

# Net Metering of Renewable Energy

- “Net Metering” is using electricity generated from renewable energy to offset your consumption from the local utility.

- Specific conditions and rules for eligibility apply in each state.

# Net Metering of Renewable Energy

Energy consumed immediately: retail rate

Excess energy used to **offset** consumption at another time: retail rate

Net excess energy (determined monthly or annually): retail rate, avoided cost, or given to the utility

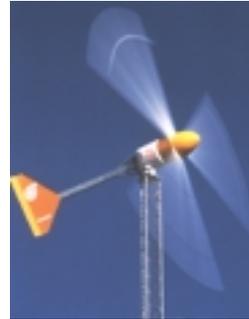


# Small Turbines Require Less Wind



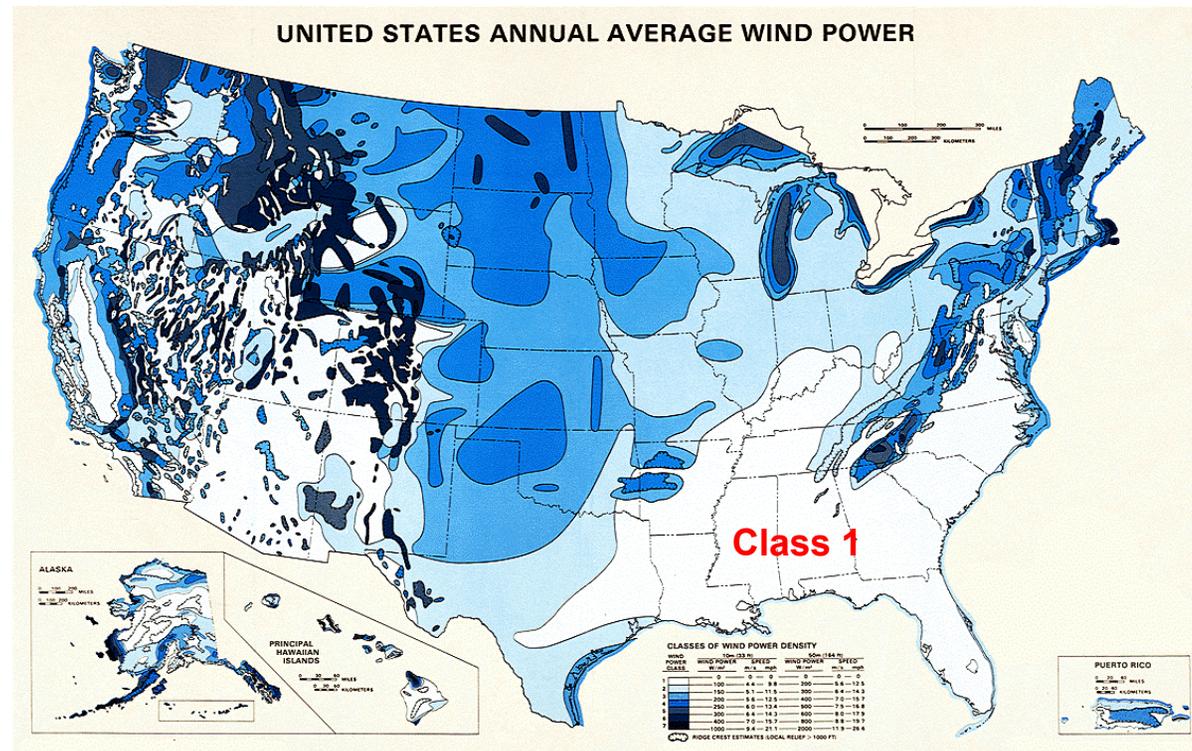
## Large Turbines

- ❖ Require ~ Class 3-4 Wind Regime
- ❖ Prefer Class 5



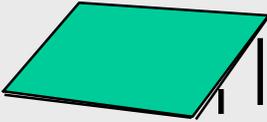
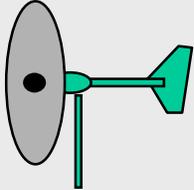
## Small Turbines

