

# Arizona Electric Utility Perspective on GHG Mitigation and the Role of CCS

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- About SRP
- Current SRP generation profile
- H.R. 2454 Climate legislation impact to SRP
- Opportunities to narrow the gap
  - Short term
  - Long term
- Challenges



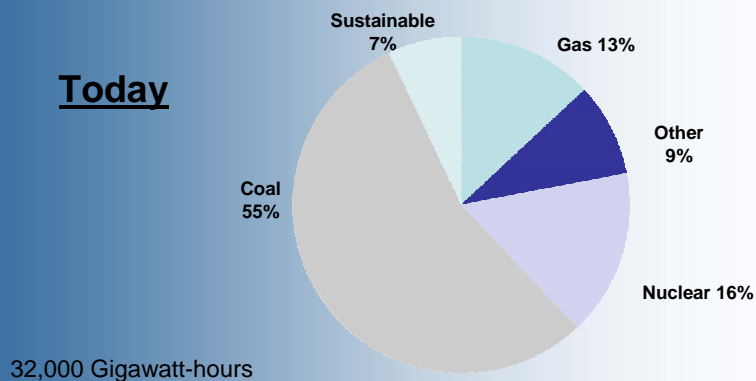
## About SRP

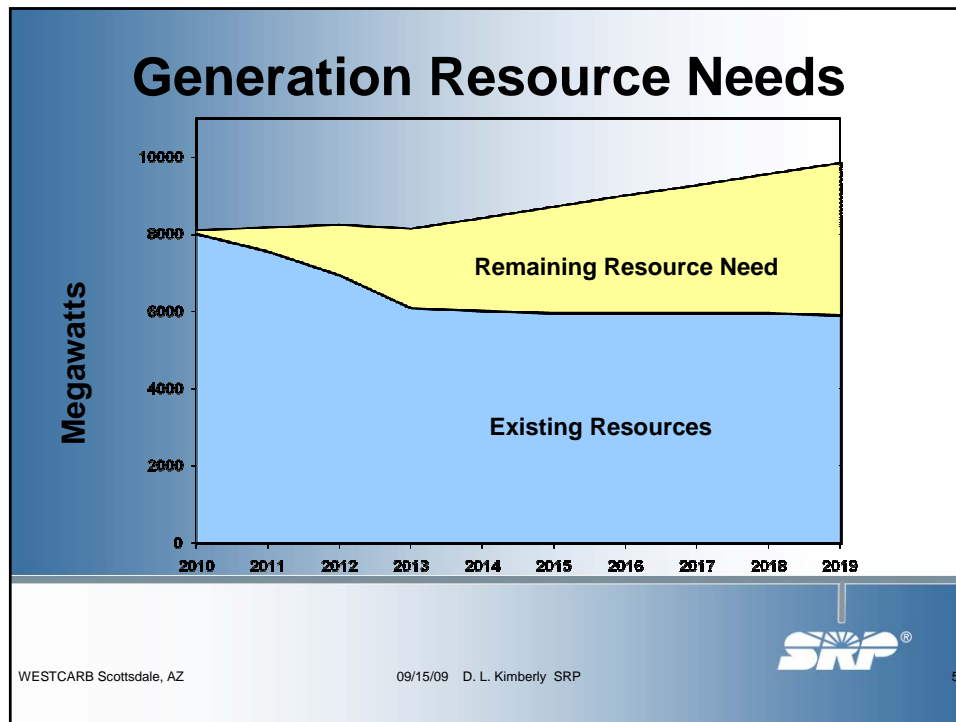


- One of the largest public power utilities in the nation
- Over 920,000 electric customers
- 13,000 square mile watershed
  - Largest water supplier in the Phoenix metro area
- 2009 Retail peak – 6,438 MW

