Water for Power: Electricity Risk and Resilience in a Warming World

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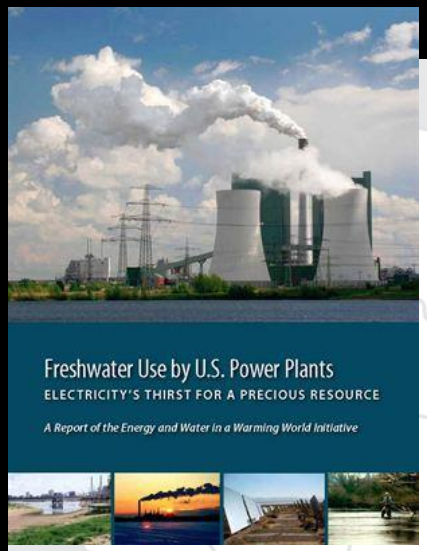
Addressing the Energy-Water Nexus
National Academy of Sciences
Washington D.C.
June 6, 2013

Collaborators and Scientific Advisors



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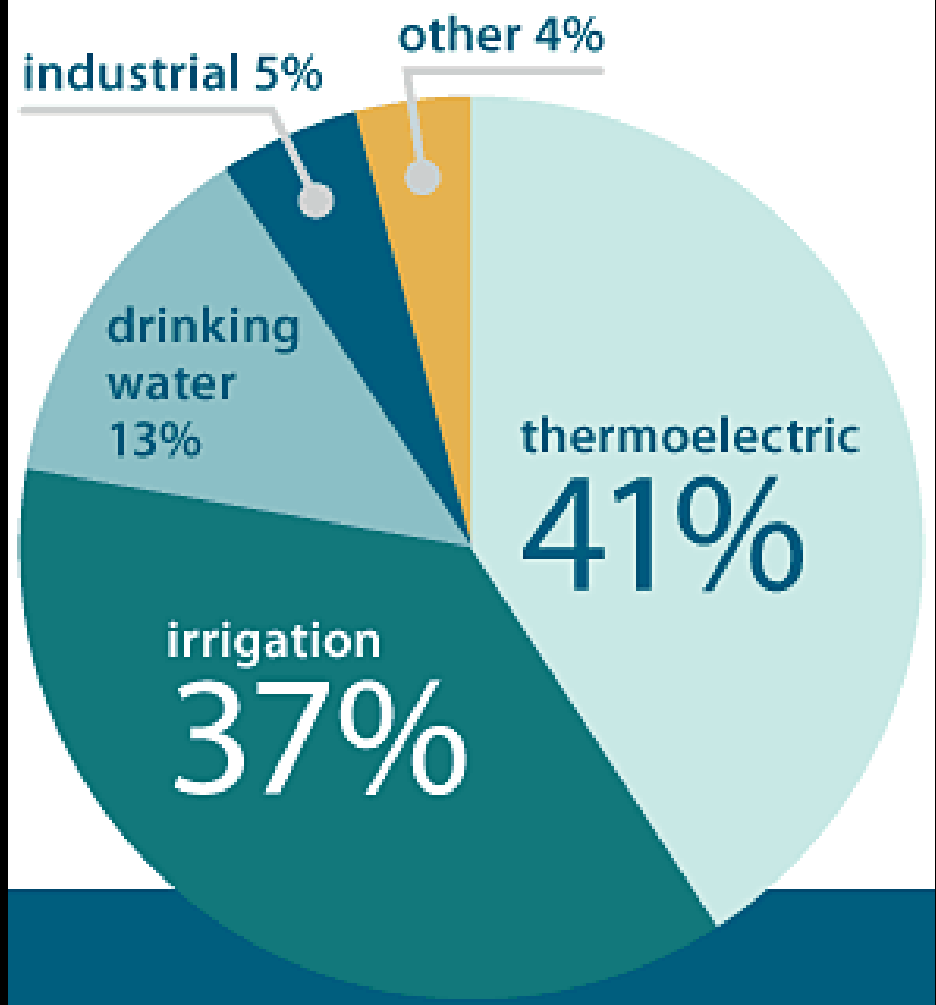
EW3 Baseline Assessment Team

