



VERMONT ENERGY
INVESTMENT CORPORATION

Transformative Energy Planning

Metcalfe Institute – Innovations in Renewable Energy

March 15th, 2013

David G. Hill – *Vermont Energy Investment Corporation*

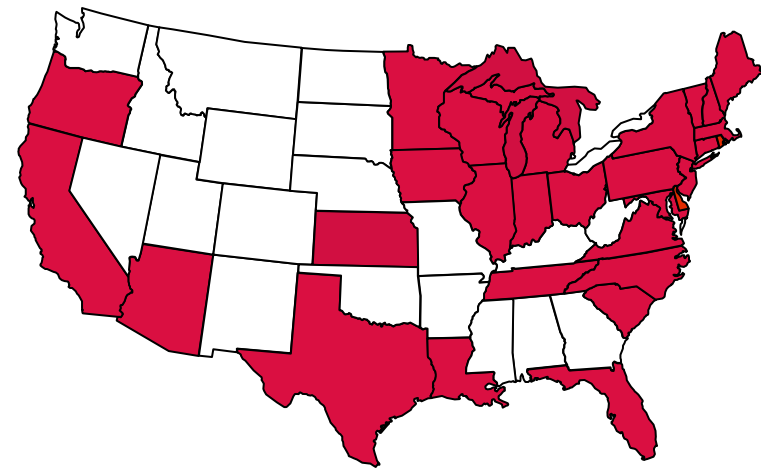
Presentation Overview

- Background on VEIC
- Trends – Up and Down
- Planning as Narrative
- Examples – Deeper EE and RE scenarios
- Looking Forward



VEIC Overview

- Non-profit efficiency & renewable energy services
 - Founded in 1986
 - Today - Approx. 270 employees & \$75 million annual revenues
- Consulting
 - Energy policy and programs
 - > 30 states and provinces,
plus China & other countries
- Program implementation
 - Efficiency Vermont
 - New Jersey & Vermont customer-sited renewables
 - Washington DC, Sustainable Energy Utility - DCSEU
 - Municipal Utility Associations in Ohio and Indiana

