Approved: March 31, 2008
Date

MINUTES OF THE HOUSE ENERGY AND UTILITIES COMMITTEE

The meeting was called to order by Chairman Carl Holmes at 9:15 A.M. on March 13, 2008 in Room 783 of the Docking State Office Building.

All members were present except:
Annie Kuether-excused
Tom Sloan-excused
Josh Svaty-excused

Committee staff present:
Mary Galligan, Kansas Legislative Research
Carol Toland, Kansas Legislative Research
Melissa Doeblin, Revisor's Office
Renae Hansen, Committee Administrative Assistant

Conferees appearing before the committee:
Trudy Forsyth, National Renewable Energy Lab
Lori Bird, National Renewable Energy Lab

Others attending:
Thirty-one including the attached list.

Trudy Forsyth, National Renewable Energy Lab, Golden, Colorado, (Attachment 1), came before the committee and gave a presentation on net metering relating to wind energy. She noted that the best way to get up to date information on net metering across the United States is to go to: DSIRE: Database of State Incentives for Renewables & Efficiency: http://dsireusa.org/ .

Lori Bird, National Renewable Energy Lab, Golden, Colorado, (Attachment 2), presented to the committee, a slide presentation on the Current RPS policies that are in place in the United States. Additionally, she spoke to the committee about the wind shut down that happened in Texas, the analysis of that incident, and how they anticipate dealing with any future problems such as the one that occurred in Texas. She noted that there are some instances where wind is the most cost effective resource for electric generation, especially in the West.

Questions were asked and comments made by Representatives: Rob Olson, Vaughn Flora, Peggy Mast, Tom Moxley, Bill Light, Vern Swanson, and Carl Holmes.

The next meeting is scheduled for March 14, 2008.

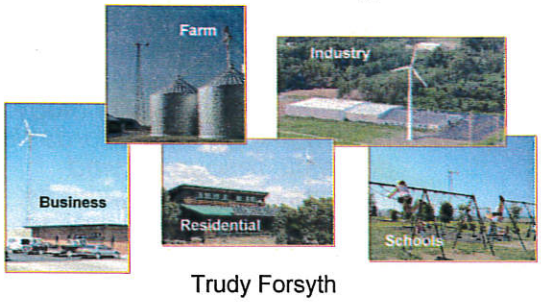
The meeting was adjourned at 10:53 a.m.

HOUSE ENERGY AND UTILITIES COMMITTEE
GUEST LIST

DATE: March 13, 2008

NAME	REPRESENTING
Larry Berg	Midwest Energy
Tom Thompson	Sierra Club
Paul Snider	KCPL

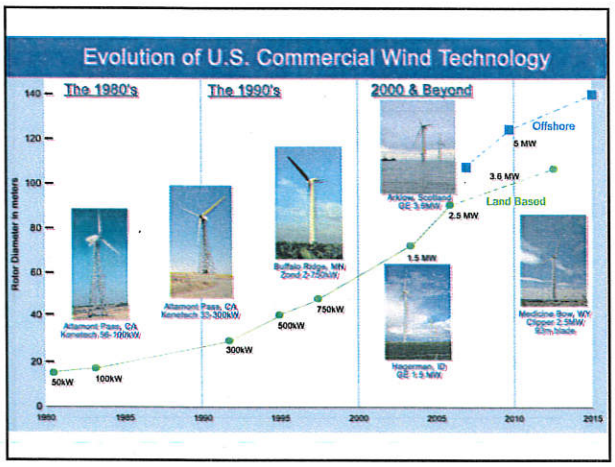
Net Metering



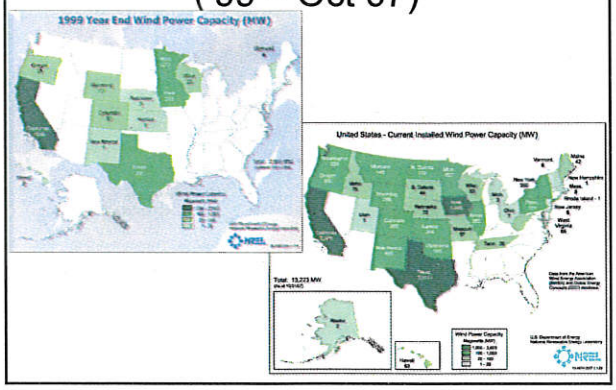
Trudy Forsyth
Trudy_forsyth@nrel.gov
National Renewable Energy Laboratory
March 2008

Net Metering

- Overview of wind industry & goals
- Economic development potential for KS
- Deliberative poll from NE
- Definitions of Net Metering
- Period of true up – monthly or annually
- What's happening nationally with net metering
  - 42 states with net metering policy
    - 29 states include Rural Electric Co-ops



Installed Wind Capacities ('99 – Oct 07)



HOUSE ENERGY AND UTILITIES
DATE: 3/13/2008
ATTACHMENT 1-1

A New Vision
For Wind Energy in the U.S.

