Testimony Before the United States House Natural Resources Subcommittee on Energy and Mineral Resources

H.R. 8665 – Supercritical Geothermal Research and Development Act and

H.R. 7053 – Orphaned Well Grant Flexibility Act

Testimony of Terra Rogers, Director of Superhot Rock Energy Program

Clean Air Task Force

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Subcommittee Chairman Pete Stauber, Ranking Member Alexandria Ocasio-Cortez, and Distinguished Members of the Subcommittee:

Clean Air Task Force (CATF) is a nonprofit organization working globally to safeguard against the worst impacts of climate change by catalyzing the rapid development and deployment of low-carbon energy and other climate-protecting technologies. With over 25 years of internationally recognized expertise on climate policy and a fierce commitment to exploring all potential solutions, CATF is a pragmatic, non-ideological advocacy group with the bold ideas needed to address climate change. CATF has offices in Boston, Washington D.C., and Brussels, with staff working virtually around the world. CATF's geothermal team works to push the technology and policy changes needed to achieve a zero-emissions, high-energy planet at an affordable cost. The main focus of our team is superhot rock energy, referred to in this bill as supercritical geothermal. We believe that superhot rock energy can become a key contributor to the energy mix, enabling clean, safe, zero-carbon energy anytime, anywhere. Thank you for the opportunity to testify.

The following testimony outlines CATF's thoughts on how H.R. 8665, the Supercritical Geothermal Research and Development Act, is an important step in positioning the U.S. as a leader in clean energy innovation by expanding the potential of clean energy and jobs in the coming decade. This testimony also outlines CATF's thoughts on H.R. 7053, the Orphaned Well Grant Flexibility Act, and how coordination among Federal agencies, the states, and other stakeholders can optimize the Bipartisan Infrastructure law Sec. 40601 Orphaned Well Program within the scope of the clearly stated activities under that Program.

We are living in a time when communities across the country are already facing the consequences of climate change paired with rapidly rising energy demand and costs. Investing in climate solutions now is not only important for protecting vulnerable communities, preserving natural ecosystems, and ensuring a livable planet for coming generations, it is also important for the health of local and national economies, the workforce, and the nation's ability to meet the residential and industrial energy demand of tomorrow. In response to the need for dependable energy solutions, policymakers should adopt a long-term climate and energy strategy that includes a diverse array of options. This is not only essential for ensuring grid stability, but also a key component to meeting current and future energy demands. The cleanup of legacy methane emissions and investment in supercritical geothermal innovation should both be a part of this strategy. Meeting the energy needs of the next decade and beyond will necessitate investment in and support for these climate solutions today.

[1] The case for geothermal innovation

Today, we have an incredible opportunity to harness the power of innovative technologies to expand our energy resources, meet rising demand, create new jobs, and leverage the deep expertise already driving our energy system. To grow a stable, zero-carbon economy and address expanding energy needs at the scale required, it is imperative that we continue to take bold action to implement pragmatic energy solutions. This is undoubtedly a significant challenge, but the United States is uniquely suited to lead this effort. Just as we once rallied our efforts in technology development for the space race, the U.S. now has the opportunity to innovate and accelerate the development of resilient clean energy solutions we know are possible. At this time in history, where clean, baseload power is increasingly in demand, there is an enormous amount of opportunity for innovation, generation of intellectual property, and growth of durable energy options within our domestic energy landscape. This requires targeted investment in technology development, stakeholder collaboration, and committed investment in de-risking and scaling of innovative climate solutions. H.R. 8665 provides a pathway to the development of one global-scale climate solution we need: next-generation geothermal energy.

a. The solution at hand: Next-generation geothermal energy in supercritical environments

