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**Wind & Hydropower Technologies Program**

# **The Realities of Consumer-Owned Wind Power For Rural Electric Co-operatives**

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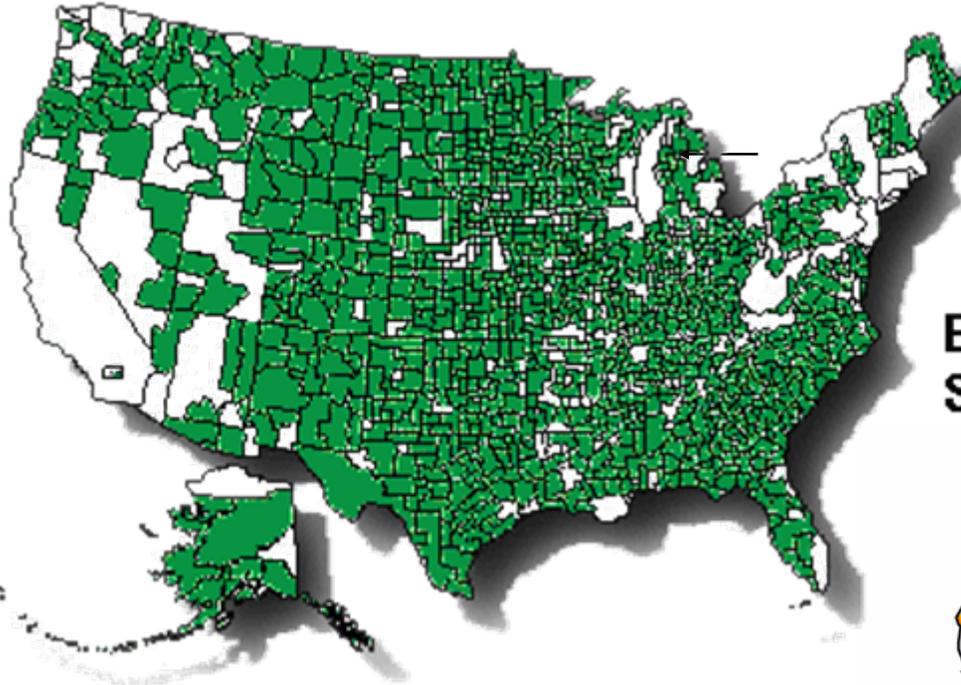


# The Market for Small Wind Turbines is in Rural America

- Better access to good wind resources
- Zoning is less often a barrier
- Larger parcels provide adequate space for wind turbine installations
- Most of rural America receives electric service from rural electric cooperatives
  - 864 distribution co-ops serve 39 million people in 47 states



