

## Energy - Docket Optical System

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**From:** Jesus Arredondo [jesus@ca-advantage.com]  
**Sent:** Tuesday, May 07, 2013 5:44 PM  
**To:** Korosec, Suzanne@Energy  
**Cc:** <loyd.drain@wyo.gov>  
**Subject:** WYOMING INFRASTRUCTURE AUTHORITY SUBMISSION TO CEC TRANSMISSION WORKSHOP  
**Attachments:** WIA IEPR Workshop May 7 2013.pdf  
**Importance:** High

Suzanne,

Thank you for allowing the WIA to speak at the workshop today. As I expressed to the Commissioners in my testimony, we will continue to make the rounds in California and will look forward to participating in your ongoing discussions specific to what the WIA can provide to California.

Attached is our presentation for submission to the record on this workshop.

Thank you again.

Best regards,

Jesus Arredondo  
for the Wyoming Infrastructure Authority

California Energy Commission

**DOCKETED**

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**TN # 70668**

**MAY 08 2013**

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# Wyoming Infrastructure Authority

## California Energy Commission

**IEPR Workshop**

**May 7, 2013**

**Sacramento, CA**



**WYOMING INFRASTRUCTURE AUTHORITY**

*An Instrumentality of the State of Wyoming*

# About the WIA

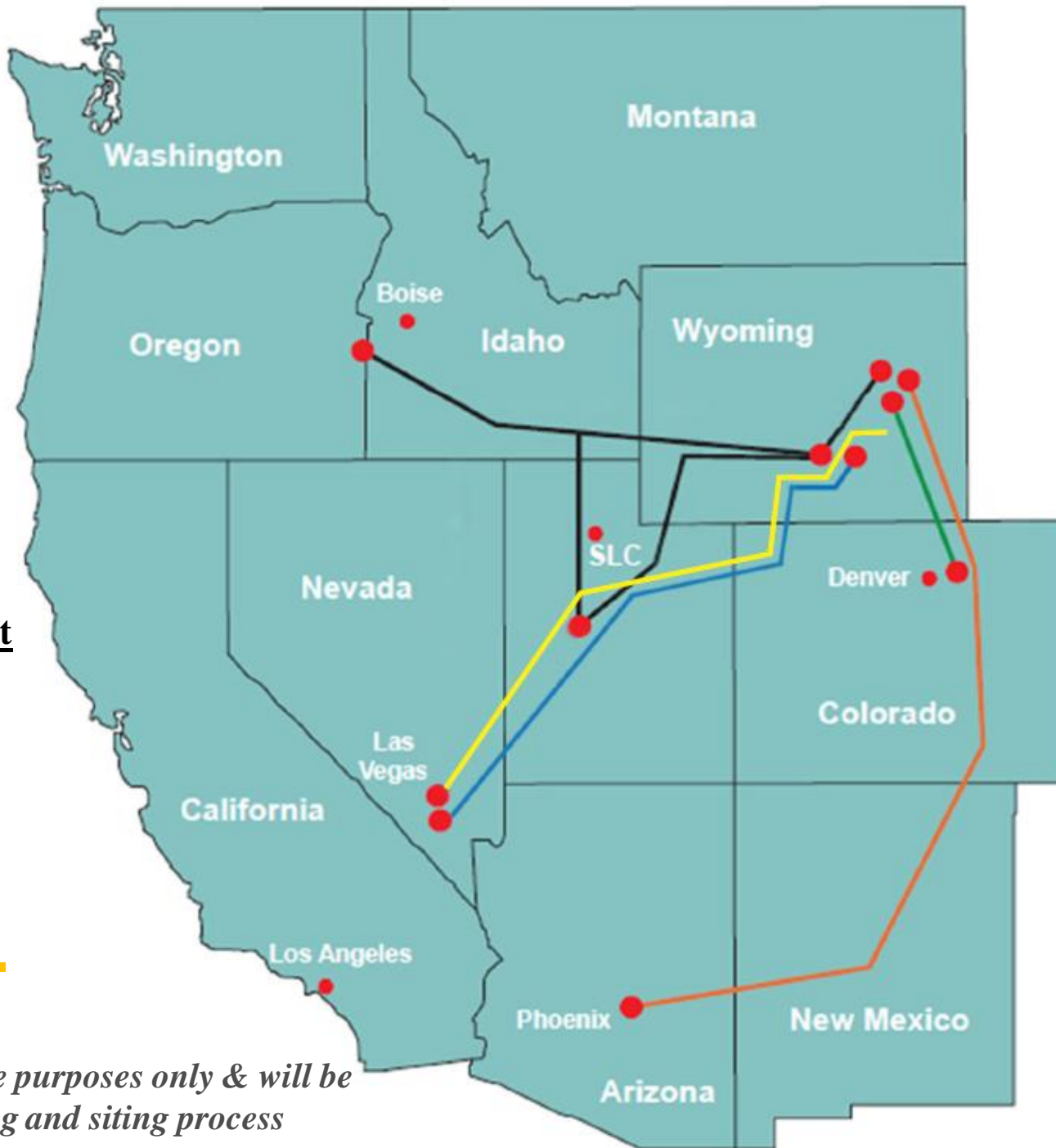
# Wyoming Infrastructure Authority

- *An instrumentality created in 2004 by the Wyoming Legislature---*  
<http://legisweb.state.wy.us/statutes/statutes.aspx?file=titles/Title37/T37CH5.htm>
- *Mission: diversify and expand the state's economy through improvements in the transmission grid*
- *Tools:*
  - *Can plan, finance, site, own, operate and otherwise promote transmission projects*
  - *\$1 billion in bonding authority to finance G&T*
- *Governed by a 5 member Board of Directors appointed by the Governor with the advice and consent of the Senate*



# **Transmission Generation in Wyoming**

**Two (2) Projects in various phases of development for  
delivery of world-class Wyoming wind to California**



### Projects under Development

Energy Gateway —

WY-CO Intertie —

TransWest Express —

Zephyr —

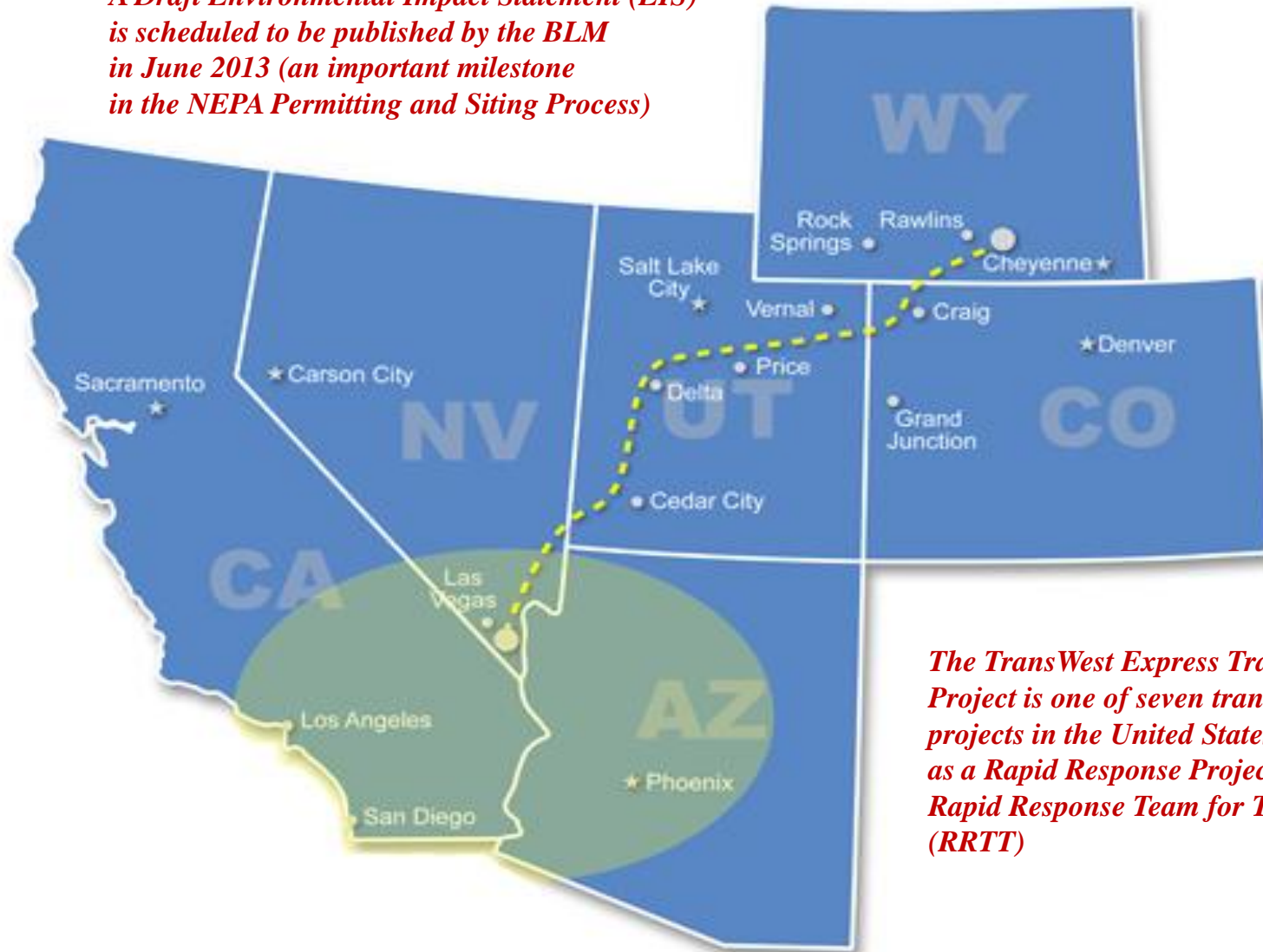
High Plains Express —

*Routes shown are for illustrative purposes only & will be finalized following the permitting and siting process*

