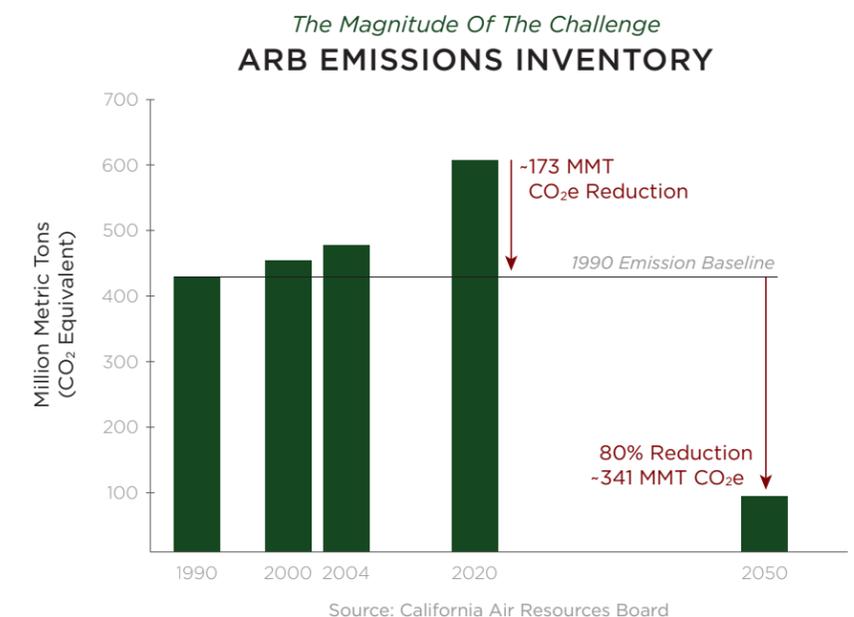
Governor's Office

The Governor's office is the leader and main policy driver of the state's environmental movement. For the past 3-5 years, Governor Schwarzenegger has created policies that have pushed the state's environmental movement, via executive orders and his support for major legislation, including AB32. Recognizing that the implementation of these orders will require an extensive collaboration at the highest levels of state government, he also created two major leadership policy and execution teams: the Climate Action Team and the Green Action Team. These two groups have been the main influencers of the implementation of his executive orders and the priority legislation. Details regarding the two groups follow:

Climate Action Team

In June 2005, Governor Schwarzenegger signed Executive Order S-3-05, which requires the state to develop strategies to drastically roll back GHG emission targets by the year 2020 to 1990 levels (a 25% reduction), and further to 80% of 1990 levels by the year 2050.

This Executive Order established the Climate Action Team (CAT), led by the Secretary of the Cal EPA, to mobilize and coordinate statewide efforts to reduce GHG emissions and stem climate change. CAT team executives meet every two months and serve as the state's most collaborative effort to coordinate the green program in California, bridging a gap between government agencies that have previously worked in silos. CAT team subcommittees have held public workshops for the past several years on a variety of topics relating to energy issues and curbing global warming. In 2006, The



CAT team released an “Early Action Plan to Mitigate Change in California,” and another edition in 2008, outlining strategies that will help the state meet the Governor’s targets in 2010 (approximately 60 million tons CO₂ equivalent in emission reductions) and 2020 (approximately 175 million tons CO₂ equivalent in emission reductions).

Members of the CAT team include executives in the following agencies:

- Cal EPA
- California Air Resources Board
- California Public Utilities Commission
- California Energy Commission
- State and Consumer Services Agency
- California Department of Water Resources
- Governor’s Office of Planning and Research
- California Integrated Waste Management Board
- CalTrans
- Business Transportation and Housing Agency
- California Department of Forestry and Fire Protection
- California Department of Food and Agriculture
- California Department of Parks and Recreation

(Bios can be found in the Appendix)

Strengths:

- The Governor is pushing collaboration heavily – his top-down approach has made it clear to state agency leaders that the environmental issues are a priority for his administration. He wants change – and results.
- The leaders of the agencies and top staff are working together, led primarily by CARB, CPUC, and CEC.
- The Governor has surrounded himself with key environmentalists who have years of experience in the field.

Weaknesses:

- The mid-range bureaucracy in some areas has been resistant to change, or slow to make changes. Although the upper management is working together, middle managers and rank-and-file do not always seem as committed (in some agencies). However, with the Governor’s office taking such a powerful position, and so determined to make these changes, resistance has been reduced by dictates coming from him or his office.

Green Action Team

The Green Action Team (GAT) was created from Governor Schwarzenegger’s Executive Order S-20-04 in December 2004, which also established the Green Building Action Plan - the State of California’s priority for energy and resource-efficient high performance buildings. The Executive Order sets a goal of reducing energy use in state-owned buildings by 20 percent by the year 2015 (from a 2003 baseline) and encourages the private commercial sector to set the same goal (see CPUC section for more information). The GAT team is chaired by the Secretary of the State and Consumer Services Agency and consists of the Director of the Department of Finance; and the Secretaries of Business, Transportation, and Housing; Environmental Protection; Resources; Education, and a commissioner from the California Public Utility Commission. Other participants include the Department of General Services and the State Architect.

The Green Building Action Plan also specifies that all new and renovated state-owned buildings paid for with public funds should be certified as LEED Silver or higher. The Plan charges the California Public Utilities Board to use its authority to inform building owners about the “compelling economic benefits” of energy efficiency measures and how they can improve building efficiency to meet the 20% goal. The GAT meets every two months and provides progress reports to the Governor’s office.

Strengths:

- Provides accountability for moving the sustainability initiative forward.
- Provides more coordination between state agencies at the highest levels.
- Rosario Marin, Secretary of the State and Consumer Services Agency, has been a very persistent, key driver of the program.
- Establishes green building as a state policy, and LEED as a state-mandated standard.

Weaknesses:

- More coordination and cooperation are needed at the mid-level at some agencies.
- Plan does not provide funding.
- Budget issues have further slowed progress.

PRIORITY STATE AGENCIES INVOLVED IN THE GREEN MOVEMENT:

California Air Resources Board

Overall Mission: A majority of California Air Resources Board’s (CARB) 1,000 employees work to set and enforce emission standards for motor vehicles, fuels, and consumer products; set health-based air quality standards; conduct research; monitor air quality; identify and set control measures for toxic air contaminants; provide compliance assistance for businesses; conduct public education programs; and oversee local air quality districts.

CARB is widely recognized as the agency with the most influence in the environmental movement due to its leadership role with AB32, the California Global Warming Solutions Act of 2006. This legislation represents the first enforceable state program to cap all GHG emissions from major industries that includes penalties for non-compliance. The law requires the state to roll back GHG emissions by the year 2020 based on 1990 levels (a 25 percent reduction), with further rollbacks by 2050 (80 percent below 1990 levels). On December 11, 2009, the Board adopted mandatory reporting rules for significant sources of greenhouses gases and adopted a scoping plan indicating how the emission reductions will be achieved via regulations, market mechanisms (e.g. cap-and-trade), and other actions. The Board will have another two years (until January 1,

2011) to adopt regulations achieving that plan, including both market mechanisms and alternative compliance mechanisms. Mandatory caps will begin in 2012 for significant sources and ratchet down to meet the 2020 goals. Within CARB, about 50 employees are working directly on the implementation of AB32.

As part of AB32, the Governor is seeking public input toward implementing the process. He appointed an Environmental Justice Advisory Committee, an Economic and Technology Advancement Advisory Committee, and a Market Advisory Committee, and CARB and other agencies are holding public workshops to ensure the opportunity for comment on the scoping plan and other aspects of the climate change programs. Prior to imposing any mandates or authorizing market mechanisms, CARB must evaluate several factors, including potential impacts on California's economy, the environment and public health; equity between regulated entities; power reliability; conformance with other environmental laws; and assurance that the rules do not disproportionately impact low-income communities.

CARB held a series of public workshops as part of the development of the scoping plan for AB32. The last of the workshops was held on

April 4, 2008. In June, the final draft of the scoping plan was released for public comment, followed by more public workshops in June and July. The final draft was released in October, and was adopted in December by the Board. The Board now has two years to adopt these recommendations as full regulations.

