July 21, 2024

Open Letter to the Resources and Development Committee of the Navajo Nation Council
Re: Tallgrass's Proposed Hydrogen Pipeline

Dear Honorable Delegates of the RDC:

We very much appreciated the opportunity to meet with you on July 8. As a follow-up to our presentation, we'd like to elaborate in writing on some of the reasons for our strong and steadfast opposition to Tallgrass's proposed hydrogen pipeline in the Navajo Nation. We look forward to discussing our concerns with you fully at a future work session.

Over the last several years, Tallgrass has engaged in a deeply disingenuous and dishonest conversation with Navajo Nation leadership about the prospects of a future hydrogen economy, the potential safety and health impacts of a massive hydrogen pipeline on our lands, and the purported economic benefits of such a project for the Nation. We are profoundly concerned about the conversation that has taken place, and we see history repeating itself. We see how fossil fuel-based hydrogen threatens to become the latest in a line of energy development industries—including coal, oil, gas, and uranium—that have exploited and devastated our lands and people over the last century. We see how Tallgrass uses false promises of money and jobs to lure us into a business venture with a high risk of failure. And we fear that our leadership has not fully grappled with the dangers of such a venture.

Tallgrass's proposed hydrogen pipeline—and accompanying infrastructure, including two new blue hydrogen production plants in the Farmington, New Mexico area—are harmful to our climate, harmful to Mother Earth, and harmful to local communities in the thirteen chapters along the pipeline route. The pipeline is also likely to fail economically and become a stranded asset, making the enormous risks of this project unjustifiable. **Honorable Delegates, we urge you to hear your constituents and reject the proposed Tallgrass pipeline.**

1. <u>The big picture: blue hydrogen is the fossil fuel industry's get-out-of-jail-free card. That's why oil and gas companies like Tallgrass are the biggest proponents of this false climate solution.</u>

The climate crisis is here. The Intergovernmental Panel on Climate Change warns that "we are at a crossroads" and "it's now or never" if we want to avoid the most catastrophic and irreversible impacts of global warming.[1] In order to limit global warming, we must drastically reduce our emissions of greenhouse gases, which trap heat in the atmosphere. Most human-caused greenhouse gas emissions come from burning fossil fuels like coal, oil, and natural gas.[2]

Tallgrass—which operates five interstate gas pipelines and three interstate oil pipelines—is a fossil fuel company.[3] As global consensus about the severity of the climate crisis has crystallized, fossil fuel companies have scrambled to ensure they stay in business. Rather than working to end our dependence on the energy sources that are posing an existential threat to our planet, fossil fuel companies are pushing false climate solutions—like carbon capture and storage technologies—that rely on a steady stream of fossil fuels. In 2017, oil and gas industry executives established a lobby group, the Hydrogen Council, that has generated much of the current hype around hydrogen.[4] Although Tallgrass and other fossil fuel companies frequently tout green hydrogen—the only clean form of hydrogen, produced from water using renewable electricity—their actual interest is in blue hydrogen production. **The fossil fuel industry thrives on hydrogen hype because blue hydrogen is produced using vast quantities of natural gas (and then falsely branded as "clean," as we explain below).** In fact, replacing natural gas with blue hydrogen enables the fossil fuel industry to *expand* rather than reduce its production of gas: since hydrogen has a much lower volumetric energy content than methane (the main component of natural gas), a larger volume of hydrogen is needed to transmit the same amount of energy, requiring more gas to make the hydrogen.[5]

2. Blue hydrogen is not clean. In fact, the science shows that blue hydrogen may be even dirtier—that is, worse for the climate—than natural gas.

98% of the hydrogen produced today is made from fossil fuels without any carbon dioxide emissions control:[6] steam is used to heat methane from natural gas, producing hydrogen and carbon dioxide; the carbon dioxide, a greenhouse gas, is released into the atmosphere. Tallgrass

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[1] IPCC Press Release, *The evidence is clear. The time for action is now. We can halve emissions by 2030*, at pp. 1-2, (2022), https://www.ipcc.ch/site/assets/uploads/2022/04/IPCC_AR6_WGIII_PressRelease_English.pdf.
[2] U.S. Energy Information Administration, *Energy and the environment explained: Where greenhouse gases come from*, https://www.eia.gov/energyexplained/energy-and-the-environment/where-greenhouse-gases-come-from.php.
[3] Tallgrass: Natural Gas, https://tallgrass.com/energy-solutions/natural-gas; Tallgrass: Oil, https://tallgrass.com/energy-solutions/oil.
[4] Damian Kahya, *Why oil companies want you to love hydrogen*, UNEARTHED (2020), https://unearthed.greenpeace.org/2020/12/08/unearthed-today-why-oil-companies-want-you-to-love-hydrogen/; see also, Hydrogen Council, *Founding Story*, https://hydrogencouncil.com/en/founding-story/. Four Corners Clean Energy Alliance, the regional lobby group that promotes hydrogen on behalf of Tallgrass, has close ties to the oil and gas industry. One of Tallgrass's vice presidents is on the board of the Four Corners Clean Energy Alliance. The lobby group's Interim Executive Director and Director of Communications & Advocacy both work for the Consumer Energy Alliance, an industry trade group whose membership includes many major oil and gas companies. Four Corners Clean Energy Alliance, *Meet Our Team*, https://fourcornerscleanenergyalliance.org/meet-our-team/; Consumer Energy Alliance, *Members*, https://consumerenergyalliance.org/about/our-members/.
[5] Jeff Koestner, *6 Things to Remember about Hydrogen vs Natural Gas*, POWER ENGINEERS (2021), https://www.powereng.com/library/6-things-to-remember-about-hydrogen-vs-natural-gas; David Cebon, *How Clean is Hydrogen, Actually? With Prof. David Cebon*, at min. 13:40 – 14:00, FULLY CHARGED PODCAST (2022), https://www.youtube.com/watch?v=JlOCS95Jvjc.
[6] Emeka Ochu et al., *Hydrogen Fact Sheet: Production of Low-Carbon Hydrogen*, COLUMBIA UNIVERSITY CENTER ON GLOBAL ENERGY POLICY (2021), https://www.energypolicy.columbia.edu/publications/hydrogen-fact-sheet-production-of-low-carbon-hydrogen/.

and other fossil fuel companies claim they can capture and store almost all of this carbon dioxide to make the hydrogen production process "clean"—that is, free of climate-warming greenhouse gas emissions. But the science is clear: hydrogen production with carbon capture, known as "blue" hydrogen production, is an extremely dirty process for several reasons.

First, since blue hydrogen production consumes large quantities of natural gas, the upstream emissions of that gas contribute significantly to the carbon intensity of blue hydrogen.[7] Upstream emissions are the greenhouse gas emissions associated with the production, processing, and distribution of natural gas—in other words, the climate-warming emissions that occur before the gas arrives at a blue hydrogen production facility. In its work session with RDC on April 22, Tallgrass sought to address the issue of upstream emissions by pledging to purchase so-called "responsibly sourced gas," which refers to gas that one of a handful of companies has certified as meeting some threshold of low-emissions production. But "responsibly sourced gas" is both a scam and another false climate solution that the fossil fuel industry uses to prolong our reliance on natural gas. The companies that certify gas as "responsibly sourced" are completely unregulated and largely nontransparent, and there are no uniform emissions standards or monitoring methods to which certification companies must adhere.[8] Indeed, the gas certification market has been described as "a Wild West frontier filled with mudslinging and smoke and mirrors—and the gunslingers are deciding the rules as they go along."[9] Certification companies often have close financial ties with the gas producers they certify,[10] and recent research has exposed the companies' failure to detect significant pollution events.[11]

Second, carbon capture has had an abysmal track record of failures and expensive project cancellations, and the high capture rates that industry often promises have never been achieved in any large-scale commercial plant.[12] As the CEO of the energy company Enel Group said about

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[7] See generally, Robert W. Howarth & Mark Z. Jacobson, *How green is blue hydrogen?*, ENERGY SCIENCE & ENGINEERING (2021), https://doi.org/10.1002/ese3.956 [hereinafter Howarth & Jacobson]; Thomas Longden et al., *"Clean" hydrogen? – Comparing the emissions and costs of fossil fuel versus renewable electricity based hydrogen*, APPLIED ENERGY (2022), https://doi.org/10.1016/j.apenergy.2021.118145 [hereinafter Longden et al.]; David Schlissel & Anika Juhn, *Blue Hydrogen: Not Clean, Not Low Carbon, Not a Solution*, INSTITUTE FOR ENERGY ECONOMICS AND FINANCIAL ANALYSIS (2023), https://ieefa.org/sites/default/files/2024-01/Blue%20Hydrogen%20Not%20Clean%20Not%20Low%20Carbon_September%202023_0.pdf [hereinafter Schlissel & Juhn].

[8] Oil Change International & Earthworks, *Certified Disaster: How Project Canary & Gas Certification are Misleading Markets & Governments*, at pp. 4-12, (2023), https://earthworks.org/wp-content/uploads/2023/04/certified_disaster_report_FINAL_04_14_2023.pdf [hereinafter OCI & Earthworks].

[9] Jeffrey Ball, *Inside the high-dollar race to sell natural gas as low carbon*, CANARY MEDIA (2023), https://www.canarymedia.com/articles/liquefied-natural-gas/inside-the-high-dollar-race-to-sell-natural-gas-as-low-carbon.

[10] Hannah Story Brown, *The Unholy Alliance Between 'Certified' Clean Natural Gas Producers and the Certifying Companies*, THE AMERICAN PROSPECT (2023), https://prospect.org/environment/2023-08-03-unholy-alliance-certified-clean-natural-gas/; OCI & Earthworks, at p. 29.

[11] OCI & Earthworks, at pp. 14-27.