U.S. demand for clean, baseload power is expected to rise significantly in the next decade, and the country has an opportunity to advance its energy leadership by investing in geothermal innovation. Traditional geothermal systems in operation today only work in regions where hot water naturally exists near the surface. As a result, traditional geothermal potential represents less than 3% of utility-scale electric generation capacity in the U.S[1] [2]. However, recent advancements in engineering have enabled a new form of geothermal energy which can harvest the Earth's heat *without* the need to locate rare and naturally-occurring underground sources of water. These advancements, including Enhanced Geothermal Systems (EGS) and Closed Loop Geothermal Systems (CLGS), are rapidly enhancing the scalability of geothermal energy in the U.S.[3] While early movers in this industry are targeting, and will continue to target, regions in which the heat is closer to the surface, innovations in deep drilling are expected to unlock this resource at a global scale. [4] When deployed in belowground rock formations that exceed the supercritical temperature of water, these systems could significantly boost power potential and reduce costs, enabling geothermal energy to become cost-competitive with the lowest-cost

[1] National Renewable Energy Laboratory. *Annual Technology Baseline: Geothermal* https://atb.nrel.gov/electricity/2024/geothermal
[2] U.S. Energy Information Administration. *Electricity Explained*. https://www.eia.gov/energyexplained/electricity/electricity-in-the-us-generation-capacity-and-sales.php
[3] Clean Air Task Force (2023, Mar. 19). *Focus on geothermal innovation heats up with DOE's new liftoff report.* https://www.catf.us/2024/03/focus-geothermal-innovation-heats-up-does-new-liftoff-report/.
[4] Clean Air Task Force, *Superhot Rock Energy: A Vision for Firm, Global Zero-Carbon Energy*, https://cdn.catf.us/wp-content/uploads/2022/10/21171446/superhot-rock-energy-report.pdf

sources of energy today.[5] Next-generation geothermal (both EGS and CLGS), when operated in supercritical temperatures, are referred to as supercritical geothermal, or superhot rock energy.

Superhot rock energy is an emerging energy source that will harness massive stores of zero-carbon energy by pumping water deep into hot underground rocks, where it naturally heats up and then returns to the surface as steam. That steam could be used to produce abundant and stable grid-scale carbon-free electricity. Its advanced heat streams could also be used for industrial and commercial applications. This inexhaustible source of both power and heat could enable industries such as hydrogen and carbon removal, and decarbonize industrial processes including pulp and paper manufacturing, oil and gas refining, textile production, and more. Furthermore, the inexhaustible nature of this renewable resource facilitates a steady cost profile and is not subject to the volatility of the commodity market, thereby offering price stability for electricity consumers and downstream products.

To give you an idea of the scale of this solution, heat from the Earth's interior is continually replenished and will remain available for billions of years – longer than the lifetime of the sun. Estimates suggest that harnessing just 0.1% of this heat could meet the world's total energy needs for two million years.[6] CATF's modeling suggests that superhot rock energy potential in the U.S. alone could produce 4.3 terawatts of clean firm power – 687 times New York City's 2021 energy consumption, [7] and that energy source is constantly regenerating. With appropriate investment in research, development, and testing, next-generation geothermal energy, particularly in supercritical conditions, could provide robust 24/7 power at a global scale without the environmental impact and land-use footprint of most other energy sources.

The energy profile of the United States is changing. Projections indicate a 5% increase in demand over the next 5 years[8]. Specifically, we are also seeing a skyrocketing demand for baseload power[9], electricity that is available without seasonal or temporal interruptions. One driver of this potential demand increase is the data management and artificial intelligence (AI) industry, which consumed approximately 3% of U.S. power in 2022. It is estimated to consume twice that much in 2 years – accounting for nearly one-third of additional demand[10]. Affordable and clean energy is paramount to the success of emerging industries and the U.S. economy at large. Next generation geothermal technologies are uniquely positioned to help satisfy this

[5] Clean Air Task Force (2023, Nov. 7). A Preliminary Techno-Economic Model of Superhot Rock Energy. https://www.catf.us/resource/preliminary-techno-economic-model-superhot-rock-energy/.
[6] ARPA-E, AltaRock Energy, *Millimeter-Wave Technology Demonstration for Geothermal Direct Energy Drilling*, https://www.arpa-e.energy.gov/technologies/projects/millimeter-wave-technology-demonstration-geothermal-direct-energy-drilling
[7] Clean Air Task Force. *Mapping the Potential of Superhot Rock Energy.* https://www.catf.us/superhot-rock/heat-mapping/.
[8] Grid Strategies. *The Era of Flat Power Demand is Over*. https://gridstrategiesllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf.
[9] Grid Strategies. *The Era of Flat Power Demand is Over*. https://gridstrategiesllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf.
[10] International Energy Agency. *Electricity 2024.* https://www.iea.org/reports/electricity-2024.

growing demand, due to their high reliability and 24/7 profile, with an average power generation capacity of 98-99%[11] . Resources with a firm production profile also reduce the transmission necessary by approximately threefold in relation to more conventional renewable sources[12] .