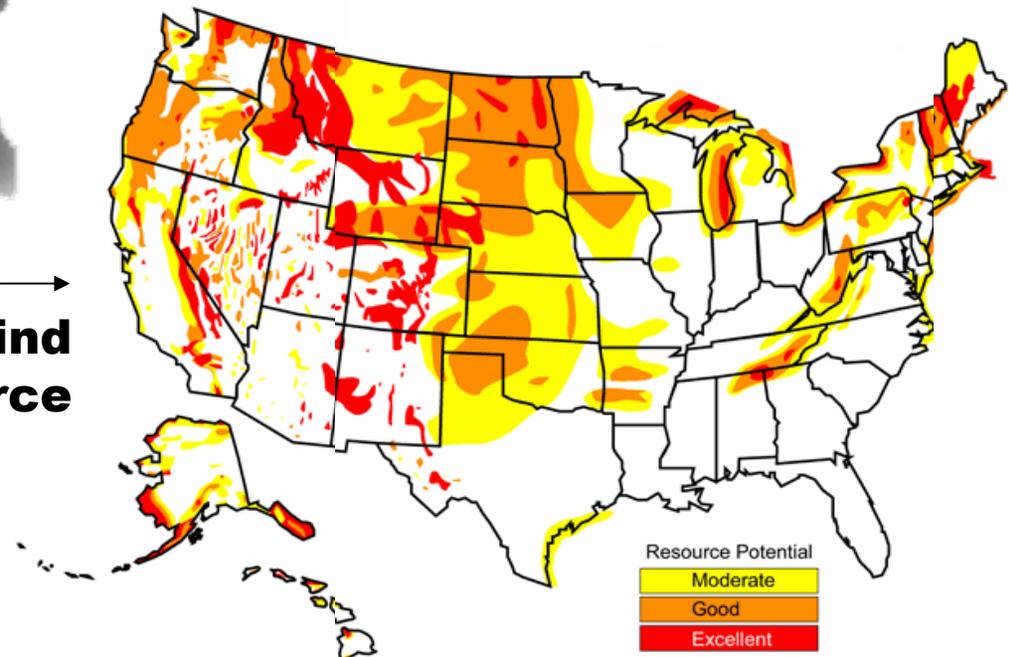
# Wind in Co-op Territory



Source: NRECA

←  
**Electric Co-op  
Service Areas**

→  
**Wind  
Resource**



Resource Potential  
Moderate  
Good  
Excellent



# Consumer-Owned Wind Power

*The relationship between  
wind turbine owners and their cooperatives  
is crucial for the future of  
small wind power!*

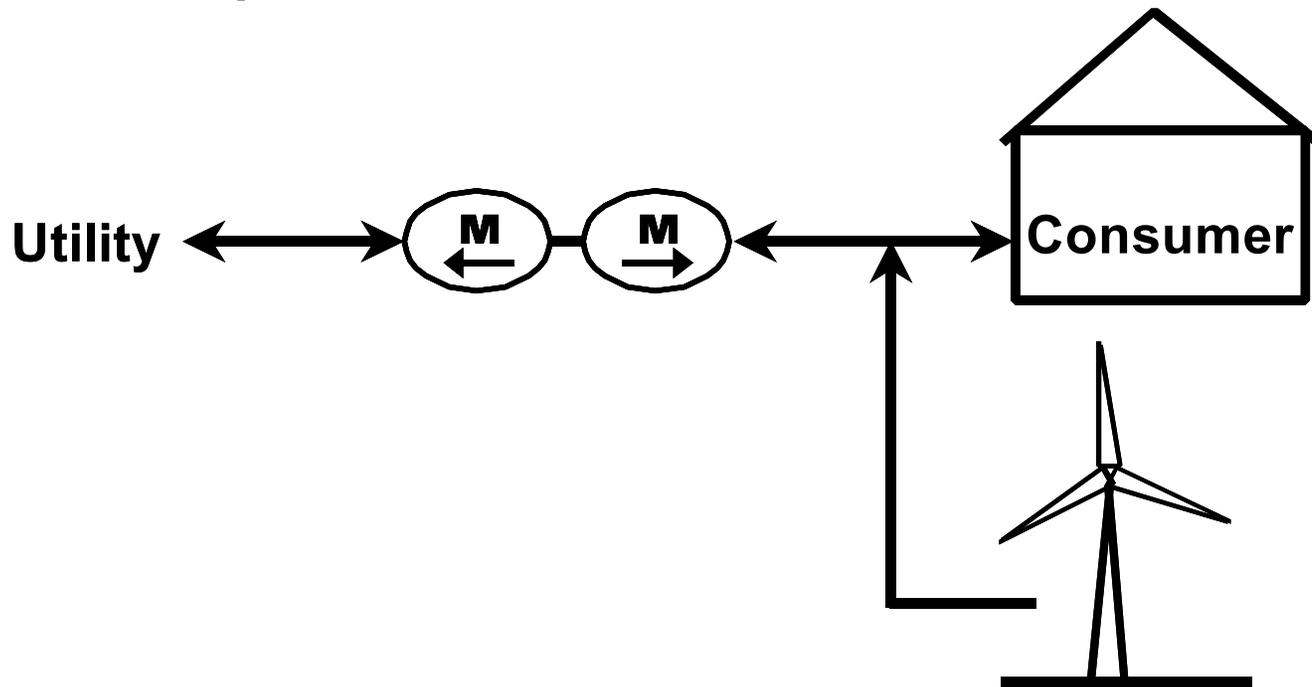
Our Focus → consumer-owned wind power

- Wind turbine(s) connected on the consumer's side of the electric meter
- Reduces consumption of utility electricity
- Excess energy may be exported and sold
- Consumers with energy-based tariffs
- Single-phase electric service, typically < 25 kW



# Meter Configuration For Net Billing

Net energy is recorded instantaneously as either a purchase or a sale.

