



U.S. GENERAL SERVICES ADMINISTRATION

FEDERAL HIGH-PERFORMANCE
GREEN BUILDINGS
AND THE
AMERICAN RECOVERY
AND REINVESTMENT ACT

CALIFORNIA GREEN SUMMIT



March 16, 2009

Sacramento, CA

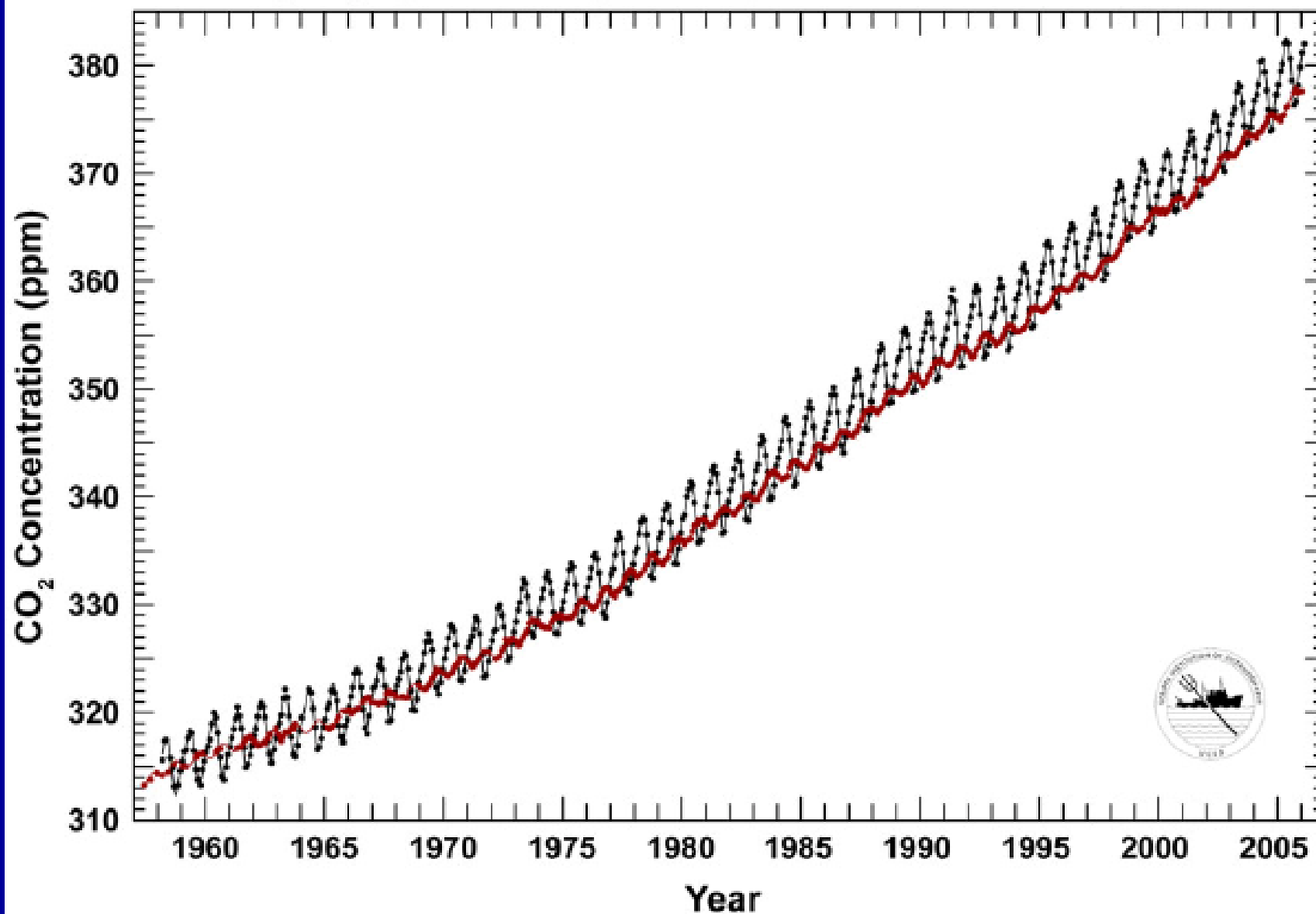