EW3 Scientific Advisory Committee

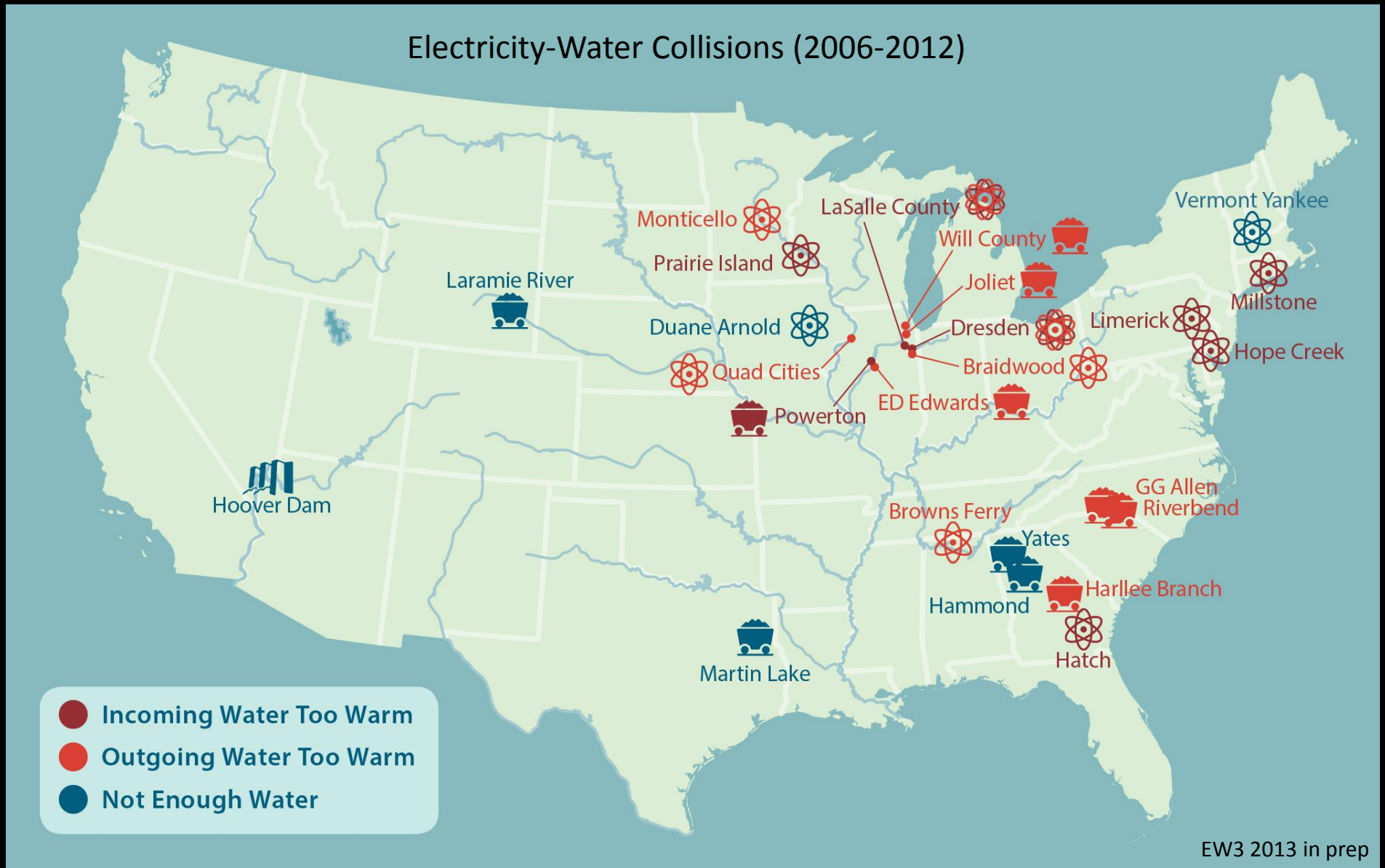
Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