- ❖ Require ~ Class 2 Wind Regime

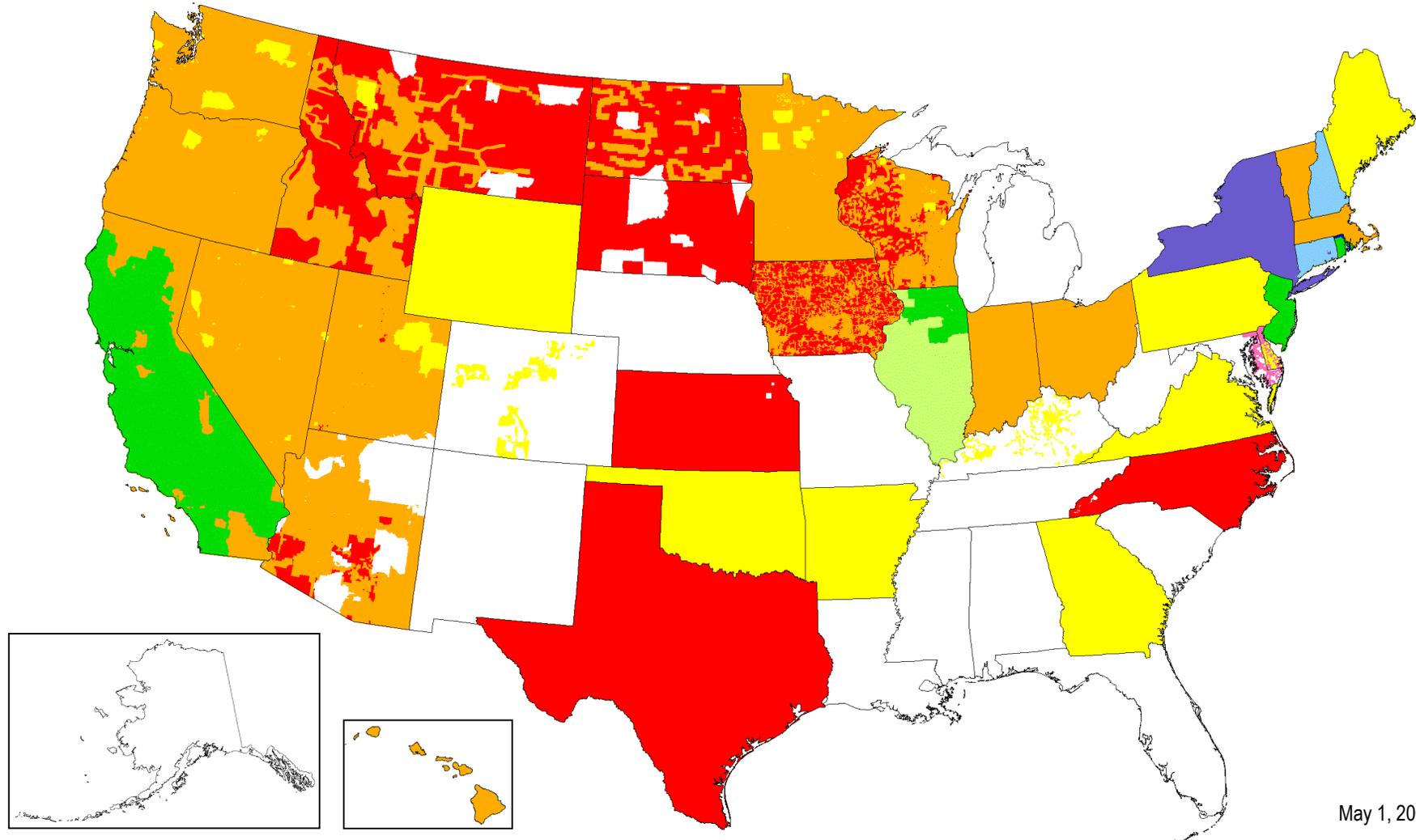


# Wind has the Lowest Costs

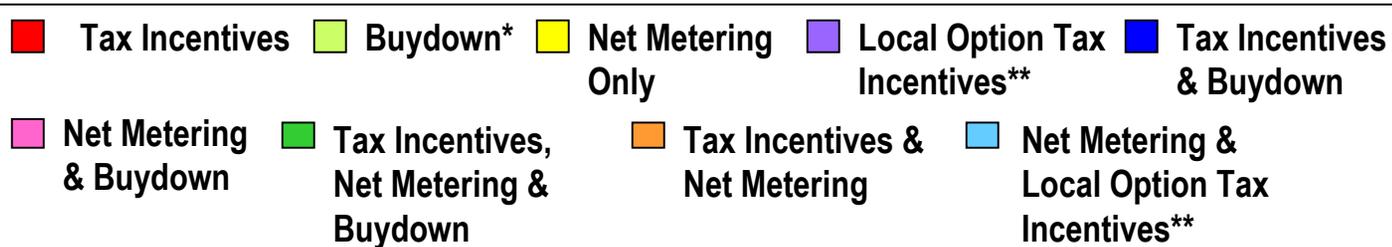
Less Than 1/2 the Cost of Solar

Status of the Technologies	 Photovoltaics	 Solar Thermal	 Small Wind
Status	Commercial	Demo	Commercial
Installed Cost	\$ 9 / Watt	\$ 10 / Watt	\$ 3.50 / Watt
Payback Period	30 Years	30+ Years	15 Years
Cost Potential	\$ 3 in 2010	?	\$ 1.50 in 2010
Typical Site	Suburban	Southwest	Rural
Available Resources	Poor - Good	Poor - Good	Poor - Great