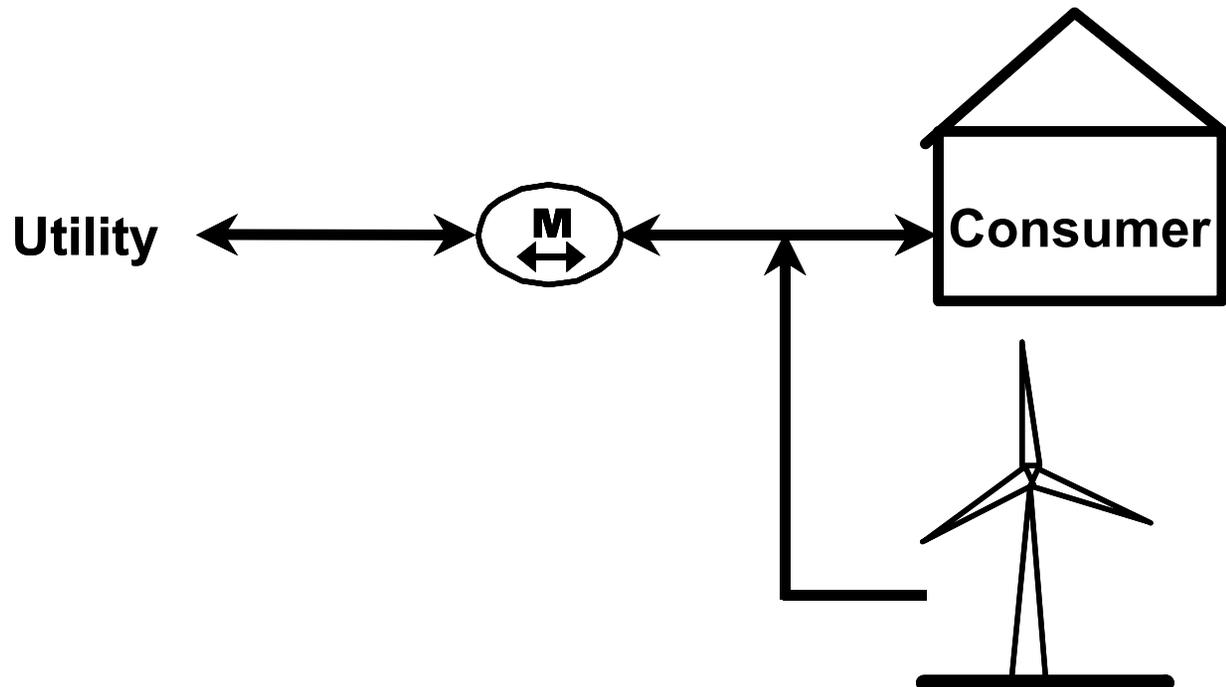




# Meter Configuration For Net Metering

Cumulative net energy is recorded.

