

CDFA – Stern Brothers Renewable Energy Finance Webcast Series: Financing Renewable Energy in the Wild Wild West

The Broadcast will begin at 1:00pm (EDT).

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**Advanced Bond
Finance WebCourse**



October 15-16, 2013
Daily: 12-5pm (EDT)

**Intro Tax Increment
Finance WebCourse**



November 12-13, 2013
Daily: 12-5pm (EST)

**Intro Energy
Finance WebCourse**



December 11-12, 2013
Daily: 12-5pm (EST)

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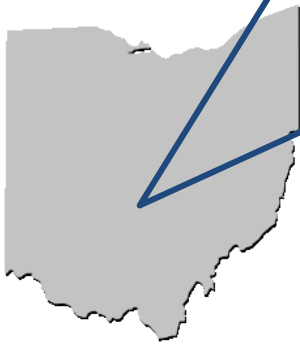


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Financing Renewable Energy in the Wild Wild West

Katie Kramer

**Director, Education & Programs
Council of Development Finance Agencies
Columbus, OH**



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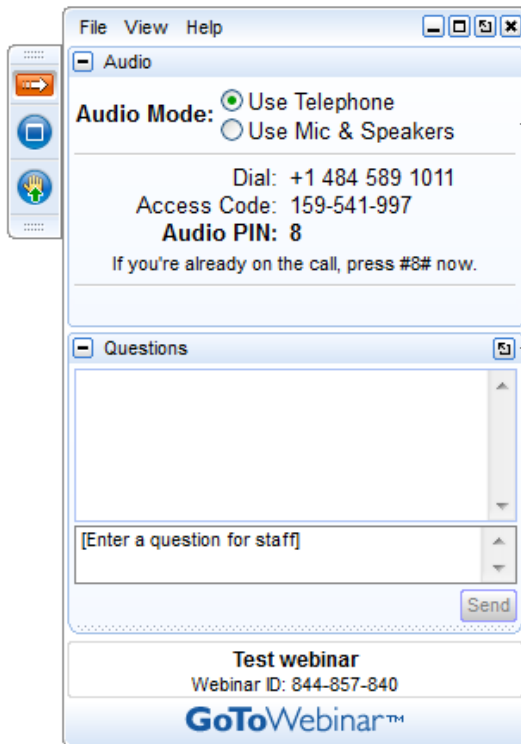
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Financing Renewable Energy in the Wild Wild West



Using your telephone will give you better audio quality.

Submit your questions to the panelists here.

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Financing Renewable Energy in the Wild Wild West

Speakers

Les Krone, *Moderator*
Stern Brothers & Co.

David Hurlbut
National Renewable Energy
Laboratory

Suzanne Linfante
Nevada Governor's Office of Energy

John Kinney
Clean Fund



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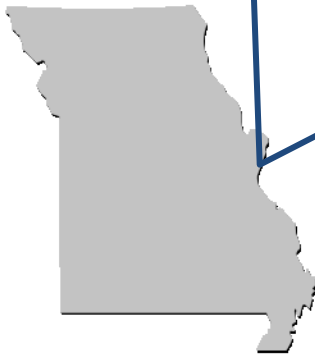


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Financing Renewable Energy in the Wild Wild West

Les Krone

**Managing Director
Stern Brothers & Co.
St. Louis, MO**



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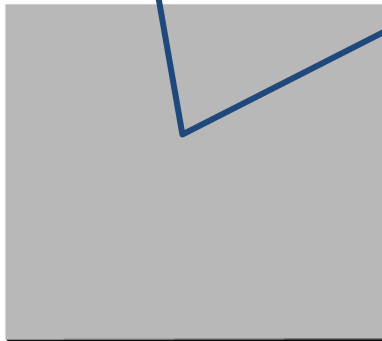
Financing Renewable Energy in the Wild Wild West

David Hurlbut

Economist

National Renewable Energy Laboratory

Golden, CO



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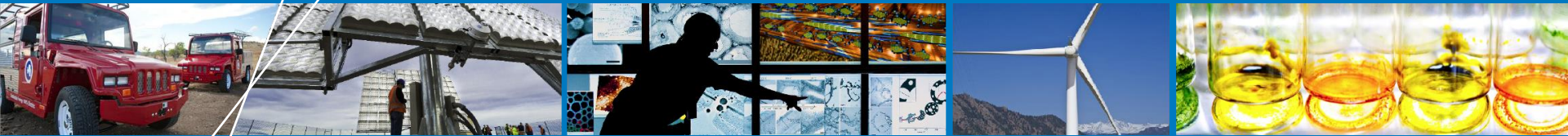
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Beyond RPS: Long-Term Supply Outlook for Western States



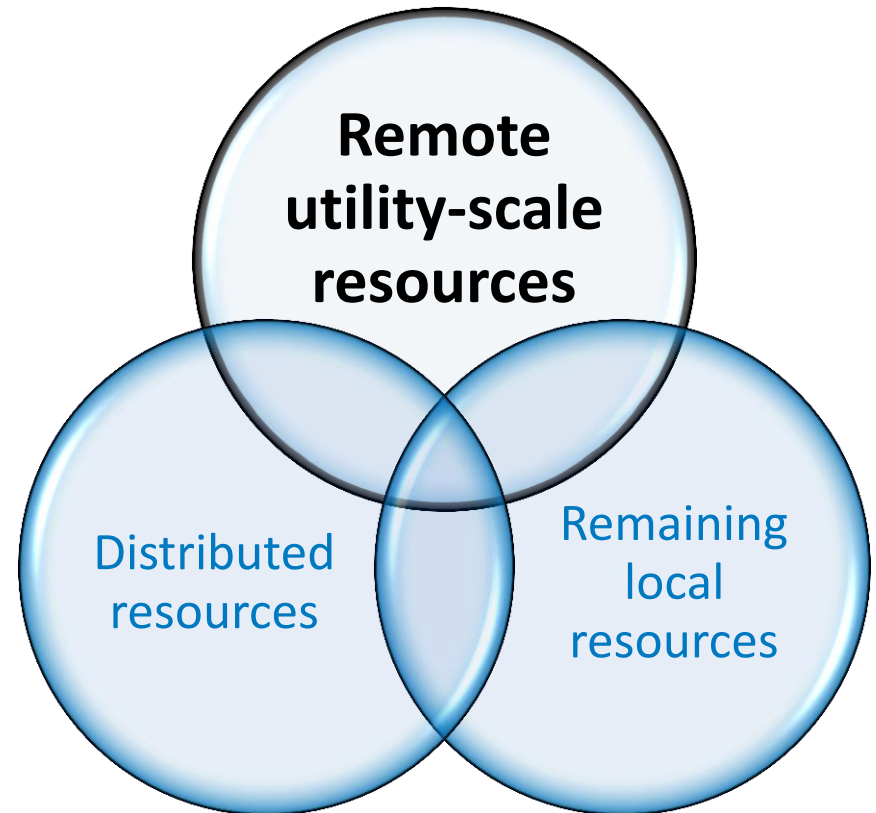
**Briefing for Council of
Development Finance Agencies**

David J. Hurlbut

September 26, 2013

Goal of the Study

- **Outlook for utility-scale renewable energy development in the West once states have met their various RPS requirements**
- **Target year: 2025**
- **Portfolio approach**
 - Large-scale regional RE projects will be one of several options
 - No choice precludes any other. What mix is best?

