

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



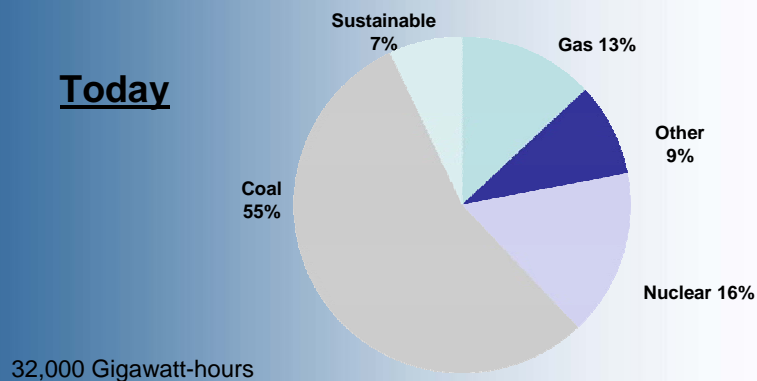
About SRP

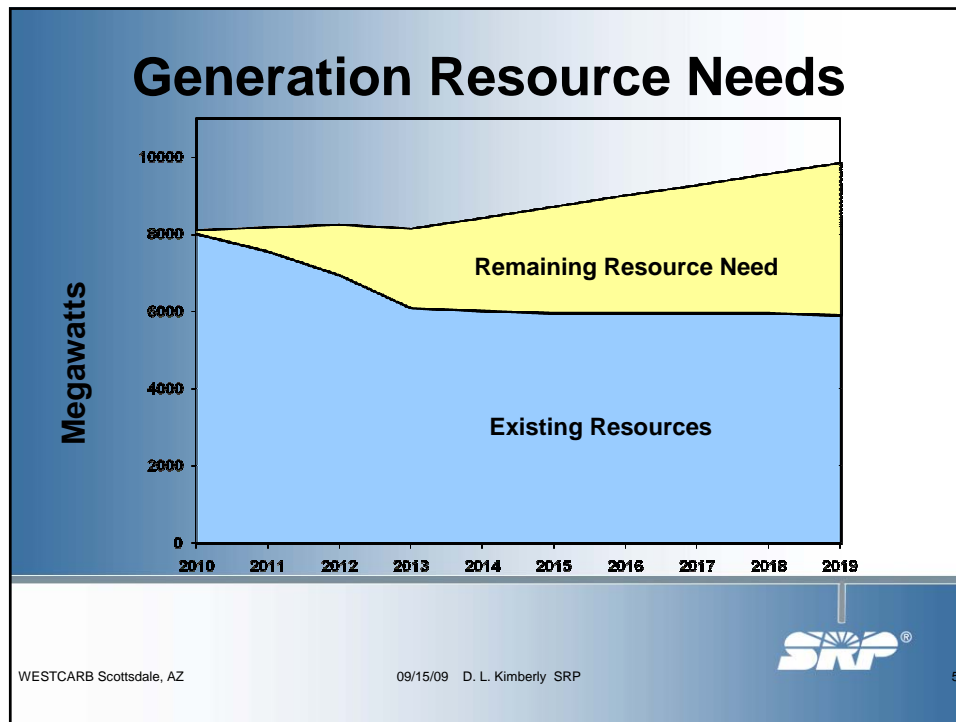


- One of the largest public power utilities in the nation
- Over 920,000 electric customers
- 13,000 square mile watershed
 - Largest water supplier in the Phoenix metro area
- 2009 Retail peak – 6,438 MW

Salt River Project Energy Mix


Today





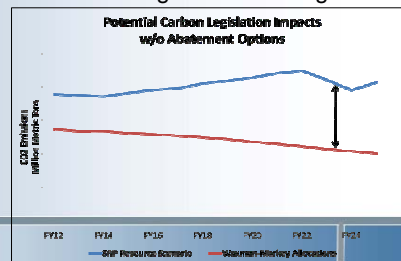
Planned Additional Resources

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

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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