# TransWest Express Transmission Project

A 725 mile, 600kV HVDC line with a capacity of 3,000 MW

*A Draft Environmental Impact Statement (EIS) is scheduled to be published by the BLM in June 2013 (an important milestone in the NEPA Permitting and Siting Process)*

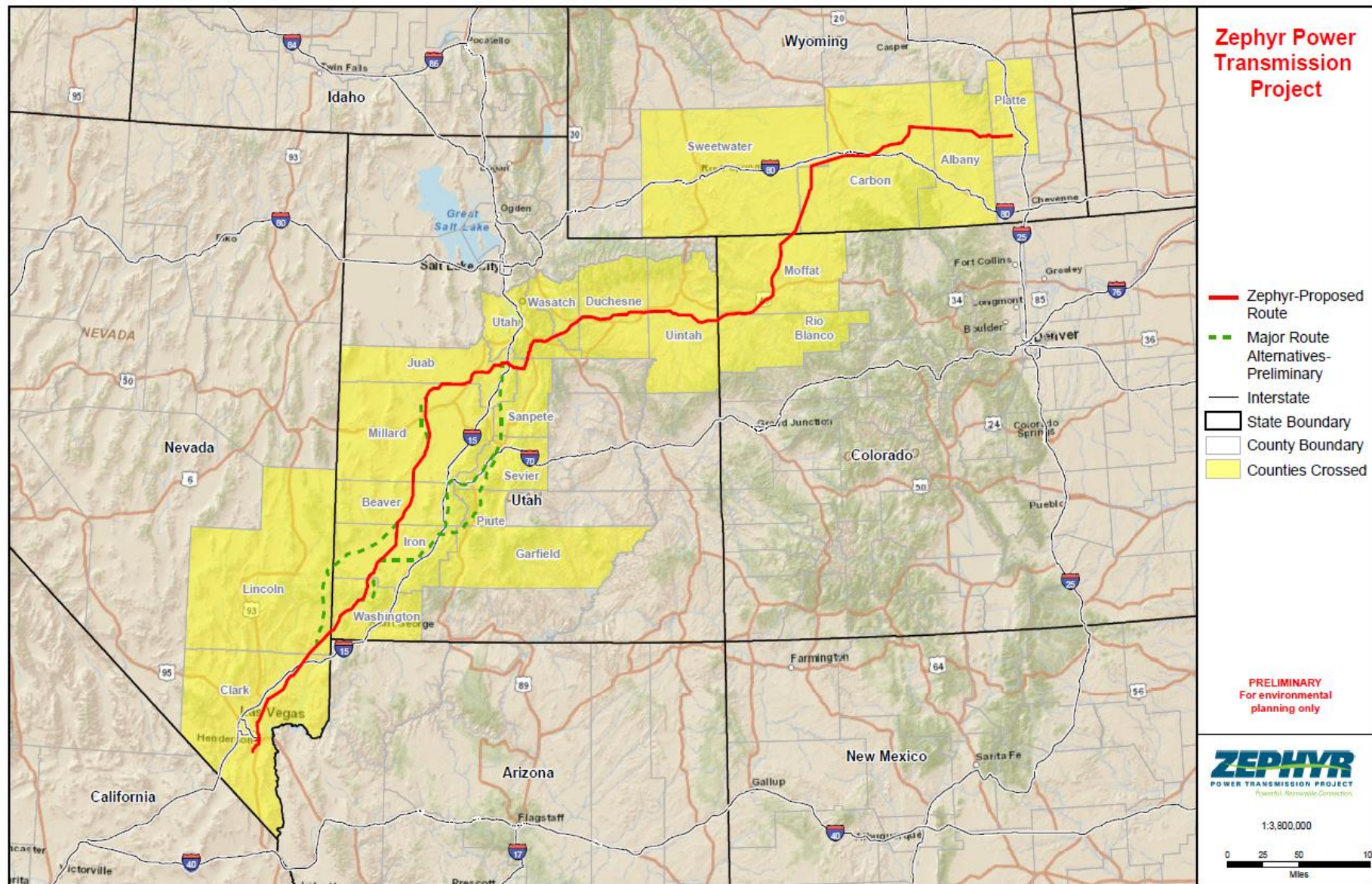


*The TransWest Express Transmission Project is one of seven transmission projects in the United States designated as a Rapid Response Project by the Rapid Response Team for Transmission (RRTT)*