[12] Schlissel & Juhn, at p. 17; Nan Wang et al., *What went wrong? Learning from three decades of carbon capture, utilization and sequestration (CCUS) pilot and demonstration projects*, ENERGY POLICY (2021), https://doi.org/10.1016/j.enpol.2021.112546; Government Accountability Office, *Carbon Capture and Storage: Actions Needed to Improve DOE Management of Demonstration Projects*, (2021), https://www.gao.gov/assets/d22105111.pdf [hereinafter GAO 2021]; Molly Taft, *The Energy Department Blew $1.1 Billion on Carbon Capture Projects That Were Mostly Failures*, GIZMODO (2022), https://gizmodo.com/the-energy-department-blew-1-1-billion-on-carbon-captu-1848338427.

carbon capture in 2021, "The fact is, it doesn't work, it hasn't worked for us so far...And there is a rule of thumb here: If a technology doesn't really pick up in five years—and here we're talking about more than five, we're talking about 15, at least—you better drop it."[13]

In its work session with RDC, Tallgrass claimed that its planned blue hydrogen production plants will capture 97% of the carbon dioxide produced. There is absolutely no convincing evidence that the company will be able to achieve this capture rate. Currently, there are only three commercial-scale blue hydrogen production facilities in the world, and the highest capture rate that any of them has managed is 68% (the Quest facility in Alberta, Canada).[14] The facility's true capture rate is even lower, since the 68% figure appears to ignore emissions associated with the carbon capture process itself[15]—the highly energy-intensive process of capturing carbon dioxide is often powered by electricity generated from burning additional natural gas. Indeed, scientists have found that improving carbon dioxide capture rates would not, in fact, have a significant impact on the greenhouse gas footprint of blue hydrogen production because capturing more carbon dioxide takes more energy, and the upstream emissions of the additional natural gas burned to generate that energy offsets much of the carbon dioxide emissions reduction achieved by capture.[16]

Tallgrass appears to base its inflated 97% carbon capture prediction on a small-scale demonstration project; however, small-scale carbon capture tests with reported capture rates of 90-95% have repeatedly failed to translate for large-scale projects.[17] As one energy company noted about carbon capture, "[a] technology needs to be demonstrated [at larger scale] to identify and address operational issues before being considered commercially available."[18] Finally, plans for blue hydrogen production assume that carbon dioxide can be stored indefinitely after capture. But there is no evidence that permanent underground storage of carbon dioxide—without leakage into the atmosphere—is even possible.[19]

Third, Tallgrass has never addressed the downstream (post-production) emissions impact of its blue hydrogen—that is, the greenhouse gas emissions associated with compressing, storing, and transporting the hydrogen to the sites where it would be used and/or stored. These emissions

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[13] Anmar Frangoul, *'For us, it is not a solution': Enel CEO skeptical over the use of carbon capture*, CNBC (2021), https://www.cnbc.com/2021/11/25/climate-enel-ceo-skeptical-of-carbon-capture-and-storage-technology.html.
[14] Schlissel & Juhn, at p. 18.
[15] *Id*.
[16] Howarth & Jacobson, at p. 1684.
[17] Schlissel & Juhn, at pp. 21-22.
[18] Southern Company, *Comments of Southern Company to EPA's Pre-Proposal Docket on Greenhouse Gas Regulations for Fossil Fuel-fired Power Plants*, at p. 7, (2022), https://www.regulations.gov/comment/EPA-HQ-OAR-2022-0723-0029.
[19] Howarth & Jacobson, at p. 1685; see also, Intergovernmental Panel on Climate Change, *Carbon Dioxide Capture and Storage*, at p. 373, (2005), https://www.ipcc.ch/site/assets/uploads/2018/03/srccs_wholereport-1.pdf ("CO2 storage is not necessarily permanent. Physical leakage from storage reservoirs is possible via (1) gradual and longterm release or (2) sudden release of CO2 caused by disruption of the reservoir."). In addition to concerns about leakage, there are significant concerns about the safety and security of storing carbon dioxide underground, including "the risk of seismic disruptions of underground storage areas and contamination of groundwater supplies." Suzanne Mattei, *Blue Hydrogen Has Weak Case When It Comes to Emission Reductions*, at p. 4, INSTITUTE FOR ENERGY ECONOMICS AND FINANCIAL ANALYSIS (2022), https://ieefa.org/wp-content/uploads/2022/02/Blue-Hydrogen-Has-Weak-Case-When-It-Comes-to-Emission-Reductions_February-2022.pdf.

would include (1) greenhouse gas emissions from the production of all the electricity needed to compress, store, and transport the hydrogen; and (2) downstream leakage of the hydrogen produced.[20] Downstream greenhouse gas emissions from electricity production are alarming because of the huge amount of power needed to compress and transport hydrogen (especially over long distances like Tallgrass's proposed 200-mile pipeline).[21] Downstream hydrogen leakage is also a major concern. Recent scientific research has found that hydrogen is an indirect but potent greenhouse gas with over 35 times the global warming power of carbon dioxide in the short term and 12 times the warming power of carbon dioxide in the longer term.[22] Hydrogen is an extremely small and slippery molecule with a high potential for leakage at every stage of its lifecycle, "from production to compression to pipeline transport through final use."[23] Although we cannot predict the loss rate of Tallgrass's blue hydrogen value chain since current leak detection technology for hydrogen is insufficiently advanced, the long distances of pipeline transport envisioned for this project—from Tallgrass's production facilities in the Farmington area to end-users potentially 200 miles away—indicate that hydrogen leakage rates could be very high.[24]

But without even including these downstream emissions in their analyses, scientists have found that "blue hydrogen has large climatic consequences."[25] According to a seminal study conducted by world-renowned methane and carbon capture scientists, replacing natural gas with blue hydrogen could be even more emissions-intensive because of "the large quantities of natural gas consumed in the production of hydrogen."[26] In other words, since so much natural gas is required to power the blue hydrogen production process, the upstream emissions of all that gas more than make up for the small reduction in emissions achieved by carbon capture. The scientists concluded, "**there really is no role for blue hydrogen in a carbon-free future**...we see no advantage in using blue hydrogen powered by natural gas compared with simply using the natural gas directly for heat...We suggest that blue hydrogen is best viewed as a distraction, something that may delay needed action to truly decarbonize the global energy economy."[27] Another scientific study has similarly found that blue hydrogen "will always have substantial emission intensities" due to upstream emissions from the natural gas used to produce it.[28]

[20] Schlissel & Juhn, at pp. 23-25.
[21] *Id.*; DOE Office of Energy Efficiency & Renewable Energy, *Gaseous Hydrogen Compression*, https://www.energy.gov/eere/fuelcells/gaseous-hydrogen-compression (indicating that it takes about three times as much energy to compress hydrogen as it takes to compress the same amount of natural gas).
[22] Maria Sand et al., *A multi-model assessment of the Global Warming Potential of hydrogen*, COMMUNICATIONS EARTH & ENVIRONMENT (2023), https://doi.org/10.1038/s43247-023-00857-8; Ilissa Ocko and Steven Hamburg, *New research reaffirms hydrogen's impact on the climate, provides consensus*, EDF BLOGS (2023), https://blogs.edf.org/energyexchange/2023/07/19/new-research-reaffirms-hydrogens-impact-on-the-climate-provides-consensus/.
[23] Schlissel & Juhn, at p. 23.
[24] *Id.*, at pp. 23-24.
[25] Howarth & Jacobson, at p. 1685.
[26] *Id.*, at p. 1683.
[27] *Id.*, at p. 1685.
[28] Longden et al., at p. 4.

3. Tallgrass's pipeline presents serious safety concerns, and federal regulations do not address the unique dangers of hydrogen pipelines—in part because research into hydrogen pipeline safety is not sufficiently advanced.

One of Tallgrass's favorite talking points—presumably intended to allay community members' fears about the safety of a massive hydrogen pipeline coursing through residential areas—is that hydrogen is "in the air we breathe," "in the water we drink," and "in our bodies." Unfortunately, just because an element or substance exists naturally in the human body (or in air or water) does not mean its transmission by pipeline is safe. Plenty of substances—for example, ammonia, carbon monoxide, nitric oxide, and hydrochloric acid—play important roles in the human body but are otherwise harmful to human health.

Several of hydrogen's chemical properties make its transmission by pipeline potentially much more dangerous than conventional gas pipelines. Hydrogen is not only highly leak prone but also has a much wider flammability range, lower autoignition temperature, faster burn speed, and higher combustion efficiency than methane.[29] In other words, hydrogen ignites more easily, is much more prone to explode, and can produce larger and hotter fires and explosions than methane. In addition, hydrogen flames are invisible in daylight and thus difficult to detect (unlike methane, which burns blue in daylight).[30] One study cautions that if pipeline damage results in an uncontrollable release of hydrogen, a potentially lethal hydrogen jet fire can ensue.[31] Hydrogen's chemical properties raise serious concerns about the safety of its transportation by pipeline through residential areas—concerns that are exacerbated by the inadequacy of existing federal regulations and the emerging nature of hydrogen technology.

A. Hydrogen pipelines are not well-regulated.

Tallgrass often states in its marketing materials that hydrogen pipelines are "tried, true, and tested technology." But hydrogen pipelines are extremely uncommon, comprising only one-half of one percent of gas transmission pipelines in the U.S.[32]; there are fewer than 1,600 miles of pure hydrogen pipeline, compared to 3 million miles of natural gas pipeline.[33] Moreover, 85% of current hydrogen pipeline mileage exists in just three major transmission pipelines, all of them concentrated in rural areas of the Gulf Coast region.[34] The limited mileage and geographic scope of hydrogen pipelines—as well as the small number of hydrogen pipeline operators—indicate that industry and regulators do not have anywhere close to the same experience with hydrogen as they do with natural gas pipelines, and especially not in residential areas.[35] Tallgrass, in

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[29] Accufacts Inc., *Report: Safety of Hydrogen Transportation by Gas Pipelines*, at pp. 4-6, (2022), https://pstrust.org/wp-content/uploads/2022/11/11-28-22-Final-Accufacts-Hydrogen-Pipeline-Report.pdf [hereinafter Accufacts Report].

[30] *Id.*, at p. 4.

[31] Andrzej Witkowski et al., *Comprehensive analysis of hydrogen compression and pipeline transportation from thermodynamics and safety aspects*, at pp. 2514-2518, ENERGY (2017), https://doi.org/10.1016/j.energy.2017.05.141.

[32] Accufacts Report, at p. 10.

