



# BetterBricks 2011 Oregon/SW Washington Awards



Office of Federal  
High-Performance Green Buildings

February 11, 2010

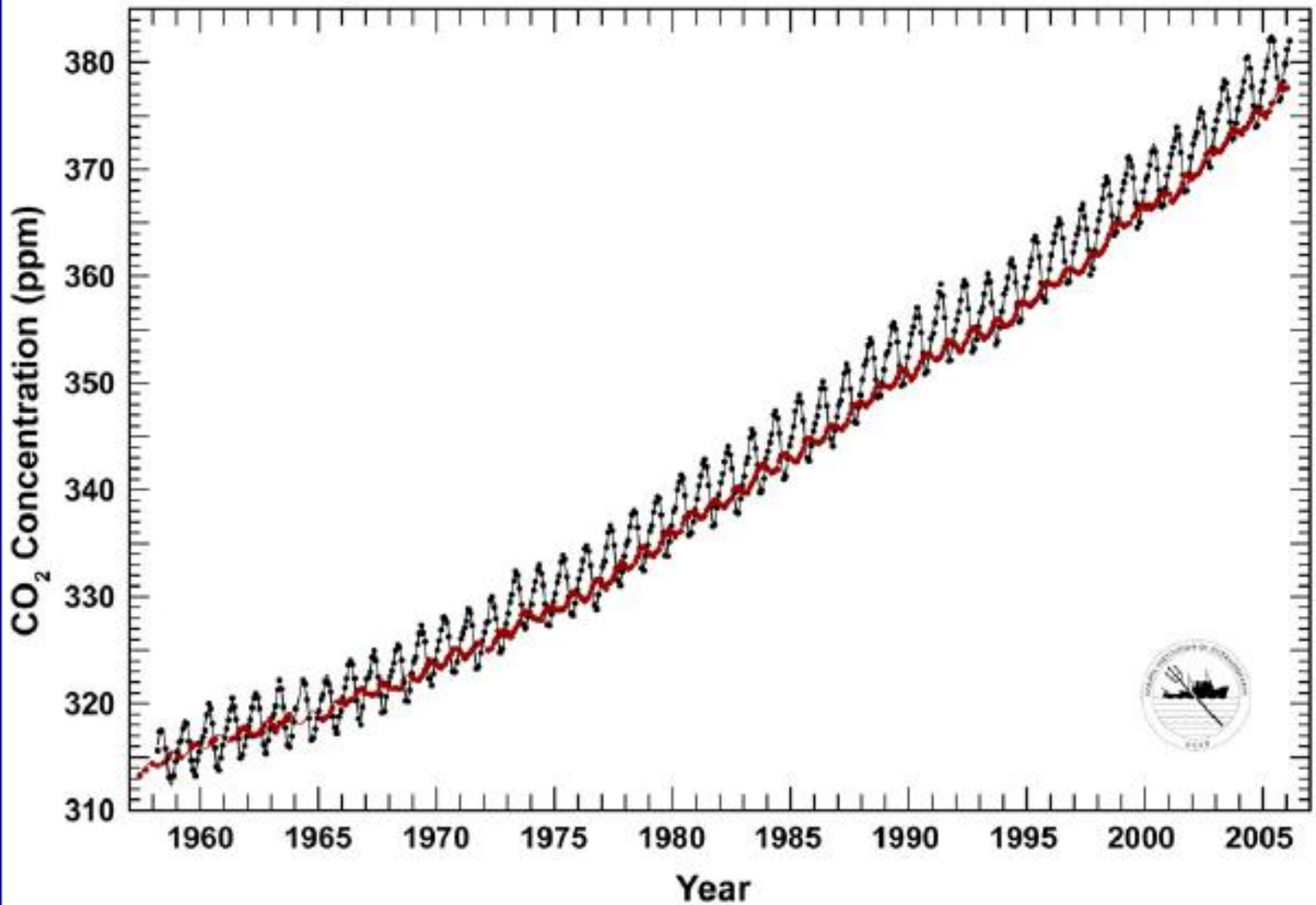
Portland, OR

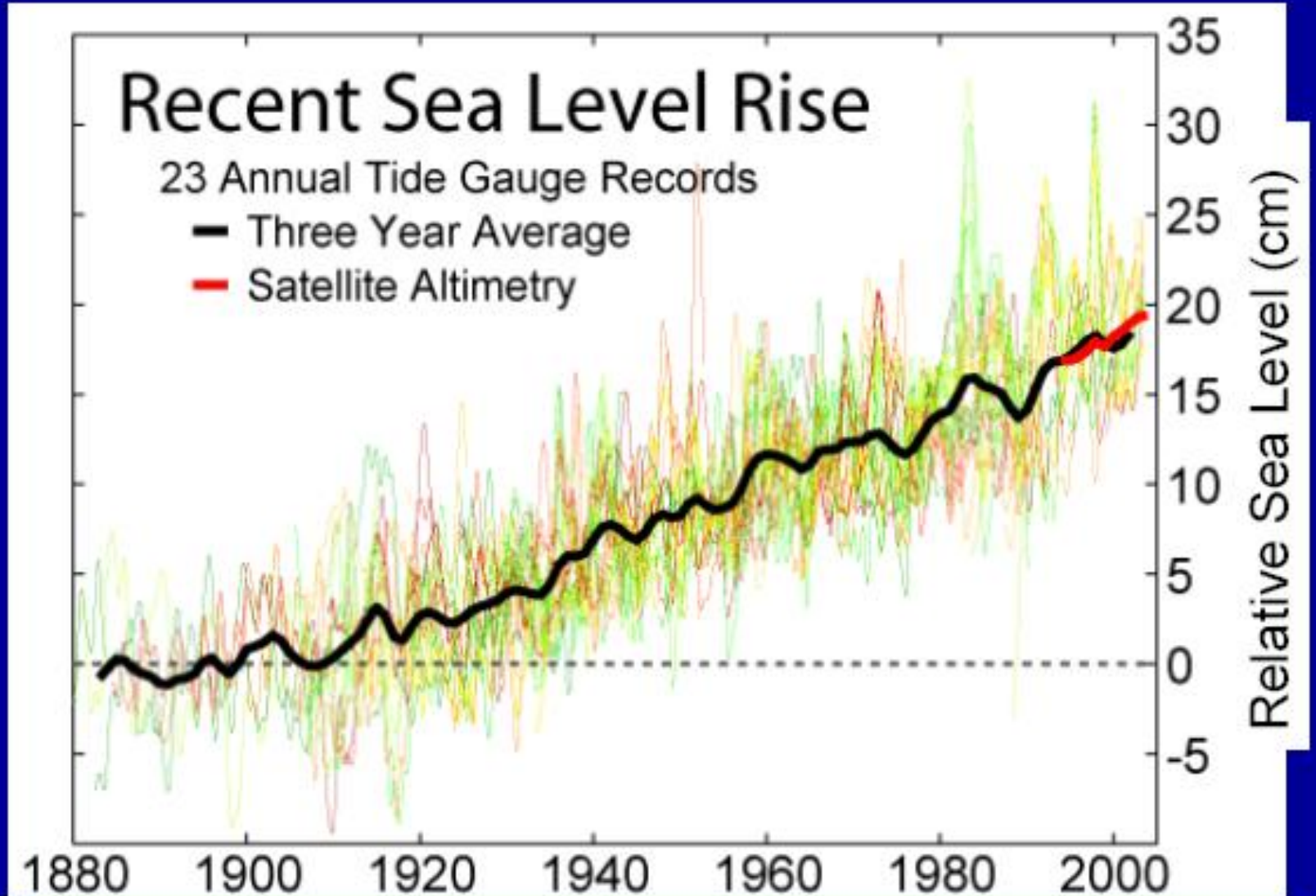