# Residential Small Wind Incentives



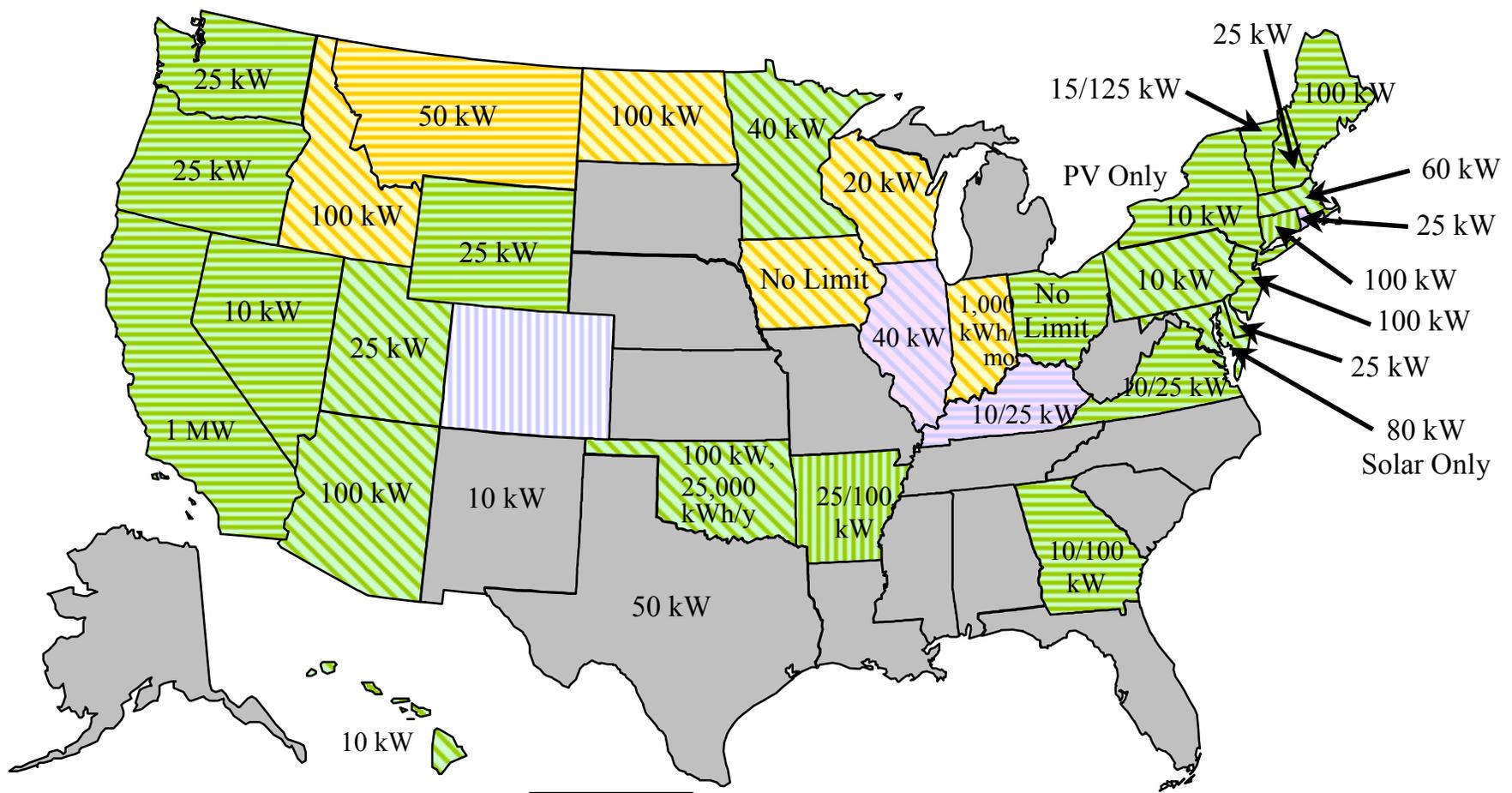
May 1, 2002



\*Contact your utility to see if you qualify for the Renewable Energy Resources Program.

