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By

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# The Energy Independence Trust: Independence Across the United States

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Presented by the Coalition for Green Capital

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Presented to the National Defense University

The Economic Element of National Power: Economic Security is National Security

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*“there is nothing to rule out our universe itself  
being inside a black hole.”* Washington Post, 8/24/2010

As anyone inside the  
Beltway could tell you,  
inside the black hole of  
D.C. there surely exists  
another universe.....



And it is very dark in here....

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## But to cast a little light on the matter

- China consumes more energy than any other nation
- China must become number one in world in nuclear, solar, wind, and gas electricity generation and consumption
- Will China also lead in coal?
- Will China become energy efficient? If it does not, its economic growth will falter

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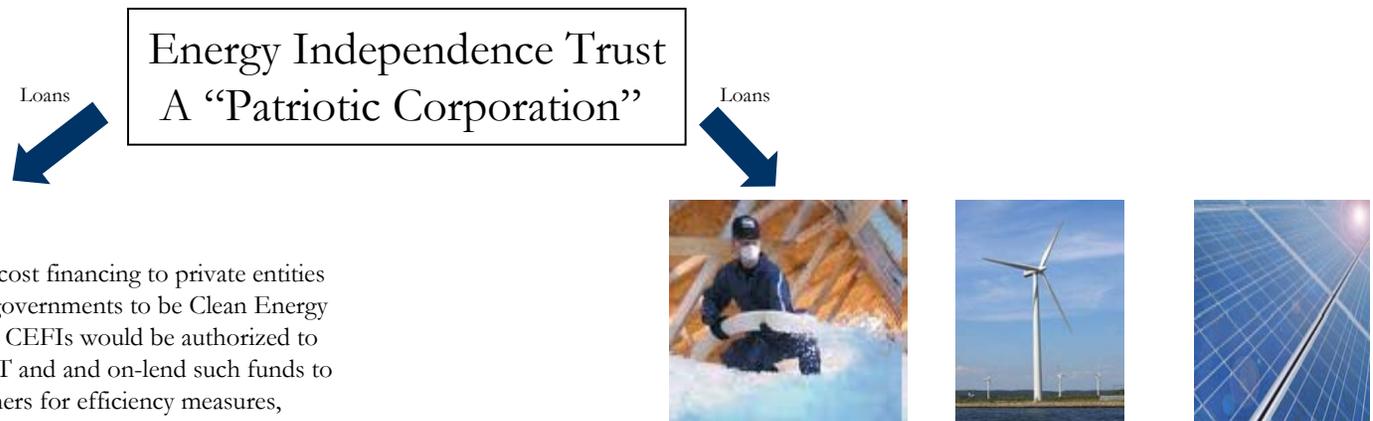
# Why should we care?

- The biggest consumers shape product markets
- Electricity consumption creates near-at-hand supply markets
- Innovation accrues to consumption markets
- Success breeds success
- Succeed or fail: the lesson of economic development