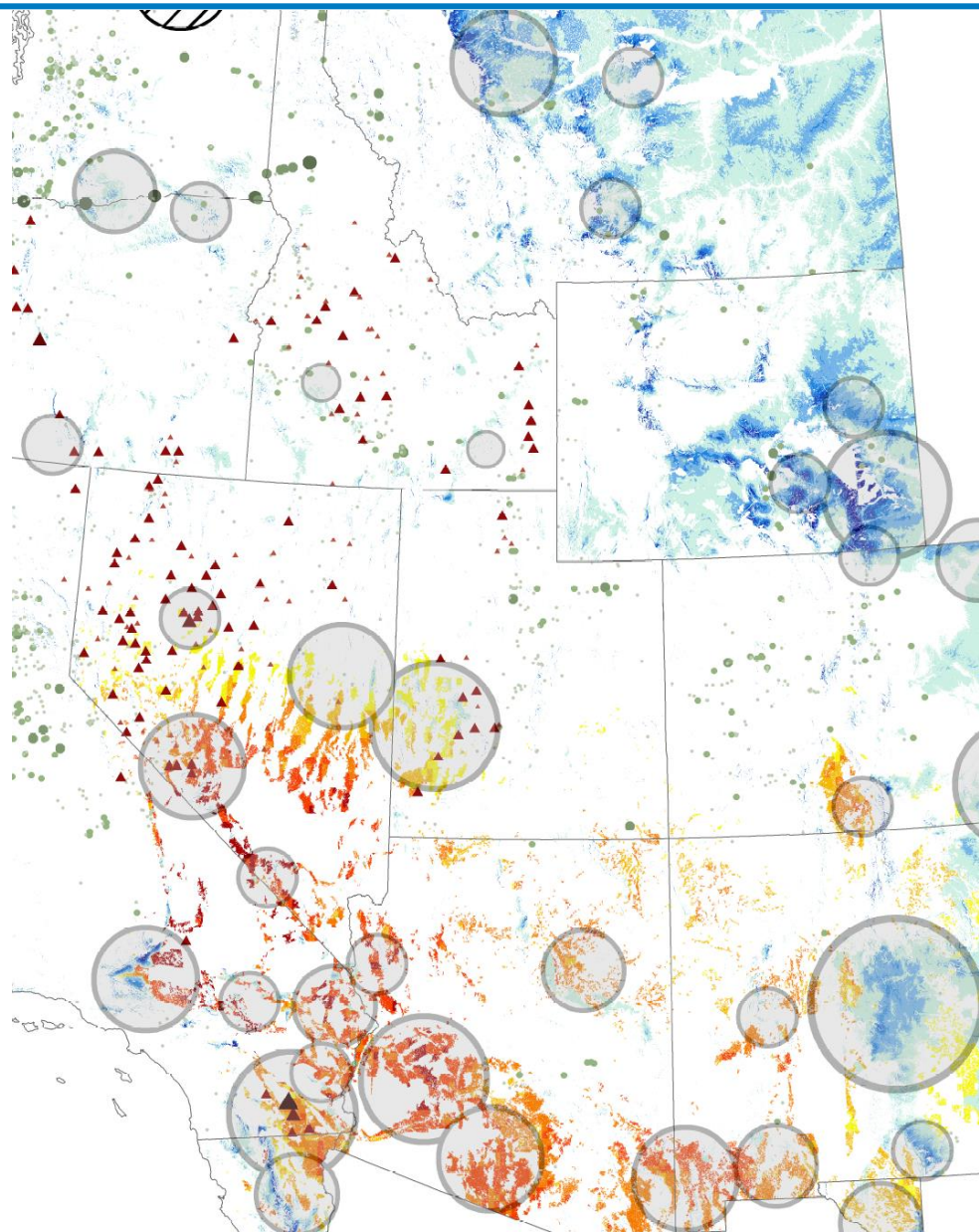


Builds on and Extends Previous Work

- **Western Renewable Energy Zone Initiative**
 - Western Governors' Association, with DOE support
 - Earlier phases included resource assessment, development of transmission scenario tool, survey of utilities and regulators
- **Similar state assessments, planning by WECC**

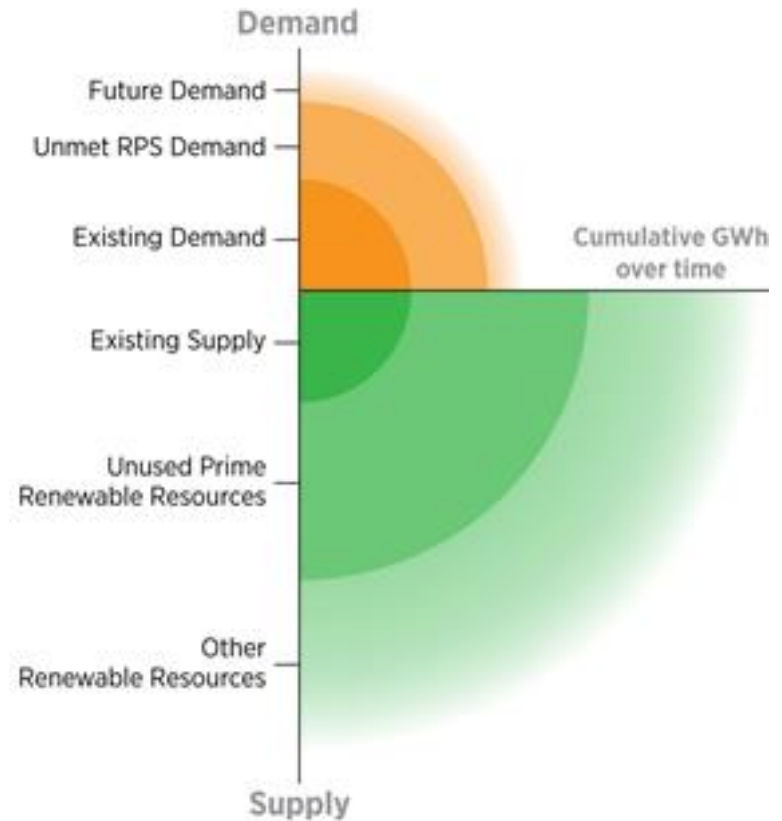
Focus on Prime-Quality Renewables

- All resources screened for known land use constraints
- Quality screens identified concentrations of high-productivity resources
- This study examined the ‘best of the best’
 - Wind: 40% capacity factor or better (dark blue)
 - Solar: 7.5 kwh/m²/day DNI or better (red)
 - Geothermal: sites where exploration indicates sufficient heat at developable depth (brown triangles)

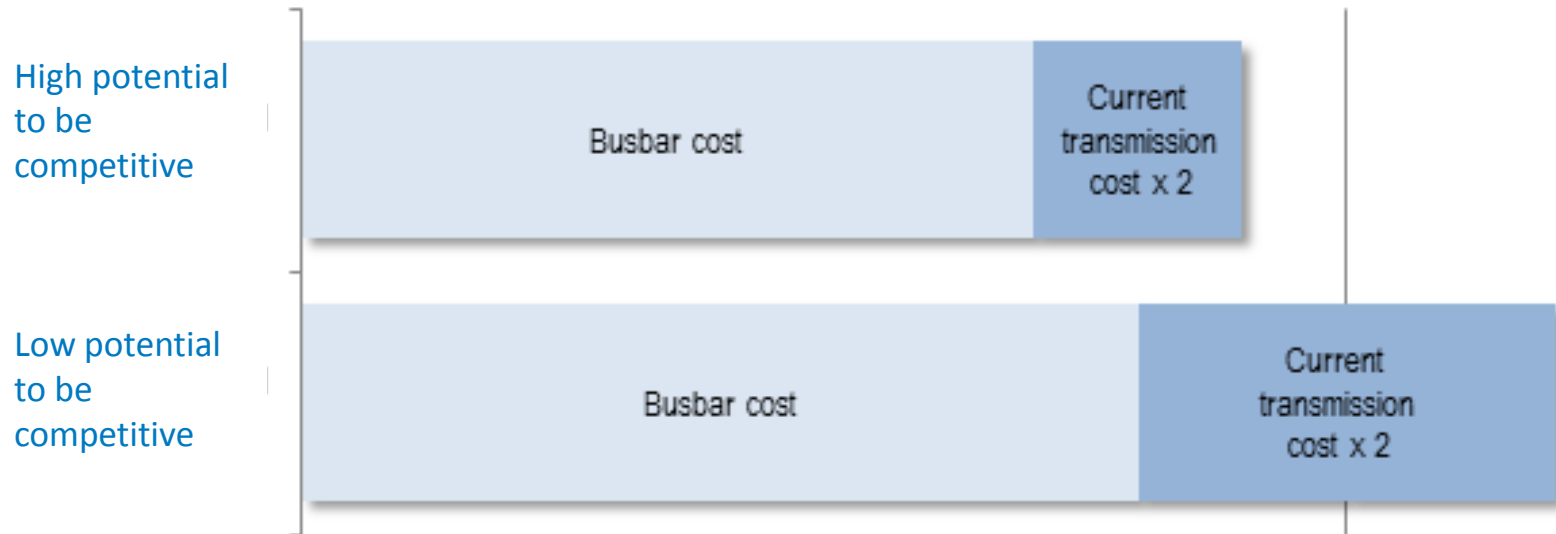


Analytical Approach: Find Likely Surpluses

- What's likely to be left over after RPS laws culminate?
- Test the relative value of 'resource paths' from potential exporting states to potential importing states



Analytical Approach: Benchmark Costs

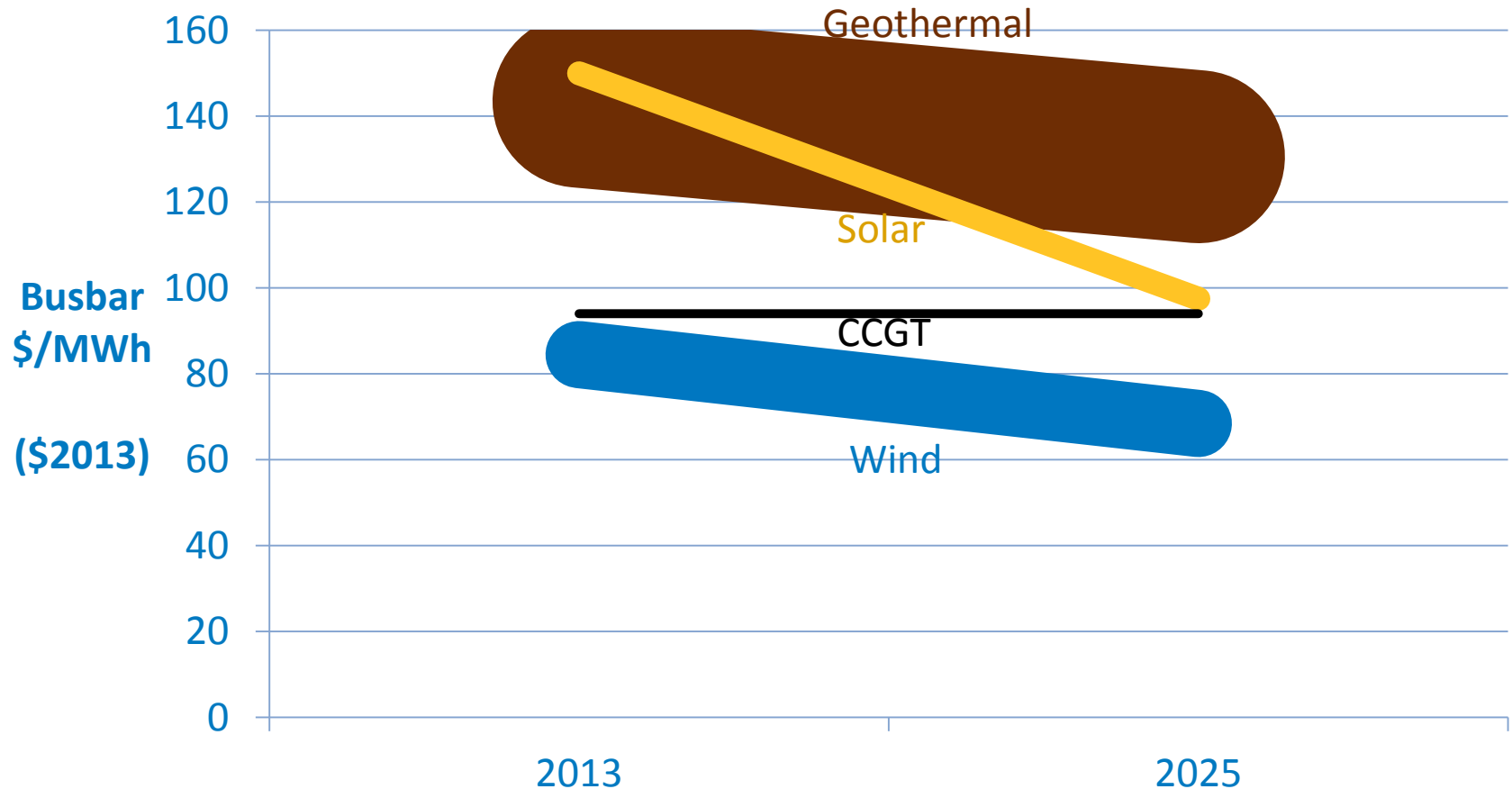


$$\text{score} = \frac{\text{busbar cost} + 2 \times \text{transmission cost}}{\text{benchmark}}$$