Today's Power Plants Rely On Large Amounts of Freshwater For Cooling

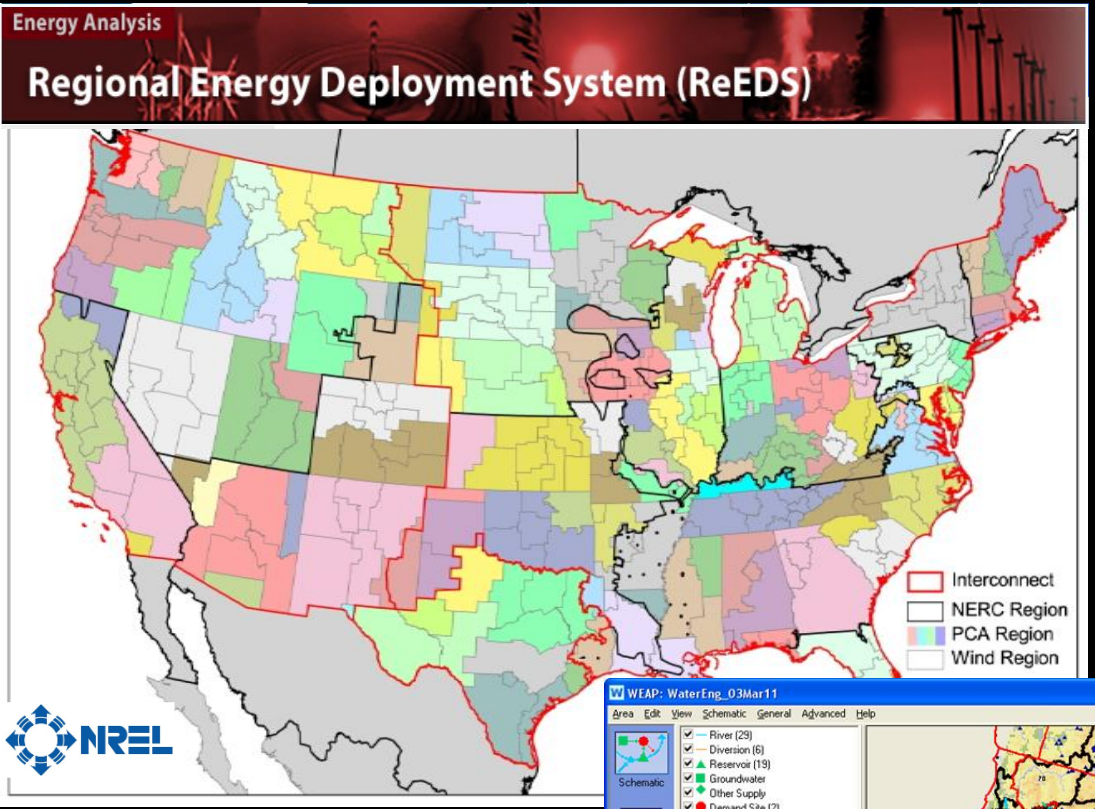