\*\* Contact your city or county to see if they offer tax incentives for small wind systems.

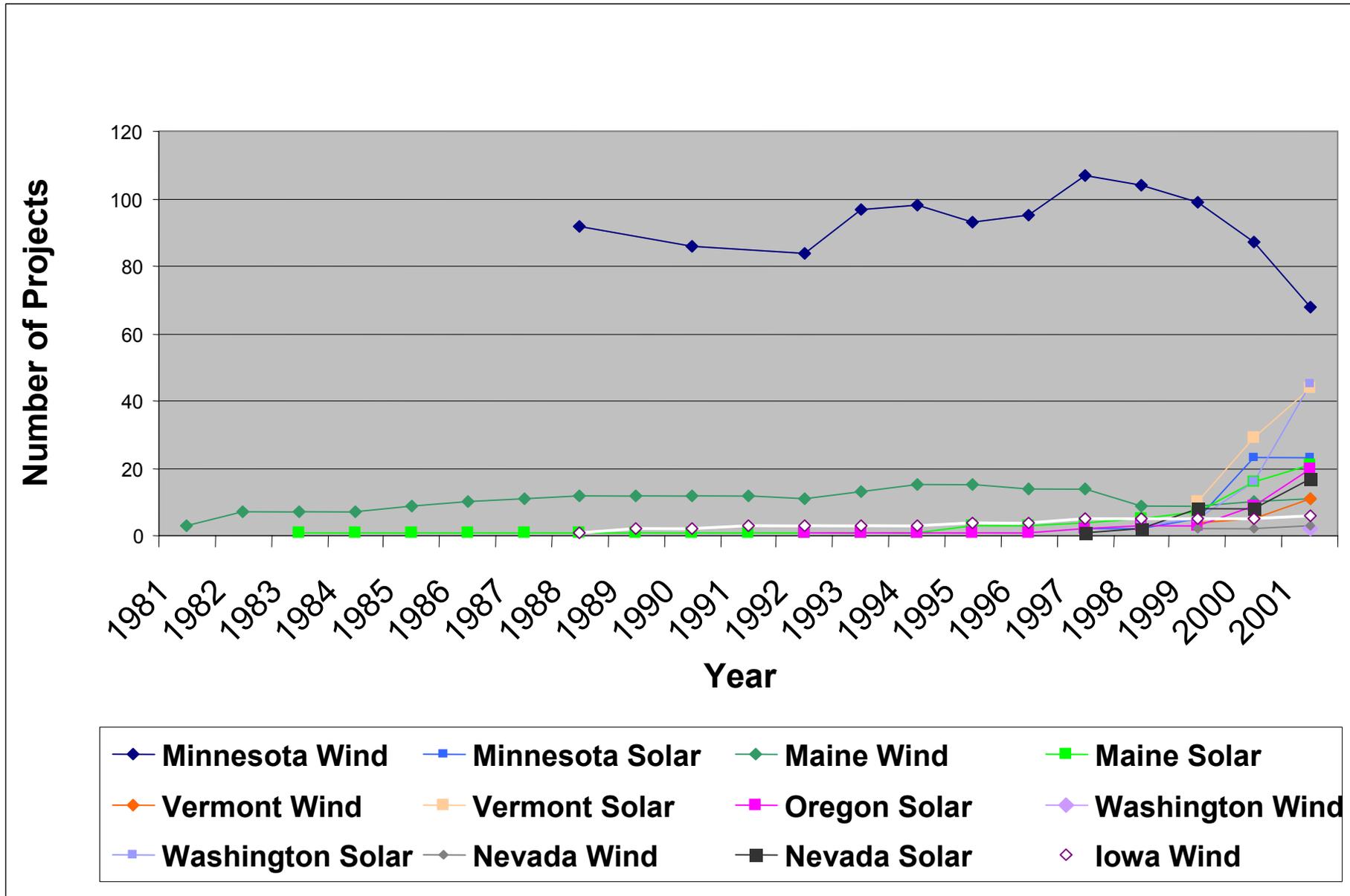
# Net Metering By State



-  Monthly Net Metering
-  Annual Net Metering
-  Varies by Utility or Unknown
-  None
-  Individual Utilities
-  Investor-Owned Utilities Only, Not Rural Cooperatives
-  Investor-Owned Utilities and Rural Cooperatives