Benchmark for testing delivered cost in destination market

Note: Busbar costs assume PTC, ITC have expired and are no longer available

Capital Cost Trajectories



(Thickness indicates approximate range of busbar costs)

Scoring methodology

$$\frac{2025 \text{ busbar cost} + 2 \times \text{transmission tariffs}}{\text{state benchmark}} = \text{index score}$$

Busbar cost:

Extends cost trajectories to 2025

Subtracts state's best resources (assumed to be in use for RPS)

Transmission tariffs:

Current filed tariff rates for utility territories from renewable energy zone to destination market

\$/kW rates for firm point-to-point, scheduling/control/dispatch, voltage control

\$/kW rates converted to \$/kWh using system loss factors stated in transmission tariff, technology-specific capacity factors

Benchmarks:

All-in cost of new combined cycle gas generator, based on California PUC's Market Price Referent

Capital costs, fuel costs adjusted for each state based on observed data

For variable renewables, benchmark adjustments capture coincidence with load

Top-scoring Resource Paths

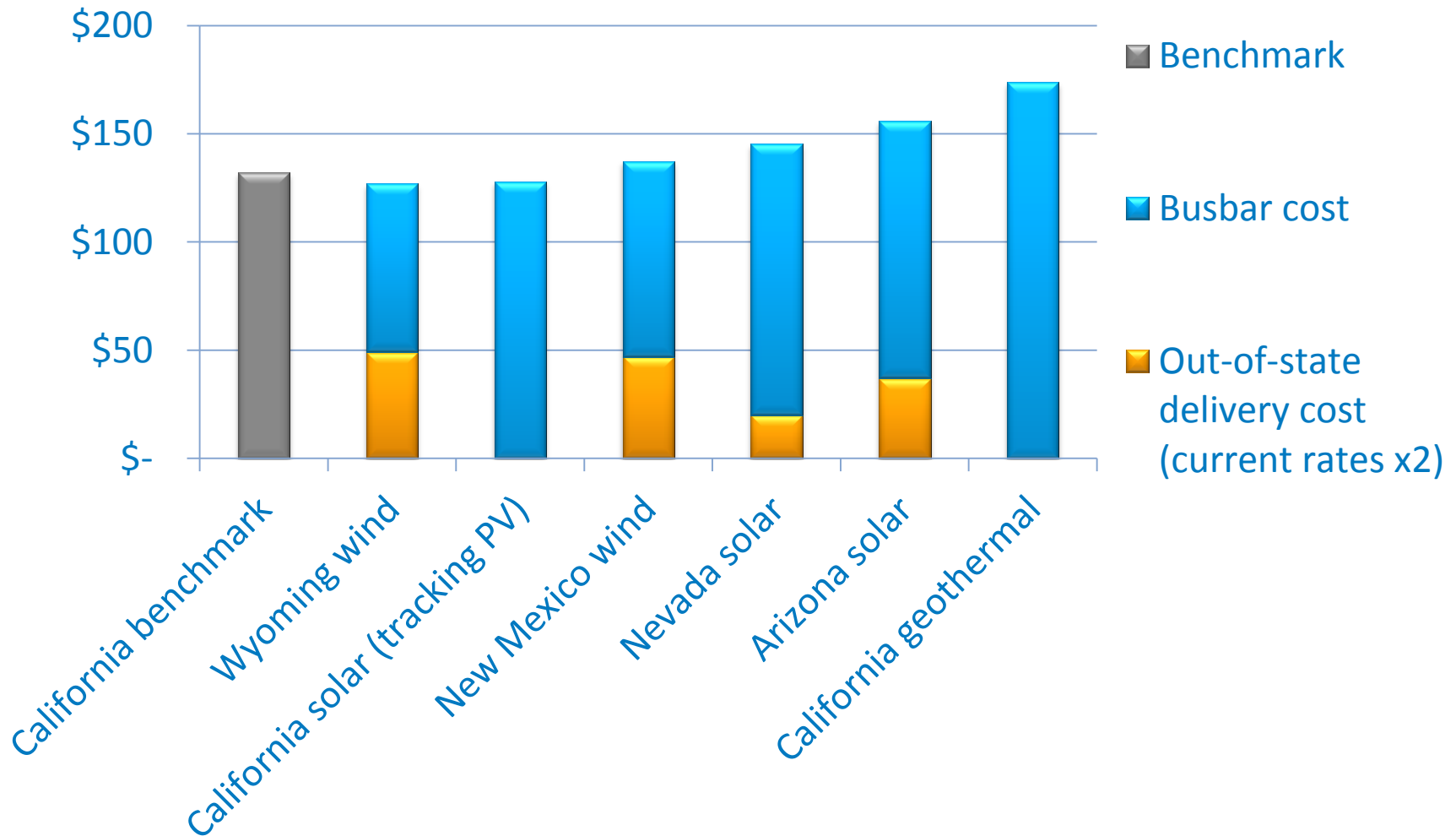
High value potential



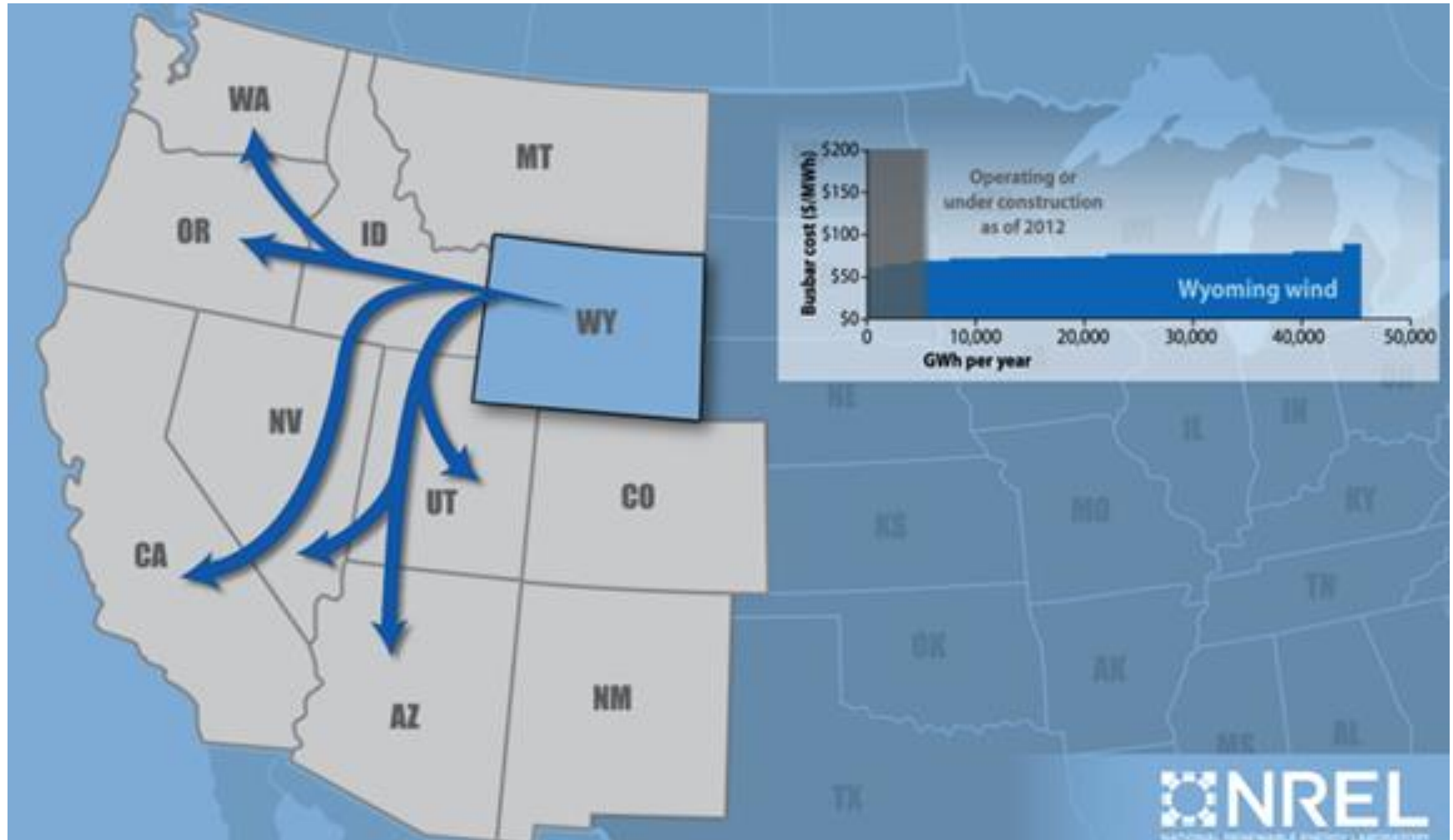
Moderate value potential

	Index score
Wyoming wind to Nevada	0.79
Wyoming wind to Utah	0.84
New Mexico wind to Arizona	0.94
Wyoming wind to Arizona	0.95
Wyoming wind to California	0.97
Wyoming wind to Washington	1.04
Wyoming wind to Oregon	1.04
New Mexico wind to California	1.06
Nevada solar to California	1.07