[2] How do we make this energy resource a reality?

Much of CATF's support for next-generation geothermal energy is informed by a listening campaign that CATF led between 2022 and 2023. During this time, CATF conducted 24 conversations with representatives from 21 organizations actively engaged in geothermal innovation. These included public and private research groups, drilling service companies, and geothermal start-ups. The focus of this listening campaign was to identify gaps related to the research, development, and demonstration of next-generation geothermal energy. These learnings were then used to inform our understanding of how to make commercial-scale supercritical geothermal energy a reality.

Through its collaboration with stakeholders and technology leaders across the U.S., CATF identified four key themes that could enable supercritical geothermal energy to become an energy source capable of meeting a significant portion of the total global demand for 24/7 low-carbon energy. These themes include field testing and demonstration, investment in targeted R&D, creating opportunities for collaboration, and de-risking exploration by increasing the availability of subsurface data. H.R. 8665 addresses all of these themes.

First, and perhaps most critical: Creating opportunities for in-field testing and demonstration. This past year, CATF commissioned research across the supercritical geothermal spectrum to identify the technology gaps that exist today. The research papers focused on five technology subsets of geothermal: site characterization, drilling, well design and construction, heat extraction, and power production. Authors of these reports found that across each technology area, the most critical action that can be taken to advance the technology to be closer to market-ready is to provide opportunity for testing in realistic environments, and demonstration of the technology areas end-to-end in the field.

Second: Supporting targeted research, development, and testing. Supporting research, development, and testing within a specified program that allows both publicly- and privately-driven technology advancement would not just help bridge the commercialization gap for superhot rock energy but would also enhance the durability of conventional geothermal technologies and their ability to function in increasingly hostile subsurface environments. Producing higher temperature steam increases energy density, which both reduces costs by decreasing the number of wells required, but increases electricity production efficiency, thereby enabling a more cost competitive product. Without a program tasked specifically with pursuing

[11] Department of Energy. *Chapter 2: Geothermal Takes the Stage*. https://www.energy.gov/eere/articles/chapter-2-geothermal-takes-stage.
[12] Environmental Defense Fund. *Clean Firm Energy is the Key to California's Clean Energy Future*. https://www.edf.org/sites/default/files/documents/LongCA.pdf.

higher temperature (supercritical) technology development, federal-level research on supercritical geothermal is at risk of stagnation. Additionally, by defining specific research targets rather than providing unfocused funding, the government can minimize the risk of leaving persistent gaps in research, development, and testing. Finally, federal-level R&D creates an opportunity for groups working in siloes to collaborate and to be aware of ongoing work.

Third: Providing opportunities for public-private collaboration. Research organizations, startups, service companies, and national labs across the U.S. have all made major strides in geothermal innovation. Achieving commercialization of supercritical geothermal will be the result of a series of technology innovations in numerous areas, including drilling, stimulation, well completion, power production, and more. Work in these spaces occurs across a diverse set of stakeholders who are at risk of working in siloes.

Fourth: Data is a valuable resource for geothermal development, and access to subsurface data is critical for helping companies optimize development and reduce technological risk through well-informed drilling programs. Though there are existing data repositories at both the federal and state levels, they need to be better organized, centralized, and more widely accessible. Improvement of these existing resources could be particularly impactful. Geothermal is not the only technology that has access to, and benefits from, a shared understanding of challenges and resource opportunities below the subsurface of the U.S. Other industries, like mining, oil and gas, and carbon management, have their own data resources that exist separately from the Department of Energy's Geothermal Data Repository and could benefit from cooperation on subsurface data availability as well.

