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Think Green | Design Green | Build Green

LEED for Homes in Arizona

For

SWEEP Workshop on High-Performance Homes

Moderator: Mark D. Wilhelm – Principal, Green Ideas, Inc.

Presenter: Richard Zimmerman – Sonoran LEED for Homes, LLC

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Why is it important for Arizona builders and leaders to focus on climate change issues?

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U.S. buildings have a significant negative impact on the environment

- Collectively, > 76 million residential + 5 million commercial buildings in the U.S.:
 - Consume:
 - 70% of electricity
 - 39% of primary energy
 - 25% of all water supplies
 - 40% of all raw materials
 - Generate:
 - 35% of solid waste
 - 36% of CO₂ emissions
 - 46% of SO₂ emissions
 - 19% of NO_x emissions
 - 10% of fine particulate emissions



Sources: DOE, EPA, U.S. Geological Survey, Worldwatch Institute



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COMMERCIAL REAL ESTATE FINANCE
GOING GREEN
Environmental efficiency is actually the hottest trend in the industry. The challenge is creating demand among tenants.

Special Reprint Edition
USA TODAY
As seen in **Money** July 26, 2006

Building 'green' reaches a new level

Real Estate's Latest Movement

The New York Times
Editorial
The Green in A
Adobe has turned its headquarters green and is saving millions of dollars.

Build Green, Make Green

The New York Times
Education
The Greening of America's Campus
Building anymore. The sustainability movement shows how campuses are built, and how students live.

It's Easy Being Green

REAL ESTATE FINANCE

TIME
Hurricanes

USA TODAY
Special Report Global Warming

Money
Special Report Global Warming

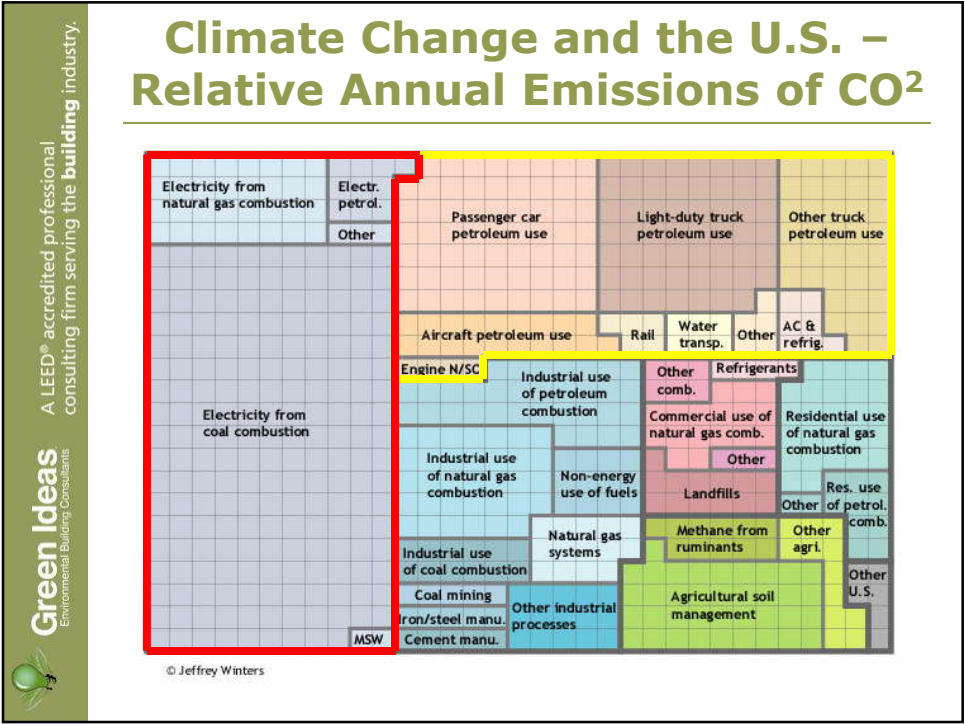
National Geographic
Global Warming

BusinessWeek
Global Warming

The Economist
The greening of America

The Economist
The oilholics

National Geographic
After Oil



EPRRI | ELECTRIC POWER RESEARCH INSTITUTE

Electricity Technology in a Carbon-Constrained Future

February 2007

Steven Specker
President and CEO

Context

- Growing scientific findings and public opinion that GHG emissions are contributing to climate change...
- Priority of 110th Congress ...
- U.S. responsible for 1/4 of worldwide CO₂ emissions...
- Electric utilities responsible for 1/3 of U.S. CO₂ emissions...
- Agreement that technology solutions are needed...



...But What is Feasible???