# What would an Energy Independence Trust look like?

## Capitalization Options

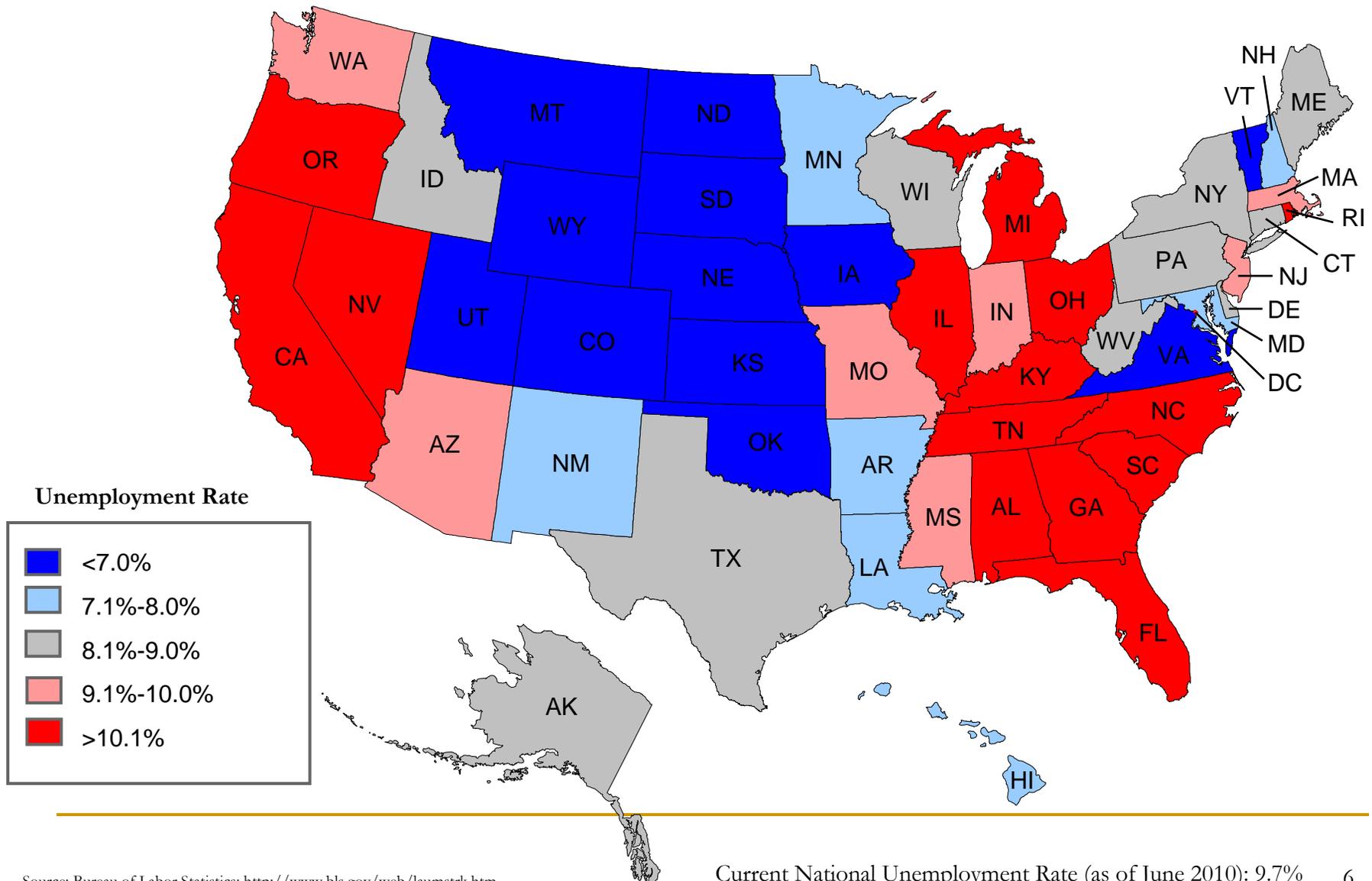
- Deposit capital of 5% total of BP fines per barrel under existing statutes (no money is diverted from any compensatory funds for residents of the Gulf Coast region)
- \$ borrowed from the Federal government at Treasury rates
- Charitable Donations: Private citizens, foundations, etc.



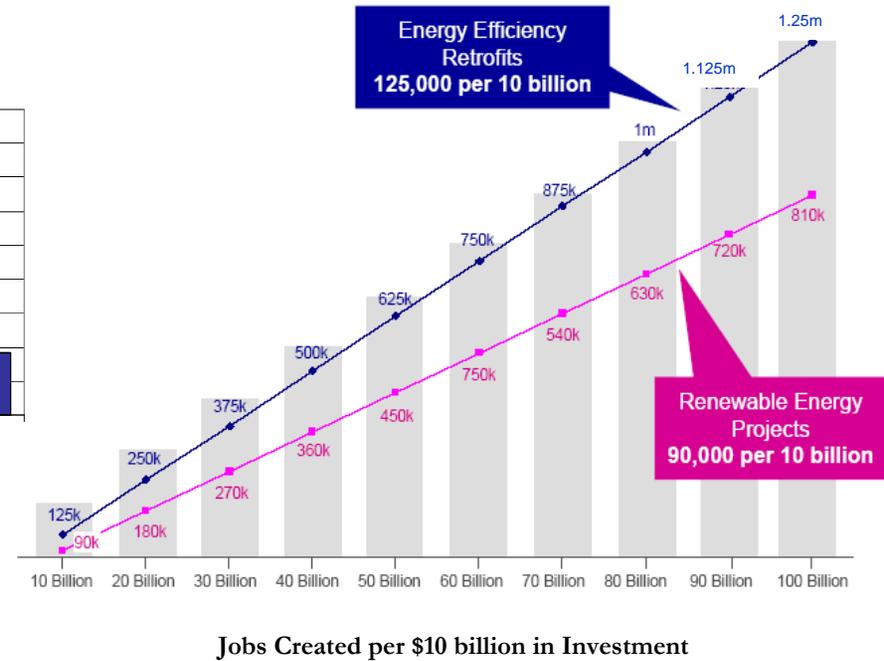
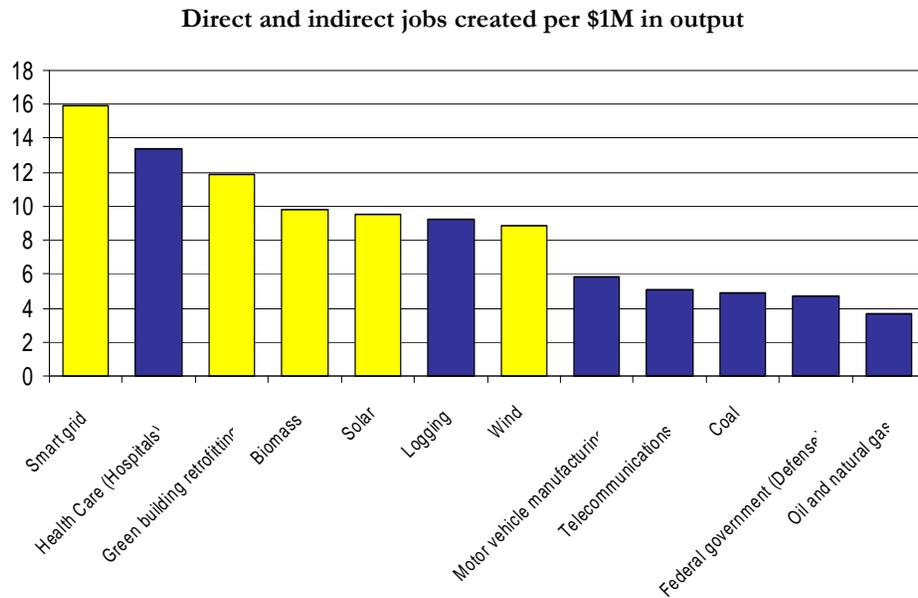
CEFIs---The EIT would provide low-cost financing to private entities that meet criteria established by state governments to be Clean Energy Financing Institutions (“CEFIs”). The CEFIs would be authorized to receive low-interest loans from the EIT and on-lend such funds to local businesses and residential customers for efficiency measures, distributed generation of renewable energy, renewable transmission and other measures that reduce dependence on oil. CEFIs could be existing commercial institutions (e.g. community banks) or specialized entities, including non-profits, formed for the purpose of distribution of the funds. The legislation should provide that CEFIs qualify as Community Development Financial Institutions under the Riegle Community Development and Regulatory Improvement Act and that loans or contributions to the EIT [and CEFIs] shall count in the evaluation of federally-regulated lenders under the Community Reinvestment Act.