# Zephyr Transmission Project

An 850 mile, 500kV HVDC line with a capacity of 3,000 MW



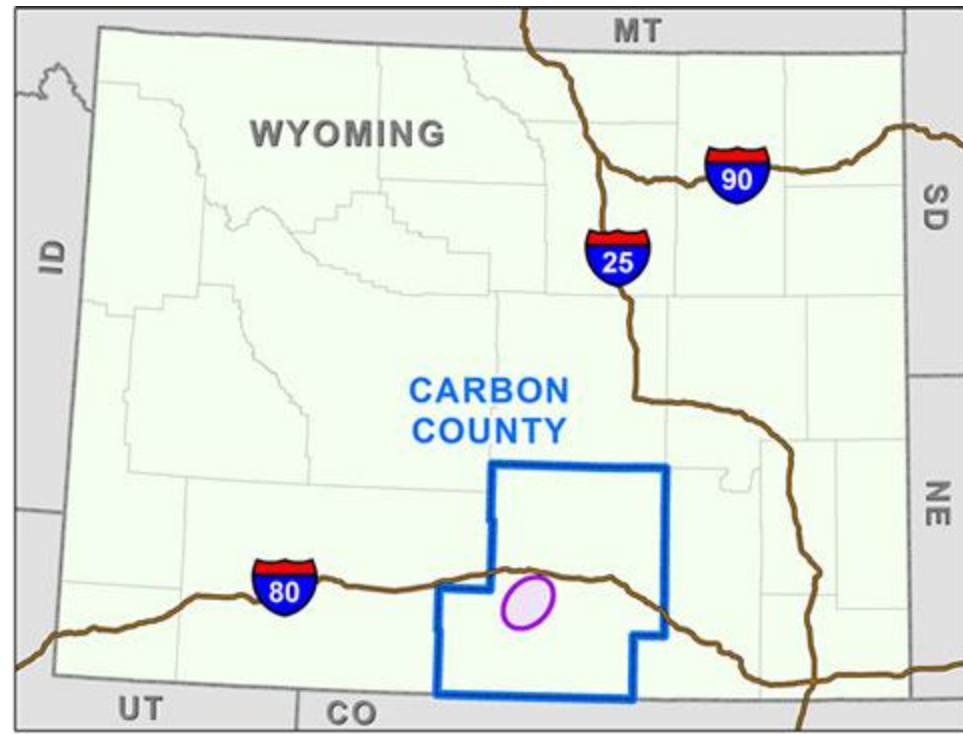


# Wind Generation in Wyoming

**Power Company of Wyoming LLC's Chokecherry and Sierra Madre Wind Energy Project** is an up to 1,000-turbine wind farm, with the potential to generate approximately 2,500 MW of clean energy, to be located south of Sinclair and Rawlins in Carbon County, Wyoming. The project's long-term surface disturbance will be less than 2,000 acres of a 320,000-acre ranch owned and operated by an affiliate company.

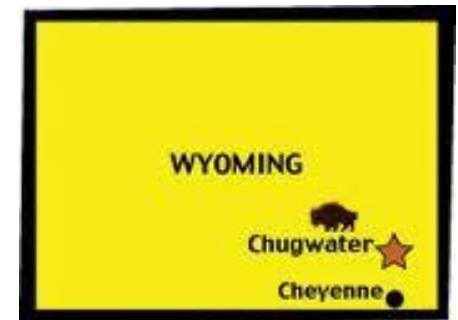


*The Chokecherry/Sierra Madre Wind Energy Project is a named "Renewable Energy Priority Project" by the BLM*

