

# **Green Action Team Meeting**

## **May 7, 2008**

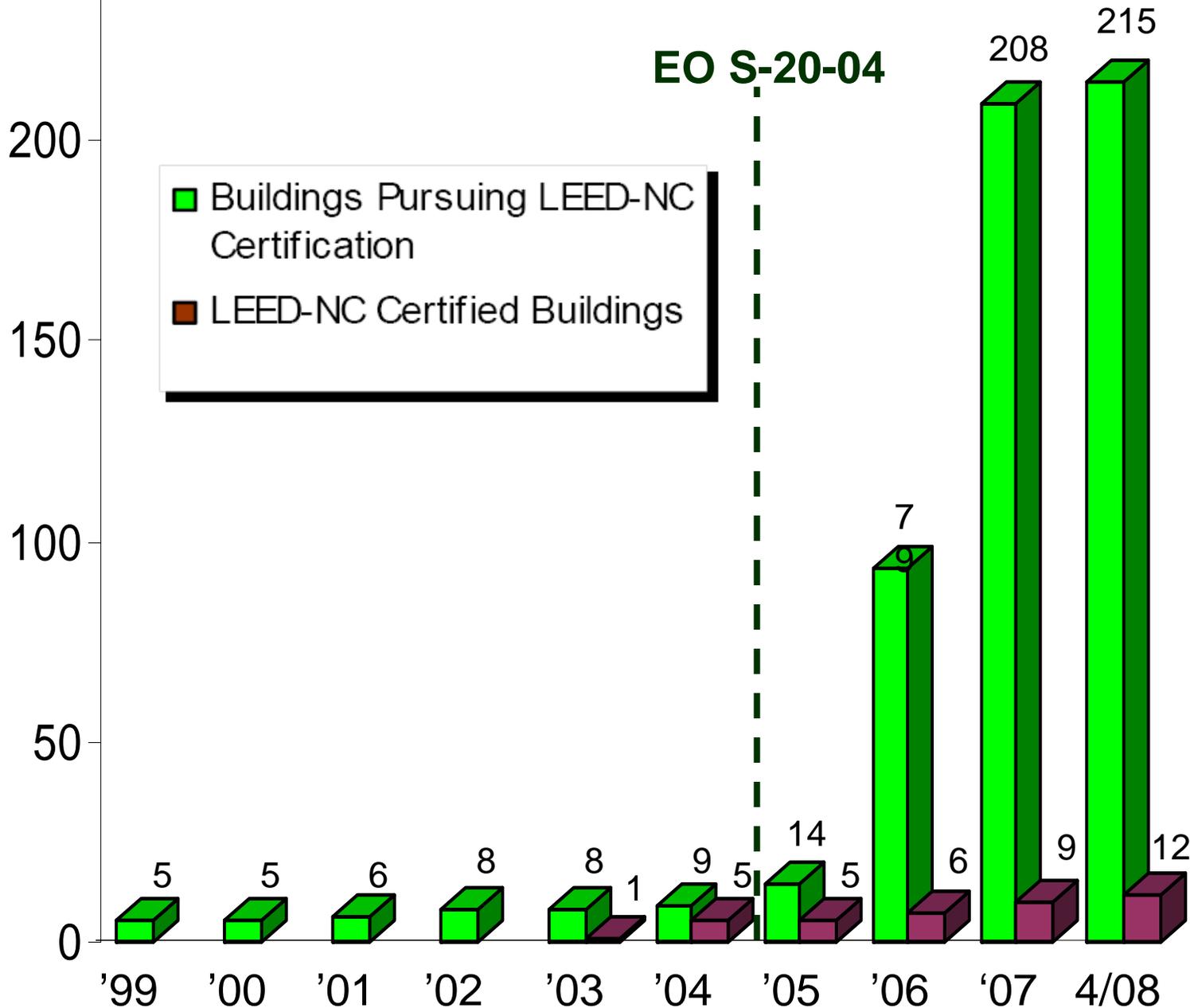
### **Status of Major Deliverables**

**Green Building Initiative  
(Exec Order S-20-04)**

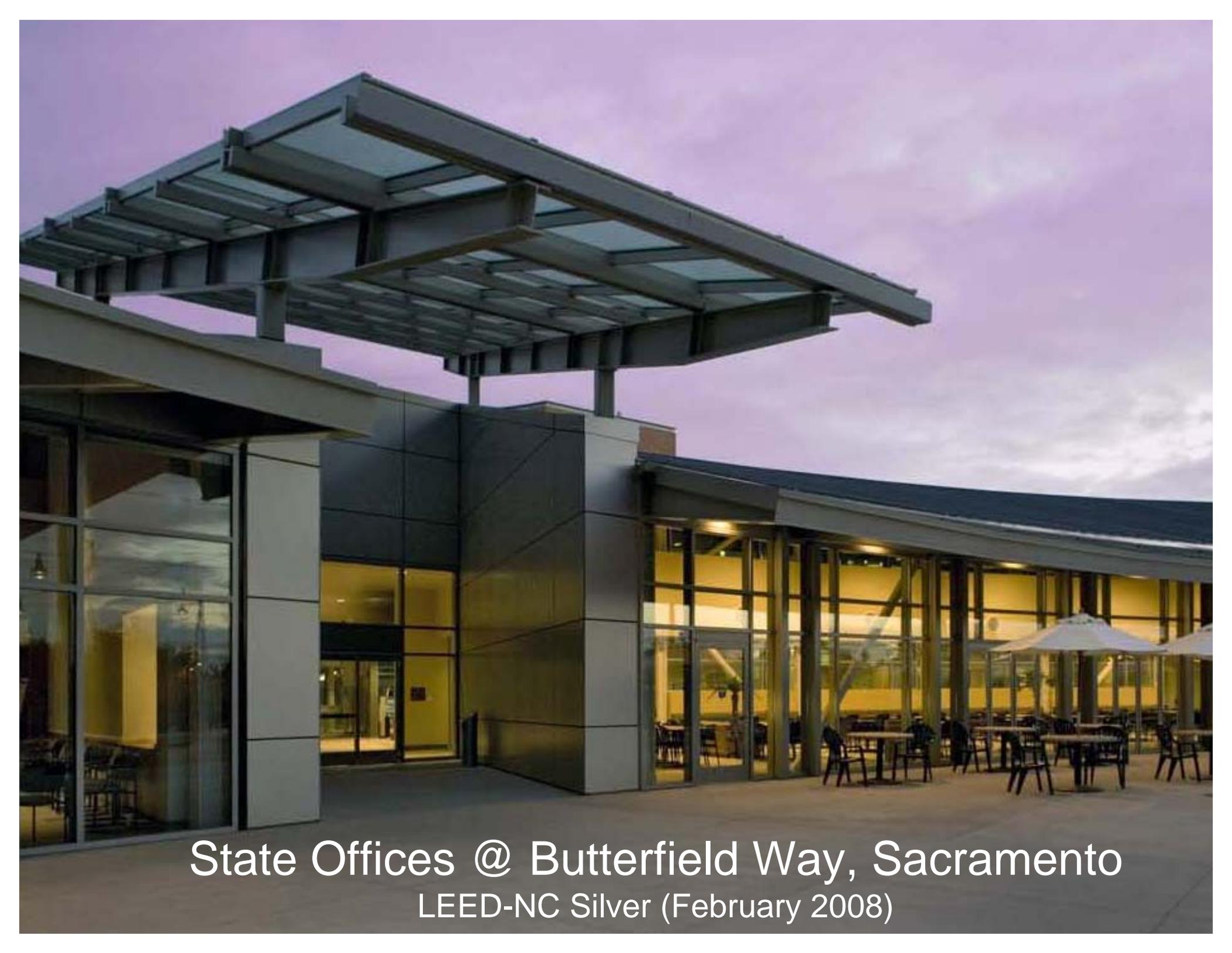


# Bldgs. DGS LEED-NC for New Construction

4/27/08



- 12 Buildings LEED-NC Certified (3.7 M sq. ft.)
- 215 Pursuing LEED-NC (6 M sq. ft.)
- Latest project certified: State Offices @ Butterfield Way LEED-NC Silver – Feb '08

The image shows the exterior of a modern office building at dusk. The building features a large glass facade that reflects the sky and shows an interior with tables and chairs. A prominent feature is a large, cantilevered metal structure made of horizontal beams, supported by vertical posts, extending over the entrance area. The sky is a mix of purple and blue, indicating twilight. The overall design is clean and industrial.

State Offices @ Butterfield Way, Sacramento  
LEED-NC Silver (February 2008)

# LEED-NC - Statewide Program

- **Other Agencies** (CDCR, DWR, DOT) -13.5 M sf/8 years
- **Buildings under 10,000 sf** – LEED Standards
- ***Building Commissioning Toolkit for In-House Commissioning of Small Buildings***
- **Average Energy Savings** – 25% >Title 24
- **Non-Energy Benefits** – Reduced GHG, Water, Waste, Improved Air Quality
- **LEED-NC Training**
  - Phase I - 140 trained Fall & Winter 2007
  - Phase II - 180 (16 agencies) ongoing
  - 12 LEED Accredited (at DGS)

# Benchmarking State Buildings

- **Establish 2003 baseline** – energy usage, cost
  - U.S EPA Portfolio Manager benchmarking system selected by CEC
  - Identify buildings that are high energy users
  - Assess progress toward EO and AB 32 goals
- **Benchmarking completed for over 95% of space** – 106 million sf
  - Annual electricity use: 1,235,869,124 kWh
  - Annual natural gas use: 71,614,142 therms
  - \$276,099,978 spent/yr
- **Automated Benchmarking Program**
  - US EPA/DOE award PG&E 2008 “Partner of the Year”
  - California effort has encouraged U.S. EPA to expand and improve Portfolio Manager
  - AB 1103 (Saldaña) placed this process in law
- **Next steps**
  - Finalize small municipal utility data upload (manual)
  - Enhanced reporting/analysis capabilities

# Tracking Progress



PORTFOLIO MANAGER



[Home](#) > My Portfolio