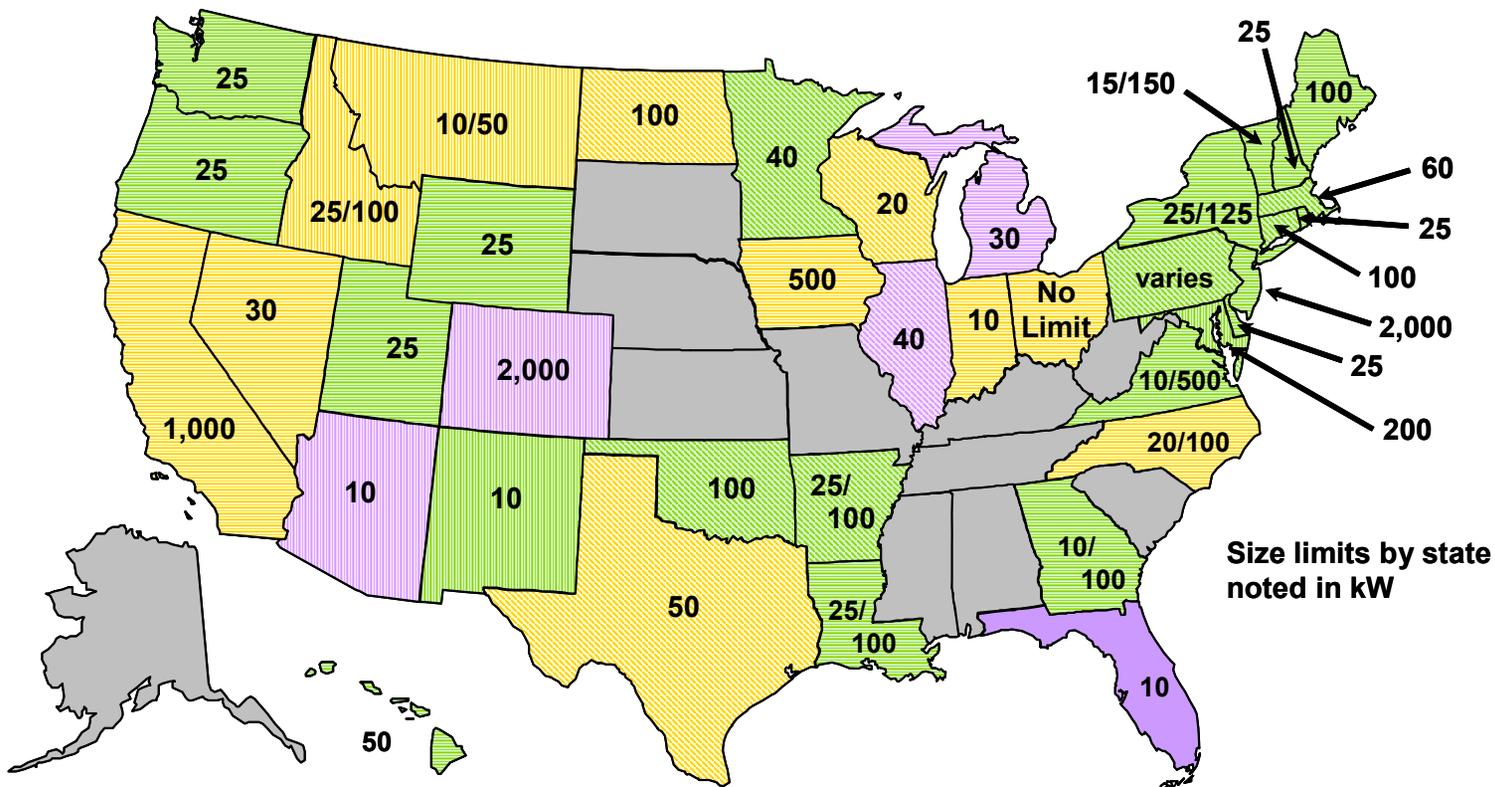
The account is settled either monthly or annually.





# Net Metering for Wind

Only 22 states have net metering for all rural customers



Settlement of Net Excess Energy:

Monthly

Annual

Varies by utility

None

Individual Utilities

Investor-Owned Utilities Only, Not Rural Cooperatives

Investor-Owned Utilities and Rural Cooperatives

Size limits by state noted in kW



# Wind Interconnection Dispute in Iowa

- Sweckers and Midland Electric Cooperative
  - 8 years of litigation
  - Interconnection fees? Determination of avoided cost? Avoided cost or net metering?
  - Iowa Public Utility Board
  - Federal Energy Regulatory Commission (FERC)
  - Iowa Supreme Court
- FERC ruling in February 2006 backed away from the net metering enforcement action of June 2005
  - Provisions of EPAct 2005 are changing the scene, outcome is uncertain for net metering