[33] DOE Office of Energy Efficiency & Renewable Energy, *Hydrogen Pipelines*, https://www.energy.gov/eere/fuelcells/hydrogen-pipelines; U.S. Energy Information Administration, *Natural gas explained: Natural gas pipelines*, https://www.eia.gov/energyexplained/natural-gas/natural-gas-pipelines.php.

[34] Accufacts Report, at p. 10.

[35] *Id*.

particular, has no experience at all with hydrogen pipelines or, for that matter, *any* hydrogen infrastructure.

Tallgrass frequently repeats that hydrogen pipelines have been regulated by the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) since 1970. But PHMSA does not have hydrogen-specific regulations; instead, the standards that apply to hydrogen pipelines (49 C.F.R. Parts 191 and 192) "apply generally to pipeline transportation of any 'gas'"[36] and were designed with a primary focus on natural gas.[37] Because these general standards for "gas" pipelines do not consider the unique safety and environmental risks that hydrogen pipelines pose, environmental groups have requested that PHMSA conduct a separate rulemaking on hydrogen pipelines.[38]

Indeed, PHMSA has noted some of the particular safety issues associated with hydrogen pipelines and acknowledged that general "gas" regulations may not adequately address these concerns. In its recent Proposed Rule on Gas Pipeline Leak Detection and Repair, PHMSA observed that "certain part 192-regulated gas pipeline facilities (e.g., gas pipeline facilities transporting hydrogen gas) may be particularly susceptible to leaks because of (inter alia) the smaller size of hydrogen gas molecules compared to methane molecules of which natural gas is mostly composed."[39] PHMSA also recognized that "the limitations of current part 191 and 192 regulations for meaningful and timely identification, repair, and reporting of leaks discussed in this section II.D. may be particularly acute in connection with the pipeline transportation of gaseous hydrogen, which is a much smaller molecule (with potentially greater leakage potential) than methane."[40]

Hydrogen pipeline operators' annual reports to PHMSA underscore the woeful inadequacy of existing leak identification, repair, and reporting standards for hydrogen pipelines. Pipeline operators must annually report the number of leaks repaired during the previous year and the number of known leaks planned for repair in the coming year.[41] According to a review of recent PHMSA data, "all [31] U.S. hydrogen pipeline operators reported zero leaks repaired or planned for repair in 2022, and reported very few leaks in the preceding years [4 in 2021, 2 in 2020, 3 in 2019, and 2 in 2018]—demonstrating that existing leak survey practices are of limited effectiveness."[42]

Although PHMSA has recognized the importance of strengthening its oversight of hydrogen pipelines, federal regulations are unlikely to improve anytime soon. In its ongoing rulemaking titled "Pipeline Safety: Gas Pipeline Leak Detection and Repair," PMHSA proposed more protective standards for both natural gas and hydrogen pipelines, including requirements for

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[36] PHMSA Proposed Rule, *Pipeline Safety: Gas Pipeline Leak Detection and Repair*, at p. 31926, (2023), https://www.govinfo.gov/content/pkg/FR-2023-05-18/pdf/2023-09918.pdf [hereinafter PHMSA Proposed Rule].
[37] Environmental Defense Fund et al., *Comments on PHMSA Proposed Rule*, at p. 110, (2023), https://www.regulations.gov/comment/PHMSA-2021-0039-26522 [hereinafter EDF Comments].
[38] EDF Comments, at p. 116.
[39] PHMSA Proposed Rule, at p. 31899 (note 75).
[40] *Id.*, at p. 31906 (note 123).
[41] 49 C.F.R. § 191.17, https://www.ecfr.gov/current/title-49/subtitle-B/chapter-I/subchapter-D/part-191/section-191.17.
[42] EDF Comments, at p. 111.

more frequent leak surveys and faster repair timelines.[43] PHMSA also proposed that "Grade 2 is the minimum priority grade for leaks of gaseous hydrogen"[44] (referring to the leak classification system in which Grade 1 leaks are considered hazardous and in need of immediate repair, Grade 2 leaks require "a scheduled repair based on probable future hazard," and Grade 3 leaks do not require repair[45]). In seeking to ensure that hydrogen leaks are never assigned the lowest risk classification, PHMSA wrote, "PHMSA understands these heightened safety requirements (compared to natural gas pipelines) are warranted because hydrogen is itself a flammable gas with a lower explosive limit and lower autoignition temperature than methane."[46] But in March 2024, PHMSA's Gas Pipeline Advisory Committee voted *not* to support the application of the Proposed Rule to hydrogen pipelines.[47] Industry comments on the Proposed Rule opposed hydrogen pipeline-specific provisions and "requested that PHMSA delay the hydrogen aspects of the proposal."[48] Industry representatives on the Gas Pipeline Advisory Committee agreed.[49]

B. Hydrogen pipelines are an emerging technology about which many open questions remain—including questions about how to detect hydrogen leaks and how to calculate the Potential Impact Radius (or blast zone) of a hydrogen pipeline.

In arguing that PHMSA's Proposed Rule should not apply to hydrogen pipelines, industry representatives on the agency's Gas Pipeline Advisory Committee emphasized that hydrogen projects are "at a very early research and development stage" and that regulations at this early stage would hinder the flexibility that industry needs for innovation.[50] Although this is a common industry talking point for delaying regulation (which is most effective and protective of the public when promulgated *proactively*—before projects get off the ground—rather than reactively), it is certainly true that much more research on hydrogen pipeline construction, safety, and monitoring is needed before PHMSA can develop a thorough regulatory framework for hydrogen pipelines. Industry representatives on the Gas Pipeline Advisory Committee reported that they are "testing whether or not [hydrogen projects] can work" and that "this is expected to evolve not over months and years, but over decades. We're truly decades away from being at scale of moving hydrogen in pipelines."[51] Industry representatives referred to hydrogen as "an industry that, frankly, doesn't yet exist,"[52] frequently acknowledging that "there are a lot of

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[43] PHMSA Proposed Rule (see generally for more protective standards proposed; see p. 31926 for statement that "the proposals in this [Proposed Rule] apply the same requirements to hydrogen gas pipelines (and other gas pipelines) as to natural gas pipelines.").
[44] *Id.*, at p. 31941.
[45] *Id.*, at pp. 31917-31918.
[46] *Id.*, at p. 31941.
[47] PHMSA Gas Pipeline Advisory Committee, *Final Combined LDAR Vote Slides*, at Slide 35, (2024), https://www.regulations.gov/document/PHMSA-2024-0005-0288 (showing that the committee voted 5-8 against applying the Proposed Rule to hydrogen pipelines).
[48] PHMSA Gas Pipeline Advisory Committee, *LDAR PAC pt. 2 Slides_March 2024*, at Slide 55, (2024), https://www.regulations.gov/document/PHMSA-2024-0005-0006 [hereinafter GPAC Discussion Slides].
[49] PHMSA Gas Pipeline Advisory Committee, *PHMSA Day 2 LDAR Transcript 03262024*, at pp. 18-20, 38, 58-60, 82-84, 93-95, 131-133, (2024), https://www.regulations.gov/document/PHMSA-2024-0005-0305 (statements from multiple industry representatives on the committee arguing against applying the Proposed Rule to hydrogen pipelines) [hereinafter GPAC Transcript].
[50] *Id.*, at pp. 19-20.
[51] *Id.*, at p. 19.
[52] *Id.*, at p. 20.

questions" and "uncertainty," "we don't know" enough, and "we don't fully understand" hydrogen.[53]

The emerging nature of hydrogen pipeline technology is evident from the "knowledge gaps" identified at PHMSA's Pipeline Safety Research & Development Forum last year.[54] Many of the topics requiring additional research are relevant to pipeline safety, including welding standards, development of coatings and liners, engineering guidance on how to assess system integrity and performance, pipeline repair and maintenance, leak detection and quantification, odorization (to help detect leaks since hydrogen is odorless), and development of a Potential Impact Radius (which we discuss further below).[55] PHMSA is currently funding twelve active research projects on hydrogen and soliciting proposals for additional projects to fill these knowledge gaps.[56] Research studies take years—often more than a few years—to complete.

We are particularly concerned about two of the knowledge gaps that PHMSA has highlighted. First, leak detection technology for hydrogen pipelines is not sufficiently advanced and much less sensitive than methane detection technology, which raises both safety and climate concerns (since hydrogen is a potent indirect greenhouse gas). According to hydrogen pipeline operators who commented on PHMSA's Proposed Rule, there is no commercially available leak detection technology that can reliably detect hydrogen at the default performance standard for natural gas pipelines (5 parts per million); in fact, leak detection devices for pure hydrogen pipelines can only detect leaks that produce a reading of 25 parts per million or more.[57] An industry trade group commented that hydrogen (unlike methane) can be detected only when the sensor is "in direct contact with a potential hydrogen leak plume" and, as a result, "hydrogen cannot be reliably detected remotely outside of the leak plume" (unlike methane, for which "surveying large distances of pipeline through remote sensing is practical").[58] According to one energy expert serving on PHMSA's Gas Pipeline Advisory Committee, hydrogen leak detection technologies "are probably where methane technologies were about ten years ago."[59]

Second, we do not currently know the Potential Impact Radius for hydrogen pipelines, which means that High Consequence Areas cannot be identified. Under PHMSA regulations, a pipeline's Potential Impact Radius—colloquially known as the "blast zone"—is the distance within which a pipeline explosion could result in death, injury, or significant property damage.[60]

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[53] *Id.*, at pp. 54, 66, 82, 84.
[54] Vincent Holohan, *PHMSA Hydrogen Pipeline Safety and Challenges*, at p. 6, (2024), https://www.energy.gov/sites/default/files/2024-02/h2-infrastructure-strategies-workshop-holohan.pdf.
[55] *Id*.
[56] Tristan Brown, *Statement Before the U.S. House of Representatives Subcommittee on Railroads, Pipelines, and Hazardous Materials*, at p. 7, (2024), https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2024-05/Written%20Testimony%20for%20Tristan%20Brown%20House%20TI%20PS%20Hearing%20-%20May%207%202024.pdf.
[57] GPAC Discussion Slides, at Slides 60, 62.
[58] *Id.*, at Slide 61. In its work session with RDC, Tallgrass offered to show a video featuring the company's control room and system for remote pipeline monitoring. We note that Tallgrass does not operate any hydrogen pipelines, so its control room would be used for monitoring oil and gas pipelines only. According to the industry trade group quoted here, leak detection technology for hydrogen is so underdeveloped at this stage that it is not even clear how effective remote monitoring of a hydrogen pipeline would be.
[59] GPAC Transcript, at p. 26.
[60] PHMSA, *Fact Sheet: High Consequence Areas (HCA)*, https://primis.phmsa.dot.gov/comm/factsheets/fshca.htm.