Kevin Kampschroer

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

Data from Scripps CO<sub>2</sub> Program

Last updated February 2006



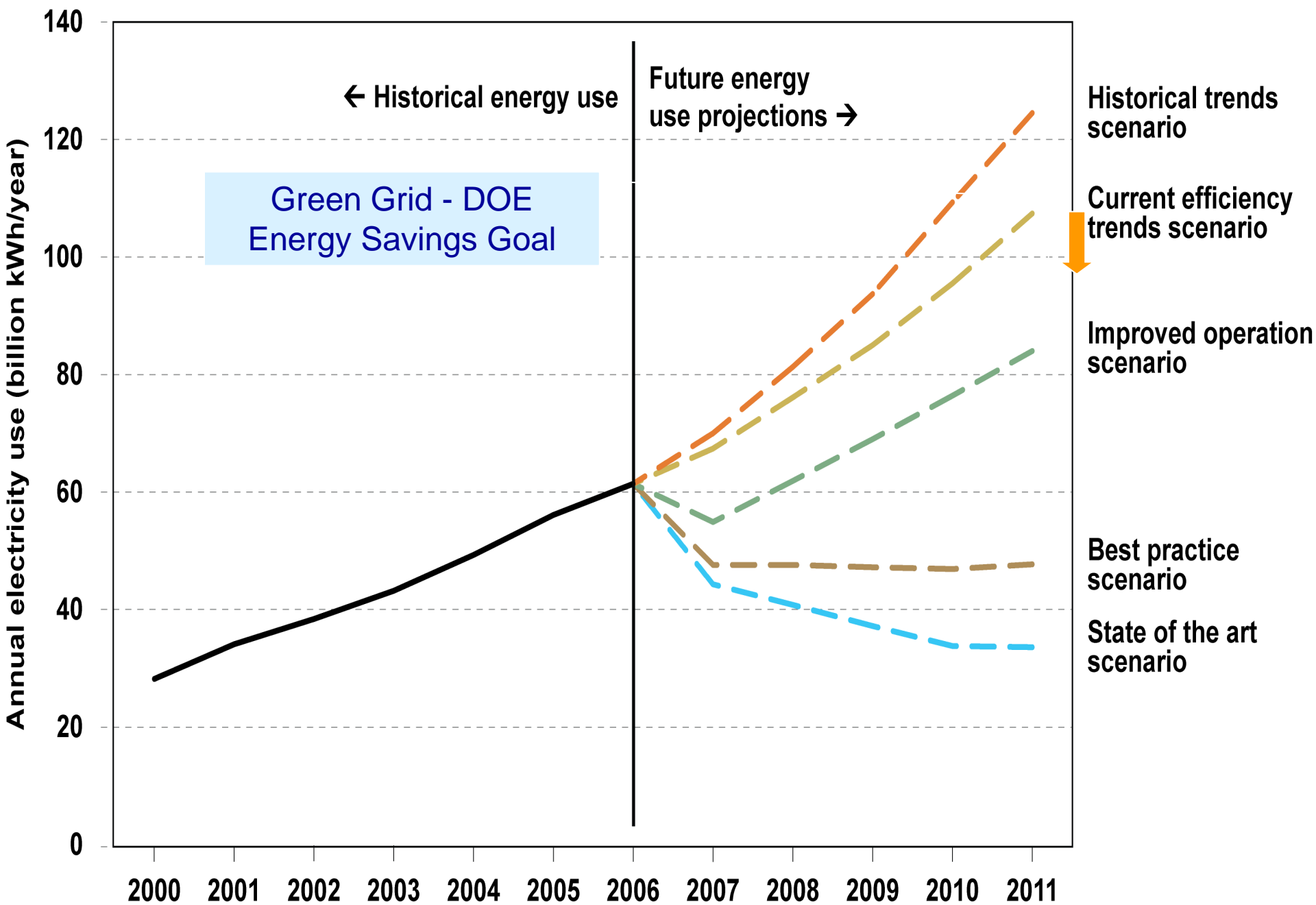