Kevin Kampschroer

The Economy
Health Care
Climate Change

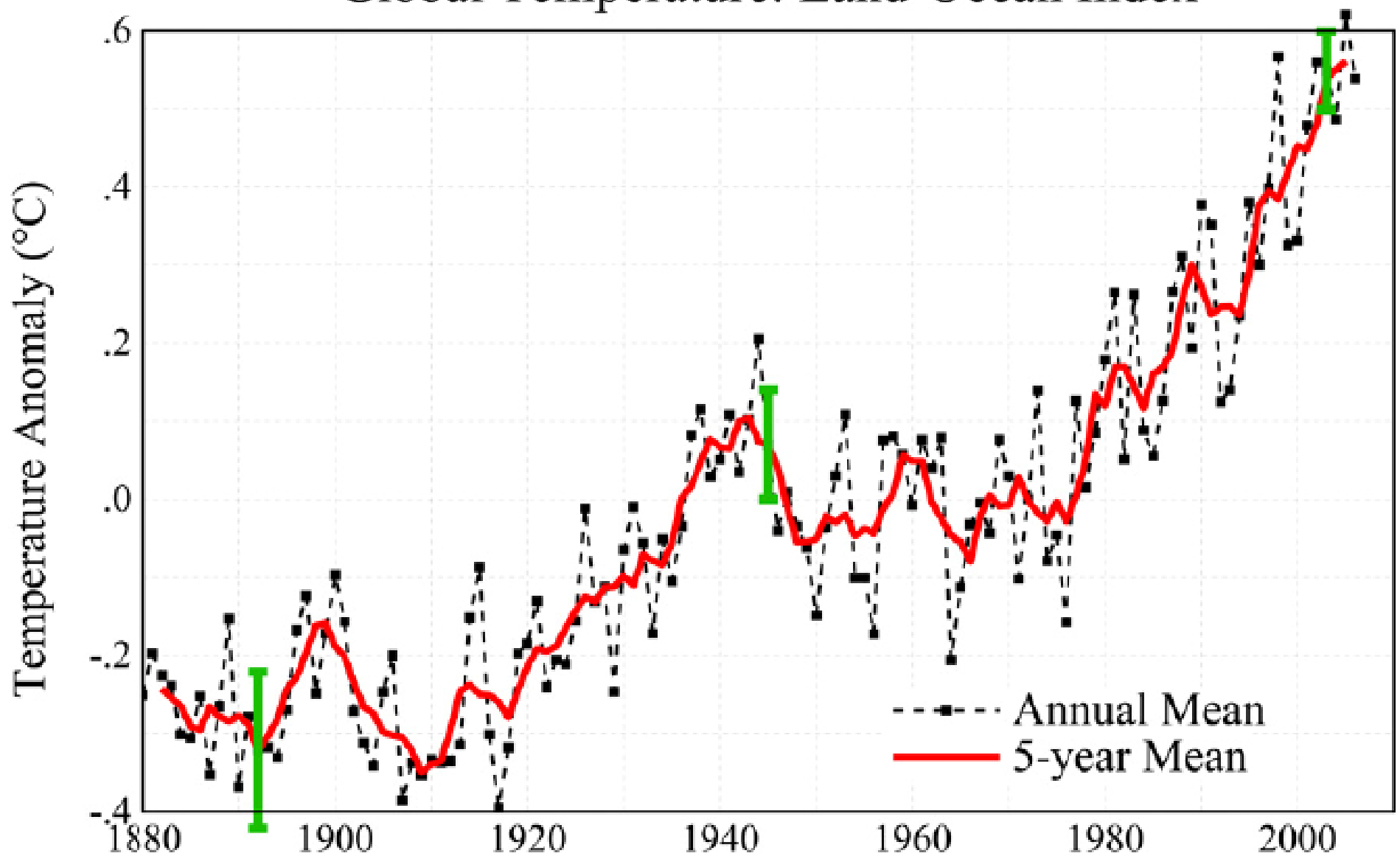
Mauna Loa Observatory, Hawaii and South Pole, Antarctica Monthly Average Carbon Dioxide Concentration

