

# Wyoming Infrastructure Authority

## ***2014 Rocky Mountain Land Use Conference***

***University of Denver Campus***

***March 13-14, 2014***



WYOMING INFRASTRUCTURE AUTHORITY

# 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
- 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 Projects under Development in Wyoming**



6 projects under development

Energy Gateway —

WY-CO Intertie —

TransWest Express —

Zephyr —

High Plains Express —

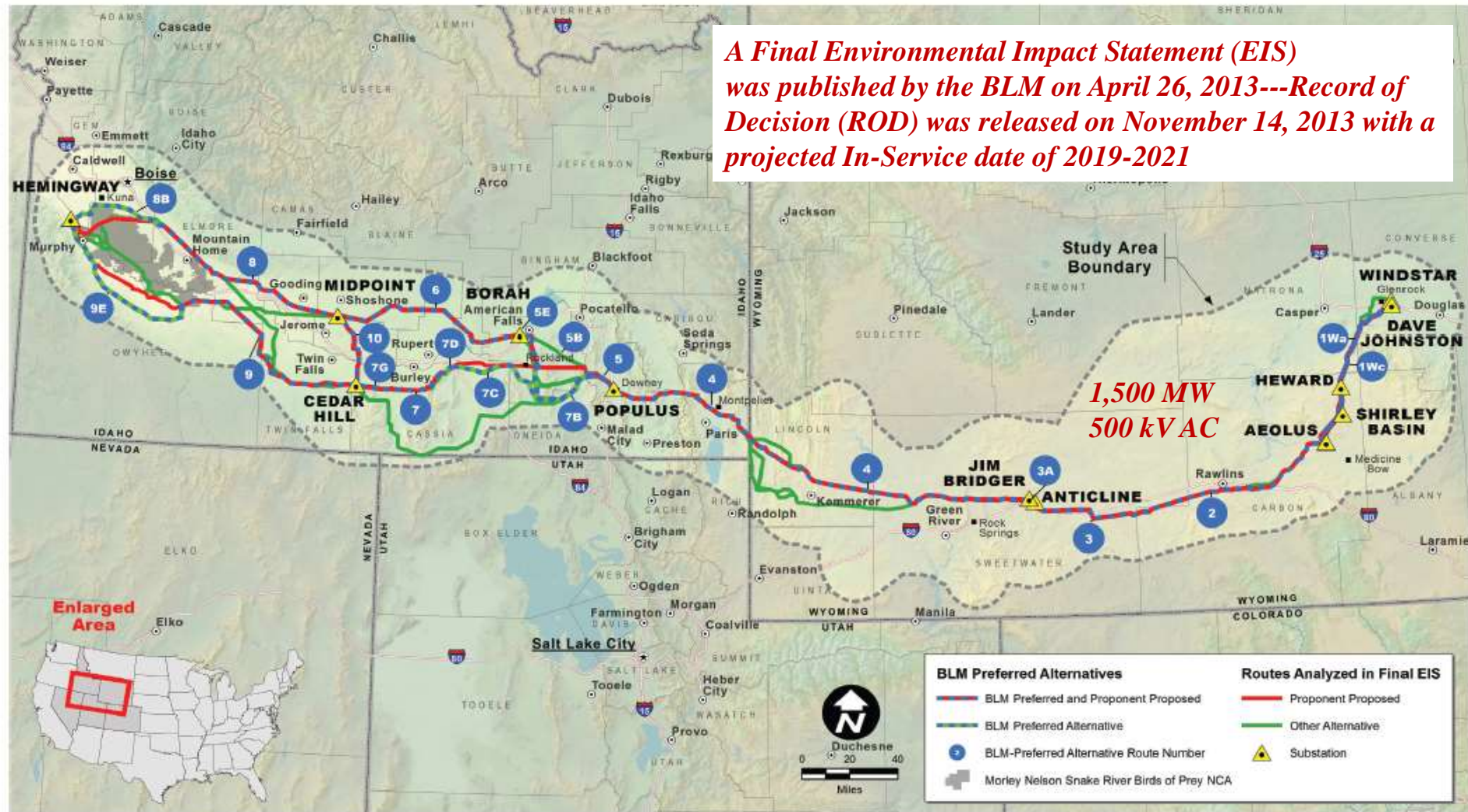


DC Lines

*Routes shown are for illustrative purposes only and will be finalized as part of the permitting and siting process*

