DISCUSSION DRAFT OF H.R. ____, "CORE ACT"; H.R. 7053, H.R. 8665, AND H.R. 8954

LEGISLATIVE HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED EIGHTEENTH CONGRESS

SECOND SESSION

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CONTENTS

HOUSE COMMITTEE ON

NATURAL RESOURCES

CHAIRMAN BRUCE WESTERMAN

To: House Committee on Natural Resources Republican Members

From: Energy and Mineral Resources Subcommittee Staff, Rob MacGregor—Robert.MacGregor@mail.house.gov, x6-2466 and Will King—Will.King @mail.house.gov, x5-9297

Date: Tuesday, July 23, 2024

Subject: Legislative Hearing on H.R. 7053, H.R. 8665, H.R. 8954, and a Discussion Draft of H.R. ____ (Rep. Hunt)

The Subcommittee on Energy and Mineral Resources will hold a legislative hearing on H.R. 7053 (Rep. Thompson of PA), "*Orphan Well Grant Flexibility Act of 2024*"; H.R. 8665 (Rep. Lucas), "*Supercritical Geothermal Research and Development Act*"; H.R. 8954 (Rep. Gosar), "*Public Lands Renewable Energy Development Act of 2024*"; and a Discussion Draft of H.R. ____ (Rep. Hunt), "*Comprehensive Offshore Resource Evaluation Act*" or the "*CORE Act*," on **Tuesday, July 23, 2024, at 10:30am in 1334 Longworth House Office Building**

Member offices are requested to notify Jacob Greenberg (Jacob.Greenberg@mail.house.gov) by 4:30 p.m. on Monday, July 22, 2024, if their Member intends to participate in the hearing.

I. KEY MESSAGES

- Renewable energy projects on federal lands currently pay fees to the federal government, but those fees are not shared to host states in the same manner as conventional energy production on federal lands. H.R. 8954 would fix this problem by ensuring states and counties secure the benefits of energy production within their borders.
- The Biden administration has unilaterally added new requirements for funding to plug orphaned wells, resulting in less wells being plugged. H.R. 7053 would further clarify the law to ensure plugging of orphaned wells can continue efficiently.
- The CORE Act addresses the urgent need to modernize Bureau of Ocean Energy Management's (BOEM) resource assessments and ensure more accurate data collection for offshore oil and gas production. This will enhance U.S. energy security and economic stability by bolstering domestic energy supply, reducing reliance on imports, and increasing support for local economies through state revenue and job creation.

II. WITNESSES

Panel I:

- **Members of Congress (To Be Announced)**

Panel II:

- **Dr. Steve Feldgus**, Principal Deputy Assistant Secretary for Land and Minerals Management, Department of the Interior, Washington, DC. [H.R. 7053]
- **Mr. JC Sandberg**, Chief Advocacy Officer, The American Clean Power Association, Washington, DC. [H.R. 8954]
- **Mr. Dustin Van Liew**, Vice President, EnerGeo Alliance, Houston, TX ["CORE Act" Discussion Draft]
- **Mr. Jim Wright**, Commissioner, the Railroad Commission of Texas, Austin, Texas, [H.R. 7053]
- **Ms. Terra Rogers**, Program Director, Superhot Rock Energy, Clean Air Task Force, Boston, Massachusetts [H.R. 7053 & H.R. 8665] [Minority Witness]

III. BACKGROUND

Discussion Draft of H.R. ___ (Rep. Hunt), "*Comprehensive Offshore Resource Evaluation Act*" or the "*CORE Act*"

The Outer Continental Shelf (OCS) plays a critical role in the United States' energy strategy, providing substantial oil and gas resources that contribute to national energy security, economic stability, and coastal resiliency goals. The BOEM periodically conducts resource assessments and regularly prepares 5-year leasing plans as mandated by the Outer Continental Shelf Lands Act (OCSLA).[1] These assessments, which include Undiscovered Technically Recoverable Resources (UTRR) and Undiscovered Economically Recoverable Resources (UERR), are crucial for informed decision-making and contribute to 5-year program planning and development.[2] UTRR and UERR are critical components of BOEM's comprehensive inventory and analysis of oil and natural gas resources beneath OCS waters. These components are reported to Congress every five years, as required by the Energy Policy Act of 2005 (EPAct05).[3]

The CORE Act seeks to amend EPAct05 to incorporate specific instructions for future comprehensive inventories, ensuring that resource assessments include the latest data and methodologies for accurate and reliable estimates. BOEM's current processes face challenges in data acquisition, technological integration, and environmental impact considerations.

Resource Assessments and Offshore Oil and Gas Leasing

The resource assessment process has unfortunately become weaponized under the Biden administration. The assessments, conducted every five years and historically two years before the comprehensive inventory mandated by the EPAct05, are critical for accurate resource estimation. These undiscovered resource assessments aim to provide appraisals of unknown, technically, and economically recoverable oil and gas on the OCS. BOEM asserts that these assessments utilize the latest geophysical, geological, technological, and economic data to draw their conclusions but massive fluctuations in resource potential from report to report, outdated inputs, and seemingly outdated methodology and processes have sparked oversight of BOEM's procedures.[4] Further underscoring their importance, UTRR and UERR assessments influence the Environmental Impact Statements (EIS) required under the National Environmental Policy Act (NEPA) for 5-year leasing programs. Accurate assessments ensure that potential oil and gas resources are thoroughly analyzed, which is essential for informed decision-making and planning.

Before unveiling their abhorrent 5-year plan, the Biden administration issued the 2021 Assessment of Undiscovered Oil and Gas Resources of the Nation's Outer Continental Shelf. This assessment showed dramatic fluctuations from the previous estimate under the Obama administration. In 2016, BOEM reported 91 billion barrels of oil (BBO), 328 trillion cubic feet (TCF) of gas, and 149 billion barrels of

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[1] U.S. Congress. (1953). Outer Continental Shelf Lands Act, as amended. Pub.L. 83-212.

[2] BOEM. (2021). 2021 Undiscovered Technically Recoverable Resources (UTRR) by Play. Retrieved July, 2024, from https://www.boem.gov/sites/default/files/documents/oil-gas-energy/resource-evaluation/2021%20UTRR%20by%20Play.pdf

[3] U.S. Congress. (2005). Energy Policy Act of 2005, as amended. Pub.L. 109-58.

[4] House Committee on Natural Resources. "Hearing on Offshore Energy Development." February 26, 2020. https://naturalresources.house.gov/calendar/eventsingle.aspx?EventID=415851

oil equivalent (BOE).[5] By 2021, these figures had dropped to 68 BBO, 229 TCF of gas, and 109 BOE.[6] Such changes, not primarily attributable to drilling, production, or seepage, indicate potentially poor data or possible manipulation by insertion of inconsistent assumptions, leading to reduced estimates and misguided policy decisions.

This assessment informed an unacceptable 5-year leasing plan which offered the lowest number of offshore oil and gas lease sales in the nation's history. This has raised concerns about the United States' long-term energy strategy, economic impact on Gulf Coast states, and national energy security.

The CORE Act seeks to address these issues by improving the resource assessment process and ensuring comprehensive and up-to-date data inform federal decision-making. By stipulating specifically what BOEM should consider in each assessment, there is a lesser chance that future assessments will be subject to weaponization.

National Security and Transboundary Hydrocarbon Agreements

Bilateral maritime boundary treaties, such as the 1990 US-Soviet Union (now Russia) Maritime Boundary Agreement and the 2000 US-Mexico Maritime Boundary Agreement, include provisions on sovereign rights over natural resources.[7] These agreements ensure that neither country can claim resources on the other's side of the boundary. The 2000 US-Mexico Agreement also addresses transboundary hydrocarbon reservoirs, establishing a framework for equitable and efficient development of such resources.[8] The 2012 US-Mexico Transboundary Hydrocarbon Reservoirs Agreement further promotes unitization and cooperation.[9]

The CORE Act addresses the critical need for enhanced assessment of transboundary hydrocarbon reservoirs, which are essential in areas where the U.S. shares oil and gas reserves with neighboring countries. The current lack of comprehensive data and clear frameworks leaves BOEM ill-equipped to assess resource potential, jurisdiction, and bilateral collaboration opportunities in these shared reservoirs. The CORE Act seeks to rectify this by mandating improved data acquisition and legal frameworks, ensuring that the U.S. can effectively lease and manage its resources while coordinating with other nations for equitable and efficient development. This approach secures our national interests and fosters international cooperation in resource management.

Geological and Geophysical Permitting

Geological and Geophysical (G&G) surveys are crucial to the exploration and development of offshore oil and gas resources. These surveys employ advanced technologies such as 3-D and 4-D seismic imaging to map and assess the subsurface geological structures beneath the ocean floor.[10] Accurate G&G data is essential for identifying potential hydrocarbon deposits, estimating their size, and understanding their characteristics. Modern seismic imaging also reduces risk for exploration and production companies by increasing the likelihood that exploratory wells will successfully tap hydrocarbons and decreasing the number of wells that need to be drilled in a given area.[11] This information is foundational for resource assessments,

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[5] Bureau of Ocean Energy Management. "2016 Undiscovered Technically Recoverable Resources (UTRR) by Play." 2017. https://www.boem.gov/sites/default/files/oil-and-gas-energy-program/Resource-Evaluation/Resource-Assessment/2016-UTRR-by-Play_2017-update-%281%29.pdf

[6] BOEM. (2021). 2021 Undiscovered Technically Recoverable Resources (UTRR) by Play. Retrieved July, 2024, from https://www.boem.gov/sites/default/files/documents/oil-gas-energy/resource-evaluation/2021%20UTRR%20by%20Play.pdf

[7] U.S. Department of State. "Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Maritime Boundary." June 1, 1990. https://www.state.gov/wp-content/uploads/2020/02/US_Russia_1990.pdf#page=5

[8] U.S. Department of State. "Treaty Between the Government of the United States of America and the Government of the United Mexican States on the Delimitation of the Continental Shelf in the Western Gulf of Mexico Beyond 200 Nautical Miles." June 9, 2000. https://www.state.gov/wp-content/uploads/2020/02/US_Mexico_2000_withExtension.pdf#page=4

[9] U.S. Department of State. "U.S.-Mexico Transboundary Hydrocarbons Agreement." May 2, 2013. https://2009-2017.state.gov/r/pa/prs/ps/2013/05/208650.htm

[10] Bureau of Ocean Energy Management. "Geological & Geophysical (G&G) Data." Accessed July, 2024. https://www.boem.gov/oil-gas-energy/resource-evaluation/geological-geophysical-gg-data

[11] EnerGeo Alliance. "Introduction to Marine Seismic Technologies." September 6, 2022. https://energeoalliance.org/Marine-Seismic-Technologies

as it provides the data needed to estimate UTRR and UERR.[12] Reliable G&G surveys reduce uncertainty in resource estimates, inform drilling and production decisions, and ultimately support the creation of comprehensive and accurate inventories of offshore oil and gas resources. This process aids in the efficient development of energy resources and ensures BOEM, policymakers and investors have the necessary information to make informed decisions.

The provisions in Section 4 of the CORE Act related to G&G permitting aim to stimulate exploration activity, which informs future assessments and improves the operating environment for geophysical and geotechnical permit applicants. By easing the burdens of permitting delays at BOEM and the National Oceanic and Atmospheric Association and mitigating related litigation, these reforms support the timely delivery of necessary data for accurate resource estimates and energy supply.

Environmental and Economic Benefits of Offshore Development

Undiscovered oil and gas resources in the OCS have the potential to significantly boost the U.S. economy while promoting a healthier environment. Improving BOEM's data acquisition methods will prompt an increase in domestic oil production which will bring greater energy security, more affordable energy prices, a lower national trade deficit, and increased revenue passed to states for vital coastal restoration and infrastructure projects. Furthermore, energy production occurring in the Gulf of Mexico is 46% less carbon intensive when displacing global production in countries like Russia, China, and Iran.[13] Economic and environmental studies commissioned in this bill will ensure that these benefits are adequately considered in BOEM's leasing programs and across the federal government.

CORE Act Improvements vs. Current Process Deficiencies

	Proposed Improvements in the CORE Act	Key Deficiencies in Current Processes
Data Inputs	Prioritizes the use of advanced geophysical and geotechnical data, along with new modeling technologies, to improve resource estimates.	Existing resource assessments rely on outdated data and lack advanced technological integration, leading to uncertainty in resource estimates.
Economic Considerations	Assesses the impact of undiscovered resource production on the U.S. economy under different production scenarios, considering market dynamics and technological advancements.	There is insufficient analysis of the economic effects of expanded offshore production on the U.S. economy and on trade deficits.
Environmental Considerations	Evaluates the potential net greenhouse gas emission reductions from replacing imported oil and gas with domestic resources.	Current assessments do not fully account for the potential environmental benefits of domestic oil and gas production compared to imports which would occur as a result of non-production
Transboundary Resource Management	Enhances the assessment and management of transboundary hydrocarbon reservoirs, including legal frameworks and cooperation mechanisms with neighboring countries.	Transboundary Resources are not currently considered or specifically discussed in assessments and lack comprehensive analysis.

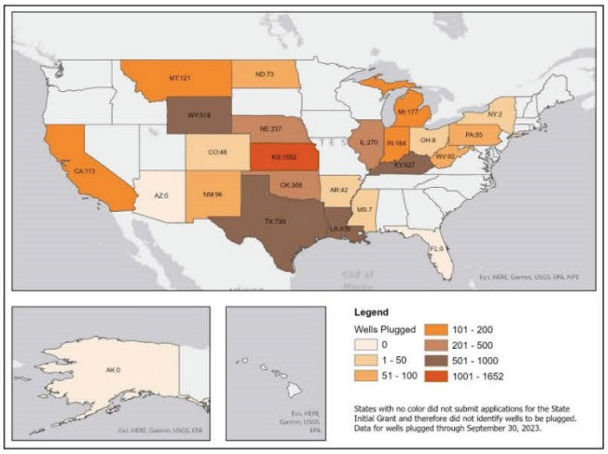
[12] Bureau of Ocean Energy Management. "2021 Assessment of Undiscovered Oil and Gas Resources of the Nation's Outer Continental Shelf." Accessed July 2024. https://www.boem.gov/sites/default/files/documents/oil-gas-energy/2021-Assmt-of-Undiscovered-Oil-Gas-Resources-OCS.pdf

[13] National Ocean Industries Association. "GHG Emission Intensity of Crude Oil and Condensate Production." May 2023. https://www.noia.org/wp-content/uploads/2023/05/NOIA-Study-GHG-Emission-Intensity-of-Crude-Oil-and-Condensate-Production.pdf

H.R. 7053 (Rep. Thompson of PA), *"Orphan Well Grant Flexibility Act of 2024"*

Orphan wells are oil or gas wells that were not plugged and remediated by energy companies post-production and have no legal owner. The Infrastructure Investments and Jobs Act (IIJA) directed the Secretary of the Interior to establish a program to plug orphaned wells on Federal and Tribal lands and to supplement state orphaned well programs.[14] The IIJA provided $4.7 billion for orphaned well site plugging, remediation and restoration activities on Federal, Tribal, state, and private lands.[15] The IIJA created three types of grants for states to receive funding: Initial Grants, Formula Grants, and Performance Grants.[16] The Initial Grants are for states to bolster their longstanding well plugging programs and build capacity for states to expand or begin well plugging activities. Formula Grants also bolster states' well plugging programs to plug, remediate, and reclaim orphaned wells on state and private lands. Performance Grants are separated into two categories, Matching Grants and Regulatory Improvement Grants. Matching Grants are intended to encourage state orphaned well spending above 2010–2019 spending levels and Regulatory Improvement Grants are intended to incentivize states to enact laws or regulations that will reduce future orphaned wells.

Figure 13: State and private wells plugged under the Initial Grants Program, as of September 30, 2023.



Through Fiscal Year 2023, $560 million was distributed to twenty-four states through Initial Grants, $102 million was distributed for the federal program and $39 million of Tribal grants were issued.[18] While the Initial Grants have been successfully utilized by states, the Department of the Interior (DOI), through guidance,[19] has added burdensome, non-statutory requirements to the Formula Grants. In the guidance, DOI requires pre and post plugging measurement of potential air and water pollution for each well.[20] While the language in the IIJA does allow for states to use funding to measure and track pollution, it is clearly optional

[14] 42 U.S.C. 15907.
[15] *Id.*
[16] 42 U.S.C. 15907(c).
[17] U.S. Department of the Interior, Orphaned Wells Program Annual Report to Congress, November 2023, https://www.doi.gov/sites/default/files/fy-2023-orphaned-wells-congressional-report.pdf.
[18] Department of the Interior, Orphaned Wells Program Annual Report to Congress, November 2023, https://www.doi.gov/sites/default/files/fy-2023-orphaned-wells-congressional-report.pdf.
[19] U.S. Department of the Interior, State Formula Grant Guidance, 7.07.23, https://www.doi.gov/media/document/state-formula-grant-guidance-07-07-2023-pdf.
[20] *Id.* at 13.

and not required.[21] This requirement has greatly driven up the cost of plugging wells and has forced some states to forgo the Formula Grant funding. To make matters worse, DOI has added more requirements in their Formula Grant awards[22] that force states to comply with the Endangered Species Act and the National Historic Preservation Act.

H.R. 7053 aims to solve this problem by clarifying that states are not required to conduct pre-plugging or post-plugging pollution monitoring. By cutting this unnecessary red tape, this bill will unencumber states so that they may plug more orphaned wells. The bill would also direct the National Academy of Sciences (NAS) to evaluate the results of the program with a specific focus on the impacts on economic development, housing trends, and other potential benefits.

This bill has bipartisan support, with 10 Republicans and 3 Democrats in the Senate including Senators Ted Cruz, John Cornyn, Mike Lee, John Fetterman, and Robert Casey. On the House side, it is cosponsored by 4 Republicans and 1 Democrat, including Rep. Estes, Rep. Reschenthaler, Rep. Hunt, and Rep. Deluzio.

H.R. 8665 (Rep. Lucas), "*Supercritical Geothermal Research and Development Act*"

Supercritical geothermal is an experimental technology that requires deep drilling to access dry rocks at temperatures around 400°C or greater. Water or other liquids are then injected at depths of 4 kilometers or deeper and, utilizing natural heat deep within the Earth's crust, returned to the surface at supercritical conditions to power a turbine and generate energy.[23] If commercialized, supercritical geothermal has the potential to produce energy at significantly higher capacities compared to conventional geothermal systems.[24] The Department of Energy (DOE) estimates that next-generation geothermal technologies including supercritical geothermal could provide 90 GW or more of clean firm power to the U.S. grid by 2050.[25]

The United States Geological Survey (USGS) currently operates several programs that support research and development of geothermal energy resources. The Geothermal Steam Act of 1970 directs USGS to conduct national scale assessments of geothermal resources, the most recent of which was published in 2008.[26] Additionally, the agency's Earth Mapping Resources Initiative (Earth MRI) coordinates priorities with DOE's Geothermal Technologies Office (GTO) to collect useful data for both critical mineral and geothermal resources.[27]

H.R. 8665 establishes a supercritical geothermal research program at DOE and provides grant opportunities for supercritical geothermal technologies. The bill also requires DOE and DOI to enter a memorandum of understanding (MOU) on geothermal data collection and analysis and directs USGS to update its national geothermal resource assessment within 180 days of enactment. Lastly, H.R. 8665 orders DOI, in consultation with DOE, to commission the drilling of exploration boreholes deeper than 8 kilometers to provide control points for supercritical heat mapping and geothermal development. H.R. 8665 authorizes $5 million for each of fiscal years 2026 through 2030.

H.R. 8954 (Rep. Gosar), "*Public Lands Renewable Energy Development Act of 2024*"

Title V of the Federal Land Policy and Management Act (FLPMA)[28] generally requires right-of-way (ROW) grant holders, leaseholders, or both to "pay in advance the fair market value" for use of the public lands, subject to certain exceptions. For solar and wind generation, the Bureau of Land Management (BLM) collects from ROW holders the greater of either an acreage rent or a capacity fee.[29] The BLM assesses acreage rent by applying the rate schedule, based on a survey of values for pastureland from the National Agricultural Statistics Service Cash Rents Survey to the number of acres that the ROW authorizes for use. Capacity fees reflect the

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[21] 42 U.S.C. 15907(c)(2).

[22] U.S. Department of the Interior, Notice of Award, Texas Railroad Commission, 1/12/24.

[23] https://science.house.gov/_cache/files/e/e/eebed5c7-3784-4b3b-b0c5-04c5456dfa77/8600498DE7130020CA43490E64B3ACBA.h.r.-8665-one-page-summary.pdf

[24] *Id.*

[25] https://liftoff.energy.gov/wp-content/uploads/2024/03/LIFTOFF_DOE_NextGen_Geothermal_v14.pdf

[26] https://www.usgs.gov/centers/gmeg/science/geothermal-resource-investigations-project

[27] https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/media/files/USGS%20BIL%20Spend%20Plan_FINAL.pdf

[28] 43 U.S.C. 1761-1772.

[29] Bureau of Land Management, Rights-of-Way, Leasing, and Operations for Renewable Energy, 5,01,24, 89 FR 35634, https://www.federalregister.gov/documents/2024/05/01/2024-08099/rights-of-way-leasing-and-operations-for-renewable-energy

value of generating electricity from solar and wind energy resources, which are quantified by the number of megawatt hours of electricity produced on public lands.[30] Under the Geothermal Steam Act of 1970,[31] geothermal energy producers on federal lands pay royalties on electricity produced and mineral byproducts derived from production along with rental fees for the leased acreage. Unlike solar and wind energy revenues which are not shared with states and counties, 50 percent of geothermal development revenues are disbursed to the states and 25 percent of revenues are disbursed to the counties where production occurs.[32]

H.R. 8954, the Public Lands Renewable Energy Development Act (PLREDA), would establish a revenue sharing mechanism with renewable energy producing states and counties while also supporting conservation efforts to offset the footprint of renewable energy projects on federal lands. Specifically, the bill would disseminate revenues for onshore wind and solar production on federal lands according to the following formula: 25% to the State hosting the production; 25% to the county hosting the production; 25% to the Renewable Energy Resource Conservation Fund (established by PLREDA to facilitate conservation, habitat restoration, and outdoor access); and 25% to aid agencies in the processing of renewable energy permits on federal lands.

IV. MAJOR PROVISIONS & ANALYSIS

Discussion Draft of H.R. ____ (Rep.), *"Comprehensive Offshore Resource Evaluation Act"* or the *"CORE Act"*

- Enhances offshore resource assessments by mandating the use of advanced data and modeling technologies.
- Requires BOEM to analyze economic impacts and greenhouse gas emission reductions of increased offshore energy production.
- Assesses the impact of withdrawals on oil and gas exploration and production.
- Analyzes existing and potential transboundary hydrocarbon reservoirs.
- Enhances cooperation and coordination with neighboring countries.
- Maintains incidental take regulations for geophysical and geological surveys.
- Authorizes geological and geophysical surveys in the Gulf of Mexico.
- Establishes expedited judicial review and enforcement processes.
- Requires monthly reporting on permit application processing times.

H.R. 7053 (Rep. Thompson of PA), *"Orphan Well Grant Flexibility Act of 2024"*

- Amends the Orphaned Well Site Plugging, Remediation and Restoration program in the IIJA by further clarifying that pre and post environmental measuring is not mandatory.
- Requires the NAS to evaluate the results of the program with a specific focus on the impacts on economic development, housing trends, and other potential benefits.

H.R. 8665 (Rep. Lucas), *"Supercritical Geothermal Research and Development Act"*

- Establishes a program at DOE to focus on supercritical geothermal research and provides grant opportunities for supercritical geothermal technologies.
- Requires DOE and DOI to enter a MOU on geothermal data collection and analysis.
- Directs USGS to update its national geothermal resource assessment within 180 days of enactment.
- Orders DOI, in consultation with DOE, to commission the drilling of exploration boreholes deeper than 8 kilometers to provide control points for supercritical heat mapping and geothermal development.
- Authorizes $5 million for each of fiscal years 2026 through 2030.

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[30] *Id.*
[31] 30 U.S.C. 1004.
[32] 30 U.S.C. 1019.

H.R. 8954 (Rep. Gosar), *"Public Lands Renewable Energy Development Act of 2024"*

- Creates a revenue sharing mechanism for wind and solar energy on public lands (25% to the State hosting the production; 25% to the county hosting the production; 25% to the Renewable Energy Resource Conservation Fund; and 25% to aid agencies in the processing of renewable energy permits on federal lands).
- Establishes a Renewable Energy Resource Conservation Fund to restore and protect landscapes in regions where renewable energy development occurs.

V. COST

The Congressional Budget Office has not scored any of these bills.

VI. ADMINISTRATIVE POSITION

Unknown.