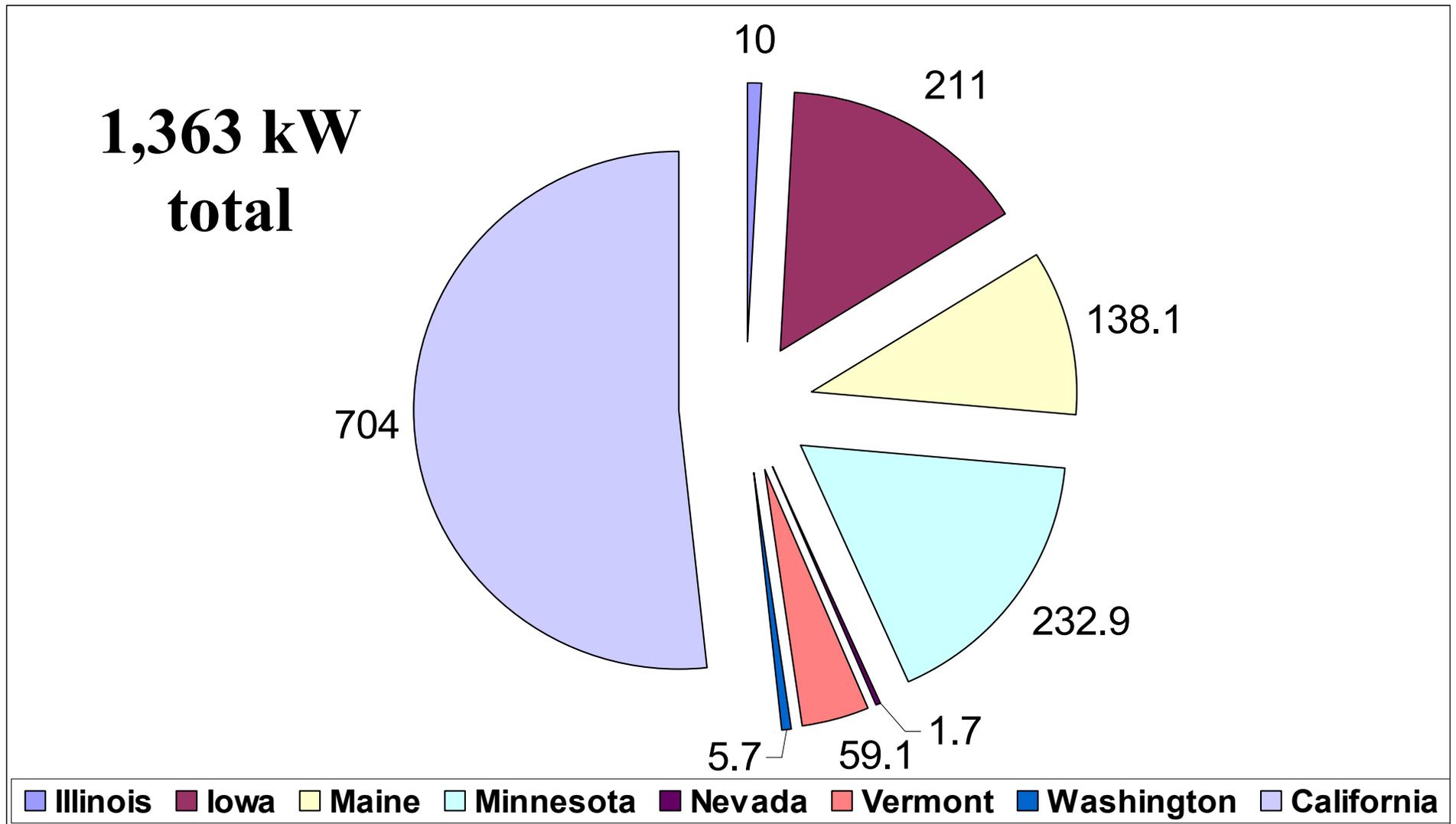
Revised: 29 May 02

# Comparing States and Technologies



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

# Total kW of net metered small wind from selected states



Oregon has no installed wind systems. Information for Idaho is unavailable.