[3] H.R. 8665 provides the solutions we need.

H.R. 8665, the Supercritical Geothermal Research and Development Act, promotes much-needed solutions to each of these challenges. First, the bill supports collaboration between the Department of Energy and the Department of the Interior in the expansion and improvement of data resources. This includes several measures within the jurisdiction of the House Committee on Natural Resources: Section 2(a)(3)(D) requires a memorandum of understanding among Department of Energy, Department of the Interior, and other relevant agencies for notifying, sharing, and providing opportunities for data collection. Section 2(a)(3)(E) requires the Department of Energy and Department of the Interior to collaborate on commissioning the drilling of exploration boreholes deeper than 8km in diverse geological provinces. Section 2(a)(4)(C)(e)(3) requires a water use study be provided to the House Committee on Natural Resources and House Committee on Science, Space, and Technology within 5 years of enactment. Finally, Section 2(b) directs the U.S. Geological Survey to complete quadrennial reporting on evolving resource potential around States like Minnesota that have very little geothermal data. This measure would support comprehensive mapping in regions of the U.S. that historically have not had access to geothermal exploration. CATF believes that adequate

resources should be provided for this work to include the mapping of geothermal potential in U.S. territories as well.

While we recognize that content pertaining solely to the Department of Energy is not within the jurisdiction of the House Committee on Natural Resources, the remaining pieces of the legislation interact with natural resource use and the environment. For example, this legislation also establishes a next-generation geothermal center of excellence to support public-private collaboration on workforce training, the development of best practices, the technical support for agencies, and support testing for next-generation geothermal technologies. The purpose of a center of excellence would be to break down siloes and enhance communication among technology leaders at every level of the technology suite.

This legislation also expands the remit of Frontier Observatory for Research in Geothermal Energy (FORGE) to test EGS and closed-loop heat extraction technologies in supercritical environments, which are not yet mature enough to stand alone without public support for R&D and testing. FORGE, since its establishment by the Department of Energy in 2014, has had an enormous impact on next-generation geothermal technologies. Just next door to FORGE, Fervo Energy broke ground on its Cape Station project, a privately funded project that aims to deliver 400 MW of 24/7 carbon-free electricity to the grid in 2026[13] .That serves as an example of how public investment can work quickly to create momentum for private industry. Expanding the remit of FORGE to test in supercritical environments would equip these technologies to be more robust when encountering harsh belowground conditions and would also enable these technologies to substantially increase their power potential.

This legislation also lays out a clear structure for the Department of Energy to establish a vertically integrated ecosystem of R&D, which would allow for the breakdown of research siloes and the ability to share learnings across stakeholders throughout the technology development process. The importance of R&D in this area is supported by learnings from the Department itself: although actions like demonstration are important for next-generation geothermal today, the Department of Energy's recent Pathways to Next-Generation Geothermal Commercial Liftoff report also tells us that continual research and development is important for geothermal to achieve cost reductions and scalability[14]. Through our extensive research and five flagship reports, CATF has identified that high-impact R&D should include deep drilling, well construction and completion, reservoir engineering, and an understanding of rock properties in supercritical environments. This is all reflected in the structure of the R&D program defined in the legislation before us today.

Finally, as the work under this legislation develops, it is important that it matures with an updated understanding of the technology. This is reflected in this legislation's required

[13] Fervo Energy, *Fervo Energy Breaks Ground on the World's Largest Next-gen Geothermal Project*, https://fervoenergy.com/fervo-energy-breaks-ground-on-the-worlds-largest-next-gen-geothermal-project/
[14] U.S. Department of Energy, *The Pathway to Next-Generation Geothermal Power Commercial Liftoff*, https://liftoff.energy.gov/next-generation-geothermal-power/

quadrennial reports on water consumption, resource potential, and barriers to development as the technology and understanding of the resource evolves.

