

October 7, 2011

Senator Thomas F. O'Mara  
District Office  
333 East Water Street (3rd Floor, Suite 301)  
Elmira, NY 14901

Dear Senator O'Mara,

We at PSE (Physicians Scientists & Engineers for Healthy Energy) find that Inergy's dSEIS for the proposed LPG storage facility at Seneca Lake inadequately addresses potential impacts on both the environment and the community.

As an organization, we are most concerned with the alarming history of catastrophic failure of hydrocarbon storage in salt caverns. The British Geological Survey has undertaken the most comprehensive examination of this storage method in a report entitled "An appraisal of underground gas storage technologies and incidents for the development of risk assessment methodology" (2008). The report demonstrates an alarmingly high frequency of reported incidents and problems. This history of failure should be addressed in the dSEIS, and it should adequately cover all potential areas of concern. According to the BGS report, failure mechanisms related to geology in salt caverns have to do with three principle factors that contribute to the breaching and collapse of salt caverns: salt creep, uncontrolled leaching, and unexpected anomalous zones in what had been thought to be homogeneous salt [1]. Equipment failures, such as valve failure, casing failure, or packer failure, must also be addressed as part of this, as these have been the principle causes of the catastrophic events involving salt cavern storage facilities since 1972 [2].

Claims in the current dSEIS that "underground gas storage is viewed as having an excellent environmental, health and safety record" (Evans, 2008 citing "Lippmann & Benson 2003; Imbus & Christopher 2005") and that "salt caverns provide one of the safest answers to the problem of storing large amounts of hydrocarbons" (Evans, 2008 citing "Bérest et al. 2001" and "Bérest & Brouard 2003") are not substantiated by data [3]. Paradoxically, the BGS report refers to the first of these claims in its summary, but as the report indicates with actual calculations, "the majority of problems have occurred at salt cavern storage facilities" [4]. According to the body of the BGS report, 41% (27/66) of all underground salt cavern storage facilities operational worldwide in 2005 experienced serious incidents. 7.6% resulting in casualties/fatalities [5]. This is significantly more hazardous than other underground storage methods and this does not speak to an excellent safety record.

The dSEIS ignores this worrisome track record, and fails to mention the BGS report. As an organization trying to bring transparency to science in the energy industry, PSE recommends these known risks need to be individualized, itemized and accounted for in the proposed LPG storage facility in an independent review. Although industry and policy makers may consider these risks low, citizens look at this data and do not share this view. Compared with other engineering projects such as bridges, aircraft, tunnels this incident rate and casualty/fatality rate is extraordinarily high.

Further concerns include, but are not limited to, the following:

- There is a likelihood the industrialization associated with the proposed storage facility will have a negative impact on the local economy, which relies heavily on wineries and tourism. Social and economic considerations are not adequately addressed in the current dSEIS. While few economic benefits are put forth, which include ~ 50 construction jobs and 8-10 permanent jobs at the facility, the impact this industry will have on the existing economy is ignored. The cumulative impacts of this industrialization of this region may seriously impact the local tourist based economy, effectively damaging the "brand" of the region. The wineries and businesses around Seneca Lake are locally owned, representing a long-term economic development trajectory for the local

communities. This trajectory should not be damaged by the proposed storage facility and its modest economic gains.

As economist David Kay writes in a working paper on the economic impact analysis of natural gas development in the Marcellus Shale, “the experience of many economies based on extractive industries is a warning that their short-term gains frequently fail to translate into lasting, community-wide economic development” [6]. We recommend a socio-economic impact review to study such concerns. This study should enlist the help of economists and address the following items: the value of tourism for the local economy, possible ways in which the tourism economy might be affected, now and in the future with the proposed storage facility, and if there is a potential harm to this economy, what policies and strategies might be enacted to mitigate these effects [7].

- There are fault lines on the Western side of Seneca Lake within a half mile of the proposed storage facility that could potentially lead to large scale accidents [8]. While the seismologic survey record and earthquake history indicates only minor activity in the area, we do not believe the geological assessment that gauges the risks these fault lines pose for the storage facility has been adequate. The USGS NEIC earthquake data, which only goes back to 1852, should not suffice as the sole means of investigation, especially given the critical nature of this proposed facility. As a California Geological Survey indicates, “certain faults have recurrent activity measured in tens or hundreds of years whereas other faults may be inactive for thousands of years before being reactivated” [9].

Other means of investigation besides seismicity and earthquake history should potentially be considered in relevant investigations and reports. These include surface observations, subsurface investigations, geophysical investigations, and age-dating techniques, among others [10]. In California, construction is prohibited on or near faults that have moved within the last 11,000 years (Holocene Epoch) [11]. Gauging fault activity often entails radiocarbon dating of organic material near the fault line, which can help project future activity. There is no mention of this in the dSEIS. It would be prudent to consult relevant seismologic experts to determine the adequacy of both conducted and suggested research when evaluating potential fault line hazards. The storage facility is a critical structure given the hazard posed by a large volume of liquefied gas under pressure and proximity to Seneca Lake. As such, it should be subject to more stringent investigation procedures with regard to fault lines and seismic activity.

- The proposed storage facility promotes the development of the natural gas industry in this rural area. While the storage facility construction is itself a single event, it should be seen as part of a larger project. For one, this infrastructure will likely be used for non-local industrial activities (e.g. Pennsylvania). This will likely involve the establishment of a network of new pipelines, transportation infrastructure, and associated industrial development. The proposed LPG storage facility at Seneca Lake will set the precedence for other salt mines in the area to be used for storing both liquefied petroleum and liquefied natural gas. For this reason, the project should be viewed in a wider, anticipatory lens. The cumulative effects this industry need to be explicitly expressed as related to issues of public health, the environment, and the economy.

Given the importance of this natural resource, we think it prudent for the pertinent data to be collected before the storage facility is developed. This becomes particularly relevant when one consider the infeasibility of remediation should anything go wrong.

"It should be noted that one of the important features of the oil/gas storage caverns in comparison with the caverns for other purposes is that there is almost no possibility for any remedial works inside the storage space after the facility is put into operation. Therefore, the long-term structural stability of the caverns has to be ensured for the whole life of the facility. Adequate rock support design by empirical means and numerical simulations based on reliable geomechanical characteristics of the rock mass and allowable operating conditions is essential for the lifetime safety of the facility" [12].

The current dSEIS summarizes some results, yet provides no data outsiders can review in their appendices. It also delays other essential studies until once the process is underway. The actual data, and not just abbreviated summaries of results, needs to be publicly available for review, preferably by an independent review panel with the requisite expertise.

In closing, the environment, community, and economy of the region should not be compromised in the name of short term gains. Until qualitative and quantitative risk analyses are conducted to address the concerns we have outlined above and the public have had a chance to evaluate them, we recommend delaying issuing permits for Inergy to proceed with this project.

#### References:

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