

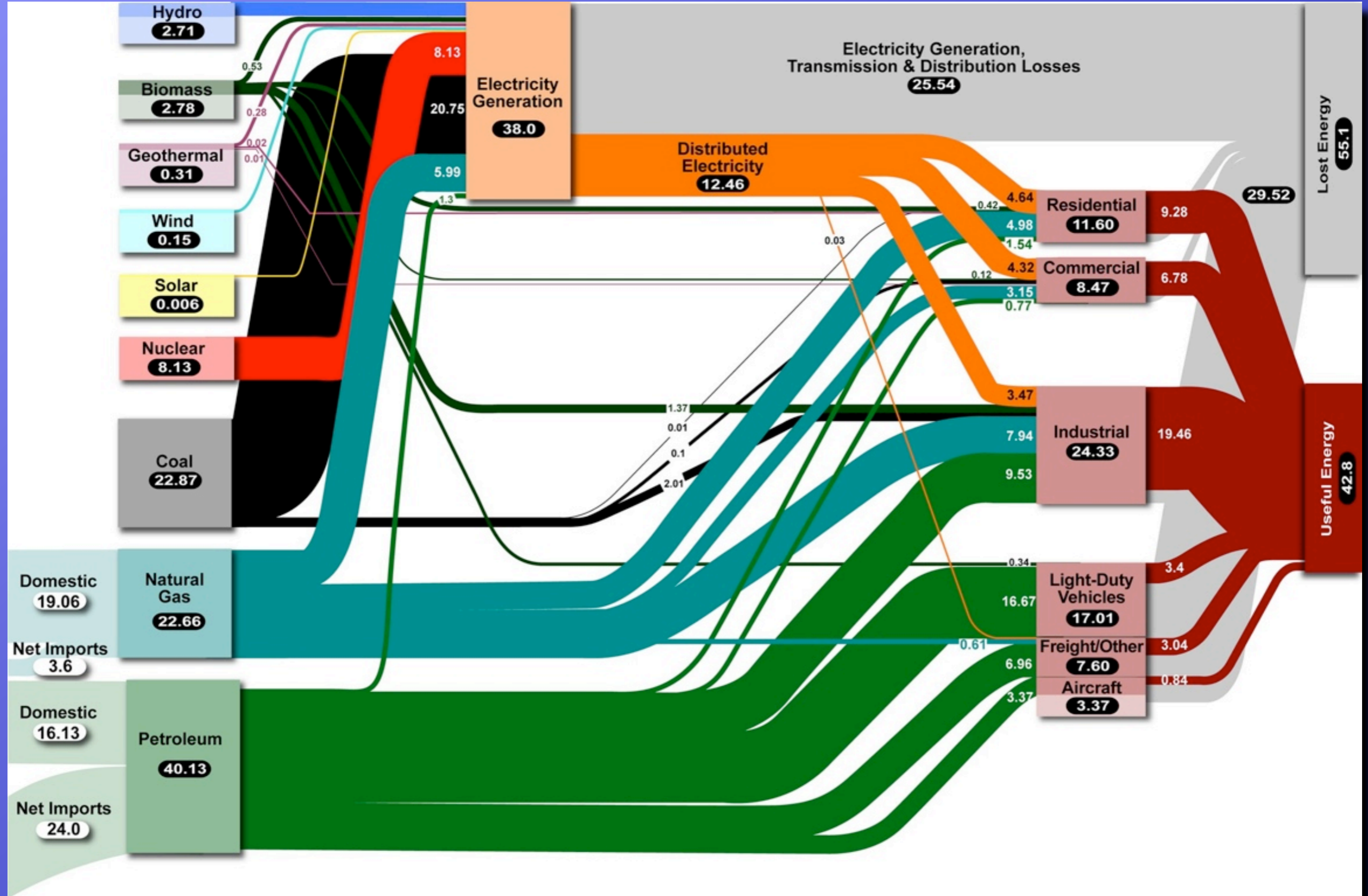
The Three Step Clean Energy Plan

**National Clean Energy Summit
August 19, 2008
Las Vegas, Nevada**



**Jon Wellinohoff
Commissioner
Federal Energy Regulatory Commission
jon.wellinohoff@ferc.gov
(202) 502-6580**

U.S. Energy Flows

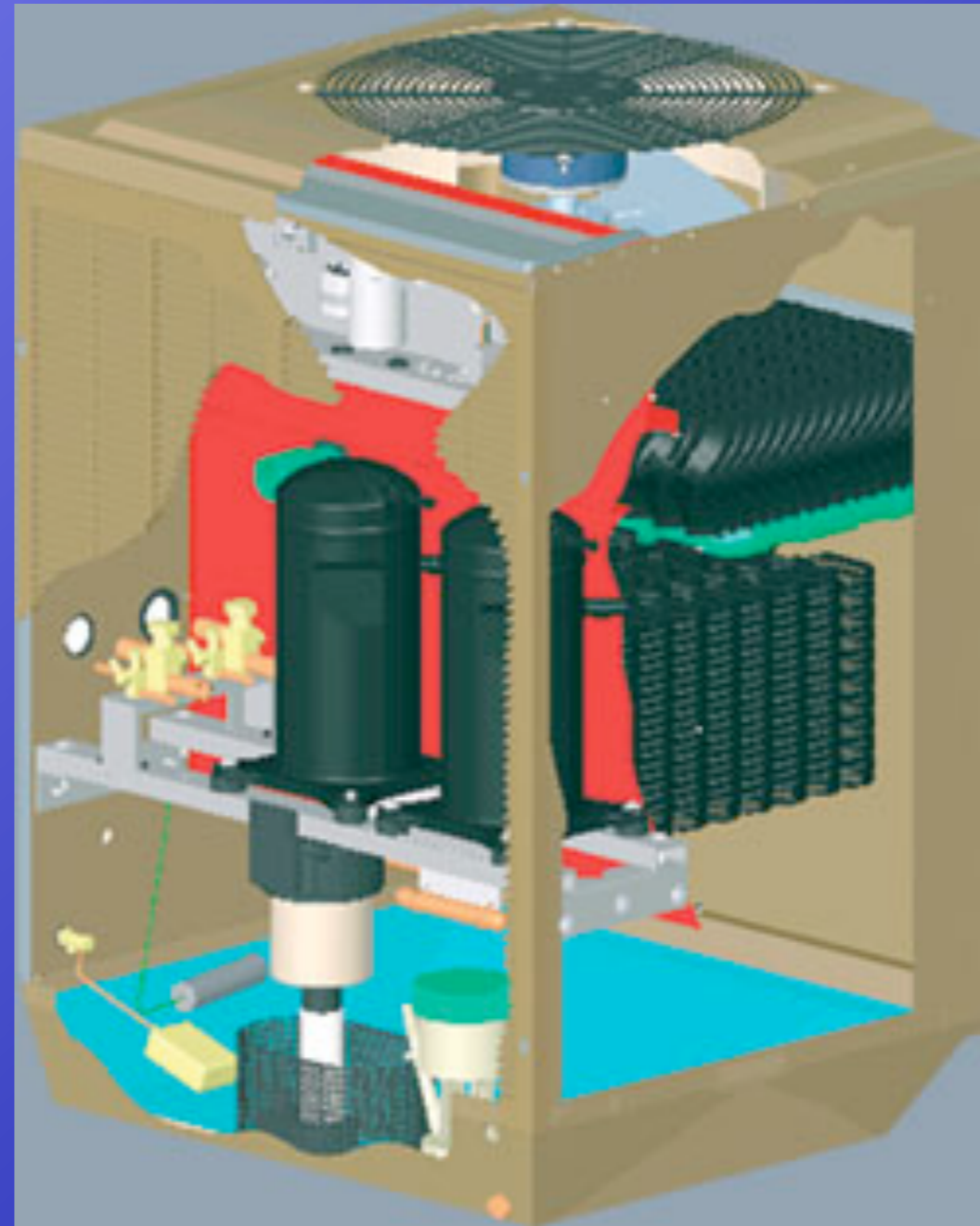


The Three Step Clean Energy Plan

Step #1

- ★ **Implement Short Term Least-Cost Solutions to Improve Energy Productivity & Lower Bills**
 - ★ **Energy Efficiency, Demand Response, Combined Heat and Power, Waste Heat Recovery, Distributed Generation**
 - ★ **Enact**
 - ★ **Loan Guarantees**
 - ★ **Energy Efficiency Standard**
 - ★ **Demonstration and Deployment Through Load Serving Entities or Third Parties- Profitable Delivery Model**
 - ★ **Enable Bidding Capacity/Energy/Ancillary Services Into Wholesale Electric Markets**