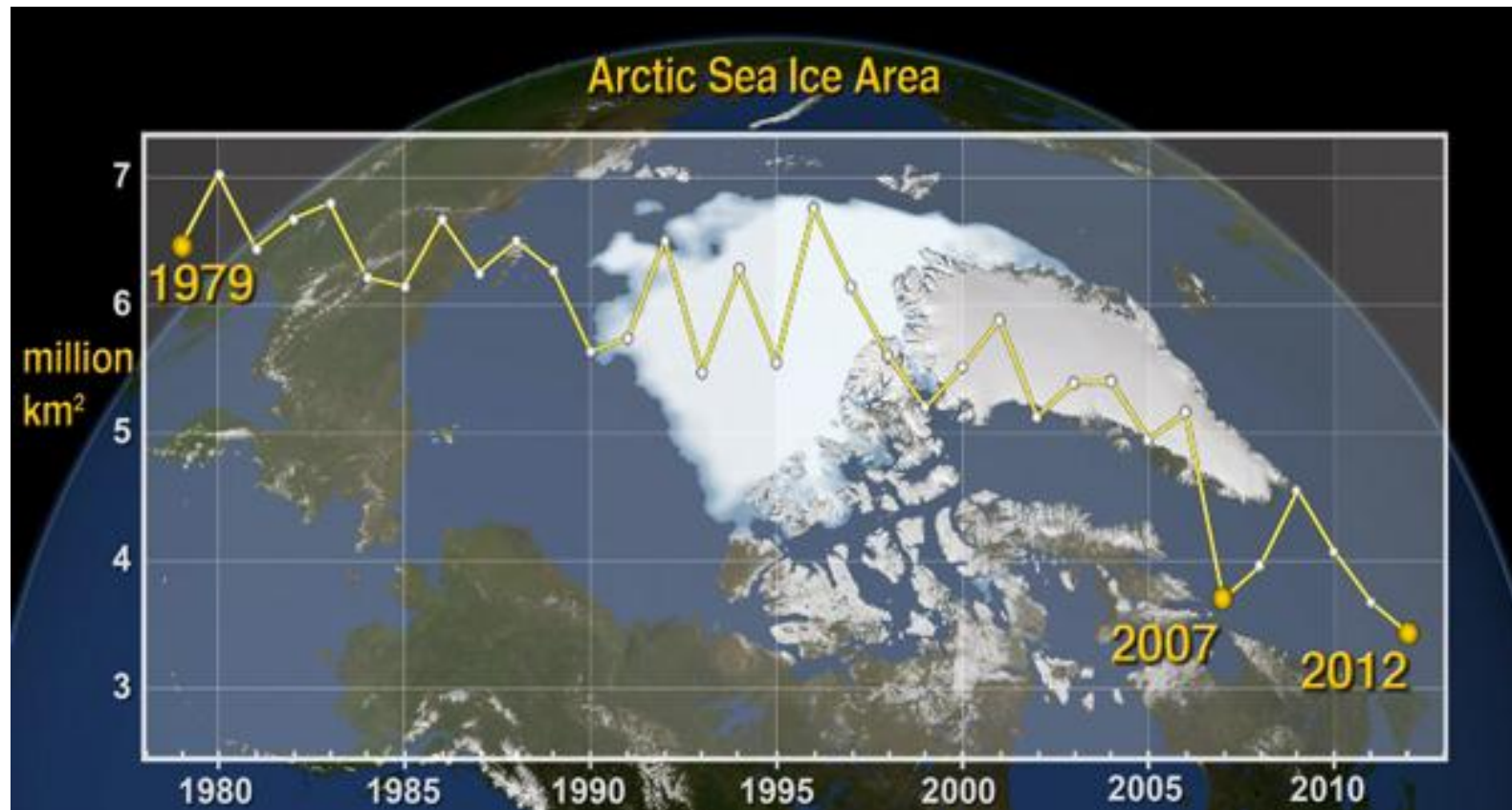


Trends:

What the public knows
What the public believes



Trend: A rapidly diminishing debate?



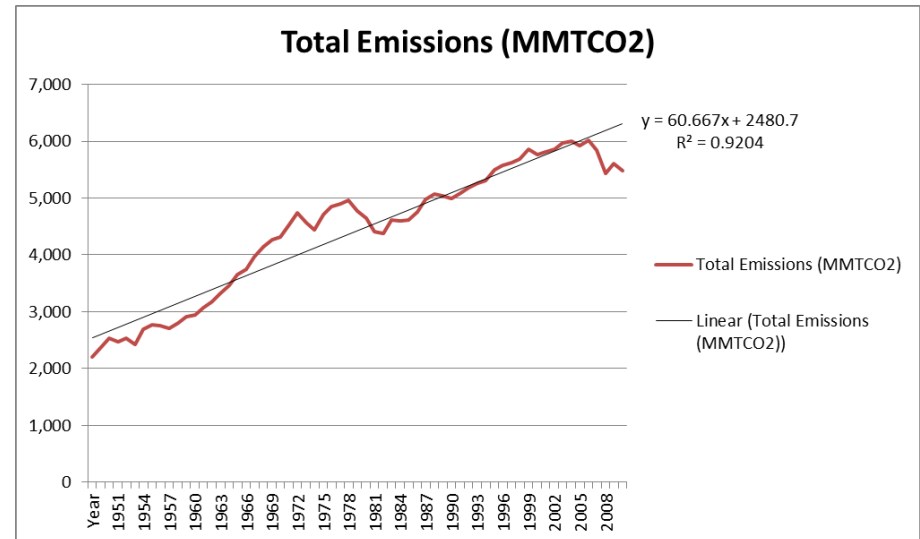
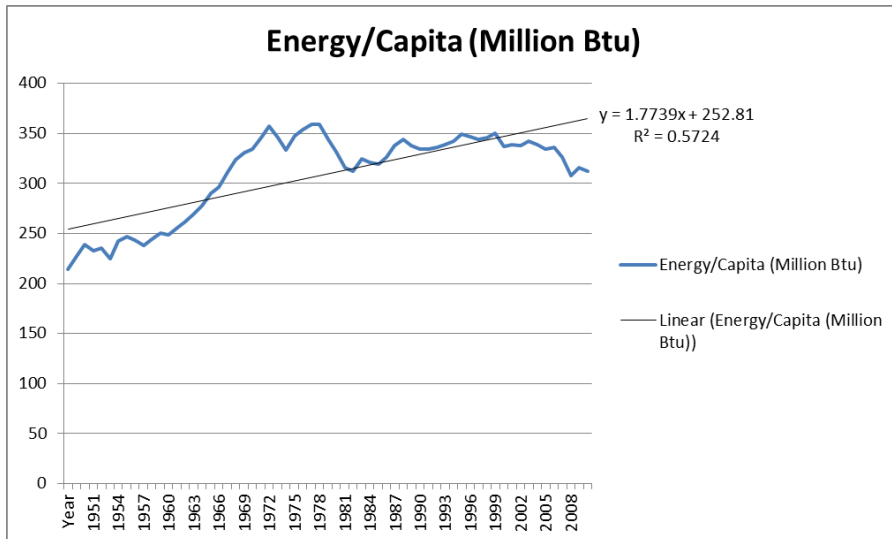
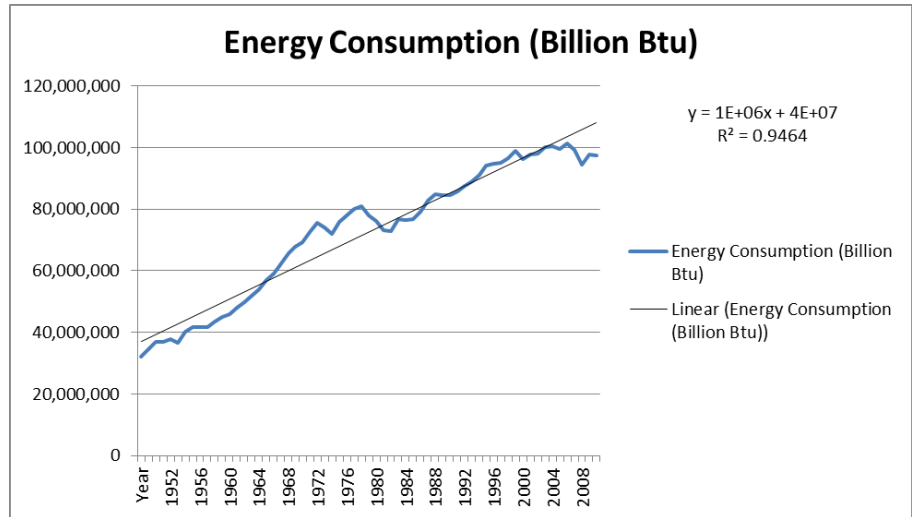
<http://www.scientificamerican.com/article.cfm?id=greene-arctic-sea-ice-hits-record-low>

