



Ultimate Triumph of Standard Market Design

Chairman Wood, Commissioners Brownell, Massey, Breathitt, take a bow

BY STEVE HUNTOON

Standard Market Design. We're coming up on its 15th anniversary. It was demonized on the Hill, declared dead by FERC in 2005, and remains a political third rail. So much so that FERC Chairman Norman Bay told the Senate Energy and Natural Resources Committee during his confirmation hearing, "I do not believe in Standard Market Design."

Who could blame him?

But what really became of SMD? First let's remind ourselves what it is.

Here are its ten core elements, taken from FERC's 2002 press release:

Regional independent grid operation. Regional transmission planning. Single network transmission

service (no rate pancaking). Market monitoring and market power mitigation. Locational marginal pricing. Congestion revenue rights. Security constrained day-ahead and real-time energy markets. Ancillary service markets. Resource adequacy requirement. Demand response.

Any of these sound familiar? They all should. All these elements are part of all the organized markets in this country.¹ And these organized markets serve about two-thirds of the electric load in this country.

There has been a debate over the benefits of organized markets à la SMD. I'm not going to reprise that general debate, but I'm going to focus on one subject, new nuclear.

Ten years ago, spurred in part by

the Energy Policy Act's nuclear production tax credits (sound familiar?), 28 new nuclear license applications were submitted to the Nuclear Regulatory Commission. A "nuclear renaissance" was declared.²

Half the applications came from traditional integrated utilities, and half came out of states with organized markets. Five of the former are being built,³ and none of the latter are being built.

Absent a remarkable coincidence, we can conclude that competition, transparency, independence (relative) and other SMD characteristics doomed nuclear in the organized markets. Or to paraphrase the Buggles,⁴ SMD killed the nuclear star.

What does that mean for consumers? Let's assume that in the absence of SMD's organized markets, five nuclear plants would have been built in those states. I'm simply applying the same built-to-proposed ratio as in the traditional integrated states.

Using Lazard's oft-cited Levelized Cost of Energy Analysis, the extra cost to consumers of those five nuclear plants over the next 40 years would have been \$123 billion relative to the cost of solar and wind.⁵

To be clear, that's without subsidies, and without according solar and wind any capacity value.⁶

So even if organized markets have contributed nothing else, avoiding \$123 billion of excess charges to consumers by avoiding five nuclear plants is not too shabby.

Pat Wood, Nora Brownell, Bill Massey, Linda Breathitt, take a bow. No one may acknowledge it 15 years later, but you won.

And we owe you one. **PUP**

Endnotes:

1. There are of course "regional differences" among the organized markets. But the differences are not that material in the grand scheme

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- of things. The biggest differences are between the multi-state organized markets and the single-state markets (California and New York), because the latter have seen many more market interventions that threaten the integrity, and ultimately the survival, of those markets.
- Information on proposed nuclear plants was compiled by the Congressional Research Service in a 2014 report, "Nuclear Energy Policy."
 - Southern Company's Vogtle 3 and 4, South Carolina Electric & Gas' Summer 2 and 3, and the Tennessee Valley Authority's Watts Bar 2 (technically, Watts Bar 2 is not a new nuclear

- plant with construction suspended in 1985, resumed in 2007, and completed this year).
- Surely you remember the Buggles. Their immortal "Video Killed the Radio Star" kicked off MTV in 1981.
 - Here's the math using Vogtle and Lazard (V 9.0) figures. 1,117 MW net capacity per unit. Times five units is 5,585 MWs of total nuclear capacity. Times 8,760 hours. Times 90% annual capacity factor. Times 40 years. The result is 1.76 billion MWhs.
Vogtle capital cost is \$8,400 dollars per kw. We subtract gas peaker capital cost of \$800 per kw

from the Vogtle capital cost, to get a net-of-capacity-value capital cost that can be compared with solar and wind.

At a \$7,600 per kw capital cost, Lazard shows a levelized cost of energy (LCOE) for nuclear of \$124 per MWh. This is \$70 per MWh more than the Lazard midpoint LCOE costs for solar and wind around \$54 per MWh.

1.76 billion MWhs of nuclear generation, times the \$70 per MWh extra LCOE of nuclear, is \$123 billion.

- In the preceding footnote, the capital cost of a gas peaker was subtracted from the Vogtle capital cost, so that nuclear, solar and wind could be put on an equivalent net-of-capacity-value basis. The preceding footnote uses Lazard's unsubsidized LCOE figures.

Effective Rate Design

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demand factor.

We need to examine more than econometric models that produce price elasticity estimates when considering rate design.

We need to free ourselves of inefficient rate designs that are shackled by average cost pricing, driven by revenue requirements. We must look for what makes real people make real decisions about energy consumption.

Utility planners and regulators

worry about the dependability of demand-side resources. Whether they are in the form of distributed generation, energy efficiency, peak shaving or demand side response.

Demand-side resources depend on human behavior. Changing human behavior often means moving people out of their comfort zones. Making lifestyle adjustments. Making trade-offs. Making sacrifices.

To achieve this end, it might be

necessary to do more than tweak a rate design. It might require a bit of a shock. And not an allegiance to the antiquated notion of gradualism.

Abrupt changes to rate designs, however, might increase the need for programs that protect the most vulnerable from this shock.

Put aside the spreadsheets and regression models. Reach for a two-by-four and get customers' attention with rate designs that create efficiency first and other policy goals second.

Free yourself from a quest for false precision and gradualism. Focus on designs that create responsiveness. **PUF**



A Lineman's Winter Day,
January 5, 1950 PUF



Making Sure of a Good Connection,
January 21, 1954 PUF



Bringing Power to the Farm,
January 19, 1950 PUF