State of the Union Address

"...We will invest more in ... revolutionary and... wind technologies"

Advanced Energy Initiative

"Areas with good wind resources have the potential to supply up to 20% of the electricity consumption of the United States."

20% Wind-Electricity Vision

Wind energy will provide 20% of U.S. electricity needs by 2030, securing America's leadership in reliable, clean energy technology. As an inexhaustible and affordable domestic resource, wind strengthens our energy security, improves the quality of the air we breathe, slows climate change, and revitalizes rural communities.

awea
american wind energy association

Kansas Economic Impacts

Wind energy's economic "ripple effect"

Direct Impacts

Payments to Landowners:
- $2.7 million/year

Local Property Tax Revenue:
- $2.9 million/year

Construction Phase:
- 1602 new construction jobs
- $188.5 M to local economies

Operational Phase:
- 252 new long-term jobs
- $21.2 M/yr to local economies

Indirect & Induced Impacts

Construction Phase:
- 1566 new jobs
- $137.5 M to local economies

Operational Phase:
- 180 local jobs
- $16.7 M/yr to local economies

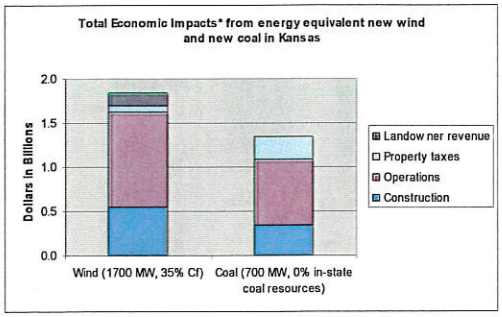
Totals (construction + 20yrs)

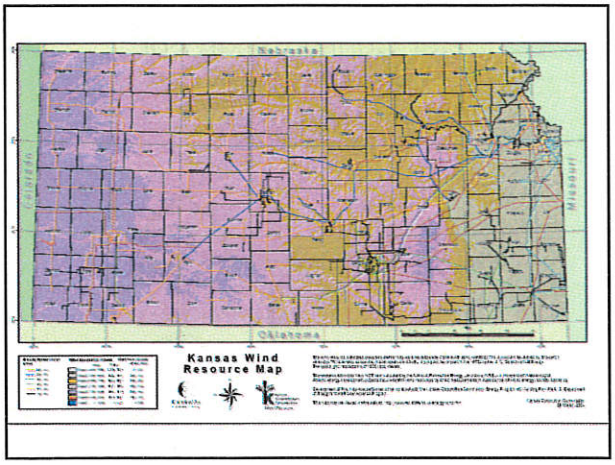
Total economic benefit = $1.08 billion

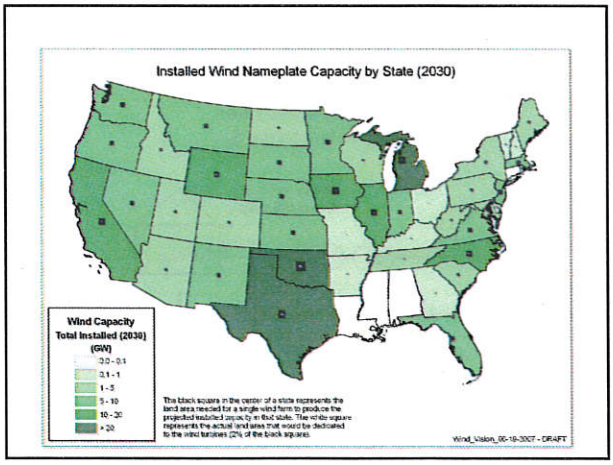
New local jobs during construction = 3168