# GATEWAY WEST Transmission Line Project

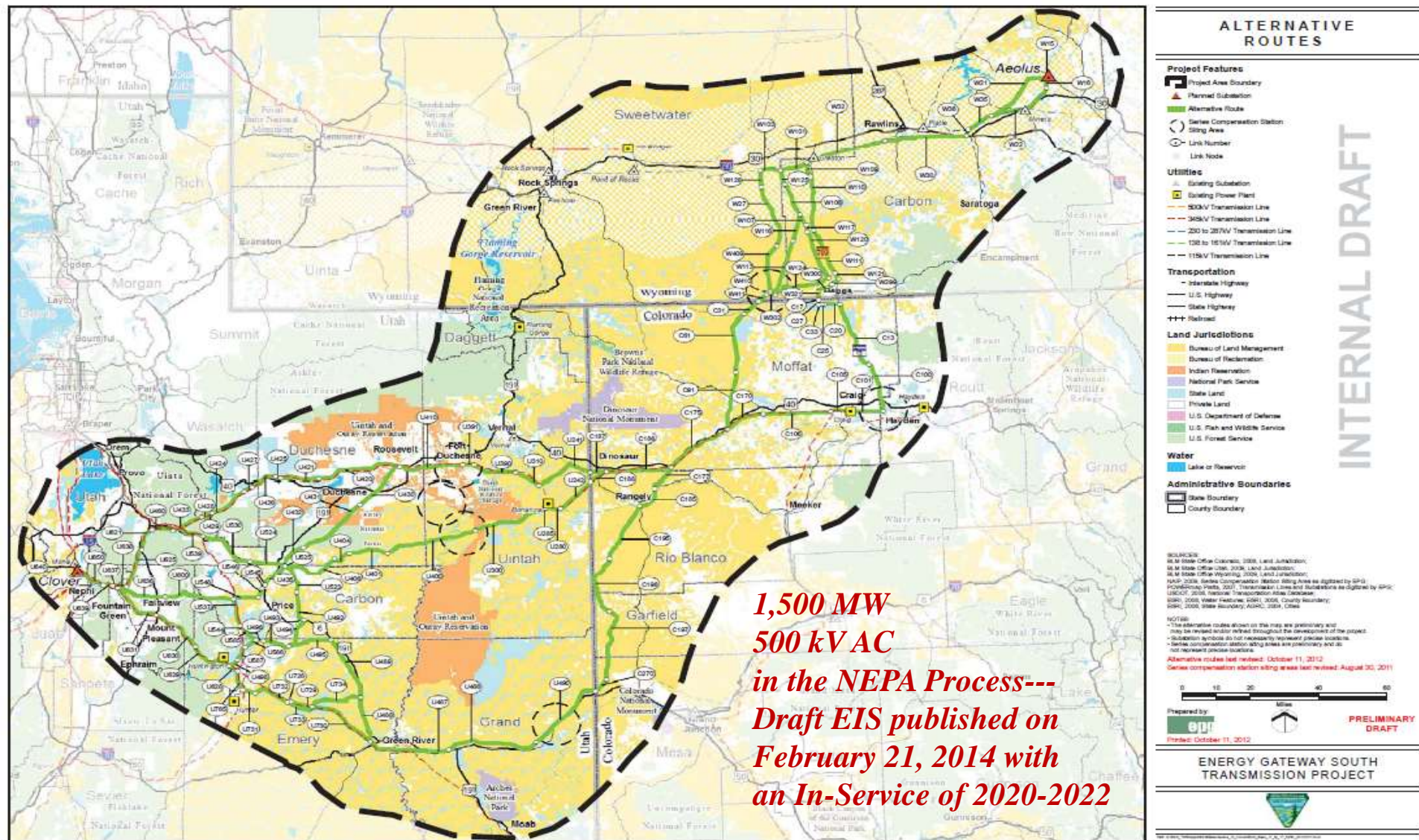
## Project Overview Map





# Gateway South Transmission

## possible routes



# One way for California to access Wyoming's complementary renewables

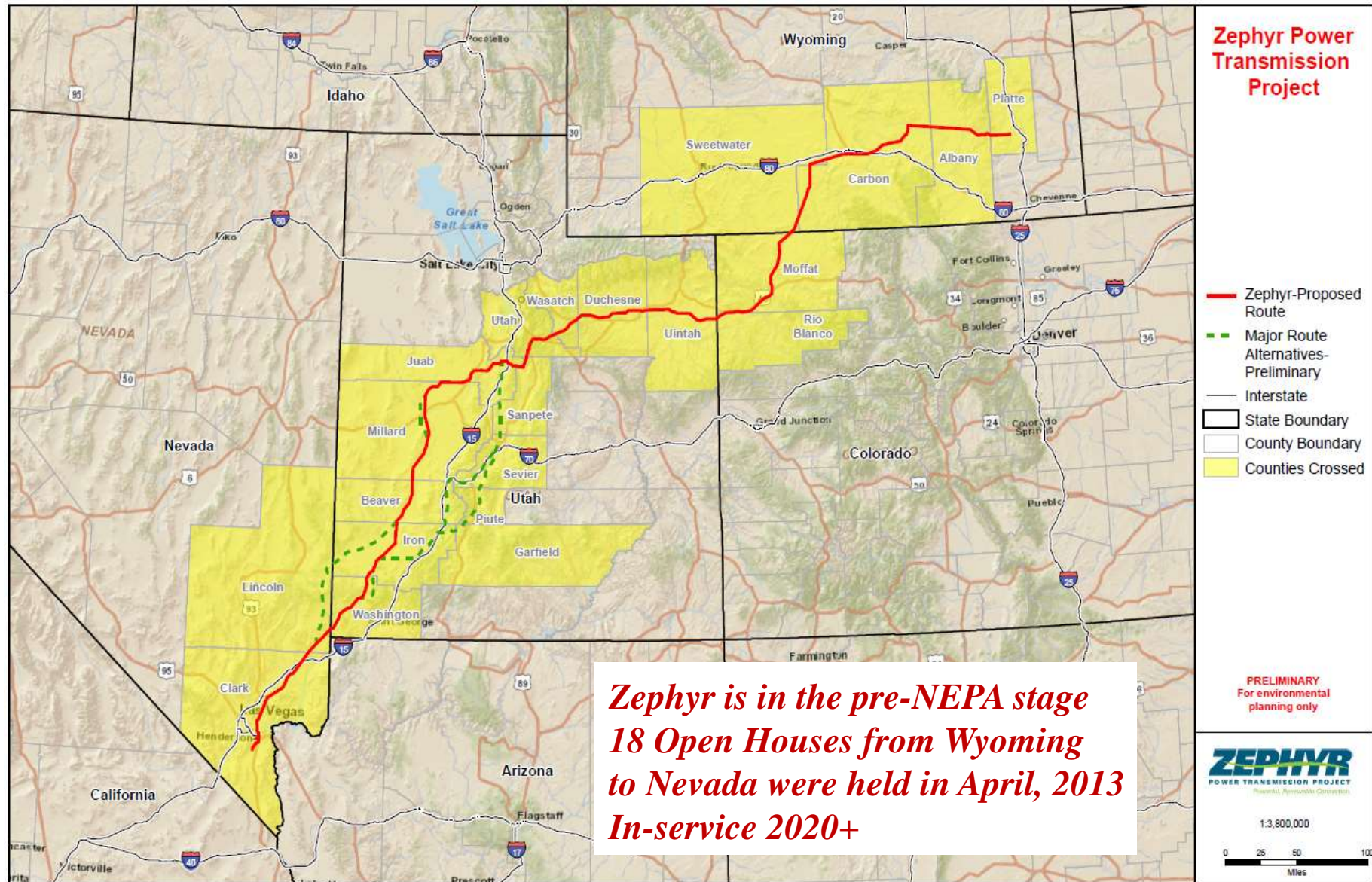
- Direct current **TransWest Express Transmission Project**
- 3,000 MW capacity, 600 kV HVDC
- 725-mile proposed route, connecting into California ISO at Marketplace
- Jointly developed by Western Area Power Administration, part of DOE
- Selected for special focus by federal interagency "Rapid Response Team for Transmission"
- NEPA process well advanced: Public scoping completed 2011; **Draft EIS released July 2013; Final EIS & ROD scheduled for 2014; In-Service 2017**