Group Averages	
Baseline Rating: 76 Facilities Included: 3	Current Rating: 92 Facilities Included: 3
Group Adjusted Percent Energy Reduction: 24.5% Facilities Included: 4	
Averages are weighted by Total Floor Space. <a href="#">More about Baselines</a> <a href="#">More about Adjusted Percent Energy Reduction</a>	

[Add a Property](#)

**Work with Facilities**

[Import](#) Facility Data Using Templates

[Update](#) Multiple Meters

[Share](#) Facilities

[Request](#) Energy Performance Report

**Apply for Recognition**

[Apply](#) for the ENERGY STAR

[ENERGY STAR Leaders](#)

GROUP: Terry's Leg Group

Create Group |  
Edit Group |  
View All

VIEW: Summary: Facilities

Create View |  
Edit View |  
View All

[Download](#) in Excel

Search Facility Name:

Results 1 - 4 of 4

All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Facility Name <input type="checkbox"/>	Current Rating (1-100) <input type="checkbox"/>	Adjusted Percent Energy Reduction <input type="checkbox"/>	Total Floor Space (Sq. Ft.) <input type="checkbox"/>	Energy Use Alerts <input type="checkbox"/>	Current Energy Period Ending Date <input type="checkbox"/>	Eligibility for the ENERGY STAR <input type="checkbox"/>	Last Modified <input type="checkbox"/>
<a href="#">002 Jesse Unruh Building (OB 1 Building)</a>	76	<a href="#">No Reduction</a>	162,000		12/31/2007	Eligible to <a href="#">Apply for the ENERGY STAR</a>	02/01/2008
<a href="#">084 FRANCHISE TAX BOARD COMPLEX BUILDINGS</a>	94	30.4%	1,851,786		12/31/2007	Eligible to <a href="#">Apply for the ENERGY STAR</a>	04/15/2008
<a href="#">330 California Towers (Riverside State B)</a>	N/A	<a href="#">No Reduction</a>	162,000		12/31/2007	Not Eligible: Rating must be 75 or above ( <a href="#">ENERGY STAR Eligibility Rules</a> )	02/21/2008
<a href="#">509 Ronald Reagan State Building</a>	90	25.3%	850,000		11/30/2007	Not Eligible: Current period ending over 120 days ( <a href="#">ENERGY STAR Eligibility Rules</a> )	03/10/2008

[Download](#) in Excel

Search Facility Name:

Results 1 - 4 of 4

All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

The rating is calculated by using the last day of the latest full calendar month where all meters in the facility have meter entries; the Period Ending date reflects that particular date.