The EIT would provide low-cost financing to utilities, local governments and small businesses to implement efficiency measures, distributed generation of renewable resources, electrification of transit, transmission, small and utility scale renewable projects or retrofit of the transportation industry through natural gas or other alternatives to oil.

## The country faces severe levels of unemployment



# Efficiency and clean electricity generation will provide work for those who currently have none



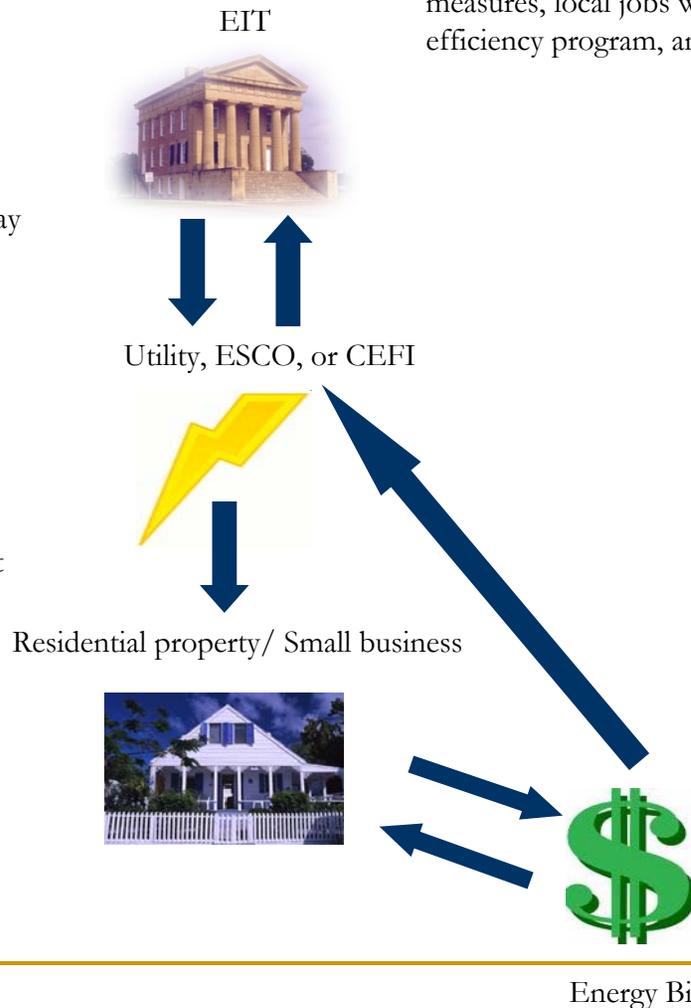
- Short-term Goal of the EIT – Provide low-cost financing support for rapid deployment of clean energy projects, including residential sector and small business activities, in areas impacted by the Gulf of Mexico oil spill. Projects eligible for financing support would be limited to commercially ready renewable energy, energy efficiency, clean energy job training, and oil consumption reduction projects that can be deployed quickly to provide immediate economic benefits to help offset adverse economic impacts of the oil spill.