VII. EFFECT ON CURRENT LAW (RAMSEYER)

Discussion Draft of "The CORE Act"

https://naturalresources.house.gov/uploadedfiles/bill-to-law_discussion_draft_of_h.r._____rep._hunt.pdf

H.R. 7053

https://naturalresources.house.gov/uploadedfiles/bill-to-law_118hr7053ih.pdf

H.R. 8665

https://naturalresources.house.gov/uploadedfiles/bill-to-law_h.r._8665.pdf

LEGISLATIVE HEARING ON DISCUSSION DRAFT OF H.R. ___, TO AMEND THE ENERGY POLICY ACT OF 2005 TO IMPROVE THE COMPREHENSIVE INVENTORY OF OUTER CONTINENTAL SHELF OIL AND NATURAL GAS RESOURCES, AND FOR OTHER PURPOSES, "COMPREHENSIVE OFFSHORE RESOURCE EVALUATION ACT", OR "CORE ACT"; H.R. 7053, TO AMEND THE ENERGY POLICY ACT OF 2005 TO ADDRESS MEASURING METHANE EMISSIONS, AND FOR OTHER PURPOSES, "ORPHAN WELL GRANT FLEXIBILITY ACT OF 2024"; H.R. 8665, TO AMEND THE ENERGY INDEPENDENCE AND SECURITY ACT OF 2007 TO DIRECT RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION ACTIVITIES IN SUPPORT OF SUPERCRITICAL GEOTHERMAL AND CLOSED-LOOP GEOTHERMAL SYSTEMS IN SUPERCRITICAL VARIOUS CONDITIONS, AND FOR OTHER PURPOSES, "SUPERCRITICAL GEOTHERMAL RESEARCH AND DEVELOPMENT ACT"; AND H.R. 8954, TO PROMOTE THE DEVELOPMENT OF RENEWABLE ENERGY ON PUBLIC LANDS, AND FOR OTHER PURPOSES, "PUBLIC LAND RENEWABLE ENERGY DEVELOPMENT ACT OF 2024"

Tuesday, July 23, 2024
U.S. House of Representatives
Subcommittee on Energy and Mineral Resources
Committee on Natural Resources
Washington, DC

The Subcommittee met, pursuant to notice, at 11:17 a.m. in Room 1334, Longworth House Office Building, Hon. Pete Stauber [Chairman of the Subcommittee] presiding.

Present: Representatives Stauber, Gosar, Graves, Fulcher, Tiffany, Hunt, Westerman; Ocasio-Cortez, and Kamlager-Dove.

Also present: Representatives Carl, Lucas, Thompson of Pennsylvania; and Levin.

Mr. STAUBER. The Subcommittee on Energy and Mineral Resources will come to order.

Without objection, the Chair is authorized to declare a recess of the Subcommittee at any time.

Under Committee Rule 4(f), any oral opening statements at hearings are limited to the Chairman and the Ranking Minority Member.

I ask unanimous consent that the gentleman from California, Mr. Levin; the gentleman from Alabama, Mr. Carl; the gentleman from Pennsylvania, Mr. Thompson; and the gentleman from Oklahoma, Mr. Lucas, be allowed to participate in today's hearing.

Without objection, so ordered.

I now recognize myself for an opening statement.

STATEMENT OF THE HON. PETE STAUBER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MINNESOTA

Mr. STAUBER. I want to thank you all for being here today to discuss these important pieces of legislation.

The bills we have before us today would continue building on our commitment to an all-of-the-above energy approach, while also reining in executive action that defies logic as well as law.

H.R. 7053, the Orphan Well Grant Flexibility Act of 2024, introduced by Representative Thompson from Pennsylvania, would further clarify language from the IIJA on orphan well plugging. There are thousands of orphan wells across the country, most of which are on state and private lands, and are legacy wells that were drilled before state and Federal regulatory statutes were put in place to ensure good practice. The IIJA included bipartisan language to provide the Federal Government, tribes, and states with money to plug these wells. Specifically, states were provided nearly $4.3 billion out of the total $4.7 billion included for remediation efforts.

Most states with orphaned wells already have programs to plug and remediate these wells, and do great work in doing so. Unfortunately, the Department of the Interior has fumbled management of the state program. In the Department's formula grant guidance, they included requirements for states to conduct pre and post-plugging groundwater and methane monitoring on each orphaned well, even though the law very clearly states that those actions are optional, and that funding "may" be used for these purposes. The practical implications of these requirements are devastating. And not only have these requirements resulted in fewer wells being plugged and reclaimed, but they have also dissuaded states from applying for the funding entirely.

I look forward to examining these decisions today, and again appreciate the gentleman from Pennsylvania for taking the lead on this bill to right this wrong.

H.R. 8954, the Public Land Renewable Energy Development Act of 2024, would simply ensure that states and counties receive the benefits of revenue sharing from solar and wind energy projects on Federal lands within their borders. The bill would provide 25 percent of the revenues from these projects to host states, 25

percent to host counties, 25 percent to the BLM to facilitate processing renewable energy permits, and 25 percent to a newly-created Renewable Energy Conservation Fund to offset the impacts of renewable energy on Federal lands and wildlife. This would ensure that renewable energy production on Federal lands contributes to local communities and states like oil and gas development does.

H.R. 8665, introduced by Congressman Lucas, would require the Department of the Interior and the Department of Energy to enter into an MOU on geothermal data collection and analysis. The bill would also require the U.S. Geological Survey to update its National Geothermal Resource Assessment, and commission the drilling of exploration boreholes to provide control points for supercritical heat mapping for geothermal development.

Lastly, Representative Hunt's discussion draft, the CORE Act, would enhance and modernize our nation's resource assessment process for offshore oil and gas exploration. The United States is endowed with vast offshore energy reserves, yet our current methodologies fall short of providing the precision and reliability necessary for informed decision making. The CORE Act addresses these deficiencies by instructing acquisition of advanced geological and geophysical data, and incorporating the latest resource evaluation technologies to ensure that our resource estimates are both accurate and comprehensive.

The bill also is necessary. It details economic and alternative energy impact analysis, ensuring that we understand the full implications of resource development. These enhancements will ensure that the Bureau of Ocean Energy Management's resource assessments are thorough and include the best available information, reducing uncertainty and providing benefits to taxpayers and coastal communities. The provisions within this bill will also streamline the geophysical and geotechnical permitting process, the linchpin of offshore exploration and a prerequisite to performing these analyses.

It is imperative that we act now to solidify our leadership in offshore energy development and secure a sustainable offshore energy future for the United States.

I look forward to hearing from our witnesses on these bills, and will now yield to the Ranking Member for her opening statement.

STATEMENT OF THE HON. ALEXANDRIA OCASIO-CORTEZ, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Ms. OCASIO-CORTEZ. Thank you, Chair Stauber.

As we all have experienced, this summer has been the hottest ever recorded in Washington, DC. The same is true across many of our districts. Climate change is here, and it is putting Americans' lives in danger. But we do not have to accept an unlivable planet. As policymakers, we have the power and responsibility to act. The bills we are considering today are steps towards different futures, some brighter, some darker.

H.R. 8665, Mr. Lucas' Supercritical Geothermal Research and Development Act, presents one important move towards a clean energy future. Supercritical geothermal is a recent innovation that

unlocks massive potential to produce reliable, always available clean energy using the heat from the Earth's core. H.R. 8665 supports much-needed research at the Departments of Energy and the Interior to catalyze the deployment of these experimental forms of geothermal.

H.R. 8954, the Public Land Renewable Energy Development Act, or PLREDA, would support solar and wind development on public lands. As we make the necessary transition from fossil fuels to renewable energy, we can't leave the counties and states that rely on oil and gas revenue high and dry. This bill would establish a much-needed mechanism to share renewable energy revenues with local communities, similar to oil and gas.

While I fully support renewables revenue sharing, we can and should go further. Mr. Levin recently introduced a more comprehensive version of the Public Lands Renewable Energy Act, H.R. 9012, reflecting a wider range of renewable energy incentives that industry and environmental groups have been advocating for years. As we move towards marking up PLREDA, I hope we can work together across the aisle to incorporate these incentives for rapid renewable development from Mr. Levin's bill.

Mr. Hunt's discussion draft, the Comprehensive Offshore Resource Evaluation Act, would take us in the wrong direction. Although my colleagues across the aisle often mention an all-of-the-above energy approach, this bill is oil and gas above all. The discussion draft before us today further skews the Federal offshore oil and gas program towards development. Who does this help? It is clear that big oil is the only winner.

The United States is currently producing more oil and gas than any nation in history, and is the No. 1 exporter of oil and gas in the world. But Americans aren't seeing any of the promised benefits of this so-called energy dominance. Prices are still high, and communities are still paying the costs of increased pollution and an increasingly unlivable climate. Meanwhile, big oil has been accused by the FTC in multiple class action lawsuits of illegally colluding with the global oil cartel to keep prices and their profits high while Americans suffer soaring costs of living.

However, this draft bill only calls for increased exploration for offshore oil and gas and skewed studies that downplay all the public health and environmental costs the American public pays for oil and gas development. This draft even strips protections for wildlife against deafening air gun blasting, potentially putting the critically endangered Rice's whale on a path to extinction.

And the final bill on today's docket, H.R. 7053, highlights one of the immense liabilities Big Oil has for the public: orphaned wells. Wells abandoned by the oil and gas industry without money to clean them up are a liability for the taxpayer and a public health risk to communities that live nearby.

Democrats won billions of dollars in the Infrastructure Investment and Jobs Act to clean up orphaned wells across the country, but H.R. 7053 would make emissions testing optional and eliminate other grant requirements such as prioritizing plugging wells within half a mile of low-income Black and Indigenous communities. Eliminating these requirements altogether would cost essential

emissions data and endanger communities already most at risk of health impacts.

I hope we can work together to use funds as efficiently as possible to plug as many wells as we can without sacrificing communities.

I look forward to today's discussion, and I yield back.

Mr. STAUBER. Thank you very much. I will now begin our Member panel, who will speak on their legislation, and I will recognize Mr. Paul Gosar from Arizona's 9th Congressional District for his testimony on his bill.

Mr. Gosar.

STATEMENT OF THE HON. PAUL GOSAR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA

Dr. GOSAR. Thank you, Mr. Chairman Stauber.

I introduced the first version of the Public Land Renewable Energy Development Act, or PLREDA, in 2012 to ensure that the emerging renewable energy technologies were treated similarly to other types of energy projects operating on Federal lands. Over the years, the bill has morphed as these technologies have become more mainstream, while pieces of the bill have passed over the years, and some pieces have become unnecessary.

One aspect of the bill that has remained is in regard to dispensation of revenue. Currently, solar and wind developers on Federal lands pay rental fees and royalties in the form of capacity fees. All the revenue from these payments goes to the Treasury. Now, this differs from the revenue generated by other energy sources on Federal lands, including oil and gas and geothermal, which are shared with states and local governments. This bill would ensure that the same is true for wind and solar.

The bill would provide 25 percent of the revenues go to the host county, 25 percent of the revenues go to the host state, 25 percent go to the BLM to improve their permitting process procedures, and 25 percent to a newly-created Renewable Energy Conservation Fund to offset the impacts of renewable energy production on Federal lands. This funding will allow rural and Western communities to benefit from energy production on Federal lands to support essential services.

While I recognize that permitting of energy projects on the Federal lands is a serious problem, I believe robust permitting reform language should be addressed in ways that will help all energy sources.

I want to thank the American Clean Power Association for testifying and am looking forward to working with my colleagues on this bill moving forward.

With that, I yield back.

Mr. STAUBER. I thank you very much. We have one more individual who wants to testify, and it is Mr. Wesley Hunt from Texas. He is on his way. I am trying to get to see how far he is, because I don't want to wait too long.

OK, we are going to start, and when Mr. Hunt comes in, at the nearest break, we will allow him to speak on his bill. We will now introduce our second panel of witnesses.

Let me remind the witnesses that under Committee Rules, they must limit their oral statements to 5 minutes, but their entire statement will appear in the hearing record.

To begin your testimony, please press the "talk" button on the microphone.

We use timing lights. When you begin, the light will turn green. When you have 1 minute remaining, the light will turn yellow. And at the end of the 5 minutes, the light will turn red, and I will ask you to please complete your statement.

I will also allow all witnesses to testify before Member questioning.

Our first witness is Mr. Dustin Van Liew. He is the Vice President of EnerGeo Alliance, and he is stationed in Houston, Texas.

Mr. Van Liew, you are now recognized for 5 minutes.

STATEMENT OF DUSTIN VAN LIEW, VICE PRESIDENT, ENERGEO ALLIANCE, HOUSTON, TEXAS

Mr. VAN LIEW. Thank you, Chairman, Ranking Member, and members of the Subcommittee. I appreciate the opportunity to testify today. As was introduced, I am Dustin Van Liew, Vice President of Global Policy and Government Affairs for the EnerGeo Alliance. I spearhead our policy efforts here and internationally.

EnerGeo members are the geoscience companies and energy developers that use Earth science to discover, develop, and deliver energy to the world. Our members operate in the United States across the Outer Continental Shelf and extensively in the Gulf of Mexico. EnerGeo commends Congressman Hunt for his leadership authoring the Comprehensive Offshore Resources Evaluation Act, or CORE Act, and we strongly support the legislation.

But first let me provide some context. Exploration is critical for ensuring global access to energy. Total energy use is estimated to increase 34 percent to support a world population of 10 billion by 2050. Even with high growth expected in alternative energy, by 2050 we will need to discover about 17.56 billion barrels to meet global energy demand. In contrast, last year we discovered about 5 billion barrels globally, with eight discoveries in the Gulf of Mexico. By 2050, about half of the expected global oil supply will come from fields and projects that are not in production today.

Global industry investments are influenced by where it can acquire geoscience data through supportive policy structures. BOEM, however, last updated its reserves report in 2019, and there is a lack of updated reserves information for the Gulf of Mexico, Alaska, and the Atlantic. The CORE Act would rectify this.

Seismic and geoscience surveying is well understood and safe. Tens of thousands of surveys have occurred throughout the world over the last 60 years using conventional compressed air arrays. After covering millions of kilometers, there is no credible scientific evidence that sound from geoscience surveys has had any significant impacts on marine life, populations, or the marine environment.

Unfortunately, geoscience permitting is too often stalled within regulatory agencies or impeded by extreme environmental organizations exploiting existing regulatory and litigation processes. The

CORE Act will advance responsible and sustainable exploration and production.

Sections 1, 2, 3, and 5, as a whole, provide clarity and helpful actions that will support the nation's energy goals. Section 4, in particular, removes onerous procedural roadblocks and litigious obstacles that hinder domestic energy security.

History has shown that the 5-year period effectiveness for ITRs is counterproductive, creates an inefficient permitting process, and leads to repetitive lawsuits by advocacy organizations only seeking to halt energy development. Indeed, many meritless lawsuits have been filed over two decades challenging Alaska North Slope ITRs. Section 4(a) resolves these issues by eliminating the 5-year expiration date and tedious ITR renewal process. The ITR governing incidental take for marine mammals on geoscience surveys in the GOM is a prime example showing why NMFS lacks the capacity and ability to issue ITRs every 5 years.

The original ITR petition for the GOM was submitted 22 years ago. NMFS at the time and BOEM since have submitted revised petitions in 2004, 2011, and 2016 to account for updated information that had accumulated while NMFS lacked the resources to take action on the petitions. NMFS eventually issued the final rule in 2021, only to be reassessed to correct math errors, and finally issued the revised ITR this year with the same mitigation and monitoring requirements included in 2021.

Even after the ITRs are issued, the current regulatory framework requires NMFS to jump through additional procedural hoops to issue letters of authorization before geoscience activities can proceed. Subsection 4(c) seeks to streamline this onerous process, and offers a pragmatic approach that both conserves agency resources and maintains the integrity of the mitigation requirements to comply with the MMPA and the Endangered Species Act. Further, Subsection 4(c) provides a clear timetable for surveys to proceed under BOEM permits, while still complying with most all the existing mitigation requirements in the GOM.

We strongly support the proposed legislation to ensure U.S. energy supplies are rigorously assessed with a more efficient and predictable permitting process. Likewise, reducing the ability of outside special interest groups to obstruct energy geoscience exploration is a necessary step to ensure continued development of energy resources and low carbon solutions for future generations.

I appreciate the opportunity to testify today.

[The prepared statement of Mr. Van Liew follows:]

PREPARED STATEMENT OF DUSTIN VAN LIEW, ON BEHALF OF THE ENERGEO ALLIANCE

ON "COMPREHENSIVE OFFSHORE RESOURCE EVALUATION ACT (CORE ACT)"

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

For the record, my name is Dustin Van Liew, and I am the Vice President of Global Policy & Government Affairs at EnerGeo Alliance. I spearhead EnerGeo's legislative and regulatory engagement efforts at national and international levels. Our membership base includes 60 companies spanning 50 countries. EnerGeo's mission is to advance the energy geoscience and exploration industry through global governmental, regulatory, and legal advocacy, communications, environmental and

scientific research, and standard development. We aim to drive excellence in health, safety, environmental performance, and sustainability.

I joined EnerGeo (then IAGC) in 2015 and have extensive experience and background in policy and government affairs. Before joining EnerGeo, I served as the Executive Director for the Public Lands Council and National Cattlemen's Beef Association—Federal Lands. Since 2014, I have served as Board Member of the Western Resources Legal Center, having recently served as Board Chair from 2018 to 2023. I am well-versed in navigating the challenges that face natural resources-based industries and am a leading authority on public and government lands and international natural resource policy issues.

I present this testimony as Vice President of Global Policy & Government Affairs at EnerGeo Alliance. Founded in 1971, EnerGeo is the non-profit global trade alliance for the energy geoscience and exploration industry. EnerGeo member companies include onshore and offshore geoscience survey operators and acquisition companies, energy data and processing providers, energy exploration and development companies, equipment and software manufacturers, industry suppliers, service providers, and consultancies. EnerGeo advocates for connecting more people and communities with access to energy around the world—by communicating factually, securing science-based policies, and promoting the geoscience companies, innovators and energy developers that use earth science to discover, develop and deliver energy, sustainably, to our world. Together, we are Making Energy Possible.

Many EnerGeo member companies operate in the U.S., both onshore and offshore across the Outer Continental Shelf (OCS), and extensively within the Gulf of Mexico (GOM). These companies play an integral role in the successful exploration and development of offshore hydrocarbon, wind, and low-carbon solutions such as carbon capture and storage (CCS) resources through the acquisition and processing of geophysical and geological data.

Through reliable science- and data-based regulatory advocacy, credible resources and expertise, and future-focused leadership, EnerGeo continuously works to develop and promote informed government policies that advance responsible energy exploration, production, and operations. As the U.S. and global energy demand evolves, we believe that all policymakers and energy companies pursuing mainstay, alternative, and low-carbon solutions should have access to reliable data and analysis to support their forward-moving efforts.

At EnerGeo, we are proud of our unique collaborations among industry, scientists, and governments to support sustainable energy access. In the U.S., this includes EnerGeo's Gulf of Mexico Proactive Regulatory Observational Program (GOMPROP) to provide a self-sustaining structure for the continued successful implementation of, and compliance with, both present and future Incidental Take Regulations (ITRs) applicable to geoscience surveys in the Gulf of Mexico, and to provide comprehensive marine mammal monitoring data.

Energy Demand: The global economy and oil demand are set to achieve consecutive record highs in 2024 and 2025, alongside record lows in oil intensity and consecutive global oil supply records, per U.S. Energy Information Administration (EIA) projections.

Natural gas experienced record-breaking global demand, production, and consumption levels in 2023—and these records are expected to be broken again this year and in 2025 per the International Energy Agency (IEA).

Global natural gas demand is also predicted to reach record highs in 2024 and 2025 with natural gas remaining an integral and competitive source for global electricity generation, heating, cooking, and industrial demands, as well as environmental progress.[1]

Exploration will continue to play a critical role in ensuring global access to energy in the future and now in the midst of the energy evolution. By 2050, the world population is estimated to increase to almost 9.8 billion.[2] Total energy use is expected to increase 34%, with an expected steady growth in mainstay sources of energy (petroleum and natural gas constituting 50%) and faster growth anticipated in all other sources.[3] In this scenario, exploration will be critical for the energy evolution. While about 5 billion barrels of oil were discovered in 2023, by 2050 we will need to discover 17.56 billion barrels per year to match the global energy demand.[4]

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[1] TXOGA Quarterly Energy Economics Outlook

[2] Source: *2023 Population Data Sheet* https://www.prb.org/wp-content/uploads/2023/12/2023-World-Population-Data-Sheet-Booklet.pdf

[3] Source: *EIA International Energy Outlook—October 2023* https://www.eia.gov/outlooks/ieo/

[4] Source: *RystadEnergy UCube; Rystad Energy U.CubeExploration; Rystad Energy research and analysis*

Although the U.S. has been blessed with energy abundance, roughly 10% of the world does not have reliable access to electricity. According to the Rockefeller Foundation, more than 840 million people lack access to electricity and over 3 billion people currently live in countries with per capita energy consumption below the Modern Energy Minimum—1,000kwh per year. Together, it is estimated that over 3.5 billion people do not have reasonably reliable access to electricity, meaning that they spend more than 56 days per year without power.[5]

Currently, 30% of the world does not have access to clean fuels for cooking. Cooking with kerosene, coal, or biomass is directly linked to over 3 million premature deaths per year with women and children disproportionately impacted.[6] Removing access to unfavored energy sources has disproportionate impacts on marginalized populations.

Populations around the world will need greater access to reliable and affordable energy to not only thrive, but for the movement of goods and people and for climate resilience, providing the necessary feedstock for fertilization, refrigeration for foods and medicine, irrigation, heating and cooling, and more. As a top priority of U.N. Sustainable Development Goals, we need all sources of energy at the table, to meet skyrocketing demand for energy security and energy accessibility.

While we are at the start of what is being called an "international upcycle," where the industry invests now will be influenced by where it has access to insight through geoscience data, infrastructure, and supportive regulatory and policy structures. Unfortunately, the United States is falling behind due to unnecessary bureaucratic delays and shortsighted policies that elevate certain forms of energy over others.

Our Surveys: Meeting growing demand for energy that is more accessible, affordable, reliable, and cleaner will require greater collaboration and geoscience-driven energy policies. The reality is, no matter the preferred or prioritized energy source, virtually all sources of energy needed to support the world's energy evolution require "eyes" on something going in, out, or through the ground. That sight is only made possible through the innovation and insight of the energy geoscience industry.

Mainstay energy sources such as petroleum and natural gas, and the lower carbon energy solutions such as offshore and onshore wind, depend on geoscience. Similarly, carbon capture, utilization, and storage projects are simply not possible without geoscience surveys to ensure that those projects are properly sited, designed, and managed. Energy literally starts with the geoscience industry.

By providing invaluable information about the resources beneath us, energy companies and policymakers can identify and prioritize high-density, lower-carbon-intensive energy sources, locate where offshore wind facilities are best suited for harnessing the energy from wind, prolong the life of existing natural gas and petroleum assets, make it possible to store carbon beneath the surface, and more.

As nations develop and implement their energy evolution goals to make reliable, affordable energy available to their citizens and meet Net Zero Emissions (NZE) policy ambitions, it is essential to understand that those goals cannot and will not be realized without the critical data and technology the geoscience industry provides.

Even though, by current market cap, geosciences are a small part of the energy supply chain, when it comes to whether energy can be accessed in any given region, we are the first and most pivotal part.

Resource Evaluation in the United States

The only viable process for the U.S. Government to understand the country's resource potential is through geoscience surveys conducted by advanced technology companies like those that comprise EnerGeo's membership. According to the Bureau of Ocean Energy Management's (BOEM) website, regarding resource evaluation, "Every five years BOEM provides a comprehensive assessment of undiscovered oil and gas resources on the OCS. The results are presented as both Undiscovered Technically Recoverable Resources (UTRR) and Undiscovered Economically Recoverable Resources (UERR). The assessment utilizes a geologic play-based approach that incorporates a complete analysis of geologic and petroleum system elements for the UTRR, and an assessment of engineering and economic considerations for the

[5] John Ayaburi, Morgan Bazilian, Jacob Kincer, Todd Moss, Measuring "Reasonably Reliable" access to electricity services, The Electricity Journal, Volume 33, Issue 7, 2020, 106828, ISSN 1040-6190, https://doi.org/10.1016/j.tej.2020.106828.

[6] World Health Organization, "Household air pollution", https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health#:~:text=Each%20year%2C%203.2%20million%20people,air%20pollution%20data%20for%20details)

calculation of the UERR. DOI has released an Assessment of Undiscovered Oil and Gas Resources on the US OCS regularly since 1975."

This information is not possible and would not be available to policymakers and U.S. citizens without the geoscience industry conducting surveys. By conducting surveys that image the subsurface below the ocean floor, geoscience surveys provide the information governments and policymakers need to make informed decisions in the best interest of their citizens regarding accessing and developing energy sources of all types, as well as developing low-carbon strategies.

Based on information compiled by the subcommittee, BOEM last updated its reserves report in December 2019, with their 2023 Comprehensive Inventory still relying on this outdated data for Gulf of Mexico. Notably, there is a lack of reserves information for Alaska and the Atlantic on their website.

Seismic and geoscience surveying is a well-understood and safe industry practice, and informed policy decisions regarding offshore energy development of any type can only be made with the evaluation provided by modern seismic survey technology. In the more than 60 years of geoscience surveys in the Gulf of Mexico, there has not been a single reported incidence of sound from survey operations injuring marine life. Tens of thousands of offshore geoscience surveys have occurred throughout the world over the last 60 years using conventional compressed-air arrays. In all that time, and across millions of kilometres, there is no credible scientific evidence that sound from geoscience surveys has had any significant impacts on marine life populations or the marine environment.

Unfortunately, the permitting of this activity, critical to identifying the nation's energy supplies, is too often stalled within regulatory agencies without accountable deadlines or timelines for review, or impeded by extreme environmental advocacy organizations exploiting existing regulatory and litigation processes.