R&D for next-generation geothermal energy, focused on advancing emerging technologies to higher temperatures, higher power potential, lower costs, and greater potential for global scalability, could be transformative in our fight for a future of 24/7 low-carbon energy. H.R. 8665 is an important step in doing just that. It addresses each of the challenges that CATF discovered in its comprehensive work with stakeholders across the U.S. Other countries, like China, New Zealand, Japan, and Iceland, have already made significant investments in supercritical geothermal, and this bill could position the U.S. as a leader in this space. The existing energy workforce, supply chain, and subsurface expertise in the U.S. is well-positioned to support a rapid scale-out of next-generation geothermal as soon as the technology is adequately mature. By promoting targeted public and private research, breaking down siloes, and leveraging the vast subsurface expertise that already exists in the U.S., this legislation does exactly what is needed to boost the momentum we see for next-generation geothermal energy and achieve temperature conditions that could be transformational in empowering a resilient, low-carbon economy.

[4] <u>To make the impact intended, H.R. 8665 must be properly funded.</u>

In order to achieve the significant impact intended in H.R. 8665, it is crucial that the bill receives proper funding. Currently, the bill is allocated only $5 million per year, which is far from sufficient given its goals. To put this in perspective, $5 million would not cover the cost of a single deep geothermal well. H.R. 8665 sets up research programs, a center of excellence, field testing opportunities, and more, but offers next-to-no funding to do this work. To truly make a difference, proper resourcing is necessary. This funding will ensure that the resources match the bill's ambitious intent and allow for meaningful advancements in geothermal technology.

Investing in geothermal innovation, with a focus on supercritical geothermal, is not only feasible but also imperative, given its massive potential. Supercritical geothermal offers unique benefits, comparable in terms of reliability, emissions, and land use only to advanced nuclear technology, which CATF also supports. CATF is thrilled with the substance of this bill, including the structures and programs that it supports. However, proper resourcing is essential for H.R. 8665 to have the intended impact on geothermal innovation. With adequate funding, these structures, including targeted research, public-private collaborations, and more, will make a real impact on geothermal innovation and its role in expanding zero-carbon energy resources.

[5] <u>A long-term vision</u>

CATF envisions next-generation geothermal energy maximizing its potential and progressing down a pathway that, ultimately, does not require federal investment or market incentives. However, to get to this point on the commercialization curve, momentum is needed in research,

testing, and collaboration. CATF sees the federal government as playing a few key roles in technology development at this stage: taking on technology risk, catalyzing research and development, developing best practices, fostering collaboration, and removing barriers for geothermal to scale rapidly. H.R. 8665 is structured to do all of these things.

Large private sector energy players are eagerly waiting on the sidelines for evidence that supercritical geothermal can work, and we are confident that significant private capital will flow into next generation geothermal if we can help address some of the remaining technological barriers. The public sector is in a unique position to take on technological risk and bridge the gap between research and deployment. Programmatic support for R&D and testing can work to advance and iterate on new technologies until private companies are able to significantly invest and enable the technology to be competitive in energy markets. Testbeds like FORGE and opportunities for public-private collaboration also provide an opportunity for private stakeholders to improve their technologies in a lower-risk environment.

Achieving commercialization of supercritical geothermal will be the result of a series of technology innovations in numerous areas, including drilling, stimulation, well completion, power production. Work in these spaces today often occurs across a diverse set of stakeholders who are at risk of working in siloes. Federal programs can help next-generation geothermal develop by encouraging collaboration between stakeholders at every level, including international allies, government agencies, academic institutions, and private companies. This bill takes collaboration one step further by establishing a public-private center of excellence. In addition to fostering collaboration in R&D and testing, the center of excellence in this bill is also well-positioned to provide a common source for the development of best practices. These practices are necessary to ensure technology deployment, equity, safety, and efficacy of nascent energy types like next-generation geothermal.

The United States trails other countries in its investment in geothermal energy innovation. However, energy companies based in the U.S. hold nearly all of the skilled workforce and supply chains required for producing next-generation geothermal energy. These energy companies maintain unrivaled expertise in the energy extraction techniques that are key to the success of next generation geothermal exploration, such as directional drilling, reservoir engineering, well completions, and more. Unlike many of the leading countries, the U.S. has a unique opportunity to rapidly scale up geothermal technologies by applying its subsurface expertise and harnessing existing supply chains to become a global leader in the development of clean, 24/7 electricity. The explicit federal support for next-generation geothermal in this bill also would signal to investors that the industry is expected to play a significant role in the future, triggering a cycle of increased investment from the private sector. CATF believes that H.R. 8665 would help to be a kickoff point for meaningful private investment.

