BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

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HP 22-002

IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA,

DIRECT TESTIMONY OF JARED McENTAFFER, Ph.D.

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1. Please state your name and business address.

Answer: My name is Jared McEntaffer. My business address is 100 S. Spring Avenue, Suite 205, Sioux Falls, SD 57104.

2. Please describe your present employment.

Answer: I am the Chief Executive Officer of the Dakota Institute, which is a nonprofit economic research and analysis organization. Our mission is to support the long-term economic growth and development of South Dakota and the Northern Plains region. We support decision makers in all fields with the best available data and analysis so they can make strategic decisions and investments. We conduct public benefit research, meaning that we share the results of our research with policymakers and business leaders. We also work with businesses, governments, and non-profits on research projects. Our services include housing studies, economic impact studies, and market forecasts. More information is available on our website at https://www.dakotainstitute.org/.

3. How are you associated with Navigator Heartland Greenway, LLC?

Answer: I am not employed by Navigator and have not done any work directly for Navigator.

4. Have you previously submitted testimony in this proceeding?

Answer: No.

5. What is the purpose of your testimony?

Answer: The South Dakota Ethanol Producers Association commissioned the Dakota Institute to analyze the potential economic impacts of two large CO2 pipeline projects, namely the Navigator Heartland Greenway Pipeline and the pipeline proposed by Summit Carbon Solutions. We produced a Report entitled "Economic Impacts of CO2 Pipelines in South Dakota." The Report is dated May 22, 2023. A copy of the Report is attached as Exhibit A. The Report considers both projects together. It includes Phases 1 and 2 of the Navigator Heartland Greenway Pipeline.

6. What was your role in preparing the Report?

Answer: I authored the Report.

7. Please describe your educational background, experience, and qualifications.

Answer: I earned a bachelor's degree from South Dakota State University and PhD in Economics from the University of Nebraska-Lincoln. My fields of specialization were Labor Economics and Econometrics. I have taught economics at The University of Nebraska-Lincoln and the Penn State University. I returned to South Dakota in 2017 to lead Benchmark Data Labs, a data consulting and outreach organization that was located in Rapid City. I have been with the Dakota Institute since April 2022. My research fields include economic impact modeling,

economic forecasting, regional labor market assessments, and treatment effect estimation. A copy of my resume is attached as Exhibit B.

8. Did you use a model to help determine the economic impacts of the construction and operation of the proposed pipeline projects? If so, please describe the model.

Answer: Yes. We used a model developed by Regional Economic Models, Inc. (REMI), which is described in more detail in Appendix B to the Report. In general, REMI uses an Input-Output model to represent the inter-industry relationships found in the economy. The Input-Output model captures the industry structure of a particular region and the transactions between industries. They are useful for estimating economic impacts because they show how a change, or shock, in one industry (e.g. the construction of a CO2 pipeline) impacts other industries in the economy. The REMI model outperforms other economic impact modeling frameworks because it also incorporates General Equilibrium, Econometric, and Economic Geography tools and methods to provide a more comprehensive understanding of the economy.

9. What are the key findings of your Report?

Answer: The study reported the estimated economic impacts of the Navigator and Summit pipelines during a two-year construction phase and then for the first ten years of their operations. Our analysis of the pipelines' operational phase encompassed the economic impacts associated with the actual operating activities of the pipelines, the potential tax credits received by ethanol producers for the production of clean fuels along with carbon capture and sequestration, and finally the higher corn basis resulting from increased corn demand. At each stage of our analysis, we estimated and reported economic impacts across four common metrics, including employment, personal income, gross economic output, and state GDP. The study did not explore the pipelines' potential impact on state and local tax revenues. The study did,

however, include property tax payments to local governments when estimating the economic impacts of the pipelines during operation. The Report estimates the total impact on state GDP of both projects across the construction and operations phases as $3.3 billion. The construction phase will increase state GDP by $952 million during 2024 and 2025, which is nearly 0.70% of state GDP each year. The Report further estimates that the operational phase from 2025 through 2034 will add $2.35 billion to state GDP from the combined impacts of pipeline operations, clean fuel and carbon sequestration tax credits, and an increased corn basis. This would represent a 0.35% increase in annual state GDP. In terms of gross output, which is a broader measure of economic activity than GDP, the pipelines will generate and support an estimated $5.92 billion in gross output from 2024 through 2034. The largest impact will come from the CAPEX phase of the projects, which will increase gross output in the state by an estimated $1.68 billion over the two-year construction period. The Report estimates that clean fuel and carbon sequestration tax credits will increase gross output by $1.6 billion from 2025 through 2034. We also estimate that a stronger corn basis will boost gross output by nearly $1.36 billion, and the operating activities of the pipelines will increase gross output by slightly more than $1.28 billion over the same period. Finally, we estimate the pipelines will support a total of 7,105 jobs from 2024 through 2034, including 5,353 annually during the construction phase and 1,752 annually during the operations phase.