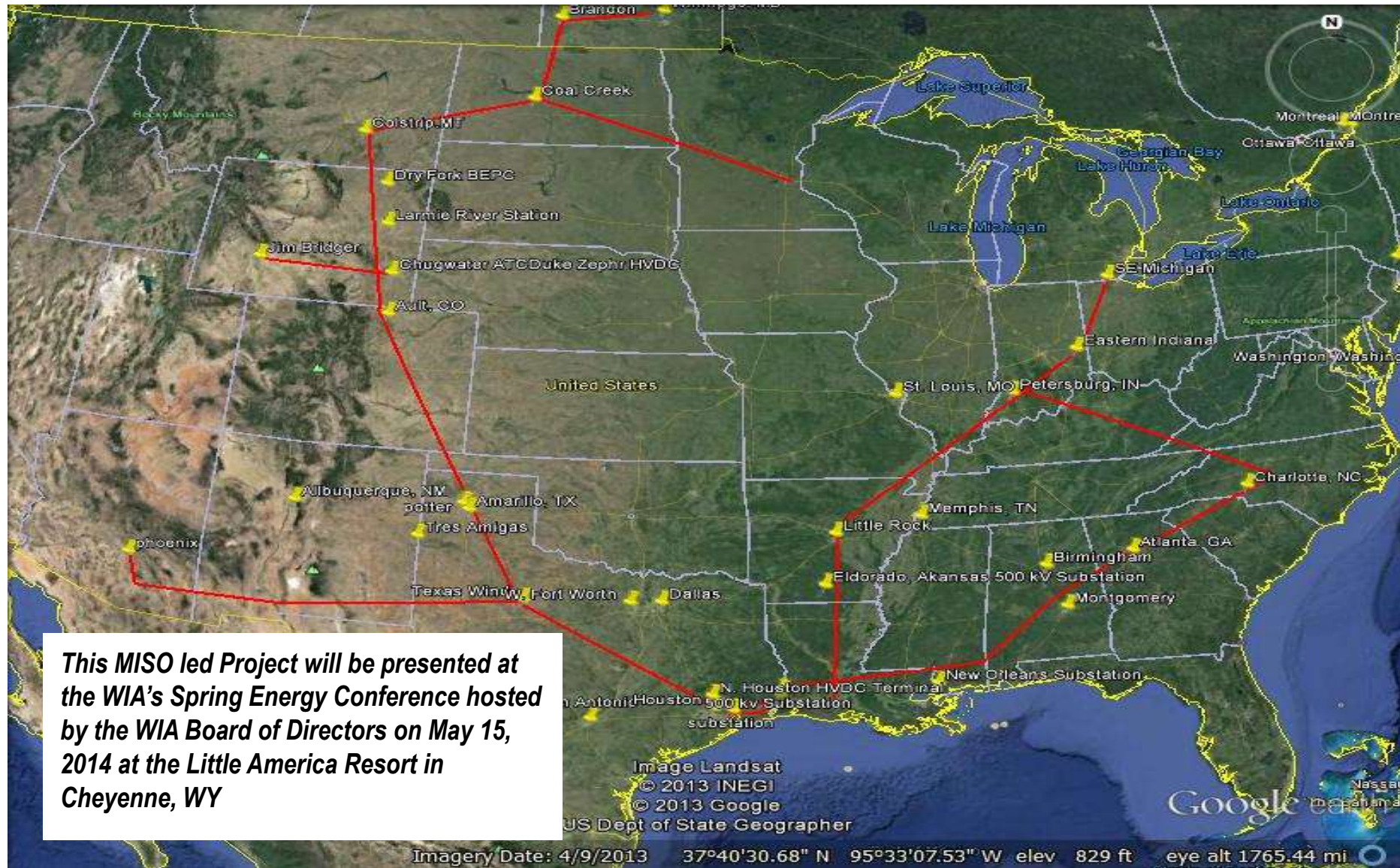
# Zephyr Transmission Project

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





# Midwest Express HVDC Transmission Project



# **WIA's Efforts Relative to Permitting & Siting of Transmission & Generation**

# Permitting & Siting

- Wyoming has a representative on the Western Governors' Association Siting Panel in cooperation with the President's Council on Environmental Quality & the Rapid Response Team comprised of a number of Federal agencies working on ways to improve the process (primary issue: BLM Field Offices)
- The WIA commissioned Tetra Tech to produce two (2) roadmaps (available at [www.wyia.org](http://www.wyia.org))
  - *Permitting Transmission in Wyoming*
  - *Permitting Wind Generation in Wyoming*



# **WIA's Outreach Initiative to California**

*Providing benefits to California beyond electricity*

# **Since November 2012, the WIA has held meetings with over eighty (80) people to-date from the following entities in California:**

- *Governor Brown's Office*
- *California PUC*
- *California Energy Commission (CEC)*
- *California Independent System Operator (CAISO)*
- *California Air Resources Board (CARB)*
- *California Senate Energy Committee Staff*
- *California Assembly Energy Committee Staff*
- *Southern California Edison*
- *San Diego Gas and Electric*
- *Pacific Gas and Electric*
- *Los Angeles Department of Water & Power*
- *California PUC Division of Rate Payer Advocates*
- *Northern California Power Agency (NCPA)*
- *Natural Resources Defense Council (NRDC)*
- *Stanford University*
- *University of California, Davis*
- *University of California, Berkeley*
- *California Wind Energy Association*
- *Greensparc Energy Advisors*
- *E3 Consulting*
- *Energy Foundation*

