

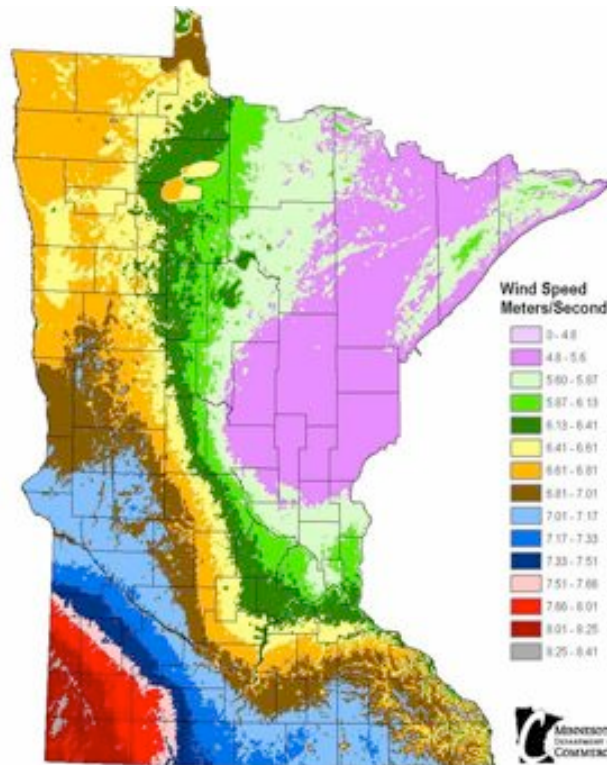
Feed-in Tariffs in the US: The Race to Catch Europe



**Bringing Renewable Energy Home: Energy Policies To Maximize Energy
Security And Economic Development**

**Wilson Rickerson
January 9th, 2009**

Why I



The Department of Commerce prepared this map using the WindMap program, which takes into account wind data, topography, and land-use characteristics. Data is averaged over a cell area 750 meters square, and values are also set there cautiously to features that could increase or decrease the results shown on this map. Regions with the greatest concentrations of wind energy also show the most accurate results. This map shows the general variation of Minnesota's wind resources and should not be used to determine the performance of specific projects.

June 2002

#1 Charity & Restraint



Baudette, The Wigwam

Bemidji, Jammers

Detroit Lakes, Islands Nightclub

Minneapolis, The Fine Line

St. Paul, The Lab

2000

#1 Charity & Restraint



Baudette, The Wigwam

Bemidji, Jammers

We didn't get beat up!

Minneapolis, The Fine Line

St. Paul, The Lab

2000

#2: Unbelievable Luck



1993 – French camp (North Woods)



2005 – Thank you Minnesota!!

#3 Inspiration



Better, Bigger, Faster (and Community Owned)

Feed-in Tariffs for Minnesota: Why are we even talking about this?



LOTS OF JOBS

| Scenario | Jobs |
|------------|-----------|
| Current | 435,000 |
| Moderate | 3,138,000 |
| Aggressive | 7,935,000 |

Source: Management Information Services, Inc. & ASES (2007)



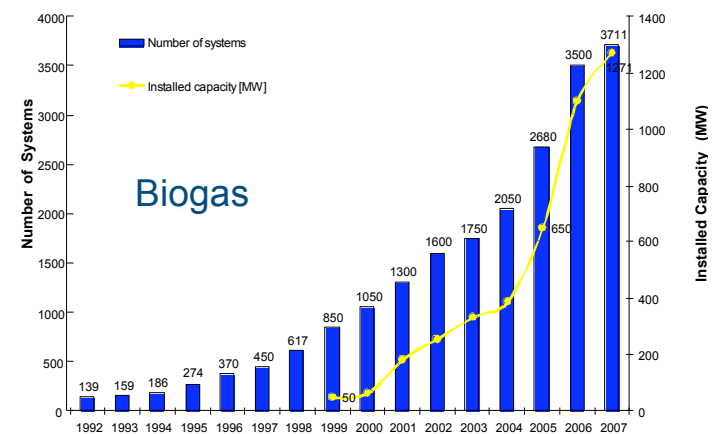
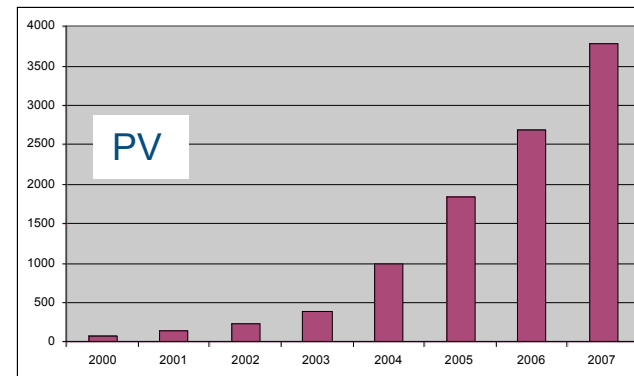
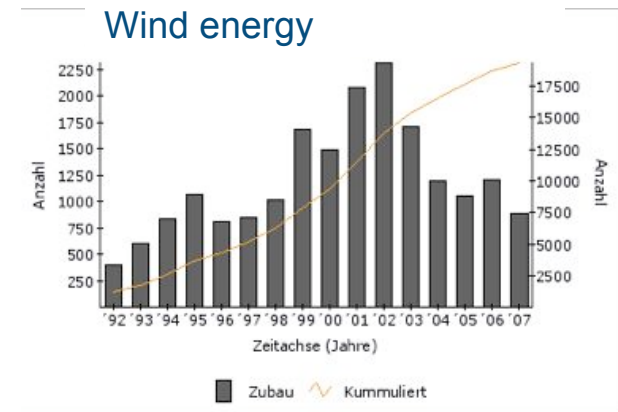
Big Ideas

- 10% by 2012
- 25% by 2025
- Plug-in hybrids and energy independence
- Climate change mitigation
- So how do we get there?