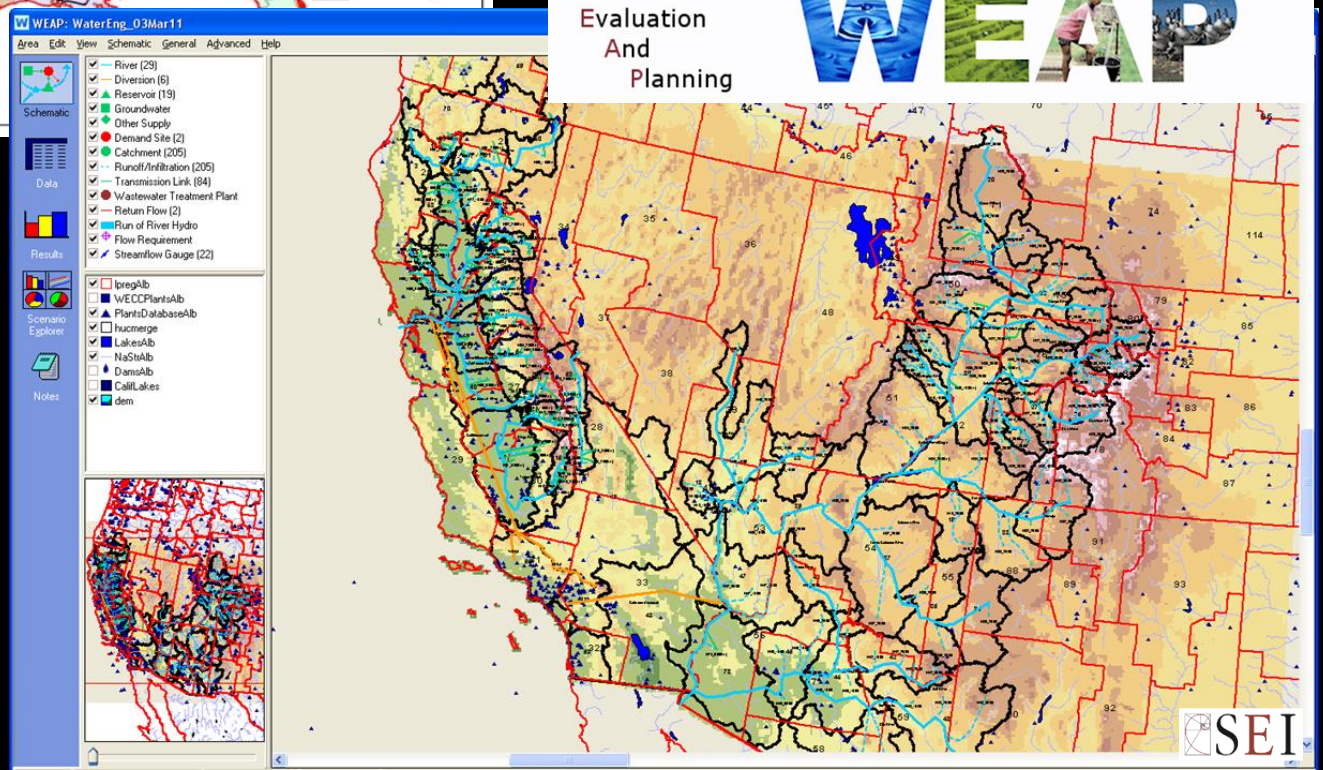
Averyt et al 2011

Heat and Drought Put Electricity and Water Supplies At Risk

