House Appropriations Government Operations Division

Honorable Representative Vigesaa, Chairman

Chairman Vigesaa and Committee Members,

In 2018 ND state leadership traveled to Canada to tour the petrochemical industry complex in Alberta. Decades ago, Alberta was at a very similar p[ace in its oil development as ND was at the time. Alberta had an excess of natural gas production, including the stream of ethane and propane. They made a decision to incentivize and partner with private industry to build a value added industry within the province instead of flaring and exporting the valuable gas stream products for processing elsewhere. Upon discussion about replicating this value added success in ND with our ethane rich Bakken gas stream, industry representatives said we would need to prove several critical components to be considered for development. These were:

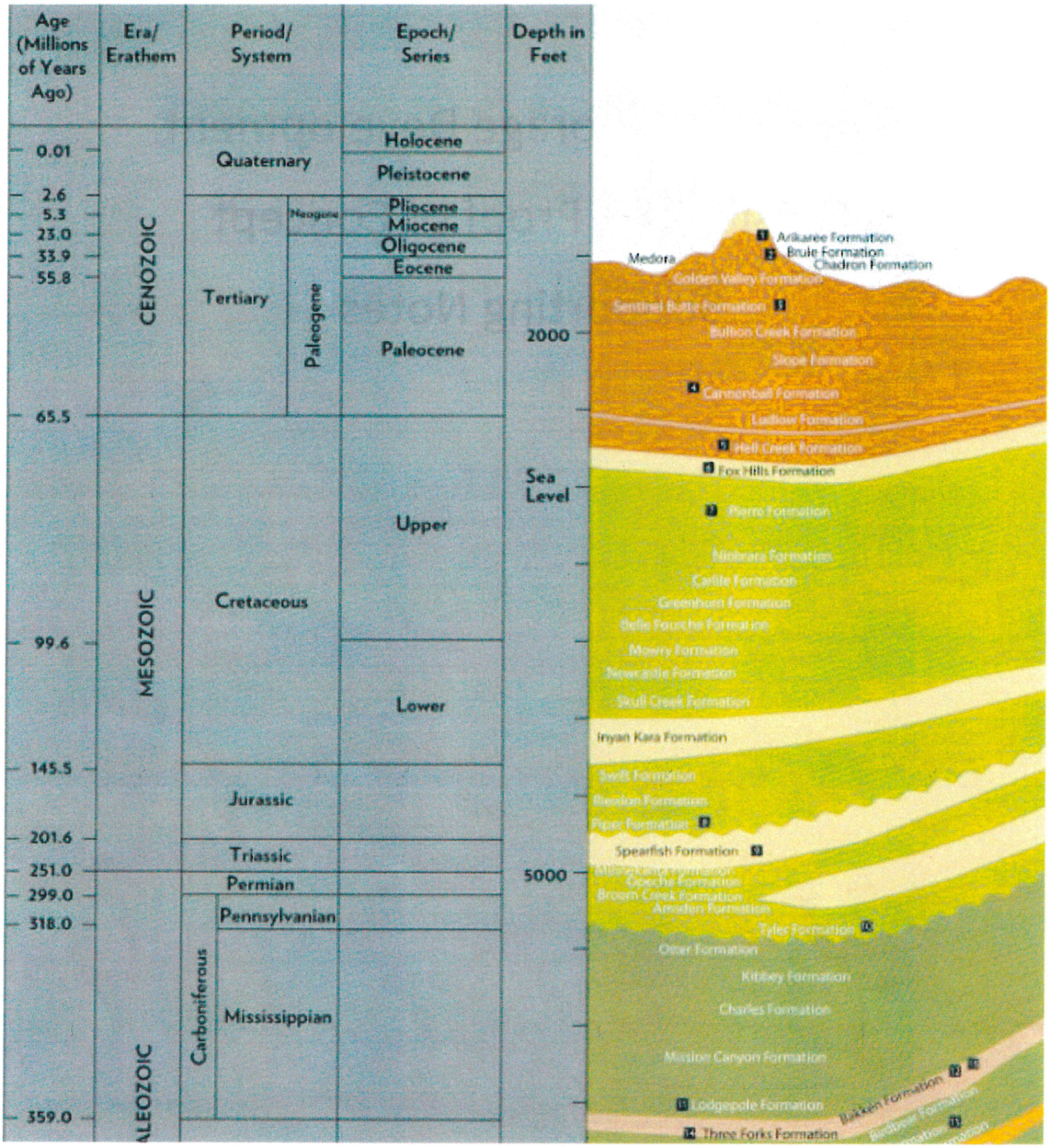
1) Adequate ethane production and reserves to fuel a 40 year life cycle of facilities. This was later confirmed by EERC analysis, the Department of Mineral Resources, and the ND Pipeline Authority.
2) Gas plant cryogenic capacity to separate the ethane in adequate quantities and the development of pipeline facilities to transport the ethane. With the construction of the new gas plant west of Williston, the doubling of the capacity of the Tioga Gas Plant, and other cryogenic plants that already exist along with the planned construction of the ethane power plant in Williams County with its ethane pipeline development, this component will soon exist.
3) Regulations and research to prove the ability to develop underground ethane storage for the industry. The Senate recently passed SB 2065 that provides the regulatory statute for storage development and was the policy hearing and endorsement of cavern storage. This appropriation is to drill a test well to collect core samples for analysis and interpretation publicly available through the State Core Lab and Energy and Environmental Research Center in Grand Forks to prove we have suitable storage formations that can be developed by industry.