The Potential Impact Radius is used to depict the pipeline's Potential Impact Circles, and High Consequence Areas are areas within Potential Impact Circles that meet certain criteria related to human occupancy.[61] In other words, High Consequence Areas are populated areas where significant injury, death, or damage could occur in the event of a pipeline explosion.

No one—not even Tallgrass—knows the Potential Impact Radius of the proposed pipeline or can identify the High Consequence Areas along the pipeline route. Potential Impact Radius is calculated using a formula that takes into account the pipeline pressure, pipeline diameter, and combustion heat of the gas being transported.[62] PHMSA is not anywhere close to determining the Potential Impact Radius formula for hydrogen pipelines: in April 2024, the agency began accepting research proposals for multiyear studies on this topic, and if studies are undertaken (which depends on the quality of the proposals submitted), a multiyear rulemaking process may follow.[63] Moreover, as Tallgrass reported in its work session, the company does not yet know the pipeline diameter. (Tallgrass is apparently considering pipeline diameters of up to 40 inches. We note that, according to PHMSA data, no existing hydrogen pipelines are larger than 20 inches in diameter and most existing hydrogen pipelines are 10 inches or smaller.[64] The larger the diameter of a pipeline, the larger its Potential Impact Radius[65] and the more gas that can be released in the event of a leak or pipeline rupture.[66])

Finally, even if there were a Potential Impact Radius formula for hydrogen pipelines, we would be extremely concerned about the protectiveness of the formula: the National Transportation Safety Board has identified multiple major flaws in PHMSA's Potential Impact Radius methodology and recommended that PHMSA revise the formula, which was devised by an industry-commissioned group called the Gas Research Institute (now part of GTI Energy).[67] In August 2022, the National Transportation Safety Board released a report detailing the results of its investigation into the rupture of a 30-inch natural gas pipeline in Danville, Kentucky in 2019.[68] Although "[t]he [Potential Impact Radius] at the rupture site calculated under PHMSA regulations was 633 feet," the body of the person killed by the pipeline rupture "was found 640 feet south of the pipeline fire and natural gas fire, and damage to homes was found up to 1,100 feet from the rupture crater."[69] The National Transportation Safety Board noted that "[p]ast

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[61] *Id*.
[62] PHMSA Notice, *Pipeline Safety: High Consequence Area Identification Methods for Gas Transmission Pipelines*, at p. 90063, (2016), https://www.govinfo.gov/content/pkg/FR-2016-12-13/pdf/2016-29880.pdf.
[63] Discussion with PHMSA.
[64] PHMSA, *Gas Distribution, Gas Gathering, Gas Transmission, Hazardous Liquids, Liquefied Natural Gas (LNG), and Underground Natural Gas Storage (UNGS) Annual Report Data*, https://www.phmsa.dot.gov/data-and-statistics/pipeline/gas-distribution-gas-gathering-gas-transmission-hazardous-liquids.
[65] Discussion with PHMSA; see also, 49 C.F.R. § 192.903, https://www.ecfr.gov/current/title-49/subtitle-B/chapter-I/subchapter-D/part-192/subpart-O/section-192.903 (Potential Impact Radius formula shows clearly that the Potential Impact Radius of a pipeline increases as the pipeline diameter increases).
[66] Accufacts Report, at p. 10.
[67] Mike Soraghan, *Gas pipelines explode. How far away is enough to survive?*, E&E NEWS BY POLITICO (2023), https://www.eenews.net/articles/gas-pipelines-explode-how-far-away-is-enough-to-survive/ [hereinafter E&E News Report].
[68] National Transportation Safety Board, *Pipeline Investigation Report: Enbridge Inc. Natural Gas Transmission Pipeline Rupture and Fire*, (2022), https://www.ntsb.gov/investigations/AccidentReports/Reports/PIR22002.pdf [hereinafter NTSB Enbridge Report].
[69] *Id.*, at p. 37.

accidents have also demonstrated the insufficiency of the [Potential Impact Radius] calculation" and cited: a pipeline rupture in Carlsbad, New Mexico in 2019, in which the Potential Impact Radius was calculated as 598 feet under PHMSA regulations but the twelve people killed were "camped about 675 feet from the rupture crater"; a pipeline rupture in San Bruno, California in 2010, in which the calculated Potential Impact Radius was 414 feet "but homes were damaged up to 600 feet from the rupture origin"; and a pipeline rupture in Sissonville, West Virginia in 2012, in which thermal damage was evident "up to 610 feet from the rupture origin" but the Potential Impact Radius was calculated as only 567 feet.[70] In a subsequent (April 2023) investigation report of a pipeline rupture in Coolidge, Arizona in 2021, the National Transportation Safety Board once again found "discrepancies between the calculated [Potential Impact Radius] and evidence collected at accident scenes": this time, the Potential Impact Radius for the rupture site was calculated as 636 feet but "damage to the surrounding vegetation was found up to 878 feet from the rupture crater."[71]

These repeated findings prompted the National Transportation Safety Board to examine the assumptions on which the Potential Impact Radius formula is based. The investigative agency found that PHMSA is using many "nonconservative" and incorrect assumptions in its formula—including faulty figures for gas flow rate, gas temperature, acceptable heat radiation intensity, and human response time—and, as a result, High Consequence Areas identified using the formula "do not include the full area at risk."[72] The National Transportation Safety Board recommended that PHMSA "revise the regulations regarding potential impact radius methodology based on data from recent natural gas pipeline ruptures and human response considerations."[73]

Some of the formula's flawed assumptions about human response, for example, are that a person just outside the Potential Impact Radius will decide to flee within five seconds of a pipeline explosion, run at a speed of about 5.5 miles per hour for 25 seconds, and successfully find sufficient shelter from the fire.[74] But in many scenarios—for example, if someone is sleeping at the time of the pipeline rupture, in an interior room and therefore not instantly aware of an emergency, or assisting other household members who need to evacuate—acting within five seconds is not realistic.[75] Moreover, elderly or mobility-impaired people, people with certain medical conditions, and young children cannot run at 5.5 miles per hour.[76] One study by an engineering firm found that the assumptions on which the Potential Impact Radius formula is based would likely result in a mortality rate of over 50 percent for elderly people (60-80 years old).[77] Another erroneous assumption in the formula is the intensity of heat radiation exposure considered acceptable: the figure used is "at least 3.3 to 10 times the actual maximum survivable

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[70] *Id*.
[71] National Transportation Safety Board, *Pipeline Investigation Report: Kinder Morgan Natural Gas-Fueled Explosion*, at p. 10, (2023), https://www.ntsb.gov/investigations/AccidentReports/Reports/PIR2301.pdf.
[72] NTSB Enbridge Report, at pp. 37-39.
[73] *Id.*, at p. viii.
[74] *Id.*, at p. 38.
[75] *Id.*, at p. 39.
[76] *Id*.
[77] *Id.*; DEATECH Consulting Company, *Analysis of Report No. GRI – 00/0189 on "A Model for Sizing High Consequence Areas Associated with Natural Gas Pipelines,"* at pp. 31-32, (2008), https://pstrust.org/docs/AnlyssRprtNoGRI000189.pdf.

level of heat radiation, depending on the length of time the public is exposed to the heat intensity before they are able to leave the area"—and that's assuming that people exposed to the heat are wearing fire-resistant clothing, which cannot be expected.[78]

Indeed, one pipeline consultant who worked for Exxon Mobil for over three decades calls the Potential Impact Radius formula "a fantasy story, like a fairy tale" and "believes PHMSA chose to use an industry-commissioned formula in order to avoid opposition from pipeline companies."[79] PHMSA has still not implemented the National Transportation Safety Board's recommendation to revise the Potential Impact Radius formula.[80]

C. *Ammonia is a toxic hazard and transporting it via pipeline in residential areas is extremely dangerous.*

In its work session with RDC, Tallgrass stated that it wishes to leave open the option of transporting ammonia rather than hydrogen through the pipeline (the company cited the high costs of transporting hydrogen over long distances, which we discuss below). Ammonia is a toxic inhalation hazard chemical that can corrode the lungs, eyes, and skin upon exposure.[81] There were 53 reported ammonia pipeline accidents between 2002 and 2010.[82] When an ammonia pipeline ruptured and produced a toxic plume near Tekemah, Nebraska in 2016, a local resident who left his home to investigate the scene died of respiratory failure from ammonia exposure.[83] The Department of Homeland Security recently announced that it is studying ammonia leaks and spills and that ammonia was "selected specifically" for the safety testing "because it ranked highest when relevant hazards were indexed and analyzed."[84] These hazards included the "number of accidents and injuries, and level of toxicity, vapor pressure, flammability and property damage" from ammonia transportation.[85]

Finally, we note a couple of additional safety concerns on the minds of community members. As the climate crisis intensifies, earth movement and other geological hazards—including earthquakes, erosion, soil settlement, slope instability, and subsidence—may increasingly threaten the integrity of pipelines. In recent years, PHMSA has issued two advisory bulletins regarding "the serious safety-related issues that can result from" such geologic conditions.[86] We

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[78] NTSB Enbridge Report, at p. 38.
[79] E&E News Report.
[80] NTSB, *Safety Recommendation P-22-001 to PHMSA*, https://data.ntsb.gov/carol-main-public/sr-details/P-22-001 (showing that the National Transportation Safety Board's recommendation to PHMSA is classified as "Open," i.e. unresolved).
[81] U.S. CDC, *Ammonia: Exposure, Decontamination, Treatment*, https://www.cdc.gov/chemicalemergencies/factsheets/ammonia.html.
[82] Jeff Wiese, *Statement Before the U.S. House of Representatives Subcommittee on Management, Investigations, and Oversight*, (2010), https://www.transportation.gov/testimony/pipeline-and-hazardous-materials-safety-administration%E2%80%99s-phmsa-efforts-advancing-pipeline.
[83] National Transportation Safety Board, *Pipeline Accident Brief: Magellan Pipeline Anhydrous Ammonia Release*, at p. 1, (2016), https://www.ntsb.gov/investigations/AccidentReports/Reports/PAB2001.pdf.
[84] U.S. DHS, *Feature Article: Securing Transportation of Ammonia*, (2021), https://www.dhs.gov/science-and-technology/news/2021/06/17/feature-article-securing-transportation-ammonia.
[85] *Id*.
[86] PHMSA Notice, *Pipeline Safety: Potential for Damage to Pipeline Facilities Caused by Earth Movement and Other Geological Hazards*, (2019), https://www.govinfo.gov/content/pkg/FR-2019-05-02/pdf/2019-08984.pdf;

are also deeply concerned that the Navajo Nation does not have effective emergency response systems in place for dealing with incidents and environmental hazards from *existing* pipeline infrastructure, let alone from additional infrastructure about which little is currently known.[87] As the recent Running Horse Pipeline crude oil spill in Shiprock highlighted,[88] the Navajo Nation must focus on addressing and remediating ongoing harms of the coal, oil, gas, and uranium industries before allowing new and untested types of energy infrastructure—such as hydrogen pipelines—on Navajo lands.

