



Climate Change Electric Utility Actions

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WRAP Board Meeting

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Overview



- Introduction
- Climate Change Debate
 - National, Regional/States
 - Individual Companies
- APS Position on Climate Change
- APS Climate-Related Actions
 - Current/proposed ACC EPS Requirements
 - Past and ongoing APS Climate-related Projects

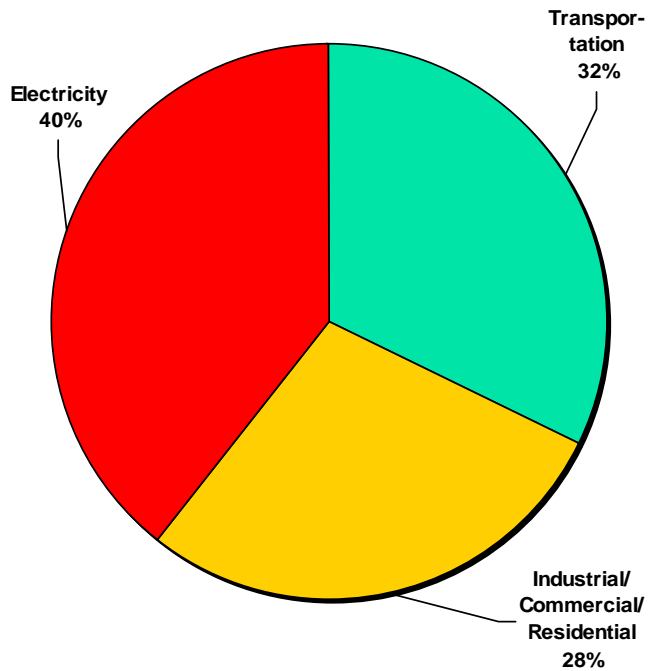
Introduction



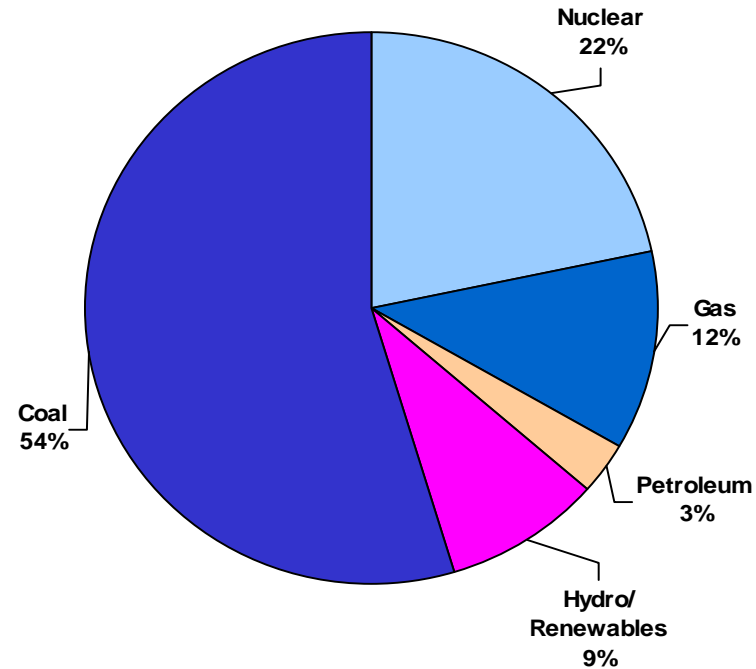
- United Nations Framework Convention on Climate Change (UNFCCC)
- United States Withdrawal from the Kyoto Protocol
- Kyoto Protocol in force since Feb 2005
- Bush Climate Change Policy (2002): Voluntary Carbon Intensity Reduction of 18% by 2012
 - Climate Vision (DOE), Climate Leaders (EPA), etc.