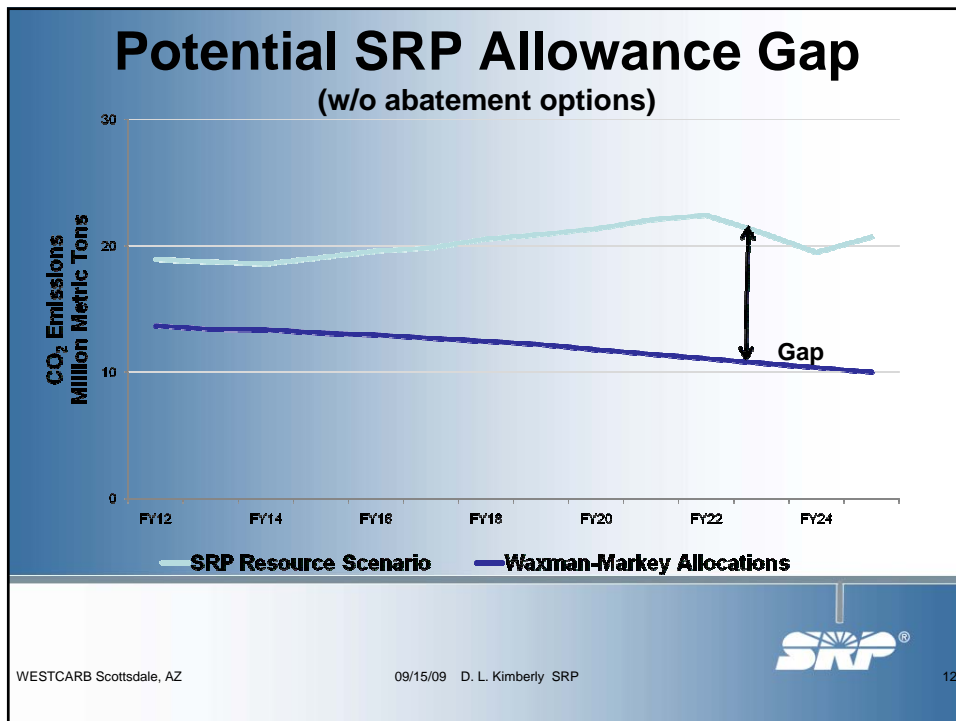
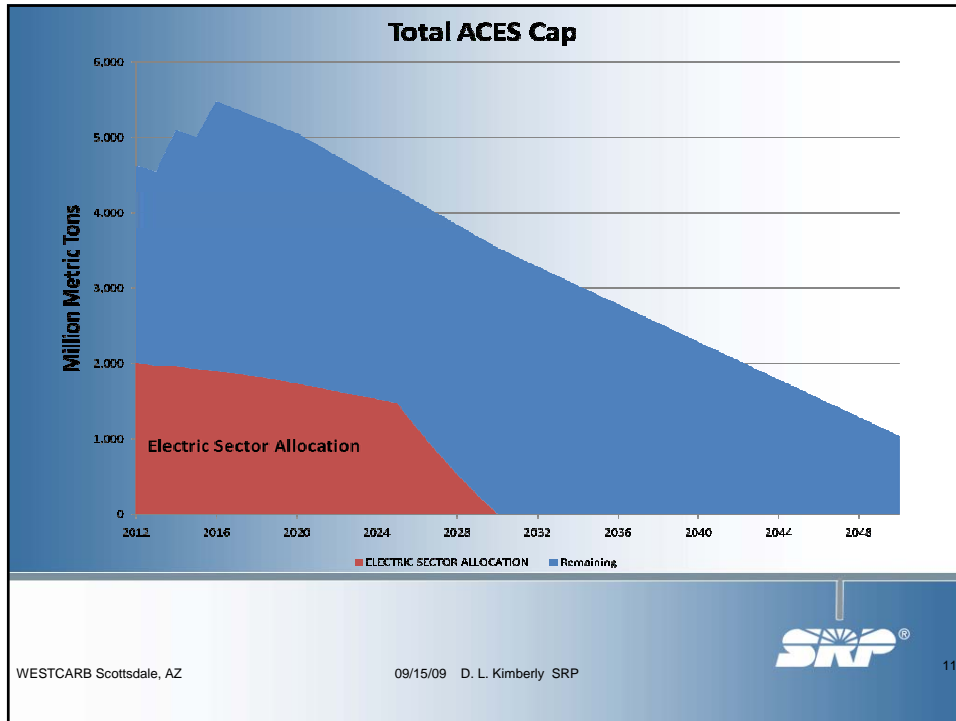
- H.R. 2454 American Clean Energy and Security Act (ACES)
 - Renewable Electricity Standard (RES)
 - 20% of retail sales from renewable and EE by 2020
 - Cap-and-Trade Program
 - Declining cap
 - Early utility Allocation
 - Energy Efficiency Standard
 - Buildings, appliances and industry

