

Green Action Team Meeting August 6, 2008

Status of Major Deliverables

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

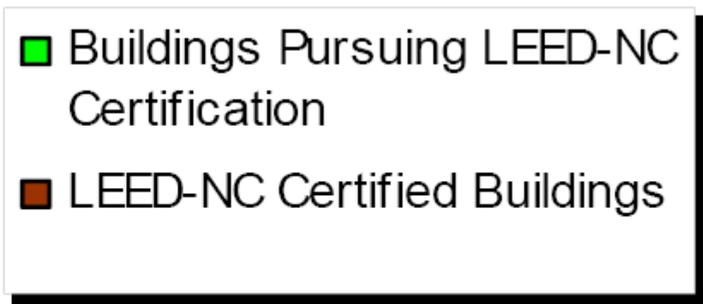


Bldgs.

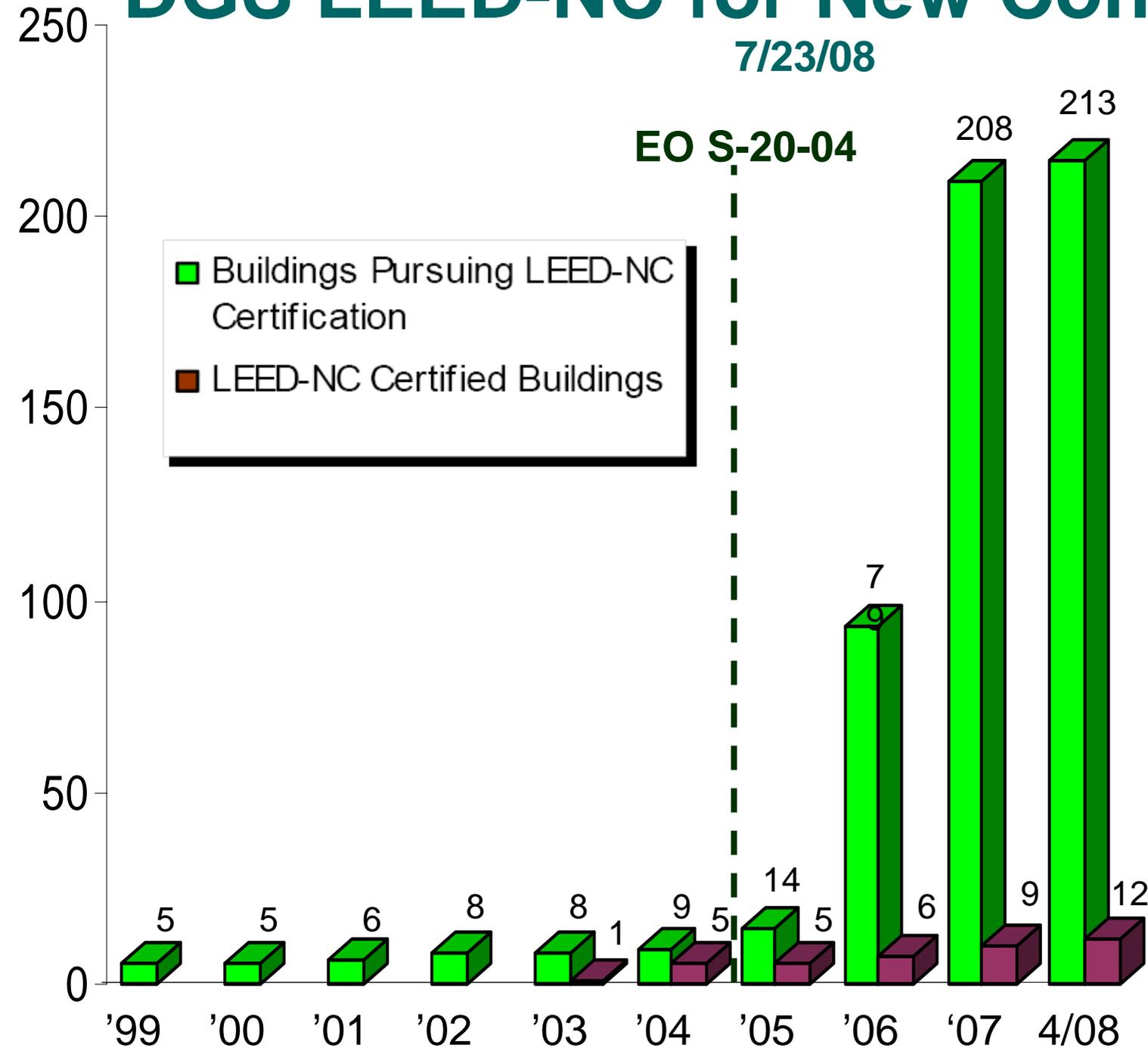
DGS LEED-NC for New Construction

7/23/08

EO S-20-04



- 12 Buildings LEED-NC Certified (3.7 M sq. ft.)
- 213 Pursuing LEED-NC (6 M sq. ft.)