Key Technology Challenges

The U.S. electricity sector will need **ALL** of the following technology advancements to significantly reduce CO₂ emissions over the coming decades:

1. Smart grids and communications infrastructures to enable end-use efficiency and demand response, distributed generation, and PHEVs.
2. A grid infrastructure with 20-30% intermittent renewable energy capacity.
3. Significant expansion of nuclear energy, supported by continued safe and economic operation of existing nuclear fleet, and a viable strategy for managing spent fuel.
4. Commercial-scale coal-based generation units operating with 90+% CO₂ capture and storage in a variety of geologies.

What is missing?

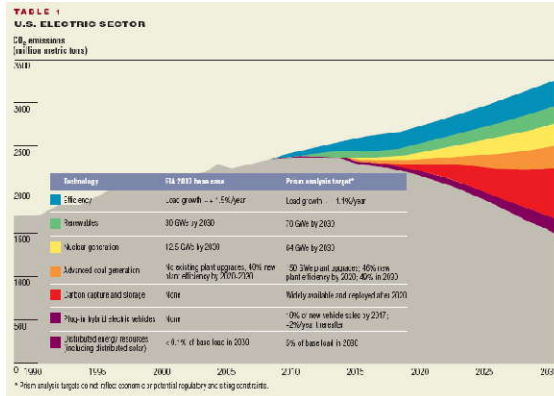
Conservation and Demand-Side Management Programs

and a Commitment to

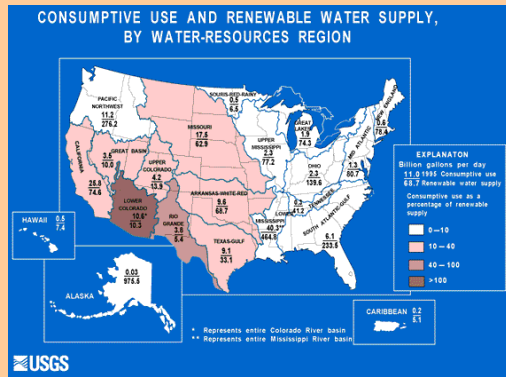
Develop Renewable Energy

Resources

Curbing CO² emissions in the U.S. Electric Sector is a serious challenge for us all...



In the Lower Colorado Water Resource Region, Our Rate of Water Consumption Exceeds our Supply



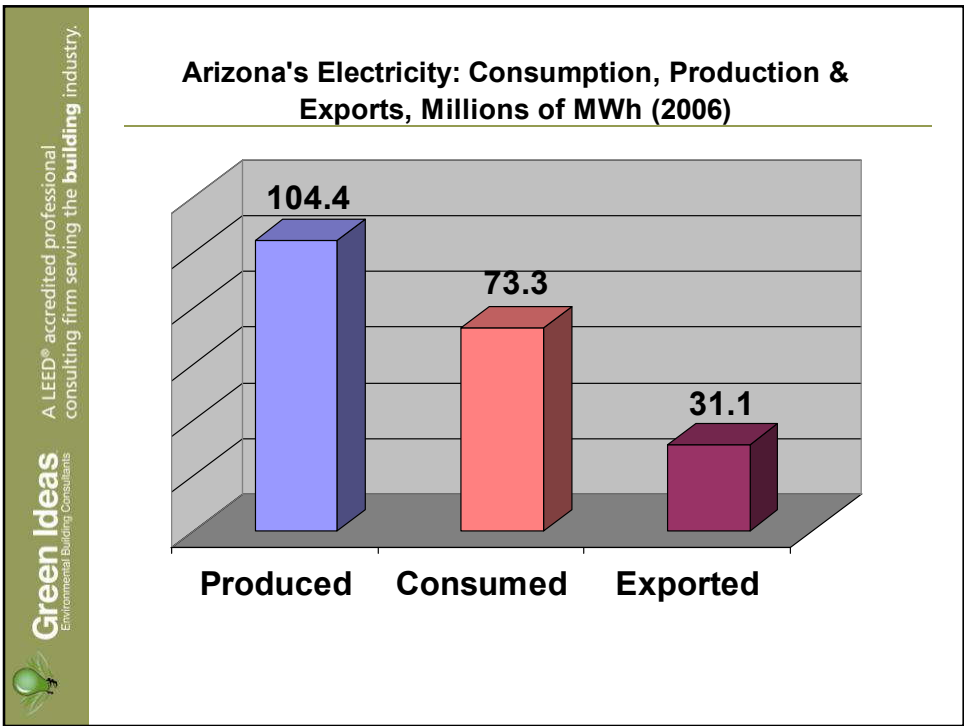
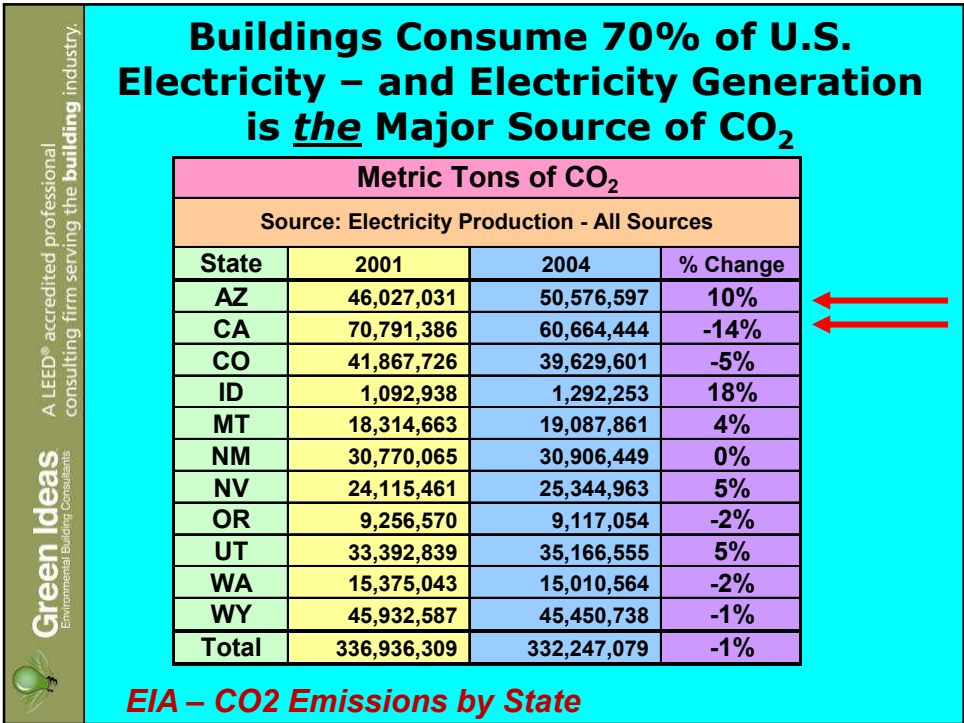
What this says about the Lower Colorado Water-Resource Region:

10.6 BG/D Consumptive Use
 10.3 BG/D Renewable Supply

0.3 BG / Day Deficit

Source: U.S. Geological Survey – 1995 data

http://pick18.pick.uga.edu/mp/20q?go=http://water.usgs.gov/watuse/misc/consume_renewable.html



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California Leadership is Changing the Game in Arizona

- During the last two years, California has taken several important climate policy actions:
 - Executive Order S-3-05
 - Sets targets to limit future GHG emissions
 - AB 32 (aka the “California Global Warming Solutions Act of 2006”)
 - Enforceable interim emissions limits starting in 2012
 - SB 1368
 - Sets interim performance standard for power plant GHG emissions
 - Affects all power plants serving California – either inside or outside the State
 - Executive Order S-20-06
 - Directs Cal/EPA to develop an emission trading system as part of the implementation of AB 32

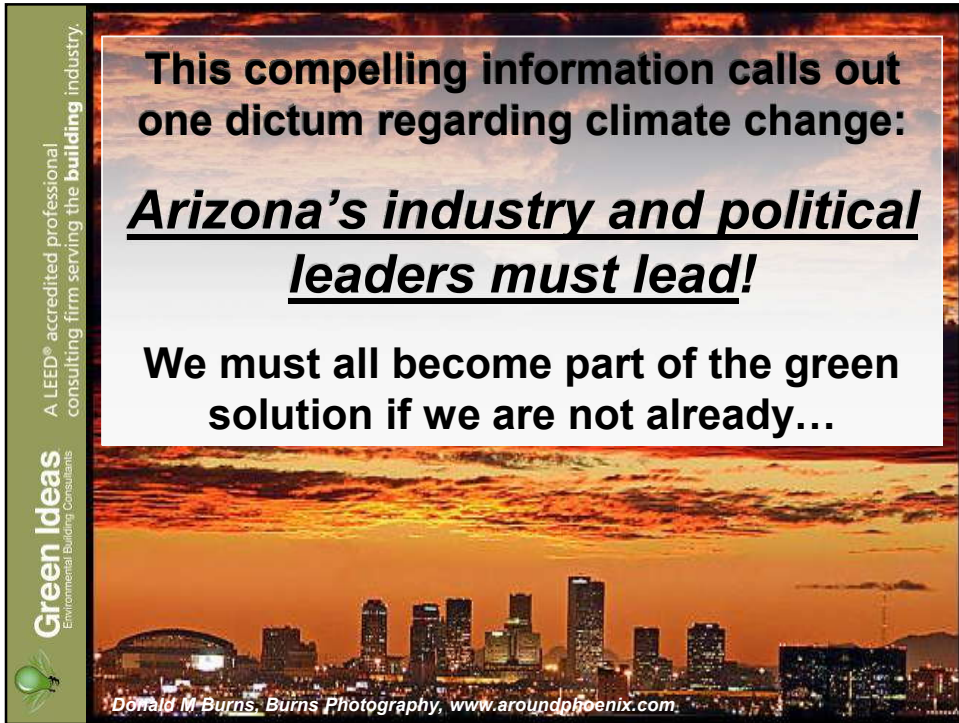
These actions form the legal framework for California’s climate policy; the implications will be felt in Arizona...