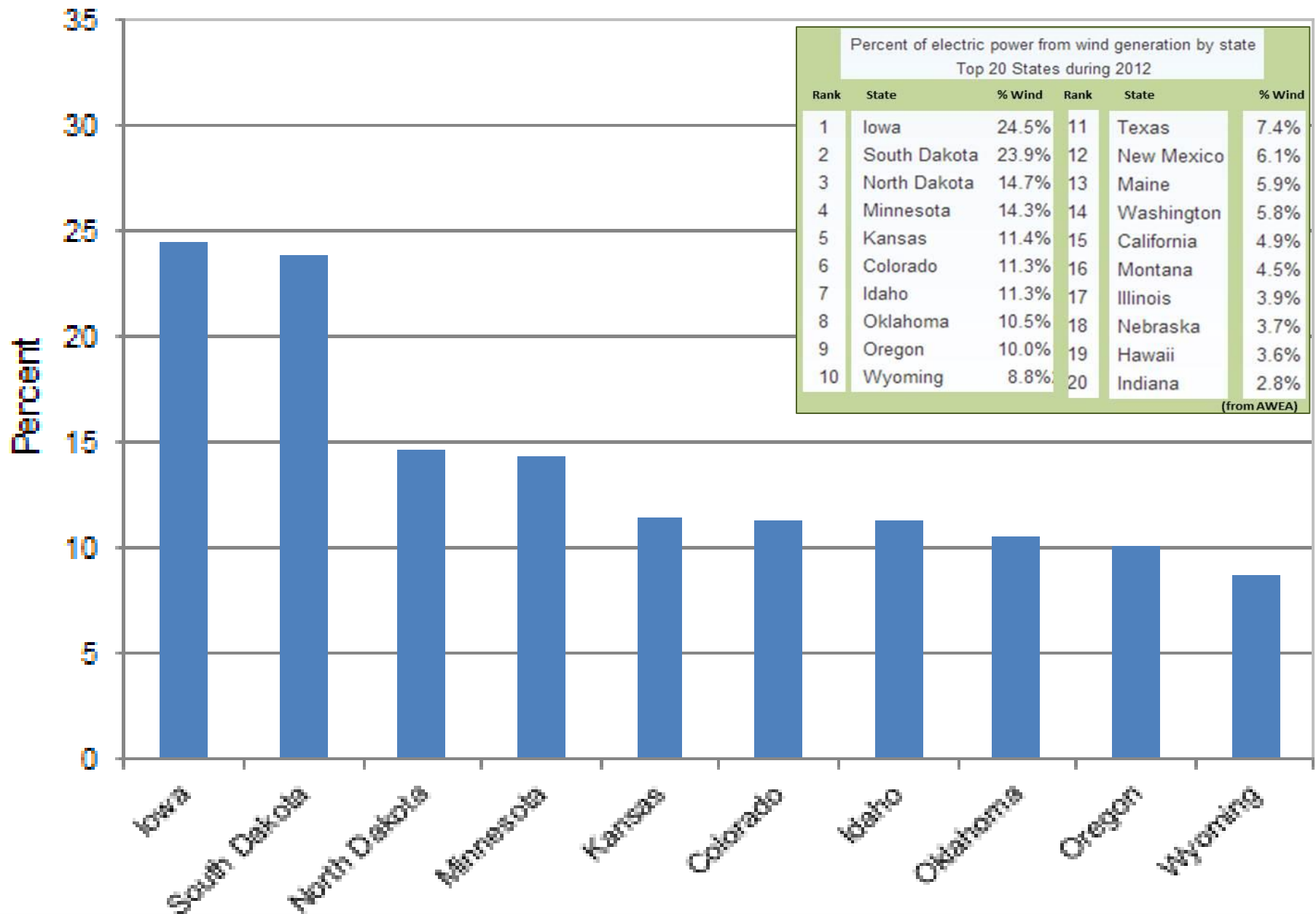




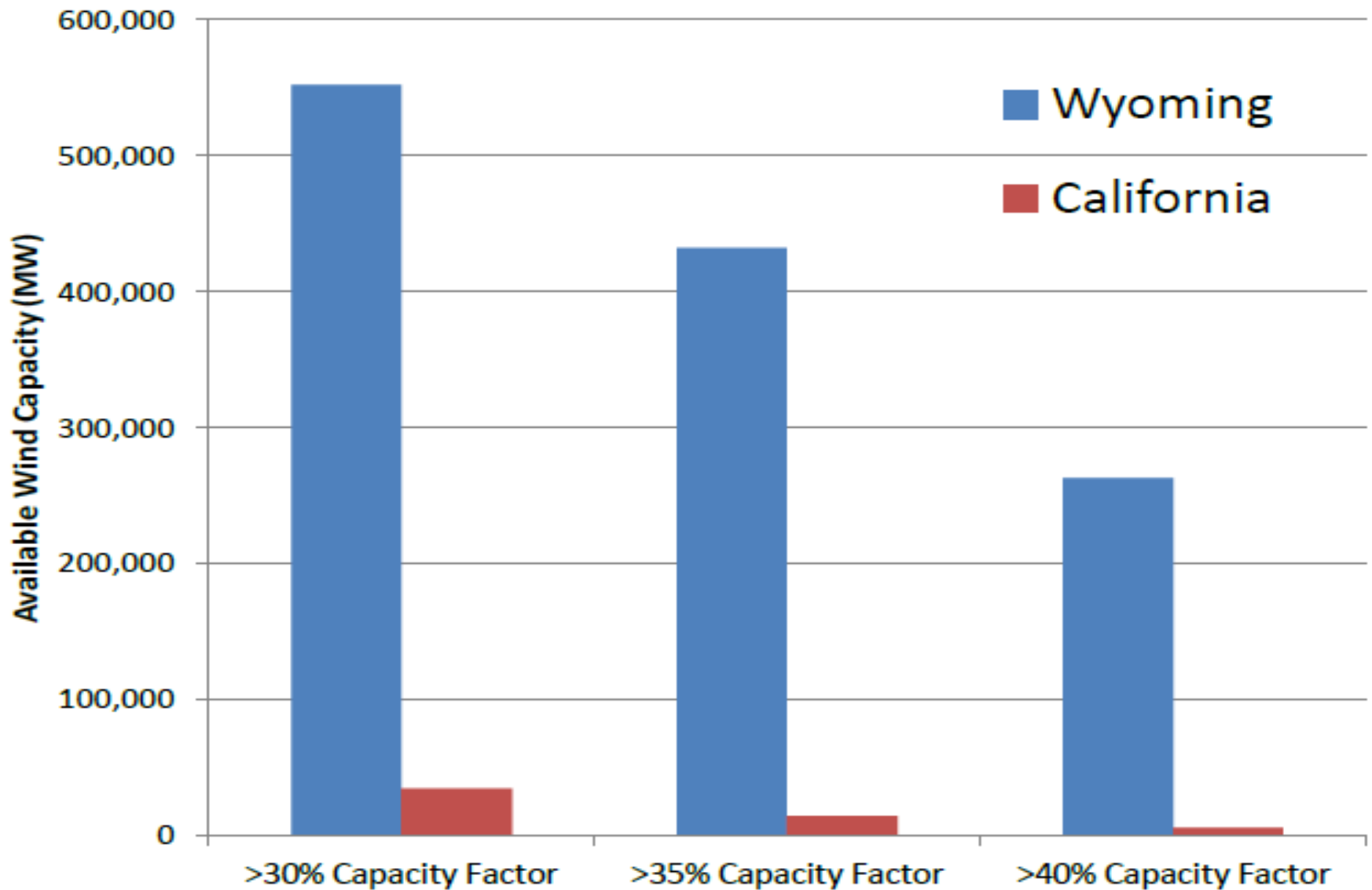
**Pathfinder Renewable Wind Energy**, is the company seeking to build hundreds of turbines on 150,000 acres near Chugwater, Wyo. Pathfinder is committed to use at least two-thirds of the **Zephyr Transmission Line's** 3,000-megawatt capacity.