In short, hydrogen (and ammonia) pipelines pose serious concerns—especially when sited in proximity to people, as Tallgrass's proposed pipeline would be. Far from being "tried, true, and tested," hydrogen pipelines are an emerging technology for which specific regulatory standards have not been developed. Before PHMSA can establish a robust regulatory framework for hydrogen pipelines, research gaps in key areas of hydrogen pipeline construction, maintenance, and safety need to be filled. Perhaps most alarmingly, leak detection technology is in its early stages of development and PHMSA has neither determined a Potential Impact Radius for hydrogen pipelines nor implemented crucial recommendations to revise its Potential Impact Radius methodology. **Tallgrass seeks the Navajo Nation's approval for its pipeline without even being able to identify the pipeline's impact area. The Navajo Nation should not be Tallgrass's testing ground for emerging hydrogen pipeline technology.**

4. Contrary to Tallgrass's claims, burning hydrogen does not produce water vapor only—hydrogen combustion also emits toxic nitrogen oxides. Blue hydrogen production, too, emits nitrogen oxides and other health-harming pollution.

Tallgrass and its allied lobby group Four Corners Clean Energy Alliance continue to repeat the falsehood that "[h]ydrogen produces only water and heat when burned with oxygen, with no harmful pollutants or greenhouse gas emissions."[89] This is only the case when hydrogen is burned in a fuel cell. Plenty of potential applications for hydrogen involve combustion that does not occur in fuel cells, and in these cases, toxic nitrogen oxides are emitted.[90] Nitrogen oxides are associated with asthma, heart and lung damage, and premature death.[91] These potent pollutants also contribute to global warming, and nitrous oxide (one of the nitrogen oxides produced by burning hydrogen) is a persistent greenhouse gas.[92] One study estimated that

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PHMSA Notice, *Pipeline Safety: Potential for Damage to Pipeline Facilities Caused by Earth Movement and Other Geological Hazards*, (2022), https://www.govinfo.gov/content/pkg/FR-2022-06-02/pdf/2022-11791.pdf.

[87] For example, the Navajo Nation currently lacks an "811" call-before-you-dig system (as RDC members pointed out during the work session with Tallgrass).

[88] Arlyssa D. Becenti, *Shiprock residents seek more answers about a crude oil spill on the Navajo Nation*, AZ CENTRAL (2023), https://www.azcentral.com/story/news/local/arizona/2023/12/22/shiprock-residents-say-navajo-leaders-responded-slowly-to-oil-spill/72013364007/.

[89] Four Corners Clean Energy Alliance, *What's with the Hype Around Hydrogen?*, https://fourcornerscleanenergyalliance.org/the-hype-around-hydrogen/.

[90] Earthjustice, *Reclaiming Hydrogen for a Renewable Future*, at p. 18, (2021), https://earthjustice.org/wp-content/uploads/hydrogen_earthjustice_2021.pdf [hereinafter Earthjustice Report].

[91] U.S. EPA, *Basic Information about NO2*, https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects; California Air Resources Board, *Nitrogen Dioxide & Health*, https://ww2.arb.ca.gov/resources/nitrogen-dioxide-and-health.

[92] Earthjustice Report, at p. 18; Paul Martin, *Hydrogen – The Decarbonization Problem*, at min. 14:00-14:52, THE GREAT SIMPLIFICATION (2023), https://www.youtube.com/watch?v=YVjEK_PjvD0.

burning hydrogen would release over six times as many nitrogen oxide emissions as burning methane due to hydrogen's higher flame temperature.[93]

Fossil fuel-based hydrogen production also emits health-harming pollution, including emissions of nitrogen oxides, fine particulate matter, carbon monoxide, and volatile organic compounds.[94] Carbon capture does not reduce emissions of most of these pollutants. In fact, some scientists predict that the additional energy needed for carbon capture "will lead to lifecycle *increases*" in pollutant emissions.[95] Although Tallgrass's blue hydrogen production plants may capture some of the carbon dioxide they produce, they will still likely be significant sources of air pollution.

5. Tallgrass's risky hydrogen business venture is unlikely to bring significant economic benefits to the Navajo Nation—let alone benefits that justify the considerable climate, safety, and health impacts of the proposed infrastructure.

Hydrogen production (whether green or blue), compression, storage, and transportation are highly energy-intensive and expensive processes. The market forces for hydrogen are not favorable, investors are leery, and hydrogen has been described by experts as a "competitive laggard."[96] In its work session with RDC, Tallgrass painted a fantastical future vision of a regional hydrogen ecosystem with a robust market, lateral pipelines sprawling off the main pipeline, and new hydrogen-fueled industries springing up on the Navajo Nation to usher in a new era of economic prosperity. **But the "outsized hydrogen-based economy"[97] that Tallgrass anticipates will not arrive.** As one chemical engineer and leading hydrogen expert has written, "the hydrogen economy is a bill of goods being sold to you."[98] Hydrogen is a sinking ship that the Navajo Nation should not board.

A. Hydrogen is an inefficient, ineffective, and costly source of energy.

Today, hydrogen is used as an industrial chemical (mostly by the petroleum and agribusiness industries), not as a fuel. We don't currently use hydrogen as a fuel because hydrogen is inefficient and ineffective—and therefore extremely costly—as an energy source. It takes more

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[93] Earthjustice Report, at p. 18; Mehmet Salih Cellek & Ali Pınarbaşı, *Investigations on performance and emission characteristics of an industrial low swirl burner while burning natural gas, methane, hydrogen-enriched natural gas and hydrogen as fuels*, at p. 1205, INTERNATIONAL JOURNAL OF HYDROGEN ENERGY (2018), https://doi.org/10.1016/j.ijhydene.2017.05.107.

[94] Earthjustice Report, at p. 10.

[95] *Id.*, at p. 15; Mark Z. Jacobson, *The health and climate impacts of carbon capture and direct air capture*, ENERGY & ENVIRONMENTAL SCIENCE (2019), https://web.stanford.edu/group/efmh/jacobson/Articles/Others/19-CCS-DAC.pdf.

[96] David Schlissel et al., *Blue Hydrogen: Technology Challenges, Weak Commercial Prospects, and Not Green*, at Slide 36, INSTITUTE FOR ENERGY ECONOMICS AND FINANCIAL ANALYSIS (2022), https://ieefa.org/sites/default/files/resources/Blue-Hydrogen-Presentation_February-2022.pdf [hereinafter IEEFA Blue Hydrogen Presentation].

[97] Suzanne Mattei et al., *Bad News for Blue Hydrogen*, at p. 29, INSTITUTE FOR ENERGY ECONOMICS AND FINANCIAL ANALYSIS (2023), https://ieefa.org/sites/default/files/2023-12/Bad%20News%20for%20Blue%20Hydrogen_December%202023.pdf [hereinafter Mattei et al.].

[98] Paul Martin, *Distilled Thoughts on Hydrogen*, SPITFIRE RESEARCH INC. (2021), https://spitfireresearch.com/distilled-thoughts-on-hydrogen/.

energy to produce hydrogen than the hydrogen provides when converted into useful energy.[99] Hydrogen contains only about one-third the volumetric energy content of methane, so much larger volumes of hydrogen are needed to deliver the same amount of energy as natural gas and three times as much energy is needed to compress and transport hydrogen compared to gas.[100] Along with hydrogen's small size (which makes the molecule prone to escape),[101] this drives up the costs of moving hydrogen, especially over long distances. In its work session with RDC, Tallgrass acknowledged the challenge of transporting hydrogen cost-effectively through its proposed 200-mile pipeline. Current hydrogen pipelines in the U.S. "are located where large hydrogen users...are concentrated,"[102] so long-distance transport is less of an issue than it will be for Tallgrass. As one group of researchers has noted, "Several technical and economic limitations have held back hydrogen, including its explosiveness, low energy density per volume, ability to cause embrittlement in metals and, accordingly, costly infrastructure for production, storage, and distribution."[103]

In addition to the chemical properties of hydrogen that make it expensive and inefficient to use as a fuel, the process of making hydrogen—whether from fossil fuels (blue) or from water using renewable energy (green)—is very energy-intensive and therefore costly. In blue hydrogen production, carbon capture and storage is extremely expensive, and the cost goes up as the capture rate gets higher ("the worse you do it, the more money you make," as one hydrogen expert told us).[104] As General Electric Power's chief marketing officer said in 2019, "At this point, it's not economically viable to use carbon capture and sequestration at scale."[105] Indeed, a Government Accountability Office audit of a $1.1 billion Department of Energy (DOE) investment in carbon capture technology found that of the 11 demonstration projects funded by DOE, only three were built and became operational and only two of those three remained operational at the time of the audit.[106] The rest of the funded projects "were not completed...primarily in response to factors affecting their economic viability."[107] High carbon capture costs contributed to DOE's recent calculation of the baseline cost (in 2020 dollars) of blue hydrogen production as $1.69 per kilogram[108]—much higher than DOE's target cost of $1 per kilogram. A recent study—which concluded that "the economic case for fossil fuels with [carbon capture and storage] is generally limited"—contrasted the high cost of blue hydrogen

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[99] Nina Lakhani, *Is hydrogen really a clean enough fuel to tackle the climate crisis?*, THE GUARDIAN (2023), https://www.theguardian.com/environment/2023/mar/07/hydrogen-clean-fuel-climate-crisis-explainer.