# Retro-commissioning Program

All state-owned buildings > 50,000 sq.ft. RCx on a 5-year cycle;  
Goal - 8% savings

- Phase I – 25 projects:
  - Avg. verified electricity savings for measures implemented - 10.3%; avg. payback – 1.6 yrs.
  - Avg. projected electricity savings for measures yet to be implemented - 17.4%; avg. payback – 4.7 yrs.
  - Avg. projected NG savings - 16%
- Phase II – 18 projects
- Next Steps - Small buildings < 50,000 sf
  - Utility audits, HVAC tune-up, lighting, controls
  - First group - 40+ DMV Field Offices
- Sustainable funding mechanism needed for front-end investment

# Retrofit Program

Implement cost effective efficiency retrofits – goal: 12% savings

- **Phase I - CDCR:**

- 10 projects - \$12.7 M (\$8.3 M financed, \$4.4 M utility incentive)
- Energy savings \$1.6 million/year; 5.2 year payback
- 5 projects in funding (\$5.1 M financed, \$1.7 M utility incentive)
- Projected completion of all projects before Dec 2008

- **Phase II – Statewide ESCO Contract:**

- 1st RFP – Proposals due May 22; 4 DGS buildings N. CA
- 2nd RFP – Issued April 23; 5 DGS buildings in So. CA
- 3rd RFP – Release early May; FTB campus
- Upcoming projects: DMV, DPH, DPR, DFA
- Sustainable funding mechanism needed for front-end investment

# On-site Clean Generation - Solar

- **Solar Photovoltaic Power Purchase Program**
  - 3<sup>rd</sup> party Power Purchase Agreement
  - Capture Federal tax incentives
- **Phase I - 4.2 MW, 8 Facilities**
  - CDCR, CalTrans, CSU
- **Phase II – 23MW, 34 Facilities**
  - 3 RFP's Issued Oct 12/13
  - Bidder site visits underway – CDCR, State buildings, CSU
  - Contracts in 6/08
  - Potential to add 5-6 MW
- **Next Steps**
  - Phase III - Master Services Agreement
  - Solar Thermal Hot Water Projects
    - Offset natural gas usage
    - Chilled water option

# On-site Clean Generation – Fuel Cells

- **Back-Up Power**

- Stanford Mansion -- 20 kW PG&E/SMUD/State Partnership; projected operational May 2008
- CalEPA HQ building– 5 kW CIWMB grant; anticipated operational by end of 2008
- Next steps: Caltrans remote radio site – 250 W methanol fuel cell; Telecom Microwave Monitoring – 30 kW

- **Co-Generation**

- Corcoran Prison – anaerobic digester gas fuel
  - PG&E feasibility study complete
  - Discussions underway on implementation strategy
- Folsom Prison – anaerobic digester gas fuel
  - SMUD feasibility study due completion May 2008

# Other On-site Clean Energy Opportunities to be evaluated

- **Wind** – small rooftop turbines (new technology)
- **Geothermal** – ground source heat pumps
  - Renewable energy source: solar heating of earth
  - Initial development 1940's
  - Potential for doubling HVAC efficiency
  - Applicable where land area/geology supports installation of “ground loop” piping
  - CA installations include 15 schools; 1 US park; 1 visitor center
  - Challenges: awareness, up-front cost, fragmented delivery system

# LEED-EB (Existing Buildings)

- All state buildings over 50,000 Sq. Ft. certified by 2015

- **6 LEED-EB Certifications:**
  - **2 LEED-EB Platinum**
    - **CalEPA Building**
    - **DGS operated CA Dept. of Education Building**
  - **4 LEED-EB Gold**
    - **DGS operated CA Dept. of Public Health/ Health Care Buildings**
      - **Recipient of 2008 Green California Leadership Awards for Green Buildings**
- **Revised version of LEED-EB: Operations & Maintenance (O&M) online summer 2008**
- **DGS received USGBC approval for pilot volume certification program**
- **58 DGS owned and/or operated buildings registered with USGBC January 2008**
- **Request for Proposal for LEED-EB Consultant: Certification/ Recertification/ Training:**
  - **Published on April 4, 2008**
  - **Proposed Start Date July , 2008**
- **BPM Sustainability Program Positions Update**
- **LEED-EB Module 1: Tasks 1-10 Documentation Process: Progress report on Task 3**
- **LEED-EB training for state employees:**
  - **DGS two LEED-EB general training sessions for DGS/RESA employees: Summer 2007**
- **LEED-EB training session: DGS/BPM statewide building manager's conference September 2007**
- **Statewide LEED-EB Workgroup initiated: February 2008**
  - **17 state departments/agencies participating**
  - **Third meeting in June 2008**
- **Green California website online "Existing Building Tool Kit"**

# **Green Leasing** - Seek ENERGY STAR leases for buildings over 5,000 s.f. beginning in '06 (new leases) and '08 (existing leases)

- **65 ENERGY STAR leases out of 1,855 total**
  - 2,000+ letters advising preference for ENERGY STAR.
  - 1,160 additional letters/e-mails to commercial market: state's preference for ENERGY STAR, requesting real estate community's support in this effort
- **All build-to-suit leases LEED-NC Silver**
  - 1 project completed – DMV Clovis
  - 3 projects in construction – DMV: Tracy, Riverside &, Hollywood
- **Existing Leases**
  - Ziggurat pursuing LEED-EB Silver
  - 2 retro-commissioning projects complete (Ziggurat and Fresno OB)
  - 1 commissioning project complete – (CDCR Sacramento)

