

# Letter to the PUC Regarding the Public's Interest in the Proposed CO2 Pipeline

## Summary:

If the Summit Pipeline project is approved and completed, its construction and maintenance costs, along with the subsequent costs of transporting and sequestering the CO<sub>2</sub>, would effectively be borne by the public in the form of higher federal taxes. It is also inevitable that the public would pay more for the ethanol produced by the plants that utilize the pipeline. South Dakota landowners who would be forced to sell easements for the pipeline would then have a hazardous high-pressure containment structure permanently encroaching on their properties. This would restrict the use of this real estate, reduce its productivity and decrease its resale value. Meanwhile, the pipeline would increase neither the quantity nor the quality of the ethanol produced. The only measurable changes that the public would experience from the pipeline are increased taxes and higher costs for ethanol, as well as the aforementioned problems and potential dangers that the pipeline would create for affected landowners.

Some may argue that the pipeline would help the public by allegedly reducing the rate of climate change. However, there are no scientific test data verifying the accuracy of any existing climate theory/model. Without a verified model the effects of the pipeline on the rate of climate change cannot be predicted with any confidence. Big claims require big proof. Climate change, as typically defined, is a big claim, yet there is essentially no proof that climate change is currently occurring nor, assuming that it is, that the Summit pipeline would affect it in a manner that significantly benefits the public. Pipeline supporters need to show that the construction and operation of the pipeline would result in a significant net reduction in the amount of CO<sub>2</sub> entering the atmosphere, as well as show that such a reduction would significantly reduce the rate of climate change. Without a verified model that accurately predicts how climate is affected by CO<sub>2</sub>, the latter is not doable.

A key objective of the PUC, as stated in its Mission Statement, is to promote the public's interests. While it is certain that the pipeline would increase costs for all South Dakotans, as well as create hazards and restrictions on the lands of citizens forced to sell easements for its construction, the alleged benefits to the public are quite speculative. Given this the PUC should not approve a permit for this project.

### **Introduction:**

Summit Carbon Solutions Carbon Transport LLC, a subsidiary of Summit Carbon Solutions (SCS), has applied to the PUC for a permit to build a CO<sub>2</sub> pipeline (the Summit CO<sub>2</sub> Pipeline) in South Dakota<sup>1</sup>. The PUC's Mission Statement lists a number of objectives. One of these objectives is "*to promote their (the public's) interests through public policy*"<sup>2</sup>. Thus, among other things, SCS must provide the PUC with clear and convincing evidence that its pipeline will generate significant benefits for the public. However, the construction and operation of the proposed pipeline will have no proven general benefits for the citizens of South Dakota. In actuality the construction of this pipeline will negatively affect most SD citizens due to increased taxation, higher prices for ethanol blended gasoline and reduced productivity/value of the land that the pipeline would pass through. The PUC should not approve a permit for its construction.

### **Discussion:**

#### **Pipeline Plan**

SCS Carbon Transport LLC has proposed the construction of a pipeline--the Summit Pipeline. This pipeline would enter South Dakota from Iowa and exit into North Dakota—running a distance of approximately 469 miles<sup>3</sup>. It would transport CO<sub>2</sub> at a pressure of 2100 psi. In North Dakota the CO<sub>2</sub> would be sequestered by pumping it into a geological formation that would reportedly trap it underground permanently. The transported CO<sub>2</sub> is a by-product from the

production of ethanol. The Summit Pipeline is part of a larger pipeline network intended to capture and sequester CO<sub>2</sub> from more than 40 ethanol producing plants in a five-state region. In South Dakota SCS has seven ethanol plant partners. These plants would capture the CO<sub>2</sub> by-product from their ethanol production and use the proposed pipeline to transport it away for sequestering. SCS will manage the transport of the CO<sub>2</sub> through the pipeline and its sequestering in North Dakota.

### **“Financial Benefits” from the Pipeline**

The financial benefits of the pipeline are not derived from any added value to the production of ethanol, but rather government subsidies to select entities. The entities that would receive these payments are SCS and its ethanol plant partners. The costs for constructing the pipeline would be subsidized by the federal government from a \$12 billion fund for carbon-capture research and projects. This fund is part of the omnibus \$1 trillion infrastructure package passed in 2021<sup>4</sup>. The federal government will also directly pay SCS \$50 to \$85 per ton of sequestered CO<sub>2</sub><sup>5</sup>. SCS will presumably share these payments with its ethanol plant partners. In addition, the ethanol plants themselves would likely benefit directly by being paid more for their ethanol. The capturing/sequestering of the CO<sub>2</sub> would reduce the “carbon footprint” of the ethanol. Some customers will pay more for “green” (i.e. lower “carbon footprint”) ethanol<sup>6</sup>.