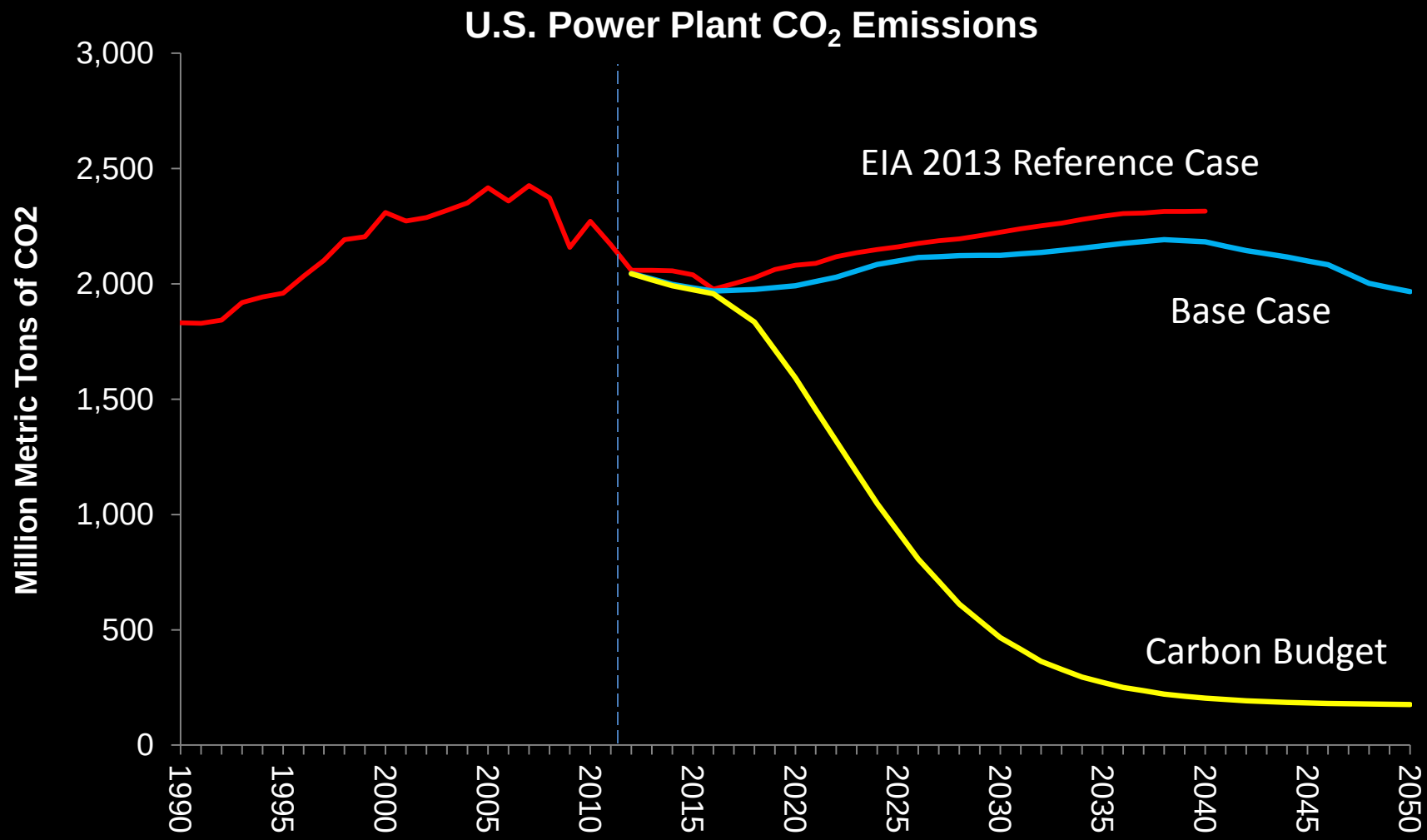


Electricity-Water Futures Modeling

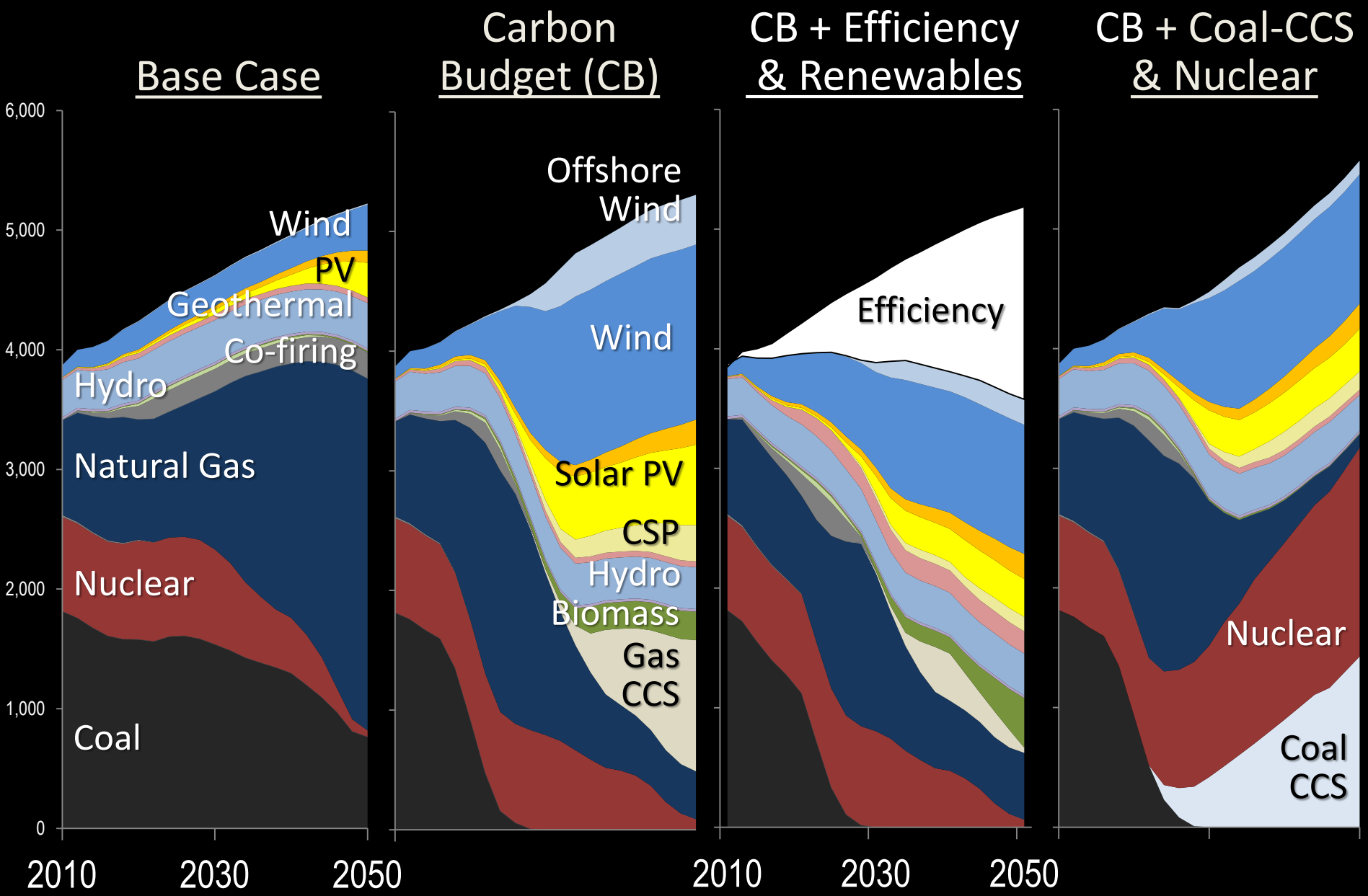