# Wind Power Share of Net Electricity Generation in Top 10 U.S. States, 2012



# Wind Quality Comparisons WY vs. CA



*Amounts are from NREL data and do not include further state exclusions*



# **The Value Proposition of Delivering WY Wind to CA**

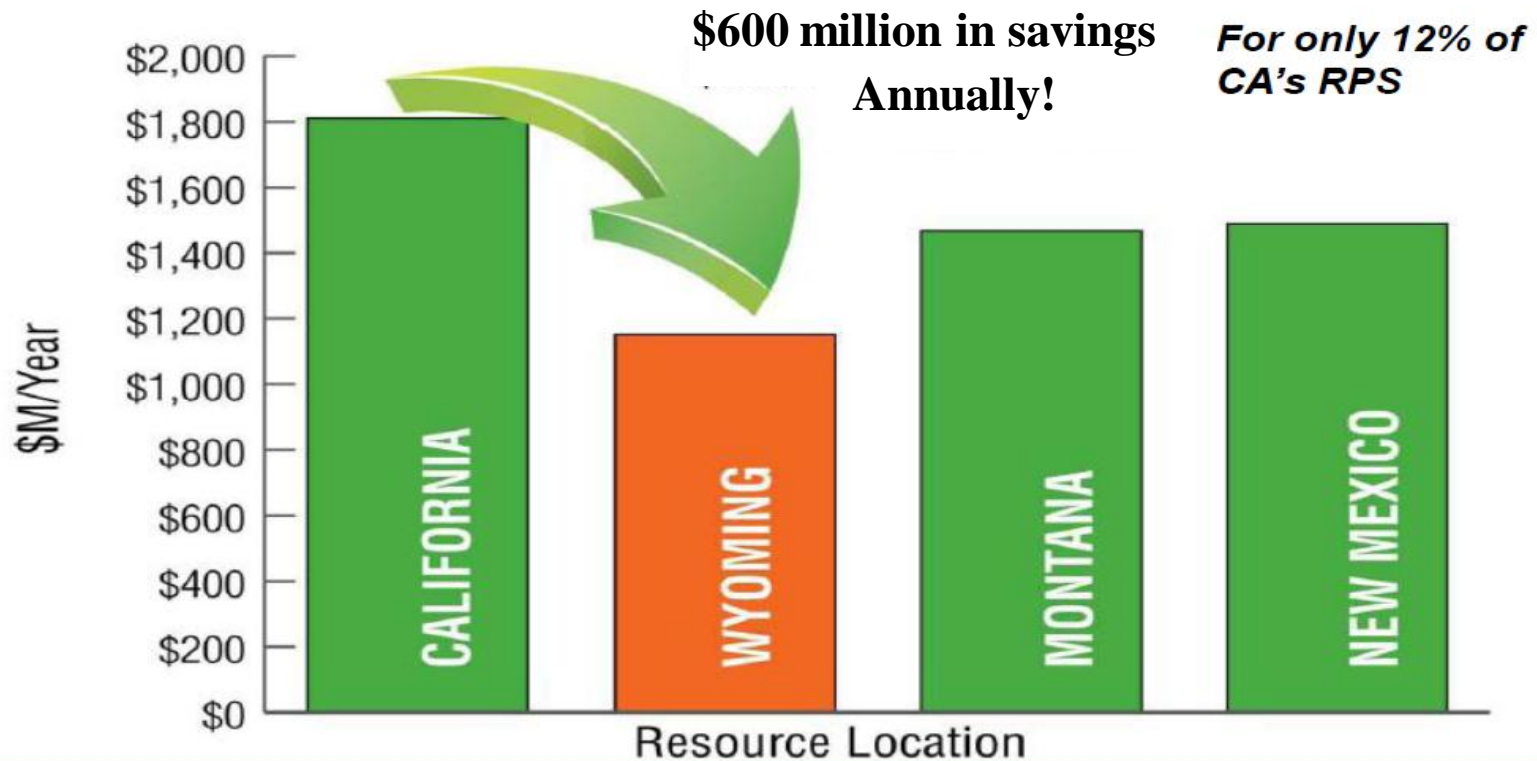
# WECC Study Released in 2011

## Data from WECC 10 year plan

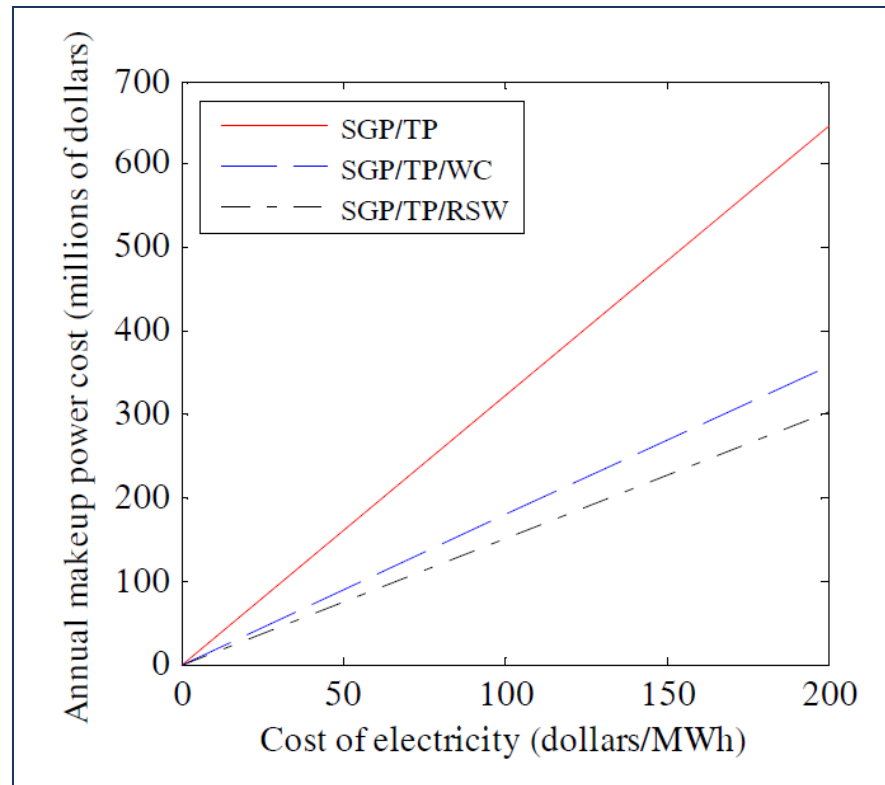


### Annual Cost Estimates for Delivering Approximately 3,000 MW of Renewable Energy to California by 2019

Source: WECC DRAFT 10-Year Regional Transmission Plan Summary, August 2011



# Wyoming's Diverse Wind Resource Can Save California Rate Payers \$100 million annually



WC is Wyoming Wind in the Wheatland/Chugwater, WY area

RSW is Wyoming Wind in the Rawlins, WY area

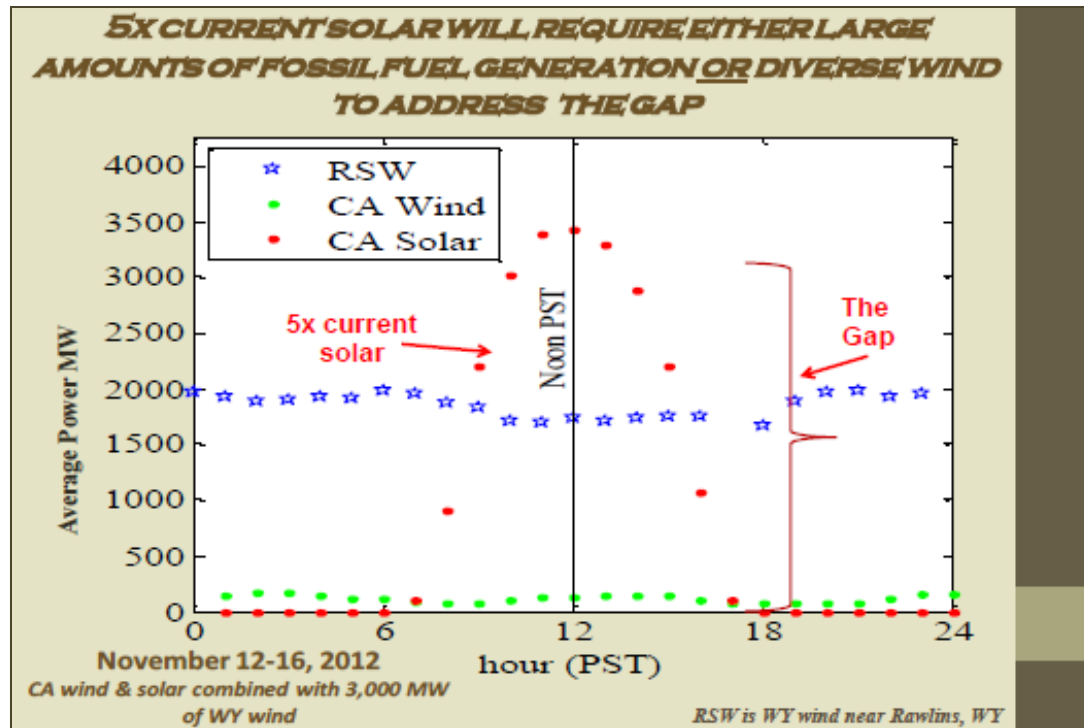
UW researchers analyzed a scenario using 6,000 MW of California wind and maintaining a level of 25 percent of the nameplate capacity which would require dispatchable generation. Then, researchers looked at what would happen when combining 3,000 MW of California wind with 3,000 MW of Wyoming wind and maintaining the combination at the same 25 percent level. *The results showed that wind resource diversity would mitigate the need for dispatchable resources and yield savings of approximately \$100 million annually based on a dispatchable energy cost of \$50/MW hour.* Such savings do not take into consideration the hours from 10pm to 6am (off-peak hours).

# Impact of an increasing Amount of Solar on the CAISO System

*The green line represents over 7,000 MW of wind capacity currently connected to the CAISO System*

*The blue line represents 3,000 MW of Wyoming winter wind*

*The red line is five times the amount of solar currently connected to the CAISO System*



RSW is Wyoming Wind in the Rawlins, WY area

One graph that is not found is a scenario where five times the current solar energy on the California ISO System is depicted above. There is a significant amount of additional solar that has been contracted in CA and will be added to the grid in the future and a 500% increase is likely to occur. Given such an amount of solar on the California grid, when the sun sets in the late afternoon and demand for electricity is still high, a large “gap” is created which will require significant amounts of stand-by dispatchable thermal generation. *Diverse Wyoming wind would mitigate the need for such stand-by generation. In this example, Wyoming’s winter wind appears to solve approximately 50% of the “gap” issue.* **The Phase II Study, with an expected release date in May 2013, will better quantify this scenario.**