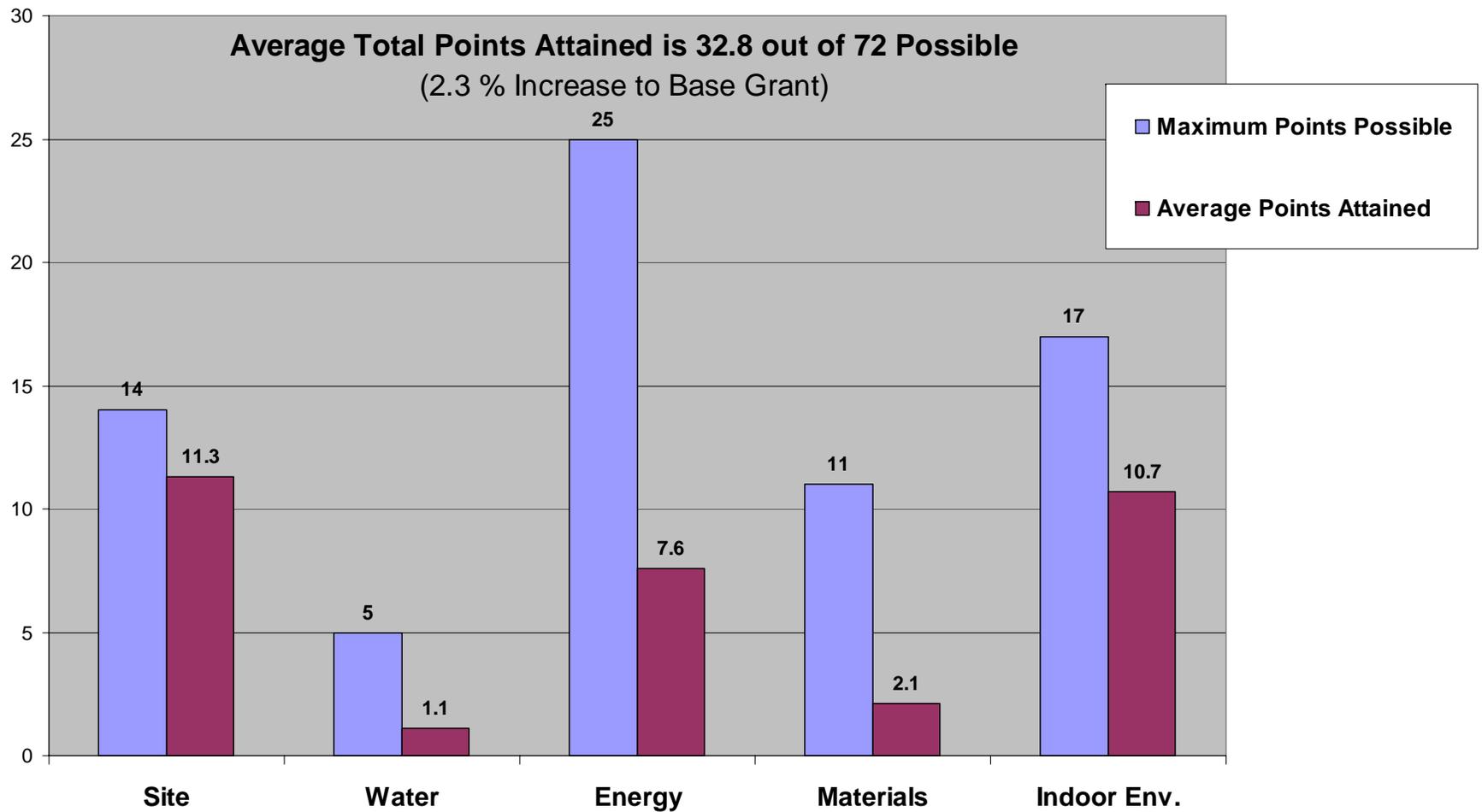
# Public School Construction

## High Performance Incentive Grant

- Proposition 1D provides \$100 million in incentive grants
- Promotes high performance attributes in modernization and new construction public school projects
- Uses Collaborative for High Performance Schools (CHPS) criteria
- Regulations effective October 1, 2007
- DSA reviews plans, verifies point score
- OPSC funds depending on # of points
  - Increase to base grant ranges from 2% to just over 10%
- 36 funding applications w/ HPI Grant request received so far
  - 21 already apportioned (\$5.9m) at Feb., Mar., & Apr. SAB
  - 15 scheduled for May SAB (\$3.5m)
  - Approximately \$90.6 million remains to be requested

# High Performance Incentive Grant

Maximum Available Points & Average Actual Points  
35 Applications Using 2002 CHPS Criteria



# Other Topics

- Green California Summit
- CPUC Update
- Climate Action Team Green Building Subgroup