Policy Challenges

Because the energy geoscience industry provides access to develop energy through its imaging, it is very often the first presence of energy development or exploration in a geographic area. As a result, our members often encounter obstacles and opposition to their operations that are aimed at preventing the development of a certain energy source—whether that's petroleum, natural gas, or even wind.

In some regions, extreme environmental advocacy groups prioritize preventing any energy geoscience surveys from occurring and even label geoscience research as "the gateway drug to oil and gas." Policymakers and energy companies consequently are unable to access important data needed to make informed decisions about future energy development.

This has led to increased regulatory scrutiny and misinformation about what geoscience research is and its impacts in frontier areas and even in mature basins. Recent eNGO advocacy focuses on geoscience as the linchpin to not only exploration but also increasing production in mature basins includes the Gulf of Mexico.[7] This short-sighted advocacy ignores both the undisputed energy needs of the world and the fact that geoscience surveys allow for the identification of both the presence and absence of energy sources and, thus, more efficient and less-impactful development.

In order to stimulate new geoscience activity, policymakers must prioritize geoscience-driven energy policies and regulatory frameworks that remove uncertainty and delay, promote timely permitting decisions, and support a quick pace of return on investment. Regulations should provide predictability, promote competition, and provide fiscal certainty, through risk-and science-based processes.

BOEM Permitting & NMFS Authorization Delays

In the Outer Continental Shelf Lands Act (OCSLA), Congress expressly mandated the "expeditious and orderly development" of the Outer Continental Shelf (OCS) "subject to environmental safeguards." 43 U.S.C. § 1332(3). Courts have confirmed that "the expeditious development of OCS resources" is OCSLA's primary purpose. *California v. Watt*, 668 F.2d 1290, 1316 (D.C. Cir. 1981). Congress enacted OCSLA to "achieve national economic and energy policy goals, assure national security, reduce dependence on foreign sources, and maintain a favorable balance of payments in world trade." 43 U.S.C. § 1802(1). Congress expressly intended to "make [OCS] resources available to meet the Nation's energy needs as rapidly as possible." *Id*. § 1802(2)(A).

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[7] https://www.nrdc.org/stories/offshore-drilling-101#environmental

Geoscience surveying has been and continues to be essential to achieving OCSLA's requirements because it is the only feasible technology available to accurately image the subsurface of the OCS before a single well is drilled or a single energy source is developed.

Offshore geoscience surveys require authorizations from BOEM, pursuant to OCSLA. *See id.* § 1340. There is no requirement for an applicant for an offshore survey permit under OCSLA to obtain an incidental take authorization under the Marine Mammal Protection Act (MMPA). However, unlawful "takes" of marine mammals incidental to lawful activities (such as a permitted offshore seismic survey) may nevertheless be subject to MMPA-based penalties. *See* 16 U.S.C. § 1375. Accordingly, many applicants for offshore survey permits from BOEM also request incidental (*i.e.*, unintentional) take authorization under the MMPA from the National Marine Fisheries Service (NMFS) and/or the U.S. Fish and Wildlife Service (FWS).[8]

In this context, it is important to recognize that the permit issued by BOEM authorizes the *seismic survey* and the MMPA authorization narrowly addresses the *incidental take* associated with the seismic survey. NMFS and FWS do not have jurisdiction over the survey; their authority under the MMPA extends only to the authorization of incidental take. Notwithstanding the limited role of FWS and NMFS, MMPA authorizations are often the primary cause of administrative delay in the offshore geoscience survey permitting process.

In the past decade, these problems have manifested in routinely delayed permitting processes, inconsistent and misguided analyses of potential impacts, and opportunistic advocacy litigation intended to block or impede offshore development.

For example, in the Gulf of Mexico, BOEM requires an MMPA authorization from NMFS prior to the issuance of a geoscience permit under the current ITR. During the rulemaking process, industry pointed out mathematical errors in the ITR that was originally promulgated January 2021. As discussed further below, it took BOEM and NMFS an additional three years to re-evaluate the original analysis before NMFS amended the ITR in 2024, ultimately making few changes. This revision process was just one of many delays in the history of the GOM ITR that contributed to the steady decline of geoscience surveys mapping the Gulf of Mexico since at least 2014.

In Alaska, unnecessary and unexplained delays in processing MMPA authorizations prevent planned geoscience surveys from providing the timely insight that would update resource estimates. Currently, at least one petition for MMPA authorization has stalled for more than two years preventing updated insight into the resource potential on Alaska's North Slope.

In the Atlantic, approximately 30 years have passed since the potential hydrocarbon resource base has been assessed with seismic surveys. In the meantime, seismic surveys for "scientific research" have been conducted fairly regularly in the Atlantic OCS, in addition to other geophysical surveys used to characterize the seabed and subsurface for suitability of offshore wind energy facilities. Six companies applied to BOEM for permits to conduct seismic surveying in the Atlantic OCS—a process that started in 2011, when the first permit application was filed, and ultimately ended in 2018 after nearly six years of working to obtain MMPA authorizations from NMFS.

Support for Proposed Language

In general, EnerGeo believes that the CORE Act as drafted will advance responsible and sustainable energy exploration and production. Sections 1, 2, 3, and 5, as a whole, provide clarity and helpful action items that will support the nation's energy goals. Section 4, in particular, removes onerous procedural roadblocks and litigious obstacles that hinder domestic energy security goals. Without a more efficient regulatory framework in place to support geoscience surveys, the country will not be able to keep up with the increased demand for reliable energy.

Subsections 4(a) and 4(b)

History has shown that a five-year period of effectiveness for ITRs is counterproductive, creates an inefficient permitting process, and leads to repetitive lawsuits by advocacy organization seeking to halt energy development. Subsection 4(a) resolves these issues by eliminating the five-year expiration date and unnecessarily tedious ITR renewal process.

The ITR governing the incidental take of marine mammals in GOM associated with offshore geoscience surveys is a prime example showing why NMFS lacks the

[8] FWS has jurisdiction over polar bears, walrus, sea otters, dugongs, and manatees. NMFS has jurisdiction over all other marine mammals.

capacity and ability to timely issue ITRs every five years.[9] The original petition to initiate the rulemaking process for the GOM ITR was submitted 22 years ago by the Minerals Management Service (MMS), an agency that no longer exists and was reorganized to now-BOEM and the Bureau of Safety and Environmental Enforcement. MMS/BOEM had to submit three revised petitions in 2004, 2011, and 2016 to account for updated information and analyses that had accumulated while NMFS lacked the resources to take meaningful action on the petitions.

NMFS eventually issued a final rule in 2021 in response to BOEM's 2016 revised petition. But that final agency action was short-lived, as the 2021 final rule was reassessed to correct certain mathematical errors, as described above. Over the course of three years, NMFS considered and incorporated newly available information and issued the 2024 final rule, affirming the same regulations, mitigation, monitoring, and reporting requirements promulgated pursuant to the 2021 final rule. The timeline leading up to the current GOM ITR therefore provides little assurance that NMFS is capable of issuing ITRs every five years. A better approach would be to eliminate the arbitrary five-year limit on ITRs and to instead allow for the targeted amendment of ITRs, as necessary, to update mitigation measures or other findings, based on the best available scientific information.

Eliminating the arbitrary five-year limit will also help to decrease opportunities for advocacy groups to challenge ITRs in misguided attempts to prevent U.S. energy development. Indeed, numerous meritless lawsuits have been filed over two decades challenging ITRs applicable to Alaska North Slope oil and gas activities—wasting the resources of federal agencies and the courts. Again, new agency actions, which can be challenged in court, should only occur if there is a substantive need—not based on an arbitrary five-year termination period for what may be an otherwise valid ITR.

For the same reasons stated above, EnerGeo similarly supports the language of subsection 4(b), which applies the logic described in Subsection 4(a) and prevents the existing GOM ITR from expiring on April 19, 2026. By prolonging the period of effectiveness, the geoscience and exploration industry can continue to make long-term plans for meaningful geoscience surveys that will inform forward-looking policies and help diversify energy sources.

Subsection 4(c)

Even after ITRs are issued, the current regulatory framework requires NMFS to jump through an additional procedural hoop and issue Letters of Authorizations (LOAs) to survey operators before they can move forward with the geoscience activities described and analyzed in their respective ITRs. Subsection 4(c) seeks to streamline this onerous procedural process and offers a more pragmatic and beneficial approach that both conserves agency resources and maintains the integrity of the substantive mitigation and monitoring requirements to remain in compliance with the MMPA and the Endangered Species Act.

For example, after the 2021 ITR was issued for geoscience activities in GOM, NMFS incurred a significant backlog of applications for LOAs. The delays in permitting continued to snowball when the 2021 ITR was revised and reissued in 2024 to fix agency mathematical errors. Although NMFS has recently been more expedient in approving LOA applications, history shows that the LOA approval process is unduly time consuming and detrimental to the timely conduct of otherwise-lawful geoscience activities.

Subsection 4(c) simply relieves an administrative burden and provides a clear and predictable timetable for surveys to proceed under BOEM permits without the delay caused by waiting for an untimely LOA. There would be no significant change in protection as a result of this modification because operators would still be required to comply with almost all of the existing mitigation and monitoring measures prescribed in the GOM ITR.

Conclusion

The energy geoscience industry is in the business of minimizing the footprint of energy activity by pinpointing where the resource is and importantly where it is not. Armed with reliable data and analysis, companies and policymakers are able to identify and prioritize high-density, low-carbon-intensive energy sources closer to existing infrastructure and the end user, locating where offshore wind facilities are best suited for harnessing the energy from wind, prolonging the life of existing

[9] *See* BOEM Request to the National Oceanic and Atmospheric Administration for Incidental Take Regulations Governing Geophysical Surveys on the Outer Continental Shelf of the Gulf of Mexico at 5 (Oct. 14, 2016), available at https://media.fisheries.noaa.gov/dam-migration/boem_2016rule_app_opr1.pdf.

natural gas and petroleum assets, and making it possible to store carbon beneath the surface. Geoscience surveys provide the information governments and policymakers need to make informed decisions in the best interest of their citizens regarding accessing mainstay energy and alternative sources, as well as developing low-carbon strategies. Currently, those data acquired by our members make it possible for BOEM to publish resource assessments. Nations cannot develop and provide opportunities for energizing their economies without the geoscience industry, let alone implement their energy evolution goals to make reliable, affordable energy available to their citizens and meet Net Zero Emissions (NZE) policy ambitions.

We strongly support the proposed legislation, which will help to ensure more rigorous and comprehensive assessments of U.S. energy supplies and a more efficient and predictable process for permitting geoscience surveys. The energy geoscience and exploration industry stands ready to partner in the discovery and development of low carbon solutions and of energy dense, low emissions sources of energy to power the world. Streamlining the permitting process along with reducing the ability for outside special interest groups to obstruct energy geoscience exploration is a necessary step to ensure our continued development of energy resources and low-carbon solutions for future generations in the U.S.

Thank you for the opportunity to testify today.

Mr. STAUBER. Thank you very much. Our next witness is Ms. Terra Rogers. She is the Director at Superhot Rock Energy Program, the Clean Air Task Force, and she is stationed in Boston, Massachusetts.

Ms. Rogers, you are now recognized for 5 minutes.

STATEMENT OF TERRA ROGERS, PROGRAM DIRECTOR, SUPERHOT ROCK ENERGY, CLEAN AIR TASK FORCE, BOSTON, MASSACHUSETTS

Ms. ROGERS. Good morning, Chairman, Ranking Member, and distinguished members of this Committee. I appreciate the opportunity to be here. As the Chairman commented, I am Terra Rogers, and I do direct the Superhot Rock Program at Clean Air Task Force. We are a global non-profit organization. I joined CATF after 20 years in industry, just as the full potential of geothermal was coming into focus.

Superhot rock is a visionary energy source, almost entirely unrecognized in both the decarbonization and the energy crisis debate. And to do my part, I aligned myself with a trusted voice, an organization that could not profit from the public support so desperately needed, which brings me back to CATF. Our mission is to push technology and policy changes needed to achieve a zero emission, high energy planet at an affordable cost.

Today, I will share CATF's thoughts on H.R. 8665, the Supercritical Geothermal Research and Development Act, and H.R. 7053, the Orphan Well Grant Flexibility Act, and how these bills further the shared goals of securing the United States' role as a clean energy leader in an abundant and affordable energy future.

I will now refer to the handout on page 2. Traditional geothermal facilities, shown on the far left, have been safely and reliably operating for over 100 years by using naturally occurring hot water from the Earth to spin a turbine and produce electricity. These conventional systems are rare, as they depend on unique geologic conditions, but the technology landscape has changed. Advancements have made geothermal possible in dry rock conditions, thus expanding its potential to cover the globe.

This new, next-generation technology involves pumping water into the Earth to flow through hot rocks like your car's radiator, and returning that water to the surface for power production, which is depicted in the middle graphic—colloquially, Geothermal 2.0.

The distinction between 2.0 and superhot 3.0 is the operating temperature. Now, we strongly support the measures in this bill that address the R&D and demonstrations needed at the temperatures accessible today, 2.0. But we must continuously drive down costs. And by targeting higher and often deeper temperature environments, we anticipate 5 to 10 times increase in energy production from each well, enabling up to a 70 percent cost decrease.

To help internalize the magnitude of this opportunity, CATF's modeling estimates that the United States could produce 4.3 terawatts of superhot rock energy. This could theoretically satisfy the annual demands of 687 additional New York cities. This could also be a game-changer for some of the most promising and emerging technologies, such as AI, through data management and low carbon hydrogen, ones that demand firm energy.

There are four key themes identified by CATF to jumpstart the commercialization process, and H.R. 8665 captures them all. I will lead with the measures that are under direct jurisdiction by this Committee.

First, data is king, and this bill appropriately prioritizes the data resources through the MOU between DOE and DOI, as well as a full resource assessment by the USGS through techniques such as the deep data probes, and also including regions previously overlooked, such as Minnesota and some of the U.S. territories.

Second, private-public collaborations. This is established through a center of excellence, including workforce training, best practice development, in tandem with agencies such as the BLM.

Third, integrated and targeted R&D designed to span the nation's laboratories, engaging in complementary research at the bench and in the field.

Fourth and final, in-field testing. This one is crucial. The bill calls for the creation of a FORGE-style test bed, at which next generation technologies and tools can be tested at higher and higher temperatures.

We are thrilled with the substance of this legislation, but emphasize the need for proper funding. The current $5 million per year is insufficient and won't cover even one deep geothermal well. Adequate funds for this bill will ensure the resources match the bill's ambition and allow for meaningful advancements in geothermal energy.

Other countries have already invested in supercritical geothermal. H.R. 8665 can make the United States a leader in this field. By advancing next-generation geothermal, we can leverage the existing U.S. subsurface expertise and maintain our global energy leadership.

Finally, on H.R. 7053, the Orphan Well Grant Flexibility Act, CATF supports its intent to allow states to optimize funding use. Some states may wish to use funding to measure emissions from every emitting well before plugging, while others may prefer to approximate emissions by using qualitative comparisons, as this

flexibility would free up more funds for mitigation activities. In this case, a state should have room to coordinate with the Federal agencies and other stakeholders. DOI's goals of targeting high emitters and understanding the climate impacts of orphaned well plugging are admirable, and through collaborative effort can be accomplished at lower costs than are currently realized.

Thank you. I look forward to your questions.

[The prepared statement of Ms. Rogers follows:]

PREPARED STATEMENT OF TERRA ROGERS, DIRECTOR, SUPERHOT ROCK ENERGY PROGRAM, CLEAN AIR TASK FORCE

ON H.R. 7053 AND H.R. 8665

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 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 sky-

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[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

[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.

rocketing 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 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 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.

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[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.

[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.

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 below-ground 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

[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/

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 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] To make the impact intended, H.R. 8665 must be properly funded.

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] A long-term vision

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.

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[14] U.S. Department of Energy, *The Pathway to Next-Generation Geothermal Power Commercial Liftoff*, https://liftoff.energy.gov/next-generation-geothermal-power/

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,

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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.

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.

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 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.

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[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.

[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 toward this future.

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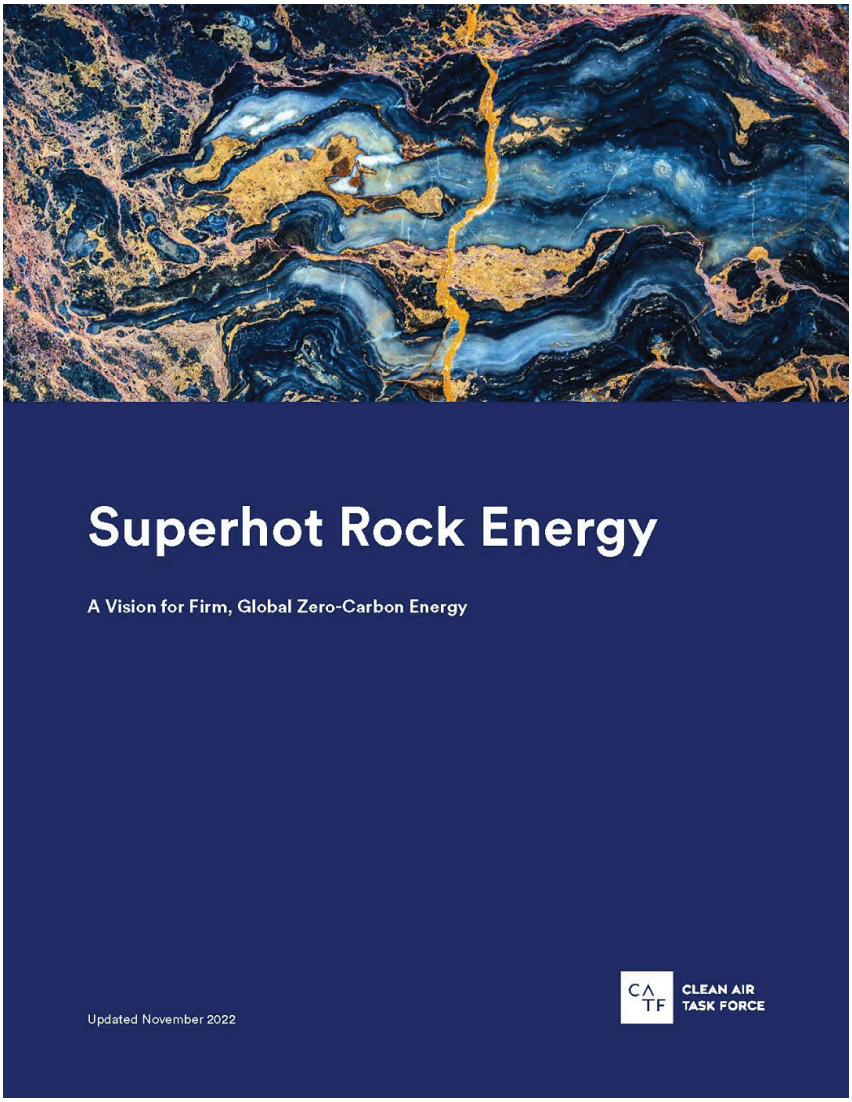
The following document was submitted as a supplement to Mr. Rogers' testimony.

[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.



The full document is available for viewing at:

https://docs.house.gov/meetings/II/II06/20240723/117484/HHRG-118-II06-20240723-SD006.pdf

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Mr. STAUBER. Thank you very much. Our next witness is Mr. J.C. Sandberg. He is the Chief Advocacy Officer for the American Clean Power Association, and he is stationed in Washington, DC.

Mr. Sandberg, you are now recognized for 5 minutes.

STATEMENT OF J.C. SANDBERG, CHIEF ADVOCACY OFFICER, THE AMERICAN CLEAN POWER ASSOCIATION, WASHINGTON, DC

Mr. SANDBERG. Thank you, Mr. Chair, Madam Ranking Member, and members of the Subcommittee. It is a privilege to be here, and we appreciate the invitation to testify on H.R. 8954, The Public Land Renewable Energy Development Act—say that five times fast—of 2024, PLREDA.

Renewable energy has become a significant part of our nation's energy mix, providing 16 percent of U.S. electricity in 2023, with nearly 270 gigawatts online, enough to power more than 68 million homes. The industry provides 460,000 jobs, supporting jobs in every state in our country, and delivers $3 billion each year in state and local taxes and landowner lease payments. In the past 2 years alone, the nation has seen massive deployment of a wide range of renewable energy, largely on private lands, resulting in more than $468 billion in private-sector investments and more than 44,000 manufacturing jobs.

It is critical that Congress continue to build on this momentum by using public lands to further unlock the industry's economy stimulating and community revitalizing potential. Building more renewable energy on public lands will allow our nation to address the rapidly growing demand for electricity and ensure reliability. That is why I offer ACP's support for PLREDA 2024. This bill will ensure a fair return to states and counties for renewable energy development, promote related conservation efforts, and expedite the processing timelines for renewable energy projects on public lands.

Federal law requires that oil and gas revenues must be shared with states, and that geothermal revenues must be shared with states and counties. By allocating 25 percent of the Federal revenue to the county where the wind or solar facility is located, and another 25 percent to the state, this bill would help boost local economies and guarantee that states and residents rightly benefit financially from the renewable energy projects they host in their communities, thus providing them with additional funds to invest in schools, libraries, roads, and other public services.

Additionally, the Renewable Energy Resource Conservation Fund set up by the bill will help Federal, state, local, and tribal agencies support their conservation efforts in areas hosting renewables, including efforts to restore and protect fish and wildlife habitats, corridors, and wetlands.

It is also important to recognize that improvements to deploying renewables on public lands can only go so far if BLM and the U.S. Fish and Wildlife Service offices don't have the resources necessary to process permits. As proposed in PLREDA 2024, allocating revenue to these land agencies to add capacity and skills to effectively manage and process renewable energy permits will help maximize the potential for renewable energy development on public lands.

Ultimately, revenue sharing is a win-win. It supports renewable energy development on public lands, while at the same time ensuring that benefits of this development further support the people and areas where the projects are located. To that end, ACP would encourage the Committee to include energy storage in the definition of energy project as you work to finalize the bill.

Including energy storage in the definition of renewable energy project is a common-sense measure that will make sure states and communities benefit from all aspects of renewable energy development on public land and the revenue sharing program created by this bill.

I would also like to encourage the Committee to continue its work to improve the permitting process for energy infrastructure. I provided some specific ideas in my written testimony. While PLREDA 2024 represents a significant step toward facilitating the development of renewable energy projects on public lands, our nation's cumbersome and uncertain permitting process impedes critical energy infrastructure development, effectively preventing counties and states from receiving the revenue this legislation would authorize.

In conclusion, ACP strongly supports H.R. 8954, which is vital to unleashing our nation's clean energy potential across the country.

I look forward to your questions, and thank you again for the opportunity to testify.

[The prepared statement of Mr. Sandberg follows:]

PREPARED STATEMENT OF JC SANDBERG, CHIEF ADVOCACY OFFICER, AMERICAN CLEAN POWER ASSOCIATION

ON H.R. 8954

Chairman Stauber, Ranking Member Ocasio-Cortez, and members of the House Natural Resources Subcommittee on Energy and Mineral Resources, thank you for the invitation to offer testimony on H.R. 8954, the Public Lands Renewable Energy Development Act of 2024 (PLREDA 2024). My name is JC Sandberg, and I am the Chief Advocacy Officer for the American Clean Power Association (ACP). ACP represents over 800 companies focused on deploying utility-scale clean energy. ACP unites the power of solar, onshore and offshore wind, storage, green hydrogen, and transmission developers, along with manufacturers and construction companies, owners and operators, utilities, and corporate purchasers of clean energy.

Today, I offer ACP's support for PLREDA 2024. There has been longstanding bipartisan interest in a revenue sharing program that ensures investment in domestic renewable energy on public lands will be reinvested in the states and local communities that host these projects, as well as in conservation efforts in these areas and to improve the processing of permits on these lands. ACP appreciates this Committee's interest in advancing legislation that will help make these goals a reality.

Our nation is experiencing a breakthrough in domestic energy production and rapid growth in demand for electricity. Seizing and meeting this opportunity is dependent on the continued strength in traditional energy production while unleashing a massive deployment of a wide range of renewable energy technologies, including on public lands. Renewable power has already become a significant part of our nation's energy mix. Wind and solar produce 16% of U.S. electricity with nearly 270 GW online—enough electricity to power more than 68 million homes.

The industry provides 460,000 American jobs, supporting jobs in every state in our country, and delivers $3 billion each year in state and local taxes and landowner lease payments. In the past two years alone, the nation has seen massive deployment of a wide range of renewable energy, largely on private lands, though—resulting in more than $488 billion in private-sector investments and more than 44,000 manufacturing jobs.[1]

It is critical that Congress continue to build on this momentum by using public lands to further unlock the industry's economy-stimulating and community-revitalizing potential. By ensuring that renewable energy projects provide steady revenue to speed up the permitting process on public lands and provide additional economic and environmental benefits to the communities that host these projects, this bill will do just that.

[1] American Clean Power Association, Clean Energy Investing in America, https://cleanpower.org/investing-in-america/.