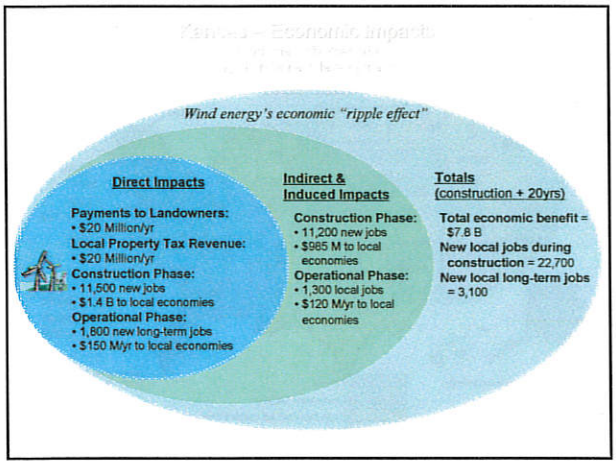
New local long-term jobs = 432

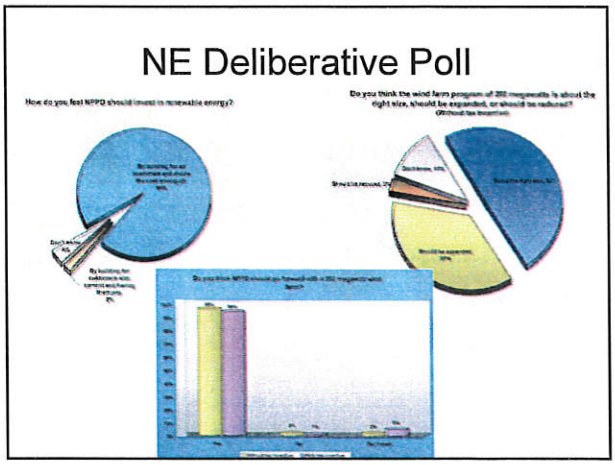
Energy-equivalent new wind vs. new coal in Kansas




Nebraska
Colorado
Missouri
Oklahoma
Kansas Wind Resource Map

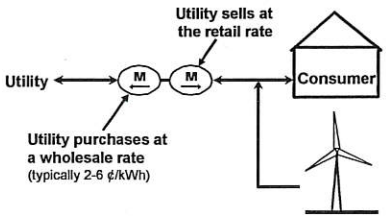

Installed Wind Nameplate Capacity by State (2030)
Wind Capacity Total Installed (2030) (GW)
0.0 - 0.1
0.1 - 1
1 - 5
5 - 10
10 - 20
> 20
The black square in the center of a state represents the land area needed for a single wind farm to produce the projected installed capacity in that state. The white square represents the actual land area that would be dedicated to the wind turbines (2% of the black square).
Wind_Vision_05-10-2007 - DRAFT


Wind energy's economic "ripple effect"
Direct Impacts
Payments to Landowners:
• $20 Million/yr
Local Property Tax Revenue:
• $20 Million/yr
Construction Phase:
• 11,500 new jobs
• $1.4 B to local economies
Operational Phase:
• 1,800 new long-term jobs
• $150 M/yr to local economies
Indirect & Induced Impacts
Construction Phase:
• 11,200 new jobs
• $965 M to local economies
Operational Phase:
• 1,300 local jobs
• $120 M/yr to local economies
Totals (construction + 20yrs)
Total economic benefit = $7.8 B
New local jobs during construction = 22,700
New local long-term jobs = 3,100


NE Deliberative Poll

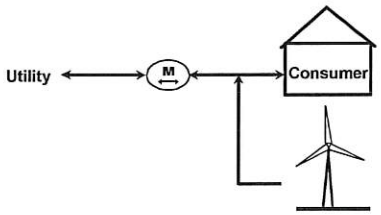
Meter Configuration For Net Billing

Two meters, two rates.
"Net" refers to net $.

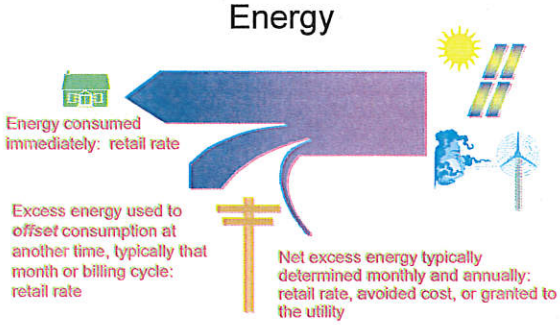


Meter Configuration For Net Metering

One meters, one rate.
"Net" refers to net kWhs.

