



Transmission to Everywhere



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Energy Policy Goals

- Meeting peak demand energy needs
- Efficient, reliable, cost-effective generation
- Greenhouse emission reductions
- Stable, secure, sustained fuel sources (*nix foreign oil*)
- Environmentally sensitive siting of generation



Tools to meet the Goals

- State Renewable Portfolio Standard

State requires a % of electric energy sales be generated by renewable technologies (28 states mandatory, 6 states renewable goals)

- Federal Production Tax Credit (since 1992)

Per KWh tax credit for electricity generated by qualified resources

- Stimulus Bill: \$80B in federal loan guarantees

US Department of Energy guaranteed loans to finance renewable energy projects, electric transmission projects, etc.



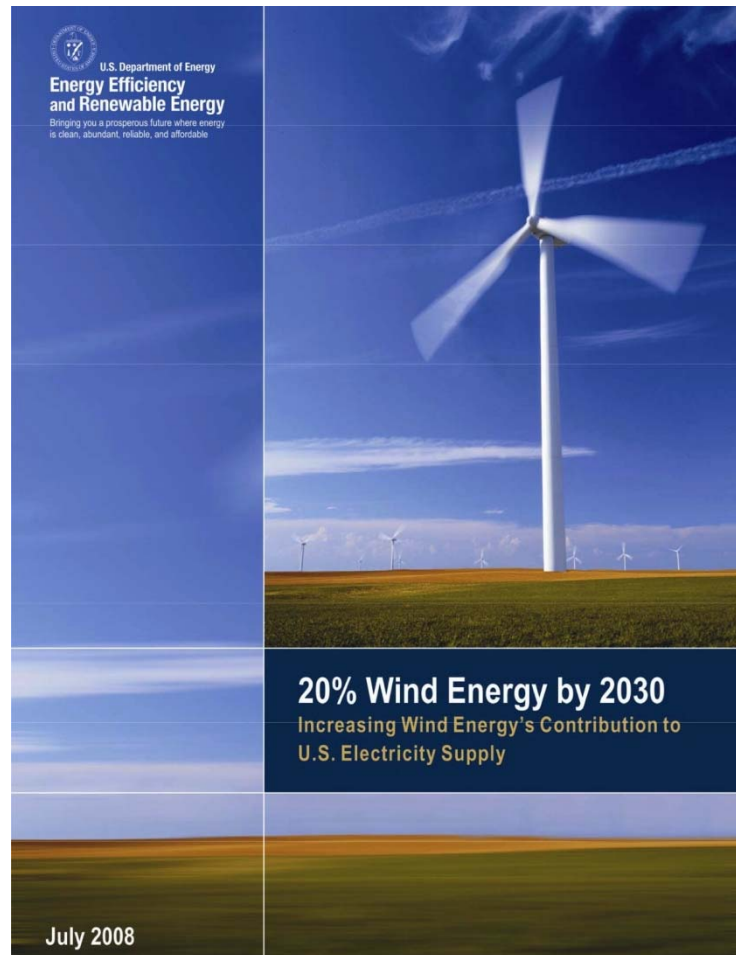
Playing favorites with **Incentives:**

FUEL SOURCE	Subsidy per MWh
Coal	\$0.44
Natural Gas	\$0.25
Nuclear	\$1.59
Biomass	\$0.89
Geothermal	\$0.92
Hydro	\$0.67
Landfill Gas	\$1.37
Solar	\$24.34
Wind	\$23.37

Source: U.S. Energy Information Administration



Playing favorites with the Research:



Playing favorites with the Vision:

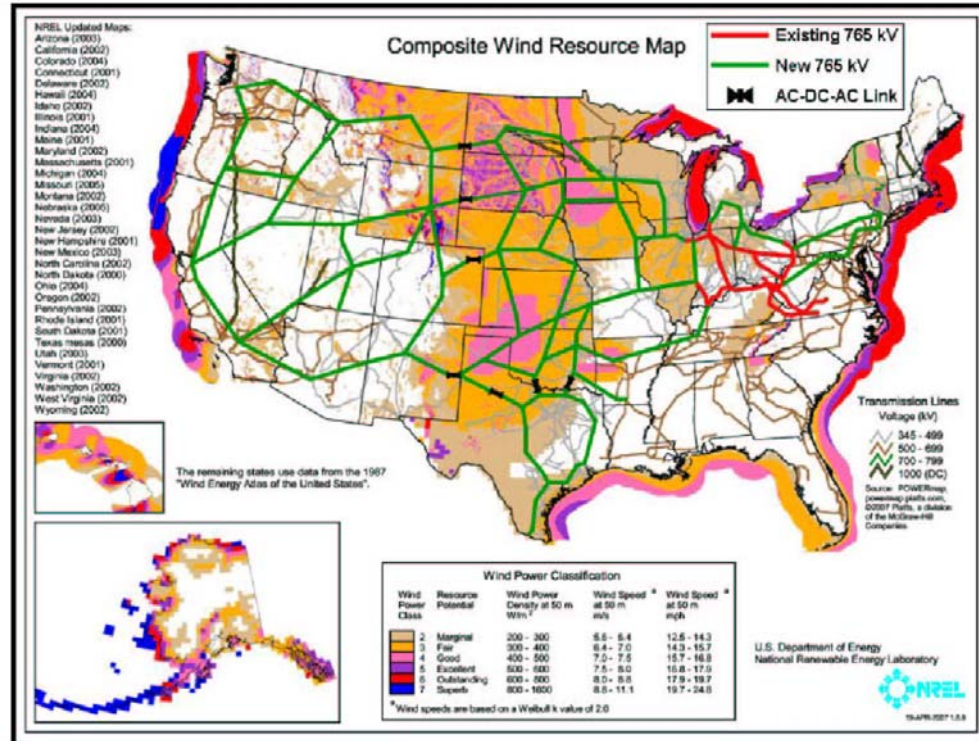


Exhibit 1: Conceptual 765 kV backbone system for wind resource integration (edited by AEP).



Where is this “policy” headed?



**Industrial wind
represents more than
90% of the proposed
generating capacity of all
renewable energy
projects.**



Image: Elk River 150mw facility, Butler County Kansas



Midwest wind slated to flow East!

(and more slated for West)

State	# of Queue Entries	WIND Megawatts
Iowa	2	3000 MW
North Dakota	1	1,500 MW
South Dakota	6	10,500 MW
Illinois	74	13,348 MW
Indiana	22	5,152 MW
Ohio	22	3,635 MW
	127 proposed	37,135 MW

PJM wind proposals as of February 12, 2009

<http://www.pjm.com/planning/generation-interconnection/generation-queue-active.aspx>



... and much more

- ✘ 305,000 MW of installed wind geographically distributed
- ✘ 19,000 miles of new 765 kV transmission lines
- ✘ \$60+ billion in transmission & infrastructure costs
(2007 dollars, assumes \$2.6 million per mile 765 kV line cost)
- ✘ Wind power development capital costs in the trillions
- ✘ Profit motive married to fast-tracking of approvals

Fine print: costs are ballpark estimates created without the benefit of detailed engineering.

Sources: American Electric Power: Interstate Transmission Vision for Wind Integration (2007)

DOE 20% wind power by 2030 (2008)