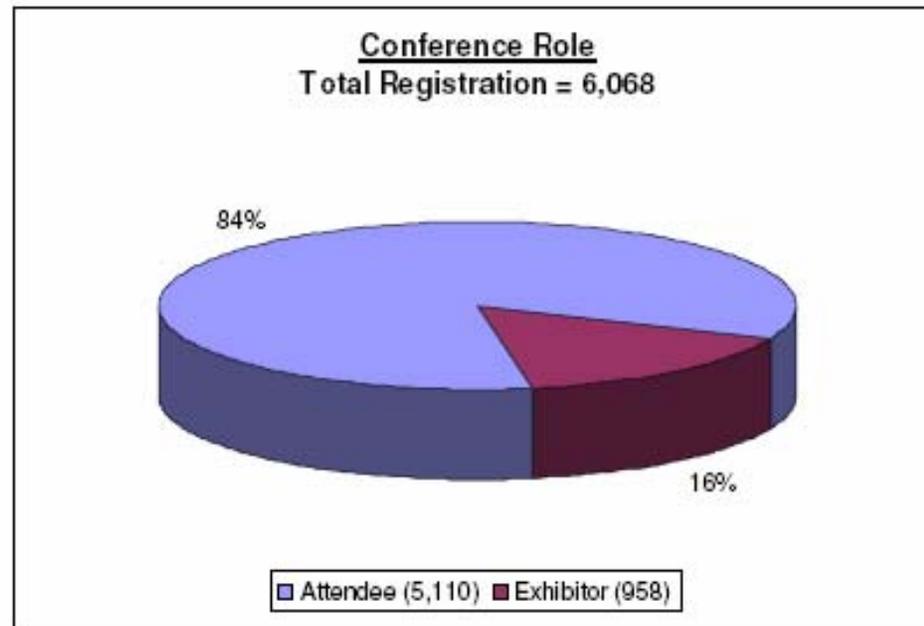


**Green California Summit & Exposition  
April 7-9, 2008 • Sacramento, California**

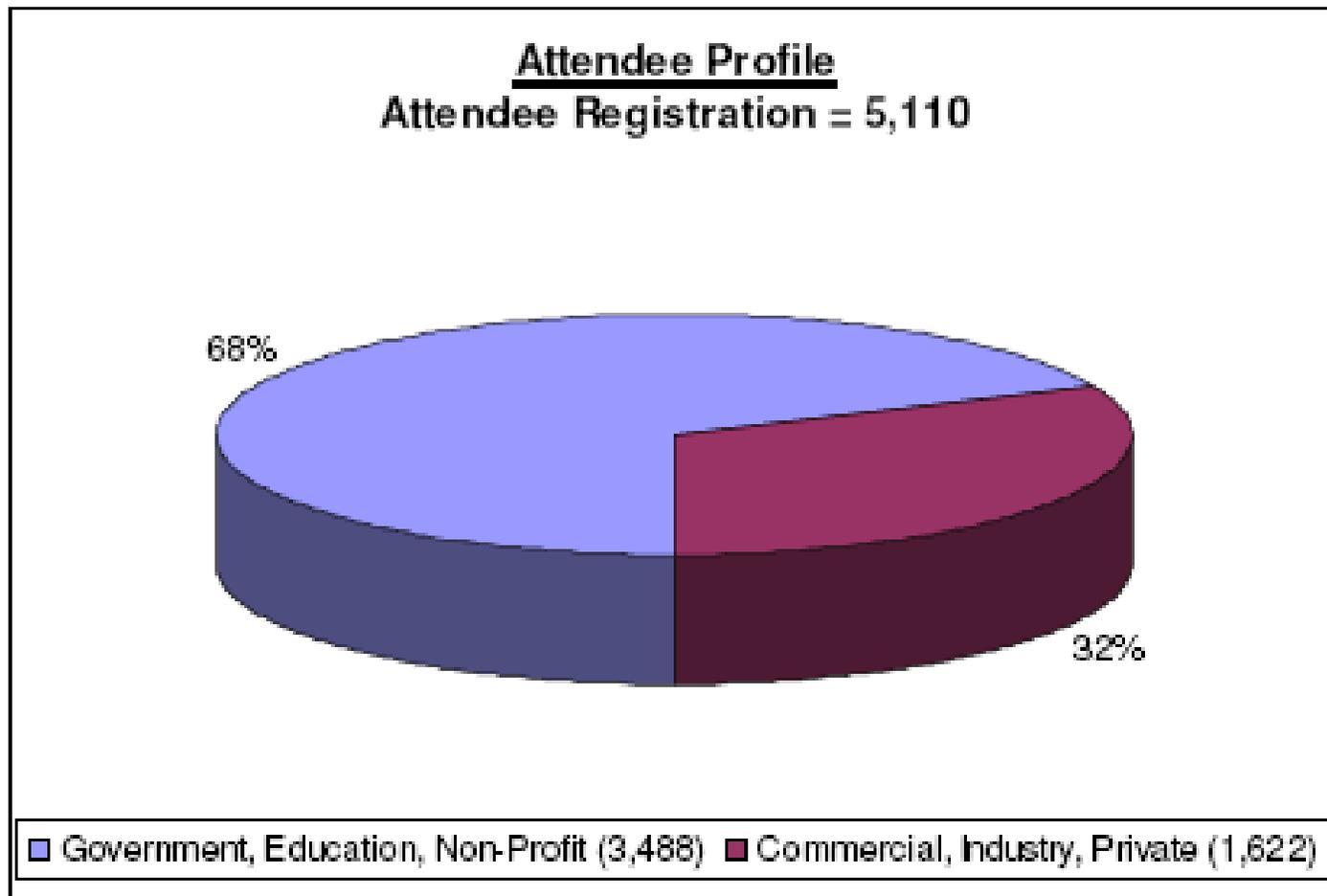
**REGISTRATION REPORT**

Registration for the 2008 Green California Summit & Exposition totaled 6,068.

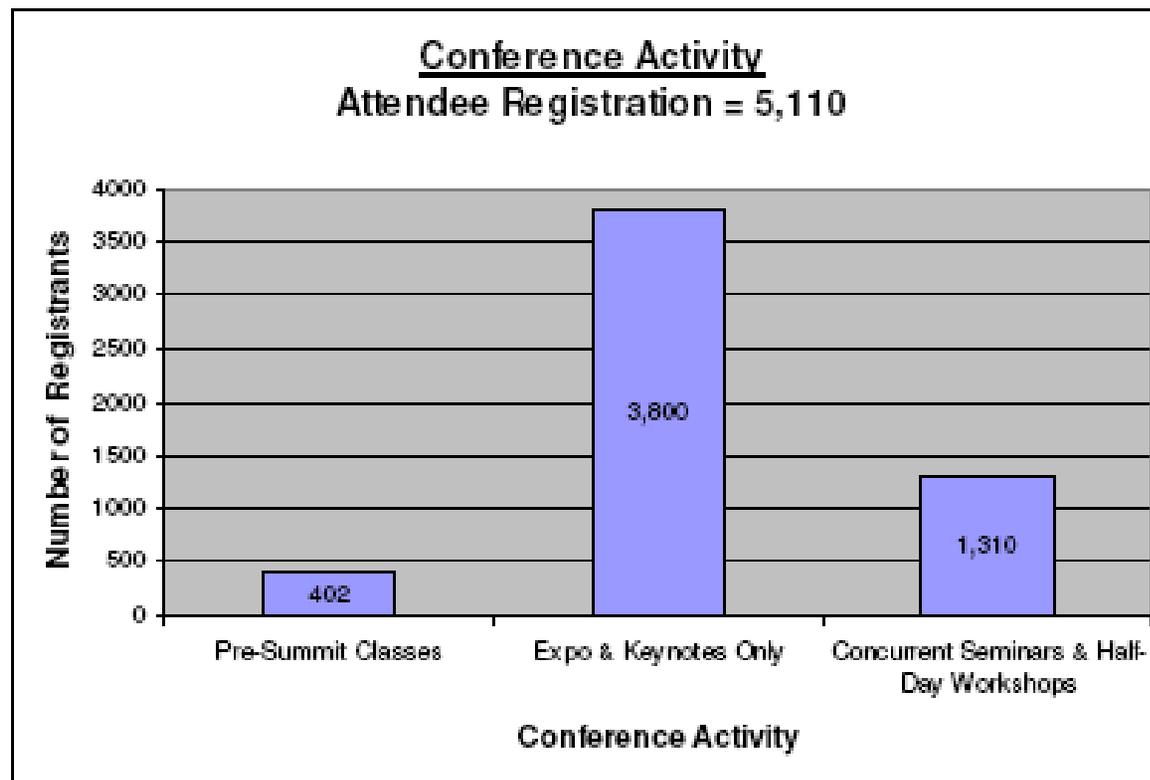
The following data shows the proportion of attendees and exhibitors:



# Green Technology Summit - *Attendance breakdown*

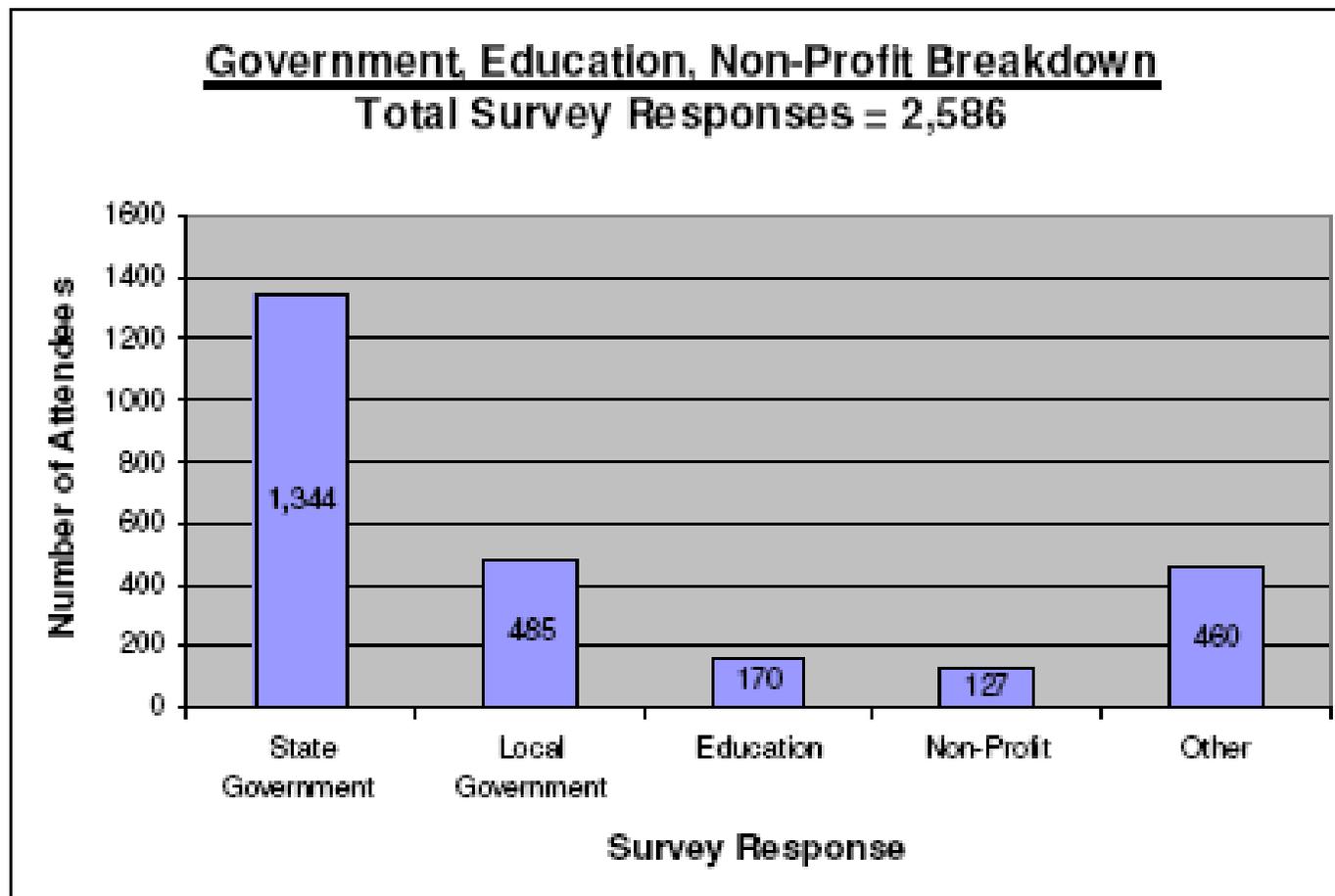


# Green Technology Summit – *Activity attendance*



Note: the sum of all conference activities exceeds total attendee registration because some individuals participated in Pre-Summit Classes and Concurrent Seminars & Half-Day Classes.