30-50% Energy Productivity Gains Achievable



The Three Step Clean Energy Plan

Step #2

★ Enable Renewable Energy

★ Wind, Geothermal, Biomass, Hydrokinetic, Central Solar

★ Enact

★ Federal RPS

★ 8 Year PTC/ITC

★ Enable Construction of HVDC and/or HVAC Backbone Transmission Grid w/Smart Grid Capabilities

★ Loan Guarantees or Incentive ROEs

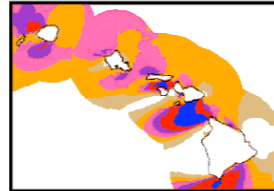
★ Federal Siting Authority

Existing High Voltage Transmission

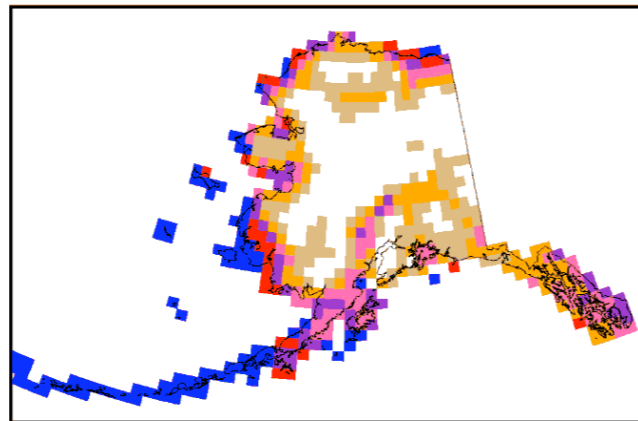


Renewable Backbone Transmission Highway

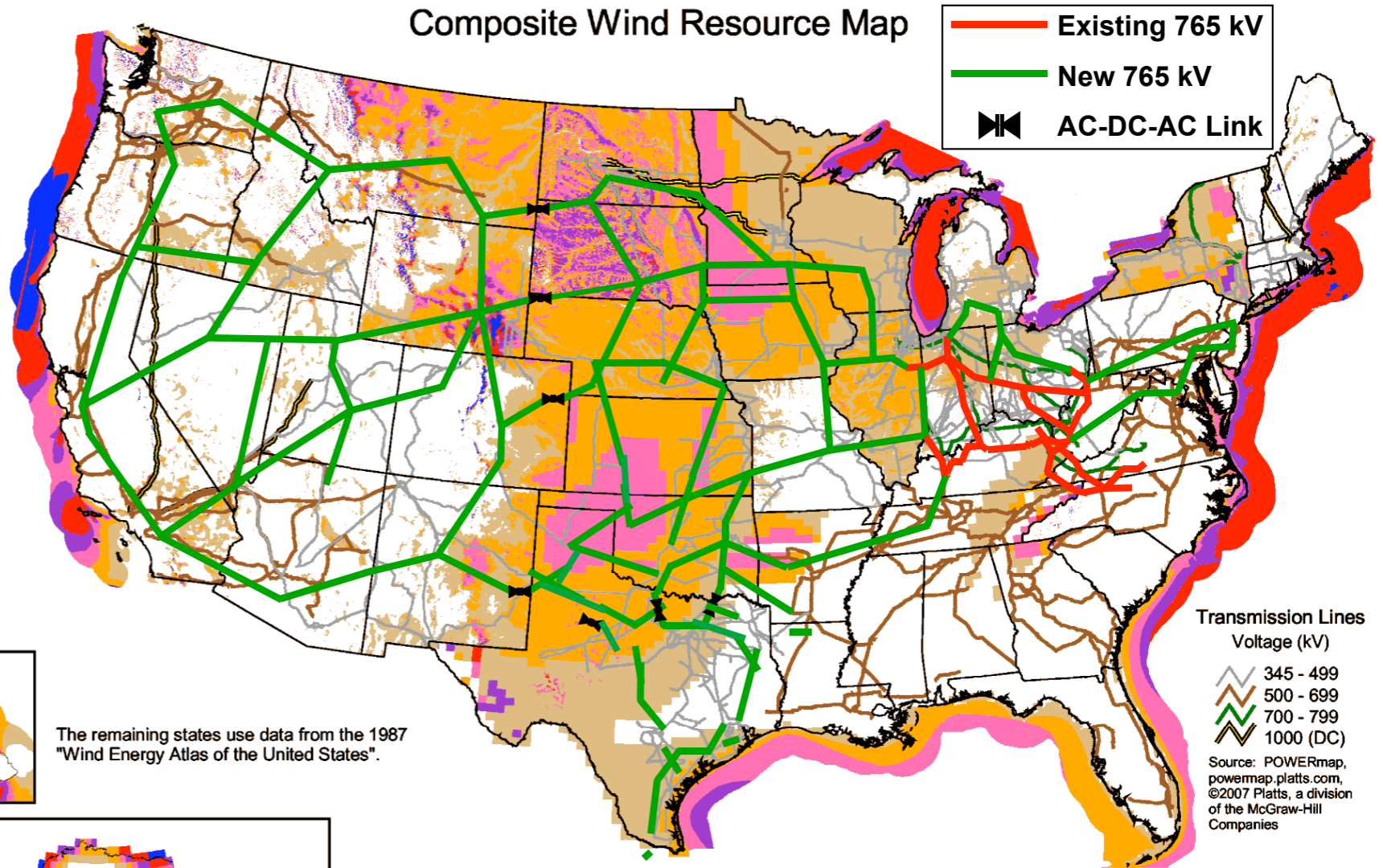
NREL Updated Maps:
 Arizona (2003)
 California (2002)
 Colorado (2004)
 Connecticut (2001)
 Delaware (2002)
 Hawaii (2004)
 Idaho (2002)
 Illinois (2001)
 Indiana (2004)
 Maine (2001)
 Maryland (2002)
 Massachusetts (2001)
 Michigan (2004)
 Missouri (2005)
 Montana (2002)
 Nebraska (2005)
 Nevada (2003)
 New Jersey (2002)
 New Hampshire (2001)
 New Mexico (2003)
 North Carolina (2002)
 North Dakota (2000)
 Ohio (2004)
 Oregon (2002)
 Pennsylvania (2002)
 Rhode Island (2001)
 South Dakota (2001)
 Texas mesas (2000)
 Utah (2003)
 Vermont (2001)
 Virginia (2002)
 Washington (2002)
 West Virginia (2002)
 Wyoming (2002)



