

Considerations for Federal Leasing of Onshore Energy: Oil and Gas and Geothermal Power

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Both oil and gas (O&G) and geothermal power are longstanding energy sectors for the United States. The two sectors have many similar characteristics including accessing subsurface resources, having similar development timelines, using similar technologies and processes, and having similar types of environmental impacts. The technologies also have significant differences. O&G is more mature, with more investment potential and more potential for competition for leases, but it depends on finite, carbon-intensive resources. Geothermal power has growth potential due to developing technologies like enhanced geothermal systems and the potential to deliver lower-carbon electricity. But geothermal power also has challenges to greater deployment, including high capital costs, difficult operating conditions, lower profit margins on electricity compared to fossil fuels, and other market challenges. These similarities and differences influence how current onshore federal leasing and permitting laws and regulations impact each sector and can inform what changes might be relevant for the future management and development of federal lands and resources.

The Bureau of Land Management (BLM) manages onshore federal lands pursuant to the Federal Land Policy and Management Act (FLPMA; 43 U.S.C. §1701 et seq.). In accordance with FLPMA, BLM develops Resource Management Plans to manage federal lands for multiple uses and to ensure a sustained yield of those lands and resources in perpetuity. One of those uses is for energy development, including, among other commodities, O&G and geothermal energy. The leasing authority for these resources comes from the Mineral Leasing Act of 1920 (MLA; 30 U.S.C. §§181 et seq.) and the Geothermal Steam Act of 1970 (30 U.S.C. §§1001 et seq.), respectively. Additionally, leasing activities by BLM and development activities by the lessee are subject to other federal laws such as the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. §4321 et seq.), the Clean Air Act (42 U.S.C. §7401 et seq.), and the Clean Water Act (33 U.S.C. §1251 et seq.), as well as state and local laws governing resource use and protection. With respect to NEPA compliance for O&G and geothermal development on onshore federal lands, some categorical exclusions (CXs) have been established in statute or administratively that identify activities that normally do not have a significant impact on the quality of the human environment and thus do not require further environmental reviews under NEPA.

Federal leasing terms and requirements may vary between O&G and geothermal development on federal lands. However, both sectors have periodic competitive bidding processes (geothermal also has noncompetitive options) that require the lessee to pay bids, rents (paid prior to energy production, based on the amount of land), and royalties (paid once production begins, generally based on the value of the resource being accessed or extracted). Some of the lease terms are set by law at fixed values, have established minimums, or may be left to BLM to determine based on agency objectives and best-use determinations. The initial lease terms for both sectors are 10 years for the initial development, with total lease duration subject to successful production and lease extension options. These leasing and permitting requirements and related costs may result in under- or over-development of resources or in a resource development mix that does not best serve various federal priorities. These priorities include BLM's mission to ensure multiple-use and sustained yield of federal resources or broader federal goals of providing a reliable electricity supply, ensuring energy security, reducing greenhouse gas emissions, or providing for fiscal security through federal leasing revenue.

Congress has reviewed and may further consider a variety of topics associated with federal leasing and use of O&G and geothermal resources. These topics could include:

- guidance or requirements for financial bonding—often used to support site reclamation after project completion;
- lease terms to address non-productive leases and/or intermediate land uses;
- conditions for when competitive and noncompetitive leasing opportunities could be allowed;
- how much authority BLM has to set lease terms; whether such terms should be fixed values, minimum values, or ranges of values; and their timeframes;
- requirements on applications for drilling permits and timelines for reviewing and deciding on them; and

appropriateness of the CXs available to O&G or geothermal projects to support resource development and/or to ensure proper evaluation of environmental impacts.

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Oil and Gas and Geothermal Power Sectors

Congress plays a role in energy development on federal lands, including by providing authority and guidance to federal agencies, such as the Bureau of Land Management (BLM), that are responsible for resource management. BLM and other federal agencies support development of both non-renewable and renewable resources on federal lands, which contribute significantly to federal revenues, the energy supply for the U.S. economy, and other national priorities.

Oil and gas (O&G) and geothermal energy are two such resources. They have a variety of similarities and differences that can affect their contributions to the U.S. economy and their management as a resource. Review of these similarities and differences could help inform Congress on whether to maintain the current laws and regulations or to make changes to best serve federal priorities for managing and developing the lands and resources.

The federal government may seek to regulate and support both sectors' development similarly because these two energy resources share many general physical and operational characteristics. These include similar subsurface location of resources; similar development processes and timelines; similar resource identification, access, and production technologies; similarities in the types of potential environmental impact considerations from their development; and similar workforce knowledge and skillsets.

The federal government may seek to regulate and support these resources differently because of different goals for their exploitation or because of the differences between the resources. These differences include challenges related to accessing resources and their production (including potential development risks, costs, and timelines as well as the need for technology development and adaptations); the degree of emissions and other environmental impacts from development; industry size, investment opportunities, and maturity including the long-term profit and development potential; and how each resource can contribute to different national priorities or future development scenarios.

The following sections describe how processes for leasing and permitting on onshore federal lands are applied to O&G and geothermal energy. These sections note how these two resource types are treated similarly or differently and provide context for federal O&G and geothermal energy development regulations. The final section of this report discusses several issues for potential congressional consideration, including bonding and project reclamation, productive and non-productive leases, BLM authority to set lease terms, and application review processes.

The report does not cover development of other onshore energy resources on federal lands (such as solar, wind, or coal) or of offshore energy resources. Conservation, environmental protection, and other aspects of BLM's multi-use mission are also outside the scope of the report, as are commercial considerations including labor and access to capital. The intersection between leasing and other environmental statutes outside of NEPA is not covered. Multiple other federal, state, and local laws also may require permitting or other procedures for the approval and operation of a O&G or geothermal project on federal lands, depending on the scope and nature of the activities, potential environmental impacts, and other factors. This report focuses on select BLM processes.

Aside from NEPA, other applicable federal laws and regulations, as well as those at the state level, are not covered.

Development of Oil and Gas and Geothermal Resources in the United States

O&G and geothermal power are two long-operating energy sectors in the United States. The first successful well intended to produce natural gas was dug in 1821 in Fredonia, New York.¹ The first American natural gas company was formed in Fredonia in 1858. The first commercial well drilled specifically for oil in the United States was the Drake Well near Titusville, PA in 1859.² John Rockefeller invested in his first oil refinery near Cleveland, OH, in 1863, leading to the creation of Standard Oil in 1870.³ O&G contributes 69% of total U.S. primary energy consumption and supplies energy and products to a variety of industries including electricity generation, heating, industrial and chemicals manufacturing, and transportation fuels.⁴ Even with continued policy and market trends toward lower-carbon energy sources, O&G will likely continue to play an important role for decades.