Note that the pipeline does not increase the quantity nor the quality of the ethanol. Furthermore, a higher price typically causes a reduction in demand. If, by becoming “green”, the price for ethanol increases then it would likely be used less and thereby decrease the demand for corn. Hence the construction of the pipeline seems more likely to harm rather than benefit farmers who grow corn. Also, all of the direct “financial benefits” from the pipeline go to corporations-- SCS and their ethanol plant partners. In order to directly “financially benefit” from the pipeline one must be a shareholder in SCS or one of the partnered ethanol plants.

## **Who Pays for the Costs of the Pipeline?**

The federal government is both subsidizing the construction of the pipeline and paying for the sequestering of the CO<sub>2</sub>. This means that the people in SD who pay federal taxes would pick up the tab for a portion of these costs. If the price of ethanol rises, then so too will the price of ethanol-blended gasolines at the pumps. South Dakotans who use blended gasoline would be paying more for it due to the pipeline.

## **Other Costs--Impact on South Dakota Landowners**

The owners of the land that the Summit pipeline crosses would be forced to deal with some serious problems<sup>7</sup>. The Summit Pipeline would transport CO<sub>2</sub> at a pressure of 2100 psi. CO<sub>2</sub>, becomes toxic to humans when its concentration, in the air we inhale, reaches a level of 5%<sup>8</sup>. If the pipeline bursts, it could result in serious injury or death to any people or livestock nearby either because of objects propelled by the high pressure or the toxicity of the CO<sub>2</sub>. If a land owner accidentally damages a pipeline, he may be liable for the cost of repairs and even the lost revenue. Insurance companies have reportedly become reluctant to insure property near a gas line<sup>9</sup>. In addition to the personal safety and liability concerns, the installation of a pipeline also has been shown to reduce crop yields. A study by the Ohio State Univ extension service found that the land that was worked in the process of laying a pipeline show decreased production of corn (23.8%), silage (28.8%) and beans (7.4%)<sup>10</sup>. The paper stated that: *“Soils within the ROW had more rock fragments, lower soil moisture, and had a higher resistance to penetration which indicates lasting forms of soil compaction.”* Pipelines will generally lower the value of a property. For all of these reasons many land owners are opposed to the Summit Pipeline going across their land.

## **Effect of the Pipeline on Climate Change**

The driving force for constructing this pipeline is the federal payments and subsidies. The alleged benefits for the capture and sequestering of the CO<sub>2</sub> is a reduction in the rate of climate change. However, there are many controversial aspects concerning the issue of climate change. One very important, but unfounded, assertion in the general narrative of people that believe in climate

change is that it has been “proven by science”. Another such assertion is that humanity will face serious, perhaps existential problems, if climate change is not stopped. If you believe that climate change is a scientific fact/“settled-science” then you are more apt to agree that most anything that acts to slow climate change is beneficial. However, if it is not scientifically proven than how should it be viewed? We believe that the concerns about climate change are opinions/speculations. Opinions can be important, but they are typically given little or no weight in deciding legal issues. That is how we believe the PUC should treat any claims about the “benefits” that the pipeline allegedly produces with regard to climate change when deciding this case.

We’ll explain why climate change is not scientifically proven and give an example illustrating why this is important. The term “climate change” has come to mean three things:

- (1) The climate is presently changing.
- (2) The change is causing average global temperatures to rise and this is primarily driven by increased concentrations of greenhouse gases in the atmosphere caused by human activities.
- (3) Climate change will cause major problems/existential threats to humanity.

What is required in order for something to be scientifically proven? Science comes from the exercise of the scientific method<sup>11</sup>. To apply this method a phenomenon (e.g. “climate”) is studied in order to develop a hypothesis/theory that explains it. Once a theory has been developed, experiments must be designed and conducted to determine if the theory can accurately predict the behavior of the phenomenon. If the theory accurately predicts the outcomes of the experiments, then the theory is considered valid. If the theory fails to make accurate predictions than it is not valid and it needs to be either modified or discarded. To assert that a theory has been “scientifically proven” means that the theory has been tested, i.e. used to predict the outcomes of many experiments over a wide range of conditions, and has always accurately predicted the outcomes.

What testing has been done to prove the “climate theory”? Furthermore, what testing has been done to verify that the climate theory correctly predicts that the CO2 sequestering, that results from use of the pipeline, will significantly benefit SD citizens? The answer to the first question is that there is no climate theory so a climate theory has never been tested. There are a number of climate models. Models are used to predict the behavior of phenomena that are too complicated to be explained by a theory<sup>12</sup>. A model contains “simplifying assumptions” that make it possible to calculate/predict outcomes.