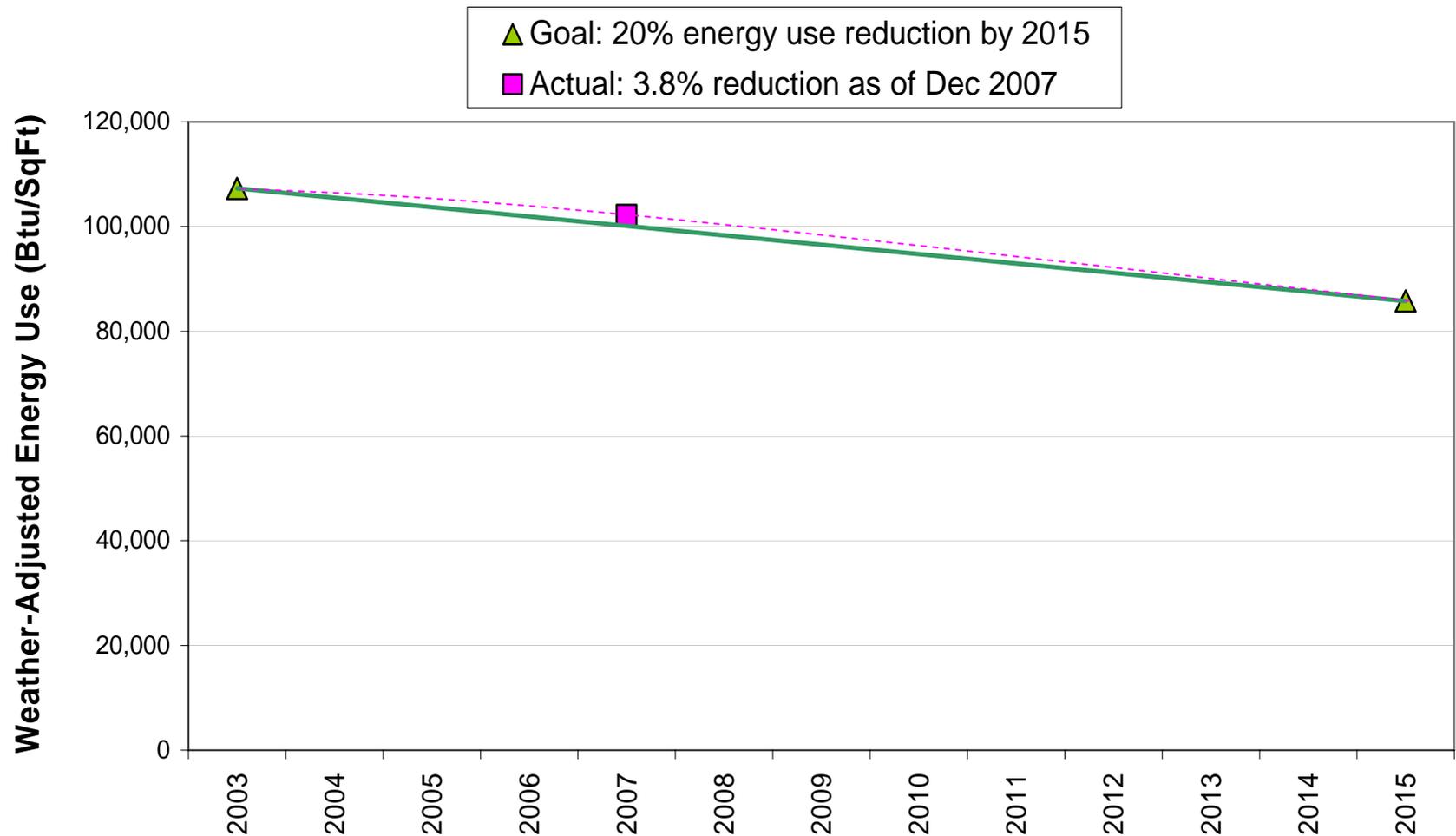


LEED-NC - Statewide Program

- **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**
 - Phases I & II: 300 trained (17 agencies) FY 2007-2008
 - Phase III – Planned Fall 2008 for all state agencies