[100] DOE Office of Energy Efficiency & Renewable Energy, *Gaseous Hydrogen Compression*, https://www.energy.gov/eere/fuelcells/gaseous-hydrogen-compression.

[101] Richard J. Campbell, *Hydrogen in Electricity's Future*, at p. 15, CONGRESSIONAL RESEARCH SERVICE (2020), https://crsreports.congress.gov/product/pdf/R/R46436.

[102] DOE Office of Energy Efficiency & Renewable Energy, *Hydrogen Pipelines*, https://www.energy.gov/eere/fuelcells/hydrogen-pipelines.

[103] Thijs Van de Graaf et al., *The new oil? The geopolitics and international governance of hydrogen*, at p. 2, ENERGY RESEARCH & SOCIAL SCIENCE (2020), https://doi.org/10.1016/j.erss.2020.101667.

[104] Longden et al., at p. 6.

[105] Catherine Morehouse, *GE: Hydrogen trumps CCS in preserving gas turbines in a carbon-free grid*, UTILITY DIVE (2019), https://www.utilitydive.com/news/ge-hydrogen-trumps-ccs-in-preserving-gas-turbines-in-a-carbon-free-grid/556585/.

[106] GAO 2021, at p. 7.

[107] *Id*.

[108] U.S. DOE, *Hydrogen Shot Technology Assessment*, at p. 13, (2023), https://www.netl.doe.gov/projects/files/HydrogenShotTechnologyAssessmentThermalConversionApproachesRevised_120523.pdf [hereinafter DOE Hydrogen Shot Assessment].

production with that of green hydrogen production, finding that the latter "could fall in the foreseeable future, and be cost-competitive with fossil fuel options."[109] Meanwhile, blue hydrogen production assets "could become stranded," the study warned.[110]

Here's the bottom line: it does not make any sense from a scientific, technical, economic, or environmental perspective to use hydrogen as an energy source, except potentially in a handful of very narrow circumstances (after cautious exploration and only if significant engineering and cost challenges can be overcome). Rather than using huge quantities of electricity to make hydrogen, transporting the hydrogen over long distances, and then converting the hydrogen back into electricity, it is vastly more efficient—and much cheaper—to cut the molecular middleman and use the electricity directly. In other words, the fastest, cheapest, and most energy-efficient way to drastically reduce our greenhouse gas emissions is to "electrify everything that can feasibly plug into a clean power grid"—including in the sectors of transportation, buildings, and power generation, which together produce about three-quarters of the U.S.'s greenhouse gas emissions.[111] That's why the Intergovernmental Panel on Climate Change estimates that hydrogen will comprise only 2% of global energy consumption by 2050.[112] Fossil fuel industry-generated hydrogen hype is just that—hype.

B. The market for hydrogen is grim, and it is unclear if and how Tallgrass can secure sufficient customer support for its ill-conceived project.

While there is no role for blue hydrogen in a carbon-free future, there *is* a (limited) role for green hydrogen—to replace the fossil fuel-based hydrogen that is produced today without carbon capture and used as a chemical in industrial processes. But the end uses of hydrogen contemplated by Tallgrass and other hydrogen proponents extend far beyond the limited end uses that actually make sense and for which there is likely to be a future market. The lobby group that backs Tallgrass, Four Corners Clean Energy Alliance, touts the use of hydrogen in cars, planes, heating, and power generation.[113] In each of these proposed applications, hydrogen technology has either already been eclipsed by lower-cost renewables or is not sufficiently advanced and faces competition from other technologies.

In the transportation sector, battery electric vehicles have surged past hydrogen fuel cell electric vehicles and will dominate the U.S. market for zero-emission light vehicles.[114] Battery technology is also predicted to dominate the market for zero-emission medium-duty vehicles and short-haul heavy-duty trucks.[115] Although hydrogen is frequently discussed as a potential fuel source for long-haul heavy-duty trucks, only 9% of heavy-duty trucks are even engaged in long-haul trucking and "hydrogen technology has not yet demonstrated commercial success in the

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[109] Longden et al., at p. 9.
[110] *Id*.
[111] Earthjustice Report, at p. 6.
[112] Hydrogen Science Coalition, *FAQ: What does science say about hydrogen's role in the energy transition?*, https://h2sciencecoalition.com/faq/#hydrogens-role-energy-transition.
[113] Four Corners Clean Energy Alliance, *What's with the Hype Around Hydrogen?*, https://fourcornerscleanenergyalliance.org/the-hype-around-hydrogen/.
[114] Mattei et al., at pp. 10-17.
[115] *Id.*, at pp. 18-21.

heavy-duty truck market."[116] As Shell wrote in its new 2050 scenario analysis, "is it just a question of time before all forms of road transport use battery-electric power?"[117] As for air and ocean transport, the aviation and maritime shipping industries are indeed the most difficult-to-decarbonize sectors; however, it is not at all clear that hydrogen is the solution, and enormous engineering and technological challenges must be overcome before airplanes and maritime vessels are anywhere close to running on hydrogen.[118]

Hydrogen-fired power plants are likely a dead end (and there are currently no commercial-scale power plants in the U.S. that burn 100% hydrogen).[119] BloombergNEF's 2021 New Energy Outlook stated that "[t]he dominance of low-cost renewables leaves relatively little space for hydrogen [and carbon capture and storage] in power generation," projecting that zero-carbon sources will provide at least 90% of electricity by 2035.[120] In addition, the practical feasibility of retrofitting coal or gas-fired power plants to run on 100% hydrogen—as Tallgrass claims it plans to do with the retired Escalante plant in New Mexico—is very much in question, and hydrogen-fired power plants would emit higher amounts of health-damaging nitrogen oxides.[121]

Tallgrass has also touted (in its work session with RDC) the use of hydrogen to store energy from wind and solar; however, battery storage is likely to eclipse hydrogen.[122] Finally, the use of hydrogen in buildings—which has been called "[t]he chief subject of misleading industry hype"[123]—is one of the least practical and most dangerous proposed hydrogen applications. Using heat pumps and electric stoves for home heating and cooking is much safer, cheaper, and more efficient than injecting hydrogen into gas distribution networks, which is why electrification is winning the market race in the buildings sector.[124]

The Congressional Research Service has found that "[b]oth converted and new hydrogen pipelines would face significant market uncertainty and logistical challenges related to hydrogen demand."[125] Tallgrass has said that the company's pipeline and blue hydrogen production plants would not be up and running until years from now. But the grim market forecast for hydrogen

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[116] *Id.*, at pp. 21, 23.

[117] Shell, *The Energy Security Scenarios: Full Report*, at p. 80, https://www.shell.com/news-and-insights/scenarios/the-energy-security-scenarios/_jcr_content/root/main/section_926760145/promo/links/item0.stream/1679344984968/5bc8327925d66e1402040d0e79fed7291bf9b7e9/energy-security-scenarios-full-report.pdf.

[118] See, e.g., *Bernard van Dijk, Hydrogen in aviation: Explainer video with Bernard van Dijk*, HYDROGEN SCIENCE COALITION (2022), https://h2sciencecoalition.com/blog/hydrogen-in-aviation-explainer-video/; Paul Martin, *Distilled Thoughts on Hydrogen*, SPITFIRE RESEARCH INC. (2021), https://spitfireresearch.com/distilled-thoughts-on-hydrogen/.

[119] Dennis Wamsted et al., *Blue Hydrogen Has Extremely Limited Future in U.S. Energy Market*, at pp. 5-8, INSTITUTE FOR ENERGY ECONOMICS AND FINANCIAL ANALYSIS (2022), https://ieefa.org/sites/default/files/2022-05/Blue-Hydrogen-Has-Extremely-Limited-Future-in-US-Energy-Market_February-2022.pdf [hereinafter Wamsted et al.].

[120] *Id.*, at p. 5.

[121] *Id.*, at pp. 6, 7.

[122] *Id.*, at p. 9.

[123] Earthjustice Report, at p. 9.

[124] Wamsted et al., at pp. 10-11.

[125] Paul W. Parfomak, *Pipeline Transportation of Hydrogen: Regulation, Research, and Policy*, at p. 2, CONGRESSIONAL RESEARCH SERVICE (2021), https://crsreports.congress.gov/product/pdf/R/R46700 [hereinafter Parfomak CRS Report].

indicates that "time is not on blue hydrogen's side"—cleaner, more efficient, and more cost-effective renewable energy competitors are surging ahead.[126] As Tallgrass told RDC in its work session, "For any of us to make any money, we've got to have customer support for a project of this size." Given the uncertainties and bleak future of this expensive and inefficient fuel, it is unclear if and how Tallgrass will manage to secure the level of customer support needed to make its hydrogen scheme financially viable.

C. Investors see carbon capture and blue hydrogen technologies as high-risk, and investment in the hydrogen sector remains small.