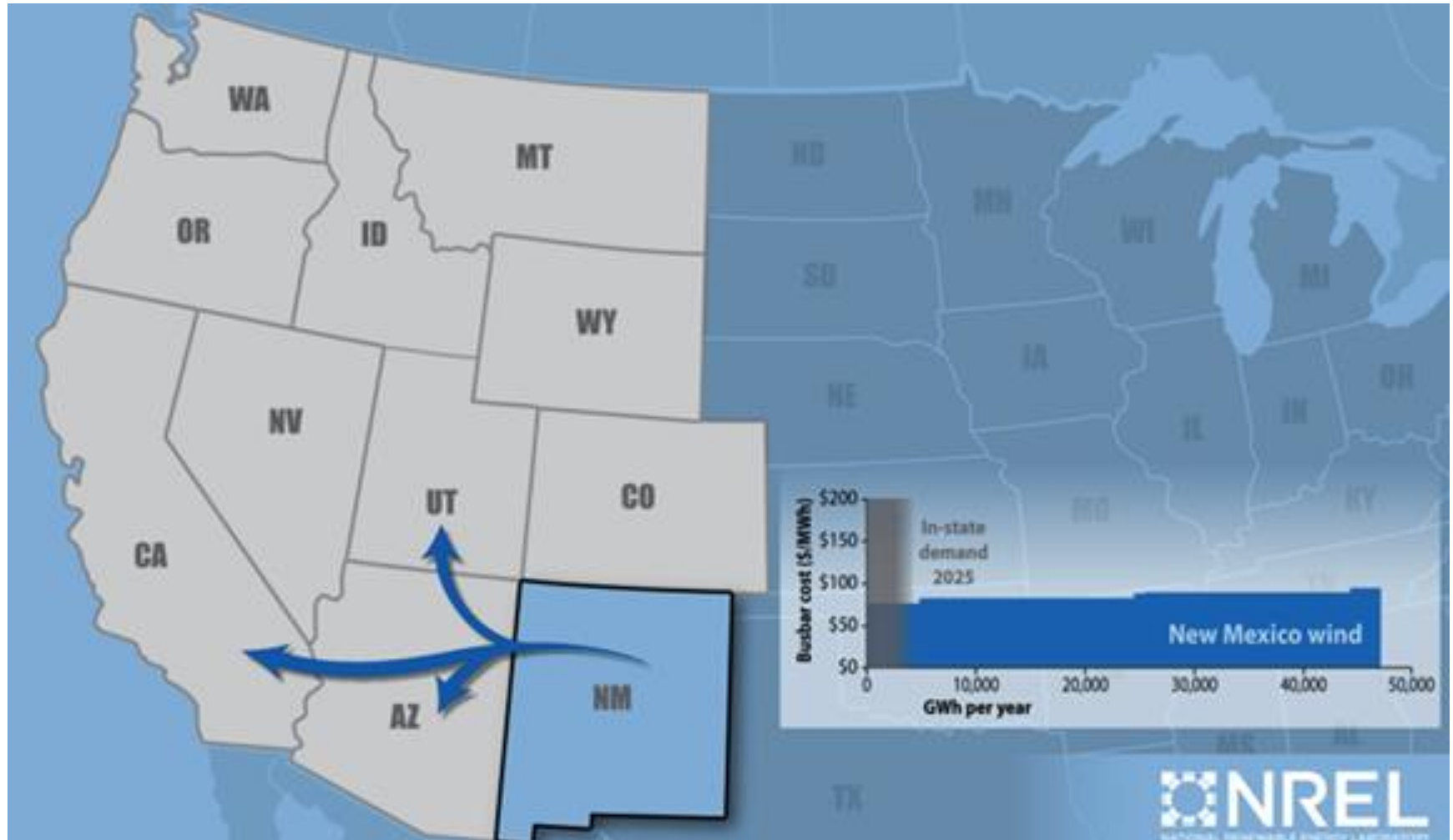
Destination Market: California



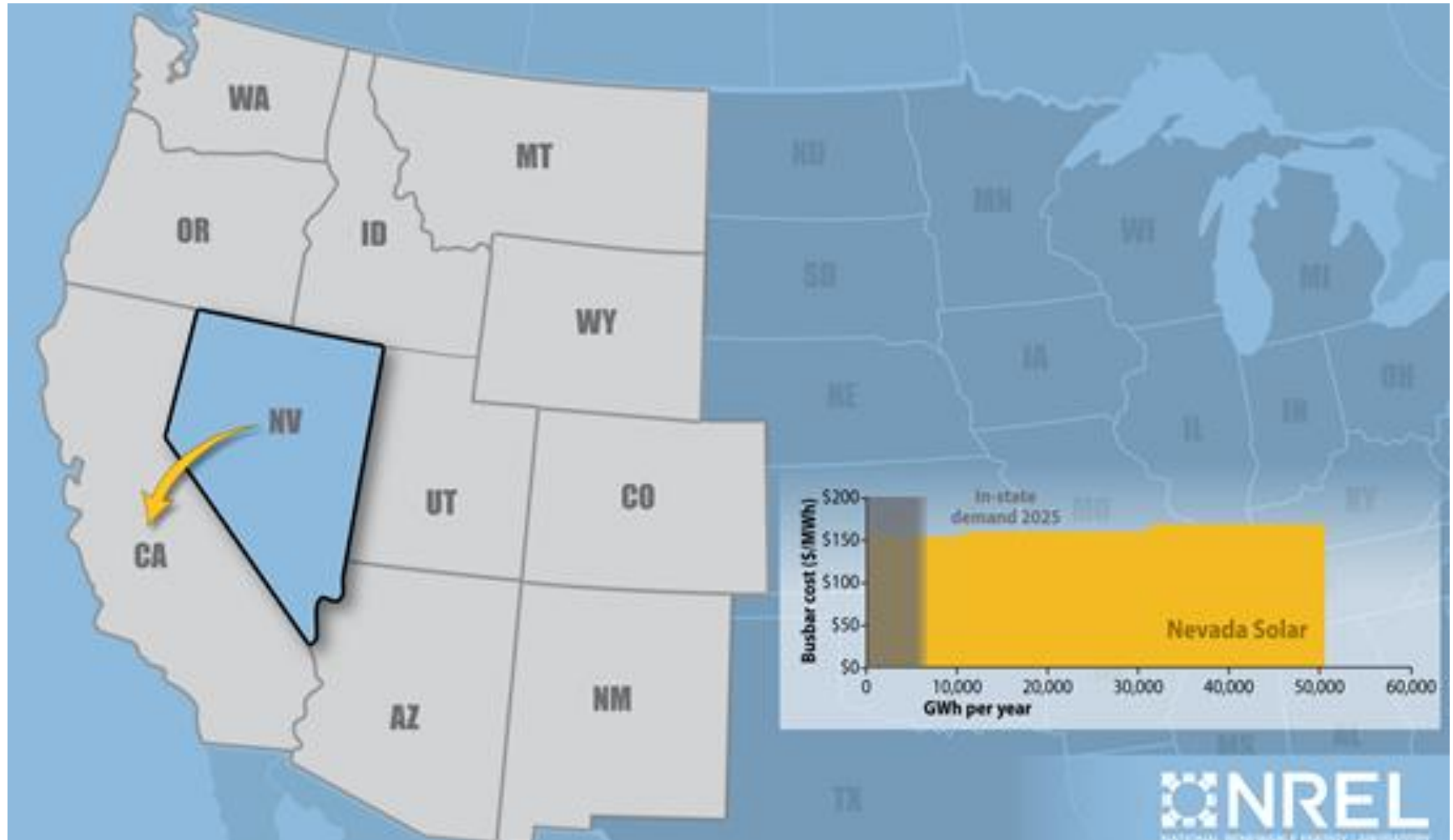
Wyoming wind: \$76/MWh busbar



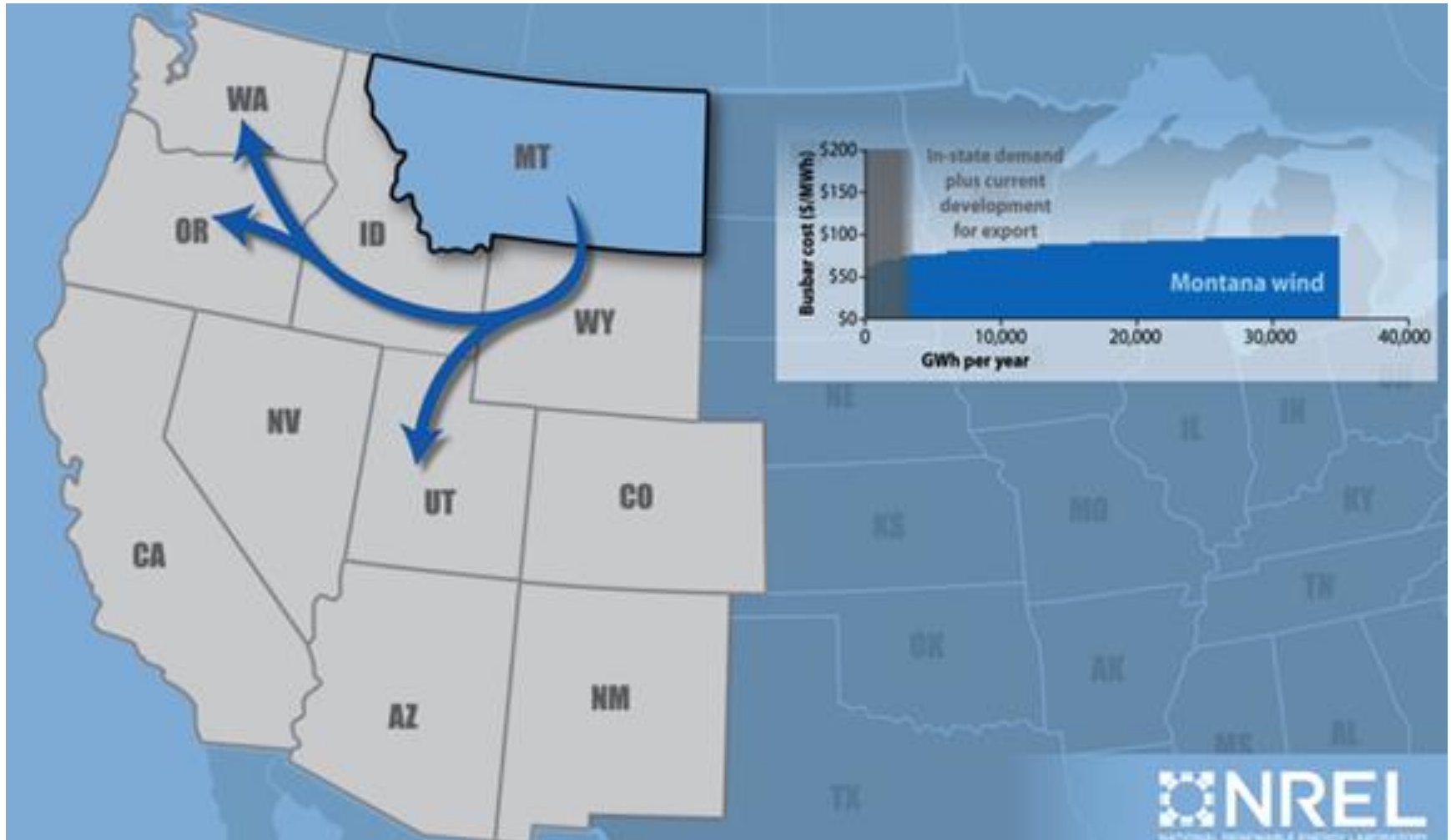
New Mexico wind: \$86/MWh busbar



Nevada solar: \$151/MWh busbar



Montana wind: \$82/MWh



Future Competitiveness Excluding PTC, ITC

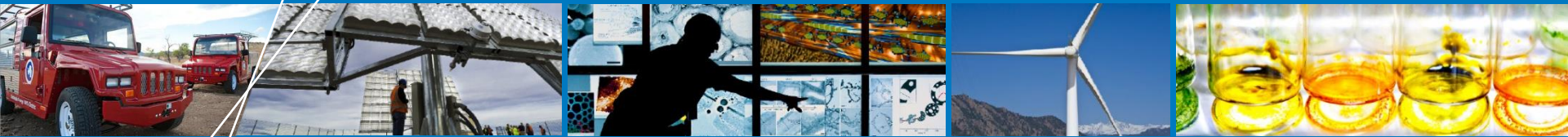
Difference from forecasted cost of new combined cycle gas turbine (2025)		
	%	\$/MWh
Geothermal <i>Idaho to California, Northwest; Nevada to California; Imperial Valley to Arizona</i>	12% - 35% higher	\$15 - \$42 higher
Solar <i>Nevada and Arizona to California</i>	1% - 19% higher	\$1 - \$31 higher
Wind <i>Wyoming and New Mexico to California and Arizona; Montana and Wyoming to Oregon, Washington and California</i>	Parity to 13% higher	Parity to \$16 higher

Risks and puzzles

- **Drivers for new generation capacity will be different in 2025**
 - ~~Load growth~~
 - Load growth is largely offset by energy efficiency, DSM
 - Aging units could be retired
 - Emission regulations could affect unit utilization
- **Can regional planning translate to regional investment?**
 - Many value propositions identified here rely on regional development to move low-cost resources to load centers
 - Requires regulatory coordination among different jurisdictions
- **For many projects, rate base is not an option**
 - Most renewable generation and some transmission is developed by independent providers; no guaranteed revenue stream from a retail customer base

Main conclusions