## Job creation will be a first priority of the Energy Independence Trust, and energy efficiency is one example

1. The EIT could loan the cost of an energy efficiency project to a utility, Energy Service Company (ESCO), or CEFI at a low rate.

2. The utility, ESCO, or CEFI use the funds to pay for the installation of energy efficiency measures in homes and small businesses. These installations will create jobs in the local community. If \$250m is invested in financing activity in the Gulf Coast region, 25,000-83,000 homes could be retrofitted.

3. The owner of the residence/small business pays no up-front cost to have their building retrofitted, resulting in decreased energy usage.

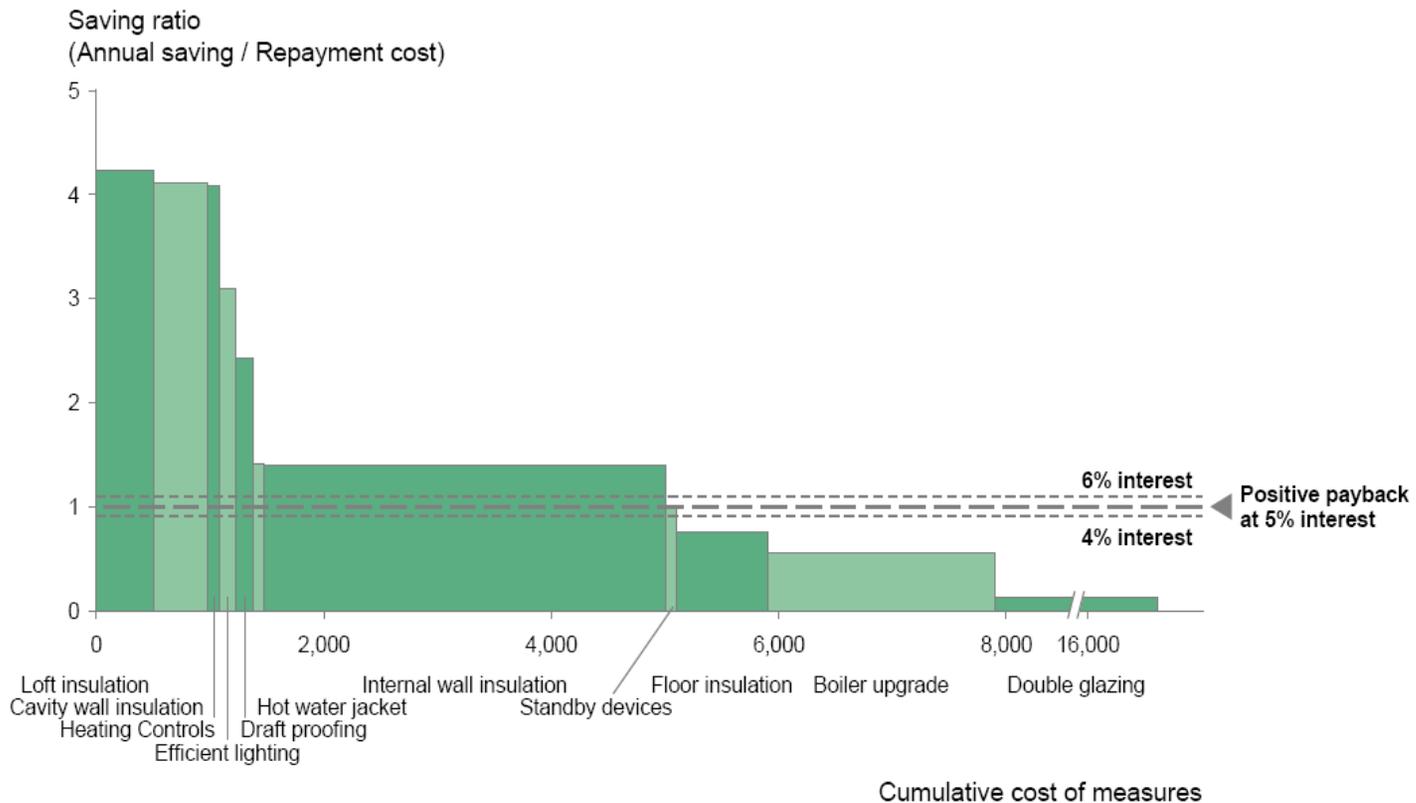


5. After the utility, ESCO, or CEFI has recouped its cost and repaid the EIT loan, the consumer would see the full benefit of the efficiency measures, local jobs would have been created through the EIT energy efficiency program, and the taxpayer would not have been exposed to risk.