<http://bcove.me/gjl6e8ot>



Trend: Growth

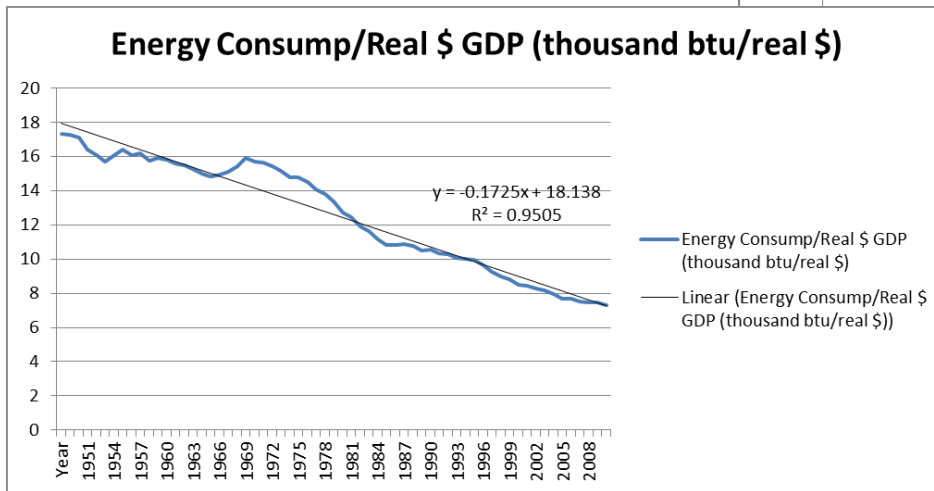
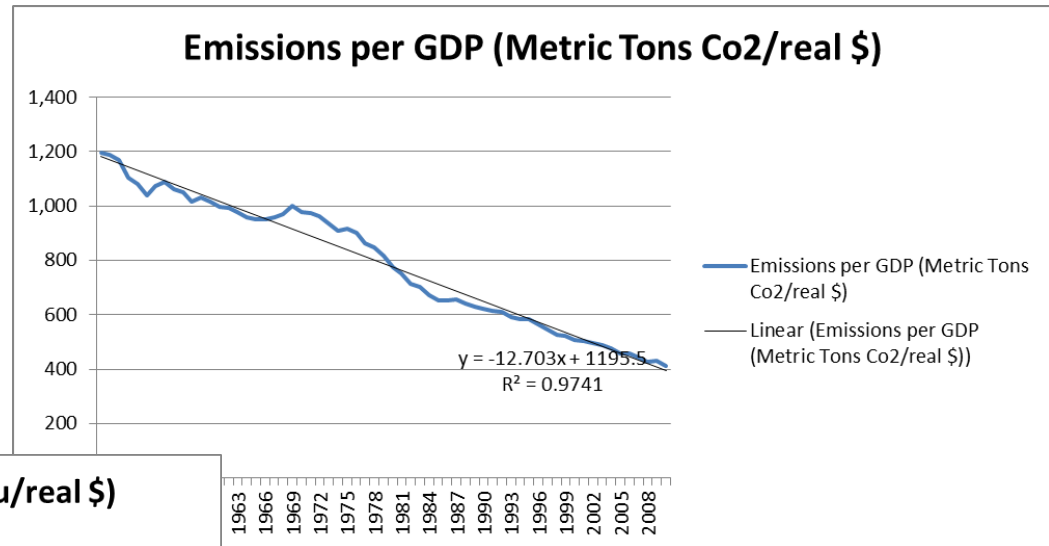
- Familiar
- Daunting
- Changing





