

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION BY SCS CARBON TRANSPORT LLC FOR
A PERMIT TO CONSTRUCT A CARBON DIOXIDE TRANSMISSION PIPELINE**

SD PUC DOCKET NO. _____

**PRE-FILED DIRECT TESTIMONY OF BRIGHAM A. MCCOWN
ON BEHALF OF SCS CARBON TRANSPORT LLC**

November 19, 2024

1 **Q. Please state your name and business address.**

2 A. My name is Brigham A. McCown, and my business address is 1717 Main Street, Suite
3 3550, Dallas, Texas 7520.

4 **Q. Please state your present position(s) and affiliation(s).**

5 A. I am the President and Managing Principal (“CEO”) of Nouveau, a regulatory and policy
6 advisory firm; the current Chairman of the nation’s only Infrastructure think tank, the “Alliance for
7 Innovation and Infrastructure” (Aii.org); an Adjunct Professor at Miami University; and a Senior
8 Fellow at Hudson Institute and Director of Hudson’s the “Initiative on American Energy Security.”

9 **Q. What is your professional background??**

10 A. I have spent the last three decades in and around the transportation and energy
11 infrastructure industries. I was the federal government’s top safety regulator of all pipelines and
12 hazardous materials as the Acting Administrator at the U.S. Department of Transportation’s
13 (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). Before that, I
14 served as the Chief Legal Counsel over commercial motor vehicles at the USDOT’s Federal
15 Motor Carrier Safety Administration (FMCSA). I have also served as an expert, special
16 government employee, and Senior Advisor to the U.S. Secretary of Transportation and have
17 served on three presidential transition teams, including the current one. I have also previously
18 served as the Vice-Chair of Safety Regulations on a USDOT federal advisory board at the
19 USDOT. My background also includes running one of the world’s best-known pipelines as the
20 President of the Alyeska Pipeline Service Company. That entity designed, constructed,
21 operates, and maintains the Trans-Alaska Pipeline System (TAPS) while ensuring safety and
22 environmental stewardship. In addition, I have served as a safety and regulatory expert and
23 have taught graduate and undergraduate courses in business, ethics, and law at Miami
24 University.

25 I am a retired Naval Officer and Naval Aviator. I obtained a Juris Doctor from Salmon P. Chase
26 College of Law at Northern Kentucky University, a Master of Business Administration from the
27 Mason School of Business at the College of William and Mary, a Bachelor of Arts Degree in
28 Diplomacy & Foreign Affairs from Miami University, and a Graduate Certificate in Energy
29 Innovation and Emerging Technologies from Stanford University.

30 **Q. What is the purpose of your Direct Testimony?**

31 A. The purpose of my testimony is to discuss federal oversight and safety regulation of
32 pipelines as they relate to carbon dioxide (CO₂) systems and SCS Carbon Transport LLC's
33 (SCS's) South Dakota Project (Project). It is critical the public understands how pipeline
34 companies are governed and how pipeline systems work, as well as why they are a valuable
35 and necessary transportation option. I have spent most of my adult life working toward
36 increasing safety in the transportation sector, first in the military, next as a regulatory attorney,
37 and then later working on behalf of the public as a federal regulator responsible for pipeline
38 safety and ultimately as a pipeline operator myself. I am here to discuss why and how pipelines
39 are the safest form of transportation, including how regulators and operators continue to evolve
40 and raise the safety bar.

41 **Q. What is PHMSA, and what does it do?**

42 A. The Pipeline and Hazardous Materials Safety Administration, better known by its
43 acronym "PHMSA," is the federal agency entrusted with the safe and secure movement of
44 hazardous materials by air, land, sea, rail, and pipeline throughout the United States. Congress
45 granted PHMSA broad authority through the Pipeline Safety Act to regulate all safety-related
46 aspects of pipeline transportation, thereby promoting safety and allowing for the free movement
47 of products in or affecting interstate commerce. This legislation requires the agency to utilize
48 data and science to establish regulations to protect the public from threats to life, property, and
49 the environment.

50 Comprehensive agency regulations address pipeline design, construction, operations,
51 maintenance, integrity management, public awareness, emergency response planning and
52 preparedness, and other topics. In carrying out its duties, PHMSA conducts data analyses,
53 inspection, investigation, outreach, training, research, enforcement, and collaborative efforts to
54 continuously improve safety regulations.