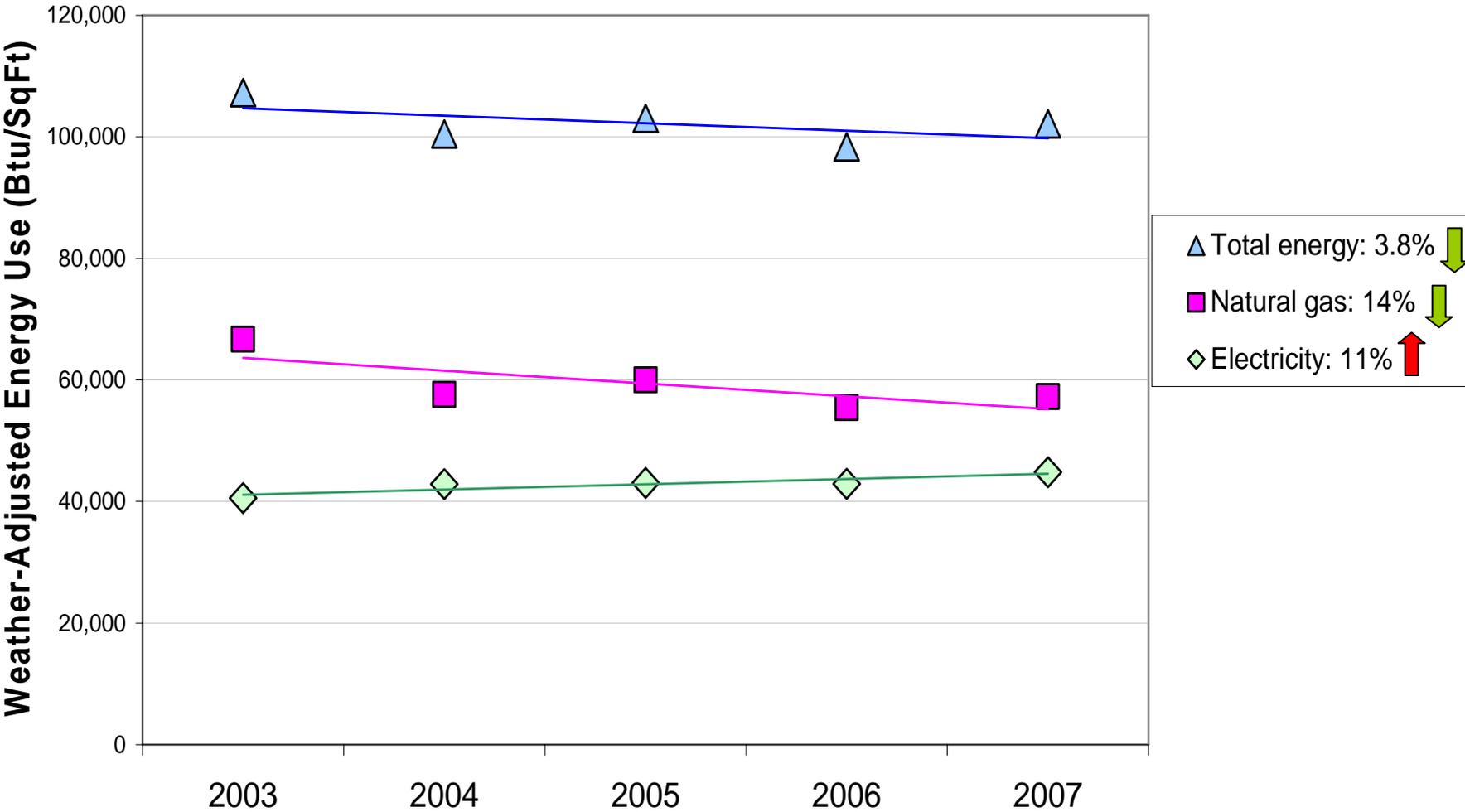
Benchmarking State Buildings

Progress Toward the 20% Energy Reduction Goal *based on 8/1/08 Portfolio Manager data*



California State Buildings Energy Use 2003-2007

based on 8/1/08 Portfolio Manager data



Next Steps

- Benchmarking Work Group
 - Send out advisory on next steps and available resources
 - Personal help: HMG, DGS, utilities, EPA
 - Funding: Utility incentives, G\$Mart Financing
 - Energy services: Statewide ESCO contract
 - In-person Portfolio Manager training - September/October 2008
 - Facilitate automation of data upload for all utilities (AB1103)
- State agencies
 - Investigate and analyze Portfolio Manager data
 - Find high energy-use buildings
 - Look for factors contributing to high usage
 - Develop comprehensive plan for reducing consumption
 - Retro-commissioning
 - Reducing plug loads
 - Retrofits

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 – Negotiating ESCO contract; 4 DGS buildings N. CA
- 2nd RFP – Evaluating ESCO proposal; 5 DGS buildings S. CA
- 3rd RFP – Release early August; FTB campus
- Upcoming projects: DPH, DPR, DFA, DMV
- Sustainable funding mechanism needed for front-end investment