Strengths:

- CARB is shifting its focus from air regulation to the transformation of the California economy – the solutions coming from the AB32s scoping plan will impact every part of our economy.
- Mary Nichols (CARB's chair) has the wholehearted support of the Governor and environmental groups, and should be able to use her influence and experience to push through major, lasting energy efficiency standard reforms.
- CARB has the power to set new standards for industry and force lower carbon emissions.
- CARB is a very transparent public agency that integrates collaboration with industry and the public into its regulatory process via individual meetings and public workshops.
- States like California are leading the country when it comes to environmental policy. The national EPA has failed to create and fund programs that would make the U.S. a world leader in the green movement, which is going to hurt the U.S. economically for some time to come. Countries in Europe, with nationally funded green programs, are very quickly moving ahead of us. CARB and other state (and local) programs are doing their best to make up the difference.
- Architects have an opportunity to be more engaged in the AB32 scoping plan process, even though it doesn't appear to relate directly to the building industry – it will create a full scale transformation of the California economy, and solutions should come from every part of our economy.

Weaknesses:

- Industry lobbyists (business/industry) did not engage sufficiently when AB32 was being negotiated and economic feasibility was not as fully considered as it could have been.
- Implementation of AB32 will push some industry out of California to other states or overseas – some say the pollution in California may indeed be reduced, but it will still occur in other parts of the globe.

- The timeframe of the scoping plan and the implementation is too aggressive for a state agency to make effective changes.
- As much momentum as CARB has, it is still a large state agency – not that nimble with regard to full-scale change.
- The state does not have the legal jurisdiction to file suit against the EPA – the suit is an attention-getting device.
- The state's budget crisis will have an impact on the resources available for implementation.

California Energy Commission

The California Energy Commission (CEC) is the state's lead agency for energy policy issues, probably most widely known for developing energy efficiency standards for buildings and appliances. Since 1988 it has been the lead agency in developing and maintaining a record of the state's inventory of greenhouse gases. More recently, the CEC has provided guidance to the California Climate Action Registry, a non-profit public-private partnership that helps various California entities establish GHG emission baselines and record their annual GHG emissions inventories. The CEC is also a member of the Green Action Team (state agencies ordered to reduce energy use – see Executive Order 2-20-04); responsible for power plant licensing, energy facility siting, transmission lines, and energy infrastructure; conducts research and development; conducts renewable energy programs (e.g. "Go Solar, California!"); and advocates for the use of alternative fuels and the reduced consumption of petroleum fuels.

Some of the CEC's more popular programs include the Bright Schools Program, which provides energy audits, low interest loans, and energy construction advisors to improve energy efficiency of K-12 schools; and DEER (Database for Energy Efficient Resources), a database co-sponsored with CPUC to provide estimates of energy and peak demand savings values, measure costs, and "effective useful life" all within one data source. The PIER (Public Interest Energy Research) Program "supports energy research and development projects that will help improve the quality of life in California by bringing environmentally safe, affordable and reliable energy services and products to the marketplace." The PIER program's Environmental Area is monitoring the accumulation of GHG in California and the climate change resulting from those emissions, as well as developing economic analyses of the cost of climate change and the implications of possible policy changes.

The CEC is also responsible for benchmarking methodology and building commissioning guidelines to increase energy efficiency in government and private buildings, as per Executive Order S-20-04 (Green Building Action Plan), and is responsible for collaborating with the CPUC to ensure the 20% reduction in energy use.

Strengths:

- CEC has ample funding for research (\$90 million).
- CEC conducts the best analysis of energy issues within state agencies.
- Low interest loans, grants, and rebates are available to those who know how to access them – true incentives for the consumer.
- CEC has been good at developing good coalitions with other agencies and private groups that focus on energy issues.

Weaknesses:

- Many of CEC’s staff are nearing retirement age – there will be a “brain drain” in the next 10 years as they leave the department – a potential loss of institutional memory and expertise/experience.
- There is a 25% vacancy rate in some departments – difficult to find good qualified employees.

Department of General Services

The business manager for the State of California, the Department of General Services (DGS) has incorporated the green message into every aspect of its service and delivery, including procurement and acquisition, real estate management and design, telecommunications, transportation, and school construction. DGS is responsible for the “Buying Green,” “Building Green,” and “Working Green” public awareness programs that encourage state agencies and consumers to be more environmentally conscious. One of the department’s most successful programs is the Environmentally Preferred Purchasing Program, enacted in September 2002, which has led to large-scale environmentally sensitive purchasing on the state and local level. DGS also works with the Integrated Waste Management Board on a Zero Waste California program that emphasizes recycling, buying recycled materials, and reducing landfill waste.

On the real estate side, DGS is a member of the Green Building Action Team and its real estate section is responsible for managing more than 24 million square feet (sf) of space in state-owned or managed facilities. Its major capital outlay, special repair, and minor capital outlay projects encompass almost 1,200 projects valued in excess of \$4.2 billion. Within DGS is the Division of the State Architect and the Office of Public School Construction. DGS is responsible for the building and retrofitting aspects of Executive Order S-20-04 (Green Building Action Plan), which requires that all new state buildings and major renovations over 10,000 sf be designed and certified LEED Silver (or higher) and all existing buildings of over 50,000 sf to meet LEED standards by 2015. DGS also provides a *Best Practices Manual* for building management to encourage energy efficiency measures in existing state-owned and leased buildings.

Strengths

- DGS has huge purchasing power and has leveraged that power to include local government agencies in their contracting.
- The department has staffed up the building and purchasing program in the past several years and placed much more emphasis on green (architecture, engineering, building commissioning, etc.).
- DGS has ample support from utilities, the CEC, and other state agencies to affect energy efficiency upgrades.
- DGS has incorporated the LEED process into the cost of state projects as a routine component of their budget for buildings.

Weaknesses

- In spite of the best efforts of some people in the organization, the massive bureaucracy of DGS has made the process of implementing the Green Building Plan slow and difficult.
- Not enough has been budgeted for implementing the green building standards.
- The relationship between DGS and the architectural profession has been uneven at times.

- It has been difficult to gain agreement between agencies (and sometimes even within DGS) on how to move forward.
- There has not been enough forward momentum on the green building implementation plan as had been expected.

Division of the State Architect

The Division of the State Architect (DSA) is responsible for building and renovating approximately 15 million sf of K-12 schools every year at a cost of \$5 billion. The Governor’s Green Building Action Plan (Executive Order S-20-04) directs the Division of the State Architect to work with the Office of Public School Construction, the California Energy Commission, and other organizations to adopt guidelines that will enable schools built with state funds to be resource and energy efficient. Consequently, State Architect David Thorman, AIA, developed schools energy efficiency standards modeled after the Collaborative for High Performance Schools (CHPs - see CHPs section entry). More recently, Thorman has developed a new plan to go beyond CHPs criteria to achieve even higher sustainability standards. He suggests moving all new schools toward grid neutrality (zero net energy), a concept that means “schools will not only self-generate all the energy they need, but they will put excess energy back in to the grid.” Design teams would be required to identify “technically feasible and cost effective clean and renewable onsite energy generation systems, and consider both initial operations/maintenance costs, including solar panels, photovoltaics, geothermal, wind, water, fuel cells, energy storage, and other energy producers. He recommends several innovative financing methods to motivate school districts.

Strengths

- The State Architect has been a solid supporter of the CHPS program and sustainably building efforts.
- CHPS schools are gaining support from school districts, especially large ones (e.g. Los Angeles Unified).
- Payback for energy efficient buildings is relatively short, 15-20 years.
- Third-party financiers are becoming more common, making financing of school projects more feasible.

Weaknesses

- There are few windows of opportunity for the State Architect to be effective, given the cycles of power and budgeting within state government. The bureaucracy can be an obstacle.
- DSA does not have enough budget for substantial green program.
- Some say the division has conservative legal department who seem somewhat cautious about making changes.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies, in addition to authorizing video franchises. In September 2006, Governor Schwarzenegger signed SB1368, which requires the CPUC and the Energy Commission to implement an emissions performance standard for all retail providers of electricity in the state. Essentially, SB1368 would prohibit utilities in the state from buying electricity from high-polluting power plants, including coal-fired power plants that are not in California.

