



California Green School Summit

California Building Standards Commission

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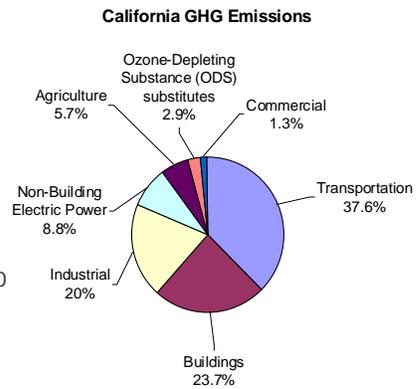
2008 California Green Building Standards Code - CALGreen

- Presentation Overview
 - Why a CALGreen Code
 - The Role of the CBSC
 - How the CALGreen Code was Developed
 - Scope and Application of the Code
 - Voluntary
 - Mandatory
 - Future of the CALGreen Code



California Green Building Initiative and Global Warming Solutions Act of 2006 (EO S-20-04 & AB32)

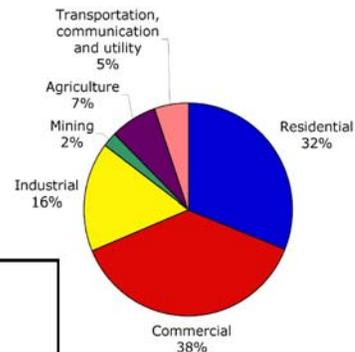
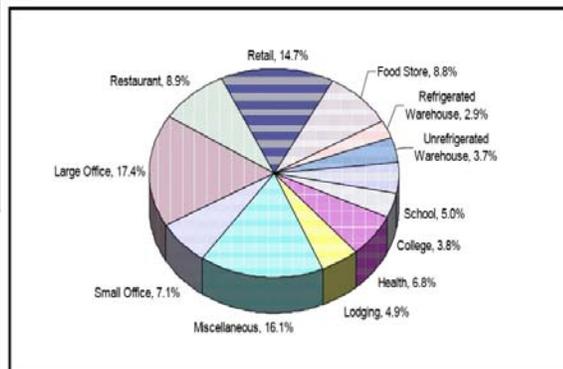
- Buildings are 2nd largest contributor (23.7%) to GHG emissions
- EO S-20-04: Reduce grid-based electricity by 20% in state-owned buildings by 2015; reduce associated greenhouse gas emissions
- AB 32: Reduce GHG emissions to 1990 levels by 2020



Source: CARB 2004 Inventory



Energy Use in California





California Building Standards Commission

■ CBSC Responsibilities

- Review building standards proposed by state agencies
- Develop building standards for non-residential occupancies where no other state agency has the authority



California Building Standards Commission

- Adopt and approve building standards for publication
- Codify approved building standards
- File approved building standards with the Secretary of State





California Building Standards Commission

- Contract to publish the California Building Standards Code
- Act as the state depository for local government modifications



California Building Standards Commission

- **11 Commissioners appointed by law**
- **Code Advisory Committees (CAC)**
 - Advise Commission and CBSC staff on proposed building standards
 - Six Committees
 - **Green Building Committee**



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- New Part of California Building Standards Code under Title 24
 - Part 11 - Green Building Standards Code



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- Adopting State Agencies
 - California Building Standards Commission (CBSC)
 - The Department of Housing and Community Development (HCD)
 - Division of the State Architect (DSA)
 - Office of Statewide Health Planning and Development (OSHPD)





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■ Contributing State Agencies

- California Integrated Waste Management Board
- Department of General Services
- Department of Public Health
- Department of Water Resources
- Energy Resources Conservation and Development Commission



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■ Additional resources utilized in developing Green Building Standards Code

- Collaborative for High Performance Schools (CHPS)
- Leadership in Energy and Environmental Design (LEED)
- Green Globes
- UC Berkeley Green Building Baseline
- Draft ASHRAE Standard 189P





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- Sustainable Building Task Force
 - Established by Executive Order D-16-00
- Green Building Action Team
 - Established by Executive Order S-20-04
- CBSC and HCD Green Building Focus Group
 - Building officials
 - Representatives from the construction industry
 - Representatives from international building code writing bodies
 - Representatives from the environmental community
 - State agency representatives



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- **Green Building Standards Code**
 - Initial Voluntary Standards
 - Effective August 1, 2009
 - Tier 1
 - Tier 2



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■ Local Government Ordinances

- Local jurisdictions may adopt more stringent versions of the California Building Standards Code
- Justification for making local modifications
 - Climate
 - Topography
 - Geology