55 The Pipeline Safety Regulations (PSRs), created by PHMSA and enforced directly or in
56 partnership with state agencies, are designed based on the direction given by the Congress and
57 informed by the agency's professional staff of civil servants who collect, study, and analyze the
58 science and data.

59 In addition, these programmatic decisions are informed by advisory committees of
60 federal and state government officials, industry representatives, safety advocates, and other
61 stakeholders who engage the agency during public comment sessions.

62 **Q. Does PHMSA regulate carbon dioxide pipelines?**

63 A. Yes, PHMSA regulates supercritical phase CO₂ lines and has done so for nearly four
64 decades under the Hazardous Liquid Pipeline Act of 1979.¹ CO₂ pipeline safety standards for
65 the design, construction, operations, maintenance, integrity management, public awareness,
66 and emergency planning of CO₂ pipelines are established by PHMSA's Office of Pipeline Safety
67 (OPS) within the PSRs previously mentioned above.

68 CO₂ pipelines may seem new to some members of the public as they are being
69 developed and permitted in new areas of the U.S., like South Dakota, for carbon capture and
70 sequestration. The U.S. Department of Energy commissioned a report released in 2015
71 reviewing CO₂ pipelines in the U.S.² Of particular interest is that when the report was published,
72 there were fifty different CO₂ pipelines in operation within the U.S. with a combined length of
73 over 4,500 miles. Currently, existing CO₂ pipelines operated in the U.S. total more than 5,000
74 miles, and some of these systems have been around since the 1950s.³

75 It is important to reemphasize that CO₂ pipelines are not new. They have been built and
76 operated safely throughout many states for over forty years. Nor are they, as a few might
77 suggest, dangerous or underregulated.

78 **Q. Will SCS CARBON TRANSPORT LLC pipelines be regulated by PHMSA?**

79 A. Yes. Based on SCS' operating parameters, found in Section 2.2.1 of its Application, its
80 pipelines will be subject to PHMSA regulations. This regulatory oversight includes the design,
81 construction, operations, maintenance, integrity management, public awareness, and
82 emergency planning and preparedness of the Project by PHMSA.

83 **Q. Are you familiar with the carbon dioxide pipelines and associated Historical
84 incident data for the United States?**

85 A. Yes, from personal experience as the federal regulator over pipelines and as an expert in
86 this field. PHMSA tracks and reports incidents involving pipelines; that information is publicly
87 available through the agency's website.⁴ Transparency is essential, and PHMSA does a good

¹ <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/Hazardous%20Liquid%20Pipeline%20Safety%20Act%20of%201979.pdf>

² https://www.energy.gov/sites/prod/files/2015/04/f22/QR%20Analysis%20-%20A%20Review%20of%20the%20CO2%20Pipeline%20Infrastructure%20in%20the%20U.S._0.pdf

³ <https://www.phmsa.dot.gov/data-and-statistics/pipeline/annual-report-mileage-hazardous-liquid-or-carbon-dioxide-systems>

⁴ <https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends>

88 job ensuring transparency of safety information. It is worth highlighting that there has not been a
89 single fatality on a CO₂ pipeline operating in the U.S.

90 **Q. How does the pipeline safety record compare to other modes of transportation?**

91 A. The U.S. has an excellent safety record when it comes to transportation, and that's
92 especially true when transporting energy supplies. That said, pipelines have an enviable safety
93 record, 99.99% safe⁵. According to PHMSA, pipeline systems are the safest means to move
94 products⁶.

95 I should also mention that while at PHMSA, I was responsible for finalizing and
96 implementing the 811 One Call system throughout the country to address the leading cause of
97 pipeline incidents, damage by third parties. The 811 system has significantly decreased pipeline
98 – and all underground incidents, making pipelines safer.

99 **Q. How does the age of the pipeline affect its safety?**

100 A. Age alone is not determinative of pipeline safety, and we have many examples of
101 pipelines operating safely for over half a century. The pipeline I used to run, TAPS, was placed
102 into service nearly fifty years ago. Like other pipelines, TAPS is not the same pipeline as it was
103 back in 1977. It has been updated, modernized, and carefully maintained. Today's pipelines
104 have been built upon innovation and more than half a century of learning. Today's pipelines are
105 designed from the ground up based on the knowledge and experiences learned through
106 operating our almost 3.3 million miles of pipelines daily. The controls, valves, safety control
107 rooms have continued to evolve. Even the steel milling has changed. It is safe to say that
108 today's pipelines are designed with innovation in mind.