Retro-commissioning Program

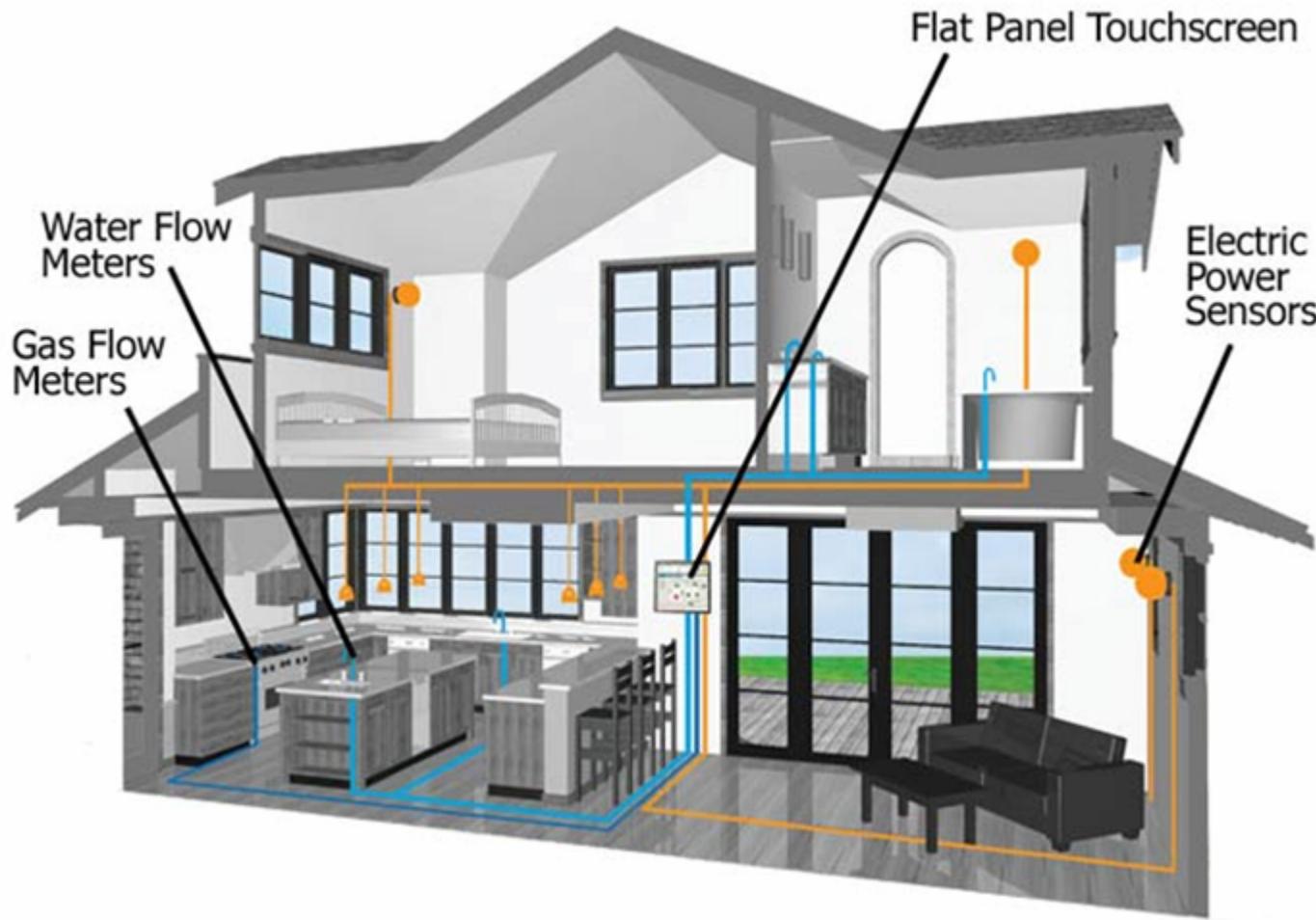
All state-owned buildings > 50,000 sq.ft. RCx on a 5-year cycle;
Goal - 8% savings

- 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 – 14.9%; avg. payback – 4.1 yrs.
 - Avg. projected NG savings - 16%
- Phase II – 18 projects:
 - Planning/investigation phases underway
 - CEC/PIER Program – ENFORMA Building Diagnostics to be installed in 4 to 6 buildings in Sacramento
 - Automated and continuous commissioning = persistence of savings!

Retro-commissioning Program

Buildings < 50,000 sf

- 2/3 of the state-owned office space sq. footage is made up of buildings < 50,000 sf
- DMV/DGS Partnership to create the model to help all departments and agencies meet our goals
 - Integrated approach
 - Energy, gas and water conservation
 - On-site generation
 - Continuous, real-time resource monitoring



On-site Clean Generation - Solar

- **Solar Photovoltaic Power Purchase Program**
 - 3rd Party Power Purchase Agreement Business Model
 - Capture Federal tax incentives
- **Phase I - 4.2 MW, 8 Facilities**
 - CDCR, CalTrans, CSU
- **Phase II – 18.5MW, 28 Facilities**
 - 3 RFP's Issued Oct 12/13
 - Evaluating Best and Final Prices
 - Contracts in 8/08
 - Potential to add 5-6 MW

On-site Clean Generation - Solar

- **Next Steps**

- Phase III - Master Services Agreement
- Phase IV – RFP for additional solar PV projects
- 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; project currently in start up test mode.
- Next steps: Caltrans remote radio site – 250 W methanol fuel cell; Telecom Microwave Monitoring – 30 kW
- Application for DOE grant funding for implementing fuel cell technologies, with a focus on First Responder needs.

- **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 report to be issued
 - Discussions underway on implementation strategy

Other On-site Clean Energy Opportunities to be evaluated

- **Wind** – small rooftop turbines (new technology)
 - CDCR potential siting opportunities
- **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**
- **DGS received USGBC approval for pilot volume certification program**
- **58 DGS owned and/or operated buildings registered with USGBC January 2008**
- **Revised version of LEED-EB: Operations & Maintenance (O&M) online Fall 2008**
- **RFP for LEED-EB Consultant: Certification/ Recertification/ Training:**
 - **Awarded to CTG Energetics**
 - **Kick-Off Start Date: August 27, 2008 at the FTB Facility**
- **LEED-EB training for state employees:**
 - **CTG to provide DGS with schedule for three LEED-EB general training sessions & two LEED AP Certification Courses for state employees per year: Winter 2008**
- **Green California Web site: online "Existing Building Tool Kit"**
- **Statewide LEED-EB Workgroup Meeting- 17 state departments/agencies**
 - **Next Meeting August 20, 2008 1:30 PM at DGS Ziggurat**