## Salt River Project Energy Mix


Today





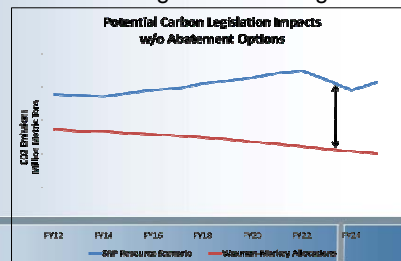
### Planned Additional Resources

<b>Energy Efficiency Demand Response</b>	<ul style="list-style-type: none"> <li>Increasing existing programs</li> <li>Allow customers to manage use</li> <li>Initial target at 3-4% of retail sales and about 100 megawatts</li> <li>Adjust programs with more experience</li> </ul>
<b>Renewables</b>	<ul style="list-style-type: none"> <li>Add about 520 megawatts (nameplate) of new wind, geothermal, solar, and distributed generation resources by 2018</li> <li>160 megawatts of solar online in 2013</li> </ul>
<b>Natural Gas</b>	<ul style="list-style-type: none"> <li>900 megawatts power purchase by 2015</li> <li>New 820 megawatt plant by 2018</li> <li>Provides system support, flexibility, and firm resource to back intermittent sources</li> </ul>
<b>Nuclear Baseload</b>	<ul style="list-style-type: none"> <li>Evaluate as a potential option after 2020</li> </ul>
<b>Replacement Baseload</b>	<ul style="list-style-type: none"> <li><b>Springerville 4 by end of 2009</b></li> </ul>

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## SRP Position on Cap and Trade

- Set realistic reduction targets and timetables
- Economy wide application of legislation
- Federal preemption of state and regional programs
- Multi-year compliance periods
- Recognize the challenges of high growth states
- Transition the economy through allocation of allowance value
- Cost containment measures
  - Reserve allowance price
  - Emission offsets
  - Banking and borrowing



## Climate Legislation

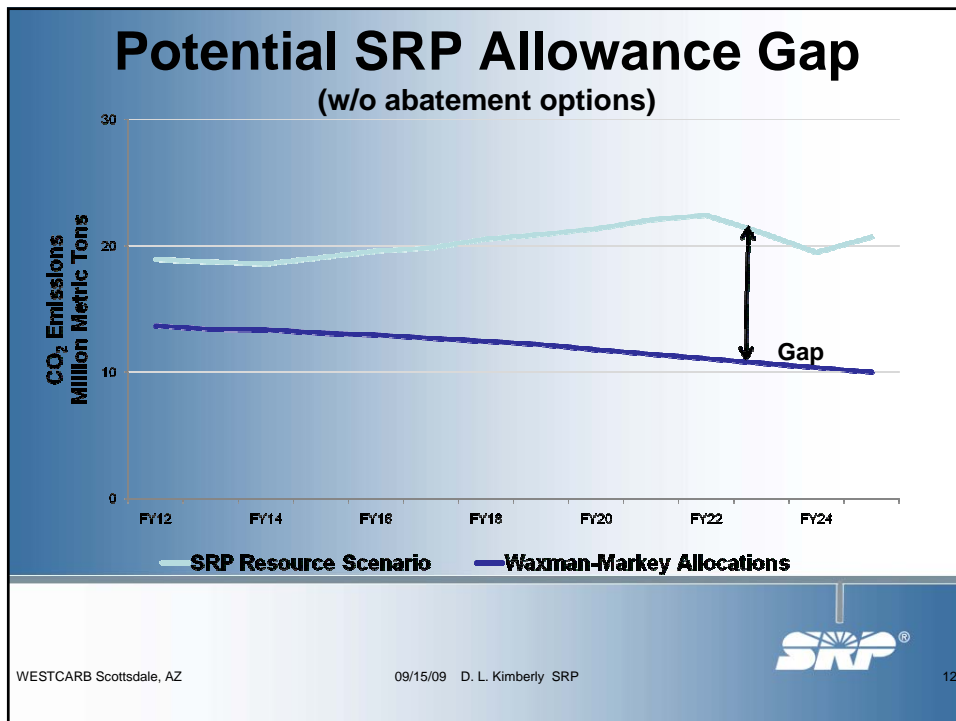
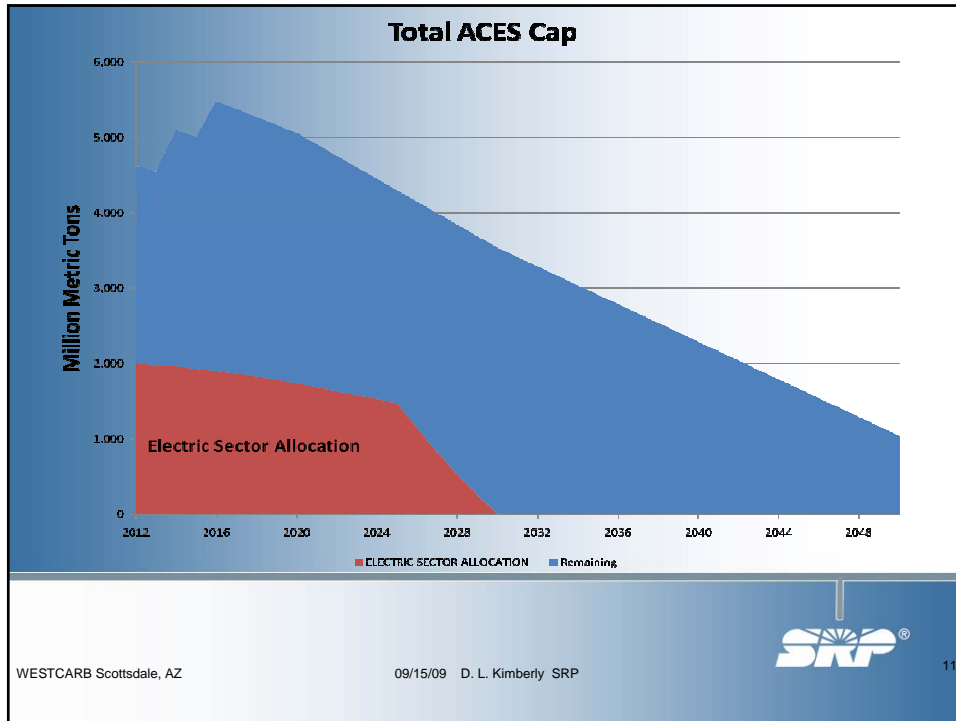
- H.R. 2454 American Clean Energy and Security Act (ACES)
  - Renewable Electricity Standard (RES)
    - 20% of retail sales from renewable and EE by 2020
  - Cap-and-Trade Program
    - Declining cap
    - Early utility Allocation
  - Energy Efficiency Standard
    - Buildings, appliances and industry