1882-2005 sea level rise based on Permanent Service for Mean Sea Level (PSMSL) tide gauge data from 23 sites selected by Douglas (1997)

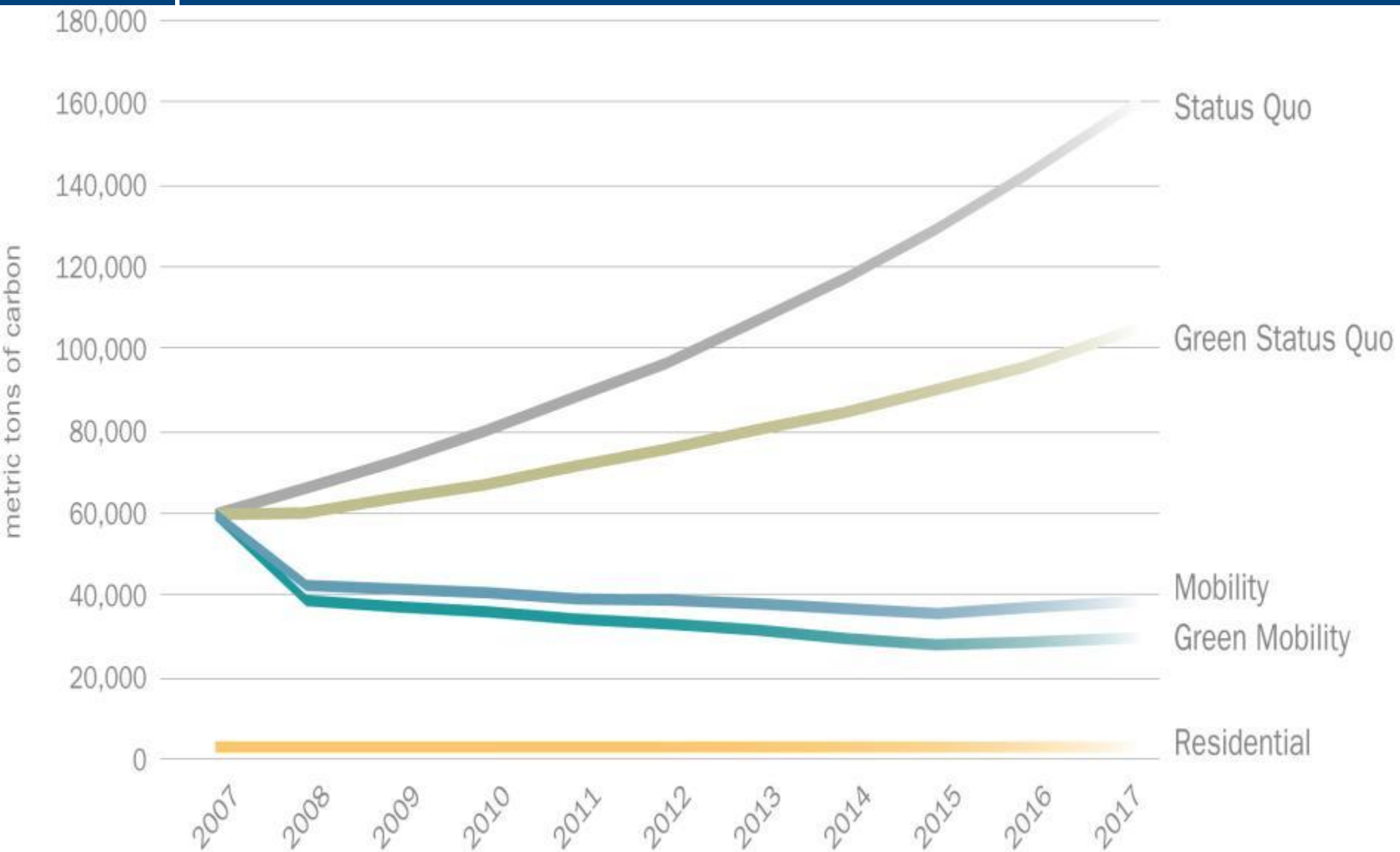
This figure was prepared by Robert A. Rohde