Germany: Market Growth

- 14.2% in 2007
(target: 12.5% by 2010)
- Revised target: 25-30% by 2020
- 22,622 MW of wind
(1,667 MW in 2007)
- 3,800 MW of PV
(1,100 MW in 2007)
- 1,270 MW of biogas
(doubled between 2005 and 2007)



Source: Fachverband Biogas e.V. (based on a survey of state government records; September 2007)

Feed-in tariffs

- Fixed-price payment (\$/kWh)
- Long-term (e.g. 20 years)
- Guaranteed interconnection
(If you build it, we buy it)
- Based on *generation cost*
- Differentiated
 - By technology
 - By size
 - By application, by fuel, by resource



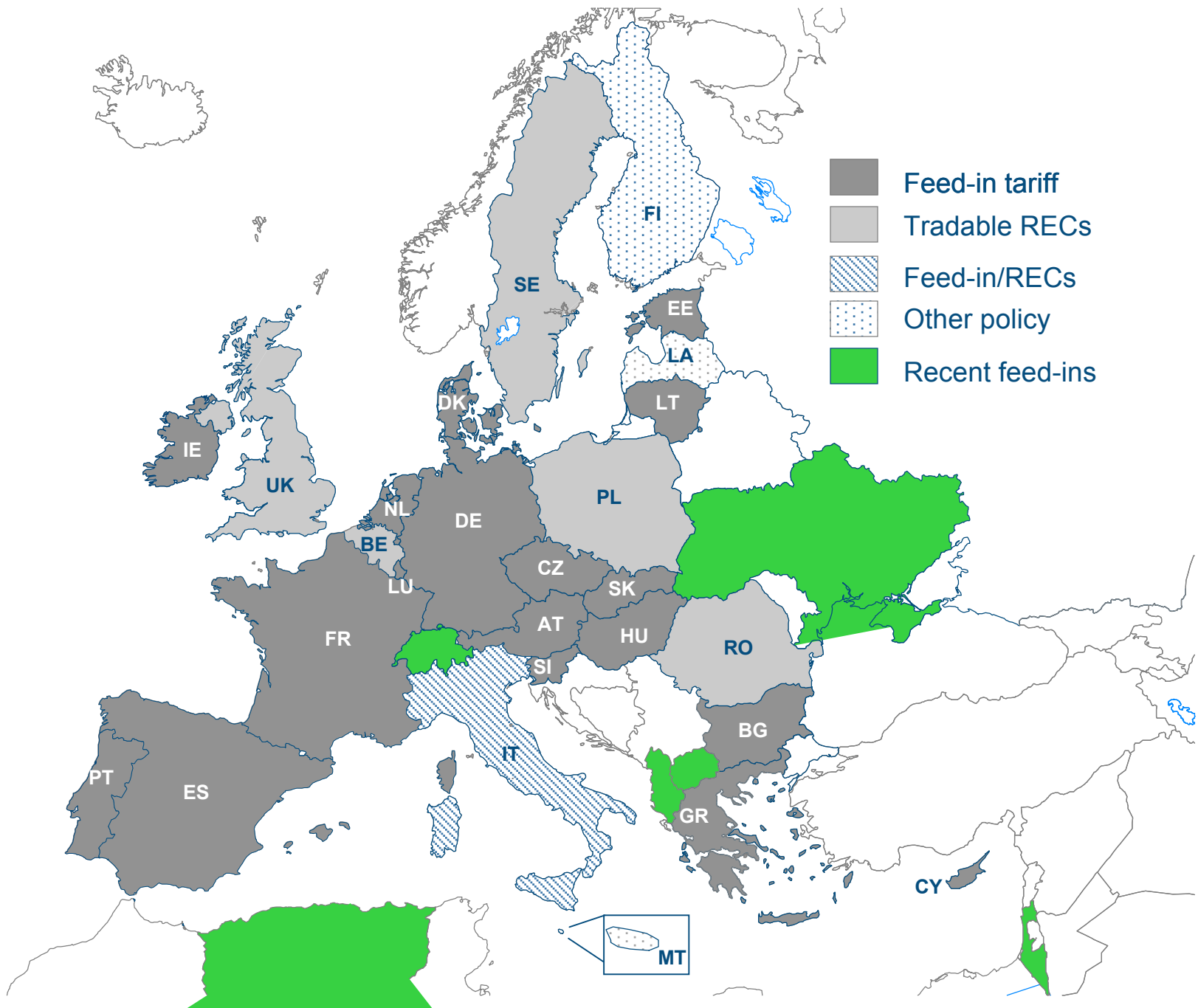
So Why Can't We Do This Here?