The world's first geothermal district heating system was created in Boise, ID, in 1892,⁵ with the first small-scale geothermal power plant (250 kilowatts) at The Geysers in California in 1922, and the first large-scale commercial power plant (11 megawatts) in 1960.⁶ Geothermal power contributes 0.2% of U.S. primary energy consumption in the form of electricity and direct use (heating and cooling). Supporters of expansion of geothermal power identify it as a renewable resource that could provide baseload electricity generation to support the changing electrical grid.⁷ Additionally, new drilling and power generation technologies, including enhanced geothermal systems (EGS), are enabling access to significant new amounts of geothermal power.⁸ The U.S. Department of Energy projects that geothermal power could provide 90 gigawatts of electricity generation capacity by 2050 (3.9% of total projected U.S. 2050 capacity providing 12.0% of U.S. electricity).⁹

¹ U.S. Energy Information Administration, "Energy Timelines—Natural Gas," accessed April 24, 2024, <https://www.eia.gov/kids/history-of-energy/timelines/natural-gas.php>.

² American Chemical Society, "Development of the Pennsylvania Oil Industry," <https://www.acs.org/education/whatischemistry/landmarks/pennsylvaniaoilindustry.html>.

³ Keith Poole, "Biography: John D. Rockefeller, Senior," accessed October 2, 2023, <https://www.pbs.org/wgbh/americanexperience/features/rockefellers-john/>.

⁴ Energy Information Administration, "U.S. Energy Facts Explained," August 16, 2023, <https://www.eia.gov/energyexplained/us-energy-facts/>.

⁵ U.S. Department of Energy, "Energy Saver History Timeline: Geothermal Energy," accessed October 2, 2023, <https://www.energy.gov/energysaver/energy-saver-history-timeline-geothermal-energy>.

⁶ U.S. Department of Energy, "Energy Saver History Timeline: Geothermal Energy," accessed October 2, 2023, <https://www.energy.gov/energysaver/energy-saver-history-timeline-geothermal-energy>.

⁷ Energy Information Administration, "What is energy?" August 16, 2023, <https://www.eia.gov/energyexplained/what-is-energy/sources-of-energy.php>.

⁸ Fervo Energy started operation of a 3.5 megawatt (MW) enhanced geothermal system (EGS) plant in Nevada in November 2023. Other plants and demonstration projects are being developed at several sites in the United States. For more details on EGS, see CRS Report R47256, *Enhanced Geothermal Systems: Introduction and Issues for Congress*, by Morgan Smith; and U.S. Department of Energy, Geothermal Technologies Office, *GeoVision: Harnessing the Heat Beneath Our Feet*, May 2019, <https://www.energy.gov/sites/default/files/2019/06/f63/GeoVision-full-report-opt.pdf>.

⁹ With 90 gigawatts (GW) of projected capacity, geothermal power could generate approximately 675 terawatt-hours (TWh) of electricity. The U.S. Energy Information Administration's 2050 projections for U.S. electricity supply are 2,172 GW of capacity and 5,520 TWh of electricity generation. Chad Augustine, Sarah Fisher, Jonathan Ho, Ian Warren, and Erik Witter, "Enhanced Geothermal Shot Analysis for the Geothermal Technologies Office," National Renewable Energy Laboratory, January 2023, <https://www.nrel.gov/docs/fy23osti/84822.pdf>; Energy Information Agency, *Annual Energy Outlook 2023*, 2023, https://www.eia.gov/outlooks/aeo/tables_ref.php.

These two energy sectors share some general operational characteristics, including the subsurface location of resources, general development timelines, technologies, and the types of potential environmental impacts from drilling.¹⁰

- Both sectors access underground energy resources tied to specific geographical locations. Accessing either resource involves many similar types of risks and challenges, including lengthy project development timelines, difficult-to-access resources, and potential well development failures.
- The two sectors use similar technologies and techniques, including drilling and well-completion technologies, underground resource assessment technologies, and power plant technologies (common to many thermal power generation applications).
- Their workforces employ similar skill sets and knowledge bases. Development requires related knowledge and understanding of geology and resource potentials.
- The two sectors can affect the environment similarly during drilling, including that both have potential for ground water impacts; induced seismicity; and other impacts from the use of drilling rigs and the construction of access roads, power plants, and pipelines.¹¹

The two energy sectors also have significant differences, including industry size and investment, long-term profit and development potential, the degree of emissions and other environmental impacts, and the applications for each energy type.

- Geothermal power is largely used for environmental heating or electricity generation. Since geothermal power is renewable, the sustainable operation of geothermal plants and the potential for expanded applications—from the continuing electrification of industrial and residential markets—means geothermal projects have the potential for long-term operations and sustained profits.
- The knowledge of geothermal resources—including their location and subsurface conditions—is generally more limited than fossil fuel resources.
- Geothermal projects—while facing some of the same general challenges as O&G development—have unique operating conditions which generate different risks and different chances of failure. In addition to navigating more uncertainty in location and subsurface conditions compared to O&G, geothermal drilling generally requires larger diameter wells with higher temperatures, faces harder rock, and accesses deeper resources than O&G drilling. Additionally, geothermal power plants tend to have higher capital costs than other similarly sized thermal power projects, such as natural gas-fired plants, due to operational and plant design factors—geothermal systems generally pump higher fluid volumes, manage more challenging reservoir conditions (e.g., reservoir geochemistry, and geofluid mechanics), and incorporate more complex plant designs to maximize efficiency.
- Geothermal power produces low to no carbon emissions. Geothermal projects also generate fewer byproducts or other wastes requiring handling and disposal.

¹⁰ For more details on comparison of these two industries, see CRS Report R47405, *Oil and Gas Technology and Geothermal Energy Development*, by Morgan Smith.

¹¹ The magnitude of these risks and impacts vary between energy types, as noted in the following section on differences.

- The O&G sector is larger, more mature, and generally better understood by potential investors, developers, and other partners, which can decrease risks and support more and/or easier project development. O&G has more capital available for investment due to high productivity and high profit levels. Potential investors and developers are more familiar with O&G risks, investments, benefits, and markets. O&G also has a larger workforce and more extensive experience with, and knowledge of, its underground resources.
- Some recent policy and social trends, such as environmental, social, and governance (ESG), cast O&G resources as finite, fossil-fuel-based, carbon-intensive energy sources, with the potential for a variety of negative environmental and human impacts. Geothermal resources are renewable, low-carbon energy sources, with more limited degrees of negative environmental and human impacts. Some trends in corporate, social, and governmental policy and markets such as greenhouse gas reduction goals, are pushing U.S. energy development to include more renewable, carbon-free sources, which may include geothermal energy.¹²

Bureau of Land Management's Role in Energy and Mineral Development

Leasing, exploration, and development of O&G and geothermal resources on federal lands is managed by BLM. BLM, within the Department of the Interior (DOI), manages energy production and mineral development from all federal surface lands and the federal subsurface mineral estate, and assists in energy development projects on certain tribal lands (though it does not lease those lands). BLM derives its general statutory authority for the management of federal lands from the Federal Land Policy and Management Act (FLPMA).¹³ FLPMA directs BLM to manage federal lands for “multiple use and sustained yield,” which encompasses “a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values.”¹⁴ Although FLPMA places some requirements and constraints on BLM's implementation of these “multiple use” and “sustained yield” directives, some discretion is left to the agency for interpreting how best to comply with this statutory mandate.¹⁵

FLPMA requires BLM to develop, maintain, and—when appropriate—revise land use plans (which BLM refers to as resource management plans—RMPs) for all managed lands in accordance with the “multiple use and sustained yield” principle.¹⁶ An RMP describes the desired outcomes, allowable uses, and anticipated management actions for a given area. BLM must consider environmental impacts while developing RMPs, and therefore RMPs are developed

¹² For more information on trends in energy, see CRS Report R46723, *U.S. Energy in the 21st Century: A Primer*, coordinated by Melissa N. Diaz.