Investors, keenly aware of the "unproven technologies and undemonstrated markets"[127] that plague the hydrogen sector, have largely withheld investments in hydrogen. As the DOE has acknowledged, the competitive challenges that hydrogen faces—including high costs and insufficiently advanced technology—make investments in the sector seem risky, and the clock is ticking: "On the financing side, perceived credit risk will be high for hydrogen projects while these challenges remain unresolved, delaying timelines for low-cost capital providers to enter the market."[128] After noting that "there might not be enough hydrogen demand to secure financing" for "large-diameter, long-distance pipelines," the Congressional Research Service cautions: "[B]ecause hydrogen pipeline construction would be costly and likely driven by the private sector, addressing private investment needs and associated financial risks would be key factors in hydrogen pipeline development."[129]

In June 2023, the *Houston Chronicle* ran a story headlined, "Clean hydrogen is all the rage, so why is Wall Street holding back?"[130] After noting that private-sector investors have put eight times as much money into batteries and 35 times as much money into wind and solar as they've invested in hydrogen, the *Chronicle* reported, "For all investors' desire to get in on the ground floor of the next big thing, it remains unclear to many who would buy the hydrogen once projects are built."[131] The DOE recently noted that only about 10% of the blue and green hydrogen production capacity announced in the U.S. so far has achieved final investment decision (FID) "largely due to this lack of long-term offtake."[132] Globally, the picture is even more unfavorable: according to the International Energy Agency, only 5% of new hydrogen projects have achieved final investment decisions, in part "due to uncertainties around the future evolution of demand."[133]

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[126] Wamsted et al., at p. 1.
[127] Mattei et al., at p. 6.
[128] U.S. DOE, *Pathways to Commercial Liftoff*, at p. 3, (2023), https://liftoff.energy.gov/wp-content/uploads/2023/05/20230523-Pathways-to-Commercial-Liftoff-Clean-Hydrogen.pdf.
[129] Parfomak CRS Report, at p. 19.
[130] James Osborne, *Clean hydrogen is all the rage, so why is Wall Street holding back?*, HOUSTON CHRONICLE (2023), https://www.houstonchronicle.com/business/energy/article/clean-hydrogen-investment-18127989.php.
[131] *Id*.
[132] U.S. DOE, *U.S. National Clean Hydrogen Strategy and Roadmap*, at p. 49, https://www.hydrogen.energy.gov/docs/hydrogenprogramlibraries/pdfs/us-national-clean-hydrogen-strategy-roadmap.pdf.
[133] International Energy Agency, *Tracking Hydrogen*, https://www.iea.org/energy-system/low-emission-fuels/hydrogen#tracking.

For blue hydrogen projects, in particular, investment in carbon capture technology is considered risky due to its long history of below-target capture rates and failures. As others have noted, these failures "might have been understandable in the 1970s, 1980s, and possibly even the 1990s. But the fact that the problem persists into the 2020s makes [carbon capture and storage] a highly risky investment."[134] Even the Global CCS Institute, whose mission it is to "accelerate the deployment of carbon capture and storage," admits that "from a business perspective, there are barriers to financing [carbon capture and storage] projects. [Carbon capture and storage] projects are perceived as high-risk (driving up the cost of capital) and are capital intensive."[135] In 2022, Enchant Energy abandoned an ill-fated project to retrofit the coal-fired San Juan Generating Station with carbon capture and storage after failing to attract investors.[136]

Blue hydrogen projects may also be seen as risky investments because of their high emissions intensity and incompatibility with a zero-carbon future. Many fossil fuel projects have been cancelled across the U.S. in recent years due to growing opposition from an increasingly climate-anxious public, and investors factor this opposition into their risk assessments.[137]

D. To succeed, blue hydrogen production depends on financial life support in the form of federal subsidies. But Tallgrass is unlikely to qualify for even the least lucrative tier of the DOE's Clean Hydrogen Production Tax Credit.

Given the steep hurdles that blue hydrogen faces—including competition from lower-cost renewables, costly and ineffective carbon capture technology, and difficulty securing investment—some experts have concluded that blue hydrogen production is "not likely to succeed without permanent taxpayer-funded life support."[138] All three of the world's existing commercial-scale blue hydrogen facilities were heavily subsidized by their governments, and two of the facilities received two-thirds of their funding from taxpayers.[139] BloombergNEF predicts that green hydrogen production will be cheaper than blue by 2030 and that "[b]lue hydrogen project developers will increasingly need subsidies to stay viable."[140] Blue hydrogen

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[134] David Schlissel et al., *Reality Check on CO2 Emissions Capture at Hydrogen-From-Gas Plants*, at p. 1, INSTITUTE FOR ENERGY ECONOMICS AND FINANCIAL ANALYSIS (2022), https://ieefa.org/wp-content/uploads/2022/02/Reality-Check-on-CO2-Emissions-Capture-at-Hydrogen-From-Gas-Plants_February-2022.pdf.

[135] Global CCS Institute, *About Us*, https://www.globalccsinstitute.com/about/; David Schlissel et al., *Costs of Blue Hydrogen Production Too High Without Fiscal Life Support*, at p. 3, INSTITUTE FOR ENERGY ECONOMICS AND FINANCIAL ANALYSIS (2022), https://ieefa.org/wp-content/uploads/2022/02/Costs-of-Blue-Hydrogen-Production-Too-High-Without-Fiscal-Life-Support_February-2022.pdf [hereinafter IEEFA Fiscal Life Support Report].

[136] Dennis Wamsted & David Schlissel, *Coal-fired carbon capture projects are a waste of tax dollars*, UTILITY DIVE (2021), https://www.utilitydive.com/news/coal-fired-carbon-capture-projects-are-a-waste-of-tax-dollars/602209/; Carlos Anchondo, *CCS 2.0: Company reboots bid to save N.M. coal plant*, E&E NEWS BY POLITICO (2023), https://www.eenews.net/articles/ccs-2-0-company-reboots-bid-to-save-n-m-coal-plant/.

[137] Wamsted et al., at p. 1.

[138] IEEFA Fiscal Life Support Report, at p. 1.

[139] *Id.*, at p. 2; Polly Martin, *Second major blue hydrogen project reaches final investment decision in Rotterdam*, HYDROGEN INSIGHT (2023), https://www.hydrogeninsight.com/production/second-major-blue-hydrogen-project-reaches-final-investment-decision-in-rotterdam/2-1-1574743.

[140] BloombergNEF, *Hydrogen – 10 Predictions for 2022*, (2022), https://about.bnef.com/blog/hydrogen-10-predictions-for-2022/; see also, Adithya Bhashyam, *BNEF Hydrogen Outlook*, at Slide 7, BLOOMBERGNEF (2023), https://www.pv-magazine.com/wp-content/uploads/2022/01/Session-9_Presentation-02_Adithya-Bhashyam-BNEF.pdf.

has simply not demonstrated its sustainability in the absence of financial life support that will not—and should not—last forever.

That said, it is highly unlikely that Tallgrass's blue hydrogen will be "clean" enough to qualify for even the least lucrative tiers of the DOE's Clean Hydrogen Production Tax Credit. The DOE's emissions evaluation tool (known as GREET—Greenhouse Gases, Regulated Emissions and Energy use in Transportation) is very flawed for a number of reasons.[141] However, even if we accept all the faulty assumptions baked into the GREET model, Tallgrass's blue hydrogen production plants would need to capture at least about 95% of the carbon dioxide they produce—which would be unprecedented, as no commercial-scale facility has ever achieved a capture rate anywhere near this high—in order to meet the DOE's standard for "clean" hydrogen production and qualify for the least lucrative tier of the tax credit.[142] The DOE's own Hydrogen Shot Technology Assessment used an extremely unrealistic carbon capture rate of 96.2% and still found that blue hydrogen would not meet the agency's "clean" standard.[143] Earlier this year, Tallgrass-aligned lobby group Four Corners Clean Energy Alliance submitted comments in response to the Treasury Department's proposed regulations for the Clean Hydrogen Production Tax Credit, lamenting that the draft regulations "severely limit how much of the tax credit is available to [blue] hydrogen production facilities" and arguing for "more flexibility."[144]

Tallgrass's likely inability to qualify for the Clean Hydrogen Production (or "45V") Tax Credit—and certain inability to qualify for the most lucrative tiers of the credit—does not bode well for the economic viability of its proposed blue hydrogen projects. As one former oil and gas lobbyist noted, "Because the making of hydrogen is such an energy-intensive process, the ability to access the full level of the 45V credit is crucial to the economics of most projects in the planning stages."[145] Indeed, Exxon Mobil recently announced that it was "highly unlikely" to

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[141] As the Institute for Energy Economics and Financial Analysis has examined in detail, the GREET model includes a number of "unrealistic and flawed assumptions." The model: (1) "assumes an upstream methane emission rate of just 1%," when peer-reviewed scientific analyses have found an average upstream methane emission rate of about 2.5%; (2) uses the 100-year global warming potential rather than the 20-year global warming potential for methane, which "significantly understates methane's environmental impact in the short-term"; (3) does not include downstream emissions from hydrogen leakage, ignoring the global warming impact of hydrogen; and (4) does not include downstream emissions associated with the compression, storage, and transport of hydrogen. Schlissel & Juhn, at p. 5.

[142] *Id.*, at p. 29. As the Institute for Energy Economics and Financial Analysis found, if the faulty assumptions in the GREET model are corrected and we assume an upstream methane emission rate of 2.5%, use the 20-year global warming potential for methane, include some of the downstream emissions associated with hydrogen production, and assume a (more realistic but still overly optimistic) carbon capture rate of 85%, then the carbon intensity of blue hydrogen would be 3-4 times higher than DOE's "clean" hydrogen standard. *Id.*, at p. 27.

[143] DOE Hydrogen Shot Assessment, p. 19 (finding a lifecycle emissions intensity of 4.6 $kgCO_2e/kgH_2$ for blue hydrogen production using the Steam Methane Reforming method, which exceeds DOE's 4 $kgCO_2e/kgH_2$ threshold for "clean" hydrogen), p. 75 (showing that DOE is assuming an extremely unrealistic carbon capture rate of 96.2%); see also, Polly Martin, *Blue hydrogen unlikely to qualify for US H2 tax credits due to high upstream emissions: Department of Energy*, HYDROGEN INSIGHT (2023), https://www.hydrogeninsight.com/production/blue-hydrogen-unlikely-to-qualify-for-us-h2-tax-credits-due-to-high-upstream-emissions-department-of-energy/2-1-1566907.

[144] Four Corners Clean Energy Alliance, *Comments on IRS REG-117631-23*, at p. 2, (2024), https://www.regulations.gov/comment/IRS-2023-0066-29634.