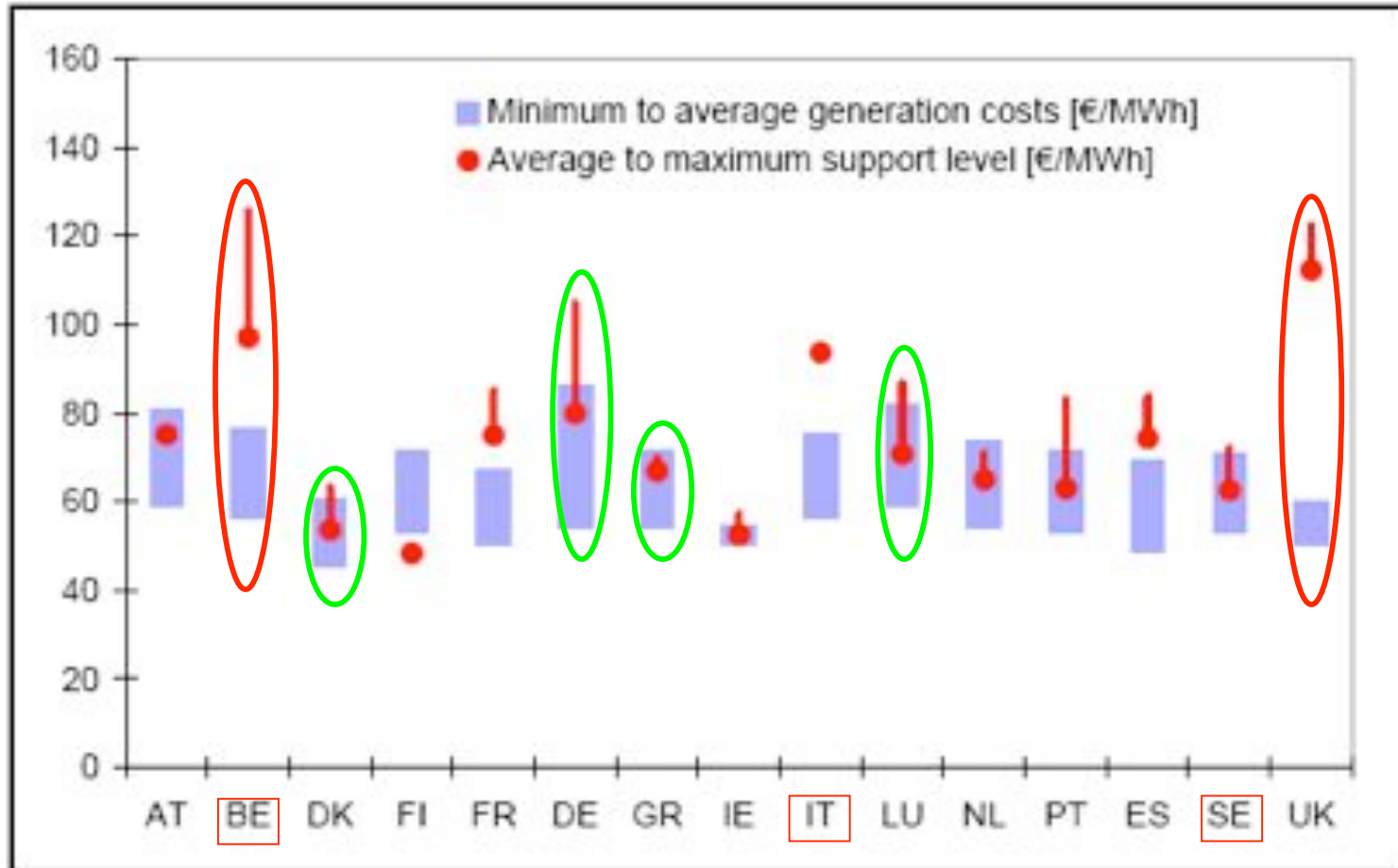
MYTH(s) #1

They Are Expensive



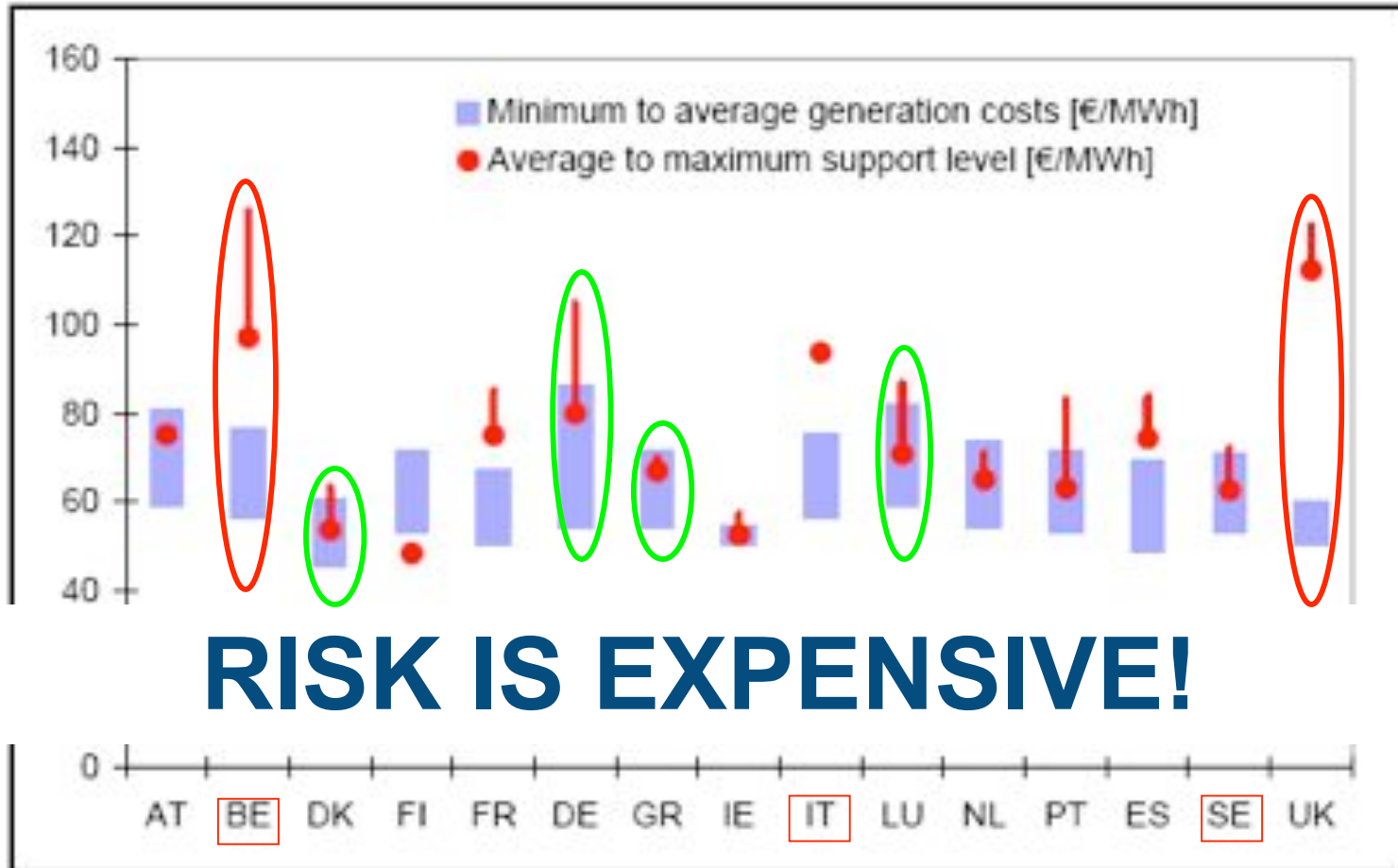


Commission of the European Communities (2006)



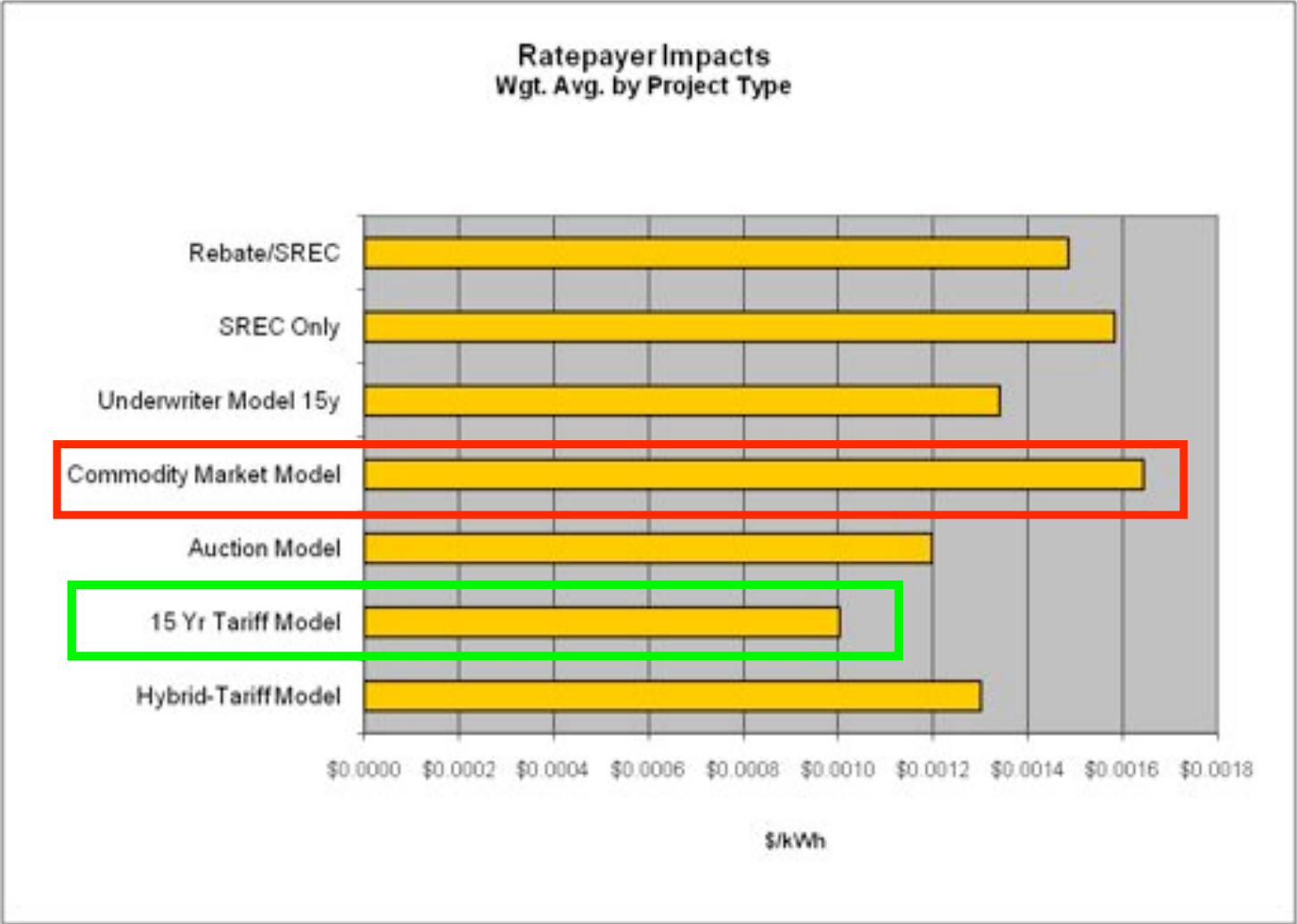
GOVERNMENTS ARE BETTER AT SETTING PRICE THAN MAKING ASSUMPTIONS ABOUT FUTURE BALANCE OF SUPPLY AND DEMAND