¹³ 43 U.S.C. §§1701 et seq. For a background on the Federal Land Policy and Management Act (FLPMA), see Bureau of Land Management (BLM), *The Federal Land Policy and Management Act of 1976, as amended*, September 2016, available at https://www.blm.gov/sites/blm.gov/files/AboutUs_LawsandRegs_FLPMA.pdf.

¹⁴ 43 U.S.C. §1702(c).

¹⁵ For more information on BLM's interpretation of these directives, see CRS Legal Sidebar LSB10982, *Federal Land Management: When “Multiple Use” and “Sustained Yield” Diverge*, by Adam Vann.

¹⁶ 43 U.S.C. §1711.

concurrently with National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. §4321 et seq.) reviews.¹⁷ Part of BLM’s management of federal lands under its multiple use directive is determining the best use of the land, including where and when multiple simultaneous uses are possible without interfering with each other. For example, grazing or recreation are often allowed on federal lands in conjunction with other designated uses. However, though an RMP for a given area of land may designate multiple possible uses, an individual project may affect or prevent the other potential uses of the land.

After the RMP is developed, BLM may also develop activity-level and/or project-specific plans and decisions that describe the on-the-ground implementation of certain actions, programs, or projects for a given area. BLM may revise any of its plans based on new information, newly developed technologies, new policy goals, or other changing circumstances. Any proposed development activity, such as for O&G or geothermal, must comport with the RMP and activity plans for the parcel of land.

Federal Lease Terms

O&G and geothermal development allowed by RMPs are managed through leasing processes that share many similarities in requirements but also have many differences. Differences between O&G and geothermal leasing include fiscal terms, frequency of lease sales, and operator responsibilities specific to the resource type. These differences in requirements may result in under- or over-development of resources or in a resource development mix that does not best serve various federal priorities, such as BLM’s mission to ensure multiple-use and sustained yield of federal resources or more general federal goals of providing a reliable electricity supply, ensuring energy security, reducing greenhouse gas emissions, or providing for fiscal security through federal leasing revenue.

Leases for onshore O&G development are administered pursuant to the Mineral Leasing Act of 1920 (MLA; 30 U.S.C. §§181 et seq.). Leases for geothermal projects are administered pursuant to the Geothermal Steam Act of 1970 (30 U.S.C. §§1001 et seq.).¹⁸ **Table 1** provides a summary of lease terms for O&G and geothermal power. Both have bonding requirements prior to drilling: \$10,000 for a single lease, or options to pay a flat amount to cover all leases within a single state (\$25,000 for O&G and \$50,000 for geothermal) or nationwide (\$150,000).¹⁹ Both also have some similar lease terms, including the duration of the primary lease and opportunities for renewals. Both require a nomination fee, but with different terms: O&G expressions of interest require a flat fee of \$5 per acre (adjusted for inflation), and geothermal nomination fees amount to \$140 plus \$0.14 per acre. The application fee for competitive leases for both O&G and geothermal is \$195; the application fee for noncompetitive geothermal leases is \$505. The budget reconciliation measure often referred to as the Inflation Reduction Act (IRA) (P.L. 117-169) eliminated noncompetitive O&G leases. Both leasing processes similarly require the payments of bids (also known as bonuses), rents, and royalties.

¹⁷ Bureau of Land Management, “Types of Plans,” accessed June 1, 2023, <https://www.blm.gov/programs/planning-and-nepa/planning-101/types-of-plans>; Bureau of Land Management, “What Informs Our Plans,” accessed June 22, 2023, <https://www.blm.gov/programs/planning-and-nepa/what-informs-our-plans>.

¹⁸ 30 U.S.C §§181-287.

¹⁹ Under a rule finalized on April 12, 2024, minimum bonding amounts for an O&G lease increase to \$150,000 per lease bond, and \$500,000 for statewide bonds. Nationwide and unit bonds are eliminated. This rule is effective 60 days after it is published in the *Federal Register*. This has not occurred as of April 17, 2024. Fluid Mineral Leases and Leasing Process, RIN 1004-AE80, <https://www.blm.gov/sites/default/files/docs/2024-04/BLM-Fluid-Minerals-Leasing-FinalRule.pdf>.

Differences also exist in lease terms. O&G leases require a minimum bid of \$10 per acre; geothermal leases do not require a minimum bid. The statutes define ranges (minimum and maximum rates) for the royalties for geothermal production based on years from production start,²⁰ but for the 10-year period until 2032 the law establishes a single set rate for royalties for O&G (after which time that value becomes a minimum).²¹ For rents, minimum rates are established by statute for both resource types. Additionally, the minimum rent and royalty rates are higher for O&G than geothermal. As a result of these terms, payments from lessees may be a greater percentage of sales or higher value per project for O&G compared to geothermal.

In addition to the terms summarized in **Table 1**, both O&G and geothermal leasing processes are subject to land use decisions documented in BLM's RMPs, activity plans, and NEPA reviews. Project operators for both resource types also must comply with requirements of site-specific and project-specific permits and other applicable requirements of federal, state, and local laws and regulations.