[http://www.globalwarmingart.com/wiki/Image:Recent\\_Sea\\_Level\\_Rise.png](http://www.globalwarmingart.com/wiki/Image:Recent_Sea_Level_Rise.png)

- 40% of Annual US Energy Use
- 30% of CO<sub>2</sub> Production
- 40% of Ozone Depletion
- 35% of Municipal Solid Waste
- 30% of Wood And Raw Materials Use
- 25% of Water Use
- 30%+ of Buildings Have Poor Indoor Air Quality
- & Most People Spend About 90% Of Their Time Indoors

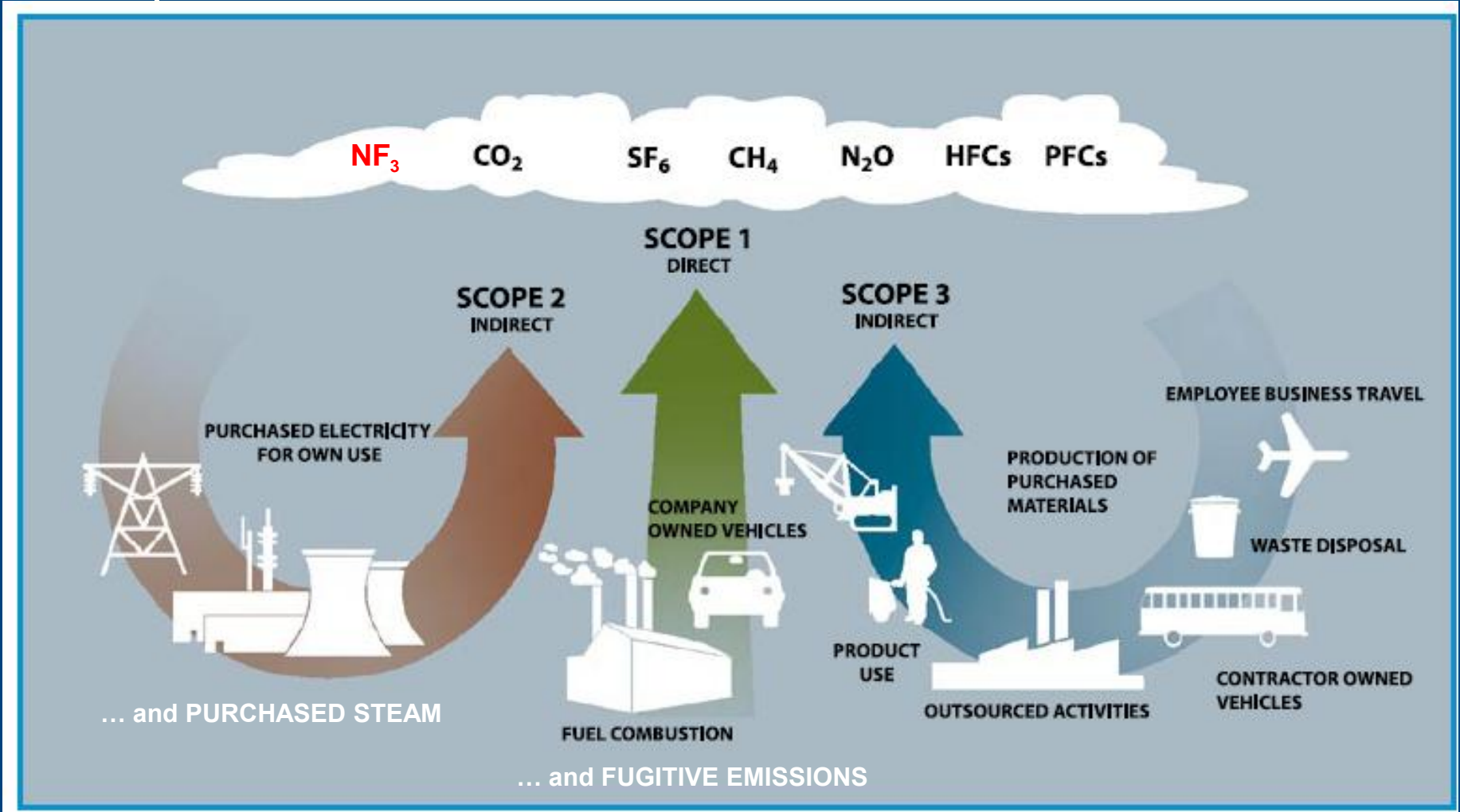


# Holistic Thinking—It's Not About the Building



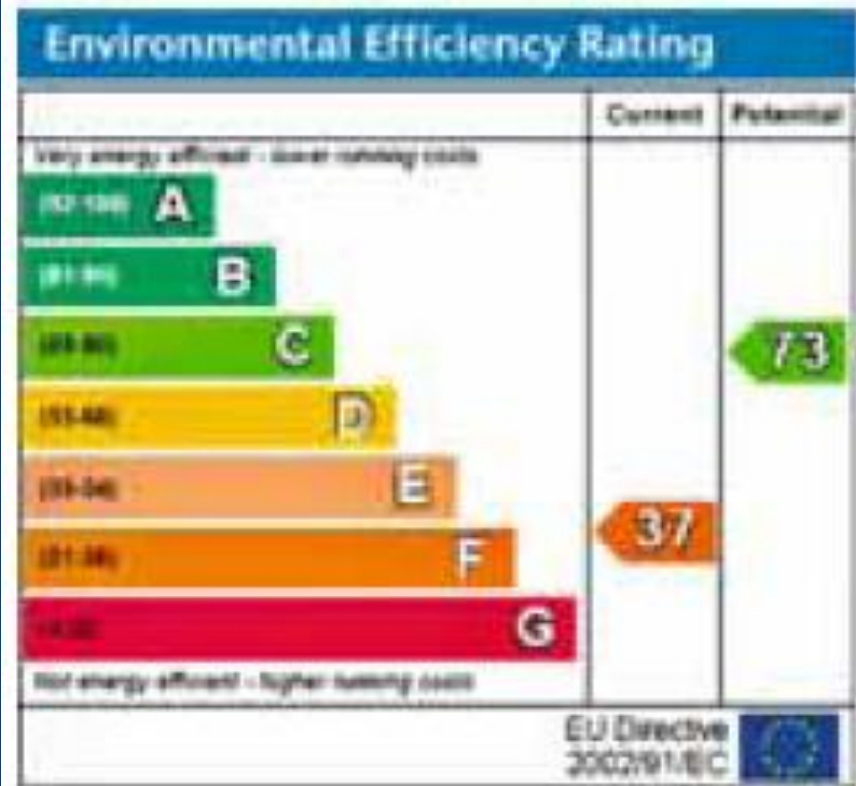
# Executive Order 13514: Environmental, Energy & Economic Performance

- Measure, Manage, And Reduce Greenhouse Gas Emissions Toward Agency-defined Targets