The CPUC plays an integral role as part of the state's Green Building Action Plan (Executive Order S-20-04), which requires that all new state buildings and major renovations over 10,000 sf be designed and certified LEED Silver or higher; all existing buildings of over 50,000 sf shall be LEED certified by 2015; and all state-owned buildings reduce the volume of energy purchased from the grid by at least 20 percent by 2015 (as compared to a 2003 baseline) by undertaking all cost-effective operational and efficiency measures as well as onsite renewable energy technologies. Commercial properties are encouraged to do the same. The CPUC is responsible for playing a major role in leading this program (with the CEC, utilities, real estate industry, architects, engineers, and "Flex Your Power" program) by funding a statewide campaign to inform building owners and operators about the compelling economic benefits of energy efficiency measures, benchmarking, and building commissioning.

California Integrated Waste Management Board

One of six agencies in CalEPA, the California Integrated Waste Management Board (IWMB) is designated to oversee, manage, and track California's 92 million tons of waste generated each year. Since the passing of Integrated Waste Management Act of 1989 (AB939) California has shifted its recycling efforts from 10% to 52%, leading the nation. One of the Board's biggest priorities is to promote the use of new technologies to divert California's resources away from landfills. Within the building industry, the IWMB works to educate users about potential waste from building sites from construction and demolition materials and the potential for reuse and recycling.

The Board provides grants and loans to help California cities, counties, businesses, and organizations meet the state's waste reduction, reuse, and recycling goals; develops and promotes alternatives to the illegal disposal of used oil; develops technical standards and permit requirements for waste tire facilities; promotes reuse and recycling of electronic devices, and encourages purchasing of environmentally preferable devices. Mark Leary, IWMB executive director, also co-chairs the Environmentally Preferable Purchasing Task Force, the state's green purchasing program, with DGS. The IWMB also has a green building public awareness program, seemingly in conflict with DGS's efforts at times.

Other State Agencies Of Significance:

The following agencies have significant green programs but are not considered to be the most active stakeholder agencies in the environmental movement at this time. There are many, many other agencies that are also involved, but due to space considerations, are not mentioned.

State Building Standards Commission – created green building code standards in 2008.

Water Resources Board – water use and delivery will be the big issue in the next generation.

State and Consumer Services Agency – Rosario Marin, the Agency Secretary, is the leader of the Green Action Team.

Attorney General's Office – under Jerry Brown the office has taken a much larger role in the environmental movement than in the past.

Governor's Office of Planning and Research - Developing CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" (i.e. the impact of AB32) for the Resources Agency on or before July 1, 2009. The Resources Agency must certify and adopt the guidelines on or before January 1, 2010.

THE BUILDING INDUSTRY – CALIFORNIA

The green movement has been gaining momentum on several fronts in the building industry: the public sector, commercial (office) sector, and schools. "Everyone wants to be first and greenest," said one architect and state public official, "but that doesn't necessarily translate to a product that is done well." The difficulty with the fast-growing green movement has been the lack of a single definition of a "green building." Said one architect and green program executive, "if you ask 20 people to define a green building, you will get 20 different answers."

On the other hand, the advent of the LEED rating system (as well as other rating systems) has been a huge boon to the green building movement, making it an increasingly popular standard-of-choice for federal, state, and local agencies, and giving the corporate world a way to benchmark the cost/benefit of building sustainably. State and local governments are leading (and in many cases, pushing) the way by implementing stringent green standards for new or retrofitted public buildings. In many jurisdictions, this has required significant training for city architects, planners, project managers, and others to ensure they understand the accreditation process and all aspects of sustainable design. Hybrid programs like CHPS (Collaborative for High Performance Schools) have offered school districts low-cost, independent standards for green schools that have been widely accepted.

"The private sector is the next frontier," said one city official. "Now that we have fully trained our staff in all city departments, we can start focusing on new standards for residential and commercial projects." Many cities are proposing ordinances or incentive programs that will require LEED, Build It Green, or other standards for new (private sector) projects over certain sizes. In many areas across the country, developers have already started competing to see who can be the most "green." According to McGraw-Hill Construction Research and Analysis, the primary drivers of green commercial building are increasing energy costs, followed by government regulations/tax incentives, and global/consumer preference influences.

AIA California Council

The AIA California Council is active on the environmental movement in several fronts, but with advocacy their primary focus. The AIACC's legislative affairs committee, Committee on the Environment (COTE), and AIACC staff closely monitor "green" legislation that could impact the building industry. The COTE committee has been particularly effective in setting up a bill monitoring system through the use of technology – members of the committee review bills online on a wiki site on their own time and hold web-based committee meetings to discuss and develop positions.

Collaboration with the local chapter of the United States Green Building Council (USGBC) has been critical, and is seen as even more important in future legislative sessions. (USGBC does not have a state chapter, so the AIACC works most closely with the Northern California chapter based in San Francisco.) The chair of the AIACC's COTE committee said the goal is for the two organizations to reach agreement on all major green legislation prior to the session to avoid conflicting appearances and to keep the building industry as unified as possible. He is drafting an MOU for the two organizations in an effort to build even stronger ties.

Strengths:

- The strength of the AIACC comes from its more than 11,000 members, that it is a member-driven organization.

- AIACC can help build more coalitions in the building industry and advocate green issues at the Capitol as a group. It's difficult for public agencies to resist private groups trying to change things.
- AIACC has an opportunity to use its strength in advocacy to sponsor more "green" legislation.
- If AIACC and other involved groups (including owners) go to the Capitol together to advocate for green issues, it removes the appearance of being "self serving."

Weaknesses:

- If AIACC were more involved, they could become more of a resource for government and clients.
- AIACC has not had the resources to devote to the green advocacy effort as much as they could.
- Members have, understandably, been client-driven (responsive), rather than environmental advocates.

Collaborative for High Performance Schools (CHPS)

CHPS is a relatively new organization created in 2000 by a group of California architects, state agencies, utilities, and others with an interest in building high performance (energy efficient) schools. The group met on an ad hoc basis for a year until Charles Eley, FAIA was asked to organize the group and become its executive director, a position he holds today. In 2001 the group became a 501(c)(3) membership organization and changed the composition of its board of directors to include designated positions in various representative fields, including the CEC, the IWMB, the State Architect, the Office of Public School Construction, the Coalition for Adequate School Housing, the major utilities and gas companies, architects, school districts, environmentalists (NRDC), and manufacturers. A CHPS technical committee developed a "best practices" manual for schools, along with a comprehensive rating system and a website. Since that time, CHPS has become widely accepted as a rating system by many of the major school districts in California, including the Los Angeles Unified School District, and interest in the program has been shown not only by other states, but also nationally.

According to the CHPS website: "The CHPS Criteria is a comprehensive system of environmentally responsible benchmarks designed by the CHPS technical committee, which is made up of over 50 school facilities experts including state agency officials, designers, school district officials, contractors, product manufacturers and energy and water utility officials. A CHPS school is a school that strives to achieve excellence in environmental efficiency and healthy building practices. CHPS recognizes superior design teams and school districts through award ceremonies, case studies and media outreach. Schools can self-certify through the free CHPS Designed program, or seek third-party verification of their high performance school through the CHPS Verified program."

Strengths:

- The technical committee is the brains of the organization, composed of 40-50 people with expertise in energy, water, daylighting, etc. - true collaboration on an internal level.
- 25 of the largest school districts in California have accepted CHPS as their rating system (i.e. schools must be built according to the CHPS criteria) representing 1/4 to 1/3 of the school districts in the state.
- School districts are enthusiastic except for the cost - the State Architect's goal is for the cost to be neutral as well. There are financial incentive options available from the CEC and other sources.

- Very low cost to certify a CHPS school compared to LEED.
- CHPS has a spirit of being different, collaborative, supportive. Its members all have a lot at stake when it comes to reducing energy consumption, so they are highly motivated.
- CHPS has a thoughtful strategic planning program that is moving the program to a national level.
- CHPS has a bottoms-up, grassroots approach that serves its members and participants well. It has been very nimble and good at getting school districts to think about sustainability.
- Charles Eley, FAIA, has been on a crusade to the school districts, trying to encourage them to adopt CHPS as their building policy. The public has also become more energy conscious, taking their concerns to their school districts, asking why their schools aren't more energy efficient.
- Once the school districts adopt the new policies, it helps the architectural profession because once the architect has built a CHPS school building, they will begin applying what they have learned in their other projects. It's a trickle down effect that is helping the profession and the building industry overall.