[6] The land footprint of energy resources: The impact of investment in supercritical geothermal, in the context of increased siting on federal lands.

CATF applauds recent steps the Administration and Congress have made toward improved clean energy siting on federal public lands. Forward-looking management of public lands can ensure ecosystem resilience and facilitate the necessary development of renewable and zero-carbon energy infrastructure. In this context, accelerating the timeline to commercial scale for technologies that minimize land use and maximize energy density becomes particularly important. Supercritical geothermal is expected to be an extremely energy-dense resource, so its land requirements will be exceptionally low. Producing 1 GW of superhot rock energy is estimated to require roughly 12 km2 (7 sq mi) of land, compared to approximately 160 km2 (100 sq mi) of land for natural gas.[15] Initiatives to support research and development of this clean, firm power source that has a lower calculated land use is critically important.

When considering smart siting for federal public lands, it is important that any new policy solutions are constructive. CATF supports increasing the Department of the Interior's goal for renewable energy permitting. We also support more comprehensive planning for renewable energy siting on federal public lands, including through programmatic reviews for specific forms of clean energy development and other benefits for renewable energy permitting. In testimony before this committee two years ago, the Bureau of Land Management indicated its intent to review wind, solar, and geothermal programmatic environmental reviews.[16] CATF has engaged with the BLM on its ongoing solar environmental review, and we support actions that would require the agency to initiate the other two planning processes. We see a significant contrast between these efforts to improve clean energy siting and the proposals in Project 2025 to eviscerate the Department of the Interior, which is critical to ensuring the health and preservation of our limited resources for future generations.

[7] H.R. 7053 – Orphaned Well Grant Flexibility Act

Reducing emissions of methane, a potent greenhouse gas with a warming potential over 80 times greater than that of carbon dioxide over a twenty-year period, must play a crucial role in any greenhouse gas mitigation. Because of its warming potency and atmospheric lifetime – which is much shorter than that of carbon dioxide – establishing policies to quickly reduce methane emissions is the fastest way to slow the escalating rate of global warming and bend the climate curve. In the U.S., the oil and gas sector is one of the most important sectors to address, along with landfills and agriculture.

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[15] Land use estimates for superhot rock energy from LucidCatalyst and Hotrock Research Organization. (2023*). A Preliminary Techno-Economic Model of Superhot Rock Energy*. https://www.catf.us/resource/preliminary-techno-economic-model-superhot-rock-energy/

[16] *Hearing on Expanding Clean Energy on Public Lands and H.R. 3326, Public Land Renewable Energy Development Act*, 117th Cong. (2021) (statement of Nada Wolff Culver, Deputy Director, Policy & Programs, Bureau of Land Management), https://www.doi.gov/ocl/pending-legislation-17.

Within the oil and gas sector, orphaned wells present a unique challenge to mitigate. This is because orphaned wells have no financially responsible owner or operators. This lack of responsibility has resulted in over a hundred thousand documented orphaned wells that have been left to pollute air and water resources until third parties, either on their own or with state or federal funding, step in to plug them, and the scope of the challenge is likely even higher since there are many times more orphaned wells that have yet to be documented. While we grapple with the immense challenge of existing orphaned wells, we are mindful that in the absence of policy change, well orphaning continues to occur because of insufficient bonding requirements, permissive well transfer rules and lax oversight of idled wells. If these policies are not modernized, the challenge of mitigating methane and other pollution from end-of-life wells will continue to grow.

This is the challenge Congress recognized in passing the REGROW Act as part of the Infrastructure Investment and Jobs Act (IIJA), providing an important tool to meet the orphaned well challenge by establishing a framework for states to address this source of emissions through funding for any of the articulated purposes in the bill. *See* 42 U.S.C. § 15907(c). As the Department of the Interior (DOI) moves forward with administering this program it should do so in a way that maximizes the opportunities provided in the IIJA.