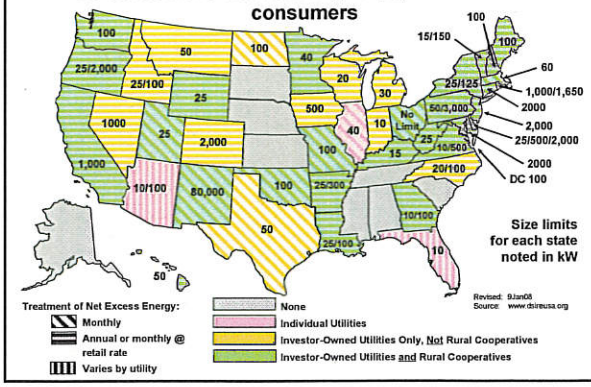


Net Metering of Renewable Energy



Net Metering for Wind

28 states have net metering for all rural electric consumers



Net Metering Surrounding Kansas

Oklahoma – enacted 5/23/88

- Includes IOUs and REC regulated by OK Corporate Commission
- Limit on size: Lower of 100 kW or 25,000 kWh/year
- No limit on enrollment
- Net Excess: Granted to utility monthly or credited to customer's next bill at avoided rate (varies by utility)
- Not allowed to impose extra charges for customers
- May not require additional liability insurance for systems that meet applicable standards

Colorado

- 2MW annualized net metering in IOU territories (Xcel, Aquila)
- Colorado Springs - 10/25 kW, Ft. Collins - 10 kW, Longmont Power - 50 kW (municipal utilities)
- Many Coops offering some form of net metering already - Delta Montrose, Empire, Grand Valley, Gunnison County , Holy Cross, La Plata, San Miguel, Southeast Colorado… and although rules vary, most have limits of 10 or 25 kW
- New legislation in CO - 10kW residential & 25kW for businesses annualized net metering

Net Metering Surrounding Kansas

Missouri – enacted 6/25/07

- For all utilities
- 100 kW cap
- Peak- 5% of utility single-hour peak load
- Annualized handling of Net Excess Generation
- 10kW and less have simplified application process

Nebraska

- No net metering

Reference: DSIRE: Database of State Incentives for Renewables & Efficiency: http://dsireusa.org/

Rationale for new CO policy

- At the annual true up RECs have complete choice how to deal with excess generation
- RECs can choose annual period for true up (does not have to be calendar year)
- Modest sizes for minimum requirements – 10 kW residential, 25 kW farms, businesses
- Customers *kWh rate* for their rate class will be credited at full kWh rate and rolled over month to month (stating full retail rate is loaded and creates confusion)

Pros & Cons of Net metering

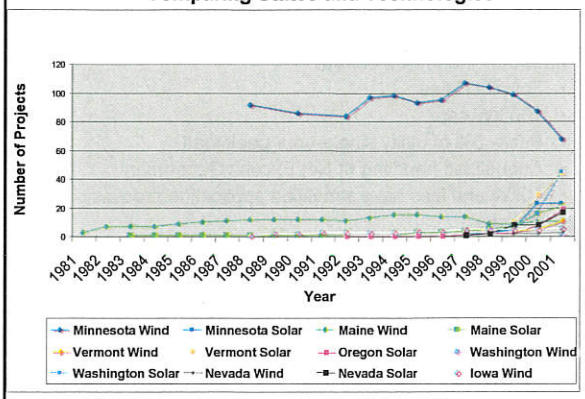
Pro

- Allows rural people an opportunity at some independence
- Offers a hedge against increasing electricity prices over the turbine lifetime
- Meets requests from REC members

Con

- Viewed as a subsidy
- Fear of significant number of small wind installations

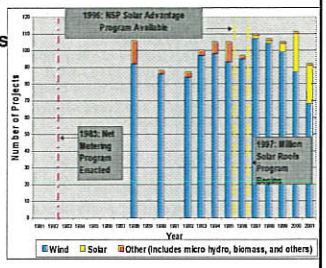
Comparing States and Technologies



*Data for California, Illinois and Idaho are not included.