Weaknesses:

- The program has not been accepted by the majority of small school districts in the state. CHPS's priority goal is to have all school districts accept CHPS as their rating system.
- Even though CHPS certification costs less than other rating systems, the cost can be onerous for some clients. They don't understand why they need a commissioning report, etc. - they don't understand the value.
- It is difficult to conduct integrated project delivery (which often comes hand in hand with high performance buildings) in a public environment. It's difficult to bring the contractor in at the front of the project. A hybrid situation often works better for the project.
- More tools are needed to educate clients about the "why" of environmental design;
- The cost can be high for some school districts, especially the cost of building commissioning. It can be difficult to explain the value in building commissioning to the client.
- There can be a perception by clients that this is an undue first time cost for construction, a premium to pay for resource efficiency.

Developers and Corporate Clients

When it comes to the green movement, developers are a leading force in some urban areas. Market forces and, in some areas, city regulations, are pushing developers to build green. One individual surveyed said now is the "perfect storm" for the green movement: the price of gasoline is high, consumers are beginning to fully understand the impact that global warming is having on the Earth, corporations are understanding the PR value of going green, and the building industry is able to provide buildings that satisfy the need through LEED and other vehicles. The real estate community sees the value in green buildings now that they didn't see before so, all things being equal, they will select a green building because it's the "right" thing to do. Most importantly, tenants are asking for green office space, and if they have a choice between a space that is green or not green, they will pick the green space. Hence, developers are moving quickly toward building green, both for economic as well as environmental reasons.

According to *Harvard Business Review* (6/2006): "Corporate clients have discovered that building green offers lower overhead costs, greater employee productivity, less

absenteeism, and stronger employee attraction and retention. Companies as diverse as Bank of America, Genzyme, IBM, and Toyota are constructing or have already moved in to green buildings. Green is not simply getting more respect, it is rapidly becoming a necessity as corporations – as well as home builders, retailers, health care institutions, governments, and others – push green buildings more fully in to the mainstream in the next five to ten years. In fact, the owners of standard buildings face massive obsolescence.”

The momentum is building in many local jurisdictions toward environmentally conscious commercial building. San Francisco has been a leader in the local green building effort: In December 2007 the city proposed an ordinance requiring newly constructed commercial buildings over 5,000 sq ft, residential buildings over 75 feet in height, and renovations on buildings over 25,000 sq ft to be subject to a LEED and Build It Green certifications, which if approved, would make San Francisco the city with the most stringent green building requirements in the nation. Another incentive: LEED Gold buildings are currently “expedited” in the city permitting process which saves 6-12 months in the environmental review process. Last year Mayor Gavin Newsom established a Task Force on Green Buildings for the City composed of various members of the building community. The city has also appointed a green “czar” to ensure that all aspects of the city’s operations are more conscientious about their impact on the environment. This kind of energy is rapidly spreading to other cities across the state, and with it, more stringent green building codes and regulations will follow.

Strengths

- Developers have the financial power to push green building. This is an opportunity for architects to take the lead and learn more about how to build sustainable buildings.
- The business sector has figured out that going green not only can’t be avoided, it’s the future, so they should incorporate it in to their business practices for better or worse. They are trying to figure out the pros and cons as quickly as they can.
- We’ve already gone from “green buildings” to “zero net buildings,” the new buzz word.
- In more and more cases, developers are competing to build the “greenest” building.
- Even companies like WalMart have huge green initiatives now and are going green – they want to be seen as the industry leaders.
- Architects can help show developers the “honest” ways to be green. There are many different definitions of green, and the profession can be leaders and show clients/ developers how to do it well and honestly –resources and tools are needed.
- Developers have more motivation for building green. Primarily financial, with market trends moving toward the demand for green, but also because it is the right thing to do.
- Business groups, especially in the Bay Area, are also leading the charge toward building green, buying green, making corporations green (e.g. Bay Area Council, Silicon Valley Network, Silicon Valley Leadership Group, etc.).
- In the business community, there is a new triple bottom line – environment, economy, and society equity.

Weaknesses

- Too much attention is spent on individual green “buildings” and not enough on large urban development that will create whole environments that will be sustainable. Architects should be creating urban areas that will provide a life for the individual that will be fundamentally richer and healthier – living and work space near mass transit, or opportunities to walk or ride bicycles to work. Open spaces near home and work. The true “holy grail” of sustainability is much more than energy efficient

buildings or the choice of building materials – it is providing a more enriched lifestyle.

- We are building green buildings that people have to drive to. We need to start thinking more about patterns of urban development.
- Some architects tell developers/clients they can build them a sustainable building, but they really do not understand the true meaning of the term. Much more education needs to occur within the industry and with contractors and trades.
- Developers need much more education about what a truly sustainable building is. There are many definitions and we need to come to a consensus about the definition and build resources and tools to help developers. It’s very confusing and too easy to slide by with a few easy fixes.

USGBC California

The United States Green Building Council (USGBC) does not have a statewide office, but does have eight local/regional offices that are reportedly very active and very collaborative with their counterparts in the building industry on the local level. The Northern California chapter serves the San Francisco, Monterey Bay, and Sacramento area and thus serves as the state advocacy arm of the organization in California (in addition to local advocacy). The office, which has three staff members, collaborates closely with AIACC on advocacy matters, and shares office space with the AIA San Francisco chapter. The primary role of the chapter is to serve as a focal point for green building in Northern California through educational programs (training, public events, outreach), advocacy and education of policy makers, and serving as a center of innovation. The office plans to expand its role in the latter by forging new relationships with research institutions in the Bay Area, particularly in the areas of building performance and building finance. Like the AIA, the USGBC is highly regarded as a member-driven organization.

Strengths (general)

- Collaborates well with other organizations on the local level.
- Member-driven organization, highly thought of by members and non-members alike.
- In some areas (e.g. Santa Barbara) the USGBC and local chapter AIA COTE are virtually the same committee, demonstrating the power of their collaboration.

Weaknesses (specific to Northern California chapter)

- Somewhat new to the political process in Sacramento.
- Staff is stretched very thin given the size of the territory – San Francisco, Sacramento, Monterey Bay.

OTHER CALIFORNIA GROUPS OF SIGNIFICANCE:

BOMA California

As with the national BOMA organization, the state level association has made energy issues a priority for the past several years. It has an active energy committee and retains an energy consultant, Bill Roberts. A key issue for BOMA has been reducing the cost of energy in commercial buildings borne by building owners: Last September, the CPUC began allowing building owners the right to submeter tenants, and bill those tenants for their electrical consumption. As a followup to this decision, BOMA recently completed successful negotiations with PG&E to allow submetering in their service territory, including a nearly 10% reduction in commercial electricity rates. This decision sets the stage to eliminate the same restrictions in the Southern California and San Diego Gas and Electric’s utility districts. In the PG&E territories, building owners may install electricity

meters in each tenants office (with their knowledge), giving tenants a powerful incentive to curb their electricity use, save money, and reduce carbon emissions as well.

California Commissioning Collaborative

The California Commissioning Collaborative (CCC) is a California nonprofit public benefit corporation with no membership, but it does have a board of directors and an advisory committee. Its purpose is to promote building commissioning in new and existing buildings; to develop programs, tools and resources for the building commissioning community. Its primary backers are utilities and the state government, many of whom participate as members of the board.

Build It Green

Build It Green (BIG) is a non-profit professional membership organization located in Berkeley that was formed as a result of the 2005 merger of the Green Resource Center and Bay Area Build It Green. The organization's primary mission is to promote environmentally friendly, resource efficient buildings in the residential sector and to create a green building rating brand in the marketplace. The BIG organization is comprised of a collaborative group of members – public agency representatives, real estate professionals, contractors, architects, builders, and suppliers, among others. They are quick to note they are not an advocacy group, at least on the state level, although they do track legislation that affects the building industry. The group offers Certified Green Professional Training and Green Building Guidelines, and the Green Point Rating for new home construction, home remodeling, and multifamily construction. The group's rating system is becoming a standard with several northern California cities as a residential model. They were recently endorsed by the northern California chapter of the California Builders Association, however they reportedly were not endorsed by the state chapter. They have 22 staff members in their Berkeley office and would like to open an office in the Los Angeles area.

