

Integrating Wind in Co-op Country



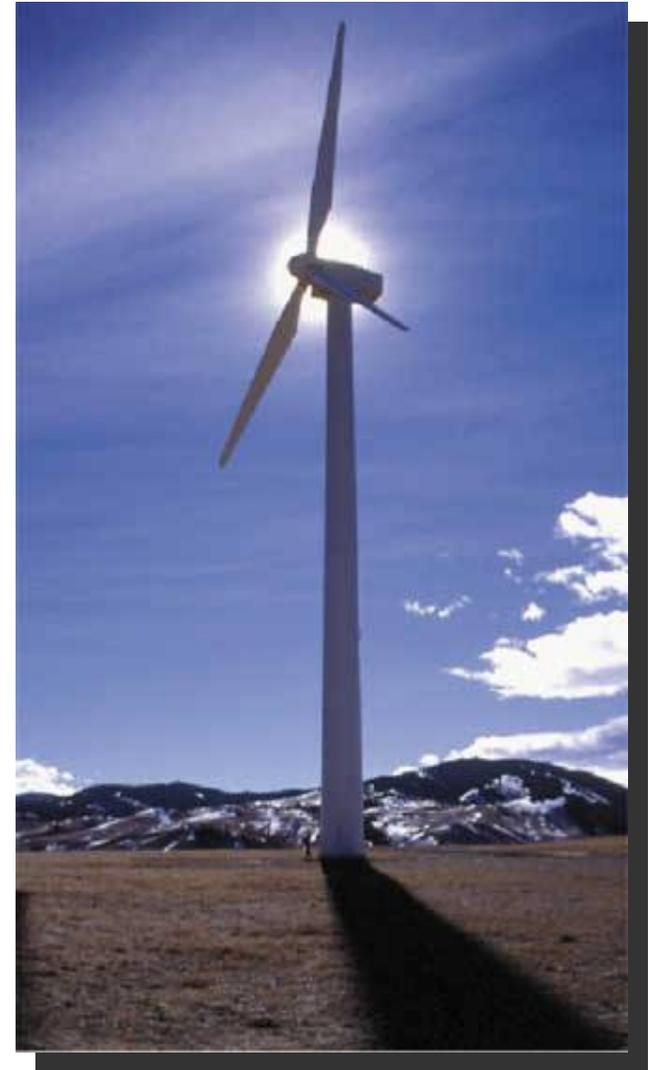
Energy & Telecommunications Interim Committee