4. Through on-bill financing, a portion of the savings shows up on the consumer's bill, and the rest is transferred to the utility, ESCO, or CEFI, which uses the money to repay the initial loan from the EIT over an extended tenor. (For example, if the utility incurred a cost of \$2000 in connection with installing energy efficiency measures in the consumer's home resulting in a savings of \$100/month, the consumer would receive a \$25 discount on the bill and the balance would go to reimburse the utility for the installation cost until that cost is recouped by the utility). Alternatively, if the CEFI finances the retrofit, the whole \$100 savings will be reflected on the homeowner's utility bill, and the consumer would use a portion of the savings to repay the CEFI. The utility, ESCO, or CEFI, as applicable, would have the right to place a lien on the property in order to obtain payment.

# Many energy efficiency measures create a net positive payback for home or business owners

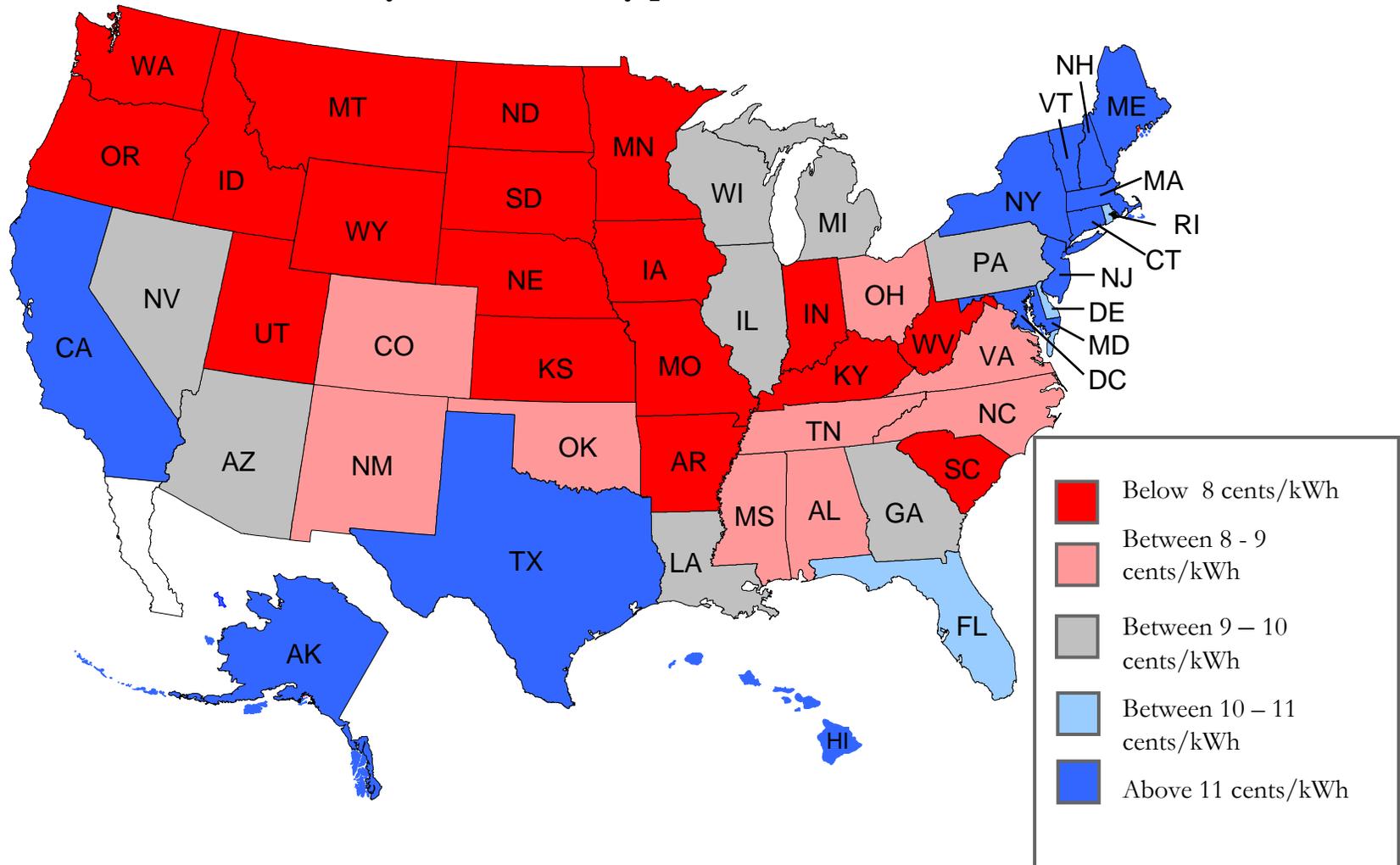
**Rates of return for selected measures**



Note: Assumes 5% interest on all loans; single property unlikely to be suitable for both cavity wall insulation and internal wall insulation  
Source: EST, OCC, Knauf Insulation, RICS, EES