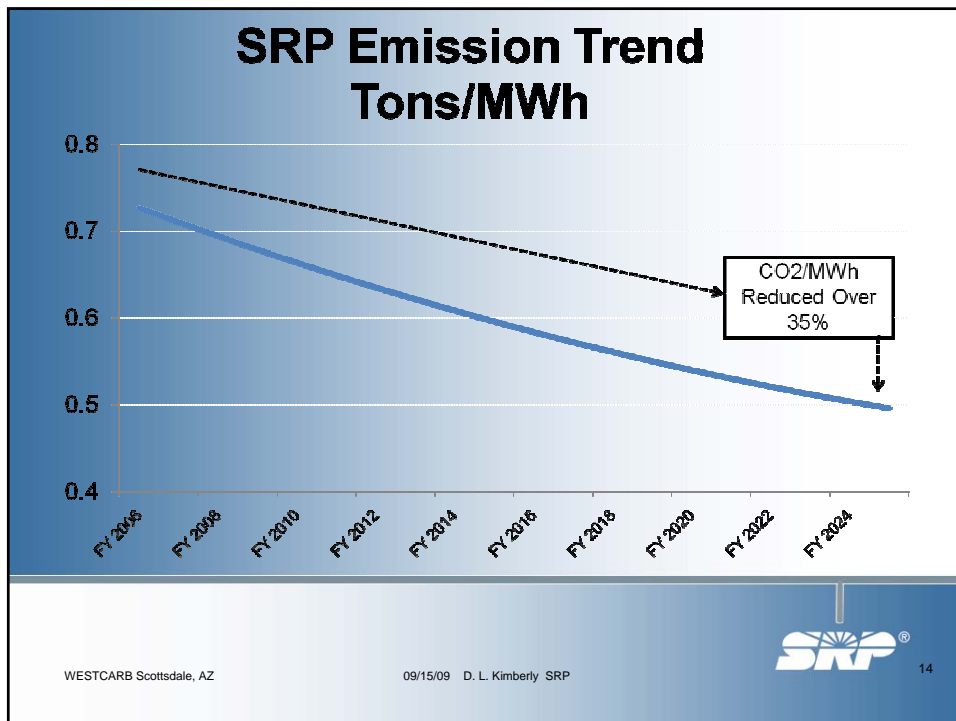
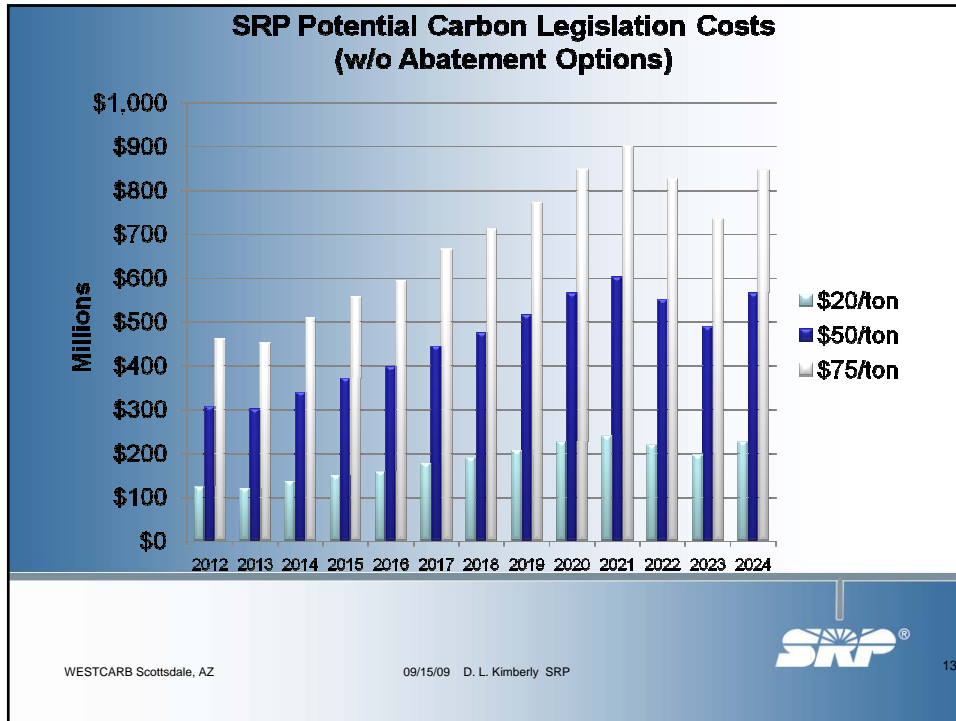
## Global Warming Provisions ACES Cap-and-Trade Program