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

- **67 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
- **Existing Leases**
 - Ziggurat pursuing LEED-EB Silver
 - 2 Retrocommissioning projects complete (Ziggurat and Fresno OB)
 - 1 Retrocommissioning projects in progress (DOT Sacramento)
 - 1 commissioning project complete – (CDCR Sacramento)
 - 1 commissioning project in progress – (CDCR Sacramento)
- **All build-to-suit leases LEED-NC Silver**
 - 3 projects completed – DMV Clovis, Riverside & Hollywood
 - 2 projects in construction – DMV: Tracy, CHP Headquarters- Sacramento
 - 6 projects in design DMV Rancho Cucamonga, Lodi, Stockton, El Monte, 1000 Palms, DIR- San Luis Obispo

CHP Headquarters, Sacramento



Public School Construction High Performance Incentive (HPI) Grant Program

- Proposition 1D provides \$100 million in incentive grants
- Promotes high performance attributes in modernization and new construction public school projects
- DSA reviews plans, verifies point score
 - Uses 2006 Collaborative for High Performance Schools (CHPS)
 - 2009 Criteria Public Comments submitted by DSA July 31, 2008
- 40 HPI Grant applications processed, to date
- Approximately \$89.8 million remains
 - HPI Point Average: 31 points
 - HPI Funding Average: 2.5% increase to the base OPSC grant

Grid Neutral Schools Workshops

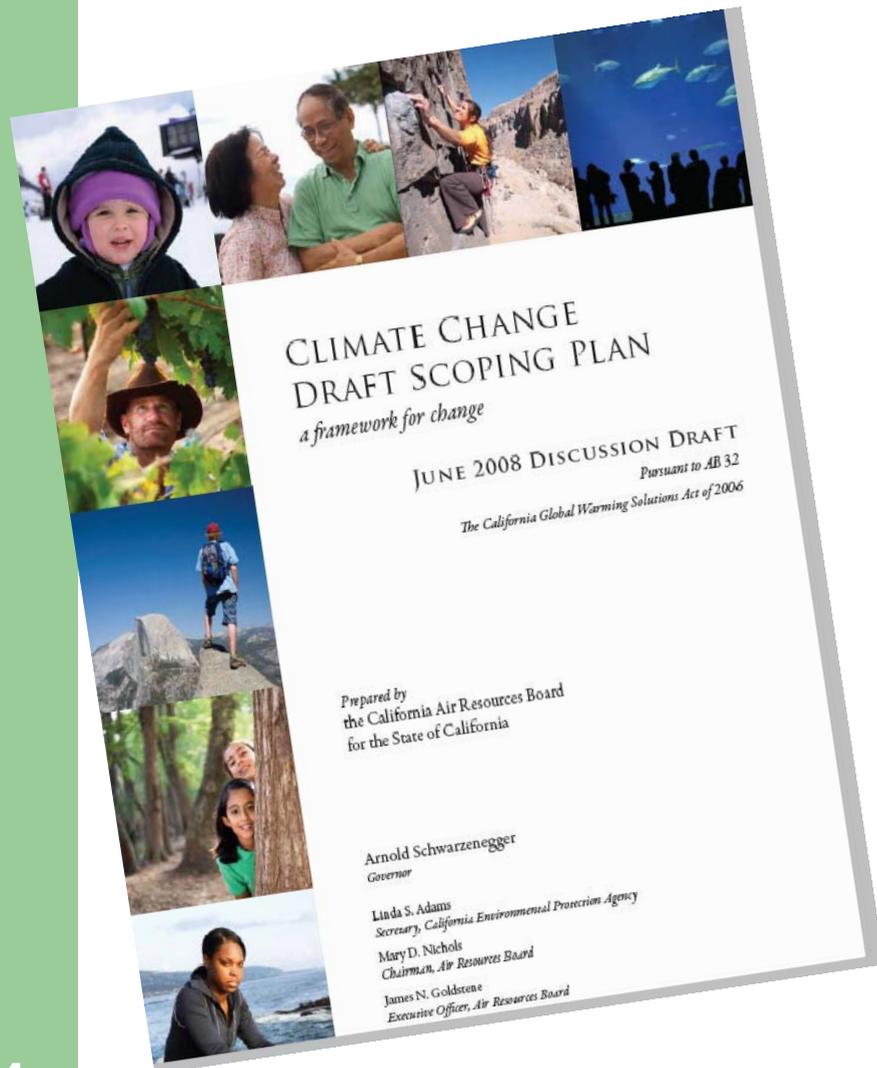
- **Grid Neutral is defined as** *“a site that produces at least as much electricity as it uses in a year.” A grid neutral school may use electricity from the grid provided the site provides electricity back to the grid at other times of the year.*
- **Round Table Discussion Workshops - 8-10 Subject Matter Experts:**
 - Comprehensive Planning – Sept. 8th
 - Energy Efficient Design – Sept. 19th
 - Energy Generating Technology – Sept. 10th
 - Innovative Funding – Sept. 15th
 - Energy Use Management – Sept. 22nd
 - Operations & Maintenance – Sept. 24th
- **Final Presentation of all Workshops**
 - Oct 20th at Ziggurat Auditorium: Open Invitation
- **How to Achieve a Grid School Guidebook**
 - Green Schools Summit – December 8-10 in Anaheim