The remaining states use data from the 1987 "Wind Energy Atlas of the United States".



Composite Wind Resource Map




Existing 765 kV
 New 765 kV
 AC-DC-AC Link

Transmission Lines
 Voltage (kV)
 345 - 499
 500 - 699
 700 - 799
 1000 (DC)
 Source: POWERmap, powermap.platts.com, ©2007 Platts, a division of the McGraw-Hill Companies

Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m ²	Wind Speed at 50 m m/s	Wind Speed at 50 m mph
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	800 - 1600	8.8 - 11.1	19.7 - 24.8

^a Wind speeds are based on a Weibull k value of 2.0

U.S. Department of Energy
 National Renewable Energy Laboratory

 19-APR-2007 1.5.9

The Three Step Clean Energy Plan

Step #3

★ Electrify Transportation

★ PHEVs and BEVs

★ Enact

- ★ Federal Fleet Requirements

- ★ Federal Tax Credits (Graduated)

- ★ Fuel Reduction and Energy Efficiency Standard

- ★ Retooling/Production Loan Guarantees

- ★ Enable Bidding of Ancillary Services by EVs Into Wholesale Electric Markets (CashBack Car)



Vehicle Electrification Benefits

- **Will Save Their Owners Money on Their Total Energy Bills**
- **Will Cost Less Than a Conventional Gasoline Car in 4 Years or Less of Ownership (Incorporate Savings into Financing to Lower 1st Costs)**
- **Will Improve the Overall Efficiency of the Electric System and Save All Consumers on Their Electric Bills**
- **Will Reduce GHG and Urban Pollution**
- **Will Reduce Foreign Oil Imports**
- **Will Improve Electric Grid Reliability and Security**

EV Electric System Benefits

CashBack Car (V2G)