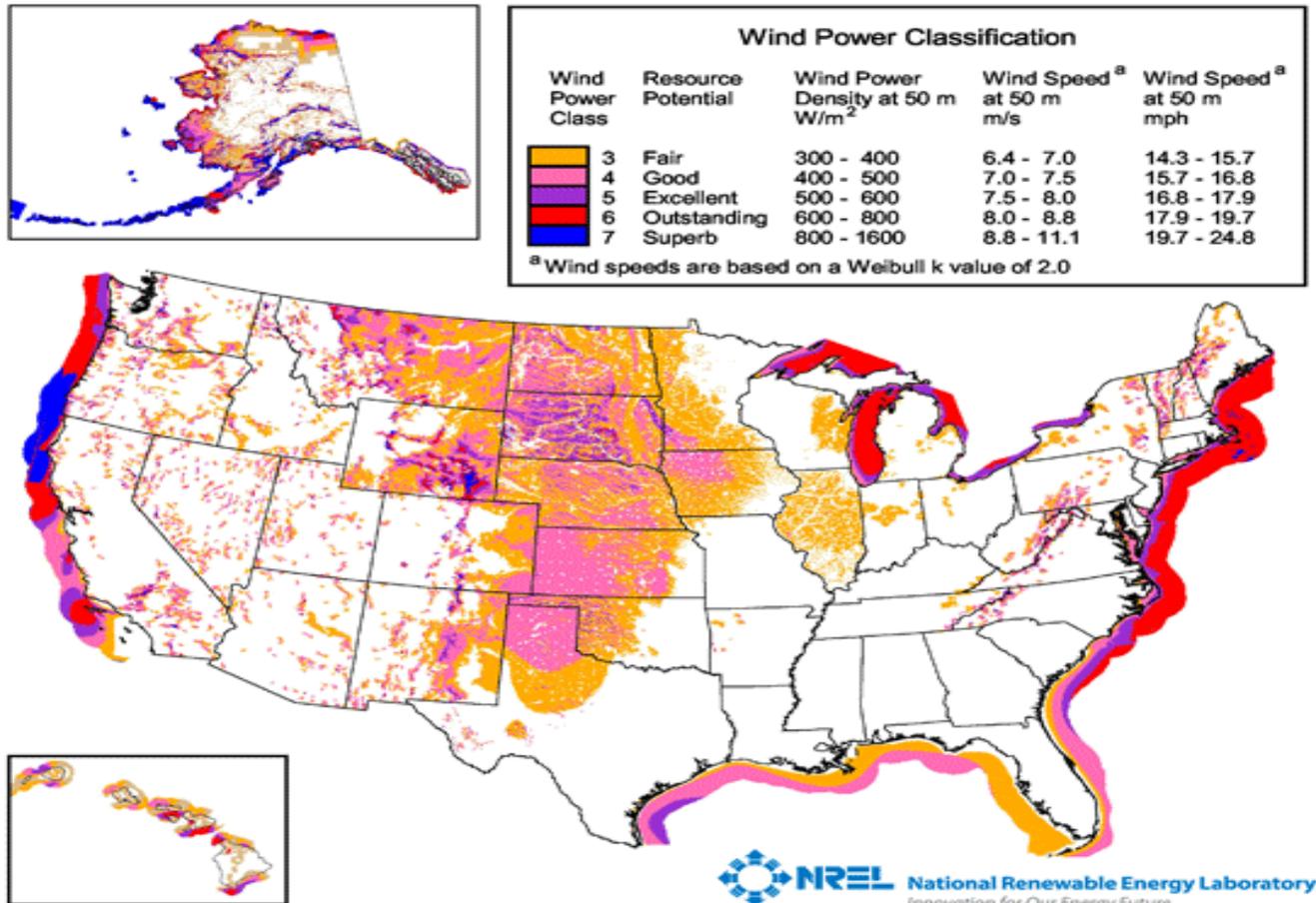
# Electricity prices in many states are low...