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■ Topics addressed in the Voluntary Standards

- Planning and design
- Energy conservation
- Water efficiency
- Materials usage efficiency
- Indoor environmental quality



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- **Chapter 4 Planning and Design**
 - Storm Water runoff
- **Chapter 5 Energy Efficiency**
 - Tier 1 – 15% energy reduction
 - Tier 2 – 30% energy reduction
 - Energy Star Appliances
 - Building Commissioning



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- **Chapter 6 Water Efficiency and Conservation**
 - 20% indoor
 - Landscape irrigation
 - Energy star
 - DWR Water Budget



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■ Chapter 7 Material Conservation and Resource Efficiency

- Material Sources
- Recycled Content
- Recyclable Materials
- Construction Waste



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■ Chapter 8 Environmental Quality

- Ventilate during construction
- Building flush out prior to occupancy
- Tables relating to material VOC limits
- Flooring
- IAQ
- Environmental Comfort



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- **Transition from Voluntary to Mandatory Compliance**
 - 2010 Mandatory CALGreen Codes
 - Proposed effective date January 1, 2011



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- **Nonresidential Mandatory Measures**
 - 2010 Chapter 5
 - Tier 1
 - Tier 2
 - Optional Measures in Appendices



2010 California Green Building Standards Code - **CALGreen**

- **Planning & Design**
 - Storm Water Pollution < One Acre
 - Bicycle Parking and Changing Rooms
 - Designated Parking
 - Light Pollution Reduction
 - Grading and Paving
- **Energy Efficiency**
 - California Energy Commission



2010 California Green Building Standards Code - **CALGreen**

- **Water Efficiency and Conservation**
 - Indoor Water Use
 - Meters
 - 20% Savings
 - Wastewater Reduction
 - Plumbing Fixtures and Fittings
 - Outdoor Water Use
 - Water Budget
 - Irrigation Design
 - Rainwater or storm water collection systems



2010 California Green Building Standards Code - **CALGreen**

- **Material Conservation and Resource Efficiency**
 - Weather Resistance and Moisture Management
 - Weather Protection
 - Moisture Control
 - Sprinklers
 - Entries and Openings



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- **Construction Waste Reduction, Disposal and Recycling**
 - Waste Diversion
 - Management Plan
 - Waste Reduction of at Least 50%
 - Excavated Soil and Land Clearing Debris



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- **Building Maintenance and Operation**
 - Recycling by Occupants
 - Sample Ordinance
 - Commissioning
 - Owner's Project Requirements (OPR)
 - Basis of Design (BOD)
 - Commissioning Plan
 - Functional Performance Testing
 - Post Construction Documentation and Training
 - Commissioning Report



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- **Environmental Quality**
 - Fireplaces
 - Pollutant Control
 - Carpet Systems
 - Composite Wood Products
 - Resilient Flooring Systems
 - Environmental Tobacco Smoke (ETS) Control



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- **Indoor Moisture Control**
 - Ventilation
 - Moisture Resistant Materials
- **Indoor Air Quality and Exhaust**
 - Outside Air Delivery
 - Carbon Dioxide (CO₂) Monitoring
- **Environmental Comfort**
 - Exterior Noise Transmission
 - Interior Sound



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- **Long Term Goals**
 - Future Code Adoptions
 - Code Adoption Cycles
 - Outreach & Education



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■ CALGreen Building Standards

Education & Outreach

- Contact
 - Cynthia Biedermann
 - (916) 263-0916
- Visit the California Building Standards Commission website, www.bsc.ca.gov for code updates



DIVISION OF THE
STATE ARCHITECT
DEPARTMENT OF GENERAL SERVICES

DSA Green Code

Green Schools Summit & Exposition
December 11, 2009

David Thorman, AIA
State Architect

Green Building Standards Code

- Development of the next version of the Green Building Standards Code is underway
 - Will be published in January 2010
 - Effective January 2011
- The Building Standards Commission is working in conjunction with the Division of the State Architect
- For the first time, the code will define the term “grid neutral”



Mandatory & Voluntary Measures

- The code will include both mandatory and voluntary measures
- Both types of measures will exist in areas of sustainable sites, energy efficiency, materials & resources, and indoor environmental quality



Mandatory Measures

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Mandatory Measures

- Some of the mandatory measures are already required by code
 - New requirements to be in green
- Mandatory measures apply to new construction projects on:
 - New sites
 - Cleared existing sites