Table 1. Summary of Lease Terms for Federal Oil and Gas and Geothermal Resources

	Oil and Gas	Geothermal
Primary lease length	10 years (30 U.S.C. §226(e))	10 years (30 U.S.C. §1005(a))
Lease renewal	Lease continues as long as there is production of oil or gas in paying quantities. If drilling operations commenced before the end of the primary term, the lease can be extended for two years and any period thereafter during which oil and gas is produced (30 U.S.C. §226(e)).	Lease may be extended for two five-year periods provided work toward development, or required payments, are made. If geothermal production and use commenced before the end of the primary term, the lease can be extended for 35 years with a preferential renewal option after that (30 U.S.C. §1005).
Pre-drilling bond requirements	Lessee or operator must post a bond amounting to \$10,000 for a single lease, \$25,000 for all leases in a state, or \$150,000 for all operations nationwide (43 C.F.R. 3104).	Lessee or operator must post a bond amounting to \$10,000 for a single lease, \$50,000 for all leases in a state, or \$150,000 for all operations nationwide (43 C.F.R. 3214).
Nomination fee	BLM solicits nominations for land for oil and gas leasing. Expressions of interest must include \$5 per acre fee (30 U.S.C. §226(q)); statute requires adjustment of this fee for inflation not less frequently than every four years. Established by the Inflation Reduction Act (P.L. 117-169) in 2022, this fee has not been adjusted.	\$140 plus \$0.14 per acre (43 C.F.R. §3000.12).
Application fee	\$195 application fee (competitive only; 43 C.F.R. §3000).	\$195 application fee (competitive leases) or \$505 (noncompetitive leases) (43 C.F.R. §3000).
Minimum bid	\$10 per acre for the 10-year period beginning on August 16, 2022. The national minimum acceptable bid may be increased after that period (30 U.S.C. §226(b)).	n/a

²⁰ The Geothermal Steam Act of 1970, Section 5, as amended through the Energy Act of 2005 (P.L. 109-58).

²¹ The Mineral Leasing Act of 1920, Section 17, as amended through the Inflation Reduction Act of 2022 (IRA; P.L. 117-169).

	Oil and Gas	Geothermal
Rent	Competitive leases: For the 10-year period beginning on August 16, 2022, no less than \$3 per acre for the first two years, \$5 per acre per year for the following six-year period, and \$15 per acre per year thereafter (30 U.S.C. §226(d)).	Competitive leases: Not less than \$2 per year per acre for year 1, \$3 per year per acre for years 2-10, and \$5 thereafter (30 U.S.C. §1004). Noncompetitive leases: \$1 per year per acre for years 1-10, and \$5 per year per acre thereafter (30 U.S.C. §1004).
Royalty	16⅔% of the value of production (30 U.S.C. §226(b)) during the 10-year period beginning on August 16, 2022, and no less than 16⅔% thereafter. The Secretary is permitted to “waive, suspend or reduce the rental or minimum royalty” as a production incentive (43 C.F.R. §3103.4-1(a)).	Not less than 1% and not more than 2.5% of the gross proceeds of electricity produced in years 1-10; not less than 2% and not more than 5% thereafter; or 10% of the gross value for an “arms-length” sale to a developer (30 U.S.C. §1004). For direct use (i.e., heat), royalties are based on a schedule of fees (30 C.F.R. §1206.356). The Secretary is permitted to “waive, suspend or reduce the rental or royalty” for conservation purposes, to encourage the greatest recovery of resources, if necessary to promote development, or if the lease cannot be operated under those terms (30 U.S.C. §1012).

Source: U.S. Code and federal regulations as indicated in text.

Notes: Among other provisions, the Inflation Reduction Act of 2022 (P.L. 117-169) eliminated noncompetitive leases, increased the minimum bid and rental requirements, and increased the royalty rates for O&G. Bid (aka bonus) is the payment that an applicant offers to purchase the lease of public lands. Rent is the payment made by a lessee before production occurs. Royalty is a required payment made by a lessee to the federal government based on the value of the public resource involved.

Under a rule finalized on April 12, 2024, minimum bonding amounts for an O&G lease increase to \$150,000 per lease bond, and \$500,000 for statewide bonds. Nationwide and unit bonds are eliminated. Unit operator bonds are bonds filed by the oil and gas unit operator in lieu of individual lease bonds. This rule is effective on June 22, 2024. Fluid Mineral Leases and Leasing Process, RIN 1004-AE80, <https://www.blm.gov/sites/default/files/docs/2024-04/BLM-Fluid-Minerals-Leasing-FinalRule.pdf>.

The U.S. Government Accountability Office (GAO) identified deficiencies with some of these elements of BLM’s onshore federal leasing program including noncompetitive leasing, royalty relief, data collection, fair return on federal resources, and bonding and reclamation processes, and recommended actions for BLM to improve the related agency policies.²² In 2021, in response to Executive Order 14008, “Tackling the Climate Crisis at Home and Abroad,” DOI produced a report identifying many of these same issues and a number of recommendations to address them.²³ See the section “Issues for Congress” for more information on addressing these issues.

²² See, for example, the following GAO reports: *Oil and Gas: Onshore Competitive and Noncompetitive Lease Revenues* (GAO-21-138), November 19, 2020; *Federal Oil and Gas Revenue: Actions Needed to Improve BLM’s Royalty Relief Policy* (GAO-21-169T), October 6, 2020; *Oil and Gas: Interior Should Strengthen Management of Key Data Systems Used to Oversee Development on Federal Lands* (GAO-21-209), May 27, 2021; *Federal Energy Development: Challenges to Ensuring a Fair Return for Federal Energy Resources* (GAO-19-718T), September 24, 2019; and *Oil and Gas: Bureau of Land Management Should Address Risks from Insufficient Bonds to Reclaim Wells* (GAO-19-615), September 18, 2019.

²³ U.S. Department of the Interior, “Report on the Federal Oil and Gas Leasing Program,” November 2021, <https://www.doi.gov/sites/doi.gov/files/report-on-the-federal-oil-and-gas-leasing-program-doi-eo-14008.pdf>.

Recent Changes to Federal Lease Terms

The MLA was amended by the IRA. Among other provisions, O&G revenue requirements were increased. See **Table 2** for a summary of the 2022 revenue changes.

Table 2. Changes to Federal Oil and Gas Revenue in the Inflation Reduction Act (P.L. 117-169)

Revenue Type	Before the Inflation Reduction Act	Inflation Reduction Act Change
Bid	Minimum \$2.00 per acre.	Minimum \$10.00 per acre; can increase after August 16, 2032.
Rent	No less than \$1.50 per acre for years 1-5 and no less than \$2.00 per acre thereafter.	No less than \$3.00 per acre for years 1-2, no less than \$5.00 per acre for years 3-8, no less than \$15.00 per acre thereafter.
Royalty	At least 12½% of the value of production from the lease.	16⅔% of the value of production from the lease for the 10 years beginning on August 16, 2022; no less than 16⅔% thereafter.

Source: 30 U.S.C. §226(b); 30 U.S.C. §226(d); P.L. 117-169.

Notes: Bid (aka bonus) is the payment that an applicant offers to purchase the lease of public lands. Rent is the payment made by a lessee before production occurs. Royalty is a required payment made by a lessee to the federal government based on the value of the public resource involved.

The IRA made other changes to onshore O&G leasing. These changes include eliminating the option for noncompetitive leases, adding a royalty on gas that is lost (such as by venting and flaring), and increasing bonding requirements.²⁴

Congress amended the Geothermal Steam Act of 1970 by the Energy Policy Act of 2005 (P.L. 109-58). Changes enacted in 2005 include adding two potential 5-year extensions to the initial 10-year lease term, increasing the maximum acreage of a single lease, and increasing the total acreage a single entity may lease in any one state.