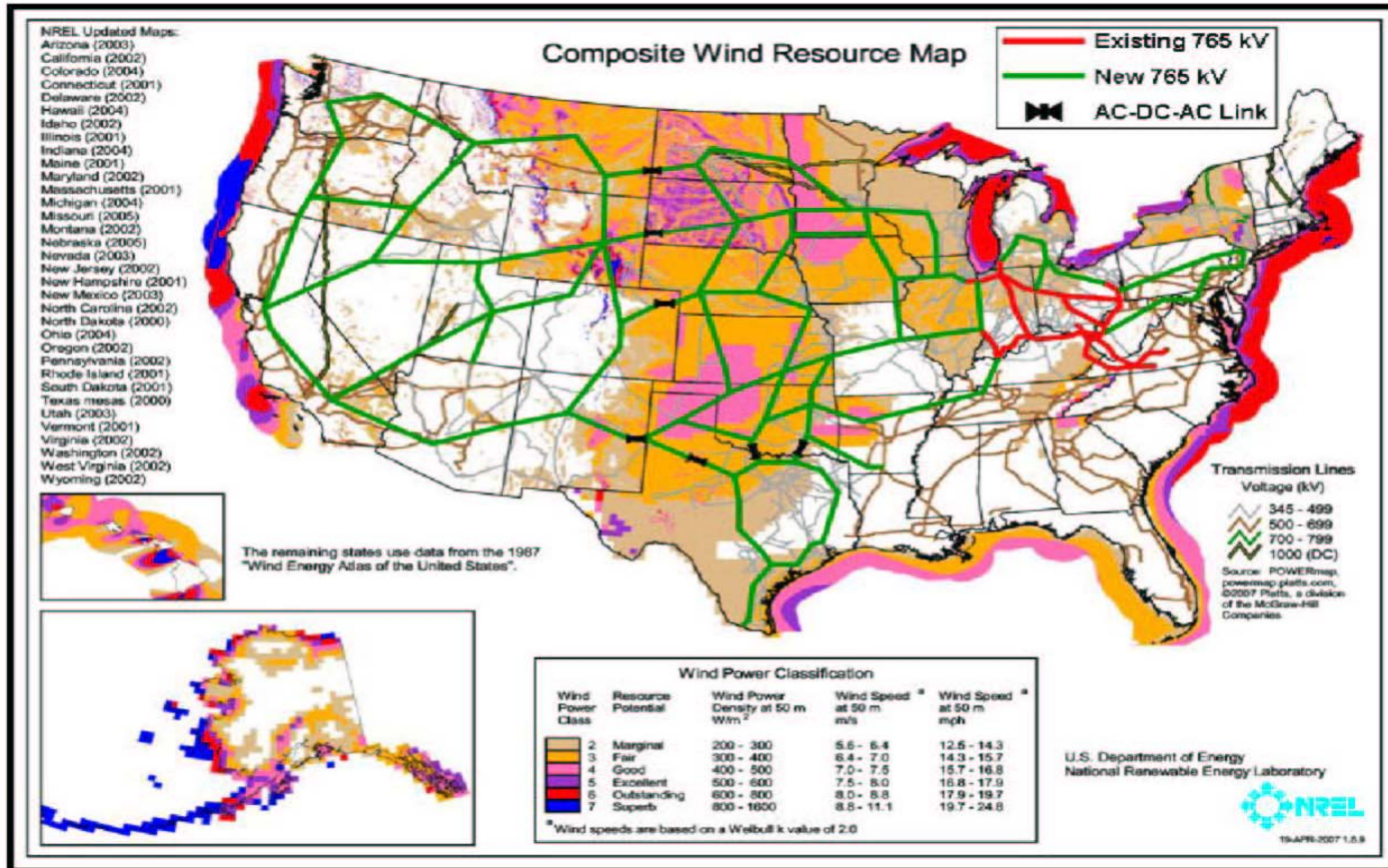


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...the public benefit?

- *Locationally constrained*
- *Can't be counted on to meet peak load*
- *Energy resource with limited capacity value (price suppression?)*
- *Less than 10% of nameplate at summer peak*
- *Intermittent, non-dispatchable, unpredictable.*

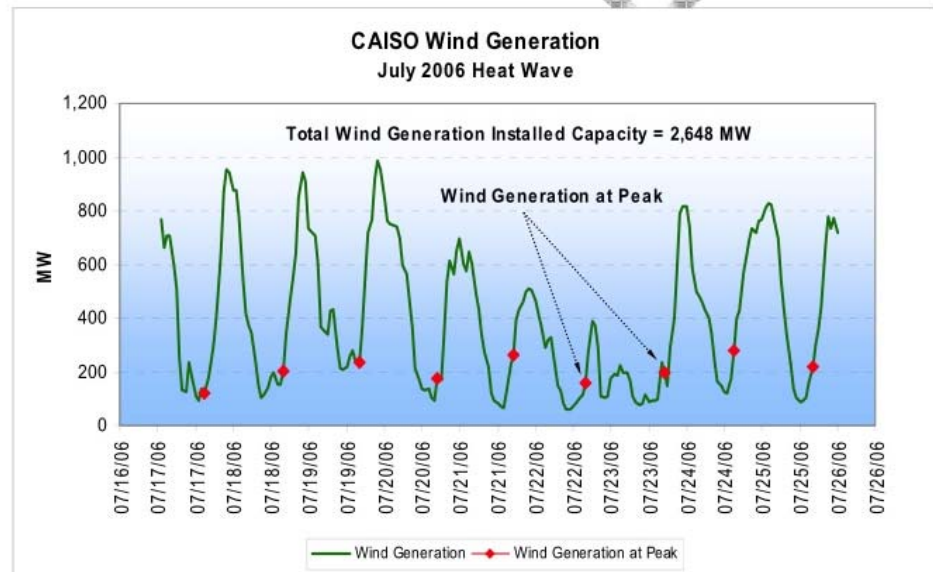


Figure 2: CAISO Wind Generation during the 2006 Heat Wave

Source: California ISO integration of renewable resources report 9/07



The better policy...

Revisit the goals: Stop picking favorites

Favor renewable sources which are

- ✓ **built closer to load**
(locational argument)
- ✓ **better able to generate during on-peak hours**
(time-of-day argument)
- ✓ **better able to generate during on-season hours**
(time-of-season argument)
- ✓ **committed to delivering energy and capacity**
(time-of-season argument)



Getting there...

Send the right market signals. Adjust the subsidies to incent those renewables that meet:

- ✓ **Location**
- ✓ **Time-of-Day**
- ✓ **Time-of-Season**
- ✓ **Committed Capacity**



Thank You

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