# Green Technology Summit – Govt, non-profit attendance breakdown



# CLIMATE ACTION TEAM

## GREEN BUILDING MEASURE



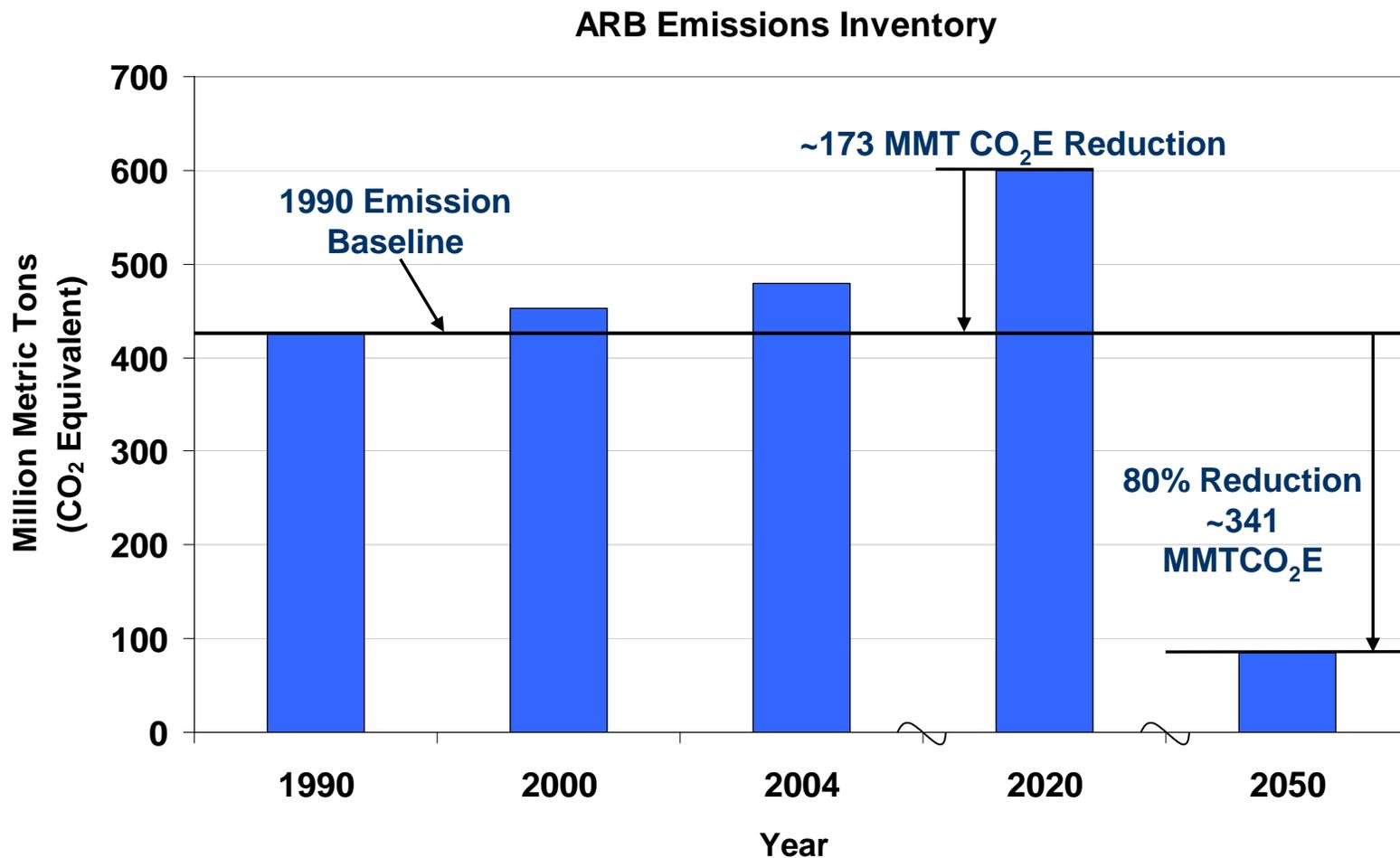
CAT Green Building Subgroup  
Roy McBrayer  
May 2, 2008

# **ARB Scoping Plan** – *How to achieve AB 32 GHG reduction goals*

- **Public process**
  - ARB lead
  - CAT Subgroups
- **Core measures**
  - AB 1493 (Pavley) Emission Standards
  - Low-Carbon Fuel Standard
  - Reduction of Vehicle Miles Traveled
  - Energy Efficiency
  - Renewable Portfolio Standard
  - High Global Warming Potential Gases

# Magnitude of the GHG Challenge

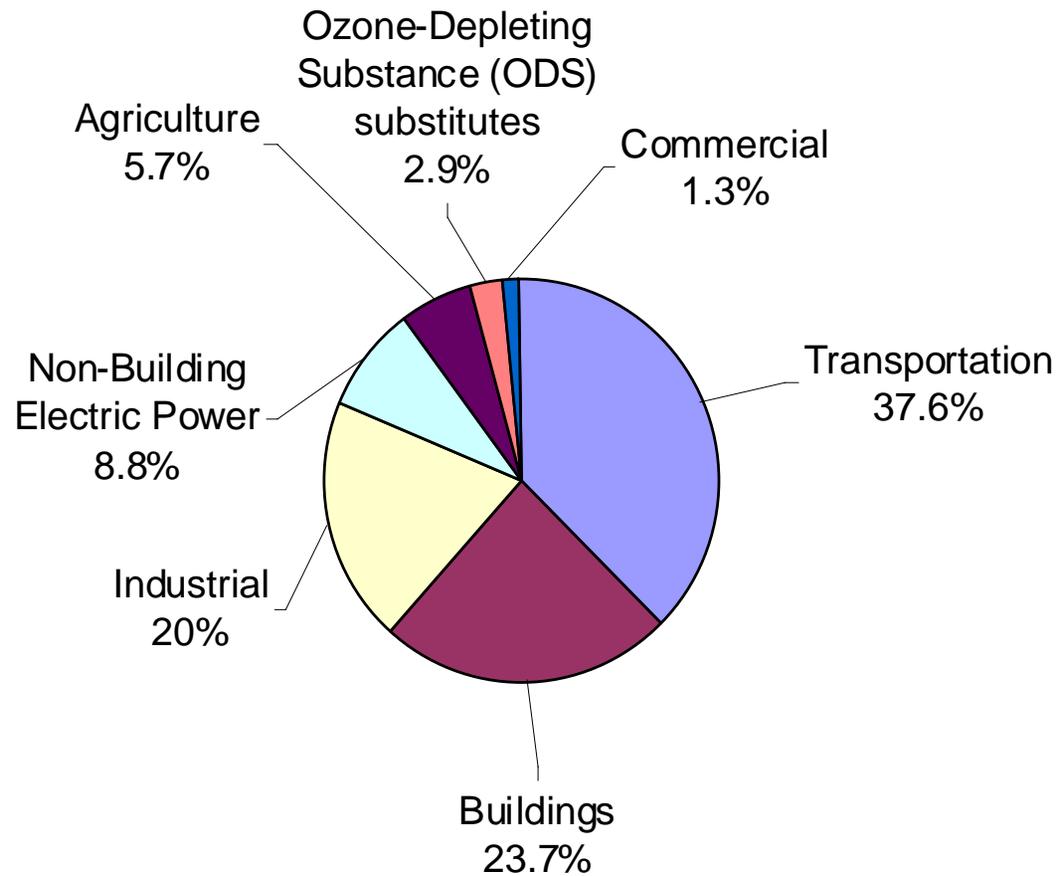
Reduce emissions 15% from today's levels By 2020, - 28% from projected levels



Source: CA Air Resources Board

# 25% of GHG Emissions Attributable to Buildings

## California GHG Emissions



2004 California GHG Inventory [ 480 MMT CO<sub>2</sub> e ]

# Climate Action Team – *The Role of Green Buildings*

- Buildings are the 2<sup>nd</sup> largest contributor to GHG emissions
  - 114MMT CO<sub>2</sub>e
- Existing Buildings represent 90% of GHG reduction potential from buildings (14 – 46 MMT CO<sub>2</sub>e)
- Many green building measures among the most cost effective
- Almost 40% of GHG abatement could be achieved at “negative” marginal cost\*

\* McKinsey & Company, U.S. Greenhouse Gas Abatement Mapping Initiative, Dec 2007