The good news is that Federal lands managed by the Bureau of Land Management (BLM) and the United States Forest Service (USFS) have a vast potential for renewable energy development. BLM and USFS manage 245 million and 193 million acres of public land, respectively,[2] with the potential to produce thousands of gigawatts (GW) of renewable energy.[3] In fact, researchers estimate that there are 2,100 GW of potential energy generation from renewables on BLM lands alone.[4]

The bad news is that despite some recent efforts to encourage renewable energy development on public lands,[5] these resources continue to be vastly untapped relative to their potential. As of 2023, a little over 60 solar and wind projects have been approved on BLM lands, and BLM currently only has an equivalent number of renewable energy projects, representing a mere 29 GW of energy generation, under review.[6] This problem is made even clearer when comparing renewable energy development on public lands with that on private land. Currently, around 95% and 99% of operating capacity for solar and wind, respectively, is on private lands. As of the end of 2023, 3,728 megawatts of solar energy (with an additional 1,556 MW approved but not yet constructed) and 1,438 MW of wind energy was operating on BLM lands (with an additional 3,038 MWs approved but not yet constructed[7] compared to 94,425 MW of operating utility-scale solar capacity nationwide and 150,455 MW of operating wind capacity.[8]

This disparity can largely be explained by the fact that it is less attractive to develop projects on public lands due to the long, uncertain, and costly permitting delays on them, which have ripple effects throughout the economy—throwing off project timelines, domestic supply chains, and the indirect jobs and economic activity that would have otherwise occurred.

PLREDA 2024's revenue recycling sharing program will help change this dynamic by providing more resources to expedite permitting and financial benefits for host states and counties, and allow the nation to realize the potential for renewable energy on public lands, creating more good-paying American jobs, strengthening the reliability and resiliency of the grid, promoting energy independence, and reducing electricity costs for consumers, all the while providing key revenue and environmental benefits to the areas in which they reside.

HR 8954 Will Ensure a Fair Return for States and Counties, Conservation Efforts, and Expedite the Processing of Permits

ACP strongly supports the revenue sharing proposal in PLREDA 2024 as it will ensure a fair return for states and counties from renewable energy development, promote related conservation efforts, and expedite the processing timelines for renewable energy projects on public lands.

Currently, 100% of rents, fees, and other revenues generated from wind and solar energy projects on public lands are directed to the Federal treasury. In contrast, Federal law requires that oil and gas revenues must be shared with states, and that geothermal revenues must be shared with states and counties. PLREDA 2024 would create parity in the treatment of revenues of energy resources on public lands by reinvesting revenues from renewable energy projects back into surrounding states and counties, conservation efforts, and the processing of permits.

Specifically, by allocating 25% of the federal revenue to the county where the project is located and another 25% to the state, this bill will help boost local economies and guarantee that state and local residents rightly benefit financially from

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[2] Bureau of Land Management, *What We Manage Nationally*, https://www.blm.gov/about/what-we-manage/national (explaining that BLM administers one-tenth of America's land base); U.S. Forest Service, *Meet the Forest Service*, https://www.fs.usda.gov/about-agency/meet-forest-service.

[3] Clean Air Task Force, *The technical potential for clean energy deployment on BLM and other federal lands in the lower forty-eight United States* (Jan. 2024), https://www.catf.us/2024/01/clean-energy-deployment-potential-blm-federal-lands/.

[4] *Id.*

[5] Bureau of Land Management, Biden-Harris Administration delivers historic milestones, new actions for clean energy on public lands (April 11, 2024), https://www.blm.gov/press-release/biden-harris-administration-delivers-historic-milestones-new-actions-clean-energy (explaining that the Department has recently permitted more than 25 gigawatts of clean energy projects on public lands, which is enough clean energy to power more than 12 million homes across the country, surpassing the Energy Policy Act of 2020's public land utilization targets ahead of the 2025 deadline).

[6] Bureau of Land Management, *Active Renewable Projects*, https://www.blm.gov/programs/energy-and-minerals/renewable-energy/active-renewable-projects.

[7] See https://www.blm.gov/programs/energy-and-minerals/renewable-energy/active-renewable-projects, https://www.blm.gov/sites/default/files/docs/2023-03/PROJECT LIST SOLAR FY2022.pdf, and https://www.blm.gov/sites/default/files/docs/2021-11/PROJECT%20LIST%20WIND_October%202021.pdf.

[8] American Clean Power Association, Clean Power Annual Market Report 2023.

the renewable energy projects they host in their communities. As with the sharing of revenues from other energy sources, such as oil and gas, communities can invest revenue from these projects in schools, libraries, roads, and other public services.

Equally, the Renewable Energy Resource Conservation Fund set up by the bill will help Federal, state, local and Tribal agencies support their conservation efforts, including efforts to restore and protect fish and wildlife habitats, corridors, and wetlands. As such, the bill strikes an important balance between supporting renewable energy on public lands while helping preserve these lands and their surrounding areas for other uses, such as hunting, fishing, hiking, and biking.

It is also important to recognize that improvements to deploying renewables on public lands can only go so far if BLM and USFS offices don't have the resources to process their permits. By allocating revenue that could be used to add to the capacity and skills to effectively manage and process renewable energy permits on public lands, the gap between the potential for renewable development on public lands and the actual number of projects developed thereon can be narrowed.

Ultimately, revenue sharing is a win-win. It supports renewable energy development on public lands, while at the same time ensuring that the benefits of this development further support the areas in which they are located.

Include Energy Storage

We encourage members to consider including energy storage in the definition of energy project as they work to finalize the bill. Including energy storage in the definition of renewable energy project is a commonsense measure that will make sure states and communities and their environments benefit from all aspects of renewable energy development on public lands and the revenue sharing program created by this bill. Many developers build hybrid projects that include both renewable energy generation, such as wind and solar, and energy storage, as well as standalone storage projects. Permitting fees from all these resources should be included in any revenue sharing provision.

Further Permitting Reforms

While this bill represents a significant step toward facilitating the development of renewable energy projects on public lands through revenue sharing, more reforms are needed to support the responsible, effective, and efficient siting of critical energy infrastructure on these lands and across the nation. To that end, ACP encourages this Committee and Congress consider other reforms, consistent with the broader bipartisan NEPA reforms enacted by Congress in 2023, that would improve the permitting process for energy infrastructure, including the following:

- **Application Processing Timeline:** Establish a default timeline of 30 days from the date of receipt of an application for a Cost Recovery Agreement and not more than 180 days for the issuance of the Notice of Intent (NOI) for an Environmental Impact Statement (EIS) and less for an Environmental Impact Statement; these milestones start the clock for preparing a NEPA document and agencies can avoid triggering it by slow-walking the issuance of them.
- **Subsequent Authorizations:** Require authorizations after a NEPA document is finished to be issued no later than 180 days after the issuance of a record of decision or finding of no significant impact; once NEPA review is done, agencies can delay the issuance of a permit by foot-dragging these authorizations.
- **Expand Utilization of Programmatic Review:** Require agencies to use programmatic environmental documents and tiering from those documents to expedite the issuance of project-specific permits and eliminate repetitive considerations of the same issues.
- **Categorical Exclusion Process Improvements:** Establish improvements to improve the use of categorical exclusions and require agencies to issue requests for information to solicit ideas for new categorical exclusions.

Conclusion

ACP strongly supports PLREDA 2024 which is vital to unleashing our nation's clean energy potential across the United States. Revenue sharing will encourage development of renewable energy projects on federal public lands—commensurate with their potential to host them—while ensuring a fair return for states, counties, and conservation.

Mr. STAUBER. Thank you very much. Our next witness is Dr. Steve Feldgus. He is the Principal Deputy Assistant Secretary for the Land and Minerals Management at the Department of the Interior, and he is based right here in Washington, DC.

Dr. Feldgus, welcome. You are now recognized for 5 minutes.

STATEMENT OF STEVE FELDGUS, PRINCIPAL DEPUTY ASSISTANT SECRETARY FOR LAND AND MINERALS MANAGEMENT, DEPARTMENT OF THE INTERIOR, WASHINGTON, DC

Dr. FELDGUS. Thank you, Chairman Stauber, Ranking Member Ocasio-Cortez, and members of the Subcommittee, for the opportunity to provide testimony on behalf of the Department of the Interior. My name is Steve Feldgus, and I am the Department's Principal Deputy Assistant Secretary for Land and Minerals Management. I am pleased to be able to provide testimony today on three pieces of legislation: H.R. 7053, the Orphan Well Grant Flexibility Act; H.R. 8954, the Public Land Renewable Energy Development Act; and the discussion draft of the Comprehensive Offshore Resource Evaluation, or CORE Act.

These bills address critical issues related to programs managed by various parts of the Department, including the Orphan Well Grant program, renewable energy development on public lands, and oil and gas development on the Outer Continental Shelf.

H.R. 7053, the Orphan Well Grant Flexibility Act, relates to the Department's orphaned well grant programs established by Section 40601 of the Bipartisan Infrastructure Law. H.R. 7053 would prohibit requiring states to collect methane emissions data as a condition of eligibility for orphaned well grants. Additionally, the bill requires the National Academies of Sciences, Engineering, and Medicine to conduct a study on the community impact of the Orphan Well Grant program.

The Department supports the proposed study, as we strongly believe in the value of comprehensive and accurate data to assess the effectiveness of taxpayer-funded initiatives. For the same reason, the Department believes that methane measurement is essential for understanding the effectiveness of the Orphan Well Grant program. Accurate methane data is crucial for evaluating the success of our well-plugging activities, and for making informed decisions that protect our communities and the environment.

Methane emissions from orphaned wells contribute significantly to environmental, safety, and economic challenges. Without accurate data, effective mitigation becomes extremely difficult. The elimination of methane monitoring requirements for grant recipients would severely hamper the effectiveness of the orphaned well program and, as a result, the Department cannot support H.R. 7053.

Turning to H.R. 8954, the Public Land Renewable Energy Development Act, this bill would establish a new distribution structure for revenue from solar and wind development on public lands. Currently, all revenues from such development goes to the U.S. Treasury. Under the bill, half of all revenues would be allocated to the states and counties in which the development was located; one quarter would go to the Department of the Interior for administration of the BLM's renewable energy program, including actions to

facilitate processing of renewable energy permits on Federal lands; and the remaining quarter would be deposited in a new Renewable Energy Resource Conservation Fund. This fund would be used to support protection and restoration of important fish and wildlife habitat and water resources, as well as to secure recreational access to Federal lands.

The Department is committed to responsibly mobilizing the tremendous renewable energy resources of our nation's public lands, and we look forward to working further with the sponsor and the Subcommittee on this shared goal. We recognize the interests of states and counties in receiving benefits from development on public lands in their jurisdiction, and this revenue allocation would be extremely helpful for supporting the additional responsibilities that states and counties take on to accommodate and manage renewable energy projects that are located in their jurisdictions.

The Department also recognizes the potential benefits that could come from the fund established by the bill, which would enhance outdoor recreation opportunities and support state and tribal wildlife conservation efforts to mitigate potential impacts from renewable energy development.

Finally, the Department appreciates that the bill exempts cost recovery revenue from the new revenue distribution structure, as those funds are essential for BLM to cover application processing costs.

Regarding the discussion draft of the CORE Act, our preliminary review indicates that the bill amends Section 357 of the Energy Policy Act of 2005 to expand the Department's comprehensive inventory and analysis of undiscovered oil and natural gas resources on the Outer Continental Shelf. The Department notes that these changes will require additional research, funding, and time to conduct. In addition, some of the provisions within the discussion draft regarding analysis and forecasting may duplicate existing provisions.

The discussion draft also contains a number of provisions regarding incidental take authorizations under the Marine Mammal Protection Act, and geological and geophysical surveys related to oil and gas activities in the Gulf of Mexico. While the Department strongly supports permitting and authorization efficiency, we also emphasize the need to thoroughly evaluate the impacts associated with oil and gas activities, including geological and geophysical surveys on marine resources. The Department would like to work with the sponsor and the Subcommittee on how the bill's requirements could be aligned with the Department's existing processes, while ensuring continued protection of important marine resources.

Finally, I would like to note that the U.S. Geological Survey has provided a statement for the record on H.R. 8665, the Supercritical Geothermal Research and Development Act.

Thank you again for the opportunity to testify on these bills, and I look forward to your questions.

[The prepared statement of Dr. Feldgus follows:]

PREPARED STATEMENT OF STEVE FELDGUS, PH.D., PRINCIPAL DEPUTY ASSISTANT SECRETARY, LAND AND MINERALS MANAGEMENT, U.S. DEPARTMENT OF THE INTERIOR

ON H.R. 7053 AND H.R. 8954

H.R. 7053, the Orphan Well Grant Flexibility Act of 2024

Introduction

Thank you for the opportunity to testify on H.R. 7053, the Orphan Well Grant Flexibility Act of 2024. The bill relates to the Department of the Interior's (Department) orphaned well grant programs established under Section 349 of the Energy Policy Act of 2005, as amended by Section 40601 of the Infrastructure Investment and Jobs Act (IIJA), and would, among other impacts, change methane emission measurement requirements for state grant recipients. Because understanding the reduction in methane emissions is critical to measuring the success of the orphaned well program and in line with clear Congressional intent in the IIJA, the Department opposes the bill. We appreciate the efforts of the Sponsors and the Subcommittee on the bill, and we look forward to continuing to work with Congress through the legislative process.

Background

Methane is a flammable greenhouse gas that is a significant driver of climate change. It is 80 times more potent than carbon dioxide at warming the atmosphere. Orphaned wells in the United States often emit methane continuously, exacerbating climate problems, and volatile organic compounds that can impact the health of nearby communities. Section 40601 of the Infrastructure Investment and Jobs Act (IIJA) established the Department's orphaned well grant program, and the IIJA appropriated approximately $4.7 billion for Tribal and State financial assistance programs as well as a federal program, which are managed by the Department's Orphaned Wells Program Office.

Since the enactment of the IIJA on November 15, 2021, the Department has awarded $565 million in initial grants to 25 states, which has been used to plug more than 7,700 wells as of March 31, 2024. In November 2023, the Department reported to Congress that based on information provided in the State Initial Grant Quarterly Performance reports, as of June 2023, combined annual pre-plugging methane emissions from a total of 497 wells measured in four states were equal to approximately 11,530 metric tons of carbon dioxide equivalent emissions per year. The Department has also awarded $394 million in formula grant awards to 16 states, and recently opened the application window for matching grants, the first of two categories of state performance grants, making up to $30 million available per state. In September 2023, $40 million was made available to Tribes in an initial round of funding, and a second round of Tribal grant applications are currently under review. Five federal land management agencies have also received nearly $150 million in funds to plug orphaned wells on federal lands.

Nationwide, investments through the Department's new program are estimated to have supported over 7,200 jobs and contributed more than $900 million to the economy over the last two fiscal years.

Due to the limited timeframe for States to use initial grant funding, for work funded by those grants States were encouraged but not required to detect and measure methane emissions at orphaned wells before and after plugging operations. For formula and performance grants, because methane emission reduction is one of the clear priorities of IIJA Section 40601—it is the only section under Division D, Title VI, which is titled "Methane Reduction Infrastructure", and the amount of methane emissions reduced is a requirement of the report to Congress in that section—methane measurement is a requirement when plugging wells using those funds.

H.R. 7053, the Orphan Well Grant Flexibility Act of 2024

Section 2 of the bill would make the collection of methane emissions monitoring data optional for the State financial assistance program and preclude methane measurement from being a condition of eligibility for orphaned well grants. These changes would severely hamper the effectiveness of the orphaned well program, and the Department does not support this change. The Department is also concerned that, as written, Section 2 of the bill creates ambiguity and could lead to a number of unintended consequences.

The Department supports Section 3 of the bill, requiring the National Academies Study on Community Impact of Orphaned Well Grant Program.

Methane Measurement Impacts

It is critical to continue measuring methane emissions at each orphaned well that is plugged. Methane measurement is necessary to verify the success of a plugging operation. Since background levels of natural methane exist, there is no way to certify the effectiveness of the plugging operation other than comparing direct methane measurement before and after plugging. Methane measurement also furthers grant program requirements under 2 C.F.R. 200 to measure the recipient's performance to show achievement of program goals and objectives, share lessons learned, improve program outcomes, and foster adoption of promising practices.

Detecting and measuring methane from wells helps mitigate serious human safety concerns. Instruments that detect methane can also detect toxic gases like hydrogen sulfide, ensuring that mitigation steps can be taken to keep the public and workers safe before well plugging begins. In addition, economically disadvantaged communities often bear a disproportionate burden of environmental hazards, including methane and toxic gas emissions from orphaned wells. Ensuring robust before and after measurements of well plugging helps identify and prioritize potential high-polluting wells that could be located near vulnerable populations that experience negative health impacts associated with poor air quality.

Not all orphaned wells emit methane at the same rate. Some are high emitters that release significant amounts of methane, posing increased safety and environmental risks. Methane emissions measurement allows for the detection and prioritization of these urgent cases for plugging and remediation. Finally, methane measurement helps detect potential water contamination, enhances our understanding of geologic factors leading to emissions from unplugged wells and the predictability of future emissions through the increased collection of data, improves the accuracy of reporting, and helps create jobs for American workers, particularly those trained using methane measurement equipment and conducting field assessments.

Elimination of the methane measurement requirement could also severely undermine the Department's ability to better understand the magnitude and characteristics of methane emissions from orphaned wells across all jurisdictions, creating inconsistencies in data collected from state, private, Tribal and Federal lands. It would also weaken the Department's ability to make data-driven policy and program implementation decisions as required by the Foundations for Evidence-Based Policymaking Act of 2018.

The Department is also concerned about the ambiguity created by Section 2 as to the purposes for which States may use awarded funds. Such ambiguity could potentially lead to the use of substantial portions of grants for activities unrelated to plugging, remediating, and restoring orphaned wells.

Proposed National Academies Study

The Department supports Section 3, the National Academies Study on Community Impact of Orphaned Well Grant Program. On July 18–19, the Department engaged the National Academy of Sciences, Engineering and Medicine (NASEM) to convene a workshop to discuss existing practices and standards for plugging orphaned and/or abandoned hydrocarbon wells. The Department has also engaged NASEM to convene an ad hoc committee of experts to provide advice to the Department on regulatory, technical, scientific, and economic considerations for plugging and remediating orphaned wells, and supports entering into an agreement with NASEM to study the effect of the plugging and remediation activity on economic development, housing trends, and other potential benefits.

Conclusion

The Department of the Interior emphasizes the critical need for continued methane measurements at orphaned wells before and after plugging. Methane emissions from these wells contribute significantly to environmental, health, and safety challenges, necessitating accurate data for effective mitigation. Because H.R. 7053 would eliminate methane monitoring requirements for grant recipients, the Department opposes the bill.

Thank you for the opportunity to testify on this bill.

H.R. 8954, Public Land Renewable Energy Development Act

Introduction

Thank you for the opportunity to testify on H.R. 8954, the Public Land Renewable Energy Development Act (PLREDA). H.R. 8954 seeks to promote and expedite the development of renewable energy projects on Federal lands through the distribution

of revenues collected from wind and solar projects in the regions in which projects are located. The bill also establishes a special account in the U.S. Treasury as a vehicle to deliver additional conservation and recreational access funding to Federal agencies, Tribes, states, and counties.

H.R. 8954 aligns with the Biden-Harris Administration's goal to promote and expedite the responsible development of renewable energy projects, and we appreciate the work of the Sponsor and the Subcommittee in advancing legislation that supports this goal.

Background

The BLM manages approximately 245 million surface acres, located primarily in 12 western states, and approximately 700 million acres of subsurface mineral estate. The Federal Land Policy and Management Act (FLPMA) sets forth the BLM's multiple-use mission, directing that public lands generally be managed for a broad range of uses, such as renewable and conventional energy development, livestock grazing, timber production, hunting and fishing, recreation, wilderness, and conservation—including protecting cultural and historic resources. FLPMA also requires the BLM to manage public land resources on a sustained-yield basis for the benefit of current and future generations.

BLM-managed public lands provide excellent solar, wind, and geothermal energy potential and are an important component of the Administration's broader strategy to rapidly reduce U.S. greenhouse gas emissions by at least 50 percent by 2030 and achieve a carbon pollution-free electricity sector by 2035. Consistent with the Energy Act of 2020, the BLM continues to accelerate responsible permitting of renewable energy projects on public lands. Since January 21, 2021, the BLM has permitted projects that are expected to provide over 7.3 gigawatts of clean energy—enough to power nearly 2.4 million homes. These efforts contributed to the Administration recently surpassing the goal of permitting 25 gigawatts of clean energy projects on BLM-administered public lands by 2025. In addition to specific project approvals, the BLM has also leased eight new areas in Solar Energy Zones with the capacity to generate nearly 2.5 gigawatts of additional clean energy. Moreover, on May 1, 2024, the BLM finalized its *Rights-of-Way, Leasing, and Operations for Renewable Energy Rule*, which will lower the cost of developing solar and wind projects, improve renewable energy project application processes, and incentivize developers to continue to responsibly develop solar and wind projects on public lands. These changes are expected to translate, over time, to a reduction in the average cost of wind and solar energy, which will stabilize or even reduce the cost of energy to consumers, even as the cost of other energy sources may experience increased volatility.

H.R. 8954, Public Land Renewable Energy Development Act

H.R. 8954 would establish a new revenue distribution structure for receipts from solar and wind development on public lands. Under the bill, beginning January 1, 2025, 25 percent of receipts would be allocated to the state within the boundary of which the revenue is derived; 25 percent to the counties within the boundaries of which the revenue is derived, split based on the percentage of land used in each county; 25 percent to the Secretary of the Interior (Secretary) to administer BLM's renewable energy program, including actions to facilitate the processing of renewable energy permits on Federal land; and 25 percent would be deposited in a new Renewable Energy Resource Conservation Fund (Fund).

The Secretary would be permitted to make amounts in the Fund available to Federal and state agencies and Tribes to protect and restore important fish and wildlife habitat and water resources, as well as to secure recreational access to Federal lands. The bill also provides an exception for revenue received from section 504(g) of FLPMA used for processing right-of-way (ROW) applications, which gives the Department of the Interior (Department) the authority to collect cost recovery revenue for the processing and monitoring of ROW applications.

Analysis

The BLM recognizes the interests of states and counties in receiving additional revenue from local wind and solar projects. Currently, states and local governments receive revenue generated by a variety of other activities on public lands—such as states receiving roughly half of the revenues generated by oil, gas, and coal development within their borders—and this revenue sharing can help pay for public services associated with projects on public lands. However, all revenues from renewable energy development currently go to the U.S. Treasury. The BLM appreciates the Subcommittee's interest in providing local communities with benefits from development on public lands in their jurisdictions. The BLM also appreciates the potential

benefits that could come from the Fund established by the bill, which would enhance outdoor recreation opportunities and support state and Tribal wildlife conservation efforts to mitigate potential impacts from renewable energy development.

Similarly, the BLM appreciates that H.R. 8954 provides an exception to its revenue allocation for revenue received from section 504(g) of FLPMA. If enacted, this exception would help ensure continued support for prioritization of renewable energy and energy transmission permit processing by retaining revenues received from local ROW grants. Currently, these funds are placed into a special account in the U.S. Treasury that the BLM uses to process thousands of ROW applications.

Conclusion

The Department and the BLM are committed to responsibly mobilizing the tremendous renewable energy resources of our nation's public lands. We share the Sponsor's and the Subcommittee's interest in supporting the development of those resources, consistent with environmental protections and public involvement in agency decision-making. The Department and the BLM look forward to continuing to work with the Subcommittee and Congress on these important issues.

QUESTIONS SUBMITTED FOR THE RECORD TO DR. STEVE FELDGUS, PRINCIPAL DEPUTY ASSISTANT SECRETARY FOR LAND AND MINERALS MANAGEMENT, DEPARTMENT OF THE INTERIOR

Dr. Feldgus did not submit responses to the Committee by the appropriate deadline for inclusion in the printed record.

Questions Submitted by Representative Westerman

H.R. 7053

Question 1. For the federal and state orphaned wells programs under the IIJA, is the Department tracking how much of each respective pot of money is being used on plugging efforts versus the other activities listed in Section 40601(c)(2)(A) and Section 40601(b)(2)?

1a) If so, please send that breakdown?

Question 2. Why didn't the Department notify states in the Department's Formula Grant Guidance that the funding would be subject to Endangered Species Act and the National Historic Preservation Act requirements?

Question 3. How many wells do you anticipate being plugged by states using Formula Grant money in FY 1924?

H.R. 8954

Question 4. How much yearly revenue is generated by energy storage facilities located on federal lands? If energy storage projects currently under review are approved, how much additional revenue will be generated?

Question 5. What percentage of wind and solar projects currently under review at BLM are co located with an energy storage facility? How does this number compare with standalone energy storage facilities under review on federal lands?

Question 6. What is the average timeline between the date of receipt of an application for a Cost Recovery Agreement and approval for energy projects on federal land since 2021?

Question 7. What is the average timeline between the submission of a project proposal and a Notice of Intent (NOI) for an Environmental Impact Statement (EIS) being issued for energy projects on federal land since 2021?

Question 8. What is the average timeline for completion of an EIS once an NOI has been issued for energy projects on federal lands since 2021?

Mr. STAUBER. Thank you very much, Dr. Feldgus. Our last witness is Mr. Jim Wright. He is the Commissioner of the Railroad Commission of Texas, and he is based in Austin, Texas.

Mr. Wright, you are now recognized for 5 minutes.

STATEMENT OF JIM WRIGHT, COMMISSIONER, RAILROAD COMMISSION OF TEXAS, AUSTIN, TEXAS

Mr. WRIGHT. Chairman Stauber, Ranking Member Ocasio-Cortez, and members of the Subcommittee, thank you for the invitation to testify before you today about the need for greater state flexibility within the Department of the Interior's Orphaned Well Plugging Grant program, and how the legislation introduced by Representative Thompson, H.R. 7053, the Orphan Well Grant Flexibility Act, provides that flexibility and would help achieve our common goal of plugging as many orphan wells as possible with these taxpayer dollars.