CO₂ and Electricity Generation

CO₂ Emissions by Sector (%)



Electricity Generation by Fuels (%)



Source: 2003 Data, DOE/EIA, Annual Energy Outlook, 2005



National Climate Debate

- Industry-Wide Applicability
 - McCain/Lieberman Bill
 - Stevens, Byrd, Hagel, etc. Proposals
- Utility-Sector only bills as part of “multi-pollutant” legislation
 - Carper Bill
 - Jeffords Bill

Regional/State Initiatives



- West Coast Governors' Global Warming Initiative
- Regional Greenhouse Gas Initiative (REGI) – 9 NE States
- Renewable Portfolio Standards (RPS) in 18 States
- WGA Initiative to add 30,000 MW by 2015
- California Auto Emissions Rule



Corporate Level Activities

- Institutional investors press for climate change risk disclosures
 - American Electric Power
 - Texas Utilities
 - Cinergy
 - Southern
- CERES calls for 50 largest electric utilities to report on their climate change risks



Corporate Announcements

- Cinergy's 2004 Annual Report devoted entirely to Global Warming
- Duke Energy's Anderson called for "carbon tax"
- CEO John Rowe, "At Exelon, we accept that the science of global warming is overwhelming," and committed to reduce carbon emissions by 8% by 2008
- AEP, Entergy, Cinergy, and others set CO₂ emission reduction targets
- Florida Power & Light called for a mandatory carbon reduction program



APS Position on Climate Change

- APS recognizes climate change as a real issue that needs to be addressed
- Human activities are certainly contributing to this phenomenon, even if it is unclear to what extent
- If there is going to be a mandatory carbon management program, it should be based on flexible market-based approaches and economic incentives



APS Policy on Climate Change

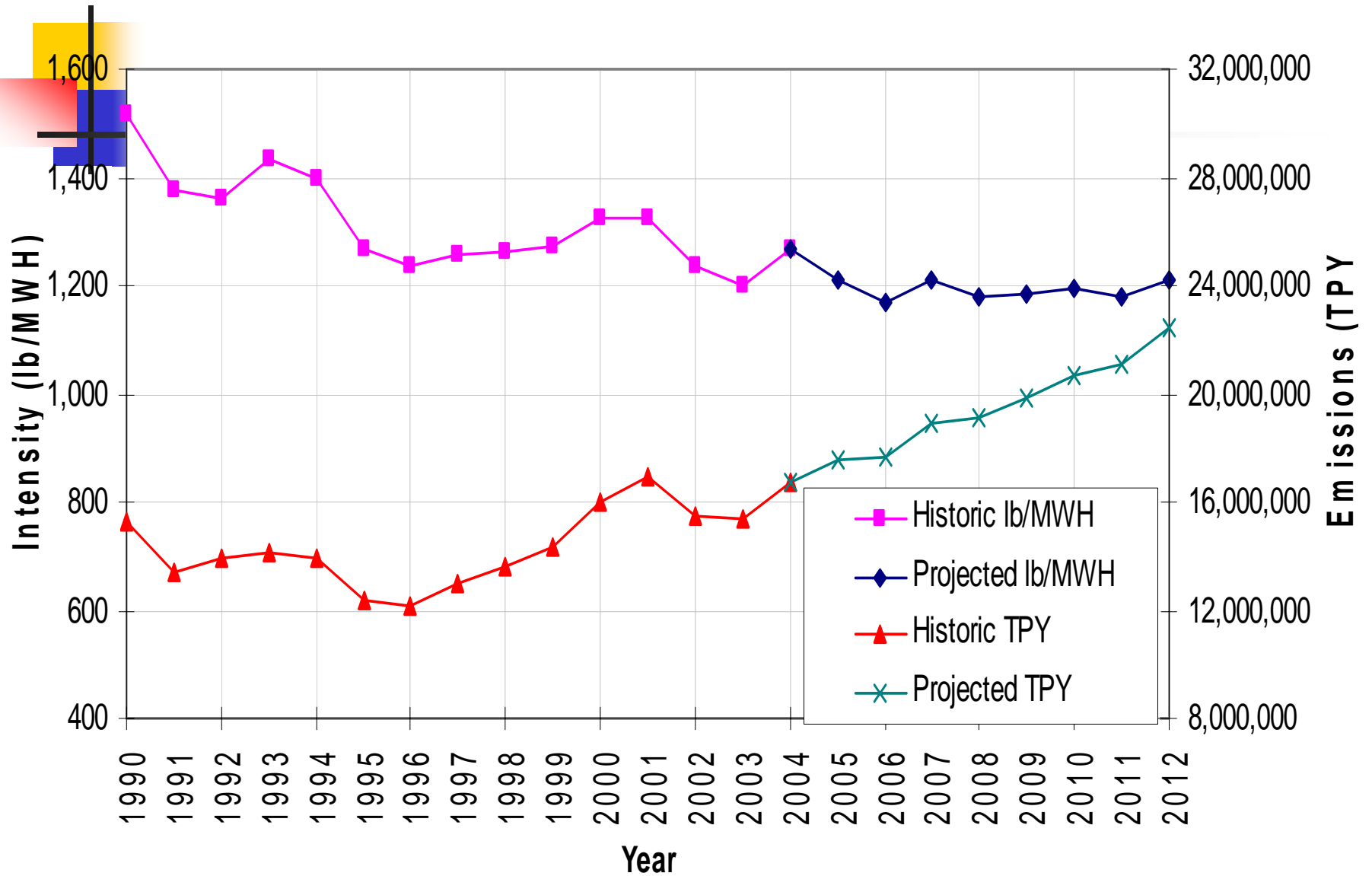
- Climate change is a long-term issue and needs a long-term response strategy to minimize economic impacts
- Legislative/regulatory requirements to address climate change should apply to all sectors, not just the electric utilities
- Legislation/regulation must recognize the rapid population and economic growth in Arizona, and should provide “adequate allowances” to meet the region’s demand in electricity growth
- Credit should be given to those who have made early emission reductions – do not punish good deeds