- Scopes 1 & 2 *And* Scope3 Targets
- 26% Water Reduction By 2020
- 50% Waste Diversion
- Net Zero By 2020
- Transit-oriented Design

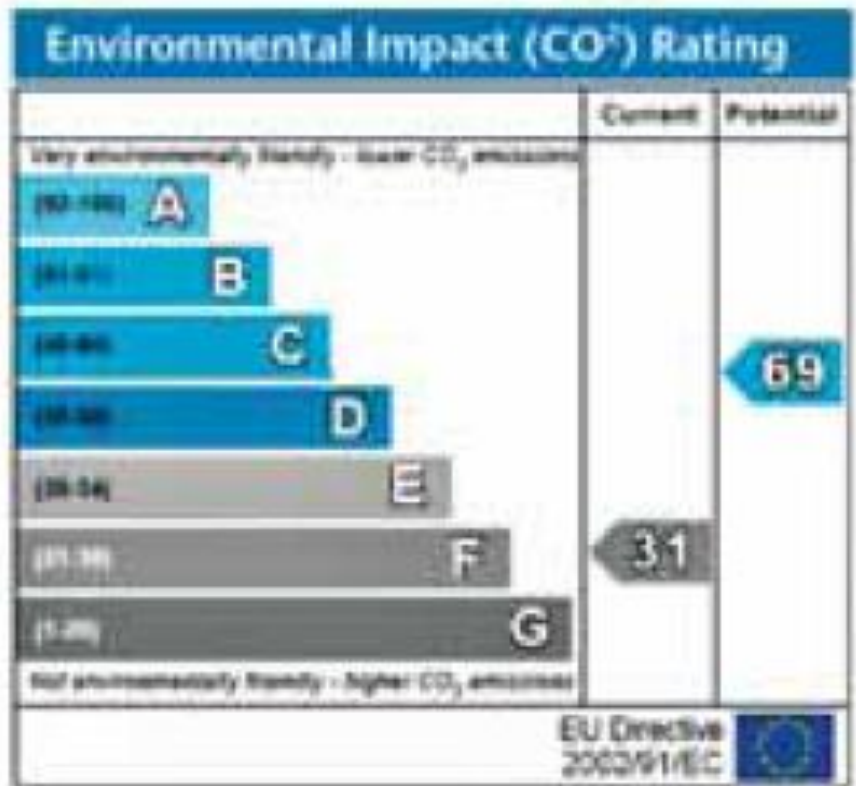


- Electricity and steam purchases
- Fuel use
- Fugitive emissions, as available (refrigerants, etc.)
- Scope 3 data
  - Employee travel
  - Commuter travel
  - Contractor emissions
  - Waste disposal
  - Supply Chain, etc

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



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 (CO<sub>2</sub>) emissions. The higher the rating the less impact it has on the environment.

