How to Improve the Efficiency of the World’s Biggest Machine
While Solving a Few Other Problems Along the Way

4th Annual Cascadia Transportation Conference

Jon Wellinghoff, Commissioner
Federal Energy Regulatory Commission
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A Little Over a Century Later …

“Most Complex Machine in the World”

Over 978,020 Megawatts of Generating Capacity

Over 351,000 Miles of Transmission Lines
Electric Grid: Billions in Investment & in Costs

Generation ~$940 B
Transmission ~$120 B
Distribution ~$140 B = $1.2 Trillion
End Use

$97 B residential
$94 B commercial
$78 B industrial

5% Improvement = $60 Billion Savings

(replacement costs)
Multiple Issues Seeking Solutions

Managing hydro system constrained by fish, water, treaties & future markets

Integrating 100+ GW of wind in the West and Midwest

Global warming & increasing reliance on coal

Wholesale Markets Need Improvement and More Elasticity to Keep Consumer Prices Reasonable

Integrating new technology that could help: demand response, distributed generation, distribution automation

Overall Grid Efficiency and Central Station Model Inefficiencies