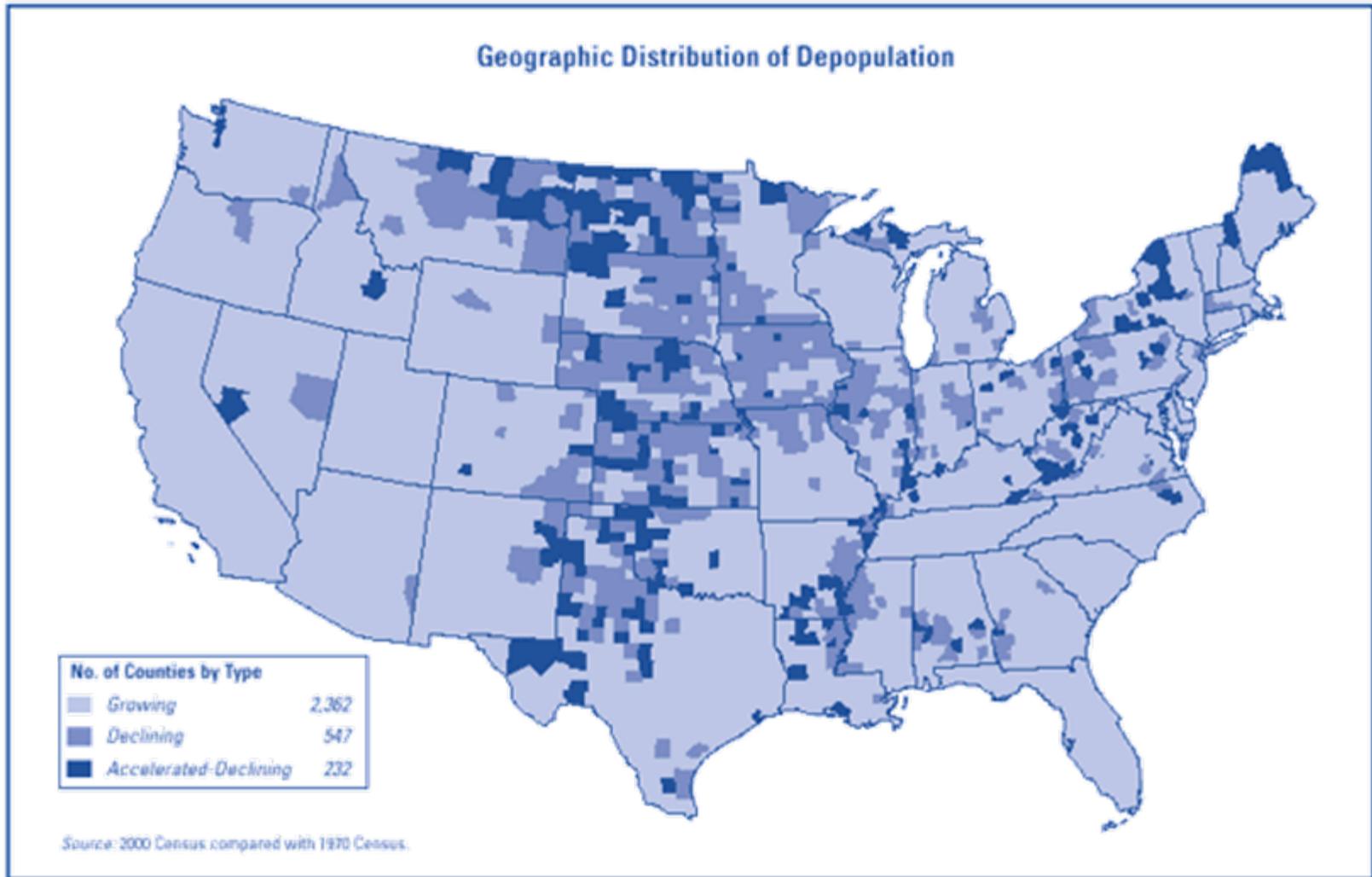


# Understanding the Co-ops

- Pinched Finances
  - Smaller rural population means declining loads
  - Reduced ability to pay for facility fixed costs
- Price Signals Are Confusing
  - Tariffs for consumers are kWh-based
    - ➔ perception that electricity is a variable cost
  - Coop operating costs may be 50% fixed costs
- Load Match (~ 20% capacity credit)
- Culture of Fairness
  - “member economic participation”
- Net Metering - It’s about the money!



# Declining Rural Populations





# Typical Utility Infrastructure Investment Per Customer

- Electric power distribution \$3,000
- Telephone \$1,600
- Natural gas distribution \$1,100
- Cable television \$ 750

Data from South Dakota (S. Wegman)

- Utility customers per mile of distribution line:
  - Investor-Owned: 35
  - Publicly Owned: 47
  - Cooperatives: 7



# Times Are Changing

- Member preferences turning to renewable energy
- Price of electricity is going up
- Opportunity for rural economic development
  - Wind is an untapped resource
- Wind power is a hedge for an uncertain future:
  - Price of coal? Price of natural gas?  
Carbon taxes? Other?



# Co-ops and Consumer-Owned Wind Power

- Options
  1. Avoided cost interconnections
  2. Net metering interconnections
  3. Green power generation
    - Co-ops aggregate and sell the green power?
  4. Co-op support services for wind power
    - Sales, leasing, financing, installation, maintenance
  5. Place value on environmental and/or risk-reduction attributes
  6. Consumer-owned wind power to drive local economic development



# Conclusions

- The market for consumer-owned wind power is in rural America where...
- Net metering is not widely available
- There is a disconnect between co-op and consumer perceptions
- Co-ops have significant fixed costs & are resistant to reduced revenues from consumers
- Benefits of consumer-owned wind power are not being given monetary value



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