Other Topics

- **Green Building Climate Action Team Update**

Climate Change Draft Scoping Plan

June 2008

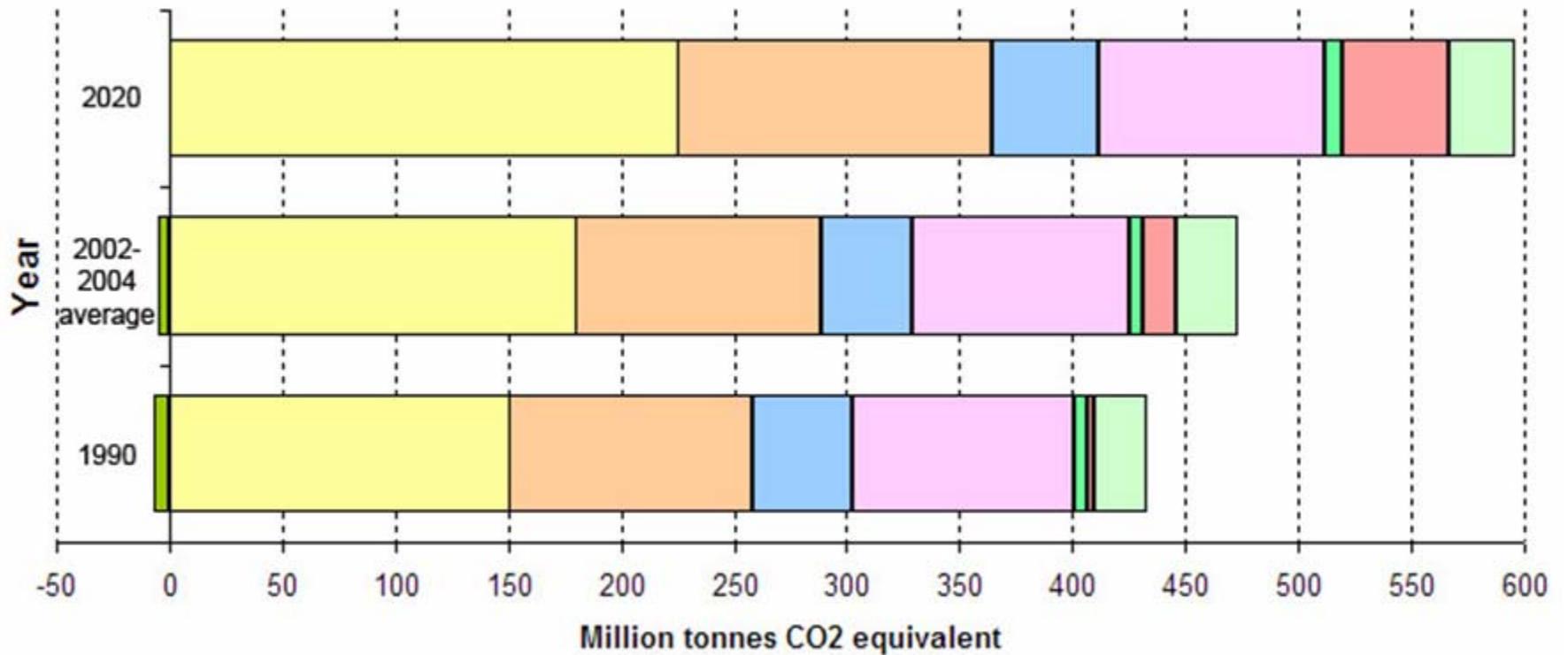


- California's Plan to Achieve GHG Reduction Targets
 - Discussion Draft
 - Appendices
- Developed by ARB Staff
- Input from CAT Subgroups & Advisory Groups
- Includes focus on Green Buildings
 - 2nd Largest Contributor to GHG Emissions in CA

Key elements of ARB's preliminary recommendation for reducing California's greenhouse gas emissions to 1990 levels by 2020 include:

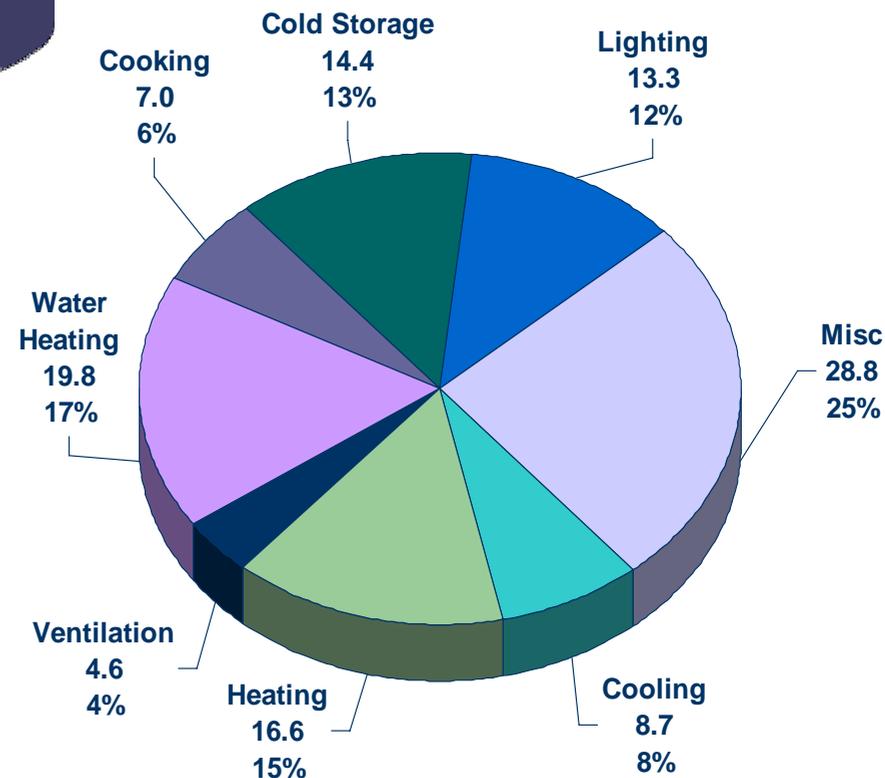
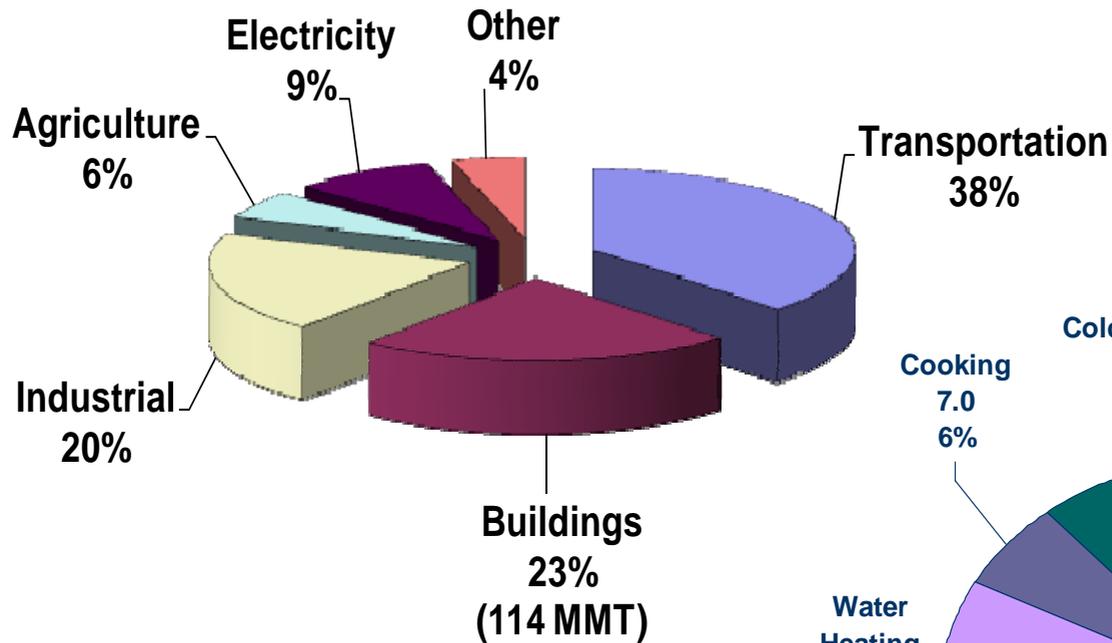
- **Expansion and strengthening of existing energy efficiency programs and building and appliance standards;**
- **Expansion of the Renewables Portfolio Standard to 33 percent;**
- **Development of a California cap-and-trade program that links with other WCI Partner programs to create a regional market system;**
- **Implementation of existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard;**
- **Targeted fees to fund the State's long-term commitment to AB 32 administration.**

California GHG Inventory Forecast



- | | | | |
|-------------------|----------------|--------------------------|------------|
| Transportation | Electric Power | Commercial & residential | Industrial |
| Recycling & Waste | High GWP | Agriculture | Forestry |

California 2004 GHG Emissions (484 MMT CO₂E)



- Buildings End-Use Demand
 - 13.6% Residential
 - 7.5% Commercial
 - 2.3% Industrial