As I discussed in my written testimony, the state of Texas has a long and successful track record of plugging orphan wells through our state-managed plugging program. While I am proud of the work the Commission has been able to accomplish over the past 40 years, we have more work to do, which is why I am pleased to see the inclusion of Federal funding for orphan well plugging included in the IIJA. This funding provides opportunity to significantly reduce the U.S. orphan well population, in addition to our existing state funds.

I am proud to report that the state of Texas was able to successfully deploy the $25 million in funding we received through the initial grant to plug 730 wells, in addition to the 1,000-plus wells we plugged with state resources. While deployment of the initial grant funds was effective, the subsequent formula grant has not achieved a similar level of success due to additional terms, conditions, and requirements which increase costs and add significant delays to complete each plugging.

Put simply, while the initial grant was successful when it comes to the formula grant, taxpayers are getting less, paying more, and waiting longer.

One issue is the cost of methane detection and monitoring. The inclusion by DOI of methane monitoring as a requirement for receiving formula grant funds can add anywhere from $2,000 to $5,000 to the average cost. I recognize that, as Members of Congress, you are likely used to hearing numbers with a few more zeros behind them, but these are real costs that have a real impact on the state's ability to plug as many orphan wells as possible.

For many states with significant orphan well populations, raising plugging costs by 10 percent means that ultimately there will be 10 percent fewer wells plugged in our state. Texas is not alone in this concern. The Interstate Oil and Gas Compact Commission, as well as the Environmental Defense Fund both provided feedback to the Department of the Interior as it was seeking comment on its draft formula grant guidance last year. Unfortunately, these suggested changes were not included in the DOI's final guidance.

One thing which I did not include in my written testimony, but would like to note, is with respect to the "J", or "jobs," in IIJA. Following the initial passage of the IIJA, and as the initial grant funds were being utilized, we saw significant interest in new entrants into the well-plugging space. That is no longer the case. Delays in project approvals due to these new, stringent require-

ments have led to at least one company who went out and hired and bought equipment to let me know they were getting out of the plugging business, selling the equipment, and letting those new hires go.

If there is one thing you take away from my testimony today, I hope it is this: When it comes to our nation's orphan well population, it is important to remember that each orphan well is different. They are all unique. Age, geological formation, depth, proximity to groundwater, onshore or offshore, these wells are as unique as the individual districts you represent. That is why it is so important states have the necessary flexibility to determine how best to utilize these funds. While it may be prudent for some states to perform methane monitoring, for others the additional cost might be better served plugging more wells. That is why I am here today, and I support this bill.

As the deployment of the initial grant made clear, when given the opportunity states can move quickly to utilize and deploy these Federal funds in a manner best suited to address their specific orphan well population.

With that, thank you, and I will be happy to answer any questions.

[The prepared statement of Mr. Wright follows:]

PREPARED STATEMENT OF THE HON. JIM WRIGHT, COMMISSIONER, RAILROAD COMMISSION OF TEXAS

ON H.R. 7053

Chairman Stauber, Ranking Member Ocasio-Cortez, Members of this Subcommittee, thank you for the invitation to testify before you today about our experience with the Department of Interior's Orphan Well Plugging Grant program and how it might be improved.

The Railroad Commission of Texas was established in 1891, making it the oldest regulatory agency in Texas, and one of the oldest of its kind in the nation. The Commission is the state agency with primary regulatory jurisdiction over the oil and natural gas industry, pipeline transporters, natural gas and hazardous liquid pipeline industry, natural gas utilities, the LP-gas industry, critical natural gas infrastructure, and coal and uranium surface mining operations. The Commission exists under provisions of the Texas Constitution and exercises its statutory responsibilities under state and federal laws for regulation and enforcement of the state's energy industries. The Commission also has regulatory and enforcement responsibilities under federal law including the Surface Coal Mining Control and Reclamation Act, Safe Drinking Water Act, Pipeline Safety Acts, Resource Conservation Recovery Act, and Clean Water Act.

As the members of this panel are no doubt aware, the State of Texas is the largest energy producer in the nation. We are responsible for over 42% of all U.S. oil production, and 28% of U.S. Natural Gas production. Texas contains almost half a million miles of pipeline, through which energy products travel to reach refineries of which the state of Texas is responsible for a full third of all U.S. capacity.

Texas State Managed Well Plugging

Like all oil and gas producing states, Texas must contend with a subset of wells for which there is no viable operator and is thus considered orphaned.

The Commission maintains oversight over Texas's orphan well plugging program, which is funded through regulatory fees, permit fees and bonds paid by the Oil and Gas industry. Since its inception 40 years ago, the Commission's State Managed Plugging Program has plugged over 45,000 wells, constituting approximately half of all wells plugged by state programs.[1]

[1] Idle and Orphaned Oil & Gas Wells: State and Provincial Regulatory Strategies, IOGCC 2024

Federal Orphan Well Grant Funding

Following the passage of the Infrastructure Investment and Jobs Act (IIJA), the Commission applied for the first of the three available funding mechanisms available under the IIJA for orphaned well plugging and was awarded $25 million through the Initial Grant. I am proud to report that a few short weeks later, the State of Texas was among the first in the nation to begin plugging orphan oil and gas wells using federal grants from the IIJA. Through the first tranche of $25 million dollars received under the Initial Grant phase, Texas ultimately plugged 730 wells.

The successful deployment of these Initial Grant funds by Texas and other states was due in large part to the fact these funds had very little in the way of new requirements or conditions for recipient states. That stands in stark contrast to the subsequent Formula Grant requirements, such as required methane detection and monitoring, and other prerequisites which I highlight later in this testimony. These additional requirements have resulted in a substantial increase in the average cost to plug a well, while simultaneously adding significant time to complete each plugging job.

Put simply, while the Initial Grant was successful, when it comes to the Formula Grant, taxpayers are getting less, paying more, and waiting longer.

Methane Detection & Monitoring Requirements: Additional Cost = Opportunity Cost

The Commission has repeatedly expressed concerns to The Department of the Interior (DOI), the federal agency responsible for establishing rules for the disbursement of funds from the IIJA for plugging of orphan wells, that requiring methane monitoring as a condition of receiving federal formula grant funds would result in additional contracting costs and ultimately result in fewer orphan wells being plugged.[2]

Texas is not alone in raising this concern. The DOI received comments from a diverse group of stakeholders in response to the Draft Formula Grant Guidance published in January of 2023. The Interstate Oil and Gas Compact Commission (IOGCC), which is composed of 29 oil and gas producing states, including California, New York, Arizona, Louisiana, Texas and others which are represented by the members of this committee, unanimously passed a resolution which called for the DOI to provide states with flexibility with respect to the formula grants.[3] The IOGCC resolution states that additional requirements not expressly required by the IIJA statute will serve to increase the cost to plug an orphan well, resulting in fewer wells being plugged. Section 40601 of the IIJA contains no requirement with respect to methane detection or methane monitoring as a condition of receiving formula grant funds. This requirement was added as a condition to receive funds in express contravention of the statutory language which was passed into law. The statutory language in IIJA affirmatively requires the DOI to consult with the IOGCC and its member states regarding the implementation and distribution of Federal Orphan well plugging funds. As a member of that body, I have found that consultation to be sorely lacking.

Indeed, other stakeholders shared similar concerns to those held by the Commission and the IOGCC. The Environmental Defense Fund, for example, noted in their comments to DOI on March 24, 2023 that "*There are some requirements in the current draft that would likely significantly drive up the costs and time needed to plug wells and could materially reduce the number of wells states will be able to plug . . . Of particular concern is the requirement to measure and quantify methane emissions before and after plugging*."[4]

Estimates vary, but the specific costs of monitoring can result in anywhere from $2,000 to $5,500 dollars in additional expenses. For context, plugging an onshore well varies due to several factors, including geographic location, but has averaged anywhere between $30,000 to $35,000 over the last several years. Simply put, spending 10% or more for methane detection and monitoring means 10% fewer wells that could ultimately be plugged in Texas. That does not account for the additional time needed to conduct the pre- and post-testing requirements, which can also add significant costs.

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[2] Railroad Commission of Texas: Response to Department of Interior Draft Formula Grant Guidance, February 24, 2023

[3] IOGCC Resolution 23.053: *Urging Congress to Direct the Department of Interior to Follow Statutory Language in Implementation of Section 40601 of the IIJA*, Interstate Oil and Gas Compact Commission, May 24, 2023. There were no votes against the resolution.

[4] Environmental Defense Fund: Response to Department of Interior Draft Formula Grant Guidance, March 24, 2023

While this extra expenditure may provide some data, it does nothing to change the necessary solution, which is to plug the well.

Importantly, several states chose to use the Initial Grant funding to measure methane emissions, as was within their right in the Initial Grant. H.R. 7053, the Orphan Well Flexibility Act, simply extends that optionality for remaining grant funds, consistent with the intent and text of the IIJA. It bears repeating that H.R. 7053 does nothing to prohibit states from utilizing federal funds for the purposes of methane detection and monitoring. However, for states with significant orphan well populations, the current requirement under the formula grant to spend additional resources to detect and monitor for methane at the expense of plugging fewer wells makes little sense. It should also be noted that these testing requirements mandated by the DOI requires detection equipment 100 times more sensitive than those required under the Inflation Reduction Act's Methane Emissions Reduction Plan (MERP) run by the EPA and the Department of Energy.[5,6] Such a requirement makes little sense and, again, represents additional and unnecessary costs due to their rigor. This inflexibility is self-defeating to the underlying goals of the IIJA and ultimately limits a state's ability to innovate and stretch these taxpayer dollars further.

Several states have had conversations with plugging contractors and others about the potential to utilize the voluntary carbon credit market to offset plugging costs. This could represent a way to lower the average cost to plug a well, enabling states to stretch these taxpayer dollars further and ultimately plug more wells. Importantly, the voluntary carbon credit markets such as the American Carbon Registry have standards which the DOI itself references in their methane monitoring guidance materials. Yet, DOI has denied states the opportunity to further explore this as a novel way to potentially lower plugging costs and obtain data related to methane emissions.

While this may not be a practical use of funds for some states, for others it may prove beneficial. Providing flexibility in these Formula Grants so that states may choose whether, and to what degree, they conduct methane testing will result in innovative solutions which directly achieve the goal and intent of Congress through the IIJA.

I support H.R. 7053, the Orphan Well Flexibility Act because I believe the ultimate success or failure of the program hangs in the balance. Texas and many other states have proven with the Initial Grant funding that they are more than capable of being good stewards of taxpayer dollars and making rational decisions which best serve the specific needs of their citizenry as well as the orphan well population in their respective states.

Approval Delays Within the Orphan Well Program Office

While this hearing is focused on providing state flexibility, I would like to take this opportunity to highlight several other issues the Railroad Commission has experienced recently as it relates to burdensome requirements and monitoring efforts which hinders the Commission's ability to utilize the Formula Grant funds effectively.

The Commission submitted its Phase I Formula Grant on September 21, 2023. Over three months later, on January 11, 2024, the Orphaned Well Program Office informed those states that submitted a formula grant application that new terms and conditions would be included in their Formula Grant awards. One day later, on January 12, 2024, the Commission received its Phase I Formula Grant award including new Award Term 25: Endangered Species Act (ESA) Compliance Reviews and new Award Term 26: Historic Preservation.

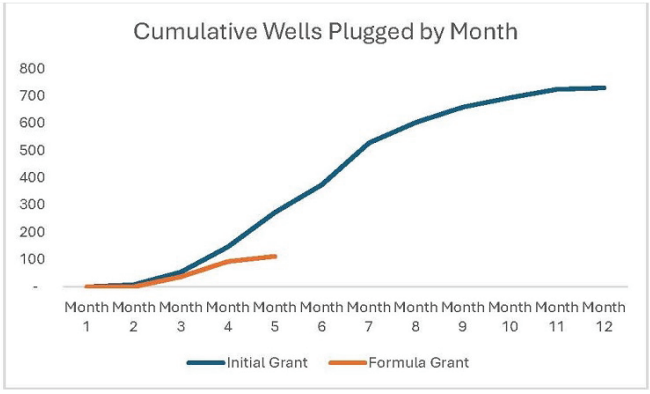
The Railroad Commission project period began on February 1, 2024, with the agency positioned to begin plugging orphaned wells across Texas immediately, just as it had done with the Initial Grant funding. Compliance with the new award terms, and the absence of processes within the Orphaned Well Program Office (OPWO) to implement those terms delayed well-plugging work until April 8, 2024, when six wells were finally able to be plugged in Bexar County using Phase I Formula Grant funds. The addition of ESA Section 7 and National Historic Preservation Act (NHPA) Section 106 compliance to the award terms and conditions adds significantly to the oversight activities of the OPWO.

Absent changes to the requirements of ESA Section 7 and NHPA Section 106, well plugging may be slowed to such a pace that funds may not be expended before their expiration on September 30, 2030. During the first five months of the Formula

[5] Orphan Well Methane Measurement Guidelines (Page 24), U.S. Department of Interior

[6] Methane Measurement Guidelines for Marginal Conventional Wells (Page 9), U.S. Department of Energy

Grant, the Commission plugged approximately 60 percent fewer wells than were plugged during the first five months of the Initial Grant (9/22–2/23, 273 wells vs 2/24–6/24, 112 wells).



Of the $79.6 million awarded to Texas under phase I of the Formula Grant, the Commission has drawn on approximately $3 million to date. This is not due to a lack of trying, nor is it for a lack of wells to be plugged. It is due to significant delays and reviews by the OPWO with respect to ESA reviews, and compliance with the NHPA.

Endangered Species Act

Compliance with ESA Section 7 delays the implementation of well plugging activities as the Commission must assess each project area for applicable species. OWPO has 10 business days to concur with a "no effect" determination made by the Commission, the best-case outcome. However, the OWPO has, in several instances, rejected the Commission's "no effect" determination, and instead directed the Commission to perform site surveys for specific species or implement other mitigation measures, extending the timeline indefinitely before a project may proceed. Should a review result in a "may affect" or "not likely to adversely" affect determination, the timeline is significantly longer as the Commission is required to seek concurrence with the determination from U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS). Should formal consultation be required, the OWPO must submit the initiation package. Award Term 25 indicates that the Railroad Commission may seek technical assistance from the USFWS or the NMFS. While that assistance was sought from USFWS in the development of internal processes, assistance has not been forthcoming in a timely manner.

National Historic Preservation Act

Compliance with NHPA Section 106 adds a minimum of 30 days to each well plugging project. Award Term 26 describes plugging as "undertakings" with the potential to affect historic properties.

Among the requirements for NHPA is the need for a "Cultural Monitor" to oversee well plugging for several wells in plugging packages submitted to DOI. These are individuals, such as archeologists, hired to conduct site surveys and monitor the plugging operations for the unlikely discovery of cultural artifacts during ground disturbance. These are unplugged orphan wells, which by their very nature have been disturbed at some point in the recent past by modern human activity.

Real World Implications

The delays experienced by our staff with respect to these provisions have had an impact on our ability to plug orphan wells in a timely fashion. This is especially concerning in emergency situations and when it is evident that a leak is occurring.

In June of this year, a little over one month ago, the Railroad Commission was notified about an orphan oil well which was leaking produced water. The Commission submitted the project to the Texas Historical Commission for NHPA Section 106 Review, as well as to the DOI requesting an expedited review of their ESA Analysis. The Commission received a completed review from the Texas Historical Commission within 24 hours. The USFWS Official Species List identified five

species as potentially present in the project area. Three species (Tricolored Bat, Piping Plover, and Rufa Red Knot) only need to be considered for wind energy projects. The two fish species (Sharpnose Shiner and Smalleye Shiner) only need to be considered for reservoir projects or projects that alter the flow of water in rivers and streams. While RRC staff determined the project would have no effect on these species, since the plugging job in question did not involve wind turbines or reservoirs, it took the DOI five days to reach a similar conclusion before granting the RRC approval to proceed and indicating standard approval would be forthcoming. Standard approval from the DOI was received 18 days later.

Earlier this year, the Railroad Commission submitted for approval an expedited review for a leaking well in Matagorda Bay. On the very same platform as the well in question were seven additional orphan wells and one well on an adjacent platform which the Commission wanted to address simultaneously. Because the leaking well was submitted via emergency procedures with respect to ESA and NHPA requirements, the OPWO only initially approved plugging for the one leaking well. The cost savings of addressing all the wells at once are significant, as the rig mobilization costs constitute a significant portion of a bay or offshore well's total plugging cost, which in Texas averages approximately $500,000 for a bay well and $1,000,000 those further offshore.

Closing

Again, thank you for allowing me the opportunity to testify on the Orphan Well Grant Flexibility Act and update the committee you some of the other issues faced by the Railroad Commission with respect to the Formula Grant funding and coordination with the OWPO.

As I hope my testimony has shown, providing states with flexibility will be key to reducing our nation's orphan well plugging population. It is in America's best interest to use this funding to plug as many orphan wells as possible, and the best way to achieve that is through state flexibility.

As the deployment of the Initial Grant made clear, when given the opportunity, states can move quickly to utilize and deploy these federal funds in a manner best suited to address their specific orphan well population.

Mr. STAUBER. Thank you very much, Mr. Wright. I am now going to recognize Mr. Wesley Hunt from Texas' 38th Congressional District for testimony on his bill.

Mr. Hunt.

STATEMENT OF THE HON. WESLEY P. HUNT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. HUNT. Thank you, Mr. Chairman, and I want to thank the witnesses for testifying today. Thank you all so much for being here.

In 2011, during the Obama administration, BOEM reported 90 billion barrels of oil, and 405 trillion cubic feet of gas, and 162 billion barrels of oil equivalent in the Outer Continental Shelf. In 2016, also during the Obama administration, BOEM reported 91 billion barrels of oil, and 328 trillion cubic feet of gas, and 149 billion barrels of oil equivalent. During the Obama administration, the numbers did not fluctuate in any unusual manner.

Let's fast forward to 2021, under the Biden administration. BOEM reported 68—68—billion barrels of oil and 229 trillion cubic feet of gas, and 109 billion barrels of oil equivalent.

Now, we can agree that President Trump unleashed American oil and gas production to levels that no one has ever seen in this country. It is also true that all of the production that President Biden touts came off the back of the Trump administration. But these reported numbers are suspiciously low, potentially even maliciously low.

From these BOEM-reported numbers came the worst 5-year leasing plan in our nation's history, offering the lowest number of offshore oil and gas leases ever. The current 5-year plan from BOEM offers only three offshore oil and gas lease sales, despite numerous reports of an increase in U.S. and global demand for oil and gas. This is why my legislation, the Comprehensive Offshore Resource Evaluation Act, or the CORE Act, is so important.

Oil and gas will continue to be an important share of our energy mix in the future. And if you think otherwise, quite frankly, you are fooling yourself. Taking politics out of the assessment process, giving BOEM guardrails and direction is imperative for the future of our nation and energy production.

And lastly, Section 4 of the CORE Act relates to the geological and geophysical permitting and surveys, which are crucial to the exploration and development of offshore oil and gas resources. Accurate G&G data is essential for identifying potential deposits, estimating their size, and understanding their characteristics. Modern seismic imaging reduces the risk for exploration and production companies by increasing their likelihood that exploratory wells will successfully tap hydrocarbon deposits, and decreasing the number of wells required in a given area.

Undiscovered oil and gas reserves in the Outer Continental Shelf will significantly boost the U.S. economy. Improving BOEM's data acquisition methods will prompt an increase in domestic oil production, which will bring greater energy security, more affordable energy prices, lower national trade deficits, and increased revenue passed to the states for vital coastal restoration and infrastructure projects for the future, all while producing energy cleaner and in a more responsible manner from this country. And we do it better than anywhere else in the world: the Gulf of Mexico production is 46 percent less carbon intensive than any other country such as Russia, China, and Iran.

The American people deserve an honest oil and gas assessment process. With this bill, we can deliver for American families and for the American public.

Thank you, Mr. Chairman. I yield back the rest of my time.

Mr. STAUBER. Thank you very much. The Chair will now recognize Members for 5 minutes of questioning. I want to first recognize the Full Committee Chair, Chairman Westerman, for 5 minutes.

Mr. Chair, you are up.

Mr. WESTERMAN. Thank you, Chairman Stauber, and thank you to the witnesses for being here.

Dr. Feldgus, recently the Supreme Court had the overturning, essentially, overturning of the Chevron decision which said that Congress is responsible for making laws, not agencies in the Administration. So, in requiring states to conduct monitoring for each orphaned well pre- and post-plugging, do you believe you are meeting the intent of the law?

Dr. FELDGUS. We do absolutely believe we are meeting the intent of the law, yes.

Mr. WESTERMAN. I would like to cite a statement for the record provided by one of the bill's sponsors, Senator Cramer. He says, "When the bill was introduced, it was clear the goal was to boost

the work of state programs." He goes on to quote, "We intentionally gave more flexibility to state programs with the word 'may' in the list of activities they could carry out. We knew states already had programs in place to do this work, and our goal was to inject dollars into their coffers as quickly as possible to keep these skilled workers employed and fix the environmental problem at hand." And I would like to submit that quote to the record, Chairman Stauber.

Mr. STAUBER. So ordered.

[The information follows:]

Statement for the Record

Kevin Cramer
U.S. Senator

Chairman Stauber, Ranking Member Ocasio-Cortez, and members of the committee, thank you for holding today's hearing. I write in support of H.R. 7053, the "Orphan Well Grant Flexibility Act of 2024," bipartisan legislation authored by Representatives Thompson (R-PA-15) and Deluzio (D-PA-17). According to the sponsor, "This legislation removes unnecessary burdens on state agencies regarding certain testing procedures, which will maximize federal dollars and lead to more wells being plugged."[1] Put simply, the bill reflects how the underlying legislation was supposed to be implemented.

When Senator Luján and I wrote the Revive Economic Growth and Reclaim Orphaned Wells Act (REGROW), I was inspired by North Dakota's decision to utilize CARES Act funding for orphaned well reclamation.[2] Our state program kept oil and gas workers on the job as they plugged wells. Senator Luján and I both saw the potential to replicate this on a national scale by supplementing state reclamation funding to get more work done. As our joint summary noted, state and federal agencies had been plugging and reclaiming these wells with limited funds so our goal was "to get funds to states quickly to help unemployed oil and gas workers" and address the hazards associated with orphan wells.[3]

When the bill was introduced, it was clear the goal was to boost the work of state programs. "New Mexico is leading the nation on climate action, and I'm proud to introduce bipartisan **legislation to build on our state's momentum**, help slash methane emissions, and create new opportunities," [emphasis added] stated Sen. Lujan. My comments reflected the same sentiment, "The REGROW Act would **follow our state's lead** by providing states, tribes, and federal agencies the resources they need to properly plug orphaned wells."[4] [emphasis added] REGROW allocated the bulk of the money to state programs so they could get more work done. The bill went to great lengths to provide states with the flexibility needed to continue their reclamation programs without federal interference.

I frequently remind federal agencies to not impose their mediocrity on states' excellence. Unfortunately, that is exactly what the Department of the Interior (DOI or Department) has done with its implementation of the program.

As a critic of lazy legislating, I make a point of being as specific as possible in authoring bills. In a July 2022 essay in the *Harvard Journal of Law & Public Policy* regarding the REGROW Act, I stated, "Throughout the bill writing process, one of my main priorities was to confine the administration and bureaucracy by clearly stating our intent in the definition section so we did not defer to bureaucrats charged with implementation. . . . By using direct language spelling out deference to existing state policy, future administrations and unelected career bureaucrats, regardless of the political party, do not have the authority to set parameters on what constitutes an orphaned well. This clarity was also necessary to expedite implementation of the program by circumventing the administrative rulemaking

[1] https://thompson.house.gov/media-center/press-releases/thompson-deluzio-introduce-orphan-well-grant-flexibility-act

[2] https://www.dmr.nd.gov/oilgas/pressreleases/Oil_and_Gas_Division_Three-Part_Education_Series_on_Well_Plugging_and_Reclamation.pdf

[3] https://www.lujan.senate.gov/wp-content/uploads/2021/04/REGROW-Act.pdf

[4] https://www.lujan.senate.gov/newsroom/press-releases/lujan-cramer-introduce-bipartisan-regrow-act-to-clean-up-orphaned-wells-create-new-jobs-and-opportunities/

processes to put unemployed oilfield workers back to work and remediate the land faster."[5]

Despite the statute's unambiguity, the administration cannot tell the difference between "may" and "shall." We intentionally gave more flexibility to state programs with the word "may" in the list of activities they could carry out. We knew states already had programs in place to do this work and our goal was to inject dollars into their coffers as quickly as possible to keep these skilled workers employed and fix the environmental problem at hand. When I testified before the Senate Energy and Natural Resources Committee on this bill, I said, "We have kept the main thing, the main thing. Rather than inserting things into the measure that would divide us we're focused to getting people back to work and cleaning up the mess."[6] This approach earned the support from a broad coalition ranging from the Environmental Defense Fund to the Independent Petroleum Association of America.

Separately, we had a specific section in the bill dedicated to Performance Grants designed to incentivize states to take added fiscal and environmental actions with their programs. These are optional grants a state could pursue to refine or improve their operations, not additional mandates.