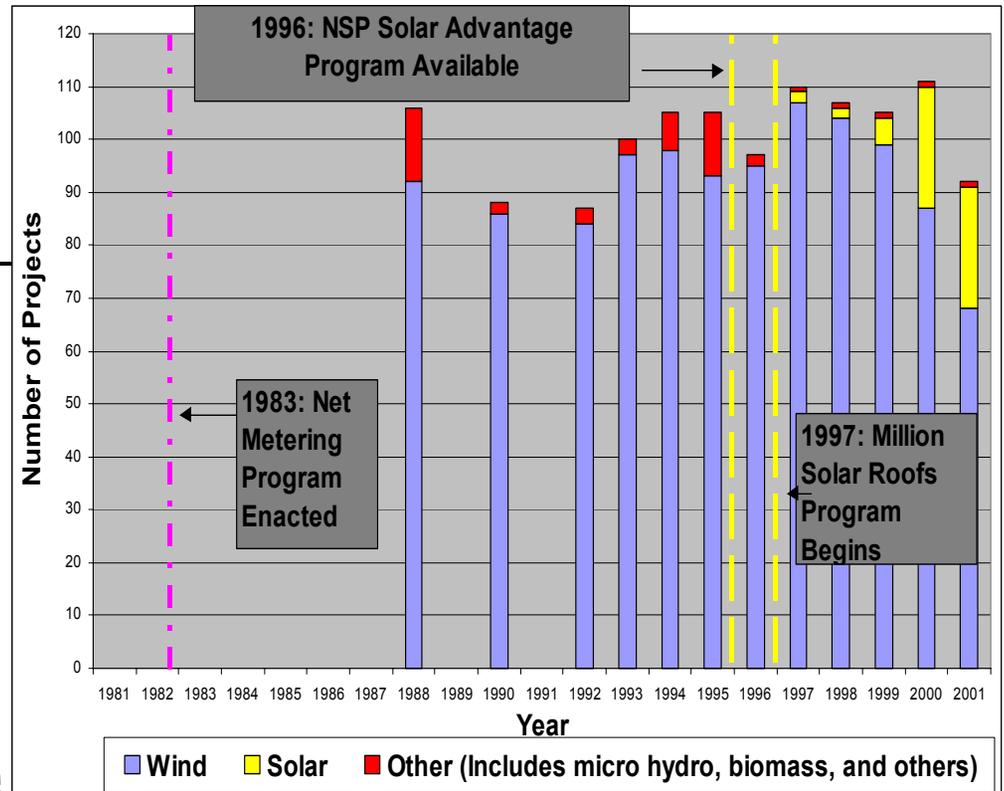
# California Net Metering

- 1000 kW size limit (changed in 2001), annual NEG granted to utility
- All utilities except SDG&E (5 hybrid systems, 402 solar) consider their net metering data to be proprietary
- PG&E, SoCal Edison and SDG&E
  - 1416 net metering contracts
  - for PG&E 619 net metering contracts (170 prior to Jan. 2001 - 264% increase)
- CEC
  - Offers 50% buy down and personal tax benefits for small wind
  - 704 kW of installed small wind under the buy down program (also net metering)
  - Good information for consumers