Commission of the European Communities (2006)



**GOVERNMENTS ARE BETTER AT SETTING PRICE THAN
MAKING ASSUMPTIONS ABOUT FUTURE BALANCE OF
SUPPLY AND DEMAND**

New Jersey: Lowest Ratepayer Impact for Solar



German government analysis from 2006 showed policy savings primarily from electricity market price reductions

| Costs (€ billion) | |
|--|--------------|
| Incremental cost of purchasing renewable energy | 3.2 |
| Balancing electricity | 0.1 |
| Transaction costs of the renewable electricity law | 0.002 |
| Subtotal | 3.302 |

| Benefits (€ billion) | |
|---|------------|
| Reduction in the wholesale price for electricity from displacing conventional energy in the merit order | 5 |
| Savings from gas and coal imports | 0.9 |
| Mitigating the external costs of energy use | 3.4 |
| TOTAL BENEFIT | 9.3 |

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|--|-------|
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THE FASTER WE GET NEAR-MARKET RENEWABLES, THE FASTER WE GET HEDGE BENEFITS AND WHOLESALE PRICE SUPPRESSION

| | |
|---|------------|
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| Savings from gas and coal imports | 0.9 |
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| TOTAL BENEFIT | 9.3 |

MYTH #2

FIXING PRICES IS UNAMERICAN



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RECs



Rebates

Net metering

State tax credit

Federal tax credit

MACRS Depreciation



Price ceiling

Price floor

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RECs



Rebates

Net metering

State tax credit

Federal tax credit

MACRS Depreciation



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Price ceiling

Phew! A market...