Somehow, despite the clarity, DOI is layering its cumbersome mediocrity onto state programs. When states apply for a Formula Grant, DOI's guidance requires a plan to measure and track methane emissions. Even though the law clearly says "may:" "IN GENERAL.—A State **may** use funding provided under this subsection for any of the following purposes: . . . (I) emissions of methane and other gases associated with orphaned wells."[7] [emphasis added] Some states who have done methane tracking with their initial grants had to spend thousands of extra dollars per well, adding to the cost of an already expensive process. Now, each state is forced to debate whether to invest the additional time and resources into complying with this mandate for their formula grants even though the law does not require it. Those that refuse have had their application rejected. DOI is also requiring states to perform National Historic Preservation Act and Endangered Species Act consultations.[8] The REGROW Act makes no mention of either of these statutes, yet the Department has rendered these complex consultations mandatory despite the fact the land in question is already disturbed. Some states are now backing away from taking the funds, because the requirements outweigh the benefit. The juice is not worth the squeeze. DOI has also taken the liberty of turning the Formula Grant into a series of awards. Despite DOI already announcing how much each state is eligible to receive and saying the formula will not change, it is requiring them to apply and reapply for each tranche.[9] Yet again, this requirement is not written anywhere in what Congress passed. In fact, when describing the application process for a formula grant, the bill specifically uses singular terms, "To be eligible to receive **a formula grant** under this paragraph, a State shall submit to the Secretary **an application** that includes . . ."[10] [emphasis added] This phased approach harms state's planning and contracting ability and requires extra resources and time for each application.

Each of these hurdles is an impediment, not a solution. And each denial or delay means an environmental hazard continues marring land that could be productive or preserved.

The intent of REGROW was to move funds as quickly as possible to resolve hazards on the ground. Lest we forget, when the bill was passed, there were more than 56,000 orphaned wells across the country. When states are reluctant to participate or DOI is slow to release funds, these hazards are perpetuated. For example, Texas, one of the most active and engaged states, has plugged 60 percent fewer wells in the first five months of the Formula Grant than the Initial Grant. Similarly, as of early July, some states with the largest backlogs, including Pennsylvania and New Mexico, have not even been awarded a first phase of formula grants yet. For context, just those two states are eligible for nearly $400 million.[11] That is $400 million sitting in the bureaucracy rather than states getting people to work to clean up the mess.

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[5] https://senatorkevincramer.app.box.com/s/zps5x48c0o3bqrdrjygeker55x5es5eb

[6] https://www.cramer.senate.gov/news/press-releases/sen-cramer-testifies-on-his-bipartisan-orphaned-wells-bill-at-senate-energy-subcommittee-hearing

[7] https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf

[8] https://www.doi.gov/sites/default/files/documents/2024-05/owpo-may-2024-formula-and-matching-grant-faqs.pdf

[9] https://www.doi.gov/media/document/faqs-formula-grants-07-07-2023-pdf

[10] https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf

[11] https://www.doi.gov/pressreleases/biden-harris-administration-invests-660-million-states-plug-orphaned-oil-and-gas-wells

I support Representative Thompson and Deluzio's bipartisan Orphan Well Grant Flexibility Act, but if DOI followed the law, it would not be necessary. A basic reading of REGROW shows the Department is taking liberties Congress never authorized. As the U.S. Supreme Court has pointed out in both *West Virginia v. EPA* and *Loper Bright Enterprises v. Raimondo*, federal bureaucrats are confined by the law. They cannot wish their preferences into statute. Furthermore, the Court has made clear: the absence of a prohibition is not a license. If authority was not given, the bureaucracy cannot take it. I support Congressman Thompson's bill to once again tell DOI these activities are not required for the states as they manage their programs.

Mr. WESTERMAN. So, Dr. Feldgus, will you commit to fixing the formula grant guidance to meet the intent of the law?

Dr. FELDGUS. Well, I do think we are meeting the intent of the law with the current guidance.

Mr. WESTERMAN. Can you elaborate on that?

Dr. FELDGUS. Sure. We think that methane reduction is one of the key goals of that section. It is in the title. It is the only section in the title that is called methane reduction infrastructure. And also, our report to Congress that will be due requires us——

Mr. WESTERMAN. Wouldn't plugging more wells prevent more methane emissions?

Dr. FELDGUS. Well, if we measure the methane that we are plugging, then we would know that, yes.

Mr. WESTERMAN. But if the well is plugged, you are not emitting methane, are you?

Dr. FELDGUS. Well, ideally——

Mr. WESTERMAN. Does it matter if you measure pre-plugging? I could see measuring post-plugging, but why do you need to measure pre-plugging?

Dr. FELDGUS. Well, we need to measure it in order to be able to, first of all, know how successful the program is; also, to know what the risks are of particular wells, knowing which might be emitting more methane versus less methane. There are multiple reasons why it is very useful to have that data.

Mr. WESTERMAN. But would you save money by maybe not plugging if it is not emitting much methane?

Dr. FELDGUS. I mean, it would always save money if you did not plug the well, certainly.

Mr. WESTERMAN. What is the purpose? Isn't the intent of the law to plug wells? I don't see in the law where it says to go measure the methane before you plug the wells, and we have heard testimony that it is costing more money. So, the program is not going to be as effective because you have added on to the intent of the law.

Mr. Van Liew, we know that clean-burning U.S. natural gas has done more to offset global carbon emissions than any other program that is out there. And we also know it is orders of magnitude that has more potential to reduce greenhouse gas emissions than things like electric vehicles that the Biden-Harris administration have pushed so hard. Yet, there seems to be an attack on producing clean, U.S. natural gas, and even a bigger attack on exporting that gas to our allies around the world. And Vladimir Putin seems to be filling that void with his production.

So, how would Representative Hunt's CORE Act ensure that future 5-year plans include more lease sales?

And what mechanisms are included in the bill to prevent future administrations from reducing these opportunities, considering the vast untapped potential of our offshore resources?

Mr. VAN LIEW. Thank you for the question. I am not sure that the bill directly requires an increase in the 5-year plan for leasing areas, but it better informs the government and the citizens of the United States when 5-year plans are being developed as to where resources may exist through geoscience surveying, and also where those resources may not exist. So, not only does it focus on areas where we can lease and add leased areas, but it also looks at areas that may not be useful for leasing.

And to your point on the lowest carbon intensity barrels, among the lowest in the world, we should be expanding on the use of our own resources to reduce carbon intensity globally.

Mr. WESTERMAN. And that leads into my next question. I talked about the cleanliness of U.S. gas, but the CORE Act mandates the determination of net greenhouse gas emission reductions if domestic oil and gas replace imports.

Again, given that the U.S. oil and gas production is already 46 percent lower in greenhouse gas emissions compared to global averages, how will producing our offshore resources domestically lead to significant environmental benefits?

Mr. VAN LIEW. I appreciate the question, and that is why we are supportive of Mr. Hunt's bill in requiring the government to do that analysis so we can make informed decisions in the United States about what impacts we will have compared to the world based on our barrels compared to importing foreign gas and oil to the United States.

Mr. WESTERMAN. Thank you.

I yield back.

Mr. STAUBER. Thank you very much, Chair Westerman. I will now yield 5 minutes to the Ranking Member, Representative Ocasio-Cortez.

Ms. OCASIO-CORTEZ. Thank you so much, Chairman, and I would like to thank all of our witnesses for joining us here today and offering their expert testimony.

During this transition from fossil fuels and a predominantly fossil fuel-reliant economy to the transition to renewable and clean energy sources, one of our essential focuses is making sure that oil and gas workers are not left behind. And it is particularly important in areas where the industry provides an enormous amount of jobs for the local communities. Geothermal energy has its own unique potential to support workers in the transition to clean energy.

Ms. Rogers, can you tell us more about how geothermal energy creates opportunities for those who have worked in the fossil fuel industry?

Ms. ROGERS. Thank you for the question. You are absolutely right. The overlap between the oil and gas and power industry, and the talent set needed in geothermal is a nearly complete match. It is uncanny, but not coincidental. In the subsurface, we use the same reservoir engineers, geoscientists, and rig operators. In the

surface, the plant looks like any other power plant, moving steam through turbines. So, we are using the same talent sets that you would see, control room operators or electricians. And that is not even including the downstream applications of contractors needed to keep these facilities operating 24/7.

The liftoff report of 2023 indicated that there are more than 300,000 of these workers ready to take these positions today. You won't be surprised, then, when I also tell you that some of the start-ups that are actively pursuing next-generation geothermal techniques are coming from people that used to work in the oil and gas industry.

If I may, though, one final point is it is not just the talent set that these organizations, the existing energy industry, can offer. They are uniquely positioned in the world with their rig deployment, with their subsurface data, with their access to a complex network of service providers to actually move and commercialize at a pace that matters for climate. And that is exactly what this bill does.

Ms. OCASIO-CORTEZ. Thank you. And I understand that supercritical or superhot rock geothermal also has unique potential to provide significant, firm, baseload power with minimal emissions and a relatively small footprint. Can you talk a little bit about what supercritical geothermal is and how this kind of energy can complement and fit in the mix of other sources of renewable energy?

Ms. ROGERS. Absolutely. As you pointed out, I believe that many of the climate benefits here are natural byproducts of what we are actually producing: 24/7 reliable energy that is inexhaustible.

Now, the value of pivoting into often deeper, but most importantly, higher temperature, is that you increase the energy density. This has always been the goal since the beginning of time, and energy density drives lower costs. We believe, according to our models, that with the proper investment in R&D like new metals and casings, that we should see a price that is competitive in unsubsidized markets with fossil fuels today.

Ms. OCASIO-CORTEZ. Thank you. And lastly, one of the things I have been very encouraged about, even in this term, is how geothermal is emerging as a bipartisan priority, and how we are seeing a lot of common cause across the aisle in trying to encourage the development of geothermal. So, to that end, and in that spirit, in looking at the landscape of legislation today, what we are considering today, and also more broadly, if there were areas that you would improve upon this legislation, or additional areas that you would encourage us to take a deeper look at, what would those points be?

And from your vantage point as an expert, what are some different things that we should make sure that we have an eye out for?

Ms. ROGERS. Thank you for the question.

I want to emphasize the word R&D, the research and development necessary here. The work that is being suggested is the work that is necessary to fill some of the gaps that naturally occur due to the expertise here. These are not breakthroughs. These are engineering iterations. So, for modest investment we can unlock

significant, to put it into context, pizza ovens operate at higher temperatures than what we are suggesting. But this bill signals the value of the market, and we are confident. Thank you very much.

Ms. OCASIO-CORTEZ. Thank you.

Mr. STAUBER. Thank you very much. I will now recognize myself for 5 minutes.

Dr. Feldgus, doesn't every additional requirement for this funding in the Department Orphan Well Grant program mean higher costs and longer timelines, thus less wells plugged?

Dr. FELDGUS. Well, I will say that we operate under a number of requirements. There are other Federal laws that need to be adhered to when wells are being plugged. There are also general grant requirements for any recipient of a Federal grant. So, there are a whole web of requirements for grant recipients.

Mr. STAUBER. I would like to cite the Environmental Defense Fund's comments on the formula grant guidance, where they flagged this as an issue. They said, "There are some requirements in the current draft that would likely significantly drive up the cost and time needed to plug wells and could materially reduce the number of wells states will be able to plug within the budget and time frame of the formula grants. Of particular concern is the requirement to measure and quantify methane emissions before and after plugging. It is premature, given the state of the science and of the methane measurement industry to require states to quantify methane emissions from every orphan well with a methane show."

They end by recommending that the Department work with the IOGCC to find a cost-effective solution. Did the Department do so?

Dr. FELDGUS. We are currently working with the IOGCC on a number of aspects of the orphan well program. We just conducted a webinar last week for guidance on methane measurement, and we also have the Department of Energy researching new methods, new cheaper ways to detect methane from orphan wells.

Mr. STAUBER. Mr. Wright, do you believe the Department listened to IOGCC and the states to find cost-effective solutions?

Mr. WRIGHT. No, I wouldn't be sitting here today if I believed that.

Mr. STAUBER. Elaborate.

Mr. WRIGHT. We have held several meetings with the Department of the Interior at the Interstate Oil and Gas Compact Commission, expressing some of the concerns that we saw and in what was being talked about, especially in methane measurements. Some of these provisions that we have seen coming out of DOI really didn't become aware to us until the day we actually received the formula grant funding.

So, what I am talking about in my testimony today are some of the hindrances that we are having of actually using and being responsible with taxpayer dollars. And the only technology that I am aware of that would take care of those concerns and issues is plugging the well.

Mr. STAUBER. How many additional wells do you think you could plug if these monitoring requirements were optional, as the law intended?

Mr. WRIGHT. Our estimate with the grant funding that we were allotted, our original intent was to plug 1,000 wells in our fiscal year, but it was not until half of the year had gone by before we received any funding. So, half a year would equate to 500 wells. And now that the ESA and the NEPA is part of the requirement, we are hoping that we can get 200 wells plugged by the end of our fiscal year.

Mr. STAUBER. So, the bureaucratic red tape has caused the reduction in orphan wells being plugged. Would that be correct?

Mr. WRIGHT. Certainly.

Mr. STAUBER. Thank you.

Mr. Van Liew, the CORE Act emphasizes the use of advanced geophysical and geotechnical data. How will these technologies enhance our ability to identify and quantify undiscovered resources, and what impact will this have on our future energy security and our economic growth?

Mr. VAN LIEW. Thank you for the question, Mr. Chair.

Our members really are technology companies, advanced technology companies, using some of the biggest computing systems in the world, second only to the U.S. Government as they analyze what the data shows from acquiring geoscience survey data offshore to better image the resource. And many of the areas of our OCS are outdated in what that data is and what those images are.

So, Mr. Hunt's bill would actually incentivize compiling new and acquiring new geoscience data to create new, advanced images, including the use of machine learning and AI, and otherwise to better inform where those resources may exist.

Mr. STAUBER. Thank you very much.

Mr. Sandberg, how will the revenue sharing program established under PLREDA help address challenges faced by state and local governments that have significant amounts of Federal lands in their borders?

Mr. SANDBERG. I think the revenue sharing pieces are critically important, as we have said in our written testimony and one of the principal parts of this bill. And it actually does provide for the economic development resources to both state and local communities to benefit from these projects. And I think that is probably the principal benefit of the PLREDA and the revenue allocations.

Mr. STAUBER. It is kind of like the Good Neighbor Authority in timber harvesting, a very beneficial program.

My time is up, and I am yielding. I will now recognize Representative Kamlager-Dove for 5 minutes.

Ms. KAMLAGER-DOVE. Thank you, Mr. Chair. I would like to go back to the topic of the orphaned wells, and I have some questions for Dr. Feldgus.

Orphaned wells are incredibly important to me. As everyone on this Committee has heard, I represent Los Angeles, which also includes the Inglewood oil fields, and we have orphaned wells and active wells all throughout Los Angeles that really are wreaking havoc on the health of so many Angelenos.

The methane emissions reduction provision of the Infrastructure Investment and Jobs Act actually provides $4.275 billion to states to clean up orphaned oil and gas wells. And the law requires states

to test for methane emissions from these orphaned oil and gas wells as a condition of grant eligibility.

Under the same authority, the Department of the Interior is requiring states to prioritize cleaning up orphan wells within half a mile of communities of color, low-income, and Indigenous communities. H.R. 7053 would make this emissions testing and prioritization of environmental justice communities optional for states receiving Federal grant dollars. So, while it is important to get the money out of the door and put it to good use plugging orphaned wells quickly, these studies and prioritizations are critical.

Dr. Feldgus, why did the DOI decide to require these methane emissions studies?

And why is this data valuable enough to spend time and money collecting it?

Dr. FELDGUS. Thank you for the question.

Part of it was understanding the purpose of that section of the law. It was the only section in a title called Methane Reduction Infrastructure. And we are required to report to Congress the amount of methane that was eliminated by the program. So, very important in order to meet our responsibilities under the Act to have states measure methane both before and after.

Also, methane measurement afterwards is critically important to understand that the plugging job has been done correctly, that the well has been sealed, and that there is nothing leaking. If the well wasn't leaking beforehand, the state does not need to measure the methane, they just can go ahead and plug it. But it is very important to measure the effectiveness of the program and the impact that we are having on local communities by reducing that methane into the atmosphere.

Ms. KAMLAGER-DOVE. So, I would say that the short answer is holding everyone accountable, and we certainly want that. That is something we hear about often, even from the other side of the aisle. I don't know why they don't want it in this case.

H.R. 7053 specifies that states may use methane emissions estimates instead of actual measurements at individual orphaned wells if the state chooses to track methane emissions at all. So, why do DOI guidelines require methane emissions measurements and not estimates?

Dr. FELDGUS. Because right now there is no good methodology for estimating methane emissions from orphan wells. We are working on that. The U.S. Geological Survey has done quite a bit of research on that.

But in order to develop a good methodology, they need more data, and that is one of the things that we will be getting from the methane measurements before and after the wells are plugged is that data that will help feed into a model that then states could use for estimation.

Ms. KAMLAGER-DOVE. Thank you. So, tell me, Dr. Feldgus, what do we know about the other kinds of pollution associated with orphaned wells that are leaking methane?

And tell us, what does this pollution do to the health of people living near these wells, people like my constituents?

Dr. FELDGUS. Sure thing. With methane, you also have other volatile organic chemicals, other organic compounds that can go into the atmosphere, sometimes benzene, toluene. Some of these molecules are carcinogens. Other times you end up with molecules that can lead to ground level ozone, which then exacerbates or causes asthma in local communities.

Ms. KAMLAGER-DOVE. Thank you for that.

I know my colleagues across the aisle claim that going to offshore oil and gas, that these resource assessments informed an "abhorrent 5-year plan." So, Dr. Feldgus, in addition, in the time you have remaining left, which I guess is my time, in addition to resource assessments what other calculations and assessments went into the 5-year plan?

Dr. FELDGUS. Thank you for the question.

There are a lot of different parameters that go into developing the 5-year plan. The resource assessments are one of them, but there is a whole set of issues lined out in Section 18 of the Outer Continental Shelf Lands Act. And in developing a 5-year plan, the Secretary balances those, and then BOEM tries to present to the Secretary the combination of sales that will have the greatest net benefits to society. So, there are a lot of factors, more than just the inventory of resources.

Ms. KAMLAGER-DOVE. Thank you for that.

With that, Mr. Chair, I yield back.

Mr. STAUBER. Thank you very much. I now recognize Representative Gosar from the great state of Arizona for 5 minutes.

Dr. GOSAR. Thank you, Mr. Chairman.

Mr. Sandberg, this revenue sharing process, can you give me a little about how you feel about that? Do you feel it is the right way, the right levels across the board?

Mr. SANDBERG. It does. I think it is an important step, and I think that it feels as it is bringing in, I think especially impactful in two ways.

One is the sharing with local communities. I think it creates a supportive ecosystem for these projects. As the Chair said, kind of the good neighbor. It allows them to benefit in material ways and in ways that other energy resources being developed on Federal lands, or providing those same benefits. So now, from that perspective, I think it is good.

I think it also helps in a material way in that one of the reasons I think that developers sometimes shy away from Federal land development is because of how long it takes when compared to what they do on private land. So, I think providing additional resources to the agencies processing these permits, it creates a direct line of benefit to the projects, and pushes them along.

Dr. GOSAR. Well, we had this idea that you would actually go out as an agency to look at the environments that you are looking at, and identify areas that would be for wind, and solar, all sorts of different things, so help to streamline it that way.

Dr. Feldgus, do you feel that the revenue sharing is adequate across the board?

Dr. FELDGUS. Well, certainly, it is up to Congress to determine what feels adequate in terms of sharing for states and——

Dr. GOSAR. No, but your feeling. What is your feeling?

Dr. FELDGUS. I think it would be very helpful for states and counties. Certainly, when renewable energy projects are proposed, there are certain burdens on states and counties planning for the new infrastructure, perhaps accommodating a new workforce, new residents. So, certainly, I think that funding would be very helpful for them.

Dr. GOSAR. Do you know where this came from? SNPLMA. Good old Harry Reid had a sharing process because Las Vegas was landlocked. He figured out a way to get the generation of those fees to split with the land. And it was very, very successful. So, just FYI.

I am very interested in your paper here, because for a long time I talked about geothermal. I am from western Wyoming, and we had that big caldera called the Yellowstone Caldera. So, this is very interesting to me. How long do you think it would take to get something that would be like nuts and bolts, like you go to a hardware store, you could put something together. How long would it take? And do you see it ever going that way?

Ms. ROGERS. May I ask one clarifying question? Are you asking about the project timeline from tip to tail on a given kind plant?

Dr. GOSAR. Yes.

Ms. ROGERS. OK, got it. We anticipate that you should be able to construct a plant within 12 to 18 months. I think that it very much depends on the availability of rigs, how many rigs you can deploy at the same time, and adequate planning in advance. I think an expedited schedule could be something as short as 9 months.

Dr. GOSAR. Let me ask you another question. Because we have a lot of geothermal on the eastern side of Arizona, could you see this being like mini power plants for, like, a group of houses out in the middle of the boondocks?

Ms. ROGERS. It is a fascinating concept. While I see no reason not to, one of the major benefits of what supercritical can unlock is a cost point that is competitive due to the scale of the plant. So, this is not to say that you couldn't, but that much of the balance of plant costs will be covered in larger facilities. So, things like the cooling tower and the turbine would then be made smaller, and therefore you may not get the same price point you would otherwise.

Dr. GOSAR. Do you see any downturn or downfall of this new technology?

Ms. ROGERS. At this point I see a huge gap between demand and our ability to fill it, and this is a really important arrow in our quiver to be able to add more energy to the grid when we need it.

Dr. GOSAR. With my last few seconds, Dr. Feldgus, I am a mining guy. I want to see us clean up those abandoned mines. We have always come back to the Good Samaritan law, and it is not good enough. Is there a way that you can kind of from your perspective look at this so that we can get the biggest bang out of the buck?

I mean, I live in Arizona, so we have tons of this. I agree with the gentlelady from Los Angeles. There has to be repercussions. A lot of this stuff we can't catch up on, but there is so much that can be done. If you look at Resolution Copper, they have cleaned up.

They spent over $2 billion cleaning up that site that was mined for over 100 years. Can you give me some ideas on that?

Dr. FELDGUS. Well, certainly the Administration supports Good Samaritan legislation. We have put that out in the mining report that we released last year.

We are also very interested in finding sources of funding for hardrock abandoned mine cleanup. One potential source would be excess claim maintenance fees. Currently that money is used to fund the BLM hardrock mining program, but the rest goes back to the Treasury. There is a potential to use some of that for hardrock cleanup and for other purposes. And those are just two examples.

Dr. GOSAR. Thank you.

My time is up, sorry. I yield back.

Mr. STAUBER. Thank you very much. The Chair now recognizes Representative Levin for 5 minutes.

Mr. LEVIN. Thank you, Mr. Chairman, and thank you for including such an important piece of legislation, the Public Land Renewable Energy Development Act, or PLREDA, in today's hearing. This bill would help to bring renewable energy development up to par with other energy development on our public lands by creating a revenue sharing structure similar to the one that already exists for oil and gas development.

Since no revenue sharing system exists for renewable energy, all the funds for renewable energy development on our public lands just go straight to the Treasury. But this bill recognizes and tries to correct for the immense missed opportunity to support local and state economies through renewable energy revenue. This bill would ensure that states and counties get a fair share of revenues from energy projects developed in their communities, while providing the Bureau of Land Management with a stable source of funding to support the timely processing of permits and directing some funds toward the conservation of our great natural and cultural resources.

I am glad there is bipartisan support for a policy to establish revenue sharing for renewables, ensuring parity with fossil energy. While this is certainly a step in the right direction, there is still significant work to be done to support the responsible siting and permitting of renewables on our public lands. I have introduced my own version of PLREDA, H.R. 9012, which not only includes revenue sharing, but also supports a smart-from-the-start approach to development, which directs projects towards non-sensitive areas and supports faster permit approvals in those priority areas.

Given that BLM has recently surpassed its goal to permit 25 gigawatts of renewable energy by 2025, which I am pleased to hear about, I think it is time we set a new goal of permitting 60 gigawatts by 2030. My bill would do just that.

Additionally, my bill supports the timely and efficient processing of permits for wind and solar energy development while maintaining key environmental protections by clarifying agency roles, responsibilities, timelines, and processes, and providing for increased economic certainty for developers.

I am pleased that conservation groups and clean energy companies and associations have come together to support this comprehensive version of PLREDA that ensures we are not just

building out our energy future, but also doing so in a way that protects our nation's most treasured resources.

And I would like to submit for the record these letters of support for PLREDA.

Mr. STAUBER. Without objection.

[The information follows:]

EDF RENEWABLES

July 23, 2024

Hon. Bruce Westerman, Chair
Hon. Raul Grijalva, Ranking Member
House Natural Resources Committee
1324 Longworth House Office Building
Washington, DC 20515

Hon. Pete Stauber, Chair
Hon. Alexandria Ocasio-Cortez, Ranking Member
Energy and Minerals Subcommittee
1324 Longworth House Office Building
Washington, DC 20515

Dear Chairs and Ranking Members:

On behalf of EDF Renewables, I write in support of H.R. 8954. We appreciate the committee's consideration of this legislation.

H.R. 8954 addresses the problem that rent and fee payments from wind and solar projects on Bureau of Land Management (BLM) lands go entirely to Washington, D.C., and none of those payments go to the local community. That is in stark contrast not just to geothermal, oil and gas operations on BLM lands, but also to the typical revenue streams to local governments from wind and solar projects on private lands.