CBIA

The California Building Industry Association (CBIA) is a statewide association representing 6,700 members including homebuilders, trade contractors, architects, engineers, designers, suppliers, and other industry professionals. CBIA recently initiated the California Green Builder Program as a voluntary program that goes 15 percent above the state's Title 24 building efficiency standards. The CGB program consists of a rating program with guidelines for energy efficiency, indoor air quality and comfort, on-site waste recycling, and water and wood conservation. The CBIA executive vice president is involved with several state boards and commissions.

Global Green

Global Green is a Los Angeles-based green building organization with offices in Washington D.C. and San Francisco, and is the U.S. affiliate of Green Cross International, founded by Mikhail Gorbachev in 1993. Its primary focus is to promote sustainable design practices among affordable housing developers. Global Green also provides technical expertise and consulting to developers, designers, and public agencies (including the City of Los Angeles). Through its Green Building Resource Center in Santa Monica, Global Green also provides green building advice, classes, and workshops for the general public.

OTHER INFLUENTIAL GROUPS:

Larger Contractors

Product Manufacturers (carpet, lighting, etc.)

Hotel Industry

THE BUILDING INDUSTRY - NATIONAL ORGANIZATIONS

AIA

National AIA has several key environmental programs. The longest running and most member-driven program is the Committee on the Environment (COTE), which finds its origins in the AIA's Energy Committee back in the 1970s. The COTE committee was officially formed in 1990 and chaired by Bob Berkebile, FAIA, and is now one of the largest "knowledge communities" within the AIA with 8,000 members. The COTE's primary efforts are to manage a national awards program (Top Ten Green Projects), sharing best practices, and conducting studies (e.g. a recent study of the effectiveness of environmental education within in architectural education).

Shortly after the COTE was formed back in 1991, the AIA began taking official positions on sustainability when the AIA Board passed a resolution that its members should not specify materials with CFCs or HCFCs. More recently, AIA's environmental program has become more robust, beginning three years ago with the development of two sustainability policy statements: Sustainable Architectural Practice and Sustainable Rating Systems. The Sustainable Architectural Practice policy statement was the genesis of what is now known as the "2030 Program" which challenges members to strive for a minimum of 50% reduction from the current level of consumption of fossil fuels used to construct and operate new and renovated buildings by the year 2010, and promote further reductions of remaining fossil fuel consumption by 10% or more in each of the following five years. Their ultimate goal is the achievement of carbon neutral buildings by 2030. The 2030 program originated with architect Ed Mazria, AIA from New Mexico, who coined the term "2030 Challenge" and has provided the AIA with much of the research behind the program's premise.

The Sustainable Rating Systems policy statement generally supports the development and use of rating systems and standards such as LEED and Green Globes, given a set of 16 criteria. Further, in 2007 the AIA took a position of neutrality regarding the rating systems, and then developed an evaluation of the top three systems based on criteria in the policy statement "for comparison purposes" only.

In recent years the topic of the environment and sustainable building became much more prevalent in the building industry, and in 2007 it was also the priority political focus of the AIA's 2007 president, R.K. Stewart, FAIA, which brought the momentum of the AIA's internal efforts to a head. Early last year the AIA formed a new committee called the Sustainability Discussion Group (SDiG) to "support and advocate for the AIA's position statements on high performance buildings and rating systems." Specifically, the function of the SDiG is "to develop sustainability tools and guide and advise AIA staff as they develop the products and resources for the program." This is the internal mechanism for the implementation of the AIA's 2030 program, which is a much more staff-driven

program than the COTE committee. The following products have been developed thus far:

- *The Sustainability 2030 Toolkit* (to encourage city leaders to promote high performance sustainable building design).
- Ratings Evaluation (conducted by the SDiG).
- Sustainability 2030 Green Meeting Guidelines (how to make your meetings green).
- 50to50 Program (50 strategies for architects and others in the building industry to reduce fossil fuel use by 50 percent).
- “Roadshow” PowerPoint presentations.
- Marketing campaign: “Walk the Walk” began in January 2008.

Throughout the AIA there are many other efforts involving sustainability, for example:

- A “2030 Coalition” led by the AIA includes 30 organizations (USGBC, ASHRAE, COAA, SNPE, BGI, ASLA, APA, etc.) that meets on a regular basis.
- The AIA has conducted several studies, including a national study of cities to determine the growth and effectiveness of green building policies in cities with populations greater than 50,000.
- A “Sustainable Justice” committee has recently been organized, stemming from the Academy of Architecture for Justice, to focus on the design of green courthouses and other justice buildings.
- An annual survey (in partnership with AutoDesk) to measure how AIA member architects in the U.S. are practicing sustainable design, including their opinions about the green building movement.

Strengths

- The AIA was probably wise to remain neutral regarding rating systems. Rating systems are a product, and AIA should not recommend any product over another (e.g. the AIA would not recommend one window manufacturer over another). It took some political courage to remain neutral on this issue.
- The AIA’s strongest abilities lie in its advocacy efforts: influencing government and influencing members.
- The 2030 Challenge is a good start, but there doesn’t seem to be much action beyond the paperwork so far.
- The AIA has been strong in sending the deeper “zero net energy” message, as opposed to a simple “let’s be green” message.

Weaknesses

- AIA has a tendency to be proprietary in nature, and not share credit for its programs (i.e. is not as collaborative as it could be).
- The SDiG committee was created when there was already a COTE committee in place (redundant strategic planning).
- The AIA is forever reinventing itself depending upon the interest of its current president. The sustainability issue is huge and should be given as much political and financial backing as possible, because it is here to stay in the industry.
- The AIA has a small handful of staff working on the sustainability issue and the USGBC has 120 staff working on it. AIA should devote more resources to this issue if it is going to remain relevant to its members.
- The AIA still lacks diversity in its membership – it is very obvious when you go to the convention and see mostly Anglo men in bowties. The USGBC conferences are incredibly diverse in comparison, and that’s one reason they are so much more popular.

- AIA has lost a great amount of institutional memory in the past several years. Staff and leadership does not seem to understand the value and history of the COTE committee.

USGBC

The United States Green Building Council (USGBC) was founded in 1993 in San Francisco and later moved to Washington D.C. Its membership is composed of 13,500 organizations, as well as nearly 60,000 individuals who have joined one of the 70 local chapters. Members include building owners and end-users, real estate developers, facility managers, architects, designers, engineers, general contractors, subcontractors, product and building system manufacturers, government agencies, and nonprofits.

The true success of USGBC began in 2000 with the advent of the LEED (Leadership in Energy and Environmental Design) rating program. The program awards points in the following categories: sustainable site, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design process. LEED has four levels: Certified, Silver, Gold, and Platinum. In addition to providing certification, USGBC also provides green building training for architects, builders, manufacturers, and others in the building industry. In a very brief amount of time, LEED has become a very well known and widely recognized brand not only in the building industry, but in the general public.

Strengths

- LEED created a national standard where others have been regional.
- LEED and other rating systems helped change corporate perceptions about green buildings. It gave building owners something tangible with which to measure building performance. The industry needed a benchmark.
- USGBC engaged a diverse group key stakeholders in the building industry from the its inception – construction firms, building industry association, architecture firms, manufacturers, hard core environmentalists.
- USGBC has huge working committees with expertise on topics like water, energy, materials; they bring in stakeholders’ opinions and then ask the BOD and members to vote before they make policy moves.
- LEED is a great marketing tool for the building owner, gives the building more value; tenants like to be able to say they are in a green building.
- USGBC is quick to praise and has a very positive attitude in general.

Weaknesses

- The cost of LEED certification can range from \$30,000 to \$100,000, which can be a difficult sell to the owner, especially when compared to other rating systems.
- Rather than paying LEED rating fees, some building owners are claiming their building “qualifies as a LEED building,” but they are not getting the certification.
- USGBC has shifted its focus to marketing (i.e. selling books, training, workshops) and other endeavors and away from its original mission of environmental protection.
- The point-based system is not as performance-based as other rating systems: it gives the same amount of credit to very small element (e.g. a bike rack) as to a very meaningful element (e.g. mechanical system). Can lead to easy trade-offs for building owners that do not have significant results.
- The GreenBuild conference is a victim of its own success, becoming too large and unmanageable – there were long lines for registration at last year’s conference that were uncomfortable for participants.

