

Policy Brief

The Unreal Cost of Control: Nuclear Prospects and (Im)possibilities

Tyler Merrill | *ECON 4XXX.XXX* | Prof. [Redacted] | 11/25/23

The current regulatory regime in place in the U.S. systematically overestimates the possibility of developing feasible, fission based, nuclear energy infrastructure that meets projected demands.

How We Got Here

A significant portion of the current status-quo in Washington D.C.¹ regard nuclear-based power generation with roots planted in a mid-century optimism that attaches itself to the prospect of an over-abundance of cheap energy that has never come to transpire.²

Starting in the 1950s, early stakeholders in nuclear energy production argued that government support of the industry was crucial to make nuclear energy as cost-effective and safe as possible.³ An argument bought by a federal government eager to end energy dependence on foreign nations (and perhaps assist the nuclear arm of other national security ventures).⁴

But despite an underwhelming cost track record,⁵ government assistance continues to buoy nuclear power generation, arguably tying tax-payers to an industry that cannot cash in the promises its advocates make for it as the perfect source of hydrocarbon free energy.⁶

Bringing in the Experts

Amory B. Lovins of Stanford University, a physicist who has spent more than four decades researching energy policy,⁷ argues that due to ever rising capital and other non-fuel costs,⁸ nuclear energy can only run at a loss in most markets.⁹ Thus, despite its apparent relative reliability when generating base loads of electricity,¹⁰ many owners of nuclear plant choose to let them retire,¹¹ often before their allotted lifespans.¹²

Indeed, Henry Sokolski, executive director of the Nonproliferation Policy Education Center, notes that a long history of government subsidies has kept the nuclear power industry from facing cost incentives that are best weighed in private hands.¹³ Specifically, he posies government support has tended to erode society's ability to properly adjudicate the most efficient plant schemes,¹⁴ and that industry claims to not be able to afford to pay for greater liability coverage to insure society against the risks their industry brings is unfounded.¹⁵

Concerning the world's interest in lowering carbon emissions, a common presumption in this day is that for all its possible shortcomings, nuclear energy at least offers policymakers a solidified case for itself as a clean fuel source. However, researchers at the Institute of Safety and Risk Sciences in Vienna offer a counter narrative.¹⁶ By simulating various scenarios of nuclear-based energy input mixes, they conclude that nuclear power is unlikely to be able to contribute to more than a fraction of green houses gas reduction before 2050.¹⁷ A time frame arguably far too late to make much of an impact on the longer consequences of global warming.¹⁸

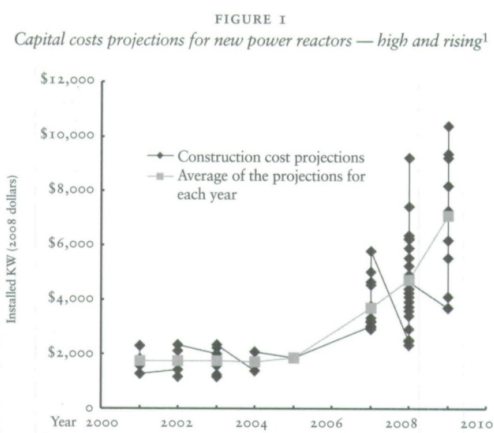
Finally, physicist M.V. Ramana notes that an assessment of the potential contributions of next-gen nuclear reactor designs, such as SMRs, does not lead to a conclusion of any economic soundness.^{19,20} In fact, the costs of reactors such as SMRs are rising,²¹ and are liable to become less economically competitive with alternative input mixes to energy generation over time.²²

The Breakdown

The economic context concerning nuclear power generation is one perhaps best characterized as “the wagon leading the

horse”. With the regulatory apparatus arguably not attuned to keeping too close of an eye on the industry it oversees.²³

In order to model the interrelationships among the agents involved, it may be most profitable to think of nuclear firms as agents who are able to present themselves as moral hazards to society because, if not via asymmetric information, at least via current government unwillingness to act on given information due to regulatory capture.²⁴ Therefore, through subsidies and tax exemptions, the nuclear power industry ends up costing far more than what it is worth on a sober cost-benefit accounting.



Rising Costs of Plant Construction²⁵

If indeed it is correct that beneficent demand reduction is not guaranteed to be easily achievable,²⁶ modern society is under more strain than usually recognized to invest in *cost-effective* means of literally fueling the future.

There are more than apparent overreactions at play in regards to problems with nuclear sourced energy.²⁷ In truth, it is difficult to accurately assess the real risks involved with nuclear power,²⁸ as well as the value of estimates of typical operating costs.²⁹ In *this* respect certainly, society as a

whole is left with the shorter end of an information imbalance.

Further, certain inputs to any costs calculus such as capital costs are in part determined by exogenous factors, such as the relative affordability of alternative energy sources.³⁰

The constellation of facts that must be assessed is typically magnified in regards to energy generation when compared to, say, calculating the cost of attending college. Exactly how to presume the aggregate welfare effects of such a potentially enormous public good misalignment is one that perhaps can tempestuously presumed to be best left adequately in the hands of a subcommittee of the congressional budget office.

However, the story that seems to unfold in regards to nuclear power still seems coherent enough: The high total costs of nuclear generation do not compete with most potential mixes of alternatively sourced energy inputs.³¹

Recap

Every decision that society makes is a decision not to do something else. The impetus to salvage as much of a scarce resource lies with those with the means to deny it to future generations. In the case of that most precious resource of all, wealth, future inhabitants of the globe will likely be better served if we choose an investment strategy that allows them more dynamism in regards to constructing a prioritizing schedule that will satisfy their baseline valuations and judgments.

There is enough confusion on this issue to occupy a lifetime of reflection and correction. Perhaps most saliently is the fact that other concerns even now feel themselves as more pressing of our resolve than this particular, perhaps peculiar, one. But we may find ourselves losing the chance to at least put our species on a better footing by not

acting upon what we can most probably ascertain to be true now.

With nuclear power receiving far more in terms of financial support than it arguably returns,³² the problem before modern society seems clear. From an economic standpoint,³³ nuclear energy should not be liable to play a central role in whatever carbon-reduction strategy we should adopt in the cost-effective vain.

We should stop subsidizing the industry, and adopt a sensible mix of renewable energy, cleaner hydrocarbons, and battery storage capacity in order to transition to a carbon free future.³⁴

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