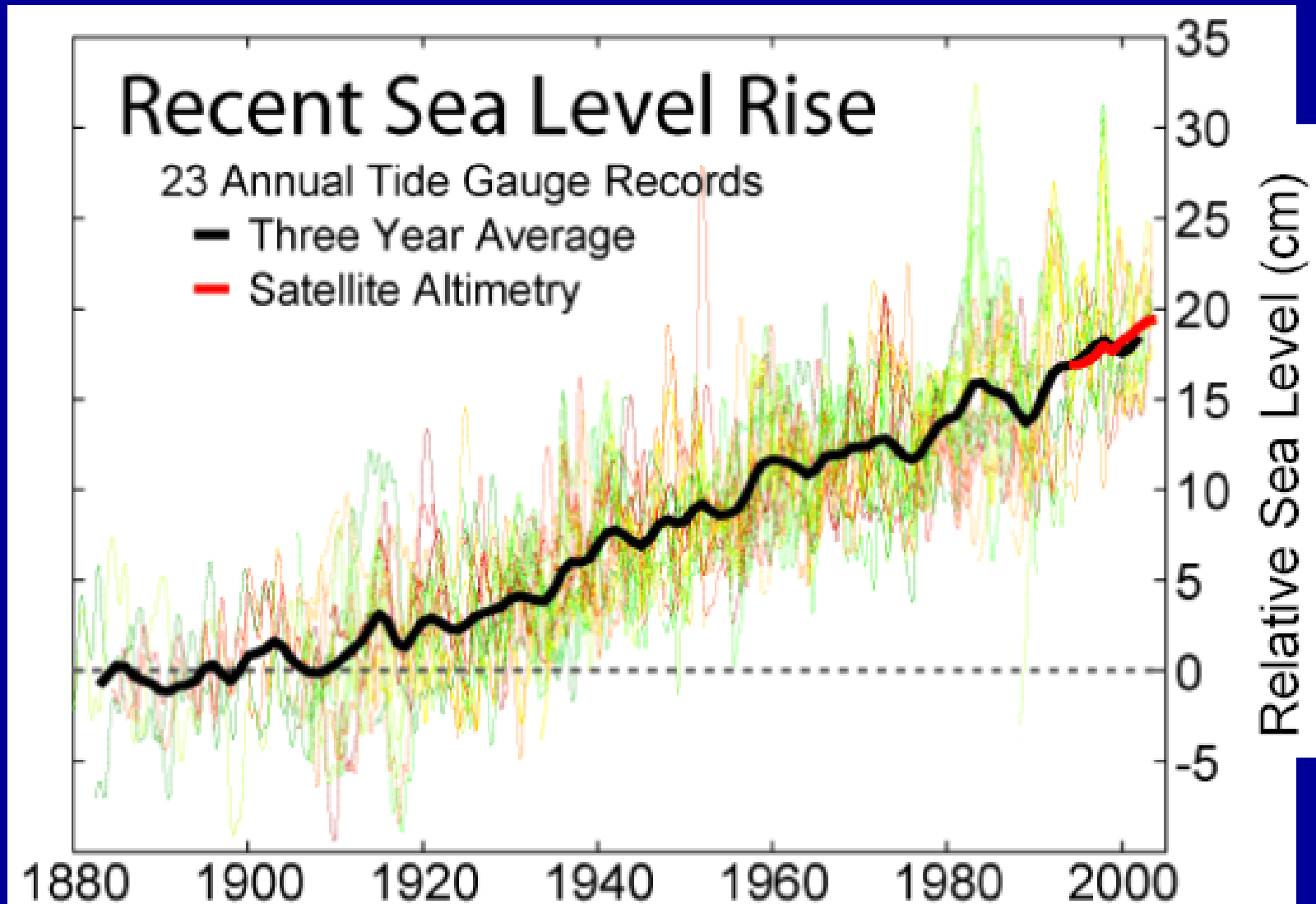
Data from Scripps CO₂ Program

Last updated February 2006



Global Temperature: Land-Ocean Index





1882-2005 sea level rise based on Permanent Service for Mean Sea Level (PSMSL) tide gauge data from 23 sites selected by Douglas (1997)

This figure was prepared by Robert A. Rohde

http://www.globalwarmingart.com/wiki/Image:Recent_Sea_Level_Rise.png

Increase in coal-fired electric power

Coal-fired capacity, GWe, 2003 & USEIA projection

	<i>USA</i>	<i>China</i>	<i>India</i>	<i>World</i>
<i>2003</i>	310	239	67	1120
<i>2010</i>	319	348 478	95	1300
<i>2020</i>	345	531 756	140	1600
<i>2030</i>	457	785 1034	161	2000

World coal-electric capacity goes up ~900 GWe by 2030, and 640 GWe of the increase is in China and India.

Source: US EIA, International Energy Outlook 2006 & 2008

General Services Administration (GSA) Mission

We help federal agencies better serve the public by offering, at best value, superior workplaces, expert solutions, acquisition services and management policies.

Public Buildings Service (PBS) Mission

To provide a superior workplace for the federal worker at superior value for the American taxpayer.

GSA'S PUBLIC BUILDINGS SERVICE (PBS)

Landlord for over 400 federal agencies, bureaus & commissions

- Portfolio of 353.9 M rentable square feet
- Space for over 1,000,000 tenants
- 8,603 owned and leased assets
- 30 LEED certified properties
- FY' 08 revenue—\$8.23 B
- \$881.2 M in project starts in FY' 08

EISA & EO 13423

- 30% Portfolio-wide Reduction In Energy Consumption In 10 Years
- 20% Water Reduction
- 55% Less Use Of Fossil Fuel Generated Energy—New Buildings AND Renovations
- Maintain Pre-development Hydrology
- Focus On Existing Buildings
- Also Leasing

EISA & EO 13423

- Renewable Energy
- Guiding Principles
- Measurement

E.O. 13514

- Greenhouse Gas Accounting (GHG)
- Re-Affirms E.O. 13423 Goals
- Tight Deadlines
- Broad Customer Implications
- VERY Different Decision-Making