- As California and other states adopt green building codes, it is possible that LEED will become less relevant. There may still be performance goals, but certification will be conducted by third parties.
- LEED is not as focused on energy efficiency as compared to the AIA's 2030 goals, which are purely focused on reducing our carbon footprint.

ASHRAE

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has made energy efficiency and high performance buildings its priority. It offers the following areas of expertise to its 55,000 members: energy efficiency, indoor air quality, codes and standards, health concerns, and guidance for a safe environment during extraordinary incidents. ASHRAE recently signed an MOU with BOMA International in support of superior building performance.

Last year the USGBC, ASHRAE, and the Illuminating Engineering Society of North America agreed to co-sponsor the development of a new minimum standard for high performance green building. According to ASHRAE, Standard 189, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*, will address energy efficiency, a building's impact on the atmosphere, sustainable sites, water use efficiency, materials and resources, and indoor environmental quality. Using USGBC's LEED Green Building Rating System, Standard 189P will provide a baseline that will help to move green building into mainstream building practices. Standard 189P will be an ANSI-accredited standard that can be incorporated into building code. Eventually the standard will become a prerequisite under LEED.

BOMA

As recently as five years ago, BOMA was reportedly skeptical of the environmental movement, but today they are a major participant. In a 2007 BOMA/USGBC survey, 81 percent of building owners and managers said greening their portfolio was a priority for their company. (BOMA and USGBC recently signed an MOU and are working closely together on several initiatives.) The national organization has issued a "7 point challenge" to its members and local chapters (see below) and are working through the BOMA Energy Efficiency Program (BEEP) to educate their members on energy efficiency techniques:

- Decrease energy consumption by 30 percent by 2012 – as measured against an "average building" measuring a 50 on the ENERGY STAR benchmarking tool in 2007.
- At least once a year, benchmark energy performance and water usage through EPA's ENERGY STAR benchmarking tool.
- Educate managers, engineers and others involved in building operations, to ensure that equipment is properly installed, commissioned, maintained and utilized;
- Perform an energy audit and/or retro-commissioning building, and implement low-risk, low-cost and cost effective strategies to improve energy efficiency with high returns.
- Extend equipment life by improving the operations and maintenance of building systems and ensure equipment is operating as designed.
- Through leadership, positively impact the community and the planet by helping to reduce the industry's role in global warming.
- Position yourself and the industry as leaders and solution providers to owners and tenants seeking environmental and operational excellence.

Green Building Initiative

The Green Building Initiative (GBI) is a national non-profit organization based in Portland, Oregon whose primary focus is to promote building practices that result in energy-efficient and environmentally sustainable buildings in both residential and commercial construction. GBI operates the Green Globes environmental assessment and rating tool, adapted from a program used in Canada for the previous 10 years. The GBI is governed by a board of 15 directors featuring representatives from industry, NGOs, construction companies, architectural firms, and academic institutions. On March 12 of this year, GBI and BOMA signed an MOU to work together to promote sustainable development and energy efficiency.

OTHER ORGANIZATIONS OF SIGNIFICANCE:

ASE (Alliance to Save Energy)

IES (Illuminating Engineering Society)

APA (American Planning Association)

ULI (Urban Land Institute)

ASLA (American Society of Landscape Architects)

IFMA (International Facility Management Association)

ICC (International Code Council)

OTHER ENTITIES OF INFLUENCE:

California Utilities: The utilities have been a tremendous force in the environmental movement. Overall, they have focused on three priorities: energy efficiency, demand response, and the California solar initiative, but statewide pressures are pushing them further. In October 2007, the CPUC issued a report outlining the following goals:

- Direct the utilities to prepare a single, comprehensive statewide long-term energy efficiency plan;
- Adopt three programmatic initiatives:
 - All new residential construction in California will be zero net energy by 2020;
 - All new commercial construction in California will be zero net energy by 2030; and
 - Heating, Ventilation, and Air Conditioning (HVAC) industry will be reshaped to ensure optimal equipment performance;
- Develop the "next generation" of California utility energy efficiency programs for 2009-2011;
- Commit in the near term to adopting utility energy efficiency goals through 2020 and reaffirm our previously adopted 2009-2011 goals; and
- Establish new, collaborative processes with key business, consumer groups, and governmental organizations in California, throughout the West, nationally and internationally.

As a group, the utilities held a series of workshops last fall and are working on a final strategic plan which will be delivered to the CPUC in May 2008.

Within the building industry, the utilities have provided much-needed education and training for architects and others, provided financial incentives for using energy efficiency designs and products, and energy efficiency modeling. They have spent millions to send the energy efficiency message to building owners through public awareness campaigns, and have worked hard to develop credibility and trust with their customers. Many of the utilities have energy efficiency research and education centers, such as the Pacific Energy Center in San Francisco. The Savings By Design Program offers design assistance and financial incentives for energy efficient nonresidential new construction and renovation/remodeling projects (sponsored by the Pacific Gas and Electric Company, Sacramento Municipal Utility District, San Diego Gas and Electric, Southern California Edison, and the Southern California Gas Company under the auspices of the California Public Utilities Commission).

Cities/Building Departments

A recent study conducted by the AIA found that American cities are going green and local leaders are pushing sustainability policies forward at an extremely rapid pace. In California, the northern part of the state seems to be the driver in this regard. San Francisco, Oakland, Berkeley, Santa Rosa, and other northern California cities are regularly listed on the “top green cities” lists. More and more, in city planning departments, commercial and residential buildings are required to meet LEED and Build It Green standards. Statewide there are reportedly around 15 cities with green ordinances in place and around 40 with plans in progress, and dozens of cities with voluntary green programs (i.e. websites with “how to” green your building but no formal enforcement plans as of yet).

Oakland, for example, has taken a progressive stance, adopting a plan to achieve 50 percent renewable energy by 2017. The city passed a green building ordinance in 2005 to encourage LEED silver buildings with rebates and permit fast tracking. The city is encouraging a continuing revival of the downtown area, encouraging 10,000 new residents to move to the central city where they will have access to the area’s many subway, bus routes, and bicycle paths. According to the City, nearly 20 percent of Oakland residents commute by public transportation or bicycle.

Southern California has not seen as much growth in the environmental movement as Northern California. The City of Los Angeles has produced a plan, however they have not put the resources behind implementation of the plan as have Oakland and San Francisco. In February, two LA City Council committees voted to approve a new ordinance that would require all new private building projects over 50,000 sf to meet LEED standards, and would give projects intending to achieve LEED Silver-level certification an expedited permitting process. The matter will now go before the full City Council for approval. There are some pockets of green building activism in smaller cities such as the Santa Monica, Pasadena, Santa Barbara, Long Beach, and West Hollywood.

Community-based Organizations

- Alameda County – Stop Waste.org (a powerful community organization)
- Tree People (Los Angeles based community group)
- Ella Baker Center in Oakland, Van Jones (e.g. green-collar jobs programs, advocacy for Green Jobs Act)
- Green for All (“a national effort to curb global warming and oil dependence can simultaneously create good jobs, safer streets and healthier communities”)
- Better Schools, Better Neighborhoods (Los Angeles)

- Bay Area Alliance for Sustainable Communities
- Association for Bay Area Governments
- Communities for a Better Environment (GREEN LA) (social justice and environmental)

Environmental Organizations

There are an endless number of environmental groups, but the following were mentioned most often in the survey as major stakeholders:

- NRDC
- Sierra Club
- Planning & Conservation League
- Environmental Defense Fund
- SustainLane (environmental public-private policy group)
- Global Green
- Bay Keeper

Research

Research on green building presently constitutes an estimated 0.2% of all federally funded research, an average of \$193 million per year. This is roughly equivalent to only 0.02% of the estimated \$1 trillion value of annual U.S. building construction, despite the fact that the building construction industry represents 9% of the U.S. GDP. At the same time, the construction industry reinvests only 0.6% of sales back into research—significantly less than the average for other U.S. industries and private sector construction research investments in other countries. (Green Downtown Office Markets: A Future Reality: CBRE Summer 2007)

Agencies and organizations conducting significant green building research in California and beyond include:

- Lawrence Berkeley National Laboratory
- California Utilities’ Research and Education Centers (e.g., Pacific Energy Center)
- Berkeley Institute of the Environment (UC Berkeley)
- California Institute for Energy and the Environment
- California Center for Sustainable Energy (San Diego)
- New Building Institute (Portland)
- Manufacturers are conducting research on high performance products (carpet, lighting, shading, etc.) sometimes with grants from CEC and other public funds. Examples include Southwall Technologies and Lumenergi lighting.