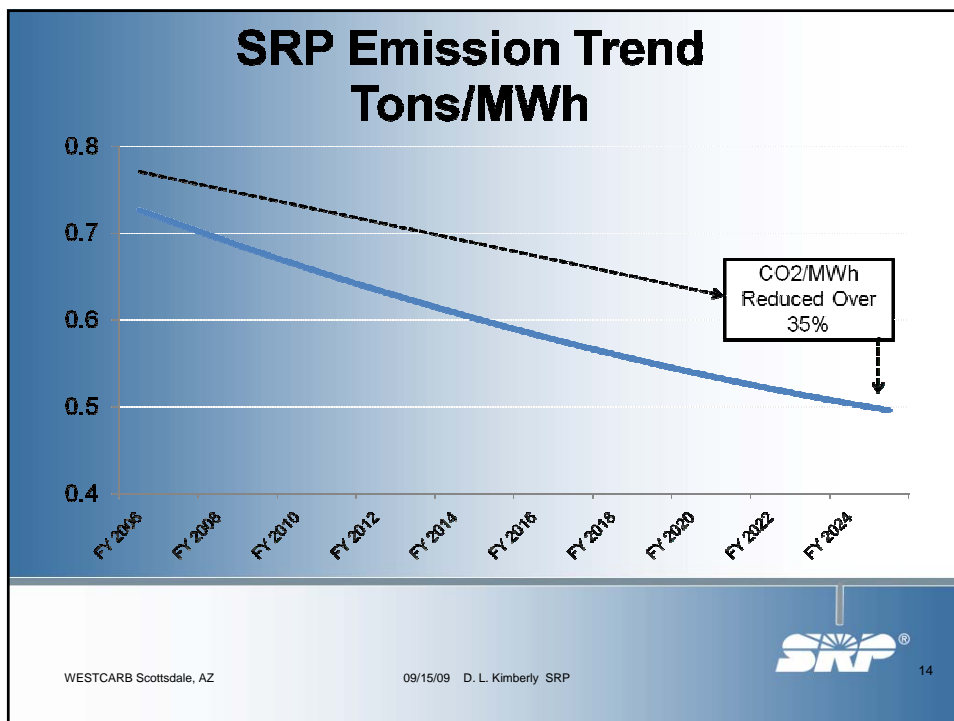
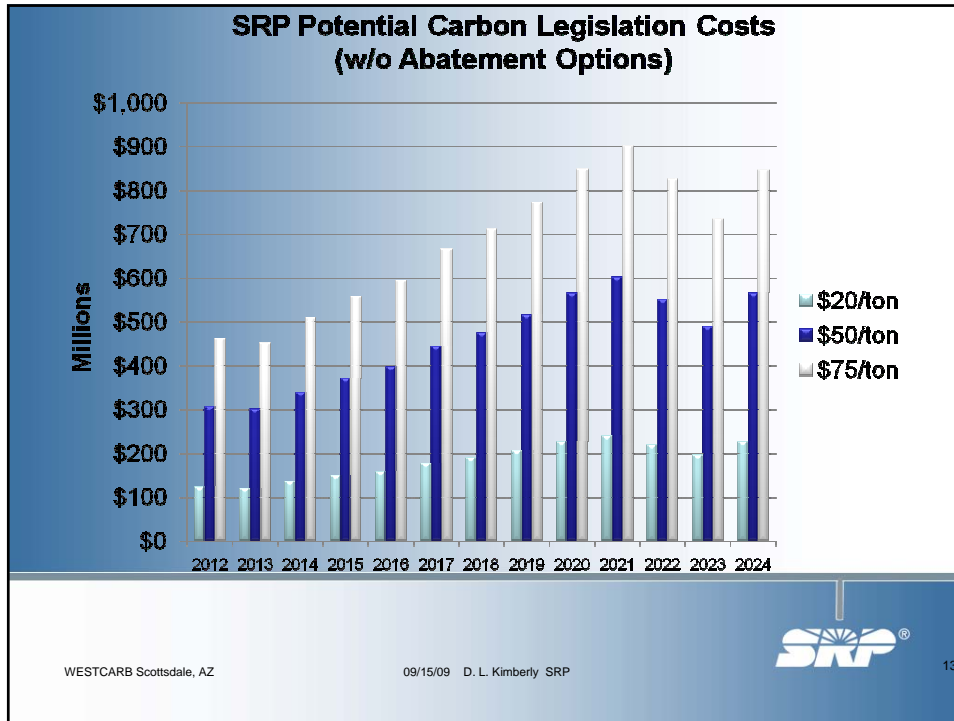
Global Warming Provisions ACES Cap-and-Trade Program