- **Costs for renewables and conventional generation seem likely to converge around the time current state RPS requirements culminate, provided the most productive renewables are developed**
- **Future electric generation portfolio is likely to represent a balance of operational characteristics**
 - Low emissions, flexibility, base load, demand-side
 - Smaller cost differences among options



David J. Hurlbut

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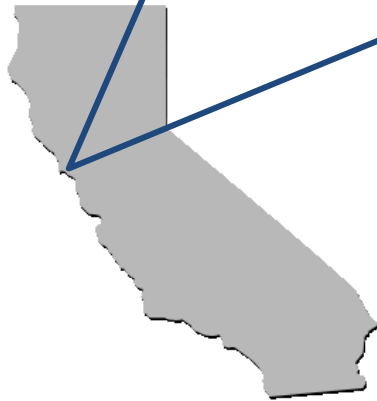
Financing Renewable Energy in the Wild Wild West

John Kinney

President & CEO

Clean Fund

San Francisco, CA



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FINANCIAL ENERGY AND THE POWER OF PACE.

CLEAN:FUND

MARKET POTENTIAL

EE and RE have significant unrealized potential due to suboptimal or unavailable financing options

Buildings use resources...

Use **40%** of world's energy

Emit **40%** of world's carbon footprint

Use **1/5th** of world's available water



50% of today's existing building stock will still be in use in **2050**

Available energy savings within this building stock are estimated at **20-40%**

Energy efficiency measures in the US would create



600,000-900,000 green jobs

and...

Reduce energy by **29%** by 2020



Save **US\$ 290 billion** in energy costs

Avoid about **360 million tons** of GHG emissions that year

87% of this potential exists in retrofitting buildings

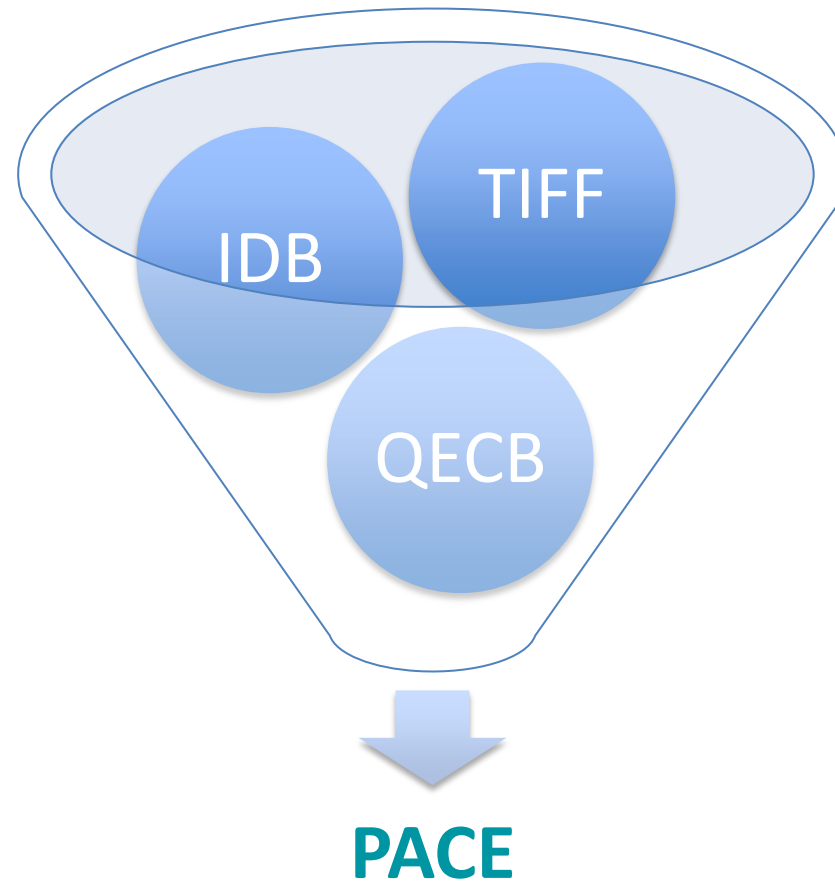


Today's cities house over **50%** of the global population and consume 3/4 of the world's energy. By 2050, cities will house **70%** of the global population and their energy needs will grow exponentially.