Trend: Efficiency and Productivity

- Less Familiar
- Empowering
- Critically Under Appreciated

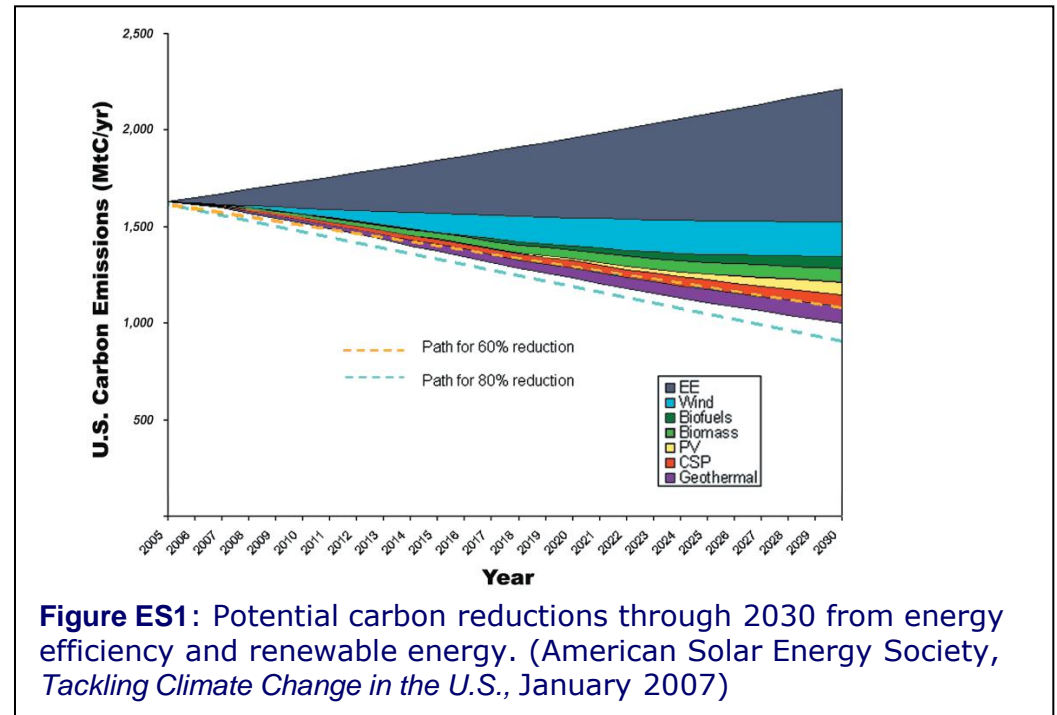




Planning As Narrative

- Inform
- Catalyze
- Compare

- Not incremental
- Not deterministic





Multiple Levers

Public Engagement

Values
Democratic Process
Consensus and Coalition

Capital Mobilization:

Profitable?
Business Models
Competitive
Time and Risk

Integrated
Planning

Technology Innovation:

Technical Barriers
Resource Potential
Cost
Risk and Reliability

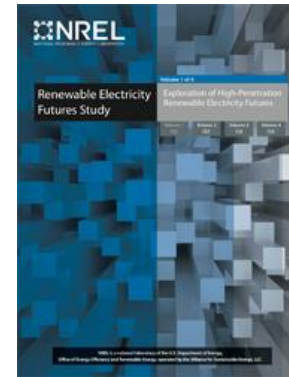
Regulatory Reform:

Stable?
Realistic?
Politically Attractive?



Examples of Deep RE/EE Scenarios:

- National Renewable Energy Laboratory (NREL) 2012 Electricity Futures Study
- Resource and nodal system based
- Integration of high penetrations 30% -90% of renewables by 2050
- Focus on 80% case
- Significant CO2 and water use reductions



http://www.nrel.gov/analysis/re_futures/



NREL Electricity Futures:



Hourly Operations Animation



Capacity Expansion



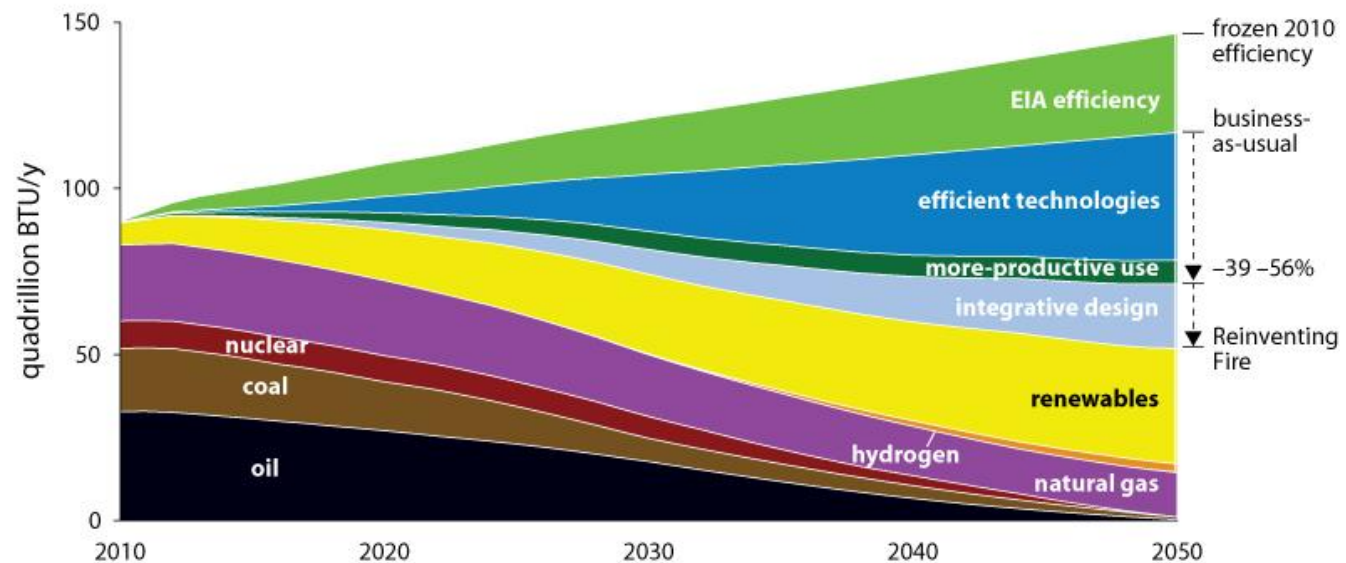
Power Flows



Examples of Deep RE/EE Scenarios:

- Rocky Mountain Institute Reinventing Fire
- Economy wide energy planning
- Efficiency and integrated design
- High level of renewables
- Phase outs of coal, oil, and nuclear