Federal Permitting and Leasing Process

The federal permitting and leasing processes are largely similar for both O&G and geothermal projects. BLM identifies land available for leasing through an RMP, identifies high- and low-preference parcels, holds competitive lease sales, and conducts NEPA reviews at different stages during the processes as required. Individuals, companies, or contractors are able to nominate lands for BLM to consider including for either O&G or geothermal lease sales. Operator responsibilities include submitting specific permits at similar points in the drilling timeline for both O&G and geothermal projects. For example, operators submit an Application for Permit to Drill (APD) before drilling for O&G projects; operators submit Geothermal Drilling Permit (GDP) before drilling for geothermal projects. Both APDs and GDPs contain plans for drillpad location, surface reclamation, and other surface uses.

Despite these similarities, there are significant differences; for example, noncompetitive lease sales are available for geothermal but not O&G resources, and operator responsibilities for exploration and drilling differ due to differences inherent to the resources. **Table 3** compares BLM permitting and leasing processes for O&G and geothermal resources and provides examples

²⁴ For non-competitive leases, see Section 50262, Mineral Leasing Act Modernization, (e) Elimination of Noncompetitive Leasing; for flaring, see Section 50263, 30 U.S.C. §1727.

of similarities and differences. The table is intended to be illustrative and not comprehensive in identifying all similarities and differences that may arise in implementation.

Table 3. Selected BLM Permitting and Leasing Processes for Geothermal and Oil and Gas Resources

	Oil and Gas	Both	Geothermal
Land management	RMP identifies lands open under standard lease terms, lands open with restrictions, and lands closed to leasing.	BLM creates a Resource Management Plan (RMP) (43 U.S.C. §1712).	RMP identifies lands available for leasing and lands not available (43 U.S.C. §3201).
Applicability of federal and state laws and regulations		BLM and operator comport with state and federal laws and regulations through entire process.	
How land is chosen for evaluation and leasing	BLM can select parcels to include in a lease sale, but typically, industry submits expressions of interest (EOIs) to nominate lands for leasing (43 U.S.C. §3120). Nominated lands must align with lands designated as open for development by the RMP.	BLM prepares Leasing Analysis.	A qualified entity may nominate lands for competitive sale by submitting an applicable BLM nomination form. BLM may include land in a lease sale on its own initiative (30 U.S.C. §3203). BLM must have information on potential lands that indicate geothermal resources that could be produced are present.
Competitive sales and frequency	Held in states with eligible lands on at least a quarterly basis (30 U.S.C. §226).	Competitive sales required.	Must be offered once every two years for states that have nominations (30 U.S.C. §1003).
Noncompetitive sales	Not allowed (P.L. 117-169).		If a lease is offered but no bid qualifies, the land becomes available for noncompetitive leasing for a two-year period (30 U.S.C. §1003).

	Oil and Gas	Both	Geothermal
Operator responsibilities before various activities	<p>Operator must submit an Application for Permit to Drill (APD) (43 C.F.R. §3162.3-1). The APD form (BLM Form 3160-3) must include, among other things, a drilling plan, a surface use plan, and evidence of bond/surety coverage. The surface use plan should contain information on drillpad location, pad construction, the method for containment and waste disposal, and plans for surface reclamation. The APD is valid for two years or until the lease expires, whichever occurs first, but the BLM may grant a two-year extension to allow the operator more time to drill.</p> <p>Operator may also need to secure permits based on project-specific needs to transport the product such as right-of-way or pipelines, or to flare gas.</p> <p>Before other operations that will result in additional surface disturbance, the operator submits a new surface use plan of operations (APD Form 3160-5) (43 C.F.R. §3162.3-3).</p>	<p>Operator must meet requirements of site-specific and project-specific permits including state regulations.</p>	<p>Operator must submit a Notice of Intent to Conduct Geothermal Exploration Operations (NOI) (43 C.F.R. §3251) including planned well characteristics and drilling and completion procedures.</p> <p>Operator must secure a Geothermal Drilling Permit (GDP) (43 C.F.R. §3261) including a complete operations plan and a complete drilling program including information on plans for well pads, roads, facilities, water sources, environmental protection procedures, and surface reclamation.</p> <p>Operator must submit a Plan of Utilization (POU) and a facility construction permit to be approved by BLM (43 C.F.R. §3271). The POU must include anticipated environmental impacts and mitigations. The construction permit must address any pipelines or facilities.</p>

Source: U.S. Code and federal regulations as indicated in text.

Notes: Though there are differences, for the purposes of this analysis, CRS is treating Geothermal Drilling Permits (GDPs) and Applications for Permit to Drill (APDs) as analogous. Laws and requirements listed in this table are not exhaustive; additional requirements may apply depending on the type of project, its location, and other factors.

Multiple other federal, state, and local laws also may require permitting or other procedures for the approval and operation of a O&G or geothermal project on federal lands, depending on the scope and nature of the activities, potential environmental impacts, and other factors. Depending on the site-specific circumstances, examples of other federal laws that may apply to a project include, but are not limited to, the Clean Water Act (33 U.S.C. §1251 et seq.), Endangered Species Act (16 U.S.C. §1531 et seq.), National Historic Preservation Act (54 U.S.C. §§300101 et seq.), Wild and Scenic Rivers Act (16 U.S.C. §1271 et seq.), and Native American Graves Protection and Repatriation Act (25 U.S.C. §3001 et seq.). As discussed below, NEPA authorizes a procedural framework for evaluating the potential effects of proposed actions and potential alternatives to inform agency decisions under other laws, but the NEPA process itself does not provide permitting or other regulatory approvals to carry out a project.

Developing Projects: Productive and Non-Productive Leases

While O&G and geothermal projects are being developed—basically any time before production starts—their leases are classified as non-productive. O&G and geothermal projects generally have longer project development timelines—compared to some other energy types—due, in part, to their potential for environmental impacts and the related requirements for NEPA reviews.²⁵ O&G and geothermal power also have operational factors that extend development time such as challenges related to drilling wells, confirming resources, and—for geothermal projects—the complexities in designing and constructing power plants. The base federal lease periods of 10 years—longer than some other federal energy lease periods such as for solar or wind testing—reflect these development challenges.²⁶

While longer initial lease terms may allow the successful development of many O&G and geothermal projects, both successful and unsuccessful projects can result in leased parcels being non-producing for extended amounts of time. For a variety of reasons including the operational challenges mentioned above as well as market fluctuations or other business decisions, some O&G and geothermal lease parcels are non-productive for several years or may never become productive. Of all onshore O&G leases held in 2022, 10,778 out of 34,409 (31%) were not producing—covering 11,341,950 out of 23,771,097 leased acres (48%).²⁷ Out of all geothermal leases held in 2022, 454 out of 538 (84%) were not producing—covering 1,019,167 out of 1,121,238 leased acres (91%).²⁸ Additionally, BLM has noted a variety of reasons for non-productivity—including “speculative leasing,” projects which are non-productive likely pending market changes, or projects which are ultimately unsuccessful—that often inhibit those lands from being managed for other purposes, such as conservation or recreation.²⁹

