

Should Minnesota Maintain its Nuclear Moratorium?

Testimony before the Minnesota Senate Energy and Environment Committee

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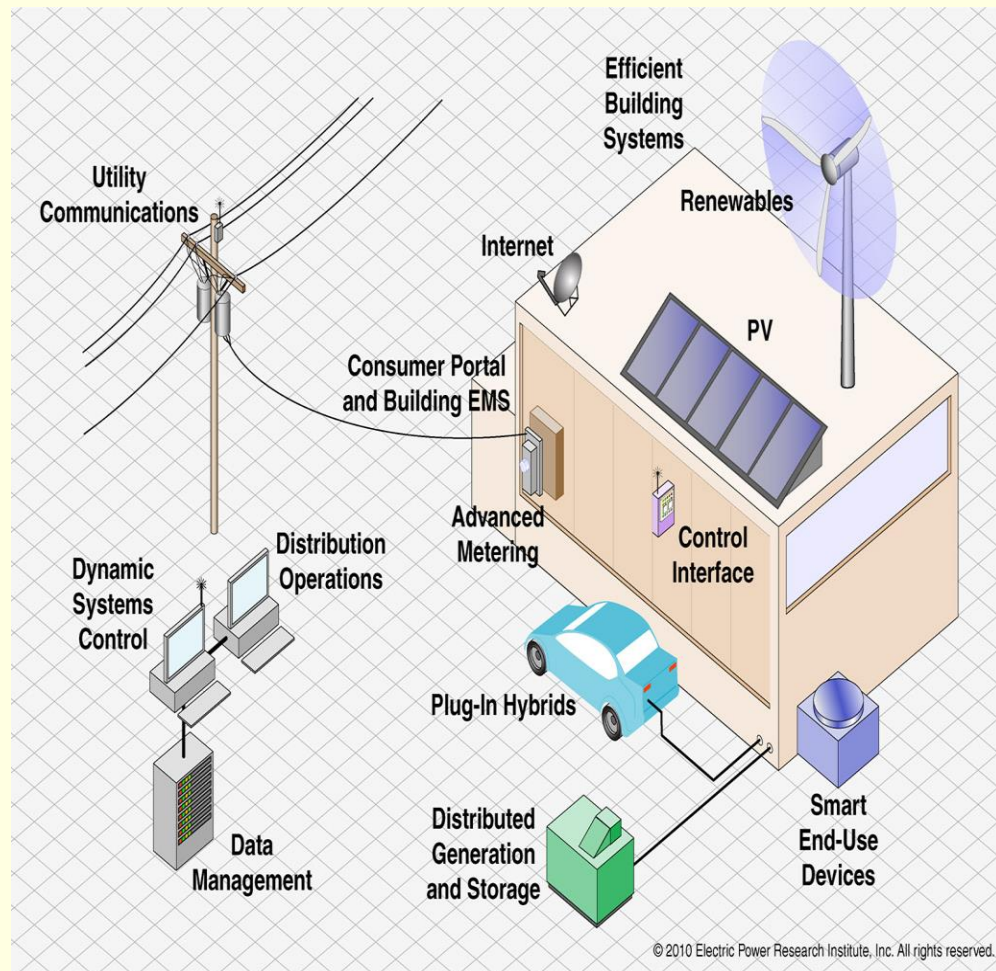