Sustainability & Regulations

Laws

- National Environmental Policy Act, 1969
- Clean Air Act, 1970; amended 1990
- Energy Policy and Conservation Act, 1975
- Resource Conservation & Recovery Act, 1976; amended 1994
- National Energy Conservation Policy Act, 1978
- Energy Policy Acts, 1992, 2005
- Energy Independence and Security Act, 2007

Executive Orders

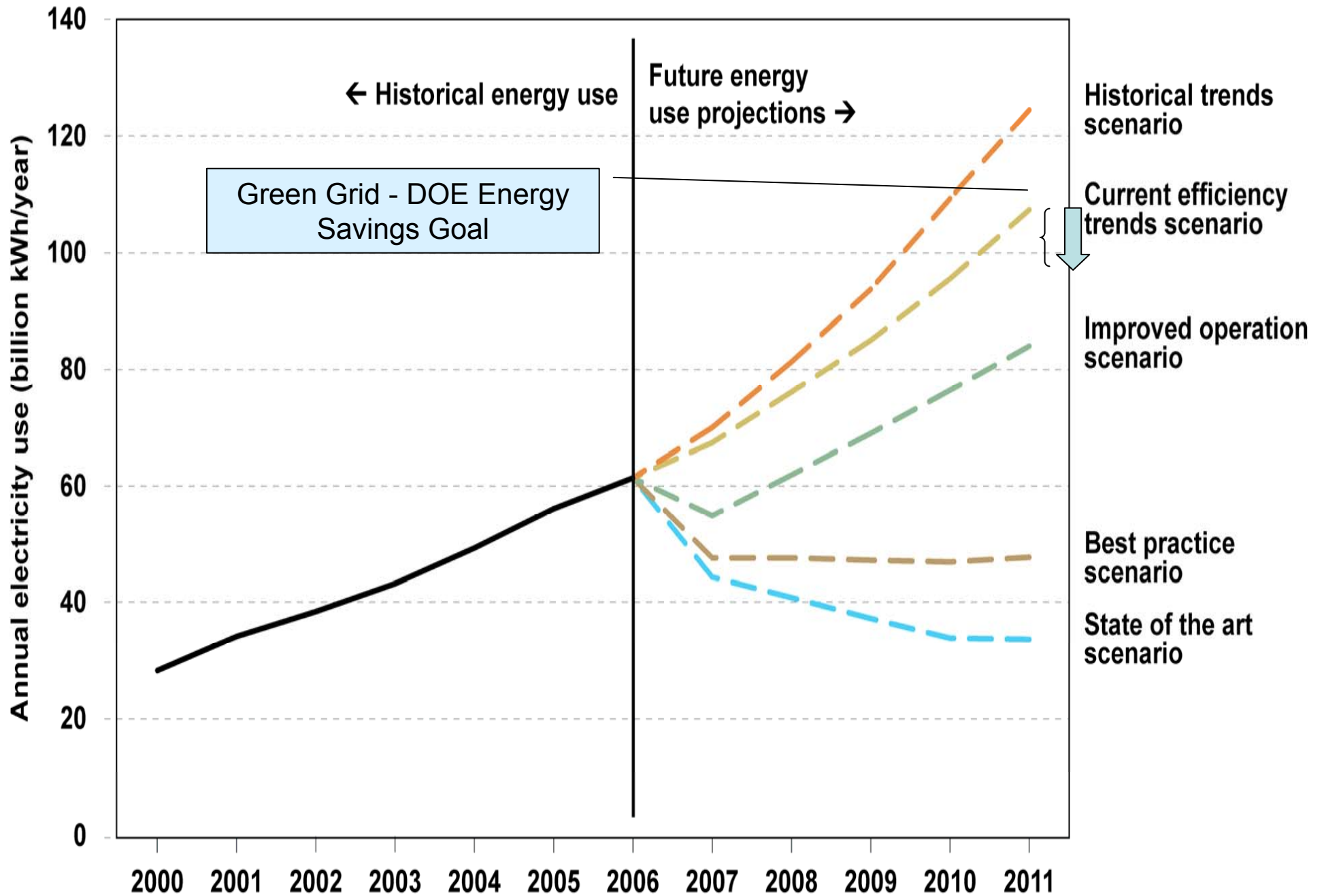
- 13101 Greening the Government through Waste Prevention, Recycling & Federal Acquisition
- 13123 Greening the Government through Efficient Energy Management
- 13134 Developing & Promoting Biobased Products and BioEnergy
- 13148 Greening the Government through Leadership in Environmental Management
- 13327 Federal Real Property Asset Management
- 13423 Strengthening Federal Environmental, Energy, and Transportation Management
- 13514 Federal Leadership in Environmental, Energy, and Economic Performance