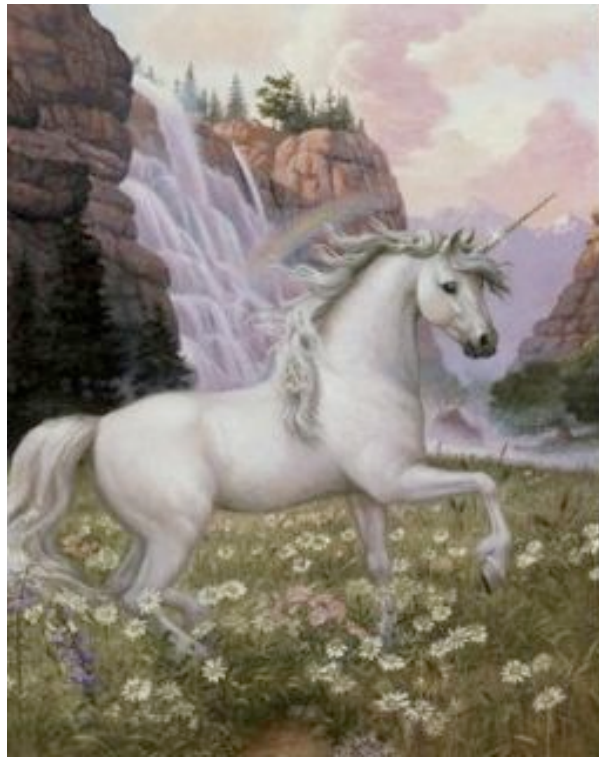
Price floor

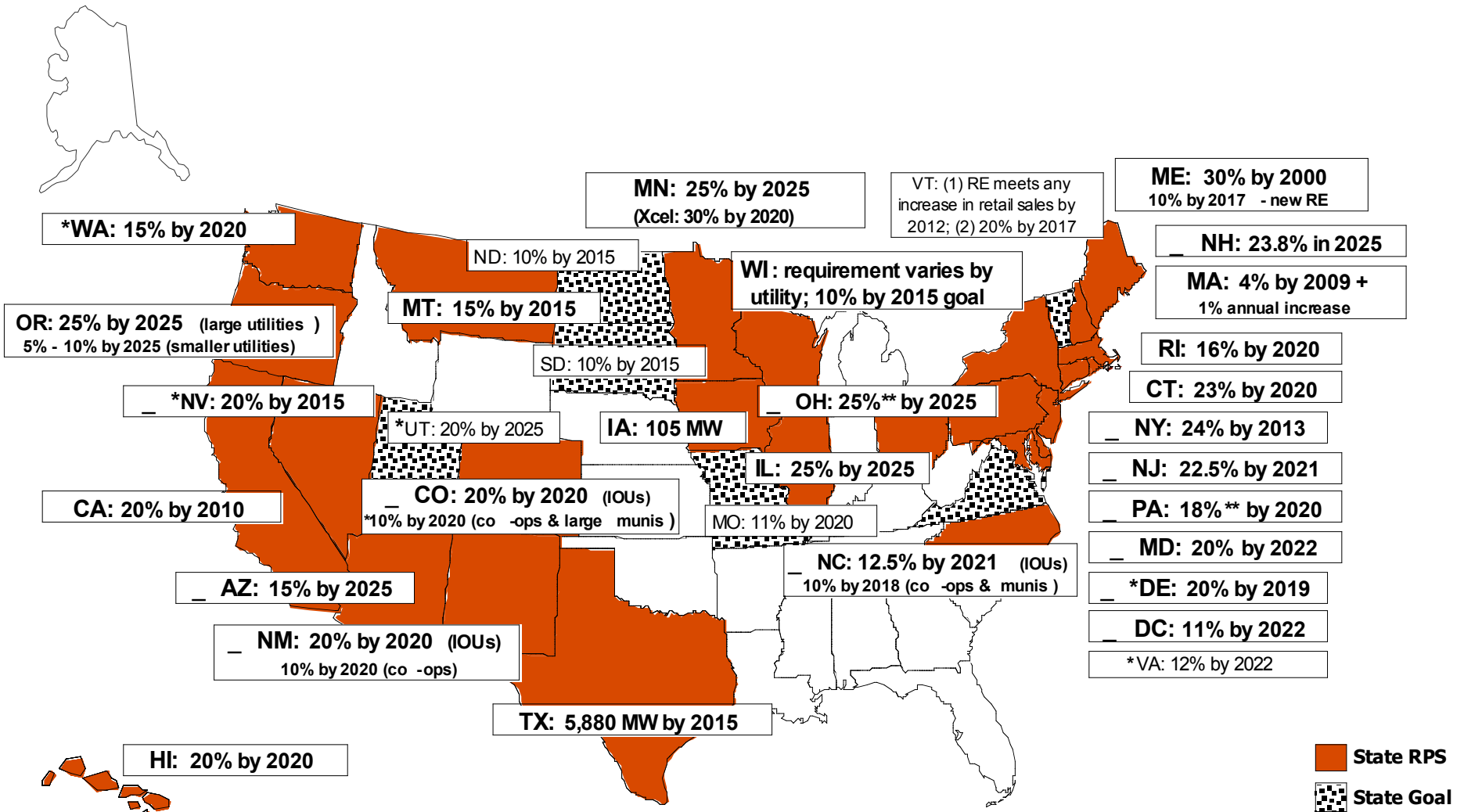
REFUNDABLE PRODUCTION TAX CREDIT??

MYTH #3

RPS AND REPS AREN'T COMPATIBLE

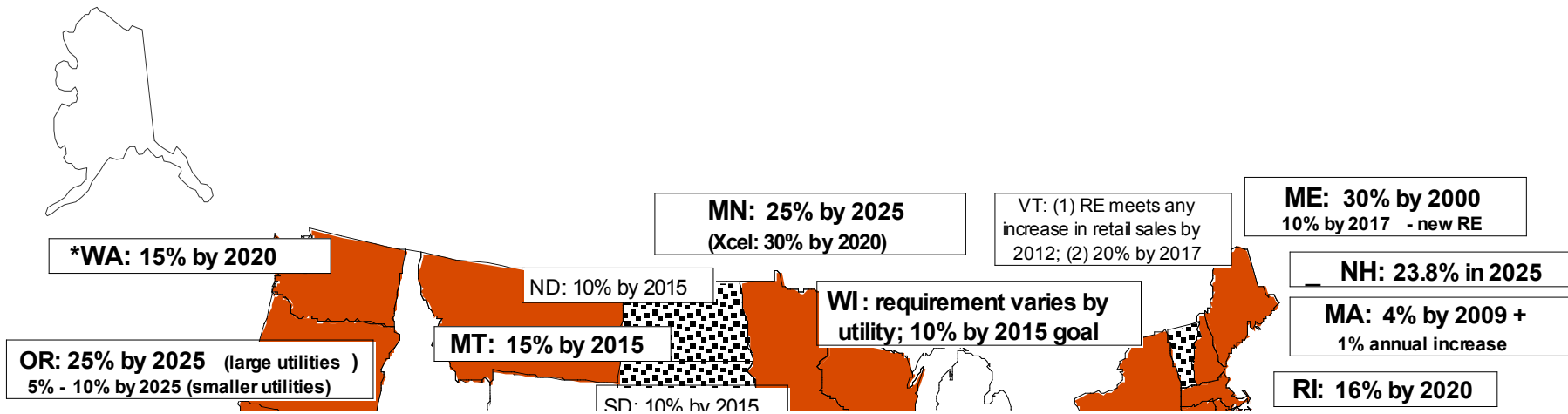
And/Or Neither are REPS and Net Metering



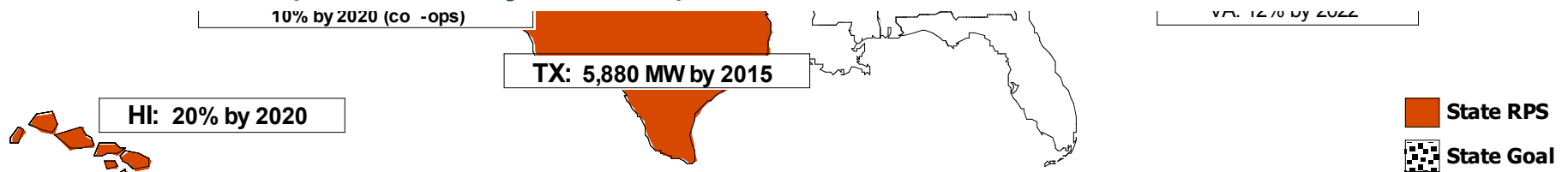


_ Minimum solar or customer -sited RE requirement
 * Increased credit for solar or customer -sited RE
 **Includes separate tier of non-renewable "alternative" energy resources