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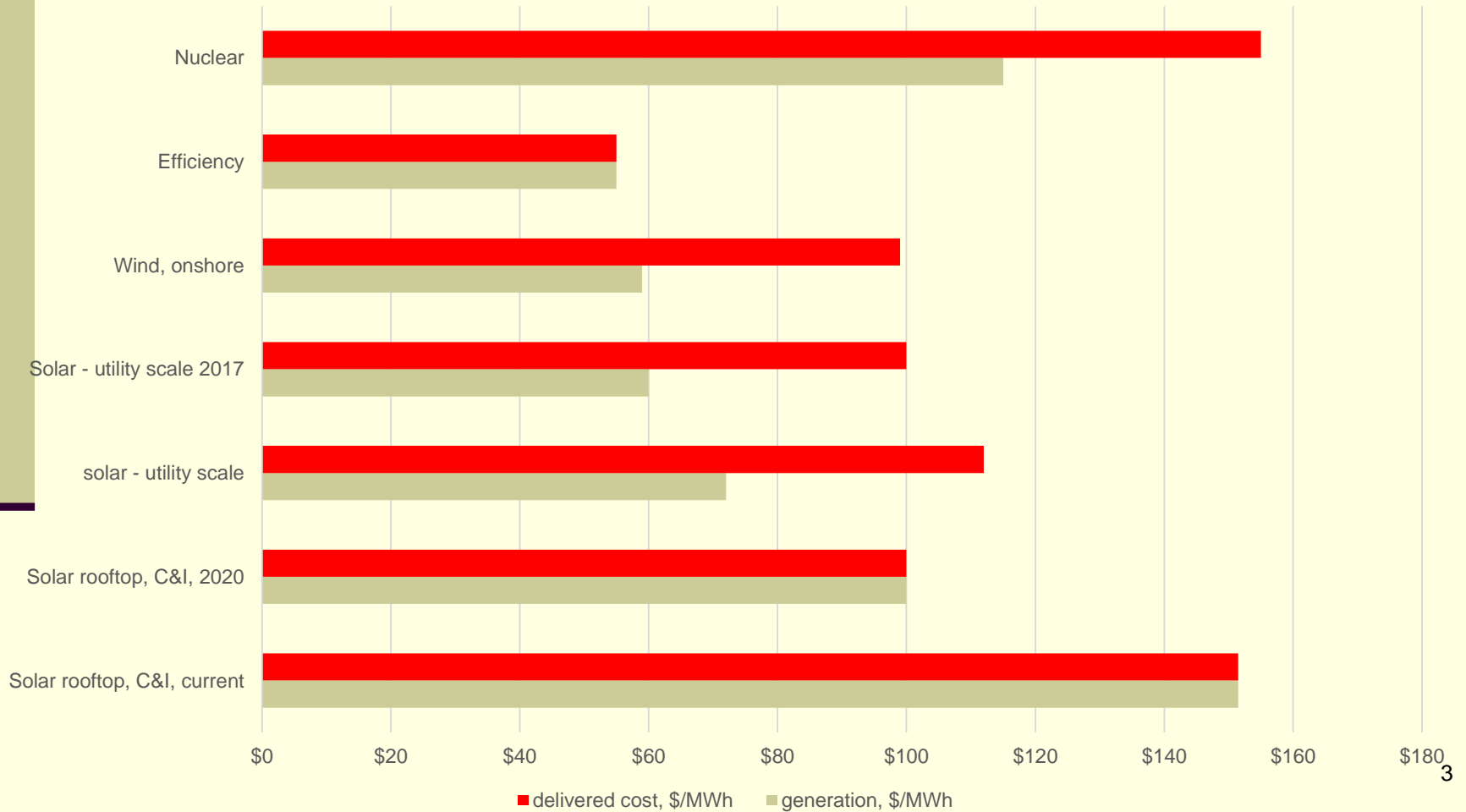
Everything on the table: good for smorgasbord; but not for a smart grid