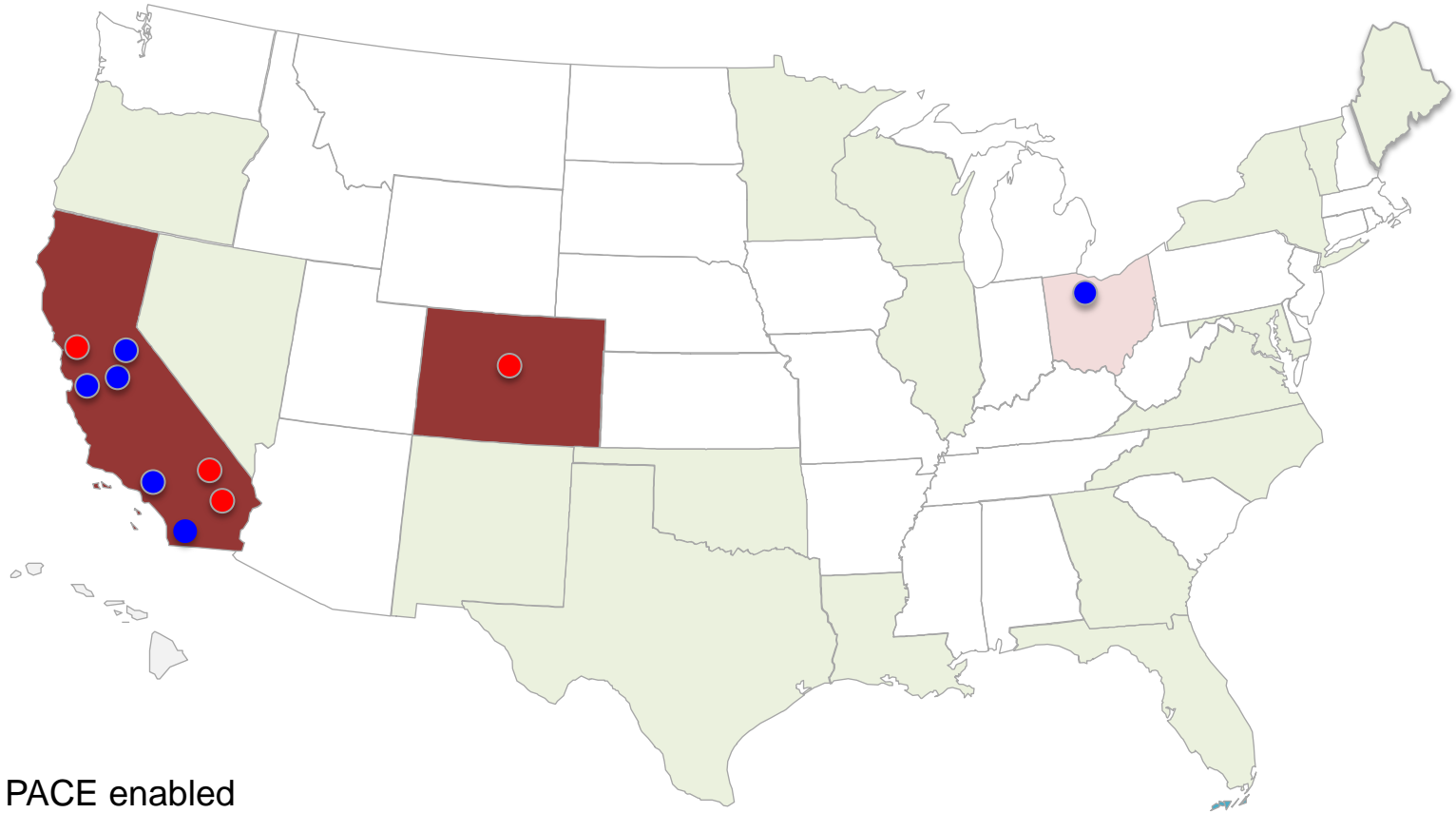
For every **1% increase** in urban population, energy consumption goes up by **2.2%**.






Source: WEF, Arup, 2011

WHEN TO USE PACE?

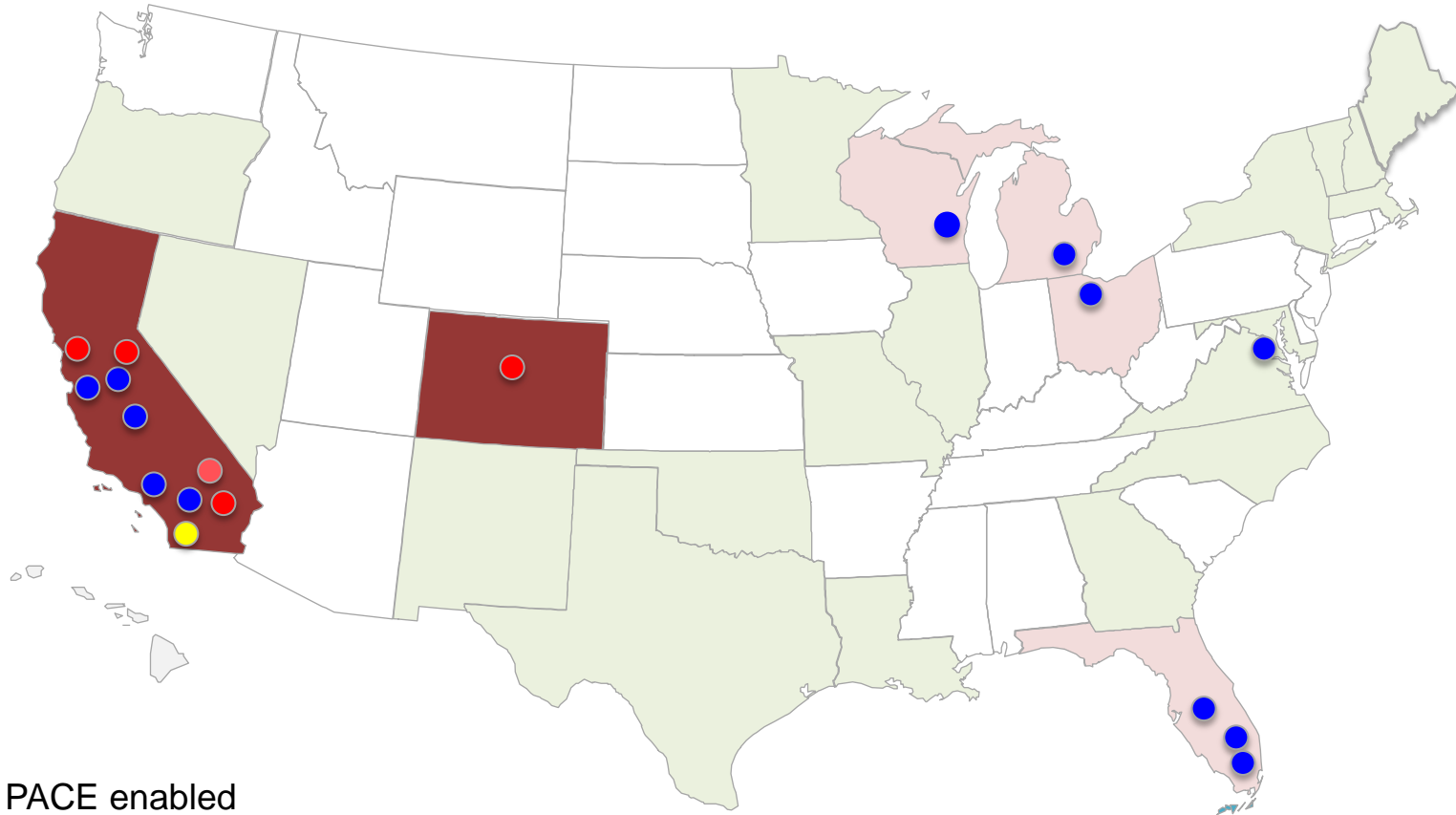


June 2010



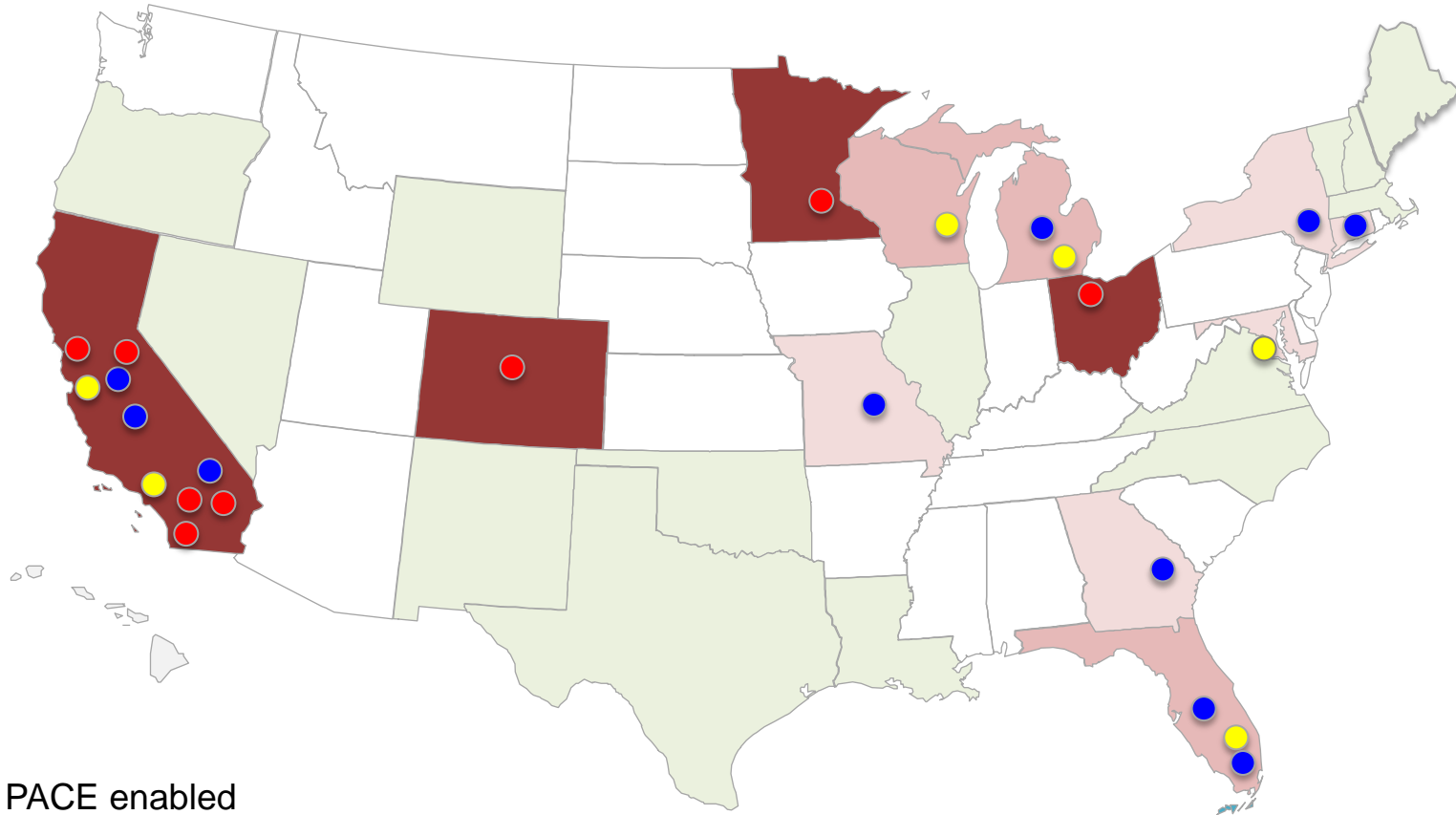
-  PACE enabled
-   Early stage PACE program development
-   PACE programs with funded projects








