Federal Transmission Initiatives for Renewables: The View From FERC

Presented by Jon Wellinghoff, Chairman
Federal Energy Regulatory Commission
February 3, 2010
Competitive Renewable Energy Zones (CREZ)
Docket No. 35665
Attachment A
Transmission Initiatives Adapt to US Wind Growth

Transmission Project Examples

United States transmission grid
Source: FEMA
Transmission Initiatives Adapt to US Wind Growth
Transmission Project Examples

Source: NREL, Emerging Energy Research
BPA Load & Wind Generation
January 5 to January 25 2009
“Transmission is the Achilles heel of Renewable Energy.”

Bennett Johnson
- From Iceland (Northwest) to Israel (Southeast) = 3,200 mi
- Concept of grid is 25,000 miles of line

The new high-voltage network would range from the Sahara to the polar cap. The concept calls for main lines that are 40,000 kilometers long. And parts of it already exist.
Transmission Efficiency

South Korea achieved major improvements and reduced T&D Losses by 40% in less than 30 years by:

- Standardizing and upgrading transmission and distribution voltages
- Building a higher voltage overlay
- Utilizing low loss conductor and transformers
- Reactive power control.

T&D Efficiency Improvement is Achievable Using a Full Portfolio of Technologies.
Demonstration of Regulation Services
Regulation Service While Charging

Regulation Supply (incidental charging)

- Regulation Signal
- Vehicle Power
- Battery SoC (%)
Regulation Service Payments—Cash in the “CashBack” Hybrid

Cumulative Cost

Payments to CBH Owners for Regulation Services. Assume $1,500/year

- Gasoline ICE
- Hybrid
- PHEV
- CashBack PHEV

- $4.00/gal.
- $0.08¢/kWh (off-peak rate)
- Maintenance costs not included, no discount rate applied

Years After Purchase

$0 $15,000 $20,000 $25,000 $30,000 $35,000 $40,000

0 5 10