109 **Q. What are some specific aspects of federal regulation that you believe ensure
110 pipeline safety performance?**

111 A. As previously mentioned, federal safety regulations holistically cover a pipeline system
112 at all phases of its life. Think of the regulations as providing multiple layers of protection. First,
113 the very design of the pipeline is required to meet PHMSA regulations.⁷ Certain types of pipe
114 material must be used, and standards must be followed during construction.⁸ Before operations

⁵ <https://auduboncompanies.com/study-shows-pipelines-are-safest-way-to-transport-oil/>

⁶ <https://www.phmsa.dot.gov/faqs/general-pipeline-faqs>

⁷ 49 C.F.R. Part 195, subpart C.

⁸ Part 195, subpart D

115 of the pipeline system, multiple tests are completed to confirm workmanship⁹ and integrity,
116 emergency response planning occurs¹⁰, and public awareness is conducted¹¹. Once the line is
117 placed into service, it must be monitored for performance by the operator and PHMSA¹². All
118 these layers of protection work together to protect the public from threats to life, property, and
119 the environment. I have highlighted a few specific examples of federal regulations below for
120 public stakeholders. In the design phase, there are requirements to apply factors of safety to
121 engineering calculations;¹³ set minimum distances between shutoff valves;¹⁴ and, specifically for
122 CO2 pipelines, take into consideration brittle fracture propagation.¹⁵

123 During construction, the federal regulations define the minimum depth of cover,¹⁶
124 minimum percent of welds non-destructively tested¹⁷, and hydrostatic testing above the
125 pipelines maximum operating pressure.¹⁸ It's worth noting that SCS has committed to a
126 minimum of 48 inches depth of cover, which exceeds the federal requirement of 36 inches. In
127 addition, SCS has stated that it will conduct inspection on 100% of pipeline welds, however, the
128 regulations only require 10%.

129 Operational safety controls include an operations and maintenance (O&M) manual¹⁹;
130 integrity management program including risk assessments²⁰; operator training and
131 qualifications²¹; leak detection system²²; public awareness²³; right-of-way patrols, and
132 emergency response plan²⁴ among other requirements.

133 In sum, PHMSA's regulatory regime is designed to decrease the likelihood of an incident,
134 and in the unlikely event an incident occurs, to mitigate potential harm to life, property, and the
135 environment using multiple layers of protection.

⁹ Part 195, subpart E

¹⁰ § 195.402(e).

¹¹ § 195.440.

¹² Operators must be able to demonstrate compliance with all aspects of Part 195, and PHMSA routinely inspects operators to verify compliance

¹³ § 195.106.

¹⁴ §§ 195.258 and 192.260

¹⁵ § 195.111

¹⁶ § 195.248

¹⁷ § 195.234.

¹⁸ Part 195, subpart E

¹⁹ § 195.402.

²⁰ § 195.452.

²¹ Part 195, subpart G.

²² §§ 195.134 and 195.444.

²³ § 195.440.

²⁴ § 195.402(e)

136 **Q. Are these specific aspects of federal regulation that ensure Pipeline safety**
137 **performance applicable to CO₂ pipelines and SCS CARBON TRANSPORT LLC**
138 **PROJECT?**

139 A. Yes, all supercritical phase CO₂ pipelines, including the Project, in the U.S. must abide
140 by these federal regulations and PHMSA.

141 **Q. What are the various types of inspections that PHMSA will perform on the SCS**
142 **CARBON TRANSPORT LLC PIPELINE?**

143 A. SCS will be subject to recurring inspections covering the entire breadth of the federal
144 pipeline safety program, including, but not limited to, Standard Inspections, Integrity
145 Management Program (IMP) Inspections, Operator Qualification (OQ) Inspections, Control
146 Room Management Inspections, New Construction Inspections, and Emergency Response Plan
147 review and approval. These audits encompass reviewing company documents, interviewing
148 employees and contractors, and conducting field visits to confirm compliance with federal
149 pipeline safety regulations.