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Change is Underway: State Government and the Western Climate Initiative

- Established in February 2007 by the governors of CA, AZ, WA, NM, and OR
 - Regional emissions target: reduce GHG emissions by 15% from 2005 levels by 2020
 - Establish market-based system by August 2008
 - Will probably be a cap-and-trade program covering multiple economic sectors
- CO, KS, NV, WY, MT, UT, British Columbia and Manitoba have also joined the WRCIA



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This compelling information calls out one dictum regarding climate change:

Arizona's industry and political leaders must lead!

We must all become part of the green solution if we are not already...

Donald M. Burns, Burns Photography, www.aroundphoenix.com



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LEED ADOPTIONS

- 12 Countries**
- 12 Federal Agencies**
- 28 States**
- 120 Cities, Towns & Counties**
- 48 Schools & Higher Learning Institutions**

LEED Requirements for Private Buildings: Existing or Pending

- Boston, MA
- Chicago, IL
- Portland, OR
- San Francisco, CA
- Seattle, WA
- Washington, D.C.
- Long Beach, CA
- Pasadena, CA
- Babylon, NY
- Calabassas, CA
- Montgomery County, MD
- Normal, IL
- Los Angeles, CA



News from April 2008

- **Los Angeles Approves an Aggressive Green Building Ordinance**
 - All new large building projects in the City of Angels will have to meet rigorous green building standards, thanks to a new law signed on Earth Day. The [new law](#) is touted as the [most aggressive green building ordinance](#) of any big city in the United States, requiring LEED Certified for all projects at or > 50 kSF.
- **Maryland Approves Wide-Ranging Clean Energy Bills**
 - Maryland now [requires](#) utilities to draw on [renewable energy](#) for 20% of their electricity supply by 2022. The state will also be requiring utilities to establish [energy efficiency programs](#), with the goal of a 15% reduction in per capita electricity use and peak demand by the end of 2015.

Source: <http://www.eere.energy.gov/states/news.cfm>

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News from April 2008

- **Governor of Colorado Announces Climate Change Measures on Earth Day**
 - Colorado Governor Bill Ritter kicked off Earth Day 2008 by issuing [three climate-change executive orders](#), announcing a new residential insulation rebate program, and introducing the first 13 Colorado participants in The Climate Registry.
- **New Jersey Unveils Draft Energy Master Plan**
 - The New Jersey governor has released an [updated draft Energy Master Plan](#) that describes a long-term energy strategy for the state and its energy needs through 2020. The plan will be subject to public hearings before being finalized.

Source: <http://www.eere.energy.gov/states/news.cfm>

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News from April 2008

- **Oregon Governor Outlines Vision for Climate-Friendly Transportation Policies**
 - Governor Ted Kulongoski has announced his vision for how Oregon can incorporate [policies](#) that [reduce greenhouse gas emissions](#) into the state's transportation plan. His plan includes alternative fuels and alternative vehicles.
- **California Utility Inks Deal for Nearly 1,500 Solar Homes**
 - An [agreement](#) between the Sacramento Municipal Utility District and homebuilder Woodside Homes will lead to [1,487 new energy-efficient solar homes](#) near Rancho Cordova, about 10 miles east of Sacramento, California. Another homebuilder is also launching new green homes in San Jose.

Source: <http://www.eere.energy.gov/states/news.cfm>

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Greenbuild International Green Building Expo:

- ❖ *Denver 2006 – 13,000 attendees, 700 booths*
- ❖ *Chicago 2007 – 22,000+ attendees, 850 booths*
- ❖ *Boston 2008 – expect 30,000 attendees and 1,400 booths*
- ❖ ***Phoenix 2009 – expect over 35,000 and 1,400 booths***

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There are many incentives to build energy efficient and green...

‘Set your company free from the burdens of business tax’

Source: www.dsireusa.org

- There are **37 tax incentives** available in 18 U.S. States for **energy efficient buildings**, in addition to several federal incentives
- There are **132 State incentives** – and one Federal incentive – **available for renewable energy**

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There are creative planning and development incentives for green building...

- Density bonuses
- Expedited permitting
- Fee reductions/waivers
- Tax breaks and credits
- Grants
- Free green building consultation
- Promotional services
- Financial incentives
- Low interest loans



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So what can you do?

Ensure that homes in Arizona are built to meet a recognized, independently verified, green building standard that actually makes a difference...

consider the LEED for Homes green building rating system