What is Next?

Market forces that are pushing the biggest users of sustainable building practices – public agencies, schools, and commercial developers – are here to stay, and these forces will gradually push other markets into the sustainable building field as well. Energy prices are high and will likely continue to rise, making standard buildings less and less affordable and desirable. Public agencies are finding ways to restrict energy use across all economies in an effort to reduce carbon emissions and minimize climate change, but they also are beginning to study the future effect of global warming: what will be the effect on our cities if the ocean level rises several feet? Government agencies and private organizations along the coastal areas are studying the impact with conferences such as, “Preparing for a Sea Level Rise” to be held in April, hosted by San Francisco Bay Conservation and Development Commission, Association of Bay Area Governments, San Francisco Bay National Estuarine Research Reserve.

Clearly there are many opportunities for architects to participate as a group and as individuals with these transformations that are affecting our world. Architects have the creative vision, the collaborative nature, and the planning tools that make them uniquely qualified to assist cities, counties, the state, developers and other clients, allied building industry groups, and the myriad other organizations who are grappling with these issues. The following represent just a few of the suggestions made by respondents to this survey for ways that architects can participate in this discussion:

- Create a major state awards program for green buildings (in addition to the Savings By Design program Energy Efficiency Integration Awards) to draw media attention to sustainable building design and showcase the best case studies.
- Develop tools and resources for members and clients that will show how to honestly and effectively build sustainable buildings. Partnering with USGBC would make the materials even more effective as a resource. Examples include green building events, training, sample specs, case studies, forums.
- AIACC should try to draw more government employees as members; since state agencies do not pay dues like many architectural firms do, they should create a lower price membership category for government employees as an incentive for them to join. That would create synergies with local and state governments that have been missing.
- Architects should become more involved at the local government level – many local governments are moving toward green building and need the expertise to help them craft new building plans and processes.
- Architects need to integrate their activities more to improve outcomes; they need to control costs as a critical step toward moving to a sustainable future.
- Architects can bring the financial incentives that are available to their clients' attention (e.g. Prop 1D, the \$7 billion bond for new and modernization of schools, includes \$100 million for high performance schools).
- Architects can help quantify the benefits of green building for their clients – there are many resources available that help to estimate the savings (e.g. climate calculators).
- Learn from groups like the Sierra Club who have battled in the trenches on truly noble efforts but have also learned what is inevitable, e.g. urban infill, and have made compromises based on those inevitabilities so they can make progress in the end. The AIA has a tendency to not want to jump out in front on issues.
- There are blue ribbon commissions being formed all across the state to help cities grapple with the green movement – architects should be on those commissions. Too often there are individuals on those commissions who do not understand development or the building industry, or who want limited development.
- We should be branding ourselves better, like USGBC.
- Contractors need help understanding the new principles of green building design and specifications. The AIA can provide significant discussions with building and trades about how to go green.
- AIACC should hold an environmental summit to bring together many of the advocates for green building together for a day's discussion and planning for more collaboration and advocacy outreach efforts.

APPENDIX:

Climate Action Team Members

http://www.climatechange.ca.gov/climate_action_team/members.html

Linda Adams

Linda Adams, former director of the California Department of Water Resources, was appointed by Governor Arnold Schwarzenegger in May 2006 as Secretary of the California Environmental Protection Agency - making her the first woman to serve as head of the agency. As Cal/EPA's Secretary, Adams oversees the environmental activities of the Air Resources Board, California Integrated Waste Management Board, State Water Resources Control Board, Office of Environmental Health Hazard Assessment, Department of Toxic Substances Control, Department of Pesticide Regulation, and the approximately 4,500 employees that serve the state's diverse environmental programs. www.calepa.ca.gov/About/Bios/

Greg Albright

R. Gregg Albright is the Deputy Director, Planning and Modal Programs at Caltrans. R. He has more than 29 years of state service, beginning in 1976 as a Junior Landscape Architect and working his way to Associate and Senior Landscape Architect. In 2000, he was promoted to District 5 Deputy Director for Planning (Supervising Transportation Planner), and since 2002 he has been District 5 Director. He has worked extensively with local, regional and state-level agencies, and he has experience in departmental policies and procedures and federal laws, rules and regulations. In 1976, he graduated with a Bachelor of Science degree in Landscape Architecture from California Polytechnic State University, San Luis Obispo, and is in the process of obtaining his Master of Science degree in Transportation Management from San Jose State University.

Cynthia Bryant

Cynthia Bryant serves as Deputy Chief of Staff and Director of the Office of Planning and Research for Governor Arnold Schwarzenegger. She advises the Governor on the state budget, redistricting, political reform, and gambling. As Director of the Governor's Office of Planning and Research (OPR), she oversees the State Clearinghouse; the OPR Legislative, Policy, and Research units; the Office of the Small Business Advocate; and the Advisor for Military Affairs (AMA). In statute, OPR is the one state agency responsible for developing state land use policies, coordinating planning of all state agencies, and assisting and monitoring local and regional planning. Ms. Bryant is a member of the Commission on State Mandates and she is also a nonvoting member of the Housing Finance Agency Board. In addition, Ms. Bryant sits on the Governor's Prevention Advisory Council and the Environmental Justice Inter-Agency Working Group. Ms. Bryant received her juris doctor from University of California Hastings College of the Law and her B.A. from Lewis and Clark College in Portland, Oregon.

James D. Boyd

James D. Boyd was appointed to the California Energy Commission on February 6, 2002, by Governor Gray Davis. He chairs the Energy Commission's Transportation Committee and oversees Climate Change and International Export Programs. He chairs the Natural Gas Committee, which includes the Energy Commission's work on Liquefied Natural Gas (LNG). He is the Associate Member of the committee overseeing the preparation of the Energy Commission's 2005 Integrated Energy Policy Report. He chairs the state's Joint Action Climate Change Advisory Committee and the state's Natural Gas Working Group. For more information: www.energy.ca.gov/commission/commissioners/boyd.html

Margo Reid Brown

Ms. Margo Reid Brown, a Sacramento native, was appointed as a full-time Board Member by Governor Arnold Schwarzenegger on January 11, 2006. Ms. Brown, whose term expires on January 1, 2009, represents the public. She was elected as Chair of the Board on February 14, 2006, in a unanimous decision. As Chair of the Board, Ms. Brown led the organization through a strategic development process to focus priorities and programs around legislative mandates and board priorities. In December of 2006, the Board adopted a set of strategic directives with a particular focus on implementation goals to achieve AB 939 mandates as well as focus on achievements of the strategies laid out in AB32. The CIWMB celebrated the milestone of 50% waste diversion in 2006 thereby accomplishing the first strategy of AB32. They are now focusing on moving toward attainment of their methane emissions reduction and zero waste goals.

Tom Cackette

With the Air Resources Board since 1982, Tom Cacketter serves as the Chief Deputy Director of the staff of the ARB. He manages all aspects of the Board's motor vehicle emission control program, which develops regulations and other programs to reduce vehicle emissions. He also manages the Board's Monitoring and Laboratory Division, which performs ambient air quality monitoring and develops test methods. Overall 350 professional and support staff and a budget of \$50 million are dedicated to these programs, which are contributing to a steady decline in air pollution in California's major urban areas.