# Building a Value Proposition for Delivering Wyoming Wind to California

- Wyoming is a long-time leader in providing high-quality, low-cost energy resources to power our nation
- Wyoming renewable resources' quality and timing complement California renewable resources
- When combined together, these resources:
  - Will ensure California ratepayers receive the most cost-effective renewable energy
  - Will contribute to helping achieve California's greenhouse-gas emissions reduction goals



# Potentially \$600 million in savings annually

## WECC 10yr plan published in 2011

*Data from WECC 10 year plan*



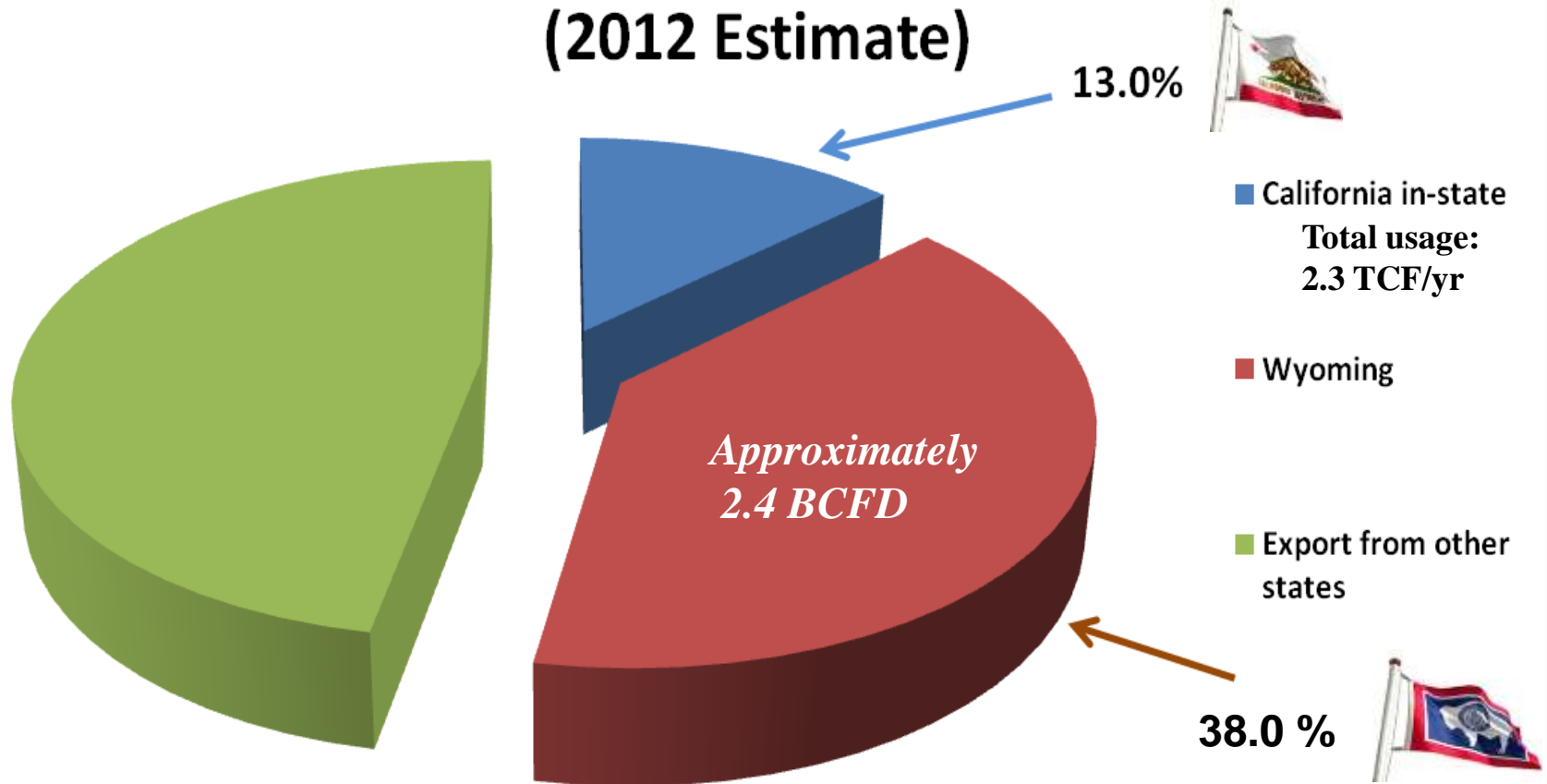
Annual Cost Estimates for Delivering Approximately 3,000 MW of Renewable Energy to California by 2019

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



# A great example of how Wyoming is already complementing California

## Where Does California Get its Natural Gas? (2012 Estimate)



Estimate is based on the addition of natural gas from Wyoming via the El Paso Ruby Pipeline completed in 2011