September 24, 2009

Montana Electric Cooperatives' Association

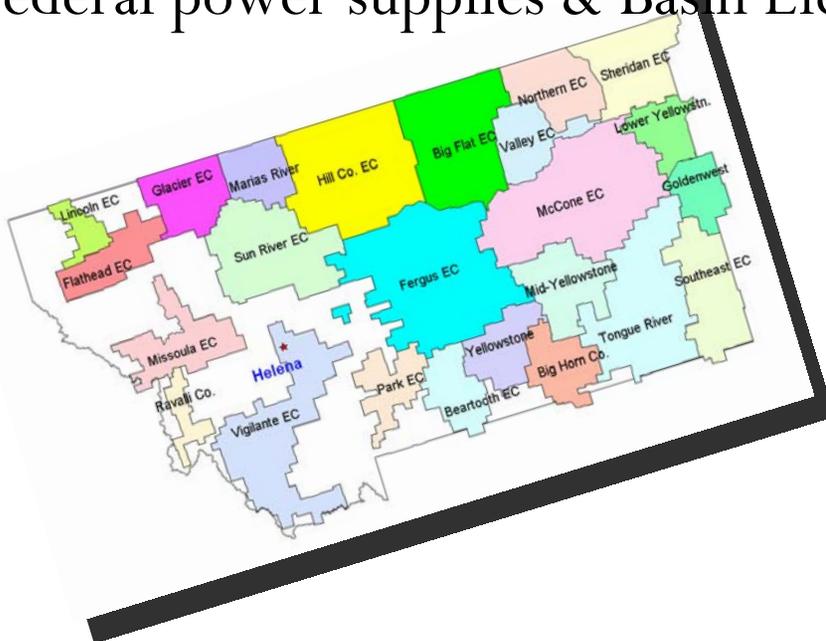
Outline

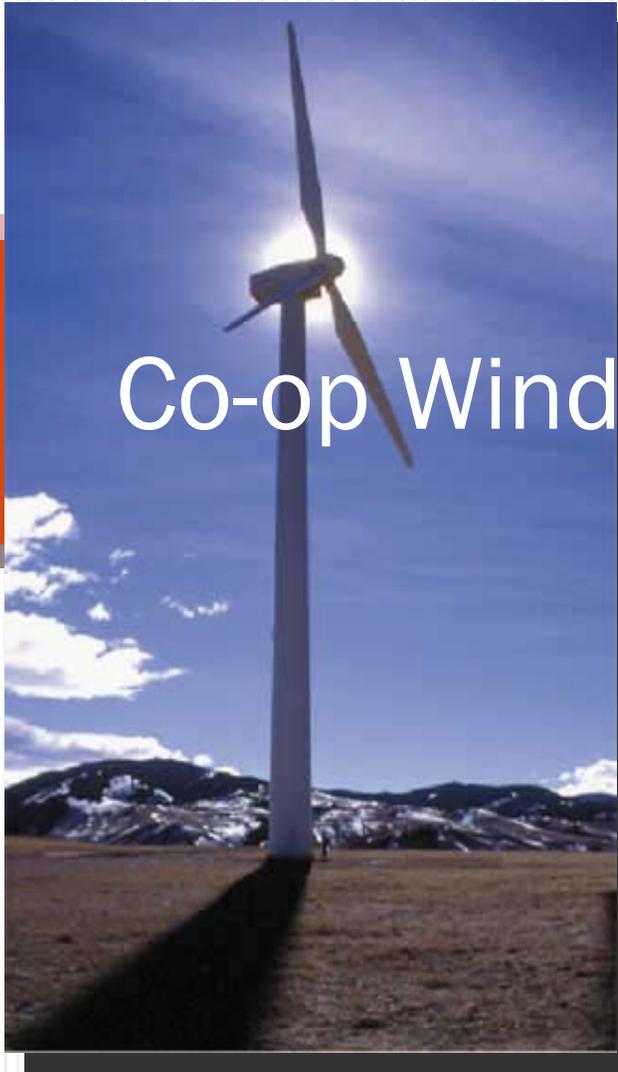
- Co-ops' Profile
- Co-ops' Wind Integration Efforts
- Key Challenges
 - System impacts
 - Cost
 - Safety
 - Intermittency



Montana Co-ops' Profile

- 25 electric distribution cooperatives
- Consumer-owned
- Mostly rural areas – all 56 counties
- Largest collective distribution system
- Federal power supplies & Basin Electric Power Cooperative





Co-op Wind Integration Efforts

Integration efforts

- Simplified, streamlined interconnection application process



GUIDELINES

MODEL INTERCONNECTION PACKET

Adopted September 30, 2008

By

Montana Electric Cooperatives' Association



Integration efforts

- Simplified, streamlined interconnection application process

Montana Electric Cooperative

Interconnection Application

Estimated Install D:

C. Interconnecti

I hereby certify that provided in this Ap Interconnection Sta Producers and retur has been installed.