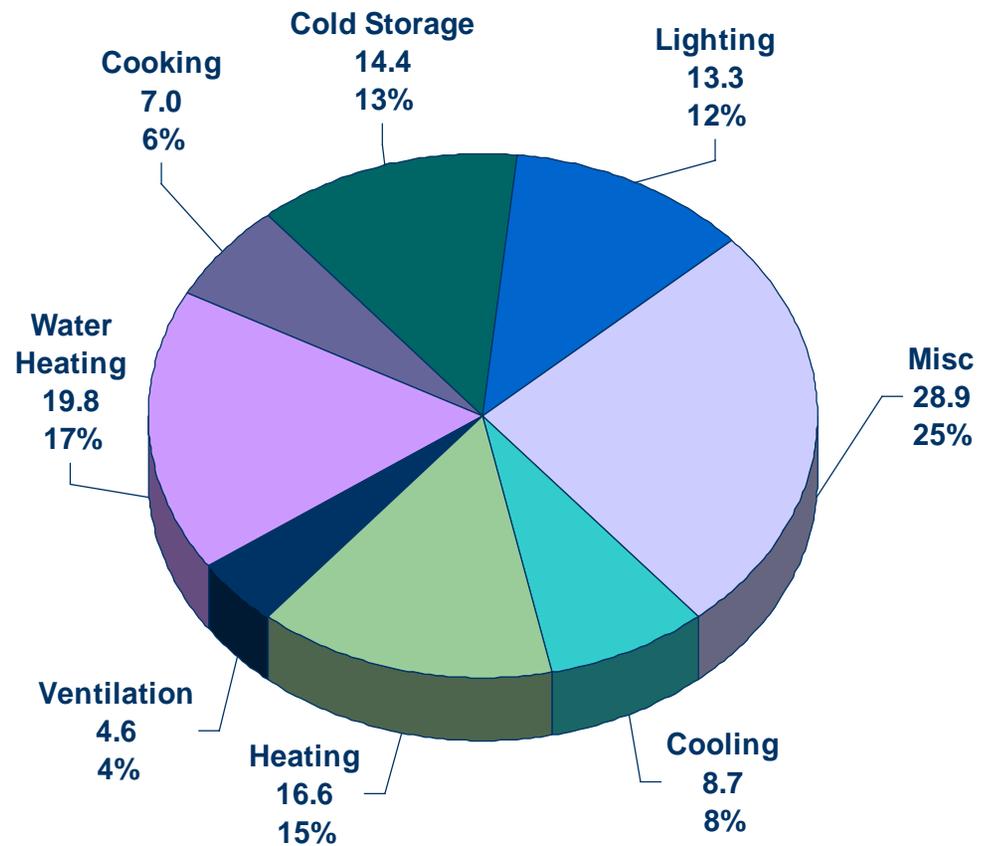
# How Buildings Contribute to Greenhouse Gas Emissions

- Electricity Usage
- Fuel Combustion
- Water Consumption
- Solid Waste Disposal
- Construction & Demolition
- Building Material Manufacturing
- Transportation



# California Building GHG Emissions Breakdown

- Buildings Overall - 23.7%
  - 13.8% Residential
  - 7.6% Commercial
  - 2.3% Industrial
- Existing Buildings represent 90% of the potential



Emissions in MMTCO<sub>2</sub>e

# Advisory Group Workshops

## *Summary of Comments*

- Existing buildings offer greatest potential for impact
- Retrofitting of existing buildings is needed to reach targets
- Transportation impact (VMT) must be a key consideration
- Potential unfunded mandates are a concern

# Advisory Group Workshops

## *Conclusions/Recommended actions*

- State should lead by example
- AB 32 goal achievement will require combination of voluntary measures and mandates
- Regulatory action needed to stimulate action
  - Enhanced building codes
  - GHG reporting
  - Stepped up code enforcement
- A common green building rating system needed
- Financing/funding mechanisms needed
- Incentives (financial and non-monetary) needed

# GHG Emissions Reduction Potential

## LEED-NC Certified Fire Station – 8,500 sf

Measures	CO <sub>2</sub> e Emissions Reduction
Building Commissioning	1.8 tons
Solid Waste Management	12.4 tons (one-time)
Energy Efficient Design & Equipment	8 tons
Renewable Energy Generation	4 tons
Water Conservation	1.4 tons
Landscaping	6.2 tons
Year-1 GHG Savings	33.8 tons = 30.66 tonnes
Annual GHG Savings	21.4 tons = 19.41 tonnes

# GHG Emissions Reduction Potential Model GreenPoint Rated New Home

Measures	CO <sub>2</sub> e Emissions Reduction
Solid Waste Management	1200 lbs (one-time)
Energy Efficient Design	650 lbs
Energy Efficient Equipment	720 lbs
Renewable Energy Generation	2,250 lbs
Water Conservation	24 lbs
Landscaping	127 lbs
Year-1 GHG Savings	4,971 lbs = 2.25 tonnes
Annual GHG Savings	3,971 lbs = 1.8 tonnes

# Annual GHG Reduction Potential – *Green Buildings, all occupancies*

Strategy	Annual GHG Emission Reduction Potential 2020 “Snapshot” (tonnes CO <sub>2</sub> e)	
	Low Range	High Range
Existing State Buildings: LEED-EB	365,067	663,759
New State Construction: LEED-NC	39,962	39,962
Existing Public Schools: CHPS	364,499	662,726
New School Construction: CHPS	35,966	141,670
Existing Residential: Mandate Energy Efficiency Upgrades	4,545,319	22,726,593
New Residential Construction: GreenPoint Rated	334,620	3,346,200
Existing Commercial Buildings: LEED-EB	8,448,830	18,775,179
New Commercial Construction: LEED-NC	2,774,655	27,746,547
<b>Total</b>	<b>16,908,918</b>	<b>74,102,635</b>

# AB 32 Scoping Plan - *Next Steps*

- Draft by June 26
  - Direct regulations
  - Alternate compliance mechanisms
  - Market-based compliance mechanisms
  - Monetary and non-monetary incentives
- Workshops on draft plan – Jul 8, 14, 17
- Final draft by Oct 3
- ARB hearing Nov 20-21

# Next GAT Meeting

- Wednesday, August 6
- 2 p.m.— 4p.m.
- CalEPA Sierra Hearing Room

[www.green.ca.gov](http://www.green.ca.gov)