Minnesota Net Metering

- **40 kW capacity limit, monthly NEG purchased at average retail energy rate**
- **In 1997, Million Solar Roofs started**
- **NSP had solar lease program – '96 only**
- **MN had wind advocates who got net metering in place**
- **Over time, maintenance costs for used equipment were too high**
- **Small residential size turbines too small for agricultural community applications**



Recent Trends

- Increase in maximum capacity – following FERC regulations of under 2 MW
  - Allows for Community Wind projects
    - Typically results in 5x profits compared to windfarms
- Increase in numbers of municipal and rural electric cooperatives with net metering policies
- Turbine system costs decrease as the turbine size increases
- Other cost items that are typically excluded
  - Liability insurance
  - Meter expenses
  - Interconnection fees

Experience with State Renewable Portfolio Standards

Lori Bird, NREL
lori_bird@nrel.gov
House Energy and Utilities Committee Briefing
Kansas State Legislature
March 13, 2008

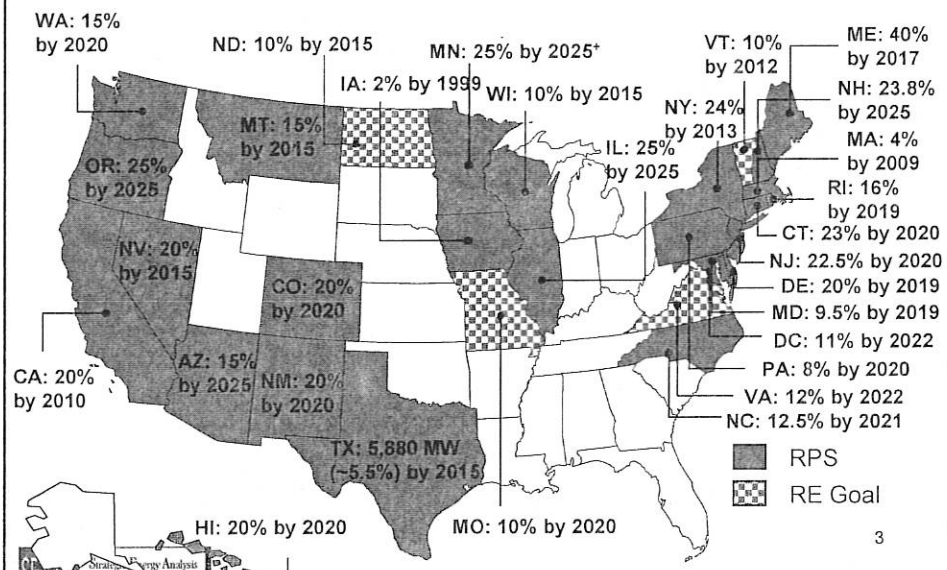
Renewable Energy Benefits

Why have states adopted and expanded renewable portfolio standards (RPS)?

- Clean energy production
  - Air quality benefits
  - Reduced greenhouse gas emissions
- Fixed, predictable costs
- Use of local or in-state resources
- Local economic benefits

HOUSE ENERGY AND UTILITIES
DATE: 3/13/2007
ATTACHMENT 2-1

State RPS Policies



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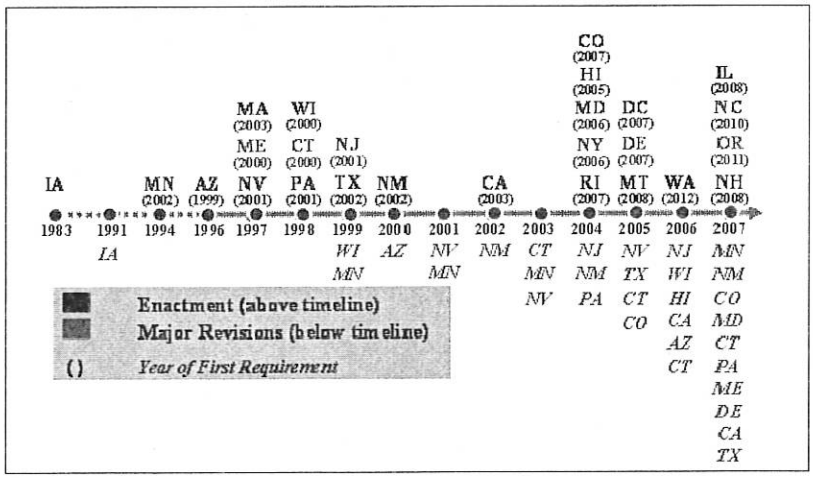
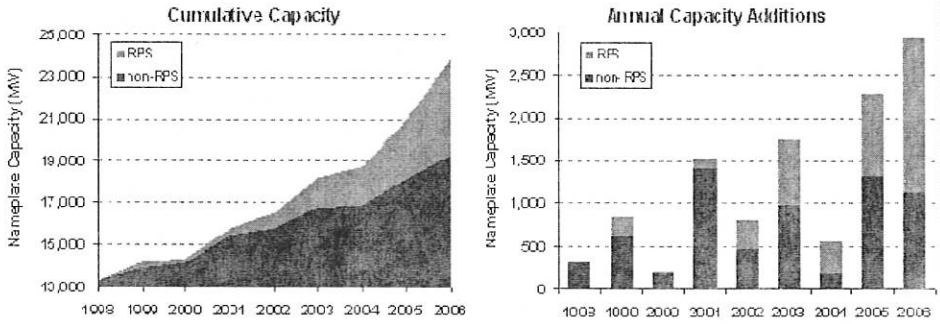
Increasing Interest in State RPS