June 2011



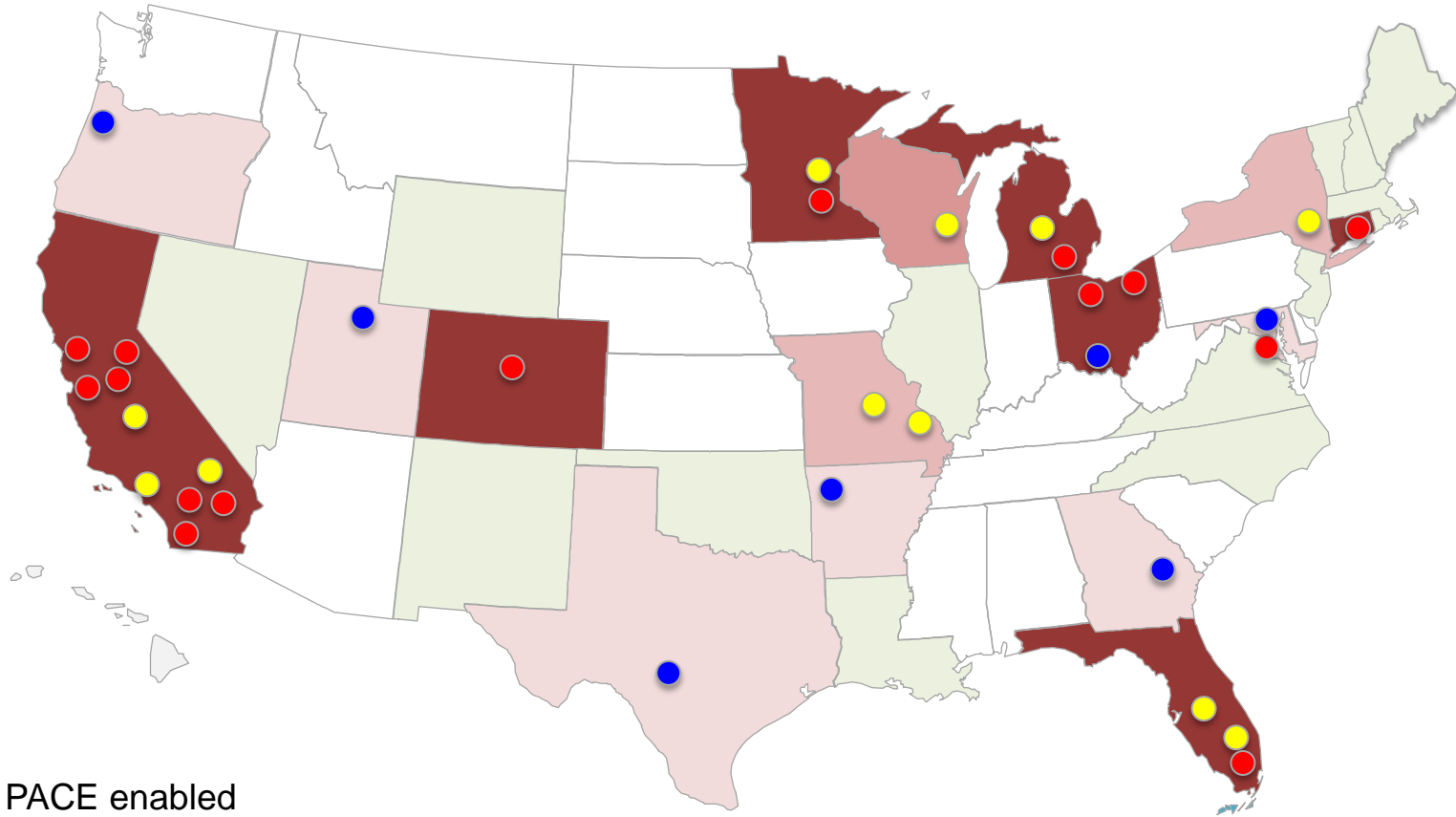
- PACE enabled
- Early stage PACE program development
- Launched PACE programs
- PACE programs with funded projects








June 2012



-  PACE enabled
-   Early stage PACE program development
-   Launched PACE programs
-   PACE programs with funded projects

June 2013

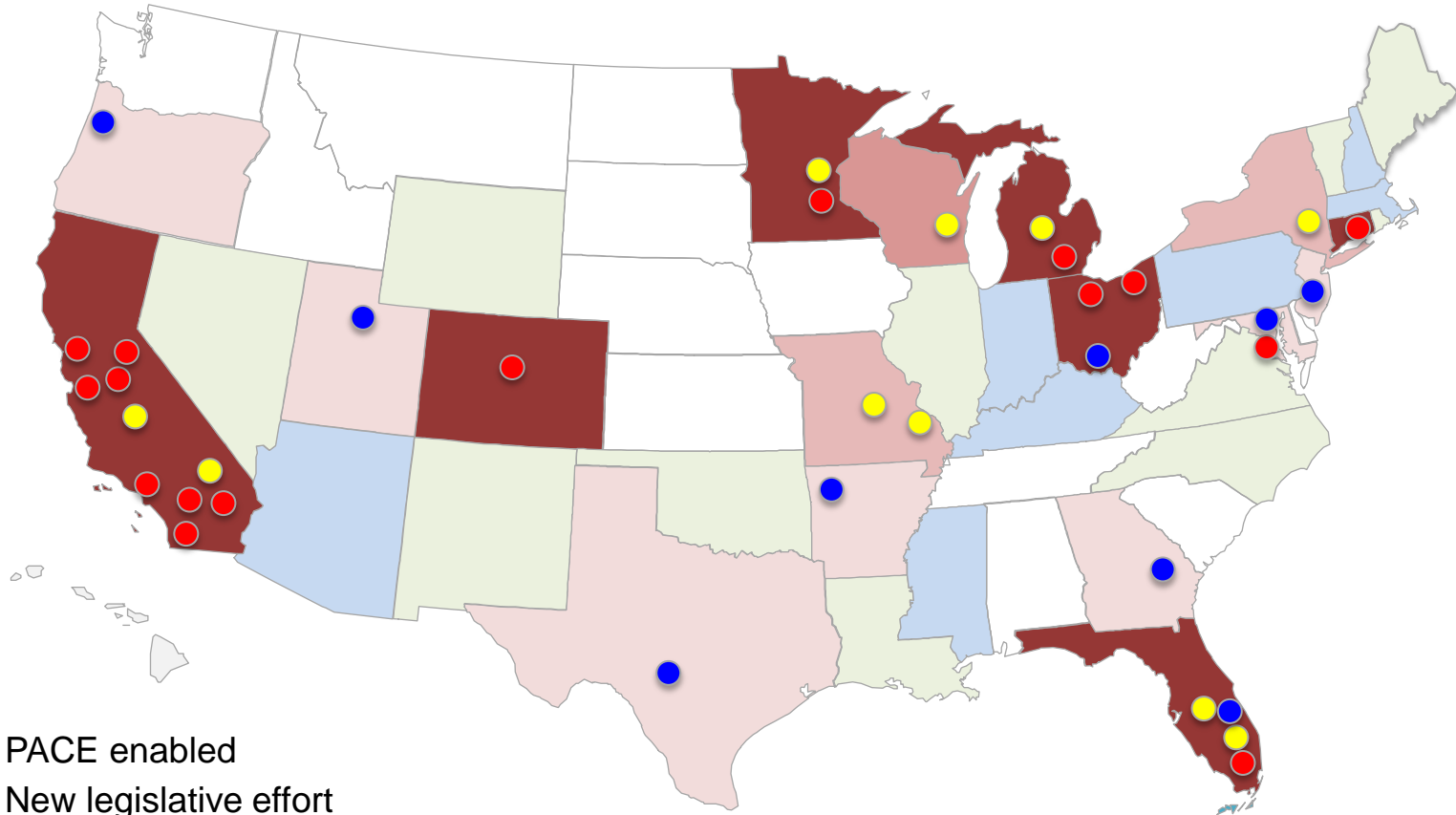


-  PACE enabled
-   Early stage PACE program development
-   Launched PACE programs
-   PACE programs with funded projects

Today

180 Projects completed - \$38 million

Pipeline Projects - \$90 million



- PACE enabled
- New legislative effort
- Early stage PACE program development
- Launched PACE programs
- PACE programs with funded projects

PACE TERMS COMPARE WELL

Optimal financing requires longer-term financing that can be repaid over the life of the improvement by the beneficiaries of those improvements

	Self Financed	Equipment Lease	Mortgage / Debt	PACE
Tenor	●	◐	◐	●
Balance Sheet	●	◐	●	◐
Credit	●	◐	●	◐
Pass-Through	●	●	●	●
Assignable	●	●	●	●

