



U.S. Department of Energy
Energy Efficiency and Renewable Energy

Renewable

CLEAN ENERGY

Efficiency

Strategy of Choice for Achieving Clean Air

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The World has changed...

- We've achieved impressive gains from the Clean Air Act
- **20th Century solutions** (command & control **only**) won't be sufficient for new problems we're facing
- We **MUST** move from addressing discreet "problems" to solutions that address **interconnectivity and deliver multiple benefits**
- We've moved from **local** (stacks and scrubbers and toxins) to **regional** (acid rain) to **global** (ozone depletion)... **next - - CLIMATE**



Next problems we face

- Increasingly, the **next set of problems we face** and the **solutions we develop will be a result of the energy choices we make.**
- **These problems transcend environmental and energy policy – HOW we fuel the nation and the economy will effect our children's health; our national security; our balance of trade; our standing in the world.**



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Why are we here?

- I'd suggest, among other issues, we **MUST** discuss how clean energy technologies can be a means to **cost-effectively** achieve clean air objectives and much more...



Where can we learn? States...



States with public benefits funds

AZ, CA, CT, IL, MA, MN, NJ, NY, OH, OR,
PA, RI, WA, WI



States with renewable fuel standards

HI, IA, LA, MN, MO, MT, WA



States with renewable portfolio standards

AZ, CA, CO, CT, DC, DE, HI, IA, MA, MD, ME, MT,
NJ, NM, NV, NY, PA, RI, TX, WI



States with tax incentives for renewable energy and energy efficiency projects

AL, AZ, CA, CT, FL, GA, HI, ID, IL, IN, IA, KS, LA,
MA, MD, MI, MN, MO, MT, NE, NH, NJ, NM, NY,
NC, ND, NV, OH, OK, OR, RI, SC, SD, TN, TX,
UT, VA, WA, WV



States with loan programs for renewable energy and energy efficiency projects

AL, AK, AR, CA, CT, ID, IA, LA, MD, ME, MA, MN,
MS, MO, MT, NE, NH, NJ, NY, NC, OH, OK, OR,
PA, SC, TN, TX, VT, WI



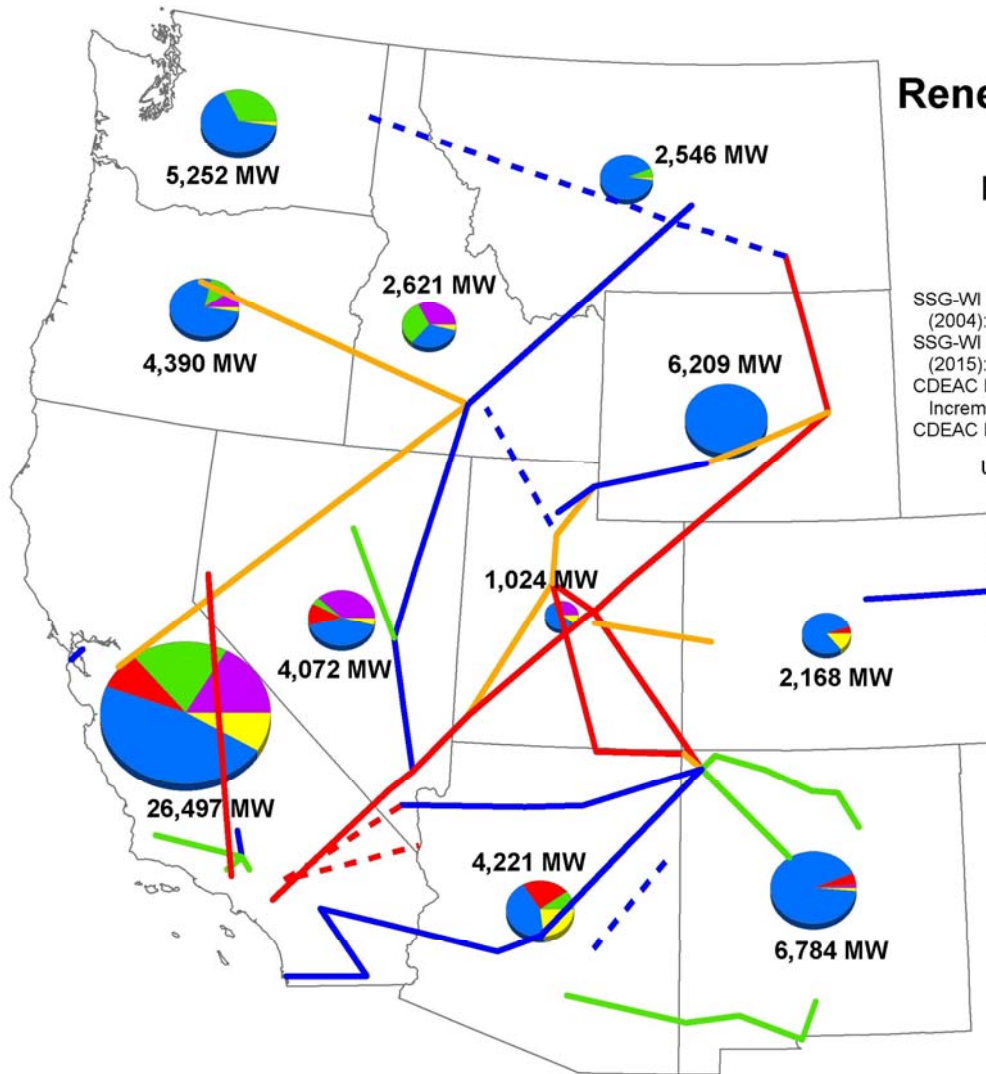
Governors Leading the Way...