NEPA Environmental Review Process

BLM has generally considered its decisions for the preparation and implementation of RMPs, including BLM permitting and leasing decisions for geothermal, O&G, and other resources, to be major federal actions subject to NEPA. Related federal agency decisions under other applicable laws also may be considered major federal actions subject to NEPA. Section 102(2)(C) of NEPA requires the preparation of an environmental impact statement (EIS) for major federal agency

²⁵ The length of the NEPA review process for each of these types of energy projects is dependent on the number of major federal actions with the potential for significant effects, as well as the availability of CXs that cover those actions. According to a 2014 U.S. Department of Energy graphic, the NEPA review process for geothermal projects was estimated at five to seven years; for O&G projects, three to five years; and wind and solar projects, approximately 1.5 years. Geothermal Energy Association Blog, “Leading News: Geothermal Needs Level Playing Field; GEA Celebrates ‘Honors’ Winners,” July 30, 2014, <https://geoenergist.wordpress.com/2014/07/30/leading-news-geothermal-needs-level-playing-field-gea-celebrates-honors-winners/>.

²⁶ For example, BLM right-of-way grants for solar and wind testing—which are used to determine whether an area’s energy potential is adequate for development—have a maximum initial term of three years with an option for a three-year renewal if accompanied by a development application (43 C.F.R. §2805.11).

²⁷ Not all of these projects will be non-producing by the end of their initial lease period; this is a snapshot of 2022 conditions. U.S. Bureau of Land Management, “Public Land Statistics 2022,” June 2023, https://www.blm.gov/sites/default/files/docs/2023-07/Public_Lands_Statistics_2022.pdf.

²⁸ U.S. Bureau of Land Management, “Public Land Statistics 2022,” June 2023, https://www.blm.gov/sites/default/files/docs/2023-07/Public_Lands_Statistics_2022.pdf.

²⁹ U.S. Department of the Interior, “Report on the Federal Oil and Gas Leasing Program,” November 2021, <https://www.doi.gov/sites/doi.gov/files/report-on-the-federal-oil-and-gas-leasing-program-doi-eo-14008.pdf>.

actions of a discretionary nature that would “significantly” affect the quality of the human environment.³⁰

Pursuant to Title II of NEPA, the Council on Environmental Quality (CEQ) promulgated regulations to establish procedures that federal agencies must follow in preparing an EIS.³¹ These procedures include an evaluation of the “reasonably foreseeable” effects of a proposed action and a range of “reasonable” alternatives to carry out the purpose and need of the action, identification of applicable requirements of other federal, state, and local laws, mitigation of potential effects that may be warranted, and certain additional considerations. Agencies are required to document the selection of a preferred alternative under an EIS in a record of decision (ROD). A ROD discloses an agency decision, but a ROD does not constitute regulatory approval to carry out a project that is authorized under another law. The preparation of an EIS also includes the opportunity for public involvement at various stages of the NEPA process.

CEQ regulations also established procedures for an environmental assessment (EA) if an agency may not be certain whether the effects of a proposed action would be significant.³² If an agency determines under an EA that the effects would be significant, the agency would be required to prepare an EIS pursuant to Section 102(2)(C) of NEPA. If an agency determines that the effects would not be significant, the agency would issue a finding of no significant impact (FONSI).³³ Agencies may provide the opportunity for public involvement in the preparation of an EA, but are not required to do so by statute.

The scope of effects that an agency must consider under NEPA is relatively broad. CEQ regulations define the term environmental “effects or impacts” for the purpose of NEPA to include “aesthetic, historic, cultural, economic, social, or health effects, whether direct, indirect, or cumulative.”³⁴ Depending on the breadth of potential effects and potentially applicable laws, numerous federal, state, local, or tribal agencies may be involved in the preparation of analyses for NEPA reviews. CEQ regulations outline procedures for identifying lead, cooperating, and participating agencies, and coordination of their respective roles in the NEPA process.³⁵ CEQ regulations also direct federal agencies to establish NEPA procedures for actions covered under their respective jurisdictions.³⁶ Agency-specific NEPA procedures are generally supplemental to CEQ regulations.³⁷

CEQ regulations also established procedures for agencies to categorically exclude specific types of actions from the preparation of an EIS or EA if those actions typically would not significantly affect the quality of the human environment under normal circumstances, referred to as a categorical exclusion (CX).³⁸ CEQ regulations also direct agencies to identify “extraordinary

³⁰ 42 U.S.C. §4332(2)(C).

³¹ Council on Environmental Quality (CEQ) regulations that establish procedures for the preparation of EISs and other elements of the National Environmental Policy Act (NEPA) process are codified at 40 C.F.R. Chapter V, Subchapter A, Parts 1500-1508. For a chronology of rulemaking for these regulations, see Council on Environmental Quality, “CEQ NEPA Regulations,” <https://ceq.doe.gov/laws-regulations/regulations.html>.

³² 40 C.F.R. §1501.5.

³³ 40 C.F.R. §1501.6.

³⁴ 40 C.F.R. §1508.1.

³⁵ 40 C.F.R. §1501.7 and 40 C.F.R. §1501.8.

³⁶ 40 C.F.R. Part 1507.

³⁷ For a list of references to agency-specific procedures, see Council on Environmental Quality, “Agency NEPA Implementing Procedures,” January 27, 2023, https://ceq.doe.gov/laws-regulations/agency_implementing_procedures.html.

³⁸ 40 C.F.R. §1501.4 outlines procedures for agencies to establish categorical exclusions (CX, also referred to as CE or CATEX). CEQ defines the term “categorical exclusion” in 40 C.F.R. §1508.1.

circumstances” to address situations in which a specific action that usually may be categorically excluded could require an EA or EIS if the effects may be significant. For example, certain resources protected under federal, state, or local laws may be present at a site that could cause the effects of an agency action to be significant at that location. CXs therefore may be a starting point, and not necessarily an end point, in identifying whether a specific action may require further review under NEPA.

Federal agencies have established numerous CXs and exceptions for extraordinary circumstances, pursuant to these CEQ regulations.³⁹ Some of these exclusions and extraordinary circumstances are listed in agency regulation, and others are listed in agency guidance. Congress also has established CXs in statute for specific types of agency actions. These statutory exclusions vary in terms of whether an agency is required to consider extraordinary circumstances to determine if further review under NEPA may be warranted on a case-by-case basis for specific actions.