Source: California Air Resources Board

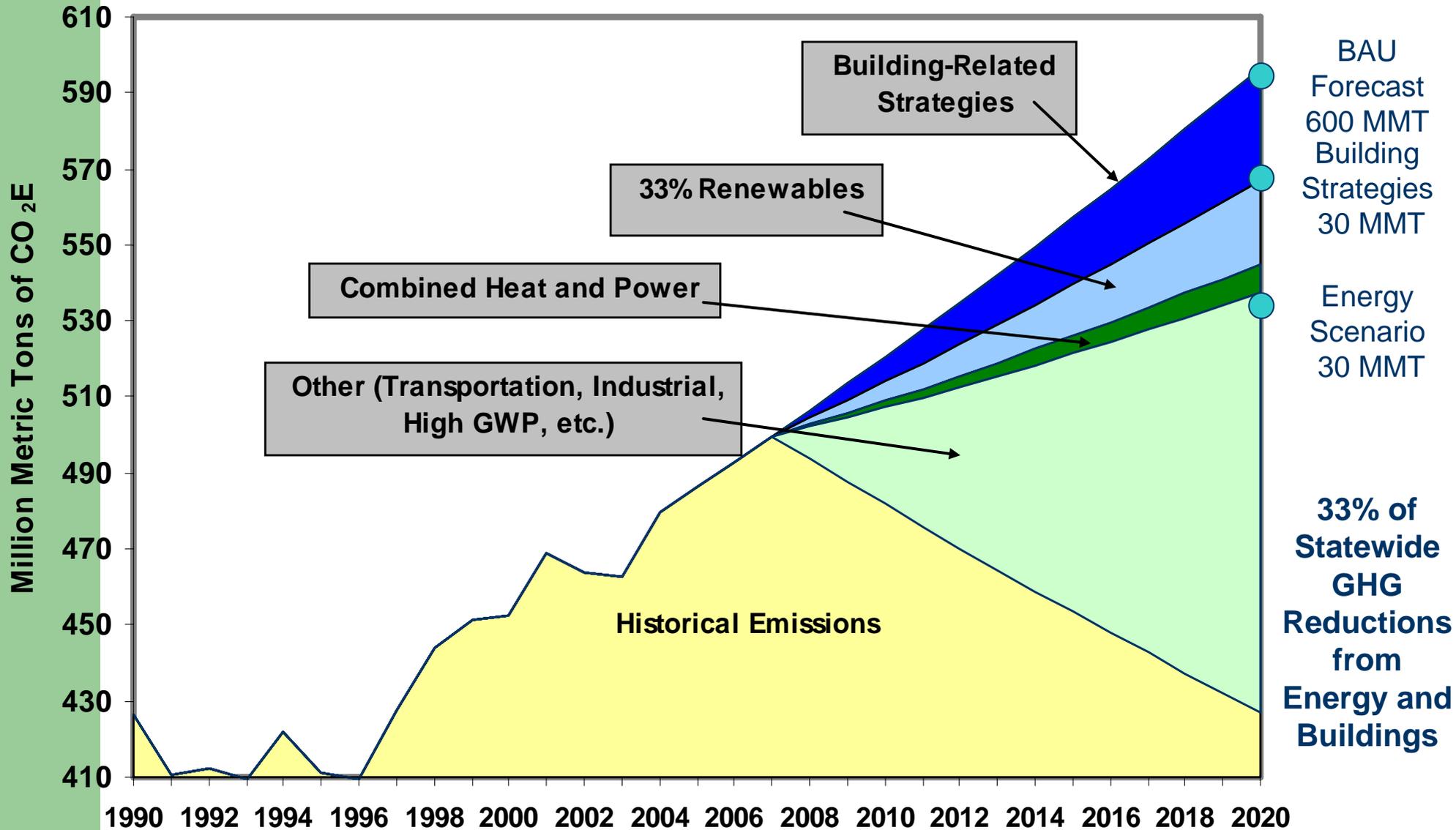
Commercial Facilities

Table 1 - Profile of Consumption by End Use and Major Facility Type *

	Electric %	Cumulative Electric %		Gas %	Cumulative Gas %
End Use			End Use		
Lighting-inter & exter	34.5	34.5	Space Heating	36.4	36.4
Cooling	14.9	49.4	Water heating	31.8	68.2
Refrigeration	13.4	62.8	Cooking	22.6	90.8
Ventilation	11.9	74.7	Process	5.9	96.7
Office Equipment	7.1	81.8	Misc.	1.8	98.5
Facility Type			Facility Type		
Office	24.5	24.5	Restaurant	24.5	24.5
Retail	14.7	39.2	Health	13.7	38.2
Restaurant	8.9	48.1	Office	13.3	51.5
Food Store	8.8	56.9	School & College	11.1	62.6
School & College	8.8	65.7	Lodging	9.0	71.6
Health	6.8	72.5	Food Store	3.1	74.7
Lodging	4.9	77.4	Retail	2.5	77.2
Unrefrig warehouse	3.7	81.1	Unrefrig warehouse	1.3	78.5

* Source: California End Use Survey, 2006

Scoping Plan Strategies to Achieve Maximum GHG Reductions



Note: Projections Based on Preliminary Air Resources Board Analysis

Green Building Comments to Date

- Existing buildings present the most opportunity for GHG reduction
- Transportation impacts need to be considered
- Better definition of cost effectiveness needed
- ZNE strategies need to be creative – e.g., solar farms
- Need to monetize carbon footprint reduction
- Need to resolve conflicts, e.g., Solar PV vs. Fire protection
- Whole building approaches are needed
- Plug loads need to be considered in whole building evaluations
- Time of Use metering needed
- Environmental performance testing/assessments for all buildings
- Savings goals should be referenced to ZNE goals
- Capital vs. operating expenses need to be rationalized
- Creative funding needed
- Incentives need to be stepped up
- Encourage distributed renewable generation
- Tie upgrades to “meter” rather than owner

Final Scoping Plan Development

Summer:

- Workshops and community meetings
- Supplemental evaluation
- Begin development of fee regulation to support AB 32 implementation

October:

- Final Proposed Scoping Plan release with 45-day environmental review

November:

- Board consideration of the Proposed Scoping Plan

For Additional Information

- ARB Climate Change Web Site
(To stay informed – sign up for list serve)
www.arb.ca.gov/cc/cc.htm
- California Climate Change Portal
www.climatechange.ca.gov
- Comments on the Draft Scoping Plan
www.arb.ca.gov/cc/scopingplan/spcomment.htm
- Green California Website
www.greenca.gov

Next GAT Meeting

- Wednesday, November 5
- 2 p.m.— 4p.m.
- CalEPA Sierra Hearing Room

www.green.ca.gov