# American Recovery & Reinvestment Act

- \$5.5 Billion
- \$4.5 Billion for Existing Buildings
- 261 Projects; 50 States, 2 Territories & DC
- Jobs
- High-Performance Green Buildings

## 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

## 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 Goal
- Future Funding Needed for Phase II



Washington, D.C.

*GSA Met EVERY Goal*

Total Obligations (Contract Awards)  
as of 9/21/10:

**\$5 BILLION**

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

***ALL Available on the Whole Building Design Guide***






- 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”

# POE: Industry Standard Metrics Collected, Normalized, and Analyzed

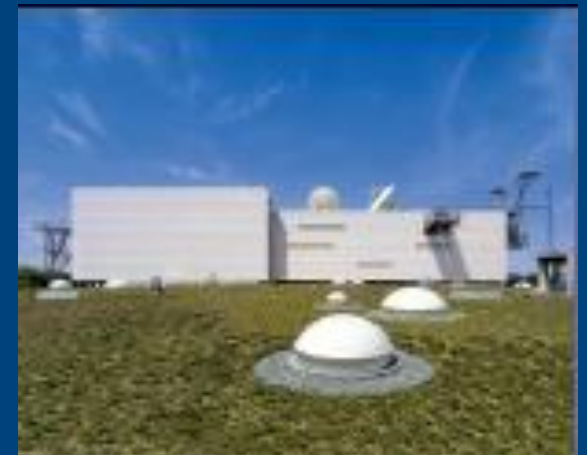
- Water
- Energy
- Maintenance & Operations
- Waste Generation & Recycling
- Occupant Satisfaction
- Occupant Commute



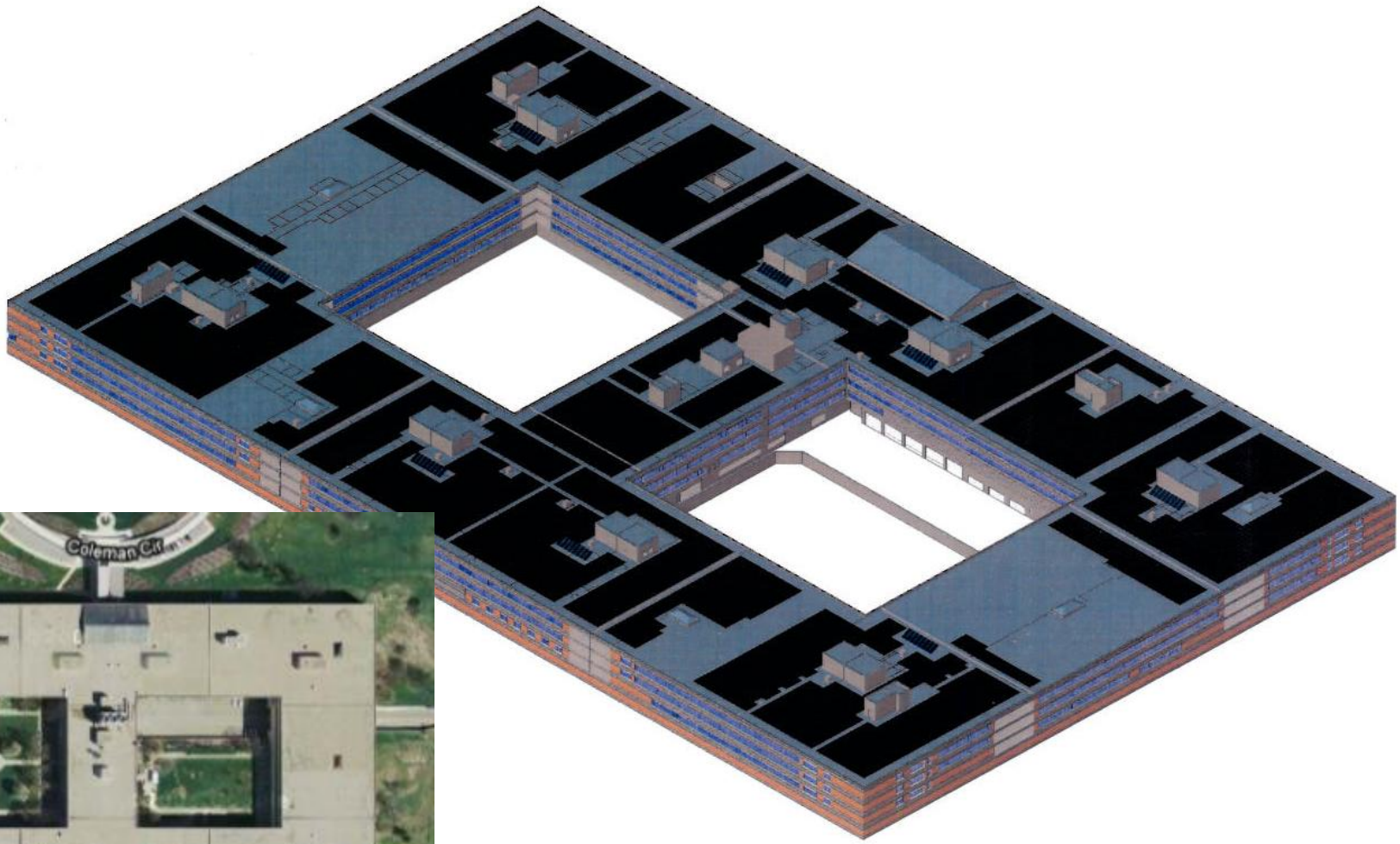
# Results: Green Buildings Perform Better & Cost Less