Energy consumption in the U.S. economy, 2010–2050



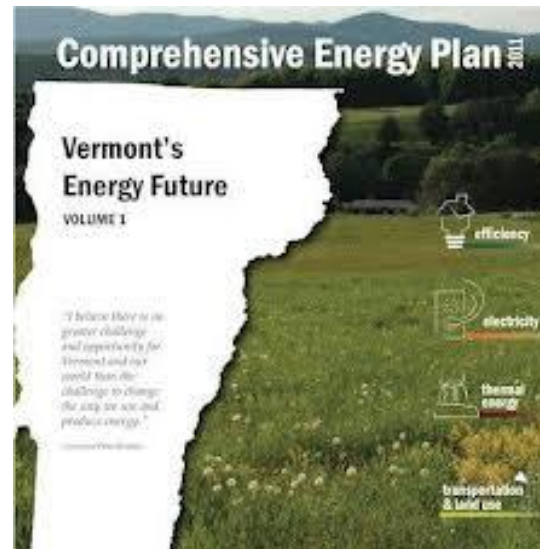
Rocky Mountain Institute © 2011. Published by Chelsea Green in *Reinventing Fire*. For more information see www.RMI.org/ReinventingFire.

http://www.rmi.org/RFGGraph-Energy_consumption_in_US_economy



Examples of Deep RE/EE Scenarios:

- Vermont Comprehensive Energy Plan – 90% by 2050
- Energy Action Network Vermont
- Economy wide energy planning
- 80% Renewable and Efficiency by 2030
- Capital mobilization for building retrofit and transportation
- Increase electrification



http://publicservice.vermont.gov/publications/energy_plan

80%^{BY}
2030

<http://www.eanvt.org/goal/>



Looking Forward

	Electricity Revenues 2011	Total Energy Expenditures
Rhode Island	\$715 million	
Vermont	\$765 million	
National	\$320 billion	\$1.2 trillion
EIA data		

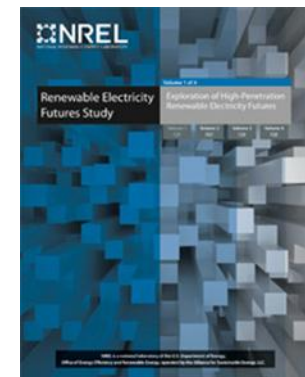
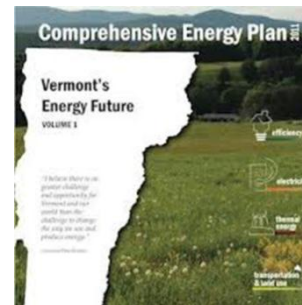
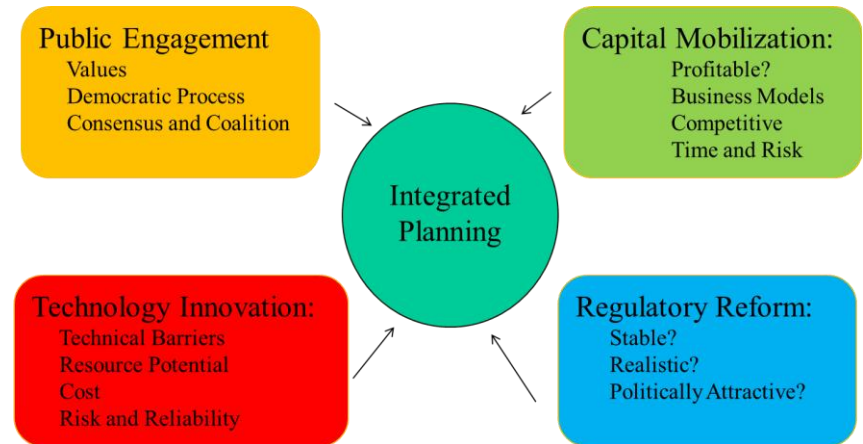
CERES Study - \$100 Billion per year for 20 years = \$2 trillion

Risk-aware regulation, oversight, and investment strategies → will lead to much higher level of investments in distributed resources.

Practicing Risk-Aware Electricity Regulation: What Every State Regulator Needs to Know, CERES, April 2012

Conclusions and Recommendations

- Future energy planning needs to include deep RE/EE scenarios
 - Public dialogue and analysis are just shifting to understand potential
- Answers will vary by state and region – but likely to consistently and increasingly illustrate highly promising options.
- Capital and infrastructure (not just program planning) decisions at a fundamental level will be impacted



Thank You!

Questions & Discussion

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