10. Please describe the economic impacts of pipeline construction based on the Report.

Answer: The capital expenditures associated with pipeline construction over all phases for both projects are estimated at $1.53 billion. The capital expenditures include all hard and soft costs that could be tied to South Dakota for the construction of the pipelines, capture sites, and pump stations necessary for the pipeline network to function. We estimated that the $1.53 billion

capital investment would support $1.68 billion in gross output during 2024 and 2025. These expenditures are estimated to generate $904 million in personal income over the two year construction phase. The CAPEX phase of the project will also generate substantial employment impacts. We estimated the pipeline projects would create an average of 5,353 jobs per year during 2024 and 2025. The largest employment impacts will be in the construction industry which we estimate will create 2,772 jobs each year. We also estimate the pipeline projects will create several hundred jobs in the retail and accommodation and food service sectors.

11. Please describe the economic impacts of pipeline operations based on the Report.

Answer: Based on planning budgets provided by both pipelines, the Report estimates operating expenditures at $82.8 million during the first full year of operations. These expenditures include regular business expenses, high voltage power, personnel, and anticipated property taxes. The Report also estimates how pipeline operations might negatively impact farm incomes due to lower crop yields along the pipeline routes. We assume all operating expenditures other than crop damages and property taxes grow at 2% annually over the ten-year operations phase from 2025 through 2034, resulted in an estimate for total operating expenditures equal to $792.3 million over ten years. The Report estimates that the pipelines' operations will increase state GDP by $771 million over the ten years from 2025 through 2034. The pipelines will also increase gross output by an estimated $1.28 billion and personal income by $398 million over the same period. Additionally, we estimate the pipelines will support an average of 436 jobs per year during the first ten years of their operations.

12. Please describe the impacts of the Clean Fuel and Carbon Capture and Sequestration Tax Credits based on the Report.

Answer: The 45Z and 45Q tax credits could have a net value of $1.56 billion to South Dakota's ethanol producers from 2025 through 2034. The 45Z clean-clean fuel tax credits are available to ethanol producers during the years 2025 through 2027. The report assumes ethanol producers will switch to 45Q credits for Carbon Capture and Sequestration in 2028 and will continue to earn them through 2034. The report models the net value of the tax credits as a dividend paid out to the owners or shareholders of the ethanol plants. For Co-Op plants, we modeled the tax credit revenue as a shock to farm proprietors' income because most shareholders likely reside in South Dakota. Similarly, because POET Biorefining is a South Dakota corporation headquartered in Sioux Falls, SD, we modeled the tax credits earned by POET Biorefining plants as a stimulus to chemical manufacturing proprietors' income. The net tax credit earned by Valero Renewable Fuels was excluded from this analysis because it is not a South Dakota corporation. The Report estimates that the 45Z and 45Q tax credits will increase state GDP by an estimated $956 million between 2025 and 2024. The report also estimates the same tax credits will increase gross output by $1.6 billion and personal income by $2.05 billion over the same period. We estimate the tax credits will support nearly 1,025 jobs annually during the operations phase.

13. Please describe the impacts on the local corn basis and farm incomes based on the Report.

Answer: The Report evaluated three ethanol expansion scenarios to understand how increased ethanol production could affect the local corn basis. The Report first estimates how the local corn basis would respond to a change in ethanol production. It then estimates the economic impact of the ethanol expansion scenario using shocks to farm industry sales stemming from the increased corn basis. In consultation with the South Dakota Ethanol Producers Association, the

Report identified a 15% increase in ethanol production as the most likely scenario. Under this scenario, ethanol production would rise from 1.444 to 1.661 billion gallons per year, requiring an additional 77 million bushels of corn annually. The Report estimates that the local corn basis would increase by nearly $0.19 after five years in response to a 15% increase in ethanol production. Over ten years, the estimated increase in the value of the corn harvest is $938.3 million based on the 2022 corn price and harvest size. Farmers will be the primary beneficiaries of the stronger corn basis, but the economic impacts of ethanol expansion would be significant. The Report estimates the higher corn basis would support 291 jobs annually from 2025 through 2034. State GDP would increase by $627 million, gross output would rise by $1.36 billion, and personal income would grow by $192 million over ten years.

14. Are you being compensated for your testimony?

Answer: Yes. I am being compensated at a rate of $500 per hour to prepare my pre-filed testimony.

15. Does this conclude your prepared direct testimony?

Answer: Yes.

Dated this 25th day of May, 2023

/s/ Jared McEntaffer, Ph.D.
Jared McEntaffer, Ph.D.