Federal Leadership in Environmental, Energy and Economic Performance

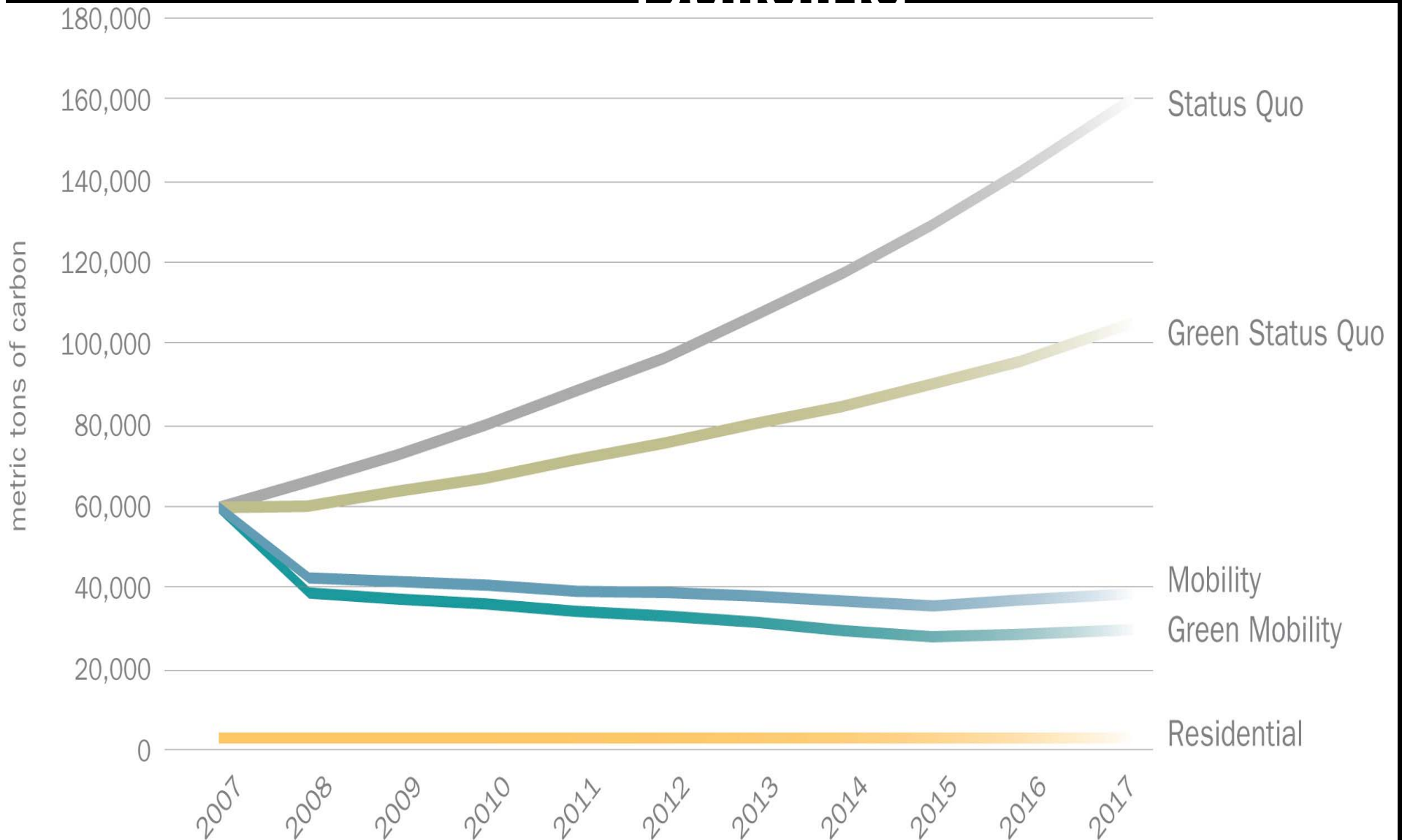
(EO 13514)

Agencies shall:

- Increase energy efficiency
- Measure, report, and reduce greenhouse gas emissions from direct and indirect activities
- Conserve and protect water resources through efficiency, reuse, and stormwater management
- Eliminate waste, recycle, and prevent pollution
- Leverage agency acquisitions to foster sustainable technologies and environmentally preferable materials, products, and services
- Design, construct, maintain and operate high-performance sustainable buildings in sustainable locations
- Strengthen the vitality and livability of the communities in which Federal facilities are located
- Inform and involve employees in the achievement of these goals



Holistic Thinking—It's Not About the Building



Recovery Act Performance Results

- Standard Specifications & Scopes
- Performance Results
- Metering & Sub-Metering by Sub-System
- Change to Tenant Sub-Metering?
- Commitments Are Visible
(Transparency)
- Performance Will Be Tracked & Published
- “Proving Ground”

P R E S I D E N T O B A M A
O N T H E R E C O V E R Y M A N D A T E

“What I will need from all of you is unprecedented responsibility and accountability...the American people are watching. They need this plan to work. They expect to see the money they’ve earned, that they’ve worked so hard to earn, spent in its intended purposes without waste, without inefficiency, without fraud.”