- **Pataki, New York**, two years ago announced that **state buildings** would be required to get 10% of their energy from **renewable sources**, with a **target of 20% in 2010**.
- **Kulongoski, Oregon**, **Renewable Energy Action Plan** (April 2005) states that **25% of state government's total electricity needs will be met by new renewable energy sources by 2010 and 100 percent by 2025**.
- **Ehrlich, Maryland**, proposed last Monday that the **state government buy 10 percent of its electricity from renewable sources**



CDEAC 2015 High Renewable Energy Scenario

State Total Renewable Nameplate Capacity (MW)



	Geoth. (MW)	Bio. (MW)	CSP (MW)	Wind (MW)	PV (MW)	All (MW)
SSG-WI Reference (2004):	1,959	1,119	160	1,575	99	4,912
SSG-WI Ref. Total (2015):	3,235	2,125	1,483	15,281	749	22,972
CDEAC High Incremental:	4,222	7,139	2,677	25,524	3,250	42,812
CDEAC High Total:	7,457	9,264	4,160	40,805	4,098	65,784

US WI Total Load (2015): 365 GW (Nameplate)

Proposed Transmission Additions

- Reference (CDEAC and SSG-WI)
- High Renewable
- High Renewable and Fossil
- High Fossil

Proposed Transmission - - - Upgrades

Renewable Generation

- Geothermal
- Biomass
- Solar CSP
- Wind
- Solar PV

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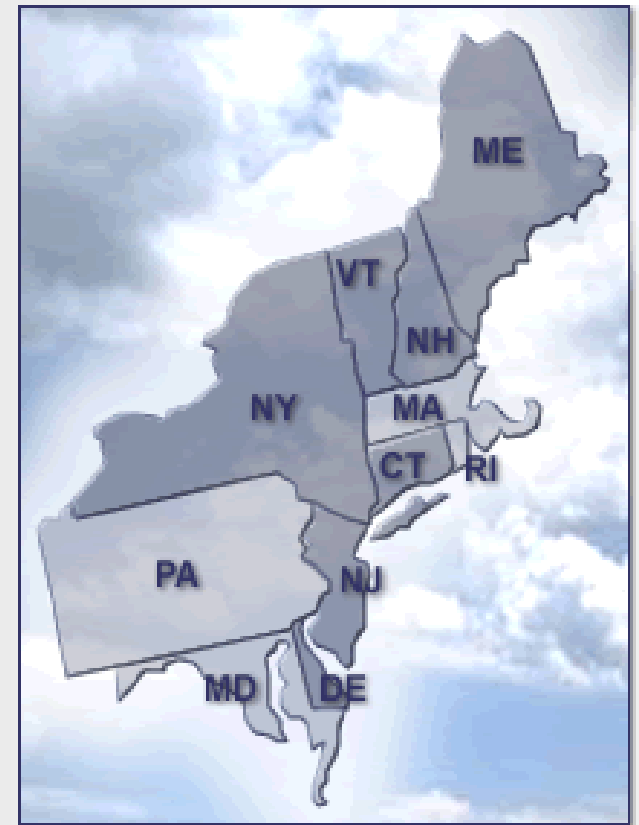
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CT – State and Regional Efforts

- State-level support through the CT Clean Energy Fund
- Regional Participation in RGGI
- Effective partnership between energy and environmental agencies



Residential Solar Photovoltaic Program



Regional Greenhouse Gas Initiative Participating States.
Source: RGGI Website



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CO – Leveraging Settlement Funds to Drive Project Development

- Increasing impact of settlement funds by link to performance contracting at Front Range Schools
- Settlement funds create an opportunity to bundle EE and RE measures together
- Results - projects on the ground, jobs, long term stable energy prices for schools, clean air, clean energy curriculum



Courtesy of D&R International



Illinois: RPS and EPS linked with AQ Improvements

Table 4.1.2-1: Emissions Displaced by EPS Measures

Year	Area	NO _x (tons)	OS-NO _x (tons)	SO ₂ (tons)	CO ₂ (tons)	Hg (lbs)
2007	Illinois	57	42	1	44,487	0
2008	Illinois	62	43	1	48,331	0
2009	Illinois	222	125	4	173,739	0
2010	Illinois	373	195	6	198,259	0
2011	Illinois	624	370	6	396,708	0
2012	Illinois	715	428	7	464,352	0
2013	Illinois	774	452	7	500,337	0
2013	Regional EPS Interchange Area	2,505	1,278	93	1,809,026	0

Source: Emissions Impact Assessment for the Illinois Sustainable Energy Plan, DRAFT, 2006



- **Governor Blagojevich's \$1.2B energy plan with a potential impact of \$225M in ethanol and biodiesel plant investment**
- **The Air Quality benefits of this effort are where DOE/NREL/EPA and the State are now focusing**



CONCLUSIONS

- **Strategy of Choice: Moving FROM command & control to pollution prevention (Energy Efficiency & Renewable Energy)**
- **Changing culture not easy or quick**
- **EE/RE technologies are cost-effective NOW in many applications**
 - **Provide many other benefits (energy security, climate, economic development, new clean sources of energy supply...)**



Conclusions

- **States and Industry**: **THE** lab for innovation and leadership
- **Suggested role for Feds**: **TA from DOE and labs ... Clear and consistent policy and guidance from EPA (HQ & ROs) sending the clear policy signal that this MUST happen, not just allowed. ... help remove barriers... then allow states, communities and industry to innovate and lead**