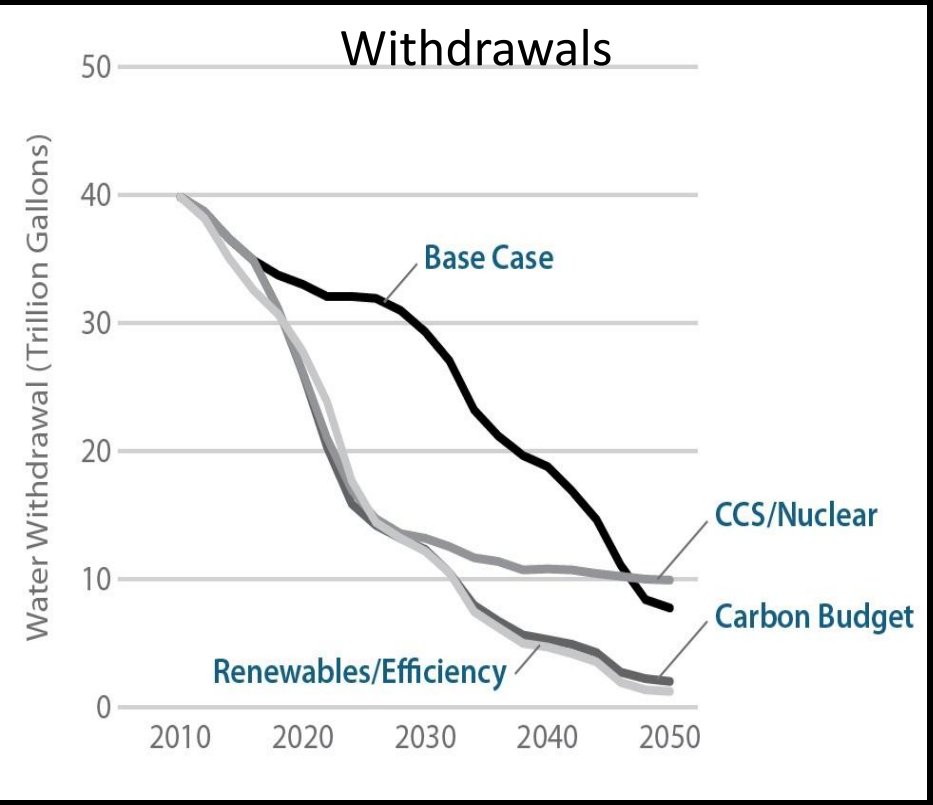
Deep cuts in US Power Plant CO^2 Emissions Are Needed to Address Climate Change