Ruth Coleman

Ruth Coleman has served as director of the Department of Parks and Recreation since 2003, under both Governor Gray Davis, and Governor Arnold Schwarzenegger. DPR manages more than one-third of our state beaches, 12 of the 41 most significant Southern California wetlands, and 58% of the remaining old growth coast redwood forest in the world. Before coming to State Parks, Ms. Coleman worked as Policy Director for Assemblywoman Helen Thomson, responsible for legislative issues relating to water, agriculture and land use. Prior to that, she was Legislative Director for State Senator Mike Thompson, providing staff leadership on such major environmental legislation as park bonds, salmon and steelhead restoration, and the protection of the Headwaters Forest. She has worked for the Air Resources Board in the electric vehicle program and the Office of the Legislative Analyst, focusing on fiscal and policy issues in the natural resources area, particularly Department of Parks and Recreation and Department of Fish and Game. Ms. Coleman received her Master in Public Administration from Harvard University, and a B.A. in Economics from Occidental College.

Mark Cowin

Mark Cowin is the Deputy Director for Regional Water Planning and Management of the Department of Water Resources. His primary responsibilities include implementing Integrated Regional Water Management, coordinating DWR's efforts related to climate change, and updating and implementing the California Water Plan. Prior to this assignment, Mr. Cowin served for five years as Chief of DWR's Division of Planning and Local Assistance. As Division Chief, Mr. Cowin oversaw development of the California Water Plan Update 2005, administered Propositions 13 and 50 grant and loan programs, and participated in development of the water management components of the Governor's Strategic Growth Plan. In previous assignments, Mr. Cowin served as an Assistant Director for the CALFED Bay-Delta Program. Mr. Cowin has worked at the Department of Water Resources for over 25 years.

Tam Doduc

Tam Doduc serves for Governor Schwarzenegger as the Chair and fills the position of civil engineer on the State Water Resources Control Board. Ms. Doduc most recently served as Deputy Secretary at the California Environmental Protection Agency (Cal/EPA), where she directed the agency's environmental justice and external scientific peer review activities. She also coordinated various environmental quality initiatives, and provided general oversight of children's environmental health programs. A licensed civil engineer, Ms. Doduc earned a Bachelor of Science in BioEngineering from the University of California at Berkeley, and a Master of Science in Civil Engineering from California State University Sacramento. She also earned a Master of Business Administration from the University of California at Berkeley.

Dian M. Grueneich

Dian M. Grueneich was appointed to the California Public Utilities Commission by Governor Arnold Schwarzenegger in January 2005 and unanimously confirmed by the State Senate in May 2005 to a full six year term. Commissioner Grueneich is a nationally recognized expert in energy and environmental issues, with more than 27 years of experience in these areas. For more information: www.cpuc.ca.gov/static/aboutcpuc/commissioners/04grueneich/index.htm

Melissa Jones

Ms. Jones was appointed as the California Energy Commission's Executive Director in January 2008. Prior to this appointment, she served as the Commission's Chief Deputy Director and has served as an energy policy advisor to Chairman Charles Imbrecht, Commissioner John Geesman and Commissioner Michal Moore. Ms. Jones has worked at the Energy Commission since 1977. She has program experience in electricity supply and demand analysis, transmission line infrastructure planning and permitting issues, natural gas supply and demand forecasts, transportation fuels, energy research and development, and renewable energy. For more information: www.energy.ca.gov/commission/bios/jones.html

Mark Leary

Mark Leary is the Executive Director of the California Integrated Waste Management Board.

Rosario Marin

Rosario Marin is Secretary of the California State and Consumer Services Agency. Secretary Marin oversees the State of California's civil rights enforcement, consumer protection, and the licensing of 2.3 million Californians in more than 230 different professions. The agency also handles procurement of more than nearly \$9 billion worth of goods and services, the management and development of the state's real estate, oversight of two employee pension funds, the collection of state taxes, and programs managing the hiring of state employees. Secretary Marin also currently chairs the Building Standards Commission, the Victim's Compensation and Government Claims Board, and the Governor's Green Action Team.

Mary Nichols

Mary D. Nichols, JD, was appointed Chair of the California Air Resources Board in July 2007, a post she held previously under Gov. Edmund H, Brown Jr. from 1979 to 1983. At CARB she is responsible for implementing California's landmark greenhouse gas emissions legislation as well as setting air pollution standards for motor vehicles and fuels. After graduating from Cornell University and Yale Law School Ms. Nichols practiced

environmental law in Los Angeles, bringing cases on behalf of environmental and public health organizations to enforce state and federal clean air legislation. President Clinton appointed her to head the Office of Air and Radiation at U.S. EPA, where she was responsible for, among many other regulatory breakthroughs, the acid rain trading program and setting the first air quality standard for fine particles. She also served as California's Secretary for Natural Resources from 1999 to 2003. Prior to her return to the ARB, Ms. Nichols was Professor of Law and Director of the Institute of the Environment at UCLA.

Jackalyn Pfannenstiel

Jackalyn Pfannenstiel was appointed to the California Energy Commission on April 20, 2004, by Governor Arnold Schwarzenegger. Commissioner Pfannenstiel fills the environmental protection position on the Energy Commission. Ms. Pfannenstiel, of Piedmont, has been an energy policy and strategy advisor since 1991. Previously, she was vice president for planning and strategy with PG&E Corporation. She joined PG&E in 1980 and held positions in the areas of rates, regulation, and planning. Her earlier work was with the California Public Utilities Commission where she served as a senior economist from 1978 until 1980. Before moving to California, Ms. Pfannenstiel was an economist with the Connecticut Public Utilities Commission.

Nancy Ryan

Nancy Ryan is the advisor to California Public Utilities Commission President, Michael Peevy.

Steve Shaffer

Steve Shaffer is Director of the Office of Agriculture and Environmental Stewardship for CDFA, the position he has held since November 2000. The office is comprised of an outstanding team of scientists who address environmental issues related to agriculture using a multidisciplinary approach. In this capacity, Steve represents CDFA on a number of environmental and natural resource management planning, implementation and monitoring activities as they relate to agriculture.

Eileen W. Tutt

Eileen Wenger Tutt has worked at the California Air Resources Board (ARB) and California Environmental Protection Agency (CalEPA) since 1990. She currently serves as Deputy Secretary External Affairs. Prior to that, Eileen worked in the ARB's Executive Office managing three projects: the California Hydrogen Highway Network Blueprint Plan, Motor Vehicle Climate Change regulations, and joint effort with the California Energy Commission to make recommendations to the Governor and Legislator addressing the issue of California's petroleum dependence. While at the ARB Eileen worked in the Mobile Source Control and Stationary Source Divisions on many high-priority projects including, California's low-emission vehicle efforts which have been emulated by other states, reducing diesel emissions and state planning processes to address pollution. Eileen received her degree in Mathematics and Statistics and spent two years working for the U.C. Davis air quality lab prior to coming to the Air Resources Board.

Crawford Tuttle

Crawford Tuttle is the Chief Deputy Director of the California Department of Forestry and Fire Protection.

LINKS AND RESOURCES

State of California:

S-20-04 (est. Green Building Action Plan, est. Green Action Team)
<http://gov.ca.gov/executive-order/3360/>

S-3-05 (rollback GHG emissions, est. Climate Action Team)
<http://www.dot.ca.gov/hq/energy/ExecOrderS-3-05.htm>

AB32

<http://www.arb.ca.gov/cc/docs/ab32text.pdf>

AB32 Scoping Plan

<http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>

Climate Change Portal

<http://www.climatechange.ca.gov/index.html>

Green Building Action Plan

<http://www.documents.dgs.ca.gov/green/GreenBuildingActionPlan.pdf>

Climate Action Team

http://www.climatechange.ca.gov/climate_action_team/index.html

AIA SUSTAINABILITY RESOURCES:

AIA: Architects and Climate Change Fact Sheet

<http://www.aia.org/SiteObjects/files/architectsandclimatechange.pdf>

AIA COTE Committee Website

http://www.aia.org/cote_default

AIA Sustainability Resource Center for Practitioners

http://www.aia.org/susn_rc_default

AIA Sustainability Resource Center for Clients

http://www.aia.org/susn_rc_cl_default

BUILDING INDUSTRY:

ASHRAE

<http://www.ashrae.org/>

USGBC

<http://www.usgbc.org/>

USGBC Northern California

<http://www.usgbc-ncc.org/>

CHPS

<http://www.chps.net/>

BOMA

<http://www.boma.org/>

Build It Green

<http://www.builditgreen.org/>

CBIA

<http://www.cbiam.org/go/cbiam/>

Global Green

<http://www.globalgreen.org/>