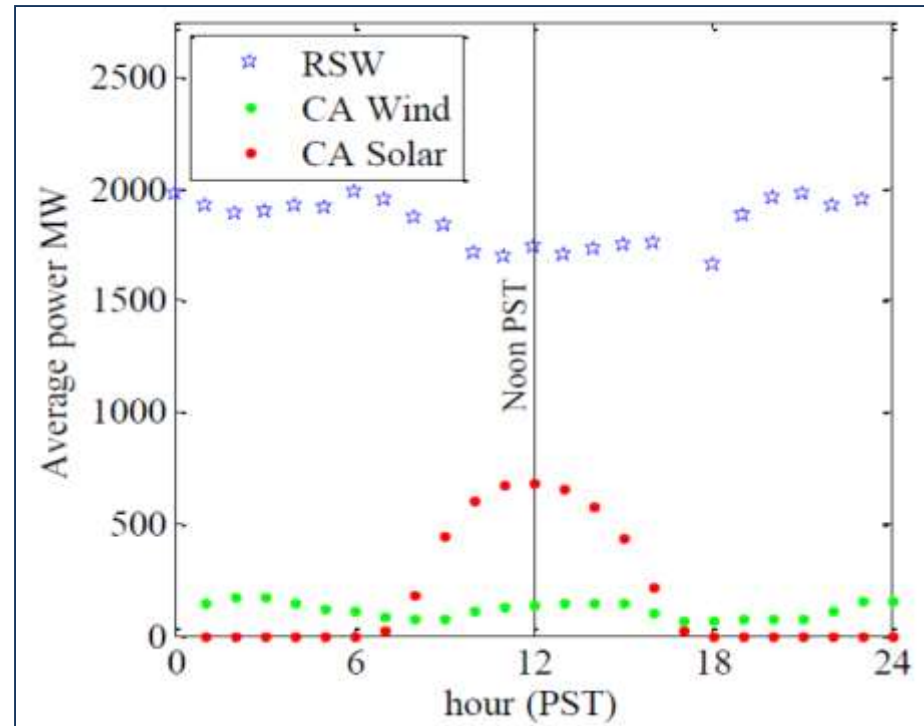
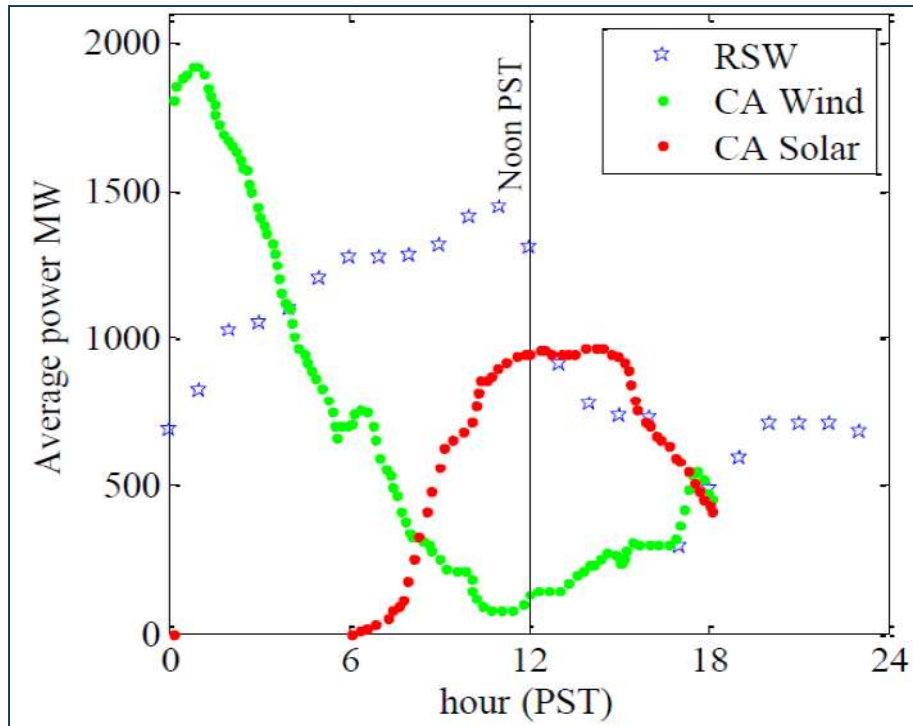
# Centerpiece of the WIA's Outreach Efforts