# **Growing Support from Organized Labor**



## **Organized Labor Support for Transmission from Wyoming to California:**

In 2012, organized labor at both the national and regional (California) levels has voiced strong support for the 3,000 MW TransWest Express Transmission Project that would deliver cost-effective, diverse wind energy to California. This support has included letters to Governor Jerry Brown, Interior Secretary Ken Salazar and Energy Secretary Steven Chu by the *International Brotherhood of Electric Workers (IBEW)*; the *California Conference of Carpenters*; the *National Construction Alliance*; the *International Union of Operating Engineers*; and the *American Federation of Labor and Congress of Industrial Organizations*.

# Summary

Wyoming Wind can provide the following benefits to California:

- 1) According to the independent WECC 2011 10 yr Study, California Rate Payers can save **\$600 million annually** by satisfying only 12% of the California 33% RPS with Wyoming Wind
- 2) The University of Wyoming Study reflects an additional **\$100 million annual savings** to California due to the diverse nature of Wyoming Wind compared to wind and solar in California including a **reduction in greenhouse gases of 700,000 tons annually**
- 3) Wyoming Wind can significantly mitigate the integration issue being created with the growing amount of solar energy on the CAISO System
- 4) 25% of the wind energy currently on the CAISO System is from out of state; there are massive amounts of hydroelectric-power that flow into California yearly from Nevada and the Pacific Northwest; and the solar energy being contracted from outside CA. *The transmission projects being developed to deliver Wyoming wind to California and the corresponding wind energy qualifies as “Bucket 1—in-state or in-state equivalent” pursuant to SB 2-1X*
- 5) Another cost-effective resource that California has been importing from Wyoming for many years is in the form of natural gas—in 2012, Wyoming supplied California with over one-third of its demand for natural gas.

# Questions?

*For more information, please visit our website at [www.wyia.org](http://www.wyia.org)*



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