150 **Q. What is an Integrity Management Program (IMP)?**

151 A. “Integrity” is a term used in pipeline operations to mean safe and fit for service. An IMP
152 includes numerous activities that must be conducted to ensure a pipeline or pipeline system can
153 be safely operated throughout its lifespan. Inspection of IMPs by PHMSA generally confirms that
154 operators are gathering and using necessary information to assess and mitigate pipeline risks.

155 During my time at PHMSA, the agency promulgated IMP regulations for the industry to
156 follow covering different types of pipeline programs. IMP applicable to SCS’ lines was one of the
157 first to be established.²⁵ In lay terms, an IMP is designed to holistically monitor pipelines from
158 construction until abandonment. During the entire lifecycle of a pipeline, data is collected and
159 monitored, like the way a doctor might monitor a patient. These observations in the form of raw
160 data and inspections conducted by trained personnel utilizing state-of-the-art technologies help
161 operators and regulators not only understand how well a pipeline is doing but serve as an
162 opportunity to watch for changes to that health over a period of many years. These leading
163 indicators are used to conduct maintenance or make necessary repairs before they would
164 otherwise be noticed. This is a proactive program designed to avoid future incidents and SCS’
165 lines will not only meet but exceed federal requirements as all line-pipe in the system will be

²⁵ IMP regulations for hazardous liquid pipelines and CO₂ pipelines are located at 49 C.F.R. § 195.452.

166 piggable and SCS has committed to applying the IMP to the entire line, not just those portions in
167 high-consequence areas.

168 Under the IMP, the entire system will also be protected against earth movement from
169 landslides and subsidence in different geological conditions. Patrols including flyovers will also
170 be used to access the system and to protect it against potential integrity threats from natural or
171 manmade circumstances.

172 Examinations and tests can include intentionally pressuring the line beyond its normal
173 operating characteristic to test it for leaks and imperfections to running devices (called "pigs")
174 through the lines on regular intervals. Some of these devices clean the lines. Pipelines are also
175 required to operate "smart pigs," the pipeline industry's version of an MRI, pass through the
176 interior of the pipeline at regular intervals. These devices can evaluate the line for corrosion,
177 dents, cracks, or other integrity related issues which in time, could later become a concern.
178 These tools use thousands of sensors that collect a large amount of data that is then analyzed
179 to determine if any remedial actions must be taken. The data is also stored so that it can be
180 compared to future data to evaluate changes over time. The pipeline can also be inspected
181 visually through direct assessment techniques and PHMSA conducts routine audits to verify
182 regulatory and programmatic compliance.

183 PHMSA also has an array of educational and enforcement tools at its disposal if areas of
184 non-compliance were to be found. This authority includes the ability to levy fines, order
185 compliance, or require other corrective actions.

186 **Q. Will SCS CARBON TRANSPORT LLC be subject to integrity management program**
187 **requirements and inspections?**

188 A. Yes. SCS will be subject to IMP requirements²⁶ and inspections applicable to any other
189 liquid pipeline operating under Part 195.

190 **Q. What are control room management ("CRM") inspections?**

191 A. In essence, the CRM program sets out detailed safety requirements for controllers, leak
192 detection systems, control rooms, and the instrumentation systems used to remotely monitor
193 and control pipelines²⁷. These regulations address engineering and management related to
194 human factors, which is to say, the performance aspect of human beings running a control

²⁶ 49 C.F.R. § 195.452

²⁷ § 195.446.

195 room. This is an area that PHMSA has focused on in recent years, taking cues from the Federal
196 Aviation Administration at the U.S. DOT for Crew Resource Management and from the maritime
197 industry, where it goes by the term Bridge Resource Management. This is exciting because it's
198 used in environments where human error can compound a situation with potentially significant
199 effects, focusing on interpersonal communications and decision-making skills.

200 **Q. Will SCS CARBON TANSPO RT LLC be subject to control room management**
201 **inspections?**

202 A. Yes.

203 **Q. What are new construction inspections?**

204 A. Yes.

205 **Q. Will SCS CARBON TANSPO RT LLC be subject to control room management**
206 **inspections?**

207 A. PHMSA inspects new pipeline construction to validate compliance with the design and
208 construction requirements in Part 195.²⁸ PHMSA Inspectors review design specifications,
209 construction procedures, quality control and construction records (e.g., welding, hydrotesting,
210 welder qualifications), and field construction activities. If a safety issue is identified during these
211 inspections, it must be addressed prior to starting up the pipeline. It is also noteworthy that SCS
212 will go above federal regulatory requirements by inspecting 100% of all pipeline welds for
213 defects.