Section 321 of the Fiscal Responsibility Act of 2023 (FRA, P.L. 118-5) amended NEPA, among other provisions, to alter various elements of the NEPA process and authorize project sponsors to petition a review of agency compliance with general deadlines for the preparation of an EIS (two years) or an EA (one year).⁴⁰ The CEQ regulations contained these deadlines prior to the passage of the FRA.⁴¹ The FRA did not establish any new CXs in statute and codified the definition of a CX found in the CEQ regulations.⁴² The FRA also expressly authorized an agency to adopt a CX of another agency, if appropriate.⁴³ On July 31, 2023, CEQ published a notice of proposed rulemaking “Bipartisan Permitting Reform Implementation Rule” to revise its regulations for implementing the amendments to NEPA enacted in the FRA.⁴⁴ The public comment period closed on September 29, 2023. That rule was finalized on May 1, 2024, and takes effect July 1, 2024.⁴⁵ Agencies also may revise their NEPA procedures consistent with these amendments to NEPA and CEQ regulations to implement changes to statutory requirements.

BLM NEPA Procedures

DOI regulations establish department-wide procedures for implementing the requirements of NEPA and CEQ regulations to carry out the federal environmental review process.⁴⁶

Departmental guidance outlines more detailed NEPA procedures of BLM and other agencies of the department.⁴⁷ BLM also has issued supplemental guidance for carrying out NEPA reviews for actions within the agency’s jurisdiction.⁴⁸ These regulations and guidance were issued prior to the

³⁹ For a consolidated list as of May 2021, see Council on Environmental Quality, “Categorical Exclusions,” <https://ceq.doe.gov/nepa-practice/categorical-exclusions.html>.

⁴⁰ For a summary of FRA amendments to NEPA, see Council on Environmental Quality, “Fiscal Responsibility Act of 2023 (FRA),” <https://ceq.doe.gov/laws-regulations/fra.html>.

⁴¹ 40 C.F.R. §1501.10.

⁴² 42 U.S.C. §4336e(1).

⁴³ 42 U.S.C. §4336c.

⁴⁴ Council on Environmental Quality, “National Environmental Policy Act Implementing Regulations Revisions Phase 2,” 88 *Federal Register* 49924, July 31, 2023.

⁴⁵ Council on Environmental Quality, “National Environmental Policy Act Implementing Regulations Revisions Phase 2,” 89 *Federal Register* 35442, May 1, 2024.

⁴⁶ 43 C.F.R. Part 46.

⁴⁷ U.S. Department of the Interior, Departmental Manual (DM), *Environmental Quality Programs, Part 516: National Environmental Policy Act of 1969*, “Chapter 11: Managing the NEPA Process—Bureau of Land Management,” June 2, 2020, 516 DM 11, <https://www.doi.gov/sites/doi.gov/files/elips/documents/516-dm-11-signed-508.pdf>.

⁴⁸ Bureau of Land Management, *National Environmental Policy Handbook*, H-1790-1, January 2008, https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_Handbook_h1790-1.pdf.

amendments to NEPA enacted in P.L. 118-5 and may be revised to reflect changes to statutory requirements.

BLM land use planning regulations also specify that the preparation of an RMP under FLPMA “is considered a major Federal action significantly affecting the quality of the human environment” requiring an EIS under NEPA.⁴⁹ These regulations require the publication of an RMP and the related EIS in a single document “whenever possible.”

BLM permitting or leasing decisions for land uses approved under an RMP also would be subject to the preparation of an EIS if the effects of the proposed action would be significant, or the preparation of an EA if the significance of the effects may be uncertain. Some O&G and geothermal activities of a more limited scope are categorically excluded from the preparation of an EA or EIS under NEPA. Some of these CXs are authorized in statute. BLM also has administratively established some CXs through agency guidance, with exceptions for extraordinary circumstances. Selected examples of these statutory and administrative CXs related to onshore geothermal and O&G activities are listed below.

Statutory Categorical Exclusions

Section 390 of the Energy Policy Act of 2005 (P.L. 109-58) authorized five CXs for certain O&G activities, including the drilling of new wells within a developed field.⁵⁰

1. “Individual surface disturbances of less than 5 acres so long as the total surface disturbance on the lease is not greater than 150 acres and site-specific analysis in a document prepared pursuant to NEPA has been previously completed.”
2. “Drilling an oil and gas well at a location or well pad site at which drilling has occurred previously within 5 years prior to the date of spudding the well.”⁵¹
3. “Drilling an oil or gas well within a developed field for which an approved land use plan or any environmental document prepared pursuant to NEPA analyzed such drilling as a reasonably foreseeable activity, so long as such plan or document was approved within 5 years prior to the date of spudding the well.”
4. “Placement of a pipeline in an approved right-of-way corridor, so long as the corridor was approved within 5 years prior to the date of placement of the pipeline.”
5. “Maintenance of a minor activity, other than any construction or major renovation of a building or facility.”

Section 390 did not specify any extraordinary circumstances in which these CXs may not apply to specific actions. BLM guidance outlines the agency’s interpretation that these statutory exclusions do not require a review of extraordinary circumstances, if the action meets the criteria of one of the exclusions in Section 390.⁵² BLM guidance acknowledges that requirements of other statutes may apply to these actions: “Energy Policy Act CXs do not require review for extraordinary circumstances. This is because these CXs are established by statute, and their application is governed by that statute. However, other procedural requirements still apply, such as consultation

⁴⁹ 43 C.F.R. §§1601.0-6.

⁵⁰ 42 U.S.C. §15942—NEPA Review.

⁵¹ *Spudding* is the first step in drilling a well.

⁵² Bureau of Land Management, *National Environmental Policy Handbook*, H-1790-1, January 2008, p. 18.

under the Endangered Species Act and National Historic Preservation Act.”⁵³ Section 390 also did not exempt applicable regulatory requirements of other federal, state, or local laws.

The Infrastructure Investment and Jobs Act (P.L. 117-58) authorized several criteria for the Secretary of the Interior to apply a NEPA CX for certain gathering lines.⁵⁴ The CX would apply in some situations for issuing sundry notices and right-of-way decisions on certain federal and Indian lands.⁵⁵ Activities covered by this CX include locating gathering lines and associated field compression or pumping units that service a well for the transport of oil or natural gas from a processing plant to a common carrier pipeline or facility, or to transport-related constituents or produced waters.⁵⁶ This exclusion generally would apply in situations that would reduce the “total quantity of methane that would otherwise be vented, flared, or unintentionally emitted from the field or unit,” or that would reduce “vehicular traffic that would otherwise service the field or unit.”⁵⁷ This exclusion does not apply to issuing sundry notices or right-of-way decisions for common carrier pipelines that would be installed on or cross federal or Indian lands.

Administrative Categorical Exclusions

BLM NEPA procedures outlined in DOI guidance list six CXs related to O&G and geothermal activities. One of these exclusions applies only to geothermal activities. Three apply to certain administrative or fiscal decisions, such as lease adjustments and royalty rate reductions. One exclusion applies to approvals for suspending operations and production. Another exclusion applies to exploration for O&G or geothermal resources, if no temporary or new road construction is proposed. These six CXs are listed below.⁵⁸ These exclusions generally would apply unless one or more extraordinary circumstances listed in DOI regulations would cause the effects of a specific action to be significant and require further NEPA review.⁵⁹

- “Issuance of future interest leases under the Mineral Leasing Act for Acquired Lands, where the subject lands are already in production.”
- “Approval of mineral lease adjustments and transfers, including assignments and subleases.”
- “Approval of unitization agreements, communitization agreements, drainage agreements, underground storage agreements, development contracts, or geothermal unit or participating area agreements.”