PURPOSES:

THE AMERICAN RECOVERY & REINVESTMENT ACT OF 2009

- Creating and saving jobs
- Increasing domestic renewable energy capacity
- Investing in infrastructure with long-term economic benefits
- Stabilizing state and local government budgets
- Assisting those most impacted by the recession

THE PBS RECOVERY VISION



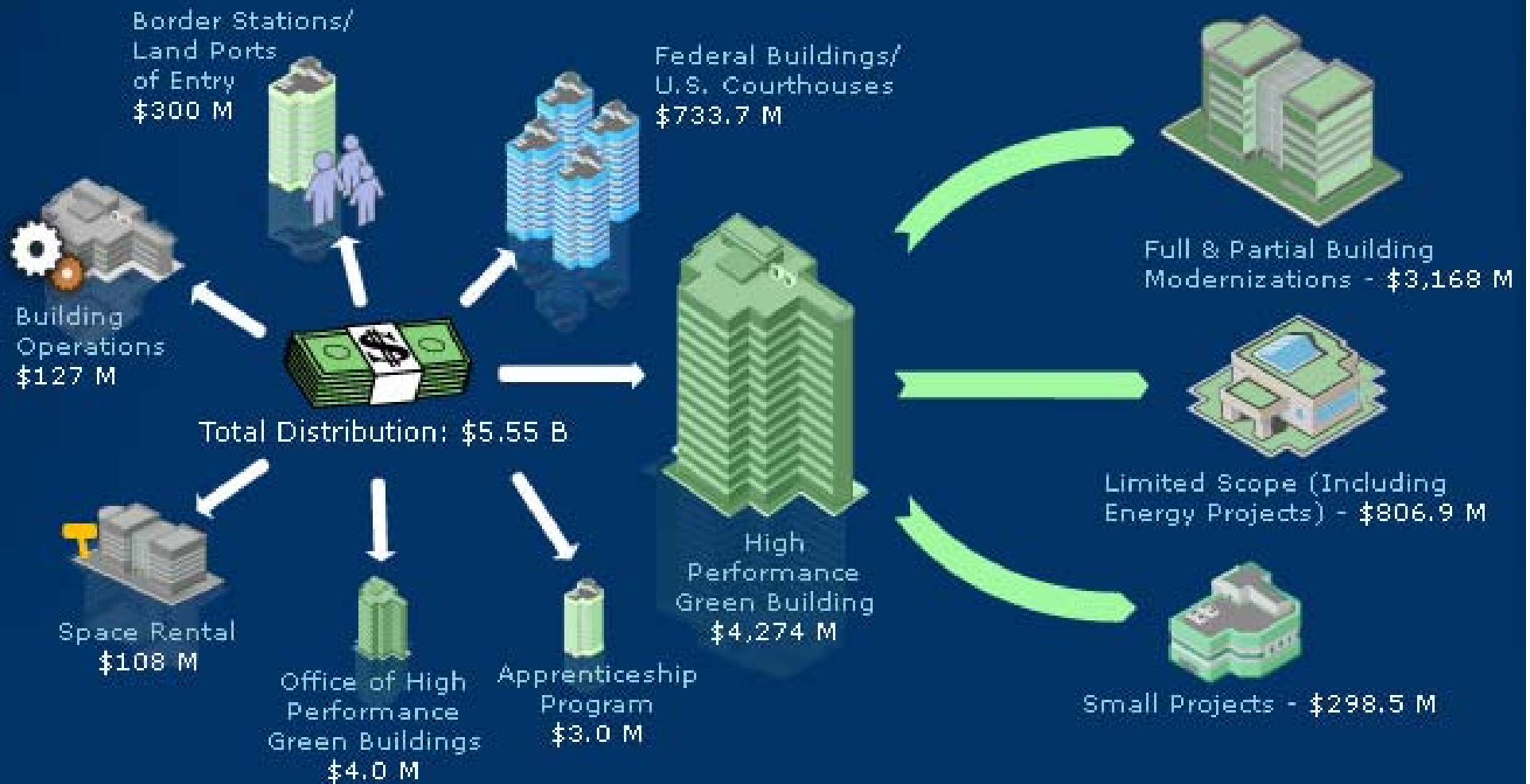
Security of the People, 1942
Seymour Fogel



Construction, 1938
Chaim Gross

PBS' RECOVERY ACT SPEND PLAN

TRANSFORMING FEDERAL BUILDINGS INTO HIGH-PERFORMANCE GREEN BUILDINGS



RECOVERY ACT: MAJOR PROJECTS

- \$750 M Federal Courthouses, Federal Buildings and Modernizations (\$450 M for DHS Headquarters)
- \$300 M Land Ports of Entry (Border Stations)