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Electricity costs, no subsidies, except Price-Anderson for nuclear; nuclear costs can go up to \$200/MWh

Chart Title



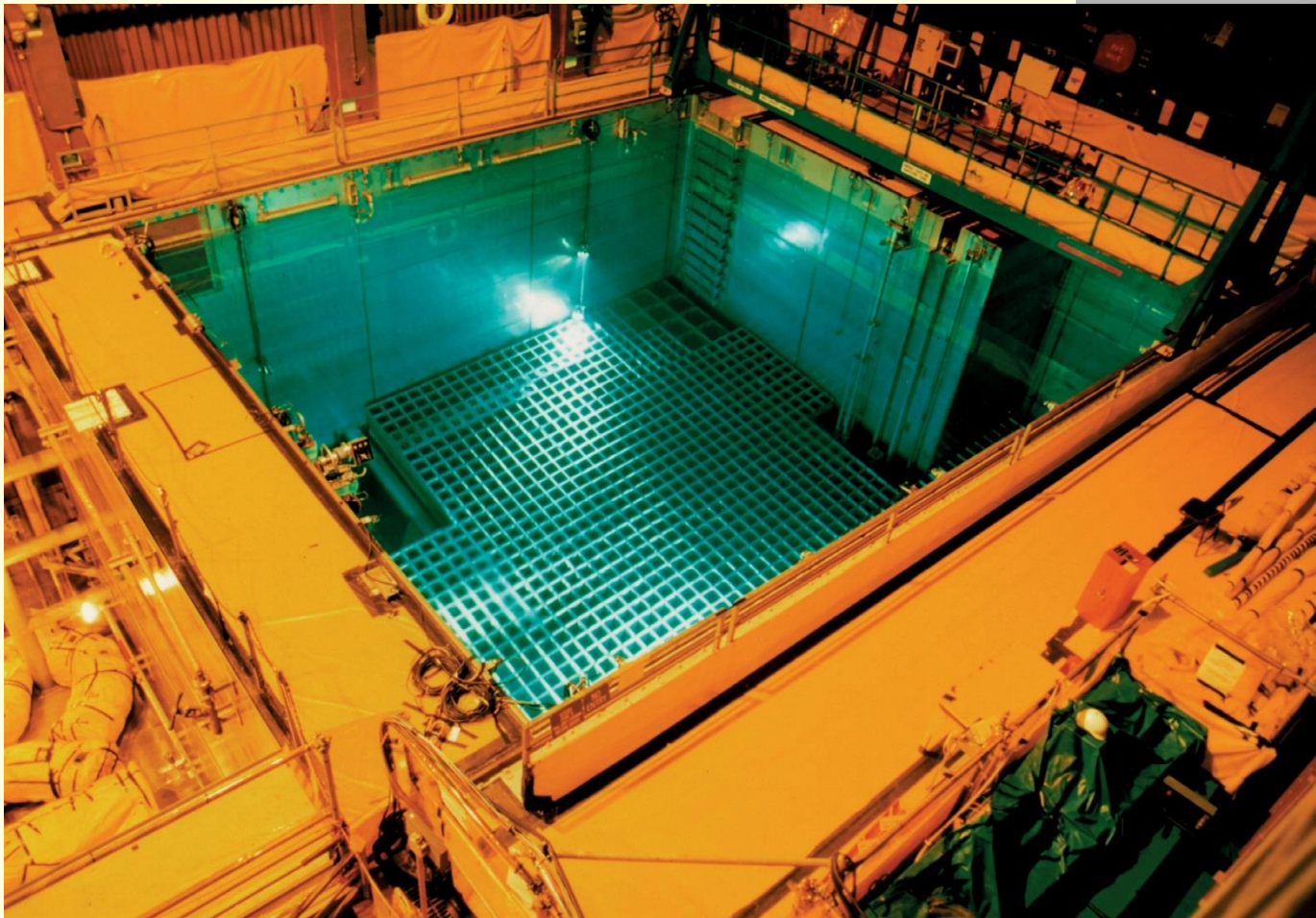
Some critical issues, Slide 1 – Long lead times and delays

- Nuclear has very long lead times and huge total initial investment. Progress Energy (now owned by Duke) in Florida proposed a two-reactor project north of \$20 billion, but the market capitalization of the whole company was about half that.
- Solar can be built in months; wind in ~2 years.
- Long-term forecasts have generally been wrong since 1973. About 120 nuclear reactors cancelled since 1973 – almost as many as were built – wasting \$30 billion (2012 dollars).
- Vogtle 3, lead new reactor, is 21 months delayed. No official opening date as of November 2014.
- V.C. Summer, in South Carolina, 2 ½ year delay.
- NRG proposed two reactors in South Texas – now moribund after hundreds of millions spent on paperwork.
- Most “nuclear renaissance” reactor projects halted or moribund.

Risk

- Ratepayers pay in advance for reactor construction and take the risk (“Construction work in progress” CWIP).
- No refunds if the plant is not finished.
- No ownership of the plant for ratepayers if it is. This is worse than a tax.
- Floridians have paid hundreds of millions of dollars for nuclear projects that are stopped. But the payments go on!

Let them have pools



And casks



- NRC now says can store on site for thousands of years
- Federal government will appropriate money every year for security and infrastructure, long after plants are shut
- It said this in the midst of a government shut down

Fukushima Daiichi - March 18, 2011: An similar accident at a Minnesota plant would devastate the Mississippi River basin, especially due to strontium-90