## State by state electricity prices



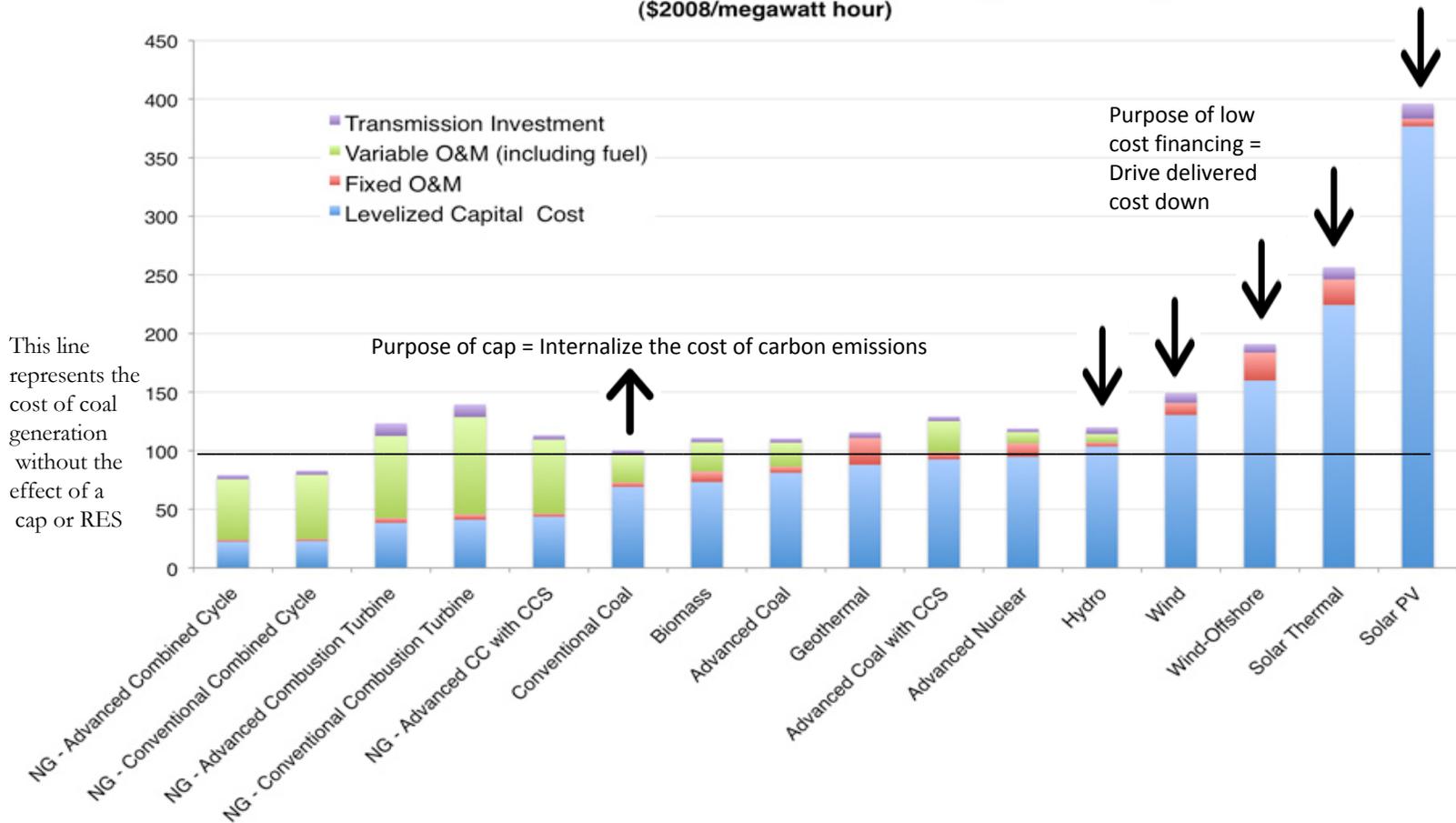
Source: EIA. Retail rate represents all sectors (Residential, Commercial, Industrial and Transportation) Current as of 2007

And wind power is sometimes not naturally price competitive with carbon based electricity...



# Low cost financing provided by a EIT drives down the delivered cost of electricity, and makes it price competitive with carbon based generation

**Estimated Levelized Cost of New Electricity Generating Technologies in 2016**  
(\$2008/megawatt hour)



Source: Energy Information Administration, Annual Energy Outlook 2010, [http://www.eia.doe.gov/oiat/aeo/electricity\\_generation.html](http://www.eia.doe.gov/oiat/aeo/electricity_generation.html)



## If we lower the cost of capital for clean energy generation and maintain existing tax policy, clean electricity can compete profitably in all states

<b>Assumptions:</b>	<b>EIT: High CapEx</b>	<b>2009 Bank Financing</b>
Capital Expenditures	\$2,750/KW	\$2,750/KW
Tenor	20 Years	10 Years
Wind Case / Coverage	P90 Wind @ 1.0x Coverage	P99 Wind @ 1.0x Coverage
Revenue Assumptions	1. \$0.072 / KWh PPA @ P90, 3.5% escalator	1. \$0.112 / KWh PPA @ P90, 3.5% escalator
	2. \$0.072 / KWh Merchant @ P50 - P90, 1.0% escalator	2. \$0.112 / KWh Merchant @ P50 - P90, 1.0% escalator
Balance @ Maturity	- Balance repaid in full	- Balance repaid in full
Interest Rate	4.5%; 30yr Treasury + 25bps	8.5%; 30yr Treasury + 425bps
Amortization Schedule	No paydown year 1-9; then increasing over time	Full Cash Sweep
IRR to Equity Holder	15.5%	15.2%
Debt to Equity Ratio	4:1	3:2

Prepared by a private equity firm based on data from a major independent wind company