- 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

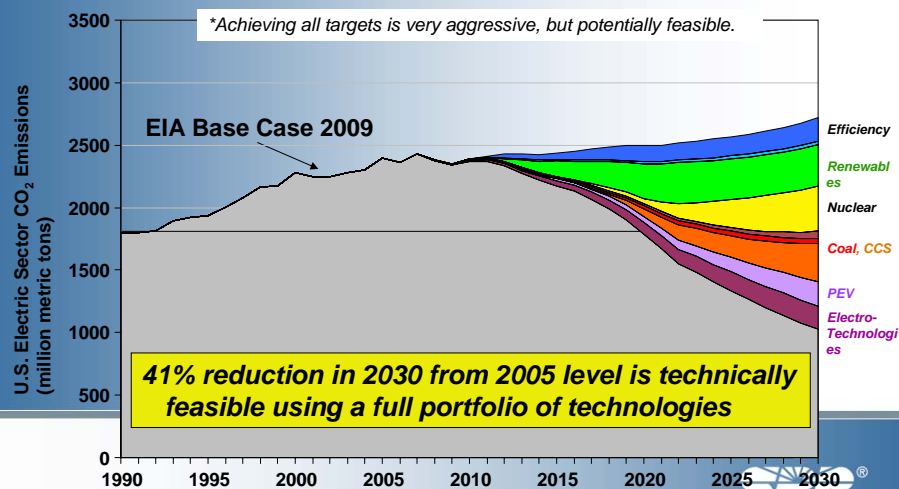
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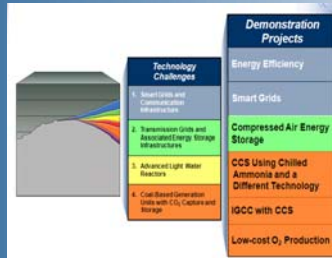
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CO₂ Reductions ... Technical Potential



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 CO₂ extraction at a plant in Wisconsin
- Target 90% removal rate
- 10% efficiency
- Carbon Capture AEP/Mountaineer



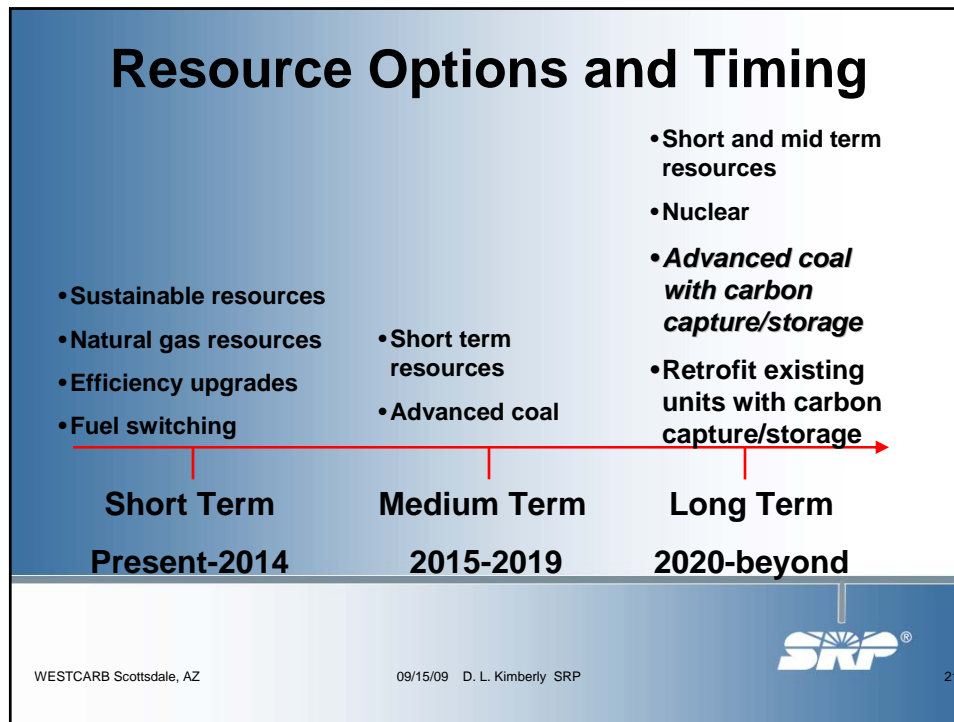
We Energies Pleasant Prairie



Stimulus Application to DOE

- Site Characterization of Promising Geologic Formations for CO₂ 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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