We note that the American Southwest, including Arizona, Nevada and California, is the home of the best solar insolation in the nation, ranking fourth, fifth and first respectively in the nation in solar generation capacity as of Q1 2024 according to the Solar Energy Industries Association. The desert Southwest will continue to attract interest for new solar as electric utilities seek low-cost power for its customers amid rising demand for electricity nationwide. That demand makes H.R. 8954 particularly important to ensure that those communities in the Southwest and other renewables-rich parts of the West receive robust, project-based revenues just as they would if the project was on local private land.

In addition to revenue sharing policy as proposed in H.R. 8954, we also recommend the committee to consider reforming wind and solar permitting policies on federal lands as proposed in H.R. 9012. The bill applies practical approaches to the permitting of renewable energy on federal lands so that projects can move forward in a timely and cost-effective manner. For example, it applies timelines for the first two key milestones for project permitting, while still maintaining reasonable and meaningful agency review. It also clarifies the role of Renewable Energy Coordination Office staff, consistent with many expectations upon the creation of that role within BLM. These provisions among others maintain the important controls on project permitting that heed biological, geological, community, cultural and multi-use imperatives.

EDF Renewables has extensive experience building and operating renewable energy projects on federal lands, including the 234-MW Switch solar project in operation in Clark County, Nevada, and the 214-MW Desert Harvest project in operation in Riverside County, California. If the revenue-sharing provisions in H.R. 8954 were in effect when those projects became operational, then the projects would have provided $13.2 million in funds to county and state governments over their contracted lives. Instead, those funds and more go entirely to federal coffers.

We thank you for your ongoing work on delivering energy benefits to all American communities. As a company that has operated and built renewable energy projects in the U.S. for almost 40 years, we at EDF Renewables commit ourselves every day to work safely and in balance with natural, cultural, and community imperatives. Please see us as an ongoing partner to support responsible energy policy.

Sincerely,

VIRINDER SINGH,
Vice President, Regulatory & Legislative Affairs

July 22, 2024

Hon. Pete Stauber, Chair
Hon. Alexandria Ocasio-Cortez, Ranking Member
House Natural Resources Committee
Energy and Minerals Subcommittee
1324 Longworth House Office Building
Washington, DC 20515

Dear Chairman Stauber, Ranking Member Ocasio-Cortez, and members of the House Natural Resources Subcommittee on Energy and Mineral Resources:

On behalf of the undersigned organizations, we write today in support of two bills, both entitled the Public Land Renewable Energy Development Act (PLREDA) of 2024—H.R. 8954, which is slated to be heard by the subcommittee on July 23, 2024, and H.R. 9012, which was introduced on July 11, 2024. While both bills facilitate the responsible buildout of renewable energy on public lands, we urge the subcommittee to consider amending H.R. 8954 to include essential provisions from H.R. 9012 before moving it forward.

Our federal public lands boast some of the nation's greatest solar, wind and geothermal potential—and investments in harnessing this potential continue to grow: in April, the Department of the Interior surpassed the congressionally-enacted goal of permitting 25 gigawatts of renewable energy onshore by 2025. Solar, wind, and geothermal development on public lands powers millions of homes across the West, sustains thousands of jobs, and returns tens of millions of dollars to the federal treasury each year. Together, H.R. 8954 and H.R. 9012 can sustain this growth, create jobs across the West, and bring new revenue streams to states where these wind, solar, and geothermal projects are built while ensuring responsible siting for these projects.

This growth has been made possible thanks, in part, to the tireless efforts of Republicans and Democrats in both chambers: provisions of a prior iteration of PLREDA became law in the year-end omnibus in FY 2021 (Energy Act of 2020, Title III, Subtitle B), which set the onshore permitting goal, established Renewable Energy Coordination Offices to help make the permitting process more efficient, and empowered the Department to further lower costs.

But this rapid solar, wind, and geothermal growth must be accompanied by additional policy changes to ensure communities stand to benefit and to address any impacts development will have on our public lands and the wildlife, habitats, ecosystems, and cultural resources they hold.

First, we support sharing wind and solar revenues, as stipulated by H.R. 8954 and H.R. 9012. Under current law, 100% of rents, fees, and other revenues generated from wind and solar energy projects are invested in the federal treasury. By comparison, federal statutes dictate that oil and gas revenues must be shared with states, and that geothermal revenues must be shared with states and counties. Critically, both bills would address this inequity by reinvesting revenues from renewable energy projects back into states, counties, into permit processing at the Bureau of Land Management, and into conservation. Both bills establish a conservation fund to help restore and protect fish and wildlife habitat, help connect Americans to the outdoors, and support local stewardship projects oil our public lands.

Second, we support increasing the statutory renewable energy onshore permitting goal for public land, considering the 25 gigawatt by 2025 goal has been reached. H.R. 9012 proposes a goal of permitting 60 gigawatts by 2030. We support this goal because it will enable further administrative action, if needed, to ensure responsible utility-scale deployment of renewable energy continues apace.

Third, we support elements in H.R. 9012 that guide renewable energy development toward low-conflict areas. Specifically, the bill will provide for efficient permitting for projects sited in places that have high-energy potential that may also be proximate to transmission or that have been previously disturbed or degraded—and where wildlife, habitat, and cultural resource impacts are minimal. The upfront planning and careful siting of renewable energy projects that H.R. 9012 envisions will improve projects' permitting timelines, limit adverse impacts, ensure their durability and longevity going forward, and help increase revenues to states envisioned by H.R. 8954.

Finally, we would be remiss not to mention the longstanding bipartisan work over many years to advance provisions addressing programmatic planning, permitting efficiency, statutory permitting goals, and industry incentives—including H.R. 3794 from the 116th Congress, which was unanimously approved by the House Natural Resources Committee. H.R. 9012 carries these important concepts forward in language endorsed by organizations representing conservationists, sportsmen, outdoor recreation. enthusiasts, and renewable energy industry actors alike, with key updates to meet the challenges and opportunities of today. We strongly urge you to include these provisions in H.R. 8954.

In sum, we urge you to support both versions of PLREDA—H.R. 8954 and H.R. 9012 alike—and encourage the subcommittee to include elements of H.R. 9012 within H.R. 8954 as the latter bill navigates the legislative process. We look forward to working with you on this legislation and appreciate your continued support.

Sincerely,

Backcountry Hunters & Anglers

Friends of Basin and Range

National Audubon Society

Natural Resources Defense Council

Nevada Wildlife Federation

The Wilderness Society

Trout Unlimited

Mr. LEVIN. Thank you.

Mr. Sandberg, as I am sure you are aware, we talk a lot about permitting reform in Congress these days, and I know that the American Clean Power Association has recommended that Congress expedite the permitting process for clean energy development on public lands, and that we direct agencies to make use of programmatic approaches to permitting and environmental reviews to incentivize projects in areas with minimal conflicts.

Today, as we are considering ways to support energy development on public lands, how would pairing revenue sharing with programmatic NEPA reviews on public lands for renewable energy help to unlock American energy independence?

Mr. SANDBERG. Thank you for the question. I think it creates a powerful combination, the revenue sharing and the programmatic NEPA reviews. And I think doing those programmatic reviews across development areas allows the resource agencies to really narrow the scope as they kind of look at projects, and really look for those unique areas that need attention and mitigation and addressing.

And I think doing that eliminates repetitive reviews. Eliminating those repetitive reviews, again, allows the resource agencies to focus on doing more projects and, in doing so, I think increases the certainty for which developers have to develop on Federal land.

And I think that, when it is paired with the revenue sharing, with that programmatic process we are confident that that would

lead to developers looking more favorably at developing on Federal lands, which is an important piece of the clean energy story as we move forward.

Mr. LEVIN. Thank you for that.

Dr. Feldgus, I will turn to you. I understand that BLM is currently in the process of updating its solar PEIS to support appropriate project siting and avoid land use conflicts. I appreciate the Department taking an important step to update and build upon the 2012 Western Solar Plan. Can you walk me through how this sort of large-scale planning supports the BLM's multiple use mission while expediting project reviews?

Dr. FELDGUS. Certainly, and thank you for the question.

The update to the Western Solar Plan, which is adding additional states out West, and accommodating new technology in the solar industry over the last decade, is designed to identify those areas that are most appropriate for solar energy while taking off the table those areas that are less appropriate. And what that does is, first of all, it helps the agency focus its resources. It gets the first studies completed so we have a landscape-level study that we can build off of in permitting individual projects, but it also tells developers where is better to go, and where they will have a harder time.

So, we focus that development on those areas that are more likely to be permitted, and that helps the overall permitting process move more smoothly.

Mr. LEVIN. Thank you for that. We have a number of built-in systemic advantages for fossil fuels, including revenue sharing. So, I am glad we are considering a bill today to get us closer to parity between oil and gas and renewable energy.

And I thank you, Chairman Stauber, and I hope we can work together in a bipartisan fashion to advance policies that ensure that projects on our public lands can be built in an efficient manner. With that, I will yield back.

Mr. STAUBER. Thank you, Mr. Levin. I will now recognize Representative Fulcher for 5 minutes.

Mr. FULCHER. Thank you, Mr. Chairman, and thank you for the panel for being here and for your testimony today.

I am going to have a question for Mr. Van Liew, but just to set that up, I am from the state of Idaho, and Idaho is a significant producer of minerals like silver, lead, and phosphate. And those are essential raw materials in the energy sector. And, of course, silver is used in critical electrical systems, used for batteries, phosphates, and is vital for drilling materials and protective coatings.

And given that the CORE Act modernizes data modeling assessments for the Bureau of Ocean Energy Management, can you just elaborate a little bit on how the increased offshore oil and gas development under CORE could drive demand for these materials, and subsequently boost our mining industry and our economy? Could you talk about that a little bit more?

Mr. VAN LIEW. I appreciate the question, and I enjoy every opportunity I get to go to Idaho.

The increased demand for the rare earth materials and minerals that would come from increasing exploration and production activities would, in fact, drive the economy and jobs for your constituents

in Idaho. But what the CORE Act is attempting to do is better inform the decision-making so that our 5-year plans can include additional areas in the offshore.

One thing to note I didn't note in a previous answer is that offshore Atlantic and Pacific have gone decades without a resource assessment, and are just, by and large, generally excluded from 5-year plans. So, there are vast areas offshore where resources may exist. Not only hydrocarbons, but implementing surveys and adding to BOEM's resource knowledge for alternative energies offshore in those areas. All would contribute to the economy in Idaho through increased use of rare materials.

Mr. FULCHER. Thank you for that. I am going to a follow-up question. The CORE Act also addresses what it refers to as transboundary hydrocarbon reservoirs and their potential impacts.

So, first of all, I would like you to explain what that is, a transboundary hydrocarbon reservoir.

And also, why should the United States have cooperating agreements with neighboring countries in this regard? Could you explain and address that, please?

Mr. VAN LIEW. The way I understand it is those boundaries offshore are really where the Exclusive Economic Zones meet for the various countries, like in the Arctic or in the Gulf of Mexico with our neighbors to the south, and analyzing the hydrocarbon resources that may exist along those boundaries to better inform decisions by the agencies and by the industry on developing those resources.

But also, it is important to have agreements with those neighboring countries to ensure there is an agreement, from what I understand, about sharing a resource that may straddle that boundary——

Mr. FULCHER. Thank you for that, and along that line, of course, Idaho is not a coastal state, but we still rely heavily on transportation and agricultural industries, both of which are heavily dependent on stable and affordable energy supply. So, with that, could you explain a little further on how a comprehensive inventory and potential development of the Outer Continental Shelf oil and gas resources, as mandated in the CORE Act, might influence fuel prices and security, even for states like Idaho?

Mr. VAN LIEW. I appreciate that question as well. In my non-day job I have a Club Lamb operation, so I am involved in agriculture directly. And I know that the ranchers in Idaho, who are very close to me as well, rely upon diesel and gas to run their operations, and one of the highest input costs can be the energy costs.

So, where the CORE Act can assist with that is expanding and enhancing geoscience exploration to better inform, again, decisions about where hydrocarbons may exist offshore so that they can be developed and contribute to the supply. As demand globally will continue to increase, we have to increase supply to meet that demand to keep energy prices stable and lower for the agriculture operators and your constituents in Idaho.

Mr. FULCHER. Thank you for that. I appreciate the insight.

With that, Mr. Chair, I yield back.

Mr. STAUBER. Thank you very much. I will now recognize Representative Tiffany from Wisconsin for 5 minutes.

Mr. TIFFANY. Thank you, Mr. Chairman.

Mr. Van Liew, the Chairman of the Committee, Mr. Westerman, brought up the issue of Chevron and the decision that just came down at the end of June. Do you have any comments in regards to that as far as how that may benefit us in the United States of America here, as we go forward, especially with the permitting timelines that have been out there?

We see interminable timelines of 10, 15, 20 years. How do you view that decision and how it could possibly help shorten these permitting times?

Mr. VAN LIEW. I appreciate the question. I will start by saying that I am not an attorney, but in general we do view the Chevron deference decision from the Supreme Court as positive, in that we believe Congress and through the CORE Act with defining timelines for G&G permits offshore is taking that direction from the court to add specific timelines for when the agencies should issue those G&G permits.

So, I think, by and large, it is good. Obviously, there can be some downside, as well.

Mr. TIFFANY. Do you see any reason, while having these permitting processes be done in a more, call it expedited fashion, it does not mean that we have to compromise environmental standards?

Mr. VAN LIEW. That is correct. So, setting the timeline here, in addition there are provisions in the CORE Act that maintain the mitigation monitoring requirements that NMFS itself has developed for existing geoscience activities, and just carries those forward through the permits so we are not going through additional analysis with the agency and subjecting it to potential lawsuits from outside special interests who are just aiming to shut down geoscience to stop energy development.

Mr. TIFFANY. Dr. Feldgus, we see in the last week that a wind turbine off Nantucket blew up, and the debris is on the shores of Nantucket. Will you folks be doing a thorough review of what happened there?

Dr. FELDGUS. Yes, we will. The Bureau of Safety and Environmental Enforcement will be conducting an investigation of the incident.

Mr. TIFFANY. How long will it take to do that investigation?

Dr. FELDGUS. It is too early to say.

Mr. TIFFANY. Does this give you a little bit of pause? I mean, this is something that we have seen happen a few times now, where wind turbines have blown up, and that there has been a real problem. One article I read said this is not an unusual circumstance, does that give you folks some pause?

Dr. FELDGUS. Well, we are certainly concerned any time there is an incident in the Outer Continental Shelf. So, we intend to investigate this. And if there is anything that needs to be done to make sure that it doesn't happen again, we will certainly explore that.

Mr. TIFFANY. When do you expect to have that review completed?

Dr. FELDGUS. That is hard for me to say.

Mr. TIFFANY. So, a year, 2 years?

Dr. FELDGUS. I mean, it is going to be as quickly as it takes to conduct an investigation to figure out the root cause. I know that

GE is also doing their own investigation, but we will be doing ours, as well. And it is just too early to say how long that will take.

Mr. TIFFANY. Yes. We see whales washing ashore, Mr. Chairman, over on the East Coast. We see wind turbines washing ashore over on the East Coast. It really causes, I think, many of us to say, are we headed in the right direction when we are seeing things like that happen?

I would go back, Mr. Van Liew, how efficient is wind and solar? What is the maximum efficiency you find from a wind or solar facility here in the United States of America?

Up where I live in Wisconsin, the maximum efficiency we find is 25 percent. Do you find it is higher anywhere else in the country?

Mr. VAN LIEW. I think that is probably a good estimate with an intermittent energy source.

Mr. TIFFANY. So, just about anywhere in the United States?

Mr. VAN LIEW. It probably varies to some extent, depending on where you are at in the United States, but I don't have those figures directly in front of me. I would be happy to follow up with you.

Mr. TIFFANY. Yes, I mean, this should really give us pause that we are going to these intermittent sources of power.

I mean, I believe in an all-of-the-above approach, but we are giving up baseload power here in America, and it is only a matter of time we go the route of Western Europe and California, where we are going to see power outages and things like that going to these intermittent sources of power.

It is very clear that wind and solar are not ready to serve the needs of the American people at this point, and we had better make sure, if we are going to do this so-called energy transition, that we keep these baseload sources of power to be able to keep the lights on.

I yield back.

Mr. STAUBER. Thank you very much. The Chair now recognizes Representative Graves from Louisiana for 5 minutes.

Mr. GRAVES. Thank you, Mr. Chairman, I appreciate it.

Dr. Feldgus, good to see you again, glad you decided to come back. Do unplugged orphan wells pose an environmental risk?

Dr. FELDGUS. Thank you for the question and, yes, they do.

Mr. GRAVES. They pose an environmental risk. So, taking that the next step, plugging them helps to minimize or mitigate that risk.

Dr. FELDGUS. That is correct.

Mr. GRAVES. So, whenever the Department comes in and they put additional steps that are hurdles in the process, you are potentially lengthening, dragging out the amount of time it takes to actually achieve that environmental objective in some cases, wouldn't you?

Dr. FELDGUS. Well, the goal is to make sure that we are doing a good job, and to make sure that these plugging jobs are working, that they maintain their seal, and no methane is leaking afterwards.

And also, as someone mentioned earlier, to hold the program accountable and make sure that we are reducing methane like the intent of the section.

Mr. GRAVES. Well, I guess if the objective of the orphan well program is to plug wells and prevent methane leak, then got it. But Interior continues to put additional hurdles in the process. And in fact, there was an assessment that was done by Politico maybe a month or two ago, where they looked at the American Rescue Plan, they looked at the Inflation Reduction Act, they looked at the IIJA, and they determined that somewhere around 70 percent of the funds from those bills, and as you know, in some cases these bills go back 3 years, were still in the bank.

And I remember when Mitch Landrieu, the former infrastructure czar for the White House, called me and we talked about the White House offering him this job. And I said, "Mitch, your problem is that this Administration's regulatory agenda is incompatible with their infrastructure agenda." And I think we are seeing that. If 70 percent of the money is still in the bank from 3 years ago, in some cases, 80 percent of the life of these bills has passed, and they have only spent 30 percent of the money, and it seems that Interior is doing the same thing.

Mr. Wright, I am curious. In Texas, do you do orphan well programs outside of the funding from the Department of the Interior? Meaning do you fund your own programs in some cases?

Mr. WRIGHT. Yes, we do. The state of Texas has had a well-plugging program using state funds for over 40 years.

Mr. GRAVES. Can you do a quick comparison and contrast between how your state-led program works, timelines, cost, compared to ones done with the Federal funds?

Mr. WRIGHT. Certainly. Our onshore wells average cost of $30,000 to $35,000 today. That has gone up due to inflation. And we tend to plug about 1,000 wells, on the average, for every year that we do it with state resources.

Mr. GRAVES. What about with Federal funds under the Federal program?

Mr. WRIGHT. In the initial grant funding, where we didn't have any of the hurdles that we are seeing today in what the formula grants are, we were able to plug, with that initial $25 million, 730 wells in one fiscal year. Today, we are on track to hopefully plug 200 wells with the formula grant money.

Mr. GRAVES. And cost per copy of using the Federal funds compared to the state, is there a significant difference? I know you said that the most recent hurdles or obstacles weren't factored in to the work that you have done, but the cost per copy, is it comparable? Is it more expensive?

Mr. WRIGHT. It is more expensive whenever you look at having to measure, measure, not detect, methane. As I said in my written testimony, we were seeing an increase in cost on the average of $2,000 to $5,000 per well.

Mr. GRAVES. OK. So, of course, these additional hurdles will cause additional time delays and additional cost, as well.

Mr. WRIGHT. Time is always money.

Mr. GRAVES. Dr. Feldgus, I can't help but, seeing you in here a few visits back when you came, you were talking to us about this Administration's energy policy, specifically energy production policy, and you were complaining about the energy sectors sitting on

permits, and you talked about how there were 9,000 to 10,000 permits that the companies were sitting on.

Later on, the Department of the Interior revised that number down by about a third. Can you speak to that, and just help us understand? It just seems like that maybe there was some misleading testimony in the Committee leading us to believe that there were more permits than were actually issued.

Dr. FELDGUS. Right now, it is about 7,000 permits that have been approved.

Mr. GRAVES. So, you revised your number from over 9,000 down to about 6,000 a year or so ago.

Dr. FELDGUS. I would have to double check the numbers. I will say sometimes that data is constantly changing as companies are getting new permits or using those permits.

Mr. GRAVES. But, off by a third is pretty, pretty substantial.

Dr. FELDGUS. I would like to go back and double check those numbers.

Mr. GRAVES. That would be great. I would love to hear that.

Last question, Dr. Feldgus. The fact that Interior is refusing to do a 5-year plan, based on how long it takes to go to production, what advice would you give these future administrations that you are just completely going to send them off a cliff in regard to energy production?

Dr. FELDGUS. Well, we have approved a 5-year plan.

Mr. GRAVES. And the leases are when?

Dr. FELDGUS. Well, we have a lease sale scheduled for, I believe, 2025.

Mr. GRAVES. Fewer leases. In fact, 1/100 of the acres leased under the Carter administration, 1/100.

So, again, the advice you would give to future administrations based on the raw deal you are handing them?

Dr. FELDGUS. We have lease sales scheduled offshore. We are doing quarterly lease sales onshore.

Mr. GRAVES. It is 1/100 of Jimmy Carter, 1/357 of Ronald Reagan.

Thank you. I yield back.

Mr. STAUBER. Thank you very much.

And before we close, I do want to enter into the record from the Environmental Defense Fund dated March 24, 2023, sent to Interior, it is the comments that I read, where they disapprove of some parts of the methane emission testing.

[The information follows:]

ENVIRONMENTAL DEFENSE FUND

March 24, 2023

Kimbra Davis, Director
U.S. Department of the Interior
Orphan Well Program Office
1849 C Street NW
Washington, DC 20240

Dear Ms. Davis, and interested parties:

EDF appreciates the opportunity to comment on the Department of Interior's Phase 1 (Fiscal Year 2023) State Formula Grant Guidance of the Bipartisan Infrastructure law Sec. 40601 Orphaned Well Program. We are grateful for DOI's leadership and for taking on the responsibility of formulating and administering this ambitious program. We commend DOI on a comprehensive first draft. Given the scale and cost of the orphan well plugging challenge, we suggest some revisions to the draft and approach, which we believe will strengthen the Federal-State partnership and will ultimately maximize the number of wells plugged nation- wide. There is a tremendous opportunity here to leverage both the DOI's and the state regulatory agencies' strengths in oil and gas well management to get the most value out of taxpayer's dollars in plugging the most and worst orphan wells and significantly reducing the risks to the environment, public health, safety and the climate posed by these wells.

While the $4.7 Billion REGROW funding as part of the Infrastructure Investment and Jobs Act provides a tremendous opportunity to dramatically accelerate our collective efforts to tackle the orphan well problem, the scale of the problem is vast. As a result, it is likely this funding at best will accomplish plugging less than half of the estimated 125 thousand documented orphan wells which have a total estimated actual closure cost of $8.5 Billion. And this is only a start to solving the larger undocumented orphan well issue with estimates that range from 300 to 800 thousand of these wells, or more. To that end, it is critical that DOI work closely with the state agencies to maximize the efficiency and effectiveness of the State Formula Grants and focus this spending on the well closure work while keeping costs contained as much as possible.

We recommend DOI work closely with State Agency representatives and the IOGCC to revise the current draft with particular attention paid to the following areas:

1. Provide predictability for entire State Formula Grants

To ensure success for this program, it is critical that state agencies and industry stakeholders understand the approximate size and timing of the funding so they can plan their budgets with as much lead-time as possible. It is not clear in the current draft how DOI is going to inform the state agencies of the amount of funding they can expect and when so that they can effectively plan, and in turn how the states can signal to industry what to anticipate so that the market can respond accordingly. A phased approach where the recipients do not have insight into when or how much they will receive in later phases will hamper their ability to staff up and plan strategically. Expanded state plugging programs will require additional personnel (inspectors, data analysts, etc.), monitoring equipment, and data management and infrastructure, and analysis tools. Service providers will also need to anticipate operating and capital costs in order to provide the trained crews (project engineers, drillers, rig hands, etc.), rigs and materials (cement, piping etc.) in a timely fashion. Recent history has demonstrated the challenges of volatile markets and supply side shocks to the service industry, such as competition and access to drilling rigs and shortages of materials such as cement and iron. The success of the program in large part hinges on the agencies' ability to most efficiently manage resources to maximize the effectiveness of their plugging programs. A lack of certainty and commitment to funding will not provide clear signals to the evolving well plugging market and will potentially drive costs up and increase chances of supply-chain bottlenecks. We urge DOI to work with the states and the IOGCC on the ideal timeline for committing funds to maximize efficiencies and economies of scale.

2. Manage program costs and reduce additional costs wherever possible in order to maximize plugging of prioritized wells

There are some requirements in the current draft that would likely significantly drive up the costs and time needed to plug wells and could materially reduce the number of wells states will be able to plug within the budget and timeframe of the formula grants. Of particular concern is the requirement to measure and quantify methane emissions before and after plugging. While we applaud every opportunity to measure progress on methane emissions reduction, in order to maximize the number of methane-emitting orphaned wells closed through this program, we suggest shifting the approach to get the same benefit but at a much lower cost. Methane emissions are one of a host of environmental risks posed by orphan wells, which can include groundwater and surface water contamination in addition to public health risks posed by a variety of polluting-gases depending on the geology. Collaborating with state agencies and the IOGCC on the most efficient and cost-effective methods for inspecting wells before and after plugging for all environmental, public health and safety risks is strongly advised.