- Notes:
- Assumes that all EBITDA from the project is financeable
  - CAPEX costs do not include transmission
  - The CAPEX here is at the high end of the range for wind projects
  - The two cases describe the identical project, but commercial banks will finance a more conservative wind case
  - The two cases assume the sale of identical quantities of electricity
1. Monetizable tax attributes (such as the 1603 cash grant or a refundable ITC) does not include MACRS
  2. Model assumes monetizable tax attributes can be monetized in year 1 of loan, without cost
  3. MACRS is assumed to be utilized in the form of NOLS that are carried forward
  4. The IRR to equity holder is higher than the ~15% due to the non-financeable revenue streams

### **Low-cost financing reduces the price of this actual wind project to the point of being cost-competitive with carbon emissions-intensive generation:**

- With financing currently made available to clean energy projects, the delivered cost of electricity to the consumer will need to rise in order to maintain a 15% internal rate of return.
- With low-cost financing provided by the Energy Independence Trust, the internal rate of return can be maintained while keeping the cost to consumers at or below current delivered electricity costs (see highlighted sections above, where the cost of delivered electricity is reduced by 4 cents per kilowatt hour because of the low-financing offered in the left column versus available bank financing in the right column).

At today's lending rates (without low cost financing enabled by a Energy Independence Trust), the "sweet spot" (IRR of over 10%) for renewable projects is limited

Commercial Bank Financing 8.5% at 60% leverage, with current tax policy, \$2000/kw

		Wind Project Capacity Factor									
		22.0%	40.0%	37.5%	35.0%	32.5%	30.0%	27.5%	25.0%	22.5%	20.0%
Price/kwh with 2% esc.	\$0.090	22.0%	19.8%	17.6%	15.5%	13.5%	11.5%	9.6%	7.7%	5.8%	
	\$0.085	20.0%	18.0%	16.0%	14.1%	12.2%	10.4%	8.6%	6.8%	5.0%	
	\$0.080	18.1%	16.2%	14.4%	12.6%	10.9%	9.2%	7.5%	5.8%	4.2%	
	\$0.075	16.2%	14.5%	12.8%	11.2%	9.6%	8.0%	6.5%	4.9%	3.4%	
	\$0.070	14.4%	12.8%	11.3%	9.8%	8.3%	6.9%	5.4%	4.0%	2.6%	
	\$0.065	12.6%	11.2%	9.8%	8.5%	7.1%	5.7%	4.4%	3.1%		
	\$0.060	10.9%	9.6%	8.3%	7.1%	5.8%	4.6%	3.4%	2.0%		
	\$0.055	9.2%	8.0%	6.9%	5.7%	4.6%	3.5%	2.3%			
	\$0.050	7.5%	6.5%	5.4%	4.4%	3.4%	2.3%				
	\$0.045	5.8%	4.9%	4.0%	3.1%	2.0%					
\$0.040	4.2%	3.4%	2.6%								
\$0.035	2.6%	1.6%									

--The boxed area represents commonly encountered capacity, pricing for wind generation.

--The shaded scenarios deliver greater than 10% Internal Rate of Return, which is considered the minimum for project finance.

Prepared by a private equity firm based on data from a major independent wind company

Note: Capacity factor is actual amount of power produced over time divided by nameplate capacity

# With low cost financing enabled by an Energy Independence Trust loan or guarantee, the “sweet spot” expands significantly

Green Financing Institution Financing 4.5% at 80% leverage, with current tax policy, \$2000/kw

		Wind Project Capacity Factor								
		40.0%	37.5%	35.0%	32.5%	30.0%	27.5%	25.0%	22.5%	20.0%
Price/kwh with 2% esc.	\$0.090	51.6%	45.3%	39.1%	33.1%	27.4%	21.9%	17.0%	12.5%	8.7%
	\$0.085	46.0%	40.2%	34.5%	28.9%	23.7%	18.8%	14.4%	10.5%	7.1%
	\$0.080	40.5%	35.1%	29.9%	24.9%	20.2%	15.9%	12.1%	8.7%	5.6%
	\$0.075	35.1%	30.2%	25.5%	21.1%	17.0%	13.2%	9.9%	6.9%	4.3%
	\$0.070	29.9%	25.5%	21.4%	17.5%	14.0%	10.8%	7.9%	5.3%	2.7%
	\$0.065	24.9%	21.1%	17.5%	14.2%	11.2%	8.5%	6.0%	3.8%	
	\$0.060	20.2%	17.0%	14.0%	11.2%	8.7%	6.4%	4.3%	1.9%	
	\$0.055	15.9%	13.2%	10.8%	8.5%	6.4%	4.4%	2.3%		
	\$0.050	12.1%	9.9%	7.9%	6.0%	4.3%	2.3%			
	\$0.045	8.7%	6.9%	5.3%	3.8%	1.9%				
	\$0.040	5.6%	4.3%	2.7%						
	\$0.035	2.7%	1.3%							

--The shaded scenarios increase feasible wind generation by approximately 120 GWs (estimate).