There exists a public-private partnership opportunity that with this up to $14 million research appropriation will provide the final documentation to recruit the petrochemical industry to our state with its investment of $10-12 billion in facilities and infrastructure. It changes North Dakota from a "greenfield" development area to a "brownfield" development for consideration by this industry. The private entity we recruited to assist will offer their land and minerals ownership to drill the core recovery well. The well bore has no value, other than if successful could be used to develop a salt cavern for storage in the future at a cost to any private entity of over $200 million, which this power plant entity does not need for their project. Please support this public-private state partnership effort to prove the petrochemical development opportunity exists in North Dakota.

Salt Cavern Storage Development

Feasibility | Proof of Concept

Supporting Notes



The funding being sought for the hydrocarbon and/or hydrogen storage in underground caverns will establish for the first time the feasibility of cavern development in the State of North Dakota.

Funds will be used to identify ideal locations using desktop analysis and then drill a narrow core sample through the different formations shown above. Once obtained the core sample will be analyzed, determinations on the viability of cavern storage will be made. Under no circumstances will the result of the feasibility effort result in functioning cavern storage.

Cavern storage development and construction requires **$200 million or more** in capital investment.

Cavern Storage Development in North Dakota = High Cost and High Risk

In the eyes of industry the fact that cavern storage development has never been done in North Dakota is interpreted as cavern storage development cannot be done in North Dakota or is a high risk, low likelihood pursuit. The funding for the study will derisk the activity.

The Necessity of Cavern Storage for In-State Hydrocarbon, Hydrogen Market Development

A supply chain prerequisite to establish a thriving and expanding in-state market for hydrocarbons and hydrogen the ability to store the products. Underground storage developed from salt caverns is the only economic way to address hydrocarbon/hydrogen storage needs.

In order to address market requirements for hydrocarbons or hydrogen of course applications or consumers are required. For example the hydrocarbon ethane used for low cost baseload power generation or stored propane for agricultural use.

, order to reliably serve a growing number of applications and consumers the following supply chain requirements must be available.

Market Requirements

Requirement	Description	Risk
Applications	Power Generation, heating and other	VERY LOW RISK – industries and processes well established
Producing/Processing of hydrocarbon	Production/processing of ethane, propane, hydrogen using established processes	VERY LOW RISK – industries and production and processing well established
Hydrocarbon / Hydrogen Transportation	Moving products from processing locations to consumption points via pipeline	VERY LOW RISK – industries and processes well established
Hydrocarbon/Hydrogen Storage	Underground cavern storage only economic means	VERY HIGH RISK – Never been done in North Dakota

Feasibility and Not Development

Again, it is important to state that the requested funding will under no circumstances result in a functioning storage cavern for hydrocarbons or hydrogen. Based on the feasibility study it will be possible to establish if the approximately $200M investment to develop, engineer, permit, construct is indicated.

It is also important to note that upon success of the feasibility study the same preliminary work we are seeking funding for will be reproduced by private industry in additional locations to support additional storage projects.

Success on this first feasibility study will send a strong signal to industry that North Dakota's geology can support salt cavern development for hydrocarbon/hydrogen storage.