Source: DSIRE, 2008

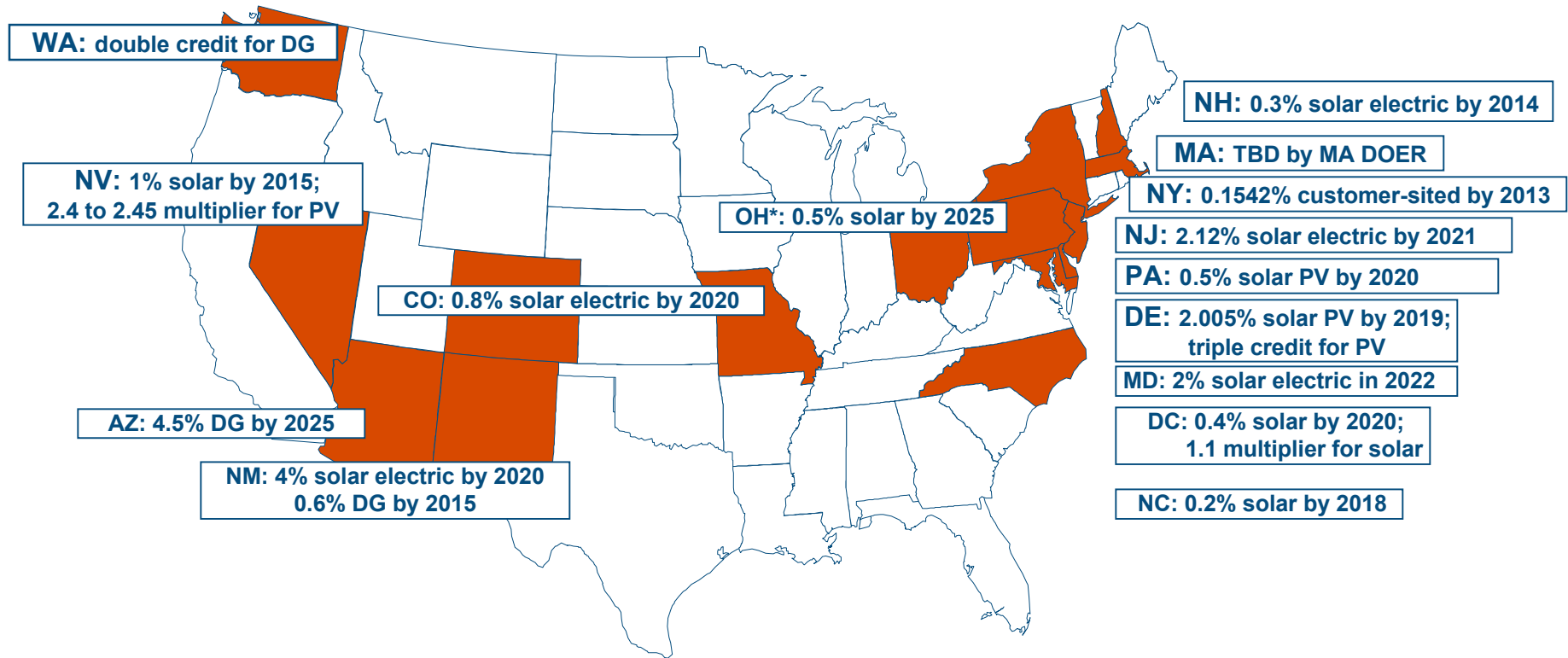


- **SHORT-TERM TRADABLE CREDIT MARKETS**
- **CENTRALLY PROCURED LONG-TERM REC CONTRACTS**
- **CA:** **LONG-TERM CONTRACTS FOR *JUST* ELECTRICITY**
- **BILATERAL LONG-TERM CONTRACTS FOR RECs AND ELECTRICITY**
- **GUILT (i.e. voluntary markets)**



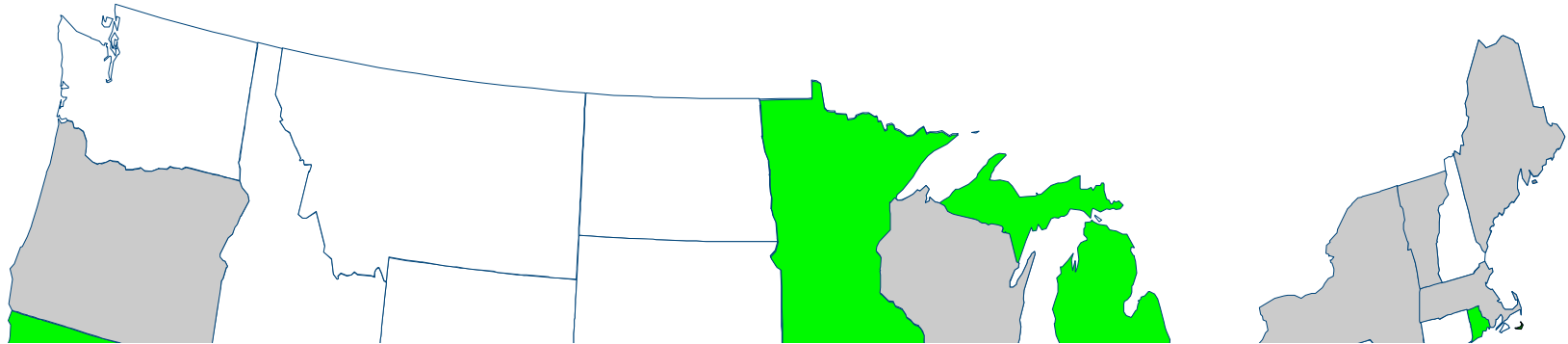
— Minimum solar or customer -sited RE requirement
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Trend #1: Technology Differentiation

