

**TESTIMONY BEFORE THE OHIO SENATE ENERGY AND PUBLIC
UTILITIES COMMITTEE
HOUSE BILL 104**

December 1, 2020

INTERESTED PARTY TESTIMONY OF WILLIAM H. THESLING PH.D.

Thank you Chairman Wilson, Vice-Chair McColley, Ranking Minority Member Williams, and members of the Committee for the opportunity to provide testimony on HB104. and the members of the Energy and Public Utilities committee for allowing me to testify.

My Name is Dr. William Thesling. I have lived in Ohio my entire life. I have a doctorate in Electrical Engineering from Cleveland State University. I am a co-founder of Efficient Channel Coding Inc. and am an author or co-author on over 30 patents. I am a serial entrepreneur and strongly believe innovation is the key to a better future.

A goal of House Bill 104 is to make Ohio a leading state in Advanced Nuclear Technology Research, Development, and Commercialization. This has some enormous long-term benefits for Ohio as a manufacturing State.

- There has been much advancement in materials technology, digital controls, sensors, instrumentation and computer modeling over the past several decades.
- These gains in technology have allowed us to revisit old technologies that were previously considered to be not viable.
- Nowhere is revisiting an old technology more compelling than Molten Salt Reactor Technology that was abandoned in the early 1970's largely for political reasons. This technology was demonstrated in a working reactor at Oak Ridge National Laboratory for four years in the late sixties and the next step was to develop a demonstration reactor but was abandoned.
- Molten Salt Reactor technology represents a very different reactor architecture from the prevalent Light Water Reactor design that has been in use for decades. MSR technology was specifically developed to do the impossible – power an aircraft and give it unlimited range. Engineers have analyzed some of the MSR designs and concluded that it would be possible to produce electricity for less than \$20 per MW/HR. Lower energy prices may even be possible. Currently the cheapest electricity on our grid comes from advance combined cycle natural gas system. Such plants exhibit a LCOE of around \$41.0 per MW/HR.
- MSRs are significantly less complex, operate at higher temperatures to achieve greater efficiency, and are passively safe due to their physics. All this means that they will be much cheaper to build once licensed.

Interesting things can happen with Molten Salt Reactor technology resulting in electricity production below \$20 per MWH as well as other benefits. A partial list includes:

- Using our high-level nuclear waste as fuel allows us to convert a cost center into a profit center. In this situation our fuel costs are effectively negative!
- We can use the heat from MSR instead of natural gas derived heat, to harvest America's vast heavy-oil reserves.
- MSR reactors – allow for extraction of fission products. A key fission product is Molybdenum-99 which is used in technetium generators. This substance, which presently has almost no domestic sources, is used in 20 million medical diagnostic procedures in the country annually. This represents a second revenue source, effectively lowering electricity production costs further.

The inherently lower costs along with alternative sources of revenue could result in energy costs approaching zero. The amount of energy that is available in the atom is truly staggering! Energy supplies would last for millennium! Zero Carbon abundant energy would be an absolute game changer and the country (& State) that develops it first could be future "Silicon Valley" of energy. The MSR technology to enable this is within our grasp.

HB104 represents minimal risks for the state of Ohio and I will argue HB104 allows the free-market to act as an agent of innovation within the nuclear sphere once again.

Thank you very much.

William H. Thesling Ph.D.