|   | Phase 2 | Phase 1 |
|---|---------|---------|
|  Domestic water use                     | - 11%   |         |
|  Energy use                             | - 25%   | - 26%   |
|  Operating costs                        | - 22%   | - 13%   |
|  General building satisfaction         | + 21%   | + 27%   |
|  CO <sub>2</sub> equivalent emissions | - 34%   | - 33%   |

- Geothermal
- Light
- Controls
- Envelope
- Wind
- Solar
- Roofs
- Natural Ventilation



# Emmett Bean—4 Solar Comparison



① ELECTRICAL ROOF ISOMETRIC VIEW  
Scale: N.T.S.

# What's Next?

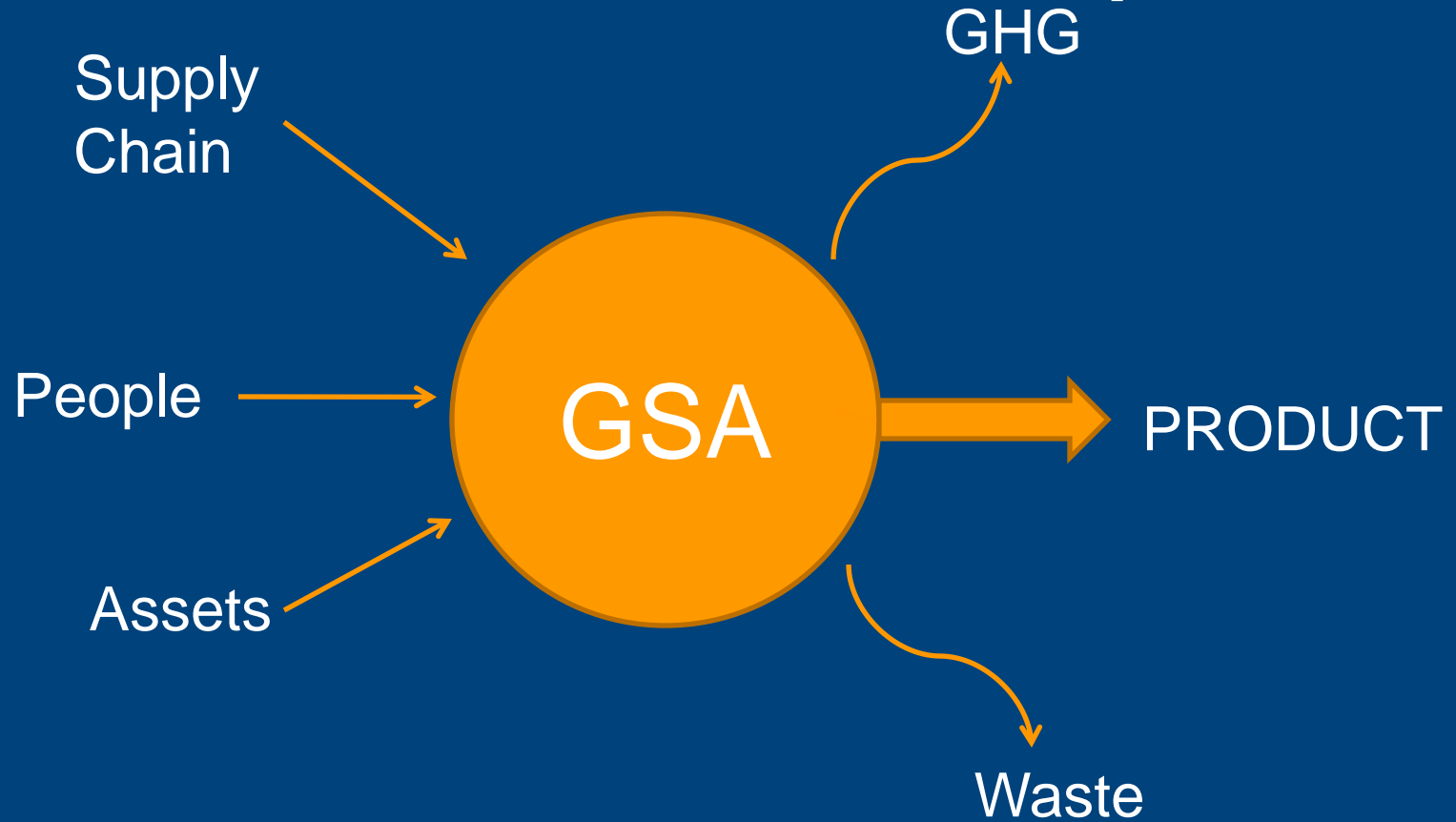
- Sustainable Facilities Tool
- How Will Energy Savings Performance Contracts Deliver Net Zero Retrofits?
- Levers for Change
- Simple Steps to Apply What We KNOW from Research Completed
- Integrated Project Delivery