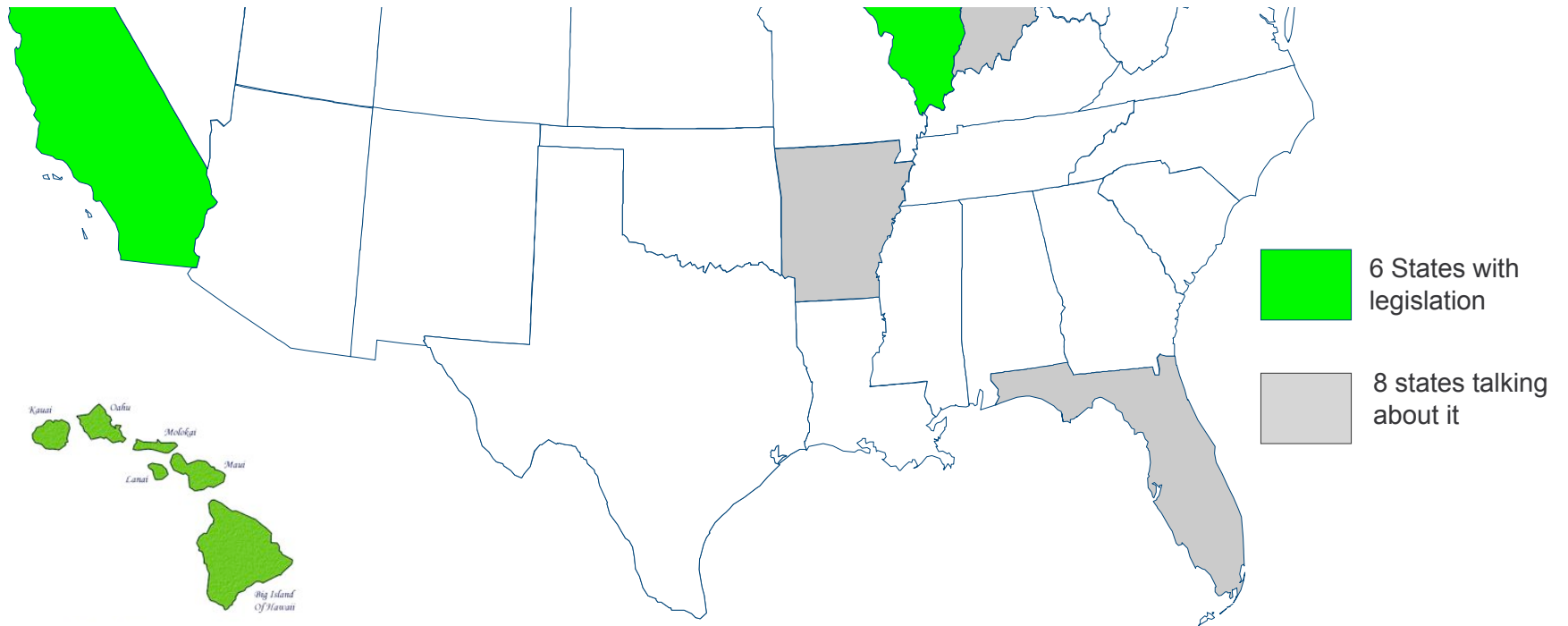


Trend #2: Long-Term Contracts

REPs under Consideration

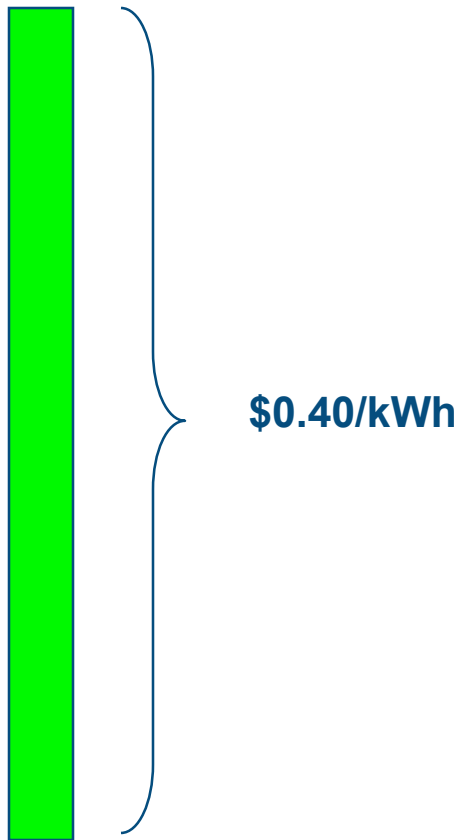


RENEWABLE ENERGY PAYMENTS ARE A MECHANISM FOR MEETING RPS REQUIREMENTS

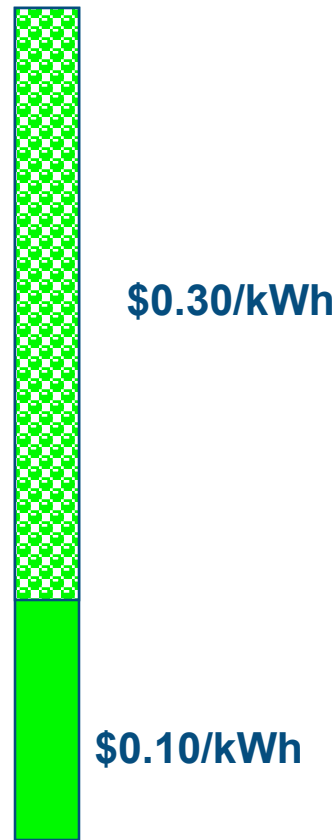


What's the difference?