1995 Climate Challenge Accord

- In 1995, APS signed an accord with the US Department of Energy, committing to keep CO₂ emissions at or below its 1990 level through 2000
- APS met that commitment
 - First US Carbon Trade
 - Mexico Renewable Energy Project

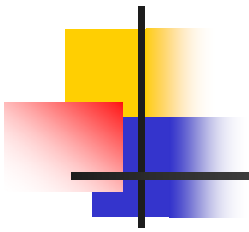
Historic/Projected CO₂ Emissions





What is APS Doing Now?

- Palo Verde Nuclear Plant capacity up-rates
- Renewable Energy Projects
- PowerTree Company Participation
- SF₆ Partnership with EPA
- Hydrogen and APS Fleet



Palo Verde Nuclear Generating Station

- Generation capacity up-rating: Plant-wide Total 210 MW (70 MW/Unit by 2007)
 - Steam generator replacements: 55 MW/Unit
 - Low Pressure Turbine Rotors: 15 MW/Unit
- Incremental Avoided CO₂ emissions
 - Plant-wide estimate: 1.71 million tons/year
 - APS Share: ~ 0.5 million tons/year



Renewable Energy Projects

- **Completed**

- STAR and Other Solar Plants – 3 MW
- Solar – Prescott 2 MW
- Biomass – Eager 3 MW

- **In-Progress**

- Solar – Prescott 5 MW
- Solar – Saguaro Trough Plant 1 MW
- Biomass – Snowflake 3 MW
- Biogas - 91st Ave WWTP 15 MW
- Wind – Flagstaff 60 MW PPA
- Wind – Kingman 15 MW PPA

- **Under Consideration**

- Concentrated Animal Feeding Operation – Pinal County 20 MW
- Geothermal – Clifton 20 MW

APS/CFE Hybrid Plant in San Juanico, Baja California Sur, Mexico











APS

ARIZONA DEPARTMENT OF COMMERCE
Clear Jobs • Add Value

Pilot

HYDROGEN PARK

US Hydrogen
&
Fuel Cell Program



<small>CHG</small> 142⁹	<small>Unleaded</small> 236⁹
<small>CHG 10%</small> 152⁹	<small>Premium</small> 260⁹
<small>Hydrogen</small> 225⁹	<small>Electric</small> 253⁹





150W

150W



2005 Rate Case Agreement

- 100 MW RFP in 2005
- Pursue 10% of annual incremental peak capacity from renewable energy
- Out-of-state agreements require Arizona Corporation Commission approval

Arizona Environmental Portfolio Standard



■ **Current**

- 1.1% by 2007 continuing through 2012
- Includes 60% solar set-aside and in-state requirement
- APS annual funding ~ \$13.5 M

■ **Proposed Revision**

- 5% by 2015 and 15% by 2025
 - 20% solar requirement
 - 40% power purchase agreements
 - 25% distributed renewable energy
- APS annual funding ~ \$49 M