- Covers 85 % of the overall economy, including electricity producers, oil refineries, natural gas suppliers, and energy-intensive industries like iron, steel, cement, and paper manufacturers.
- Emission cuts would start in 2012
- The goals for U.S. emission reductions, below 2005 levels:
  - 3 percent by 2012
  - 17 percent by 2020
  - 42 percent by 2030
  - more than 80 percent by 2050

## ACES Cap-and-Trade Program

- Cap-and-Trade Program
  - Cap emissions from large sources
  - Portion of free allowances allocated until 2030
  - Cost Containment Provisions
    - Borrowing
    - Banking
    - Strategic Reserve
- Offset Program
  - Up to 2 Billions tons of offsets allowed annually
  - Domestic agriculture and forestry offsets regulated by Dept. of Ag





## Compliance Options

- Reduce emissions
  - Fuel switching
  - Increased renewable energy supply
  - Increased energy efficiency
  - Nuclear
  - Carbon capture
- Purchase allowances
- Borrow allowances
- Purchase offsets



## Potential GHG Emissions Reductions

- On-System
    - Environmental Dispatch\*
    - Renewables\*
    - Generation Efficiency
    - New Generation\*/Fuel Switching
    - Biomass Co-Firing
    - Capture and disposal
  - Off-System
    - Demand-side management
    - Market purchases\*
    - Offsets (Terrestrial sequestration, clean projects)
- \* Options considered in SRP study



## SRP's Challenges

- Increasing regional energy demand
- Anticipated population growth in service area of Maricopa and Pinal Counties
- Energy use per household growing
  - Larger homes
  - More electrical appliances
- Resource mix dependent on fossil fuels

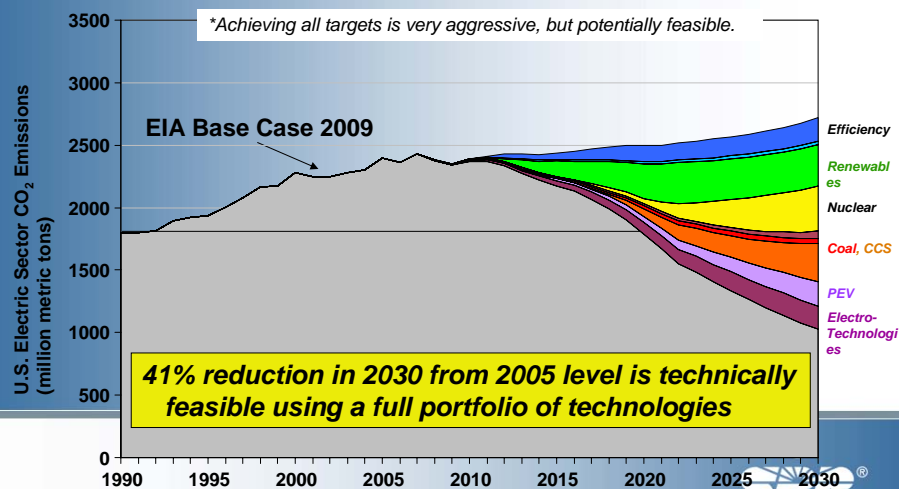
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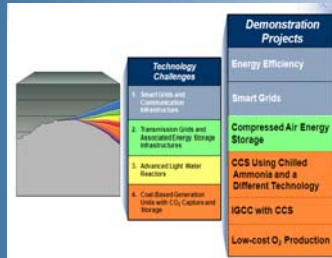
17