- Study compares the geographic diversity of Wyoming wind to wind and solar in California
- Commissioned by WIA and released January 25, 2013
- Results were compelling:
  - *Wyoming wind will **smooth the variability of wind and solar** on the California ISO System, mitigating ramping events*
  - *Wyoming wind **improved the correlation** of available wind supplies and the CAISO demand curve*
  - By reducing the need for dispatchable gas-fired generation:
    - ***Wyoming wind can help CA reduce emissions from gas-fired generation by 700,000 tons each year & save approximately 500 million gallons of water annually***
    - ***Wyoming wind can help CA save \$100 million+ annually***



# Wyoming/California Geographic Diversity Study

RSW is Wyoming wind in the Rawlins area



- The two charts are contained in Study and show California ISO data for wind and solar energy on their system combined with **3,000 MW of Wyoming wind** superimposed on the charts.
- Note that wind on the California ISO system **represents over 7,000 MW of nameplate capacity**.
- Two time periods were selected in August (above left) and November 2012 (above right).

# Summary Of Benefits to California with Complimentary Wyoming Resources

- *2011 WECC 10-year Regional Plan Study estimates \$600 million in savings annually---a new NREL Grid Integration Study for release in March 2014 will reflect \$750 million in annual savings*
- *University of Wyoming study estimates \$100 million in savings annually in the Phase I Geo Diversity Study released in 2013 plus substantial emissions savings & water savings*
- *Wyoming wind qualifies as in-state equivalent renewables under SB21X*
- *Wyoming already is the low-cost supplier of 38% of California's natural gas needs*
- *Wyoming projects will create direct, indirect, induced jobs that will benefit California labor and other workers across the West*

**We've heard it said:**

***California will develop all of its renewable  
requirements in-state***

# Renewable Energy on the CAISO System

- Over 25% of the wind energy currently on the California ISO system is from out of state
- There are massive amounts of hydroelectric power that flow into California annually
- Solar energy from outside California is being contracted on a regular basis.
- The direct current transmission projects being developed to deliver Wyoming wind to California and the corresponding wind energy ***qualifies as “Bucket 1; in-state equivalent” pursuant to SB21X (according to the California Energy Commission)***



**We've heard it said:**

***Organized Labor in California does not support  
imports of renewable energy***

# Union Support for Transmission from Wyoming

*In 2012, letters of support for the TransWest Express Project were written to Governor Brown, Energy Secretary Chu and Interior Secretary Salazar were written 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 AFLCIO*