# 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**

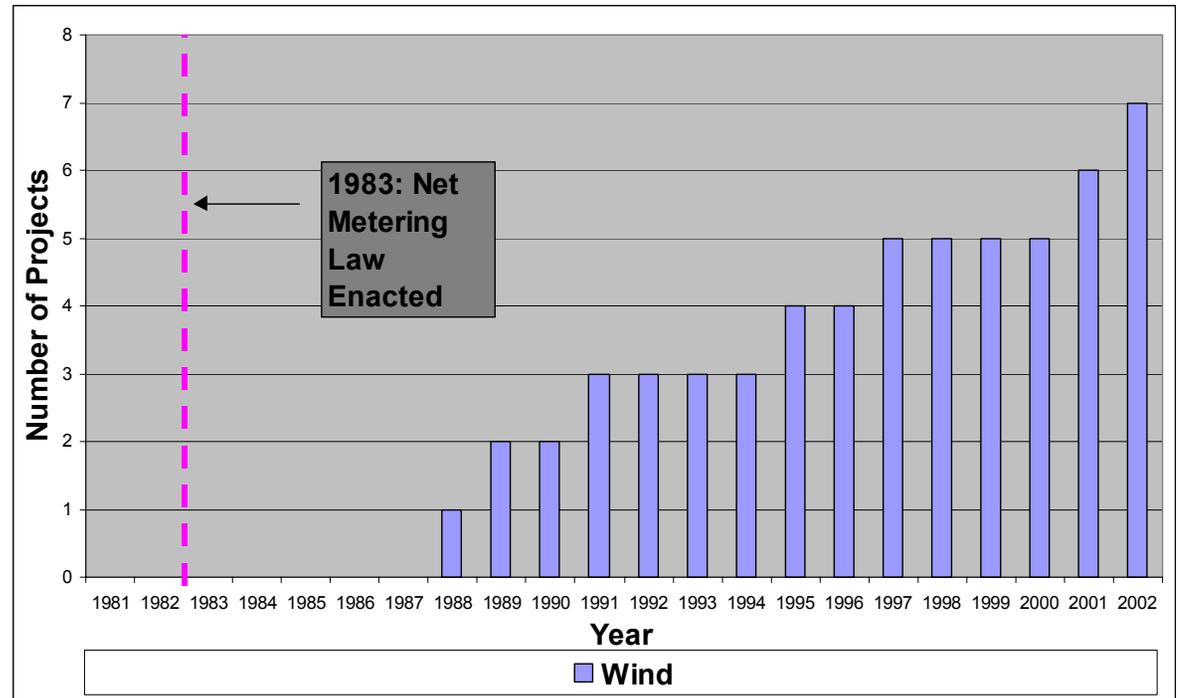


# Illinois Net Metering

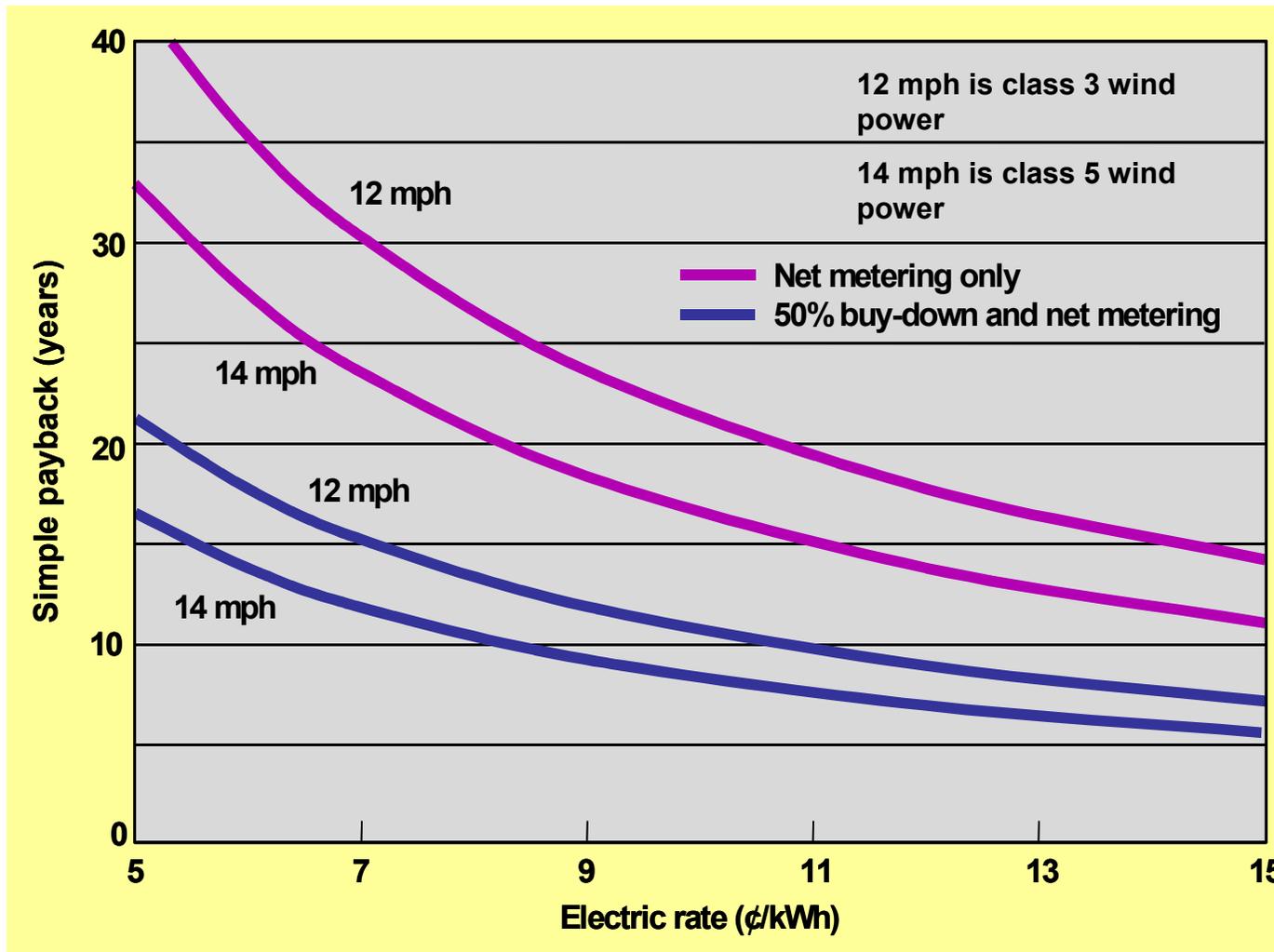
- **40 kW capacity limit, monthly NEG purchased at average retail energy rate**
- **Pricing experiment started by Illinois Commonwealth Edison**
  - **Based on customer request after net metering did not become legislated**
  - **Will become formal program in June 2002**
- **Illinois has 50% grant incentive for systems 10 kW or greater**
- **Net Metering Pricing experiment**
  - **20 total net metered systems**
    - **10 kW of wind**
    - **47.5 kW of PV**
    - **3 hybrid systems**