The policy objectives that DOI currently seeks to advance in its guidance by requiring *all* wells leaking methane to be measured pre- and post-closure may not optimize this opportunity. Measuring methane emissions from orphaned wells can provide more certainty about the reductions that can be achieved by permanently plugging a well and help identify the largest emitters for prioritized plugging. Alternatively, outside of IIJA funding, the reductions can be monetized through voluntary carbon markets, and thus third-party implementers should be strongly encouraged to measure both before and after remediation once those technologies are proven to accurately show the emissions reductions over appropriate time horizons. However, requiring such measurements as part of IIJA funding could limit what can be achieved due to the cost of measurement: upwards of $5,000 per well. [17] Because the amount of funding under the IIJA is finite, spending more on measuring means spending less on well plugging, and thus fewer communities are afforded the benefits that result from reduced air and water contamination.

Instead of requiring all emitting wells to be measured before and after plugging, CATF supports a more flexible approach. Some states may wish to use some of the funding they receive from a formula grant to measure every well. If that's the case, they should be allowed to make that choice as doing so is permitted under the statute's original language. 42 U.S.C. § 15907(c)(2)(A)(v)(I). But if a state instead prefers, it should have room to coordinate with DOI, DOE, and other stakeholders to approximate emissions by sampling and using qualitative comparisons of wells, rather than always quantitatively assessing emissions from each emitting well. In addition, or alternatively, it could also implement alternative approaches for bucketing

[17] Indeed there are other Federal efforts led by the U.S. Department of Energy that will, over time, drive the costs of such measurements down and develop workable methodologies to assess such emissions, making measurement a more efficient use of taxpayer money.

wells into non-emitting, low-emitting, and high-emitting categories. Additionally, states need to have flexibility to use funding to perform the activities originally articulated in the REGROW Act without requiring pre-plugging measurement. The policy goals of targeting high emitters and understanding the climate impacts of orphan well plugging are admirable, and through collaborative effort can be accomplished at lower costs than are currently realized through existing guidance. But all states should be encouraged to monitor pre- and post-remediation and to explore other ways to offset those increased costs rather than IIJA funds.

This program is an opportunity for genuine collaboration between state and federal agencies to solve a long-standing and vast problem. The DOI should consider meeting with DOE, the states, other stakeholders, and partners in the Administration and Congress to discuss and implement alternative approaches to universal methane quantification while retaining policy objectives.

[8] Conclusion: The Supercritical Research and Development Act is a step in the right direction.

CATF believes that a diverse array of energy solutions will be required to empower a low-carbon economy. Growing our clean energy sources, improving systems to support the abatement of fossil fuel emissions, and working to reduce legacy emissions, including methane, are all important for addressing climate change. Proactively investing in emerging solutions for growing our clean energy resources is important for addressing the climate crisis while meeting the full scale of our country's energy needs.

Next-generation geothermal offers unique advantages as a clean and reliable energy source. It features a minimal environmental footprint, a large source of 24/7 energy, and, with additional research and development, could become widely available across diverse geographies. The Department of Energy's recent Next-Generation Geothermal Liftoff report provides evidence for our need for this resource, indicating that the U.S. grid will require 700-900 GW of additional clean firm capacity by 2050.[18] This is something we need to take seriously.

The passage of H.R. 8665 with appropriate funding is an important step in advancing next-generation geothermal technologies, particularly in energy-dense, supercritical environments. These technologies hold immense potential to secure the United States' leadership in meeting the increasing demand for baseload clean power in the coming decade. By harnessing the Earth's virtually unlimited heat energy, we can accelerate the decarbonization of our energy sources, ensuring energy security and a resilient low-carbon economy. While various stakeholders are eager to engage in the advancement of geothermal innovation, public sector support is crucial to creating meaningful momentum and a pathway to commercial-scale adoption. H.R. 8665 takes a much-needed step towards this future.

[18] Department of Energy. *Pathways to Commercial Liftoff: Next-Generation Geothermal Power* https://liftoff.energy.gov/wp-content/uploads/2024/03/LIFTOFF_DOE_NextGen_Geothermal_v14.pdf.