Other Agencies' Recovery Act \$\$ Potentially to GSA:

- \$2.0 B Potential Other Agencies' RWA Work

GREEN BUILDING NEW CONSTRUCTION

\$1.1 B Focused On High-Performance Green Building Projects

- Limited By The Constraints Of The Act
- Half for St. Elizabeths Campus
- Land Ports of Entry
- Federal Buildings/Courthouses
- ISSUES:
 - Existing Designs
 - Old Standards
 - Out-dated Performance Requirements
 - Budget Constraints
 - Timing—Speed
 - Resistance to Changing Designs

GREEN BUILDING MODERNIZATIONS

\$4.5 B Focused On High-Performance Green Building Projects

\$3.2 B For Full And Partial Building Modernizations With High-Performance Features And Existing Modernization Designs

- 43 Projects Selected For:
 - High-Performance Features Concentrating On Energy Conservation And Renewable Energy Generation
 - Speed of Construction Start (Creating Jobs)
 - Execution Risk
 - Facility Condition
 - Improving Asset Utilization
 - Return on Investment
 - Avoiding Lease Costs
 - Historic Significance

GREEN BUILDING MODERNIZATIONS

Existing Designs + New Goals = ISSUES

- How Do You Set Priorities?
- Triage Process
- Integrated Design
- New Technologies
- Design/Build Contracting Techniques
- Measurement Changes:
 - Process vs. End State
 - Budget & Schedule vs. Budget & Schedule & Green
 - Reliability of Modeling
 - Quality of Review Process
 - Ability To Apply Rigorous Life-Cycle Methods

GREEN BUILDING LIMITED SCOPE

\$800 M focused on high-performance green building projects

- Tiered Structure:
 1. Building Tune-Up (Re-Commissioning + Controls +)
 2. Lighting Replacement
 3. Mechanical Systems
- Includes such improvements as:
 - Renewable energy—photovoltaics and wind
 - Roofing, including green roofs
 - Windows
 - Lighting replacement
 - High-performance building systems
 - Advanced metering

GREEN BUILDING SMALL PROJECTS

\$300 M focused on high-performance green building projects

- Includes such improvements as:
 - Renewable energy—photovoltaics and wind
 - Roofing, including green roofs
 - Windows
 - Lighting replacement
 - High-performance building systems
 - Advanced metering

EXAMPLE: ARRA PROJECT

Broad Range of Opportunities and Challenges

- 1975 Federal Building
- Never Upgraded

Plan:

- Updating Cutting Edge 'Green' Design
- \$133 M from Recovery Act
- Full Building Modernization
- High Aims for Sustainability and Curb Appeal
- Construction procurement underway



Portland, OR

EXAMPLES: “SHOVEL READY” PROJECTS

Broad Range of Opportunities and Challenges

- Historic 1917 Building
- Last Upgraded in 1935

Plan:

- Modernization with Infill
- \$161 M from Recovery Act, as Phase I
- Must Redesign for Energy Goals
- Future Funding Needed for Phase II



Washington, D.C.

Standard Specs & Criteria

For:

- Lighting w/ & w/o Ceiling Replacement
- LEDs for Garages and Parking Lots
- Exit Stairway Lighting
- PV & PV Integrated Membrane Roof
- Planted Roof, Cool Roof
- Performance Criteria for Whole and Partial Building Modernization
- Lighting Controls
- Commissioning; Energy Audits
- Meters & Data Feeds from Meters
- Improvements to Existing Engineering Design, Generally

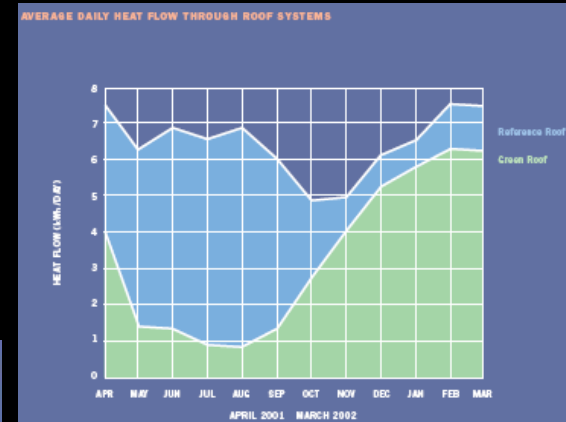
As of this week...