# Iowa Net Metering

- **No capacity limit, monthly NEG**
- **Information only for Alliant Energy with systems 100 kW or less are shown**
- **Mid-American only has a few customers grandfathered before net metering law changed**
  - **no current net metering offered**
  - **new program October 2002 with 500 kW capacity limit**



# Incentives Make Small Wind Systems



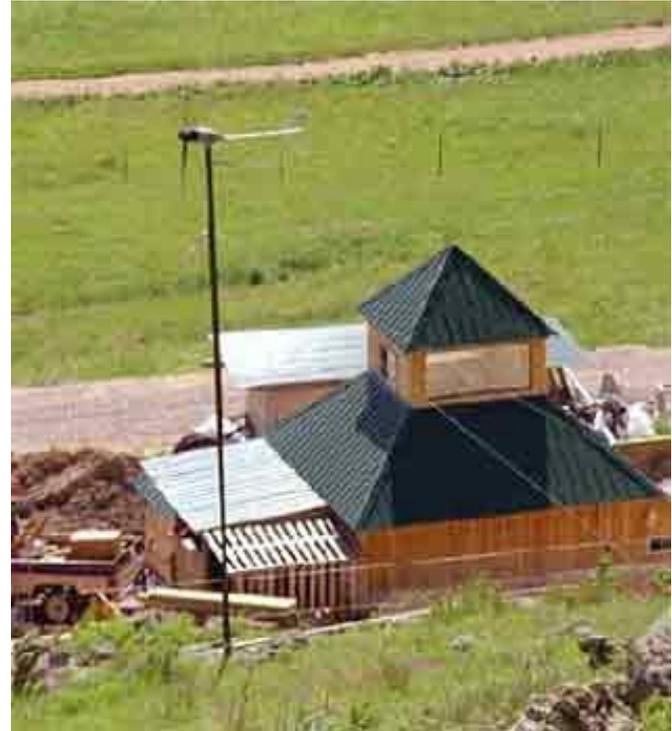
# Wind Turbines: Warranties and Zoning

- Warranties
  - 5 years typical, coverage of “materials and workmanship”
- Zoning
  - Short towers, 30–35 ft, can be installed with only a building permit
  - Taller towers often require a “special use review” by the county commissioners

# Interconnection Requirements

## **Safety Issues**

- **Must meet electrical codes**
- **Must stop supplying power to grid during power outages**



## **Power Quality Issues**

- **Must synchronize with grid**
- **Must match utility power's voltage, frequency and quality**

# Insurance Requirements

*Some utilities require small wind turbine owners to maintain liability insurance of \$1 million or more*

## Policy Responses

- **Eight states prohibit utilities from imposing insurance requirements for qualified systems**
- **Five other states limit required coverage amounts to levels consistent with commercial and residential insurance policies**



***In >20 years, there has never been a small wind system related liability claim***

# Other Requirements

*Utilities may want to be indemnified for liabilities that may arise from operation of a customer's generating facility*

## Policy Responses

- **Indemnity provisions should not favor the utility, but should be fair to both parties**
- **Federal law prohibits utilities from assessing discriminatory charges to customers who have their own generation facilities**



***Other charges may include metering, interconnection, or standby fees***

# Conclusions

- What are the motivators for consumers to Net Meter?
  - Concerns about reliability of utility service
    - Ice Storm in New England 1998
    - Y2k Fears
    - High electricity rates - CA
  - Net Metering by itself does not motivate consumers
    - Strong financial incentives for locations with multiple economic incentives (e.g. buy down, low-interest rate loans, tax incentives, etc.)
- Proactive Utilities - respond to customer requests for net metering programs - PGE, SDG&E, Illinois Commonwealth Edison
- Total installed net metering capacity for small wind as of 12/31/2001 - **1,363 kW** for 10 states