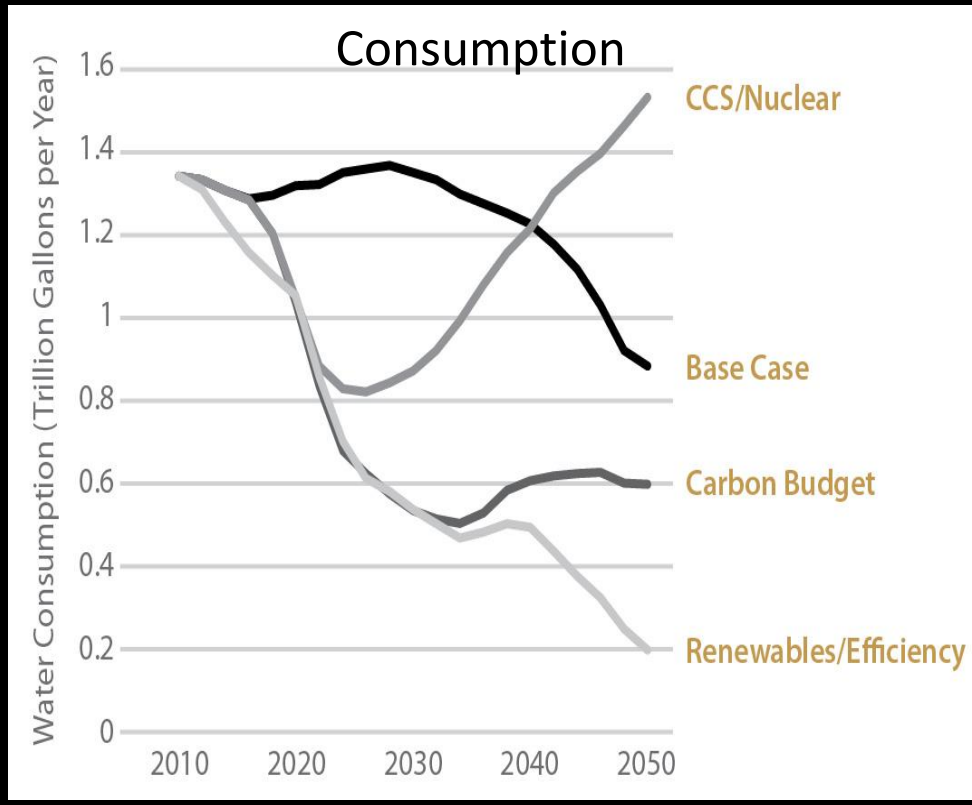


US Electricity Mix Under Low Carbon Electricity Futures (TWh)