Source: LBNL

4

RPS Has Been Significant Driver of New Renewables



Source: LBNL

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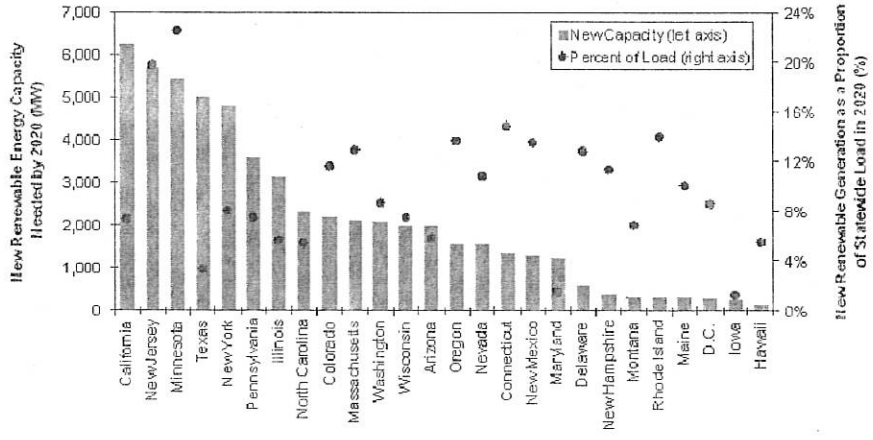
New Capacity Expected from State RPS



Source: LBNL

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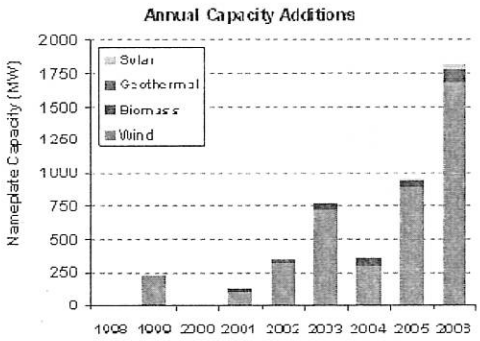
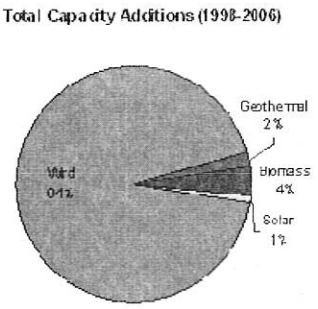
Wind Dominates Capacity Additions from RPS