★ Efficient Grid Management

- Ancillary Services (Spinning Reserve & Regulation)
- Dispatchable Reactive Power
- Peak Demand Services (Demand Response)
- Reduced Operating and Planning Reserves
- Distribution/Substation Level Support
- Reduced Line Losses
- Improved Power Plant Efficiency
- Improved Load Factor

★ Storage & Integration of Renewable Power

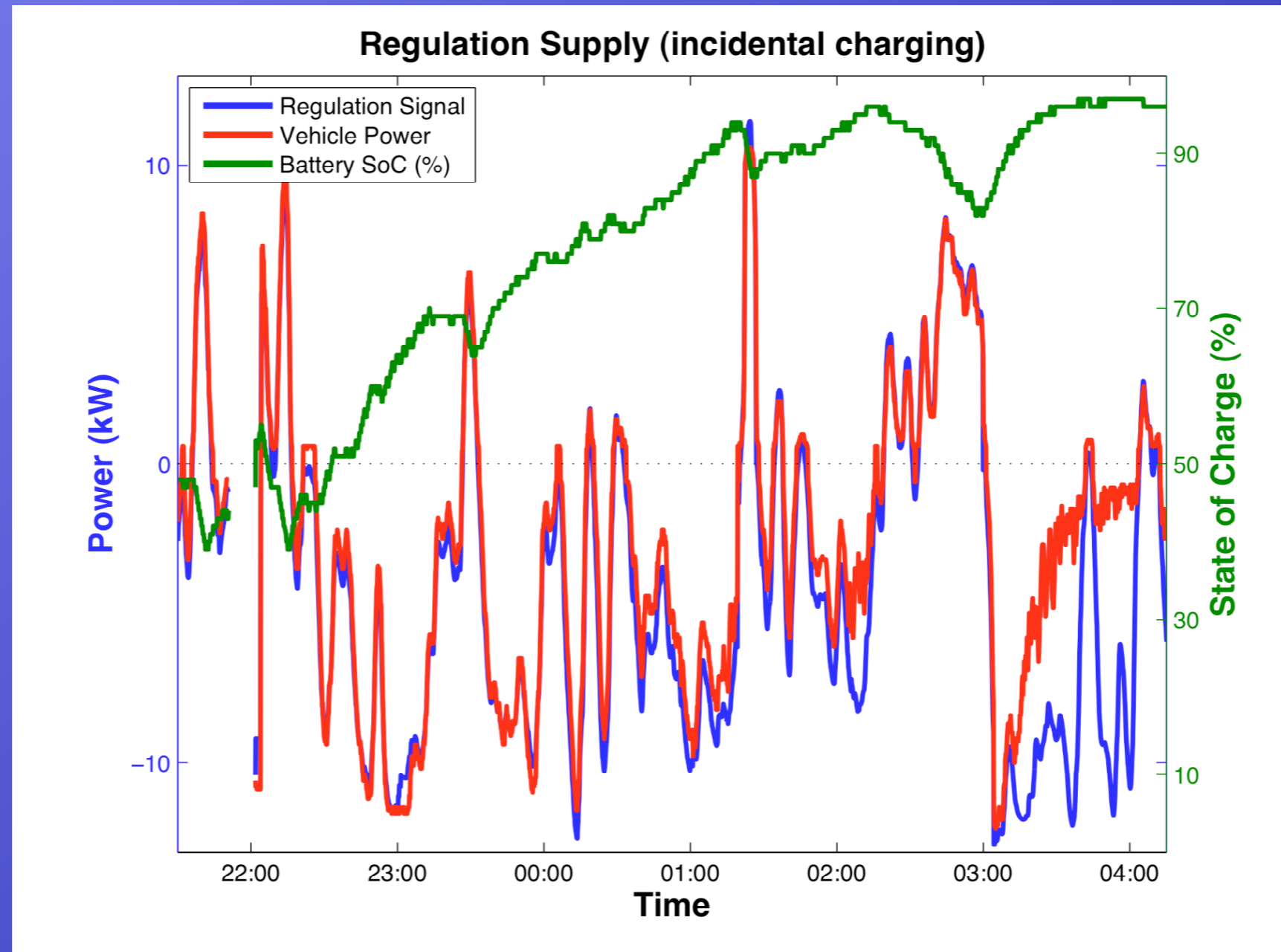