# And More What's Next?

- Change in Procurement Practice
- Change in Budget Practice
- Change in Measurement
- Criteria for Selecting Vendors
- Performance Contracting by Team Negotiation
- Change in Fee Structures
- Integration with Buildings Operations, Not Just at the Hand-Off, but for Years

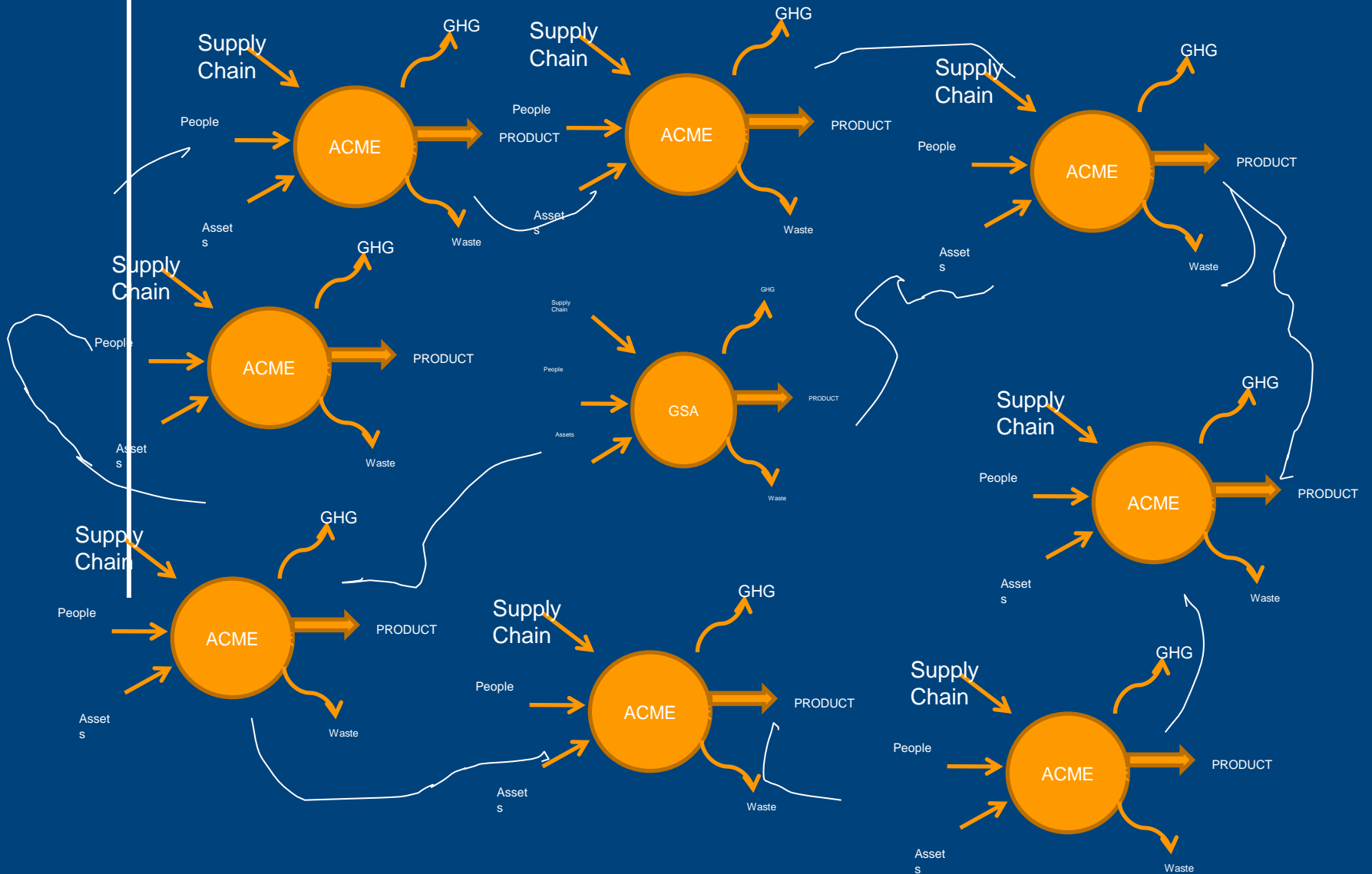
GSA

# An Over-Simplified Model: Zero Environmental Footprint



$$(\text{Product} - \text{Waste} - \text{GHG}) \geq (\text{Supply Chain} + \text{People} + \text{Assets})$$

# Inter-Related Webs



# Strategic Goal

Create a clean energy economy that will increase our Nation's prosperity, promote energy security, protect the interests of taxpayers, and safeguard the health of our environment.

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