Source: LBNL

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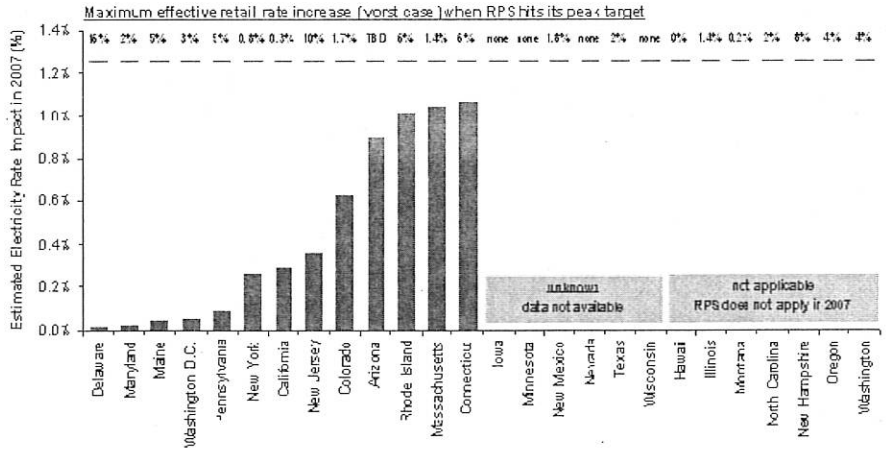
Estimated Rate Impacts of RPS



Source: LBNL

Maximum rate increase is about 1% or less for states where data are available

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Issues for Meeting RPS Targets

- Siting and Permitting: avian, noise, visual, federal land
- Transmission: FERC rules, access, new lines
- Integrating higher penetrations of wind into the system

Transmission Issues (cont)

- How can existing transmission be used more efficiently for wind?
  - New FERC flexible-firm tariffs step in right direction but may not be sufficient to enable wind projects to get financing
- Challenges in building new transmission
  - Who will pay for it?
  - Who has authority for permitting transmission that crosses state lines?

Integrating Wind Into Power Systems

New studies find integrating wind into power systems is manageable, but not costless

Date	Study	Wind Capacity Penetration	Cost ($/MWh)				
			Regulation	Load Following	Unit Commitment	Gas Supply	TOTAL
2003	Xcel-UWIG	3.5%	0	0.41	1.44	na	1.85
2003	We Energies	4%	1.12	0.09	0.69	na	1.90
2003	We Energies	29%	1.02	0.15	1.75	na	2.92
2004	Xcel-MNDOC	15%	0.23	na	4.37	na	4.60
2005	PacifiCorp	20%	0	1.6	3	na	4.60
2006	CA RPS (multi-year)	4%	0.45*	trace	na	na	0.45
2006	Xcel-PSCo	10%	0.2	na	2.26	1.26	3.72
2006	Xcel-PSCo	15%	0.2	na	3.32	1.45	4.97
2006	MN-MISO 20%	31%	na	na	na	na	4.41**

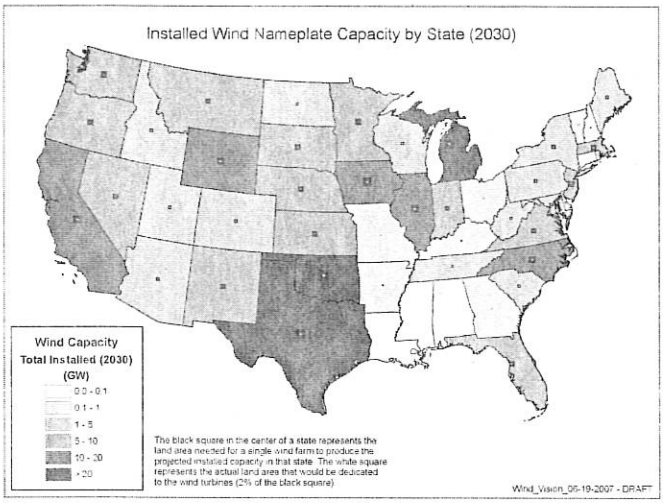
*3-year average ** highest over 3-year evaluation period*

Key Results from Major Wind Integration Studies Completed 2003-2006

Lessons from Recent Texas Wind Integration Experience

- Recent storm in Texas caused wind to ramp down as loads were ramping up
  - System operators used interruptible loads to reduce demand
- Lessons:
  - States with higher penetrations of wind are learning how to handle integration better
  - Situation was resolved without outage
  - Better coordination between forecast and operations may have helped alleviate problem
  - Kansas will benefit from the experience of system operators in other states

Scenario: 20% Wind Energy by 2030



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20% Wind Energy Scenario

- 20% wind energy penetration is possible
- 20% penetration is not going to happen under business as usual scenario
- Policy choices will have a large impact on assessing the timing and rate of achieving a 20% goal
- Key Issues: market transformation, transmission, project diversity, technology development, policy, public acceptance
- 20% Vision action plan: Spring 2008

14

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Source: AWEA 20% Vision