Planning & Design

- Light Pollution Reduction (Title-24)
 - Interior lighting contained within task area
 - Automatically control exterior lighting dusk to dawn to turn off or lower light levels during inactive periods
- Grading & Paving
 - The site shall be planned & developed to keep surface water from entering buildings



Energy Efficiency

- Title-24, Part 6 Energy Efficiency Standards



Indoor Water Use

- **Reduce Indoor Water Use By 20%**
 - Based on maximum allowable water use per fixture & fitting
- **Reduce Waste Water By 20%**



Water Resistance

- **Weather Protection**
 - Weather-resistant exterior wall & foundation
- **Moisture Control through the use of:**
 - Sprinklers (prevent spray on structures)
 - Entries & openings (design exterior entries subject to foot traffic or wind-driven rain to prevent water intrusion)



Construction Waste Reduction

- **Construction Waste Management Plan**
 - Establish plan and submit documentation to local authority or other enforcement agency
 - Isolated jobsites will be exempted if they are located in areas beyond the haul boundaries of the diversion facility
- **Recycle and/or salvage 50% of non-hazardous construction and demolition debris**



Building Maintenance/Operations

- **Provide readily accessible areas for recycling by occupant**



Pollutant Control

- **Covering of duct openings and protection of mechanical equipment during construction**
- **Limits for Volatile Organic Compounds (VOCs) in:**
 - Adhesives, sealants, and caulks
 - Paints and coatings
 - Carpet Systems
 - Carpet Cushions
 - Carpet Adhesive
 - Composite wood products
 - Resilient Flooring Systems
- **Air Filtration to use MERV 8 filters**



Indoor Control

- The Code outlines the applicable provisions for :
 - Indoor Moisture Control
 - Indoor Air Quality



Voluntary Measures

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Summary of Voluntary Measures

- **Sustainable Sites:**
 - Bike & Fuel Efficient Vehicle Parking; Reduced Parking Capacity
 - Building Orientation & Shading
 - Reduced Heat Island Effect
- **Energy Efficiency:**
 - Energy Performance
 - Energy Star Computers, Equipment, Appliances
 - Energy Monitoring
 - Grid Neutral
- **Water Efficiency:**
 - 30% Savings
 - Efficient Appliances
 - Water Budget
 - Potable Water Reduction



Summary of Voluntary Measures

- **Materials & Resources**
 - Recycled Content Materials
 - Enhanced Durability & Reduced Maintenance
 - Enhanced Construction Waste Reduction
 - Life Cycle Assessment
 - Commissioning
- **Indoor Environmental Quality**
 - Ventilation
 - Formaldehyde Limits
 - Acoustical Ceilings & Walls
 - Isolation of Pollutant Sources
 - Lighting & Thermal Control
 - Views
 - Acoustics



Grid Neutral Codified

- A5.211.2 defines the term “grid neutral”
- Production to consumption ratio
 - Uses Title 24 energy calculations
 - Proposed annual renewable electrical energy production (kwh) divided by annual electrical energy budget (kwh)
 - Estimated electrical plug loads shall be included
- Existing buildings shall use actual data
- Annual renewable electrical energy can be renewable energy produced off-site

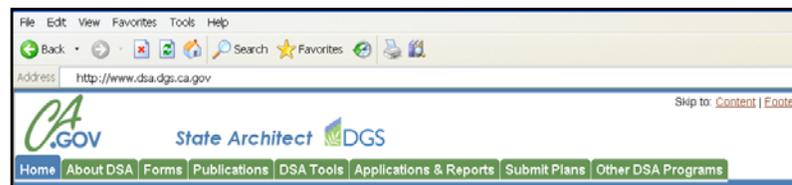


Grid Neutral Increments

- In addition to defining grid neutral, the code describes incremental levels for grid neutral
 - A site is **35% grid neutral** if the annual electrical production and consumption ratio is equal or greater than .35.
 - A site is **75% grid neutral** if the annual electrical production and consumption ratio is equal or greater than .75.
 - A site is **grid neutral** when the annual production and consumption ratio is equal or greater than 1.



Contact DSA



- DSA is online at www.dsa.dgs.ca.gov
- Call our offices:
 - Oakland Regional Office: (510) 622-3101
 - Sacramento Regional Office: (916) 445-8730
 - Los Angeles Regional Office: (213) 897-3995
 - San Diego Regional Office: (858) 674-5400
 - Headquarters: (916) 445-8100





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THANK YOU!

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California Building Standards Code

- California Building Standards Commission
- Division of the State Architect

■ Questions?

- Please complete the program evaluation form.