[145] David Blackmon, *Treasury's 45V Regulation Risks Killing US Hydrogen In The Cradle*, FORBES (2024), https://www.forbes.com/sites/davidblackmon/2024/02/25/treasurys-45v-regulation-risks-killing-us-hydrogen-in-the-cradle/.

proceed with its planned blue hydrogen facility in Baytown, Texas due to the economic implications of the Treasury Department's proposed regulations.[146]

6. Tallgrass's hydrogen scheme will not benefit local communities.

Tallgrass has repeatedly claimed in marketing materials that its proposed pipeline will bring "multigenerational jobs and opportunities" and "prosperity" back to the Navajo Nation. Recently, the company has been more specific, asserting that the project will create 250-350 permanent jobs. At its work session with RDC, Tallgrass acknowledged that pipelines do not create more than "a couple" of permanent jobs and clarified that the 250-350 figure refers to jobs that would be created by the company's two new blue hydrogen production facilities in the Farmington area. As others noted during the work session, these blue hydrogen plants would be located off the Navajo reservation, and it remains very unclear how many of the anticipated 250-350 jobs could be set aside for Navajo Nation residents (even if that is Tallgrass's preference). Beyond the hydrogen plants, Tallgrass makes vague and unsubstantiated promises of additional jobs created by a hydrogen economy that is extremely unlikely to arrive. Other than a few dozen off-reservation jobs at Tallgrass's blue hydrogen production plants, any purported employment benefits of the company's hydrogen scheme are exceedingly speculative. As the Institute for Energy Economics and Financial Analysis has found, blue hydrogen's "potential for a robust future as a reliable, growing jobs engine is highly questionable" and the blue hydrogen market is "likely to see declining production levels over time, job layoffs, and a diminishing employment trajectory."[147]

Tallgrass also touts its "Community Benefits Program," which would enable each of the thirteen affected chapters to apply for up to $30,000 in annual funds to be used for specific purposes. As one community member noted at a chapter meeting, this amount is not even enough to fix a roof. Navajo Nation President Buu Nygren has publicly agreed that $30,000 per chapter is insufficient, pledging not to support the Tallgrass project unless the company can provide each affected chapter with at least $1,000,000 in annual funds.

7. Blue hydrogen production is extremely water-intensive, and even if Tallgrass does not plan to use Navajo Nation water, the company's hydrogen plants would place further water strain on a drought-stricken region.

The process of making blue hydrogen requires a lot of water, not only for production but also for cooling and hydrogen purification.[148] According to one estimate, a blue hydrogen plant would need to draw 36.7 liters of water per kilogram of hydrogen made.[149] Tallgrass stated in its work

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[146] James Osborne, *Exxon warns Baytown, other hydrogen projects unlikely under federal draft rules*, HOUSTON CHRONICLE (2024), https://www.houstonchronicle.com/business/energy/article/exxon-baytown-hydrogen-tax-credit-biden-18677668.php.

[147] IEEFA Blue Hydrogen Presentation, at Slide 37.

[148] Polly Martin, *Green hydrogen should be prioritised over blue due to the latter's higher water use: Irena*, HYDROGEN INSIGHT (2023), https://www.hydrogeninsight.com/policy/green-hydrogen-should-be-prioritised-over-blue-due-to-the-latters-higher-water-use-irena/2-1-1569100.

[149] International Renewable Energy Agency, *Water for hydrogen production*, at p. 7, (2023), https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2023/Dec/IRENA_Bluerisk_Water_for_hydrogen_production_2023.pdf?rev=4b4a35632b6d48899eb02bc54fd1117f.

session with RDC that the company does not plan to use any of the Navajo Nation's water. Even if this remains the case, hydrogen production in the Farmington area would further strain the water resources of a drought-stricken region. As the Institute for Energy and Environmental Research has written of U.S. states in the west that draw water from the Colorado River basin, "[i]n this region, severe water shortages have already created significant economic, political, and social stresses. Large-scale hydrogen production could well aggravate these."[150] Industry participants in a recent DOE workshop on hydrogen grappled with the question of water usage for hydrogen production, agreeing that "[t]he west is an increasingly dry region and this is a concern" and noting that additional water (beyond the quantities needed for production, cooling, and purification) is needed to control emissions of health-harming nitrogen oxides at hydrogen production plants.[151]

Tallgrass and Four Corners Clean Energy Alliance have responded to community concerns about water usage by pointing out that brackish water (rather than freshwater) can be used for hydrogen production. But there are a number of issues with brackish water extraction. Brackish water is generally not a renewable resource—in other words, it will not be replenished after extraction, and eventually the supply will be depleted if extraction continues.[152] Extracting brackish water can also cause land subsidence and deplete or contaminate interconnected freshwater sources.[153] The risk of brackish water spills and improper handling of brine concentrate (which is left over after brackish water is treated) are additional concerns.[154] Most importantly, however, water use priorities must be carefully considered.[155] The risks and costs of brackish water extraction and treatment would, of course, be justified if the water were being used to supply domestic water needs. But there is no justification for depleting and treating a non-renewable source of water—at considerable risk and expense—to make blue hydrogen.

Finally, to the extent Tallgrass contemplates using "produced water"—that is, water produced as a byproduct of oil and gas extraction—this would facilitate continued oil and gas dependence and is therefore incompatible with climate goals.[156]

8. <u>Local chapters are opposed to Tallgrass's proposed pipeline, and the company has not engaged with affected communities in an ethical manner.</u>

We have already brought to the RDC's attention several concerns about Tallgrass's methods of community engagement, including the use of gift cards to obtain favorable chapter resolution votes and lack of transparent engagement with grazing permit holders. We are glad the company

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[150] Arjun Makhijani & Thom Hersbach, *Water Requirements for Various Approaches to Hydrogen Production: Quantitative, Siting, and Resilience Considerations*, at p. 19, INSTITUTE FOR ENERGY AND ENVIRONMENTAL RESEARCH (2024), https://justsolutionscollective.org/wp-content/uploads/2024/01/IEER-Water-Report-r2.pdf [hereinafter IEER Report].
[151] U.S. DOE, *Enabling an Accelerated and Affordable Clean Hydrogen Future—Fossil Energy Sector's Role: Workshop Final Report*, at p. 10, https://netl.doe.gov/sites/default/files/netl-file/21CHF_FinalReport.pdf.
[152] New Mexico Bureau of Geology & Mineral Resources, *Brackish and Saline Groundwater in New Mexico*, at p. 2, (2015), https://geoinfo.nmt.edu/publications/periodicals/earthmatters/15/n2/em_v15_n2.pdf.
[153] *Id.*, at pp. 2-3.
[154] *Id.*, p. 3.
[155] IEER Report, at p. 20.
[156] *Id.*, at p. 19.

has since abandoned some of those unethical practices. We have found, however, that Tallgrass seems unwilling or unable to accept the fact that most local communities are vigorously opposed to this project. To the best of our knowledge, only three of the thirteen affected chapters have passed resolutions supporting the Tallgrass pipeline, and seven chapters have passed resolutions opposing either fossil-fuel based hydrogen projects in general or the Tallgrass pipeline in particular. **Tallgrass is interested in "community engagement" only to the extent that engagement begins with acceptance of the company's proposed project. But that is not how true community engagement works.** Discussions with local communities must begin with the question of *whether* a proposed project should happen in the first place—not what should happen once the project is underway—and a community's decision as to this foundational question must be respected.

Finally, we note—as others pointed out during Tallgrass's work session—that it is premature for Tallgrass to be seeking consent from grazing permit holders. **At this stage, Tallgrass does not have key information about its proposed pipeline, including the Potential Impact Radius, High Consequence Areas that are most at risk, or even certainty about what material would be transported. We do not believe that grazing permit holders (or RDC members, for that matter) are able to make informed decisions without such basic information.**

9. <u>Tallgrass's project is incompatible with Diné Fundamental Law</u>.

Honorable Delegates, we respectfully remind you that the Navajo Nation Council is required by law to lead with the central tenets of Diné Philosophy. 1 N.N.C. § 201 (Declaration of the Foundation of Diné Law) and 1 N.N.C. § 205 (Diné Natural Law) make clear that the Navajo Nation must respect Nihimá Nahasdzáán (Mother Earth) and its Diné people:

> *All creation, from Mother Earth and Father Sky to the animals, those who live in water, those who fly and plant life have their own laws and have rights and freedoms to exist; and*
>
> *The Diné have the sacred obligation and duty to respect, preserve and protect all that was provided for we were designated as the steward for these relatives through our use of the sacred gifts of language and thinking; and*
>
> *Mother Earth and Father Sky is part of us as the Diné and the Diné is part of Mother Earth and Father Sky; The Diné must treat this sacred bond with love and respect without exerting dominance for we do not own our mother or father[.]*

Honoring these central tenets of Diné Philosophy requires rejecting Tallgrass's proposed project.

10. <u>We are deeply grateful for your willingness to engage with us in a full-day work session this fall, and we respectfully request that the work session remain limited to community members and their advocates and experts.</u>

We believe strongly that in order to make a truly informed decision about this project, RDC must hear from (1) independent experts who have no financial stake in either hydrogen or any of its alternatives; and (2) affected community members across the thirteen chapters. On July 8, we respectfully requested an all-day work session that would cover four topics—climate, pipeline safety and health, economics, and community impacts—and enable robust dialogue among the Honorable Delegates of the RDC, their constituents who would be affected by this project, and independent scientists, economists, and pipeline safety experts.

We very much appreciate RDC's openness to scheduling a work session this fall. Given that Tallgrass has already had a full-day work session (which was not open to community participation), we respectfully request the same opportunity for community members. In the interest of ensuring that community members' concerns are fully heard—just as Tallgrass's project proposal was fully heard on April 22—we ask that this work session remain a forum for community members and their advocates and experts to engage exclusively with RDC. To the extent that RDC wishes to engage with Tallgrass and affected communities in the same forum, we propose a separate meeting for this type of engagement. We are happy to discuss our concerns with Tallgrass in the room; we simply ask that this discussion take place separately from the work session.

Thank you very much for your time and consideration, and we look forward to further engagement with you.

Sincerely,
Environmental Justice Clinic, University of Utah S.J. Quinney College of Law
Community members from across the thirteen affected chapters
T'iis Názbąs Collaborative Coalition
C 4 Ever Green