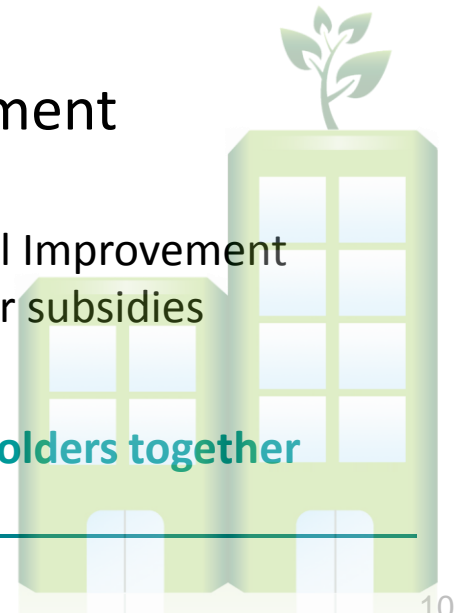
Clean Fund and PACE will facilitate improvements that were not otherwise financeable and create positive cash flows and additional property value

KEY STAKEHOLDER BENEFITS

PACE benefits stakeholders in significant ways

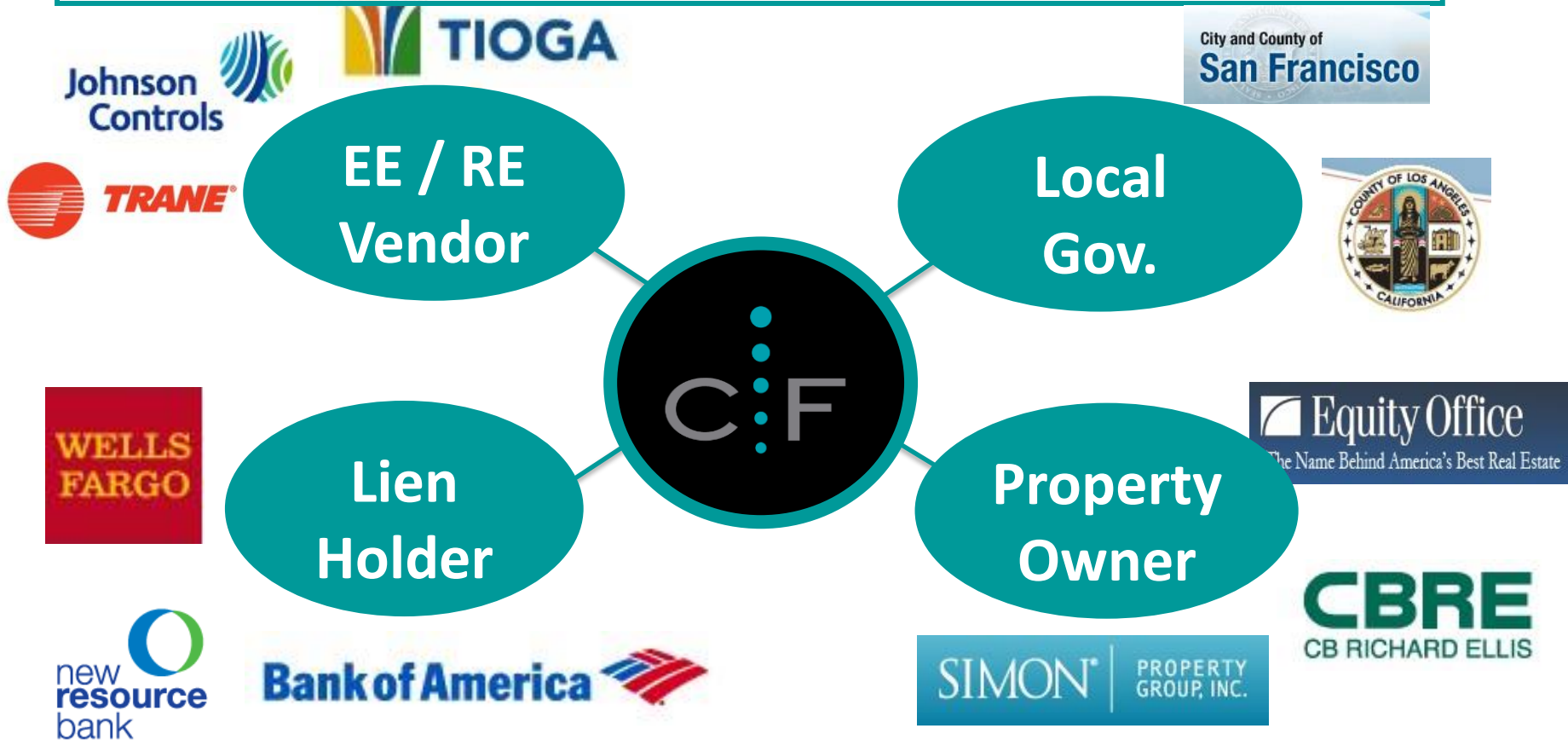
- CRE Owners
 - Increased property values
 - Improved profitability
 - More marketable property
 - Repayment passed to next owner
 - Pass-through for NNN tenants
- Banks
 - All benefits of CRE above
 - Lower LTV and Coverage ratios
 - Reduced impairment risk
 - Tax liens do not accelerate
- EE/RE Vendors
 - Increased Sales
 - Higher Lead Conversion Rate
 - Increased margins
- Local Government
 - Jobs
 - Environmental Improvement
 - Avoid taxpayer subsidies

This “win-win” outcome is only available by bringing all stakeholders together



KEY STAKEHOLDERS AND BARRIERS OF ENTRY

Clean Fund plays a critical role: simplifying a complex transaction for diverse stakeholders



EXECUTIVE SUMMARY

Clean Fund originates, structures, finances and securitizes Property Assessed Clean Energy (“PACE”) bonds for clean energy improvements.

- PACE securities are backed by super senior property tax revenues at no cost and with no liabilities from municipalities.
- Led by a veteran team of experienced renewable energy and finance professionals and advisors working together for over four years.
- Clean Fund focus is commercial real estate energy efficiency (“EE”) and renewable energy (“RE”) improvements in the \$200K to \$2MM range.
- PACE will grow financing originations to over \$1 billion dollars invested in 3 years

CLEAN:FUND

www.CleanFund.com

John.Kinney@CleanFund.com (415) 256-8000

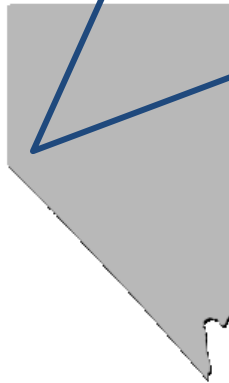
Financing Renewable Energy in the Wild Wild West

Suzanne Linfante

Management Analyst II

Nevada Governor's Office of Energy

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Nevada Governor's
Office of Energy



ACHIEVEMENTS

In 2009, Assembly Bill 522 created a Tax Abatement Program for utility scale renewable energy facilities. The Governor's Office of Energy administers the program and approves the abatements . To date, approximately twelve (10 MW+) projects including solar and geothermal have been approved.

In May 2012, Nevada was number one in the nation – tied with Indiana – for having allocated 99.8% of ARRA funds for the State Energy Projects program, including a Revolving Loan Fund (RLF).



TAX ABATEMENTS

- Doesn't provide financing, but creates an incentive to develop in Nevada
- Lowers operational costs and allows for more reasonably priced power from renewables
- Creates construction and operational jobs in Nevada
- Creates property tax revenue on land otherwise underutilized in rural parts of Nevada
- Decreases upfront equipment and building costs (sales and use tax abatement)
- Must file an annual report to ensure continued compliance



TAX ABATEMENTS

- 3 year sales and use tax and/or 20 year property tax
- A facility must continue in operation for at least 10 years
- Applicant must obtain a valid Nevada business license
- Applicant must obtain all permits required by the county, city or town in which the facility operates
- Capital investments of \$3,000,000/\$10,000,000 or more (based on county /city population)
- 50/75 or more full-time construction employees during the second quarter of construction (based on county/city population)
- At least 30 percent of the employees are residents of Nevada
- The average hourly wage of construction employees will be at least 175% of the average statewide hourly wage (2013 legislation: can include benefits)
- The average hourly wage of operational employees will be at least 110% of the average statewide hourly wage for each fiscal year (excluding management and administrative employees)



REVOLVING LOANS

- Nearly \$13 million was funded under the federal American Recovery and Reinvestment Act of 2009
- Over \$15 million in loans with another \$1.1 million pending
- Short-term, low-cost loans to developers of renewable energy projects and renewable component manufacturers
- Serve as a bridge financing option
- Hydro, wind, solar, anaerobic digesters, thermal voltaic



REVOLVING LOANS

- \$100,000 - \$1 million loan amount (can be more/less - Director discretion)
- 15 year term maximum
- Must provide three years financials
- Must have a project manager
- Requires a UCC financing statement and/or trust deed
- Involves Escrow Holder and Disbursement Agent (RFP process)
- Need complete project description and timeline for completion
- Requires Interim Financing Committee approval (even if funds are available)
- Committee (multi-agency) prioritizes loans
- Pros/Cons (Energy program vs. loan program)



WRAP UP

Participating financial institutions?

Future grants or opportunities?

Future of Tax Abatements and Revolving Loan fund?



CONTACT INFO

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<http://energy.nv.gov>



Audience Questions



Fundamentals of Development Finance
Bond Finance
Tax Increment Finance
Tax Credit Finance
Revolving Loan Fund Finance
Federal Financing Programs
State & Local Financing Programs

Energy Finance
Innovation Finance – Seed, Angel & Venture Capital
Brownfield Finance
Transportation Finance
Access to Capital Finance
Special District Finance
Public-Private Partnership Finance

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Upcoming Webcasts

CDFA – Stifel Nicolaus Innovative Deals Webcast Series
Thursday, October 17, 2013 @ 1:00pm Eastern

CDFA – BNY Mellon Development Finance Webcast Series
Tuesday, October 22, 2013 @ 1:00pm Eastern

CDFA – Stern Brothers Renewable Energy Finance Webcast Series
Thursday, November 14, 2013 @ 1:00pm Eastern

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For More Information

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