Total obligations as of 3/15/10:

\$2,391,279,160

Change Buildings Design

- Geothermal
- Light
- Envelope
- Wind
- Solar
- Roofs



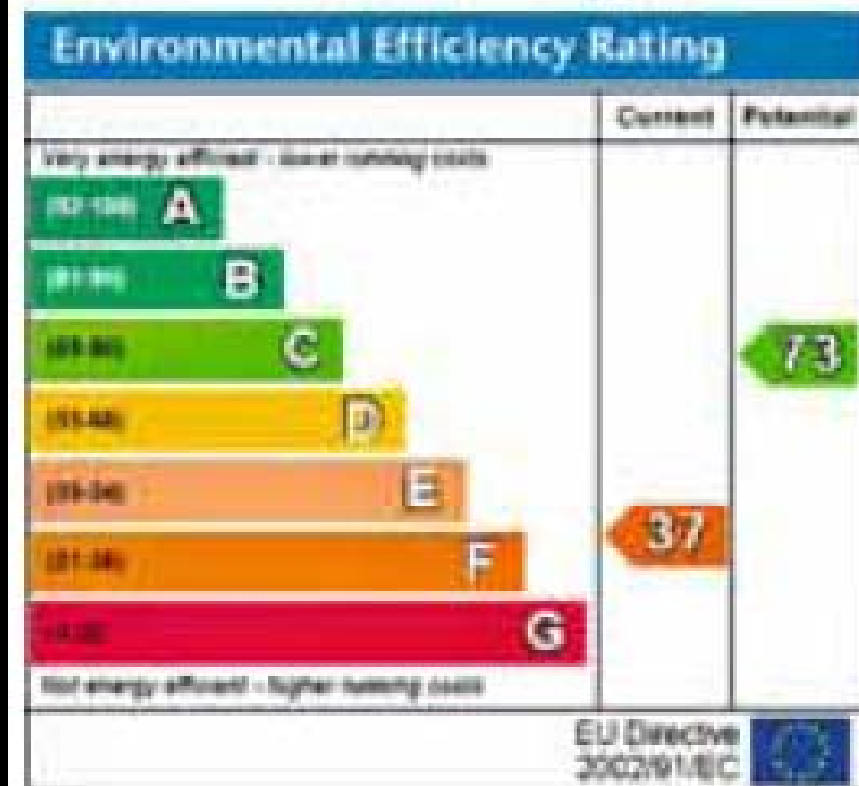
“Proving Ground”

- β -test, not α -test
- Demand-control Ventilation
- Radiant Panels; Chilled Beams
- Ubiquitous Sensing
- New Chemistry for Cooling Towers
- ...

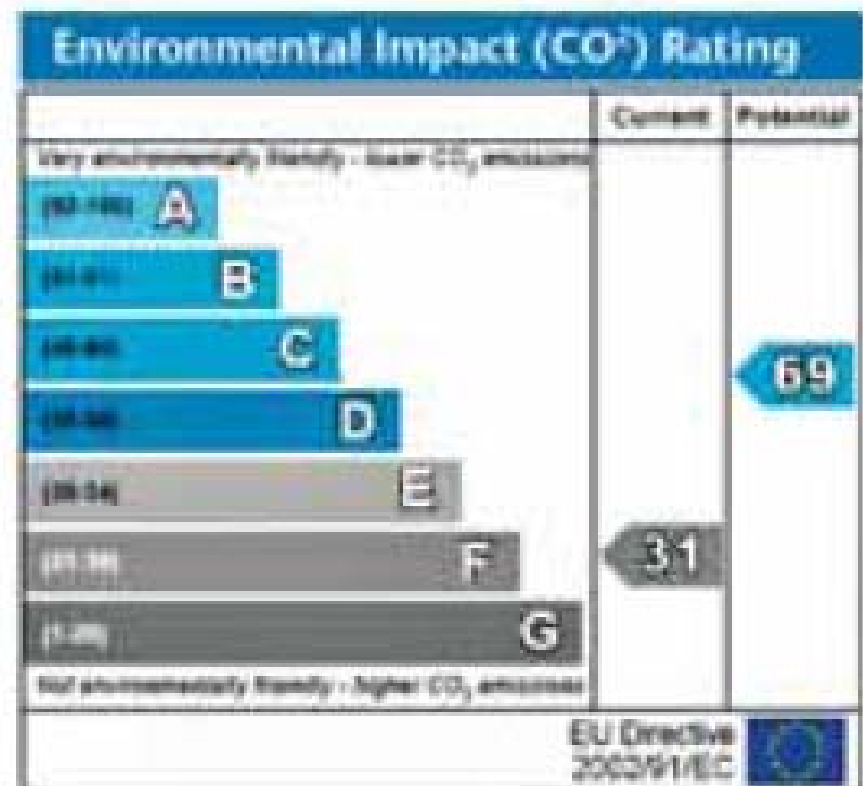
Measurement

- Energy Intensity
- Fuel Source
- LEED
- Building
- Organization
- GHG Emissions
- Fuel Result
- LEEP
- Portfolio
- Enterprise....Country

EU Labeling



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills will be.



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

Can We Avoid Sinking This?



Or This?



QUESTIONS?