Satellite imagery courtesy of GeoEye/EyeQ

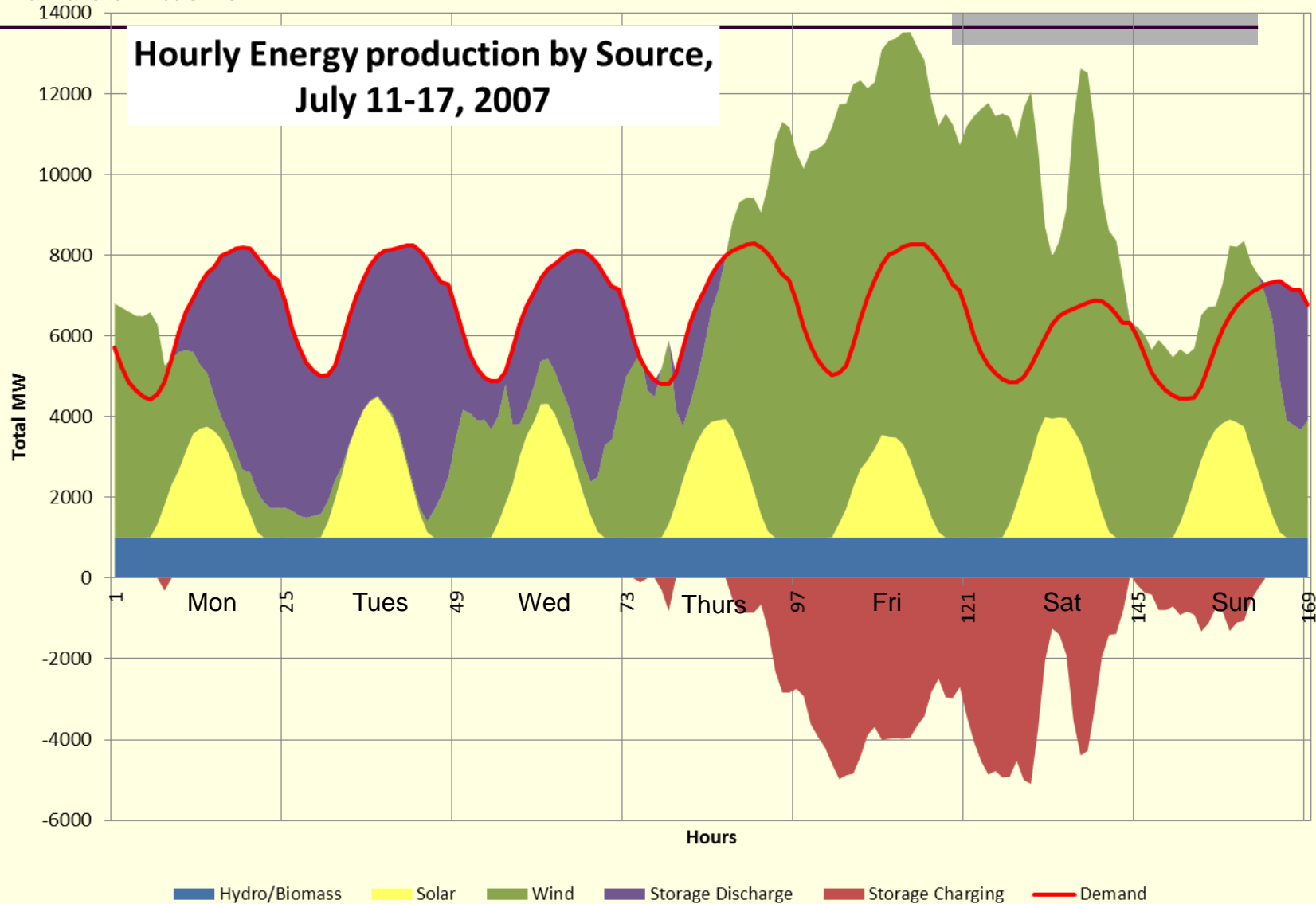
Put nuclear on the table?

- Putting nuclear on the table will not advance energy policy in Minnesota.
- Rather, it will suck all the oxygen out of the energy policy discussion.
- Next step for the nuclear lobby may well be to ask for ratepayer advance payments (Construction work in progress).
- Note: No CWIP, no utility interest in nuclear. That is the case now in Minnesota. Why ask for trouble?
- Nuclear industry is undermining renewables, as for instance in Illinois

Nuclear is inflexible: a poor complement to solar and wind

- Building more centralized plants, especially the most inflexible one, nuclear, is exactly the wrong direction.
- We need flexible responsive complements to solar and wind: hydro, natural gas, demand response, storage...
- Nuclear plants are too inflexible to support high penetration of solar and wind, MN's best resources, and the Midwest's greatest resources.
- The Midwest has more wind energy potential than all OPEC countries have oil. We need to build distributed resilient grid with responsive elements at all scales from small to large.
- We don't need new nuclear power; rather it is a hindrance and needless risk to achieving an emissions-free future.

Modeling 100% Renewable MN (IEER): Many studies now show renewable, emissions-free electricity system is feasible and desirable



Conclusions

- Minnesota is now a leader in the United States on an excellent course to reduce emissions, become more efficient, and have a resilient, democratized and renewable grid.
- Ending the nuclear moratorium will divert attention from the task at hand, at best
- At worst, it will derail Minnesota from its present course, if there are irresistible pressures for Construction Work in Progress.
- Nuclear is not needed for an emissions free electricity sector. It is a risky and costly option that should be avoided.
- This will hurt jobs, emission reductions, resiliency, renewables, and a once-in-a century opportunity to democratize the grid.