- Wind & Solar
- Load Following

★ Emergency Power Supply

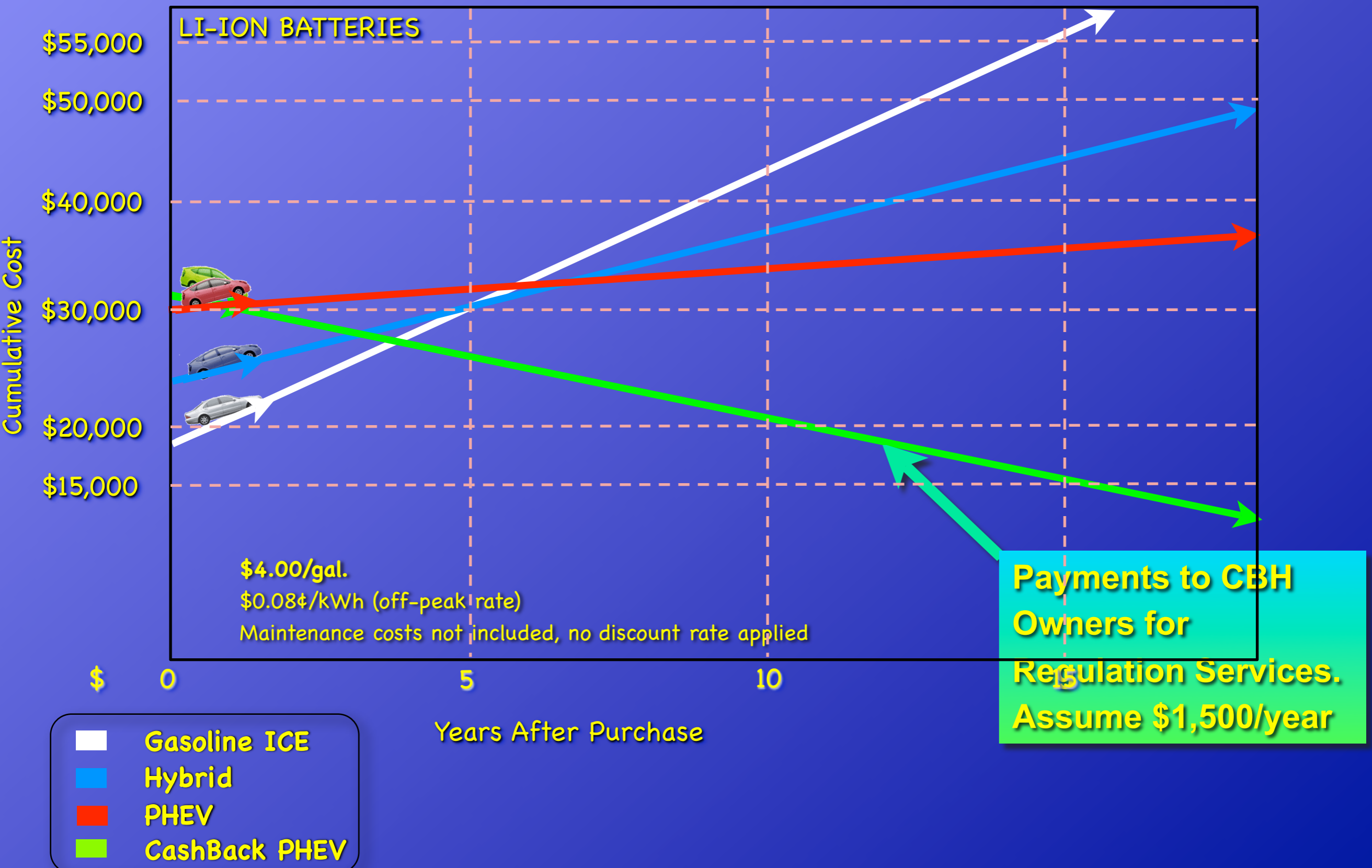
★ Electric Transit Support

You Can Be Paid to Charge Your Car

CashBack Car (V2G)



The "Cash Back" in CashBack Car



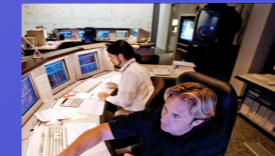
Three Step Clean Energy Plan

More Consumer Energy Benefits

Lower Total Energy Costs



Dynamic Systems Control



Grid Operator

THANK YOU

