



## The Case for a Slow and Steady “Tortoise” Approach for US Nuclear Research and Development

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Many models of potential carbon reduction pathways assume a role for nuclear, Environmental Fellow Michael Ford said in this Monday’s energy policy seminar. However, in the United States today, potential new nuclear plants are very expensive, and they face stiff competition from cheap natural gas and the growing use of solar and wind.

Can Department of Energy investment in advanced nuclear technologies change the prospects for nuclear power? To date, the track record is not good, Ford said. More than \$2 billion has been spent in the last twenty years to develop advanced reactors, but no new design has yet been developed. Part of the problem, Ford argued, is that there are many companies following a “hare” approach, attempting to rapidly bring their product to market - but with little chance of success due to limited funding, technical challenges, and no market pull. The DOE itself has also been acting like the distractible hare from the fable, providing sporadic, unfocused funding to many ambitious projects, hoping for a quick breakthrough.

With this kind of uneven approach, getting a new nuclear technology ready for the market is just not likely to happen, Ford said—and even a successful technology is likely to face daunting market conditions. Nonetheless, “continued research is warranted.” By mid-century, Ford argued, it is possible (though not guaranteed) that a “window of opportunity” will have opened for the commercialization of a new nuclear technology, as the United States attempts to get closer to a zero-carbon energy system and as the cheaper carbon-reduction opportunities offered by wind, solar and (to some extent) natural gas may become scarcer. However, commercialization will only be possible if a viable nuclear technology has been developed.

If having at least one viable new nuclear energy technology available by about mid-century is the aim, Ford said, then the DOE can likely achieve this, even without dramatically increasing current funding levels, by re-targeting existing funding on a limited number of development and demonstration projects (in partnership with the private sector), in a phased approach designed to support “extended demonstration periods to ensure readiness for commercialization.” Such an approach could potentially produce several new technologies ready for deployment by mid-century.

Nothing, however, is guaranteed, Ford noted. Even if the DOE and industry succeed in the development of viable new nuclear energy technologies, “there may never be a window for nuclear in the US”—other technologies, which may themselves realize breakthroughs over the next decades, may continue to out-compete nuclear, or new technologies, such as storage, may be developed in ways that make nuclear power unnecessary. However, if US policymakers hope to have new nuclear technologies as an option mid-century (and do not want to rely on other countries to develop them), Ford said, a focused, “tortoise” approach is essential.

Ford spoke as part of the Kennedy School’s Energy Policy Seminar Series, which is sponsored by the Consortium for Energy Policy Research of the Mossavar-Rahmani Center on Business and Government and by the Belfer Center for Science and International Affairs.