How are climate models tested? The “NOAA Climate Models link” takes you to a paper that explains that climate models are tested by using a method called “hind-casting”<sup>13</sup>. The NOAA paper describes hind-casting as follows: *“This process runs the model from the present time backwards into the past. The model results are then compared with observed climate and weather conditions to see how well they match. This testing allows scientists to check the accuracy of the model and, if needed, revise its equations.”*

Hind-casting is probably the best action scientists can take to verify a climate model. However, this “testing” procedure is not what is specified by the scientific method. The scientific method states that the theory is tested by conducting an experiment and using the theory/model to predict the outcome. With hind-casting the outcome, the “historic climate data”, is already known. Hind-casting uses the comparison between a model’s predictions and historic data to revise the model so that its predictions agree with the historic data. The great complexity of climate effectives forces a climate model to have lots of simplifying assumptions and input variables. Models with lots of assumptions and variables can typically be readily modified so that their outputs can be made to agree with historic data.

Adjusting a model to agree with historic data is fine, but this is not the same as using a model to predict something in the future. A famous example of the failure of an historically adjusted model is Ptolemy’s model predicting the motions of the planets. For most of Western history Ptolemy’s model of the universe was considered the best for explaining the motion of the planets<sup>14</sup>. Ptolemy developed a model of the universe that had the earth as its center. In this model

astronomical bodies orbited around the earth. Measurements of the motions of the planets showed behavior that was quite different from the stars. To account for this Ptolemy developed a model that added additional circular motions to the orbits of the planets in order to have model's predictions match what was being observed. With more observations and greater accuracy the model needed to be revised, adding more circles, to agree with the observations. By making these revisions the model could always be made to agree with the observational data. Nevertheless this model was totally wrong. The earth is not the center of the universe and the planets do not orbit around it. Hind-casting is the same process used to create and revise Ptolemy's model. In order for a model to be useful it must correctly predict future behavior. If a model is always needing to be revised to be consistent with new data, then the model is not making accurate predictions. Such a model cannot be used with any confidence. That is why the scientific method requires that a theory/model accurately predict the outcome of experiments rather than be continuously revised in order to agree with historic data. The hind-casting process does not meet the requirements of the scientific method and its use to "verify" climate models is in no way scientific proof of their accuracy.

Why don't scientists follow the method prescribed in the scientific method to test their climate models? The reason climate scientists don't follow the test procedure specified in the scientific method for testing their models is because those test requirements are too time-consuming and difficult to perform. Controlled climate experiments simply cannot be done. In order to test a climate model, as required by the scientific method, a test must be designed and executed. The model must accurately predict the outcome of the test. To conduct a valid test, one must be able to control the input variables. For example, one such variable is the concentration of CO<sub>2</sub> in the atmosphere. To get one climate datapoint requires that the averages of all weather data, across the entire planet, be collected for a 30-year period--a 30-year period is generally considered the minimal time over which a climate can be characterized. Getting even one climate data point is a huge investment in time and work. During the test all of the input variables must be controlled. So, for example, to test the

effect of CO2 concentration on climate one would need to minimally conduct two 30-year tests with two different CO2 concentrations. The concentrations of methane, volcanic ash, Oxygen, Nitrogen, etc. would all need to be held at the same constant levels for both 30-year test periods. As a practical matter such an experiment cannot be conducted. Scientist simply have no way to control these input variables. To scientifically prove that a climate model makes accurate predictions requires that it be tested a large number of times, over a wide range of input parameters, and that it always correctly predicts what will happen. The practical difficulties of controlling test input parameters and the huge data collection requirements means that no climate models have been tested even once, much less over the large number of times, using the method required to scientifically prove the model. Given this any claims based upon predictions from climate models should not be considered as confirmed by science. Such claims are perhaps best characterized as speculations.

### **Conclusion:**

It is nearly certain that the construction and operation of the Summit Pipeline will generate significant expenses for SD citizens and a multitude of problems for the SD landowners that are forced to sell easements for its construction. The pipeline will not increase the quality nor quantity of ethanol being produced, but it will increase the price that ethanol producers can charge for their ethanol because it allows them to attach a “green” label. Higher prices for ethanol will make SD citizens pay more for ethanol blended gasoline—this will probably cause the sales for such gasoline to decrease. Reduced ethanol sales will lead to reduced demand for the corn used to make the ethanol. The only entities that directly benefit from the pipeline are the companies that receive the federal payments or can increase their prices for the ethanol. The only SD citizens that will directly financially benefit from this are those that have ownership in these companies.

Some may argue that the pipeline will benefit the citizens of SD by reducing the rate of climate change. The climate models that could conceivably be used to support such claims have not been tested, as specified by the scientific method,



and therefore are not scientifically proven. There is no way to assign a confidence level to predictions made from using these models.

When deciding whether the pipeline is in the public's interest the PUC must weigh the clear costs and hazards to the public, that result from the construction and operation of the pipeline, versus unsupported claims of unquantified benefits from a reduction in climate change. We believe the PUC should decide against approving a permit for this pipeline.

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