

# **Opportunities in Reactor and Fuel Cycle Technologies**

**Presentation of**

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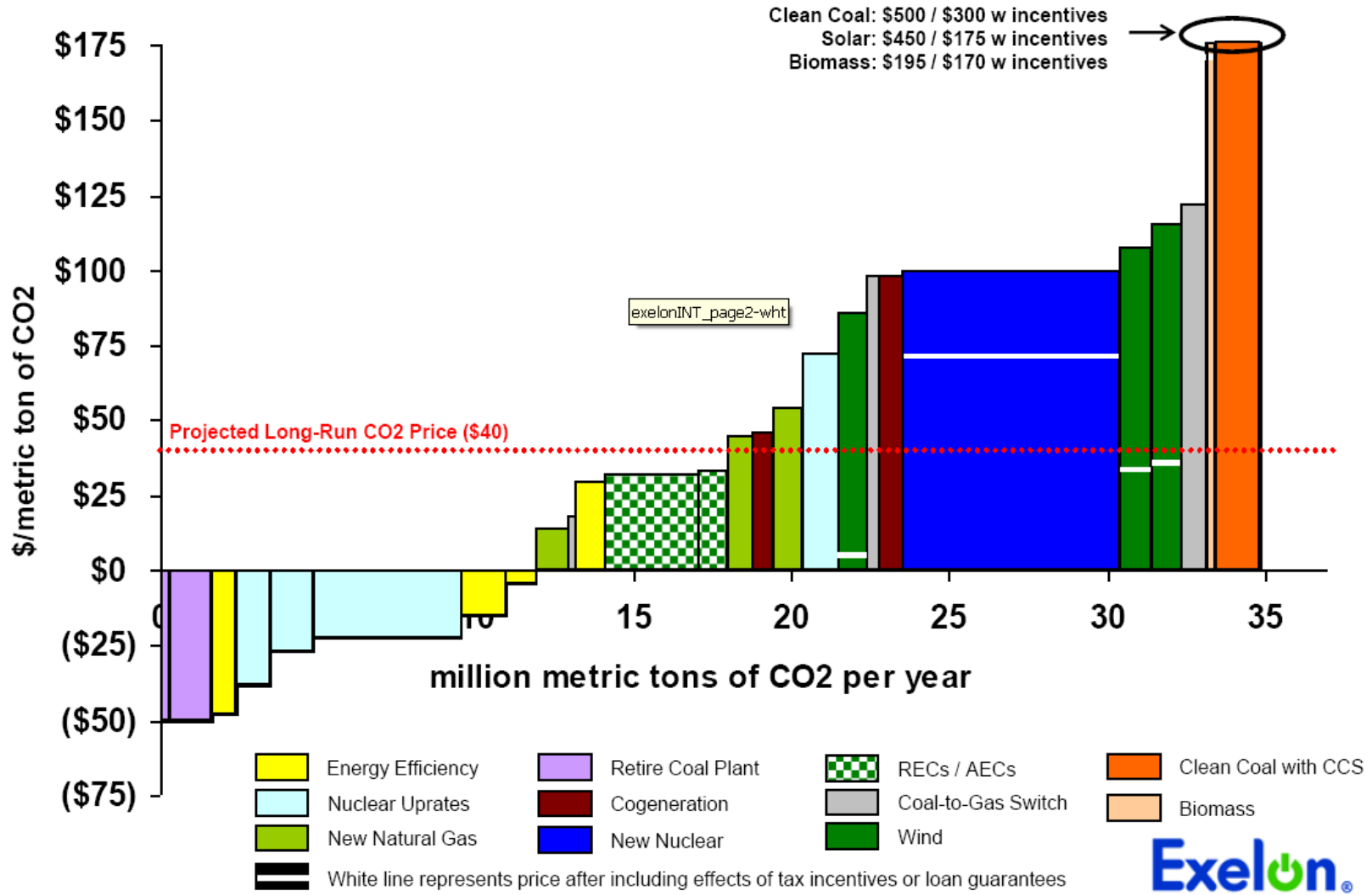
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Reactor and Fuel Cycle Technology Subcommittee**

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“Once claimed to be too cheap to meter, nuclear power is now too expensive to matter.”

Amory Lovins, *The Economist*, 2001.

# Exelon's View of Carbon Abatement Options – 2010



# Federal Nuclear R&D Priorities are Misplaced

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- New reactor unit costs and cost /kW are both too high for new nuclear to be competitive in the United States.
- Nuclear fuel and O&M costs are low and will remain so for the foreseeable future.
- DOE-NE's focus is principally a) R&D on the back end of the fuel cycle and b) subsidizing new reactor licensing and construction—both misplaced priorities.

# U.S. Government Focus should be on

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- Improving safeguards over nuclear fuel cycle activities
- Getting the repository program back on track

# Nuclear Industry Focus should be on

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- Reducing new reactor cost/kW and unit costs without government subsidies

# History has not been kind to fast reactors

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- Fast reactors currently **cost considerably more** than thermal reactors, and seem likely to stay that way.
- **Commercial/naval fast reactor development programs failed** in: 1) the United States; 2) France; 3) the United Kingdom; 4) West Germany; 5) Italy; 6) Japan; 7) Russia 8) the U.S. Navy and 9) the Soviet Navy; and the program in India is showing no signs of success. The Soviet Union/Russia never closed the fuel cycle and never fueled its fast reactors with MOX. China is starting a fast reactor development program.
- After spending tens of billions of dollars on fast reactor development there is **only one** operational commercial-size fast reactor out of about 439 operational power reactors worldwide and even this one (BN-600 in Russia) is not fueled with plutonium
- Fast reactors have proven to be **less reliable** than thermal reactors

# Conclusions

(from previous testimony)

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**The wide spread use of fast reactors and a closed fuel cycle to burn selective actinides for waste management purposes has essentially no chance of succeeding within any policy time frame that is relevant to resolving either current nuclear waste storage issues or the problem of de-carbonizing the U.S. electric power generation sector.**

**Continued U.S. research and development on advanced reprocessing will fan global interest in plutonium separation and utilization technology and thereby increase nuclear weapons proliferation risks.**



# Conclusions

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- Require spent fuel to be moved into hardened, dry cask storage facilities at the reactor sites.
- Defer significant federal R&D expenditures on and do not subsidize deployment of reprocessing facilities and closed-cycle fast reactors until:
  - closing the fuel cycle is clearly economical (which will not happen in the foreseeable future), and
  - the international control regime can provide adequate safeguards (which is clearly not the case today).
- Do not permit the Nuclear Waste Trust Fund to be used to subsidize deployment of single-pass MOX recycle.

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