214 **Q. What is a dispersion analysis, and how is it used?**

215 A. A dispersion analysis is a computer simulation of the distribution of gas or vapor in the
216 unlikely event of a pipeline release. The analysis is conducted by the pipeline operator to
217 determine the extent and concentration of gas during worst-case scenarios. In the case of CO₂,
218 topography is considered because when released CO₂ is denser than air. Dispersion modeling
219 informs risk assessments under the IMP program,²⁹ emergency response plans and
220 preparedness, and public awareness efforts.

221 **Q. Will SCS CARBON TANSPO RT LLC be required to prepare and submit such an**
222 **analysis to PHMSA?**

²⁸ 49 C.F.R. Part 195, subparts C and D.

²⁹ § 195.452.

223 A. SCS will prepare and submit a dispersion analysis to PHMSA. Because pipelines are
224 considered critical infrastructure, dispersion analyses, risk assessments, and emergency
225 response plans are kept confidential. This is to ensure that no one reading them could
226 potentially use them to undermine safety or intentionally damage a pipeline. These concerns are
227 not taken lightly and are intended to help secure critical infrastructure throughout the United
228 States.

229 **Q. What is an emergency response plan?**

230 A. Federal Emergency Response requirements for CO₂ pipelines are set forth in the Part
231 195 regulations.³⁰ Emergency Response Plans (ERP) are drafted to provide guidance and
232 structure for a quick, effective, and coordinated response to a pipeline incident with the objective
233 of protect the public, first responders, and the environment. Requirements include, but are not
234 limited to, notifications, response procedures (e.g., field and control room), personnel,
235 equipment, and post-accident review. The National Incident Management System Incident
236 Command System is typically used to manage the emergency response activities because it is
237 a response tool that is readily adaptable to incidents of varying magnitude. Local agencies and
238 first responders are trained on pipeline ERPs in their area and may fill roles during a
239 coordinated response effort.

240 Note an ERP is one of the last lines of defense after a release has occurred and there are many
241 other important layers of protections that prevent a release from occurring.

242 **Q. Will SCS CARBON TANSPORE LLC prepare and submit such a plan to PHMSA?**

243 A. Yes. It is my understanding SCS will prepare and make available its ERP to PHMSA.

244 **Q. Are you familiar with the Satartia, Mississippi carbon dioxide pipeline incident?**

245 A. Yes, based on my conversations with Satartia's fire chief and PHMSA's accident
246 investigation report³¹, the Satartia pipeline incident occurred after a prolonged period of steady
247 rain-saturated sloped soil around the pipeline, which in turn caused lateral movement of the
248 pipeline and, subsequently, a weld break and CO₂ release. As a result, 200 residents were
249 evacuated with approximately 45-50 seeking medical attention. It is my understanding that no
250 fatalities or overnight hospitalization occurred, which is why PHMSA cited "none" for fatalities
251 and injuries in its investigation. The pipeline operator associated with this incident was fined

³⁰ § 195.402(e).

³¹ <https://www.phmsa.dot.gov/news/phmsa-announces-new-safety-measures-protect-americans-carbon-dioxide-pipeline-failures>

252 approximately \$4 million for multiple probable violations of Federal pipeline safety regulations³²,
253 including failing to correct conditions that could adversely affect the safe operation of its pipeline
254 system within a reasonable time. Pipeline operators, including SCS, will take any lessons
255 learned from this incident to further strengthen and enhance safety.

256 **Q. Are carbon dioxide pipelines safe?**

257 A. Yes, absolutely, and after reviewing this project, I believe SCS' pipeline will be one of the
258 safest CO₂ pipelines ever built. I would be fully confident and would have no concerns working
259 or living within proximity of these pipelines.

260

261 **Q. Does this conclude your direct testimony?**

262 A. Yes.

263 Dated this ____ day of November, 2024.

264

265

266 /s/ Brigham A. McCown

267 Brigham A. McCown

268

269

³² [https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/42022017NOPV_PCO_PCP_0526022_%2820-176125%29 - Denbury Pipeline.pdf](https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/42022017NOPV_PCO_PCP_0526022_%2820-176125%29_-_Denbury_Pipeline.pdf)