Signed (System Ow

D. Utility Approv

Interconnection of t contingent upon the and Small Power Pt Completion, and el

Signed (Co-op Rep

Application ID nun

A. System Owner Information

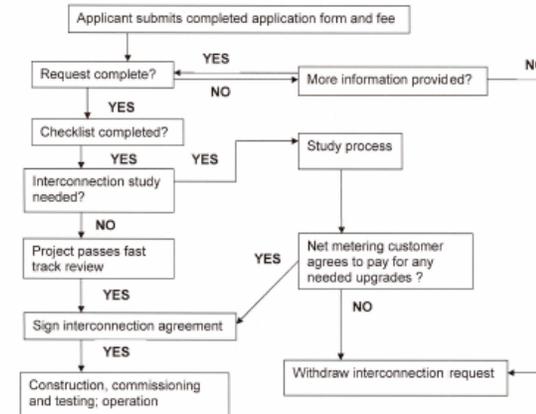
Name: _____
 Mailing Address: _____
 City: _____ State: _____ Zip Code: _____
 Service Address: _____
 Phone: _____ E-mail: _____
 Account No. (from co-op energy bill): _____

B. System Information

Location (if different from above): _____
 Designed Capacity: Solar _____ Wind _____ Other _____
 Inverter Manufacturer: _____ Inverter Model: _____
 Inverter Nameplate Rating: _____ Single Phase Three Phase
 DC Disconnect Switch AC Disconnect Switch
 Disconnect Location: _____
 Type of generator: Photovoltaic Diesel Engine Fuel Cell
 Wind Turbine Hydro Turbine Biofuels Turbine
 Geothermal Turbine Other _____
 Is the equipment UL1741 Listed? Yes No

FLOW CHART 1

NET METERING APPLICATION PROCESS



Integration efforts

- Expanded, liberalized net metering policies
 - *All 25 electric co-ops allow net metering*
 - *Credit for full-year's wind power production against co-op power bill.*



Your Touchstone Energy® Cooperative

Sun River
ELECTRIC COOPERATIVE

PO BOX 309
FAIRFIELD, MT 59404-0309
(406) 467-3205
(800) 450-7516

00002825660000255001

ACCOUNT NUMBER: 282566
STATEMENT DATE: 09/14/09

PREVIOUS BALANCE: 297.00
PAYMENT(S) - THANK YOU: 297.00CR
CURRENT CHARGES: 155.00
AMOUNT DUE: 155.00

Hit SREC on the World Wide Web at: www.sunriverelectric.com

* LIFE IS TEN PERCENT WHAT YOU MAKE OF
IT AND NINETY PERCENT HOW YOU TAKE IT.
- BEN FRANKLIN

MEMO BRANCH DESCRIPTION	PERIOD	CURRENT	WILL	DAYS / USAGE	CHARGE
MEMORIAL 97469413	09/01/09	09/01/09		31 DAYS	25.00
BASE CHARGE			1.00	1457	115.19
ENERGY CHARGE	03296	04753			
ELECTRIC			1	32 DAYS	12.37
400W MV SECURITY LIGHT					1.98
ELECTRIC SYSTEM BENEFITS PROG					
ELECTRIC TOTAL FOR: 1302550					154.54 *
OPERATION ROUNDUP					.46

CURRENT 1 YEAR AGO
AVERAGE TEMPERATURE 67F 68F
ELECTRIC 97469413 PER DAY 47 KWH 51 KWH

Sun River Electric Cooperative, Inc. • 200 1st Ave. S. • PO Box 309 • Fairfield, MT 59404-0309



Other integration efforts

- PURPA purchase or wheeling
 - Purchase @ avoided cost
- Power suppliers' push
 - Basin Electric – 10 percent
 - BPA – More than 2,000 MW today, 6,000 x 2013