**We've heard it said:**

***Long-line transmission cannot be built given the  
permitting & siting regulations***

# **The permitting & siting process for long-line transmission can be achieved:**

---Gateway West has it's ROD

--- TransWest Express' ROD is scheduled for late 2014

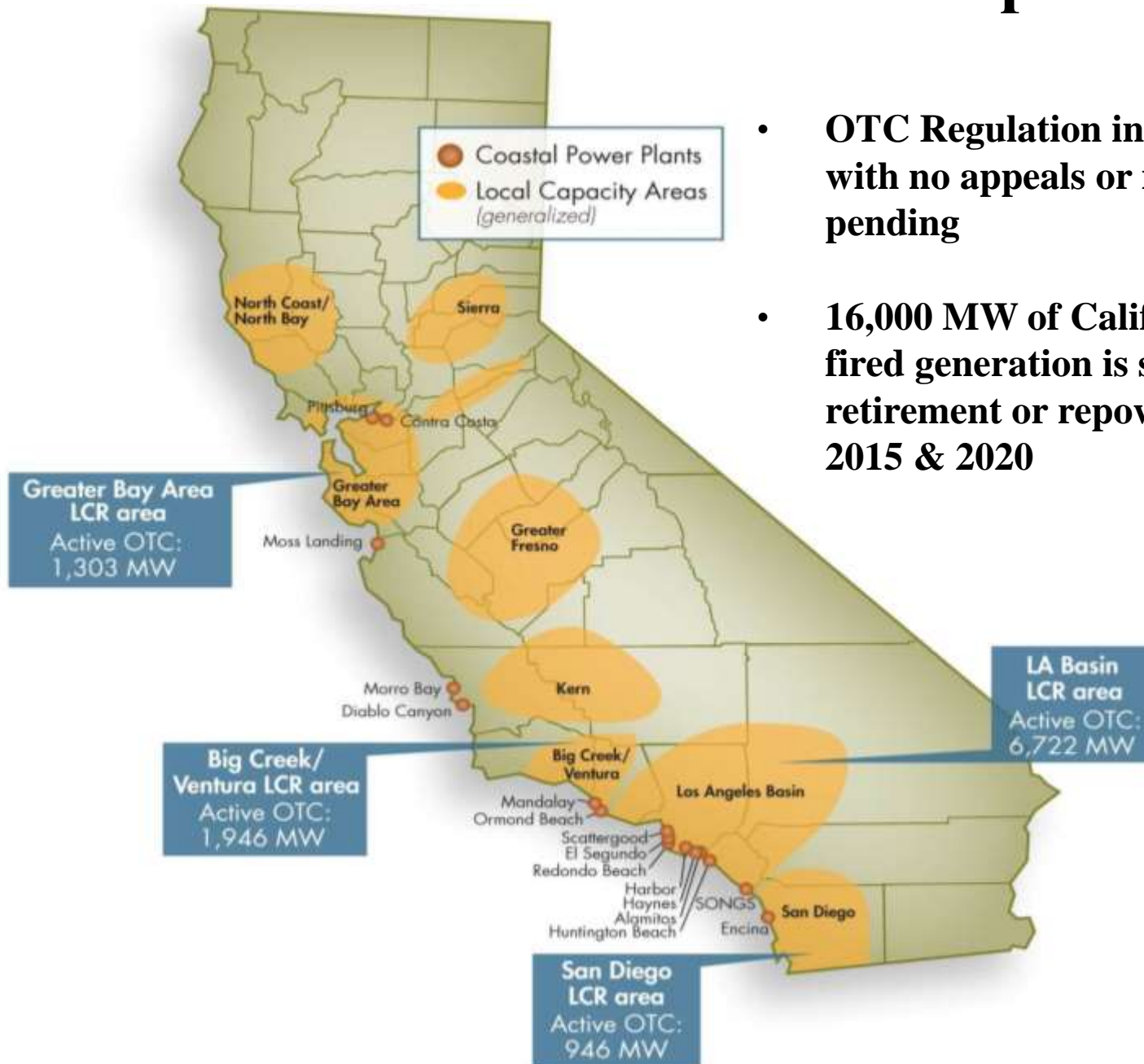


# **Once Through Cooling Policy Challenge in California & Nuclear Issues**

# The OTC Problem in CA

- On May 4, 2010, the State Water Board adopted a Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (Policy) and became effective on October 1, 2010.
  - *2015 deadline for most natural gas-fired facilities*
  - *2020 for gas-fired facilities in the LA area*
  - *2024 for Diablo Canyon*
- The Policy applied initially to the 19 existing power plants that currently have the ability to *withdraw over 15 billion gallons per day* from the State's coastal and estuarine waters using once-through cooling (OTC).

# California's OTC Impacts



- OTC Regulation in California is fact with no appeals or modifications pending
- 16,000 MW of California natural gas-fired generation is scheduled for retirement or repowering by 2015 & 2020

**California has only one (1) Remaining Nuclear Generation Facility,  
Diablo Canyon-**

**With increasing discussions about its possible closure  
Two units sized at 1,100 MW---total---2,200 MW**





# **Additional Studies Commissioned by the WIA**

# Studies Underway

- University of Wyoming Phase II Wyoming/California Geographic Diversity Study
  - Expected release date in March 2014
  - Based on actual, 10 minute multi-year data---look for some substantial findings
- NREL Grid Integration Study for Wyoming Transmission to California
  - Expected to be completed in March 2014

*All studies, when released, are posted on the WIA website at [www.wyia.org](http://www.wyia.org)*

# **Other Activities of the WIA**

# Support for Clean Coal & Advanced Fuel Technologies

- *Coal to Motor Fuels (CTL)*
- *Underground Coal Gasification for conversion to petroleum products (UCG)*
- *Natural Gas to Motor Fuels (GTL)*
- *Liquefied Natural Gas (LNG)*
- *Compressed Natural Gas for transportation (CNG)*
- *Carbon Capture and Sequestration (CCS)*
- *CO<sub>2</sub> for enhanced oil recovery (EOR)*
- *Natural Gas-Fired Generation to address the variability of wind and solar*

# **WIA Energy Conferences**

## **hosted by the WIA Board of Directors**

- *Three (3) Meetings Annually—Winter Meeting was held in Cheyenne on Jan 23-24, 2014; Spring Meeting is scheduled for Cheyenne on May 14-15, 2014; the Fall Meeting is scheduled for Jackson on September 25-26, 2014*
  - *Well attended ---150-200 Stakeholders*
  - *Agenda includes the horizon of energy issues in Wyoming with quality speakers*
- *Public Meetings---**we encourage you to attend***



# Questions?

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



**Wyoming Infrastructure Authority  
200 East 17<sup>th</sup> Street  
Cheyenne, WY  
307-635-3573**

**Loyd Drain  
Executive Director  
[loyd.drain@wyo.gov](mailto:loyd.drain@wyo.gov)**

*Register on the home page of our website to receive announcements and updates on activities in Wyoming at [www.wyia.org](http://www.wyia.org)*