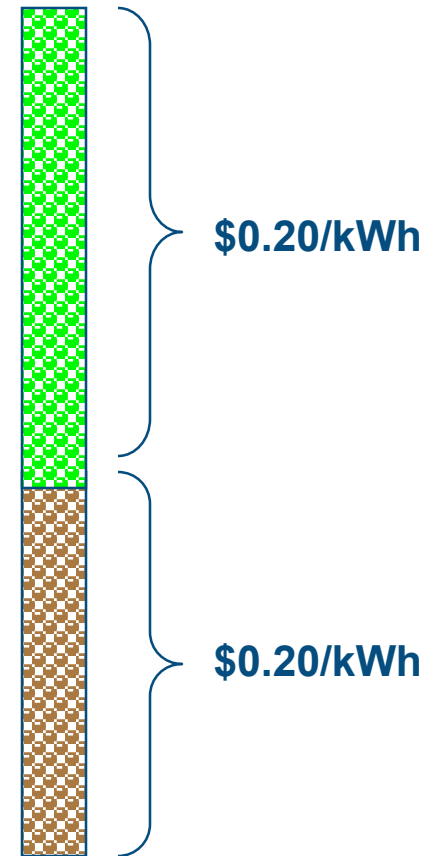
Feed-in Tariff



Wholesale RPS with Fixed-Price RECs



Net metering with Fixed-Price RECs



MYTH #3

THE GHOSTS OF PURPA ARE A PROBLEM

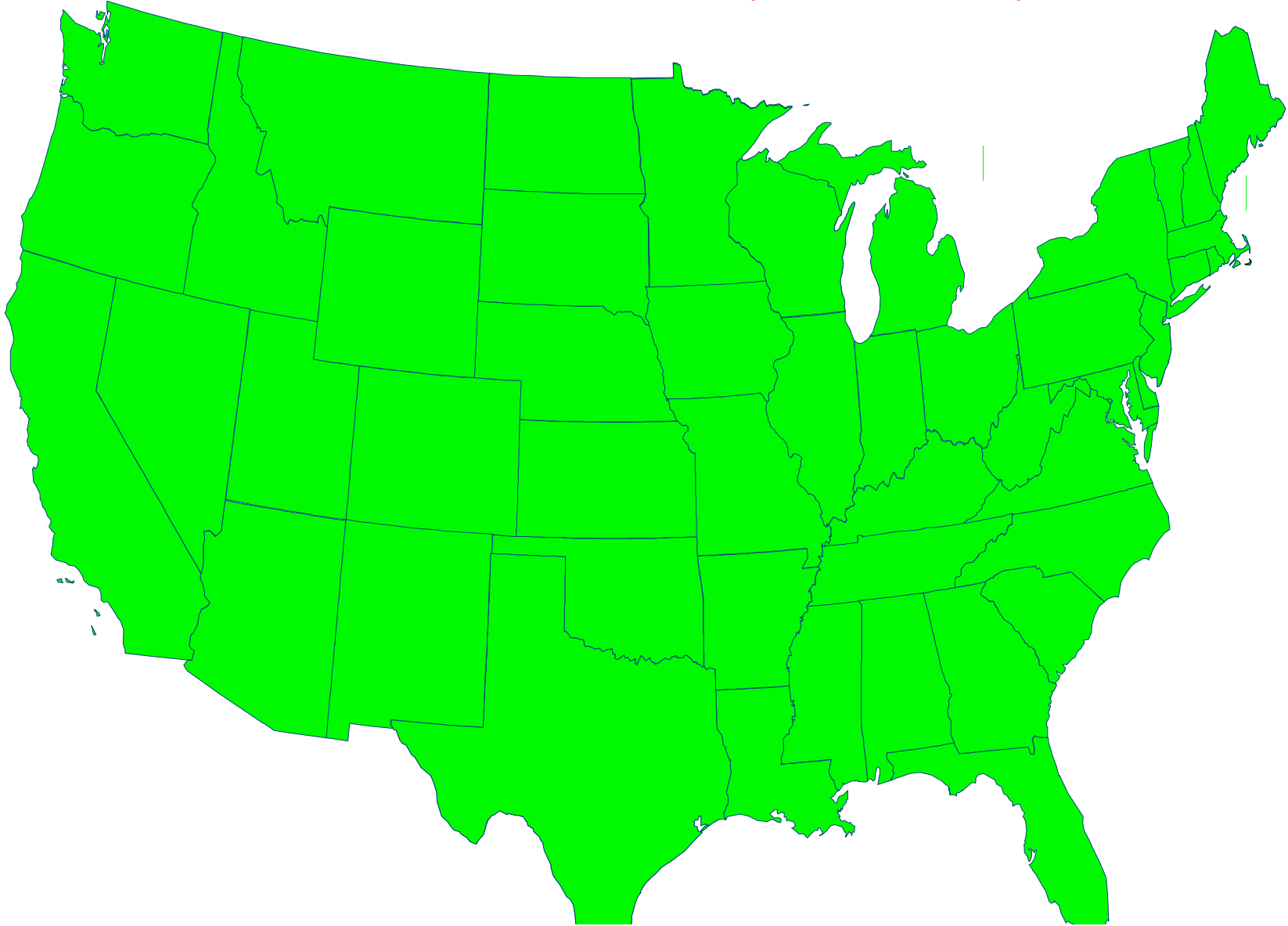


GHOSTS OF PURPA

- Long-term fuel prices probably won't stay low
- Paying “premiums” for renewable energy on a long-term basis is OK
- PURPA **does not** set a contract price ceiling
- PURPA wasn't all bad:
 - Birth of the modern wind energy industry
 - Rapid alleviation of critical capacity shortages

So... feed-in Tariffs in the US...

Federal Feed-in Tariff (Inslee, D-WA)



INTRODUCED, BUT NOT VOTED ON

California: A Convergence of Interests



- In place: Feed-in tariff for 1.5 MW and below set at time-differentiated Market Price Referant (average 11¢-13¢ for solar) (AB 1969)
- California Public Utilities Commission considering expansion of tariff to 20 MW and under
- California Energy Commission considering cost-based feed-in tariffs for under 20 MW

• In place: Feed-in tariff for 1.5 MW and below set at time-differentiated Market Price
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**EXPLORING FEED-IN TARIFFS
FOR CALIFORNIA**

Feed-In Tariff Design and Implementation
Issues and Options

Prepared For:
CALIFORNIA ENERGY COMMISSION

Prepared By:
KEMA, Inc.



June 2008
CEC-300-2008-003-D

DRAFT CONSULTANT REPORT

969

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**CALIFORNIA FEED-IN TARIFF DESIGN
AND POLICY OPTIONS**

Prepared For:
CALIFORNIA ENERGY COMMISSION

Prepared By:
KEMA, Inc.



September 2008
CEC-300-2008-009D

DRAFT CONSULTANT REPORT

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- California Public Utilities Commission considering expansion of tariff to 20 MW and under
- California Energy Commission considering cost-based feed-in tariffs for under 20 MW
- CPUC considering feed-in tariff for new Combined Heat and Power under 20 MW (AB 1613 Blakeslee)
- Southern California Edison offers standard offer contracts at MPR for biomass under three different contracts (<1 MW, 1-5 MW, 5-20MW) and proposes expanding to all renewables in 2009
- Standard offer contracts under PURPA are back (CPUC D.07-09-040)
- Legislature (SB 451 (2007), AB1807, AB1920, AB1714)
- Proposition 7: 50% renewables by 2025 using feed-in tariffs
- Feed-in tariffs were debated as part of California Solar Initiative

Challenges with Bidding

- Complexity of the RPS solicitation processes, including suitability of RPS solicitation processes for smaller projects
- Lack of transparency
- Contract failure, which may be caused by a wide variety of reasons, including over-aggressive bidding in solicitation processes.
- Cost changes during the project development process, which may cause some projects to become infeasible

DECEMBER 1st: California Energy Commission recommends feed-in tariff similar to Germany's for resources 20 MW and under

Hawaii

- 4 unsuccessful bills (2006-2008)
- Premium net metering for PV only
- 20 year contracts
- \$0.45 - \$0.70/kWh



NOT PASSED TO DATE

Hawaii Clean Energy Initiative

- “The parties agree that feed-in tariffs are beneficial for the development of renewable energy...[and] that feed-in tariffs should be designed to cover the renewable energy producer’s costs of energy production plus some reasonable profit
- “the benefits...from lowering oil imports, increasing energy security, and increasing both jobs and tax base for the state, exceed the potential incremental rents paid...”
- Utility purchases under a feed-in tariff shall be counted towards the utility’s [RPS] requirements
- By July 2009, the Commission will adopt a set of feed-in tariffs

Recent Gubernatorial Initiatives

- Wisconsin Governor's Task Force on Global Warming recommends feed-in tariffs for distributed generators (<15 MW, "based upon the specific production costs of each particular generation technology, include a return comparable to the utilities' allowed returns")
- Oregon Governor Kulongoski's 2009 legislative proposal "will create a production incentive pilot program that will pay for the electricity produced by a solar project...Known also as a feed-in tariff, this type of incentive program has led to the installation of more than 2,500 megawatts of solar electricity in Germany."
- Virginia Governor's Commission on Climate Change Draft Recommendations for a feed-in tariff feasibility study

Recent Feed-in Tariff Legislation

“Michigan model” (MI, RI, MN, IL)

- Cost-based
- Technology + size differentiated
- \$0.08 to \$0.14/kWh wind/biomass
- \$0.25 for small wind
- \$0.48-\$0.71 for PV
- 20 year contracts
- MN would be community-owned



NOT PASSED TO DATE

Gainesville, Florida

- Gainesville Regional Utility established a feed-in tariff
- PV only
- \$0.32/kWh – replaces both rebate and net metering
- 20 years

“In 1993, the city of Aachen, Germany, was the first to enact the renewable energy policy Gainesville is considering.”

-Kellyn Eberhardt, Gainesville Sun



1st PV Feed-in Tariff in 1993



EVENTUALLY, OVER 60 MUNIS BEFORE NATIONAL LAW PASSED

Conclusions

- Rapid diffusion of feed-in tariff concept during the last 24 months – Minnesota is not alone
- Feed-in tariffs proposed as mechanisms to meet state RPS goals
- To date, most FITs target specific technologies (e.g. PV), specific sizes (e.g. under 20 MW), and/or certain ownership structures (e.g. community)
- FITs gaining recognition because of the financial crisis – they provide investor security in a period of uncertainty regarding tax equity financing

Thank You



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