- **Recommendations for methane emissions quantification**

Methane emissions quantification for orphan wells is more in the science phase than the commercial phase, and for that reason, many states are having trouble finding contractors able to do this work, and when they can, they are often quoted sufficiently high rates as to materially cut into the budget for the actual plugging work. There is also a logistical challenge of combining methane measurement quantification with plugging activities given the current nascent state of the methane measurement industry. When states send crews out to plug the wells, while it will make sense and be cost-effective to have those crews conduct a show/no show test for methane emission with a FLIR camera or equivalent, their immediate next priority will be to plug the well. The well-plugging crews are not likely to have the expertise or equipment to conduct methane measurement experiments in addition to plugging activities in a cost effective or timely way.

It is premature given the state of the science and of the methane measurement industry to require states to quantify methane emissions from every orphan well with a methane show. DOI should instead work with DOE, the IOGCC, state agencies and other relevant stakeholders to develop workable methodologies and protocols for assessing methane emissions and identifying the biggest emitters. We also recommend DOI work with the nascent methane measurement industry to determine and optimize methodologies, costs and services. DOI can work with its partner agencies and stakeholders to develop pilot projects along these lines in advance of a more comprehensive solution. This recommendation does not preclude DOI and state agencies from requiring their plugging contractors to do a show/no show analysis on the orphan wells to at least identify methane emitters for future analysis and monitoring.

- **Recommendations for surface and groundwater monitoring**

An additional concern for managing costs and timelines for maximizing plugging is the requirement for before and after surface and groundwater monitoring. While we agree this is of upmost importance as protecting and restoring drinking water supplies and ecosystems is at the heart of the mission, we suggest a phased and measured approach to both accomplish monitoring while also maximizing the number of contaminating and potentially future contaminating wells plugged. We encourage DOI to work with state agencies to identify the most cost-effective methods for assessing surface water impacts, such as before and after site photographs or affordable remote sensing/imaging. Groundwater monitoring presents a number of challenges and ideally requires access to functioning on-site or nearby monitoring wells which may or may not exist. In addition, dedicated specialized field and lab personnel, such as hydrogeologists and geochemists are required to evaluate groundwater conditions and perform pump tests, geochemical analyses, groundwater modeling, etc. We suggest that DOI form a separate working group with agencies with groundwater expertise such as the USGS, GWPC and state agencies, to identify and evaluate the best and most cost-effective methods for monitoring groundwater in the vicinity of orphaned wells.

- **Skilled labor costs and job-training**

Access to skilled plugging crews at affordable prices is already a challenge for state agencies and will be increasingly difficult as competition for plugging crews ramps up. Costs are rising rapidly due to labor shortages, supply chain shortages (e.g., cement) and competition for skilled labor in a market that is currently

saturated. We encourage DOI to think creatively in its approach to minimize these challenges and consider working collaboratively with states and other parts of the administration such as the Department of Labor as well as with industry associations to think through how to best train people to participate in what is clearly a growing industry. DOI might consider forming working groups with a variety of stakeholders to both understand and figure out how best to grow the pipeline for skilled well-plugging labor, particularly in communities within oil and gas producing regions. This issue undoubtedly overlaps with labor needs in other subsurface areas of the energy transition such as enhanced geothermal, CCS and hydrogen storage, and it would be strategic to explore the synergies of building a multi-purpose workforce from the recently laid-off oil and gas workers, before they move on to other trades, and for the younger generation entering the work force. In addition to the shared goal of meaningful job creation in oil and gas producing regions, a larger labor pool will also lower overall costs of well-plugging and maximize this opportunity.

- **Cost Recovery**

Documented orphan wells are by definition no longer associated with a solvent owner. If, however in the process of evaluating orphan wells, a solvent owner was identified, the assumption is the state agency would pursue recovering plugging and other closure costs. While we agree that agencies should pursue cost recovery from solvent parties whenever plausible, we also hope the priority will stay focused on plugging the at-risk wells. Cost recovery can always come later. We encourage DOI to keep the program structured such that the plugging of prioritized wells is not delayed while recovering costs at this phase of the program. We commend DOI on its requirements for data collection and reporting which will both add transparency and facilitate tracking and analysis of well plugging activities for government agencies and for civil society.

Some final thoughts

We commend DOI on forming the Orphan Well Program Office and positioning itself to strategically to lead the Orphan Well Program. We encourage DOI to consider structuring the State Formula Grants similarly to cooperative agreements, where the states are given a certain amount of leeway to design how they spend the grants, and the agreements can be implemented through collaborative oversight between DOI and the state agencies. We think the ingredients for success of this program will require a true partnership with the federal implementing agency and the states. Substantive provisions should be worked out collaboratively whenever possible, so no one is taken by surprise. For example, we encourage DOI to work with state agencies and the IOGCC on reviewing and potentially strengthening the Data Collection and Reporting section to further leverage and expand on the use of existing data reporting and management tools such as the GWPC RBDMS system. Encouraging and supporting digital transformation of these systems will both increase the transparency of the reporting and facilitate analysis and communication of the results.

Thank you again for leading this effort. We look forward to constructive engagement with DOI as it works to ensure that state oil and gas regulatory agencies have the funds needed for plugging prioritized orphan wells across the nation, creating jobs and reducing climate impacts and environmental, safety and health risks.

Sincerely,

Adam Peltz
Director and Senior Attorney

Meg Coleman
Policy Manager

Mr. STAUBER. Again, Mr. Graves, I will say that in the 5-year plan, this Administration has three that are scheduled, and probably only one, maybe one in 5 years. Yes.

I want to thank the witnesses for the valuable testimony and the Members for their questions.

The members of the Subcommittee may have some additional questions for the witnesses, and we will ask you to respond to these in writing. Under Committee Rule 3, members of the Committee must submit questions to the Subcommittee Clerk by 5 p.m. on Friday, July 26. The hearing record will be held open for 10 business days for these responses.

If there is no further business, without objection, the Committee stands adjourned.

[Whereupon, at 12:47 p.m., the Subcommittee was adjourned.]

[ADDITIONAL MATERIALS SUBMITTED FOR THE RECORD]

PREPARED STATEMENT OF THE HON. GLENN "GT" THOMPSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF PENNSYLVANIA

Subcommittee Chairman Stauber, Ranking Member Ocasio-Cortez, and Members of the Subcommittee on Energy and Mineral Resources:

Good morning and thank you for providing the opportunity to share my support for H.R. 7053, which is being considered at today's hearing. Representing the great Commonwealth of Pennsylvania, a state with a long and proud history of oil and gas production, I am keenly aware of the environmental and economic challenges posed by abandoned and orphan wells. These wells, either unplugged or improperly plugged, can pose serious environmental threats to surrounding communities.

A study conducted this year by the Interstate Oil and Gas Compact Commission (IOGCC) reported a total of 141,959 documented orphan wells in the 29 states participating in the report, with potentially thousands more left undocumented.[1] Many known orphan wells have no verifiable ownership or operator, which makes it more difficult for state agencies to prioritize which wells to plug. In Pennsylvania alone, there are approximately 27,230 documented abandoned and orphan oil and gas wells according to the Pennsylvania Department of Environmental Protection.

The federal government currently allocates significant resources across a number of agencies to address these wells, such as the Orphan Wells Program Office within the Department of the Interior; however, the Infrastructure Investments and Jobs Act (IIJA) (P.L. 117-58) provided $4.7 billion in grants to qualifying state agencies for plugging operations. Since the IIJA was signed into law, $701 million has been distributed to twenty-four states for well plugging projects, according to the Department of the Interior.[2] Unfortunately, in many cases, funding to states came with unexpected and costly strings attached that are hindering efficient and effective plugging efforts on the ground. The initial grant guidance issued to state agencies by the Department of the Interior mandates an inspection of each potential orphan well site to test for leaks of methane and other gases, and, if identified, to measure the rates of such leaks. This additional testing requirement, which was not included in the IIJA, can significantly impact states by requiring more staff, costing thousands of dollars per well and significantly delaying plugging operations.

To maximize the effect of federal dollars, methane air and groundwater testing requirements must be optional, not required, for states to access federal funding. That is why I was proud to introduce H.R. 7053, the Orphan Well Grant Flexibility Act, to empower states like Pennsylvania to maximize their operational flexibility in addressing this critical issue. This bipartisan legislation would grant states greater discretion and flexibility when utilizing federal orphan well grant funds allocated through the IIJA. Specifically, H.R. 7053 will ensure that pre- and post-plugging methane testing is permitted, but not required, for states that utilize federal funding for well plugging operations. This would allow states to tailor their plugging programs to the specific needs and challenges they face. For instance, Pennsylvania has a large number of shallow wells, requiring different plugging techniques compared to deeper wells in other states.

Additionally, H.R. 7053 emphasizes the economic benefits that plugging abandoned and orphan wells provide to local communities. Studies, such as the aforementioned 2024 IOGCC Orphan Well Study, demonstrate that plugging orphan and abandoned wells creates jobs and revitalizes local economies. The bill directs the National Academy of Sciences, in collaboration with the U.S. Department of Housing and Urban Development, to evaluate the economic development, housing trends, and environmental benefits in areas where federal funds have been used successful to plug and remediate abandoned and orphan wells. This will provide a clear picture of the returns on these federal investments, as well as potential areas for improvement.

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[1] Idle and Orphan Oil and Gas Wells: State and Provincial Regulatory Strategies 2024, Interstate Oil and Gas Compact Commission

[2] FY 2023 Orphan Wells Congressional Report, U.S. Department of the Interior

The benefits of the Orphan Well Grant Flexibility Act are clear. This bill offers a commonsense, bipartisan solution to addressing abandoned and orphan wells across the country, which is why it has received support from a range of industry, environmental, and conservation stakeholders across the ideological spectrum. By empowering states and communities, H.R. 7053 will expedite well plugging, save taxpayers, protect ecosystems, and revitalize local economies.

Once again, I thank the Members of this Subcommittee for considering the significant environmental and economic benefits of H.R. 7053 and advancing this critical legislation. I am looking forward to working with you all to revitalize our communities, protect our environment, and create high-quality, family-sustaining jobs.

Statement for the Record

Bureau of Ocean Energy Management
U.S. Department of the Interior

on Discussion Draft of H.R. ____, Comprehensive Offshore Resource Evaluation Act (CORE Act)

Chairman Stauber, Ranking Member Ocasio-Cortez and members of the Subcommittee, thank you for the opportunity to provide this Statement for the Record on the discussion draft, Comprehensive Offshore Resource Evaluation Act (CORE Act). The Department of the Interior (Department, DOI) notes its strong preference to testify on bills after they have been introduced. Given the breadth of subject matter contained in the text of the bill, the Department did not have adequate time to conduct an in-depth analysis of its provisions. We are providing the following preliminary comments on the draft bill but would like to preserve the opportunity to submit additional input on the bill after it is introduced, if necessary. The Department defers to the U.S. Department of Commerce, National Oceanic and Atmospheric Administration on incidental take authorizations under the Marine Mammal Protection Act (MMPA).

The Bureau of Ocean Energy Management (BOEM) is taking a leading role in transitioning the U.S. to a clean energy future—one that will advance renewable energy, create good-paying jobs, and ensure economic opportunities are accessible to all communities, including underserved communities—while managing the development of oil and gas resources on the U.S. Outer Continental Shelf (OCS) in an environmentally and economically responsible manner.

For decades, resource evaluations have been carried out by geologists, statisticians, and economists, providing critical input to decision-makers and inform various policy alternatives. Increasingly complex quantitative techniques and procedures have been developed in response to the needs and uses for these assessments.

Section 2: Comprehensive Inventory of OCS Oil and Gas Resources

Section 2 of the CORE Act amends Section 357 of the Energy Policy Act of 2005 (EPACT) to expand the Department's comprehensive inventory and analysis of undiscovered oil and natural gas resources on the OCS. The new Section 357 would, in part, require the following analyses:

- An assessment of undiscovered oil and gas resources in each planning area on the OCS;
- An assessment of the effects that production of undiscovered resources would have on the economy of the United States and the economic and environmental impacts that laws limiting lands available for leasing (i.e., section 12 of the OCS Lands Act) have on the exploration, development, and production of oil and gas;
- A determination of the approximate net greenhouse gas emission reductions that would occur if the total quantity of oil and gas resources imported from foreign countries were replaced with newly produced undiscovered resources;
- An identification of alternative sources of energy that communities could rely on if the oil and gas resources assessed are not discovered and developed;
- A comparison of the amount of onshore or offshore acreage and infrastructure required to produce an equivalent amount of energy from renewable sources (such as solar and wind) compared to oil and gas;
- An examination of the feasibility of conducting and acquiring new geophysical seismic surveys on the OCS; and
- Once every 10 years, an assessment of the costs, benefits, and accuracy of the models utilized to conduct resource assessments, including consultation with various oil and gas industry associations.

Furthermore, the CORE Act would require the Secretary of the Interior to submit the newly updated inventory to Congress no later than 180 days after the date of enactment.

Currently, section 357 of EPACT directs the Secretary of the Interior to conduct an inventory and analysis of oil and natural gas resources contained within the submerged lands of the U.S. OCS, and to submit this analysis to Congress every 5 years. At present, these required analyses are required to:

- Incorporate available data on oil and natural gas resources in areas offshore of Mexico and Canada that are relevant to estimate the resource potential of the OCS;
- Use any available technology except drilling to obtain accurate resource estimates;
- Analyze how OCS resource estimates have changed over time in relation to available data and exploration and development activities;
- Estimate the effect of understated oil and natural gas resource estimates on domestic energy investments; and
- Identify and explain how legislative, regulatory, and administrative programs or processes restrict or impede resource development and affect domestic supply.

The CORE Act would greatly expand the analysis/forecasting conducted under section 357 and would require additional research, funding, and time to conduct. In addition, some of the provisions within the discussion draft are potentially duplicative of existing processes. Similar analyses are conducted as part of the National OCS Oil and Gas Leasing Program development process (e.g., analysis of national energy needs and contributions of oil and natural gas to the U.S. economy), and as part of BOEM's National Environmental Policy Act processes.

The Department would like to work with the Sponsor and the Subcommittee on aligning any new requirements with current processes and ensuring that Congress receives the necessary OCS conventional energy resource information in an effective and efficient manner.

Section 3: Transboundary Hydrocarbons Report

Section 3 requires the Secretary of State, in consultation with the Secretary of the Interior, to submit a report to Congress on existing and potential transboundary hydrocarbon reservoirs on the OCS.

Currently, the United States is party to a transboundary agreement (TBA) with Mexico that establishes a legal framework for the exploitation of transboundary hydrocarbon reservoirs that may exist along the maritime boundary between the United States and Mexico in the Gulf of Mexico. The Secretary of the Interior is tasked with implementation, which in turn has been delegated to BOEM and the Bureau of Safety and Environmental Enforcement. The TBA provides a process for orderly assessment and development of any hydrocarbon resources determined to be transboundary, including the allocation of resources to each party, safety and environmental protection responsibilities, and efficient production of the resources. The TBA would be used as a reference for negotiations related to the development of similar agreements with other neighboring countries where the potential for transboundary hydrocarbon resources could exist.

Additionally, while the Department has existing assessments of gross resource potential across the OCS, BOEM does not currently have access to seismic and well data in Mexican and Russian waters to delineate the extent of potential hydrocarbon reservoirs that may cross international borders. Access to foreign data, if available, would require negotiated data sharing agreements or the addition of funding to purchase this data from commercial sources.

Section 4: Offshore Geological and Geophysical Survey Licensing

Under Section 4, the CORE Act requires NOAA to maintain incidental take regulations under the MMPA governing the issuance of Letters of Authorizations for OCS geophysical and geological surveys that shall not expire, requires the current NOAA incidental take regulations for geological and geophysical (G&G) surveys to be in place for perpetuity, and requires the Secretary of the Interior to permit G&G surveys related to oil and gas activities on the Gulf of Mexico OCS within 30 days of receiving a completed application.

The Department of Interior strongly supports permitting and authorization efficiency, but also supports the need to thoroughly evaluate the impacts associated with oil and gas activities, including G&G surveys, on marine resources. The issuance of oil and gas G&G permits in the Gulf of Mexico OCS currently takes 60–90 days to ensure sufficient reviews and activity-specific consultation with NOAA

under the Endangered Species Act (ESA) and MMPA. The purpose of those environmental reviews and consultations is to manage the potential impacts of G&G activities on protected species and identify appropriate measures to avoid, minimize, and mitigate impacts. BOEM's ability to adapt to new information and changing operations allows for improvements in the efficiency and effectiveness of environmental review outcomes, which may not be possible if all current requirements are frozen in time and review periods are arbitrarily curtailed. The Department would like to work with the Sponsor and the Subcommittee on how the bill's potential requirements could be aligned with the Department's existing G&G permitting process while ensuring continued protection of important marine resources.

Conclusion

Thank you for the opportunity to provide this Statement for the Record and discuss the Department's efforts to responsibly manage our nation's energy resources on the OCS to meet the Nation's energy needs while minimizing impacts to the ocean, ocean users, and marine life. These programs are essential for the administration's continued commitment to ensuring a clean and secure energy future—one that is sustainable and benefits all Americans.

Statement for the Record

U.S. Geological Survey (USGS)
Department of the Interior

on H.R. 8665, the Supercritical Geothermal Research and Development Act

Chairman Stauber and Ranking Member Ocasio-Cortez, thank you for the opportunity to provide this statement on H.R. 8665 the Supercritical Geothermal Research and Development Act, a bill to amend the Energy Independence and Security Act of 2007 to direct research, development, demonstration, and commercial application activities in support of supercritical geothermal and closed-loop geothermal systems in supercritical various conditions, and for other purposes.

Background

Geothermal energy is a significant source of renewable electric power in the western United States and, with advances in exploration and development technologies, a potential source of a large fraction of baseload electric power, heating, and cooling, for the entire country. A critical question for future energy planning is the extent to which geothermal resources can contribute to the increasing demand for low-carbon electricity.

The USGS has a long history of research and assessment of geothermal resources in the United States. Several laws have authorized the USGS to conduct regional and national appraisals of all types of viable geothermal resources. USGS national-scale assessments and supporting research studies provide State and Federal government policymakers with the information they need to evaluate the potential contribution of geothermal energy to the nation's energy portfolio. In response to the Geothermal Steam Act of 1970, the USGS identified known geothermal resource areas in 1971 and completed the first national-scale assessment of geothermal resources of the United States in 1975, followed by a second assessment in 1979. In response to the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007, the USGS produced an updated national geothermal energy assessment in 2008. The Energy Act of 2020 authorized new assessments to incorporate additional geothermal resource types across the entire United States, including Alaska, Hawaii, and Puerto Rico.

Supercritical resources are an emerging geothermal resource that involves drilling into super-hot (typically >370°C or 700°F) rock near active volcanic centers. While it is well known that the crystallization of magma chambers releases large amounts of energy at very high temperatures, a systematic method of harvesting this heat has not been developed. The most significant problems relate to effective targeting of supercritical temperatures in the subsurface to efficiently access the heat and developing tools and equipment that can work reliably at these high temperatures.

H.R. 8665

H.R. 8665 amends the Energy Independence and Security Act of 2007 to direct research, development, demonstration, and commercial application activities in support of supercritical geothermal and closed loop geothermal systems in supercritical various conditions, and for other purposes. We have several comments for your consideration.

At Section 2, paragraph (a)(3)(D), we note that the USGS Energy Resources Program has a long- standing partnership with the Department of Energy's Geothermal Technologies Office. The partnership involves data collection and data interpretation including USGS Earth Mapping Resources Initiative (Earth MRI) collection of subsurface data essential to characterizing both geothermal resources and critical mineral resources. At present, the partnership leverages each agency's complementary skills, with the USGS providing geoscience data interpretation, research, and resource assessments, and DOE leading on the geothermal technology-related data. There would be additional costs and potential inefficiencies associated with moving toward a fully shared data model, including identification of key datasets, data formatting, and population of the drilling data repository with data from ongoing and completed mining, critical minerals, and energy projects. The USGS would not be able to complete this work with its current level of resources.

At paragraph (a)(3)(e), we note that the deepest geothermal exploratory wells have only recently (2023) reached depths of 5 kilometers, with 7 kilometers as a proposed current technological limit for conventional geothermal resource development. Geothermal resource development below this depth requires emerging technologies that have not at present achieved economic viability. Increasing drilling depth beyond 8 kilometers will be considerably more costly and will, for some geologic

provinces, require continued advancements in drilling technologies (an ongoing research program by the DOE). The USGS would not be able to commission drilling of exploration boreholes to depths greater than 8 kilometers with its current level of resources.

At paragraph (b)(1)(A)(iv), we note that adding an additional assessment of supercritical geothermal resources is a significant expansion of scope of USGS's responsibilities and would require development of new assessment techniques. The USGS would not be able to complete this work in a timely fashion with its current level of resources.

At paragraph (b)(2), we note that it is not possible to complete an update to the National Geothermal Resource Assessment within 180 days after enactment of the bill into law. Since the enactment of the Energy Act of 2020, the USGS has been able to develop and apply assessment methods for two of the four geothermal assessment types envisioned under that law. A modest increase in funding, as requested in the FY2025 Budget, supports essential planning efforts and will allow the USGS to accelerate progress toward completing geothermal resource assessments for conventional hydrothermal, enhanced geothermal systems, low-temperature and underground thermal energy storage. Assessing potential for co-production of minerals and geothermal energy (per the Energy Act of 2020) will also occur. Quadrennial updates would be possible following completion of the first updated assessment.

The USGS appreciates Congressional interest in the expansion of geothermal assessments and the opportunity to provide these comments. We support the underlying goal of this legislation to promote research on supercritical geothermal systems. We would be happy, at your request, to provide briefings on current geothermal research and assessment activities conducted under our existing authorities and additional technical assistance in developing this bill.

Submission for the Record by Rep. Grijalva

Understanding Superhot Rock Energy in Context

CLEAN AIR TASK FORCE

Heat Extraction Methods

Conventional (or Traditional) geothermal systems

- **Heat extraction method:** production of naturally occuring hydrothermal fluid.
- **Alternative term:** Hydrothermal systems
- **Example:** Most existing geothermal power plants today

Enhanced (or Engineered) geothermal systems (EGS) NEXT GENERATION

- **Heat extraction method:** Circulating water through fractures (either existing, created, or enhanced through stimulation) in hot rock.
- **Alternative term:** Engineered geothermal systems (EGS)
- **Example:** Fervo, Utah FORGE, Mazama[1]

Closed loop geothermal systems (CLGS) NEXT GENERATION

- **Heat extraction method:** Circulating water through continuous boreholes/underground heat exchanger in hot rock.
- **Alternative term:** Advanced geothermal systems (AGS)
- **Example:** Eavor, GreenFire, XGS[2]

Figure 1: Enhanced Geothermal Systems (EGS)

Note: Not to scale. Underground flow conduits for water may either involve below-ground piping or fracture networks (pictured).

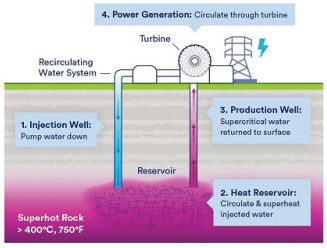
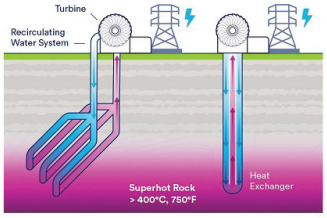


Figure 2: Closed Loop Geothermal Systems (CLGS)

Note: Not to scale. Underground flow conduits for water may either involve below-ground piping or fracture networks (pictured).

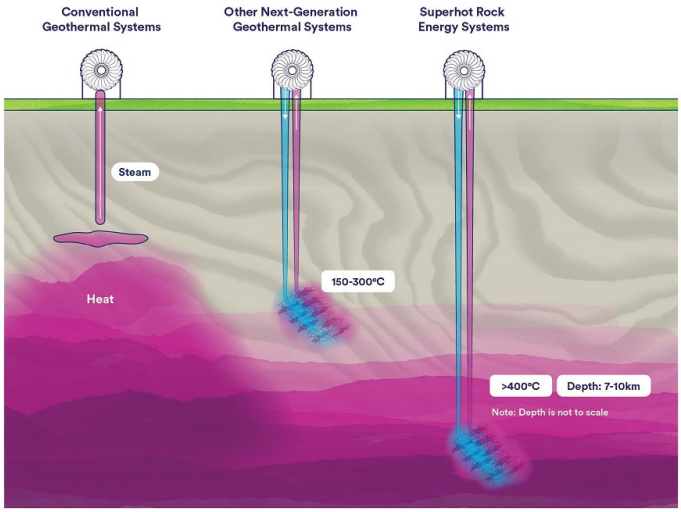


[1,2] As of 2024

Where does SHR fit in the picture?

Superhot Rock (SHR) is the *resource*, not the *method*. Superhot rock energy comes from a subsurface geologic rock resource existing in-situ at or above the supercritical temperature of water (374°C in de-ionized water or higher in brine). **SHR may use EGS or CLGS *methods*.** Existing EGS and CLGS developers are either actively chasing SHR or plan to as the technology matures.

Figure 3: Building toward superhot



For more information on this work, please contact:

Terra Rogers, *Program Director, Superhot Rock Energy*

trogers@catf.us