

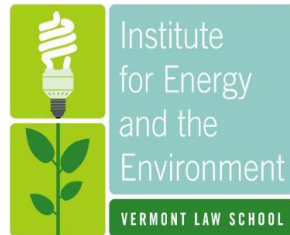
STATE PUC CONCERNS RE RESEARCH, DEPLOYMENT & DEVELOPMENT FOR A CARBON CONSTRAINED WORLD

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RD&D as a Major Driving Force

- Economic growth
- Job creation
- Future economic competitiveness
- International leadership

The tools we now have in our tool box are not good enough for our carbon crisis.

- Business regulated and unreg has vital, but partial, role.
- Government, state and federal, has vital but partial role.
- How Should State PUCs Treat Utility Expenditures/Funding of RD&D?
 - ┆ Modifications to the current model could better encourage RD&D.

Examples of State PUC approval for funding RD&D costs

- Southern California Edison Company (SCE) applied and was granted up to \$20 million in recovery costs necessary to co-fund a feasibility study of CCS project (June 2010)
 - Awarded compensation because it satisfied “intervener compensation requirements” and because it was a “reasonable” request
- PUC approved SCE and PG&E’s request regarding \$3.4 million for pilot programs to improve energy efficiency for well pumps and booster pumps. HOWEVER, their request to receive energy savings credits for participating in “Operational Energy Efficiency Programs” was denied
 - Denied because inconsistent with Commission policy regarding pilot programs.

Example of State PUC decisions not to grant RD&D funding costs

- PG&E was not granted funds for a project to elevate its electric distribution reliability to a substantially higher level
 - PG&E did not demonstrate the need
 - PG&E should address all future electric distribution reliability matters through the general rate case process

What Benefits Qualify Spatially?

- What if the project works?
- What if the project fails?
- What if we can't tell if succeed/fail?
- What if it benefits in-state ratepayers outside utility service but within state?
- What if it benefits utility rate payers outside the state?
- What if it benefits people outside the nation?

What Benefits Qualify Temporally?

- What if results are expected within 3 years?
- What if results are expected within 5 years?
- What if results are expected within 30 years?
- What if results are expected within 50 years?

- Do we, should we, treat uncertainty in RD&D in the same way we treat uncertainty in power cost?

R&D or RD&D?

- As scale goes up should PUCs have different standards?
- Partly a matter of \$\$, partly a matter of knowledge about uncertainties
 - (Chow and Newell (2004))

- Should regulated utilities do this at all?
 - ┆ If not, who will...at needed scale?

- Is \$400 million (EPRI) or \$ 8 billion requested or \$ 5 billion actual for all civilian relevant R&D the right amount for a trillion dollar industry to spend?
 - Extra RD&D investment yields substantial net benefits in the aggregate

How Does this Compare with Other Strategic Investments?

- Health care: from 4% of GNP to 14%?
- Automotive: Lead passed overseas
- Aero space: military carries the burden
- Info Tech: 3 Billion dollar chip making plant replaces \$1 billion per year; \$3 billion of electricity plant replaces \$30 million per year. Depreciation 3% or 33% ?
- Infrastructure: Roads, Defense, Transit ?



Thanks ... and Discussion

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