## CO<sub>2</sub> Reductions ... Technical Potential



## SRP – A Long Commitment to R&D

- Quarter of a billion dollars in R&D support
- Support climate studies at three state universities
- Hosting a sequestration site in Arizona



- Smart grid demonstration project
- Testing CO<sub>2</sub> extraction at a plant in Wisconsin
- Target 90% removal rate
- 10% efficiency
- Carbon Capture AEP/Mountaineer



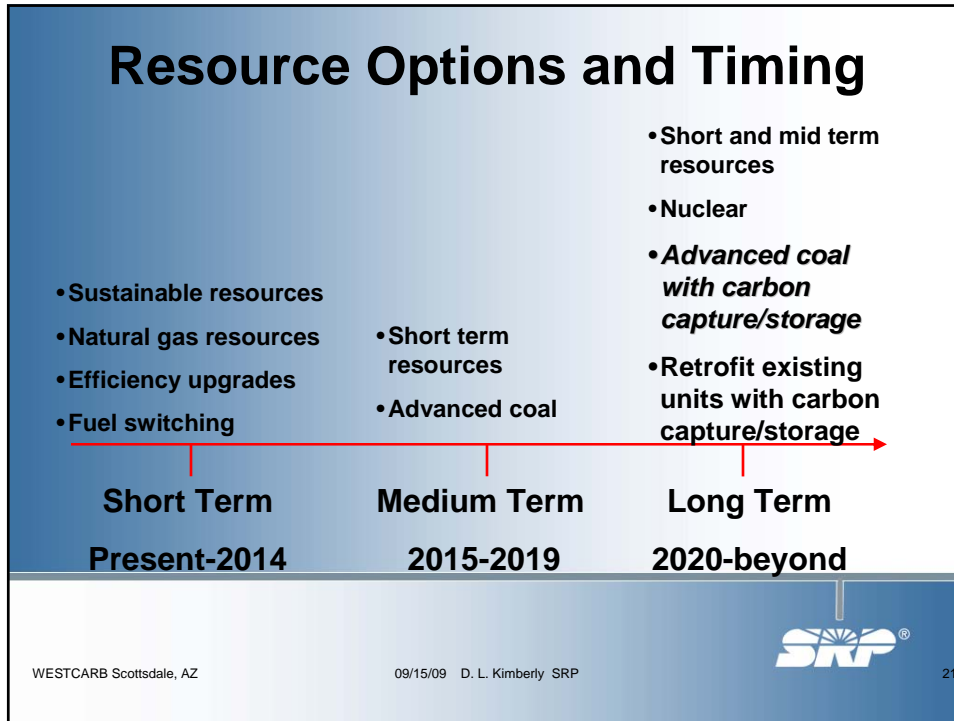
*We Energies Pleasant Prairie*



## Stimulus Application to DOE



- Site Characterization of Promising Geologic Formations for CO<sub>2</sub> Storage
  - 80% federal cost share, \$5 million project
  - Studying Black Mesa Basin for carbon capture
  - SRP Application for consortium: TEP, Peabody, Hopi Nation, Tri-State
  - SRP: \$500,000






## Going Forward

- Climate change regulation will have a major impact on SRP, our customers *and our state*.
- SRP has already taken action and wants to find sustainable solutions to reducing greenhouse gas emissions.
- Guiding Principles:
  - Promote Clean & Efficient Energy
  - Portfolio Approach
  - Progress in Technology
  - Protect Consumers & Environment
  - Purposeful, Efficient Market Mechanisms
- Focus should be on reducing carbon with flexibility on how goal is achieved.



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