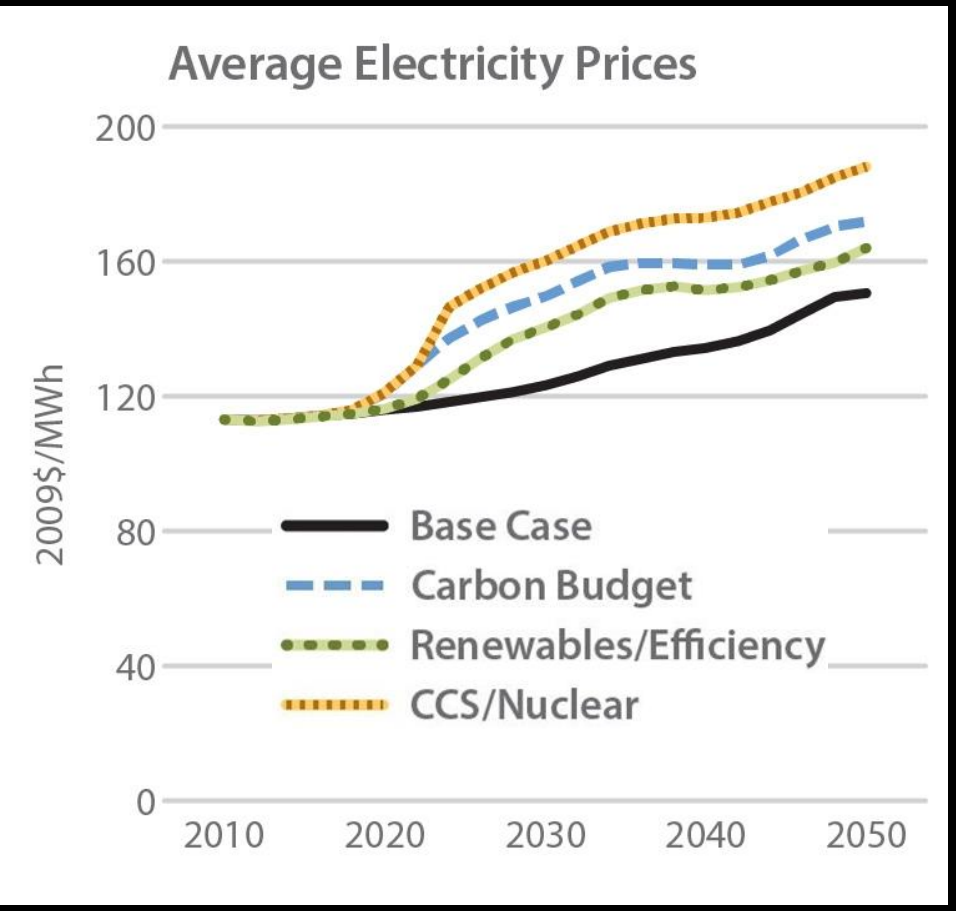


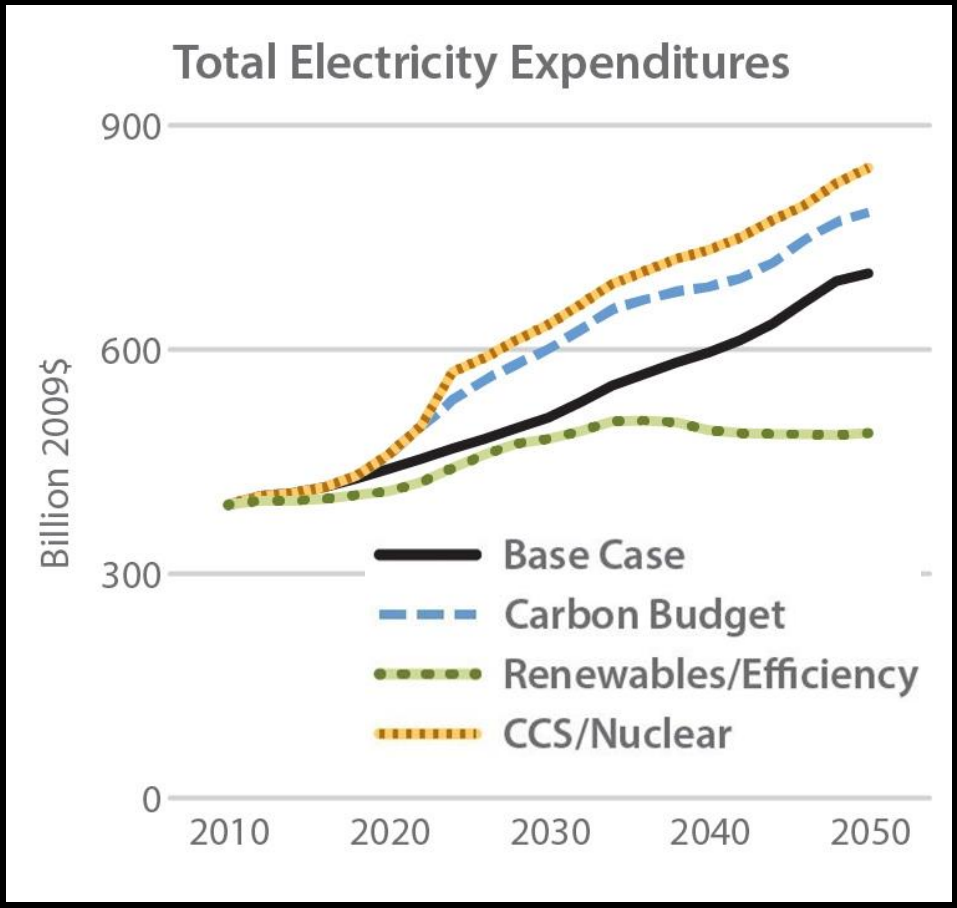
Impacts of Electricity Technology Pathways on Cooling Water Withdrawals and Consumption





Lowest Water Scenario is also the Lowest Cost to Consumers





Strong Policies and Planning Are Needed to Make Low-Carbon, Water-Smart Energy Choices

- *Deploy solutions available today to reduce water and climate risk*
- *Electricity decisions should meet low-carbon, water-smart criteria*
- *Decision making across different sectors and scales is essential*
- *The need to address the electricity-water-climate nexus is urgent*

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Focus on Electricity, Water and Climate Connections

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Image: Laramie River Power Station, taken at Grayrocks Reservoir near Wheatland, WY. Photo credit: Chance Kafka.

Research

Can switching fuels save water? A life cycle quantification of freshwater consumption coal- and natural gas-fired electricity
Emily A Grubert, Fred C Beach and Michael E Webber
2012 *Environ. Res. Lett.* **7** 045801
doi: 10.1088/1748-9326/7/4/045801 Tag this article

Abstract References Cited by Full text PDF Enhanced article HTML

Operational water consumption and withdrawal factors for electricity generating techn of existing literature
J Macknick, R Newmark, G Heath and K C Hallett
2012 *Environ. Res. Lett.* **7** 045802

http://iopscience.iop.org/1748-9326/focus/Electricity%20Water%20and%20Climate