Key Challenges of Wind Integration

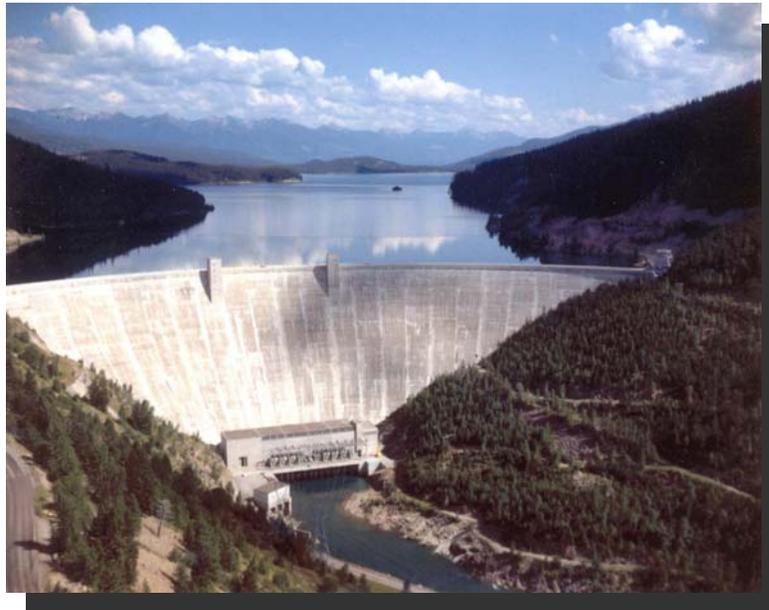
Key challenges

- System impact
 - *Large vs. small wind*
 - *Co-op systems built for very small loads*
 - *Can affect high-voltage lines outside system*



Key challenges

- Cost Issues
 - *Advantaging or disadvantaging wind projects*
 - *Cost shifts*
 - *Low-cost hydropower*
 - *Tax appetite* → *lack thereof*



Key challenges

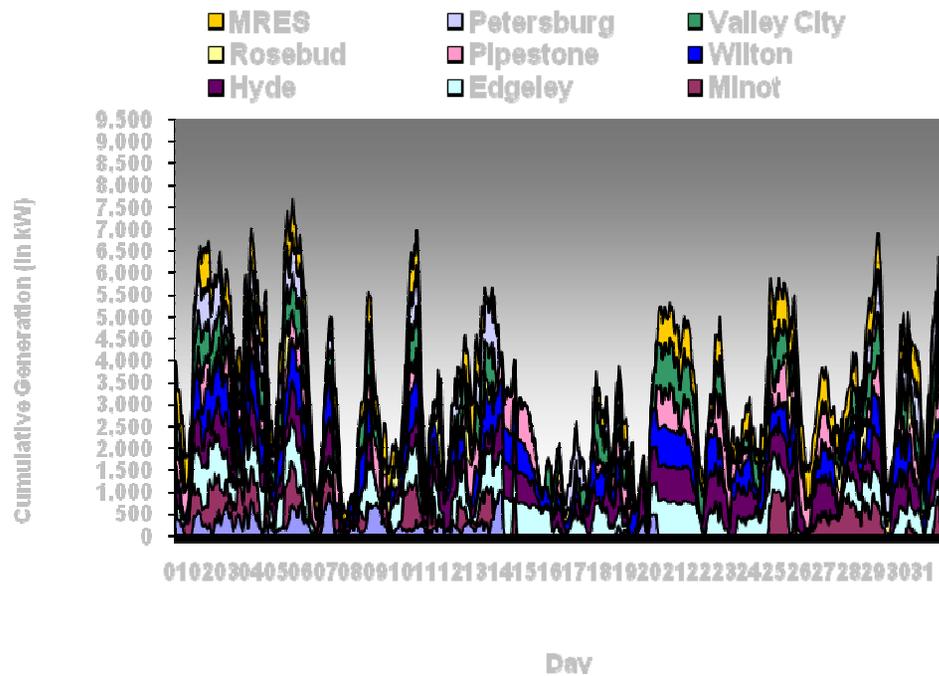
- Safety
 - *Backfeeds*
 - *Relays can fail*
 - *Standards to protect public & line personnel*



Key challenges

- Intermittency
 - *Dramatic swings in power production*

Wind Generation - December 2008



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Questions?