⁵³ Bureau of Land Management, *National Environmental Policy Handbook*, H-1790-1, January 2008, p. 18.

⁵⁴ *Gathering lines* are “a pipeline that is installed to transport oil, natural gas and related constituents, or produced water from 1 or more wells drilled and completed to produce oil or gas.” See U.S. Department of the Interior, “National Environmental Policy Act Implementing Procedures for the Bureau of Land Management (516 DM 11),” 89 *Federal Register* 14087-14090, February 26, 2024.

⁵⁵ The sundry notice is Bureau of Land Management Form 3160-5, which is used to request changes to the Surface Use Plan of Operations (SUPO). This includes changes to the SUPO during permitting and any subsequent new construction, reconstruction, or alteration of existing facilities, roads, lines, or other production facilities after the well has been permitted. For more information, see Bureau of Land Management Form 3160-5, “Sundry Notices and Reports on Wells,” https://www.blm.gov/sites/blm.gov/files/uploads/Services_National-Operations-Center_Eforms_Fluid-and-Solid-Minerals_3160-005.pdf.

⁵⁶ 42 U.S.C. §15943—Certain gathering lines located on Federal land and Indian land.

⁵⁷ 42 U.S.C. §15943.

⁵⁸ U.S. Department of the Interior, Departmental Manual (DM), *Environmental Quality Programs, Part 516: National Environmental Policy Act of 1969*, “Chapter 11: Managing the NEPA Process—Bureau of Land Management, 11.9 Actions Eligible for a Categorical Exclusion (CX),” June 2, 2020, 516 DM 11, p. 8.

⁵⁹ *Ibid.*, p. 7. The list of extraordinary circumstances in Department of the Interior NEPA regulations is codified at 43 C.F.R. §46.215.

- “Approval of suspensions of operations, force majeure suspensions, and suspensions of operations and production.”
- “Approval of royalty determinations, such as royalty rate reductions.”
- “Approval of Notices of Intent to conduct geophysical exploration of oil, gas, or geothermal, pursuant to 43 CFR 3150 or 3250, when no temporary or new road construction is proposed.”

Additional administrative CXs in U.S. Forest Service NEPA regulations are related to O&G exploration and investigation activities and geothermal investigation activities.⁶⁰ The first exclusion applies to unleased lands under the jurisdiction of the U.S. Forest Service for short-term (one year or less) “mineral, energy, or geophysical investigations and their incidental support activities that may require cross-country travel by vehicles and equipment, construction of less than 1 mile of low standard road, or use and minor repair of existing roads,” if there are no extraordinary circumstances related to the proposed action.⁶¹ These Forest Service regulations list several examples of such investigations that may qualify for this CX. An additional CX applies to the approval of a “Surface Use Plan of Operations” for O&G exploration and initial development activities, associated with or adjacent to a new O&G field or area, so long as the approval will not authorize activities in excess of one mile of new road construction; or one mile of road reconstruction; or three miles of individual or co-located pipelines and/or utilities disturbance; or four drill sites.⁶²

Issues for Congress

The following section discusses some options Congress could consider when addressing federal leasing and permitting issues related to O&G and geothermal energy development. While some issues are specific to one resource or the other (due to the technical, environmental, or market considerations for that resource), the majority of issues discussed could potentially impact both.

Congress has considered a variety of changes to BLM leasing and permitting for O&G and geothermal projects, some of which have been implemented in law, and others which are still being considered.

Oil and Gas Leasing

Bonding and Project Reclamation

Congress could consider amending current law to clarify statutory requirements for bonding on federal public lands. Some Members of Congress have argued that current bonding requirements, particularly for O&G operations, are sometimes insufficient to incentivize lease holders to complete site reclamation.⁶³ Representatives of the O&G industry have argued that the majority

⁶⁰ For energy development on Forest Service lands, “the BLM administers the lease but the Forest Service has more direct involvement in the leasing process for lands it administers.” BLM, *About the BLM Oil and Gas Program*, accessed August 14, 2023, <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/about>.

⁶¹ 36 C.F.R. §220.6(e)(8).

⁶² 36 C.F.R. §220.6(e)(17).

⁶³ Senator Michael Bennet, “Bennet Urges Secretary Haaland to Reform Outdated Oil and Gas Bonding Rates to Ensure Companies, Not Taxpayers, Pay Cleanup Costs of Wells Drilled on Federal Lands,” December 22, 2022, <https://www.bennet.senate.gov/public/index.cfm/2022/12/bennet-urges-secretary-haaland-to-reform-outdated-oil-and-gas-bonding-rates-to-ensure-companies-not-taxpayers-pay-cleanup-costs-of-wells-drilled-on-federal-lands>.

of developers clean up their projects and that setting bonding requirements higher will depress oil production on federal lands.⁶⁴ In the 117th Congress, bills introduced in the House and Senate would have amended current law to change bonding amounts for O&G operations.⁶⁵ In the 118th Congress, H.R. 4301, referred to the House Committee on Natural Resources, would do similarly. In July 2023, BLM proposed a rulemaking to update their regulations to address aspects of leasing management, including increasing bonding amounts.⁶⁶ That rule was finalized on April 12, 2024, and takes effect June 22, 2024.⁶⁷

With the enactment of the Infrastructure Investment and Jobs Act (P.L. 117-58), Congress provided \$4.68 billion in supplemental appropriations for the federal reclamation program and grants to state and tribal programs to complete reclamation within their respective jurisdictions.⁶⁸ Congress could consider evaluating the implementation of that program and the adequacy of funding to meet the objectives of the reclamation program on federal public lands.

BLM Authority to Set Leasing Terms

Congress could reconsider the O&G royalty rate, set by statute at a fixed percentage (16⅔%) through 2032. General BLM land management purposes are to maintain or increase revenue, simplify administration, or incentivize or disincentivize development—and a set rate prevents BLM from modifying lease conditions to adjust to administrative priorities or market or technology conditions.⁶⁹ In April 2022, BLM implemented a new royalty rate of 18.75%—for the first time setting it above the minimum then established (12.5%) under the MLA.⁷⁰ This was a significant step-change increase. In August 2022, Congress, through P.L. 117-169, set the royalty rate at exactly 16⅔% for all new projects for the following 10 years. If BLM determines a new rate is warranted in 2032, that could result in (1) a significant step change in rates (not dissimilar to the change in April 2022) with potential disruption to energy project development, or (2) a phased change in rates which might not fully address BLM’s other land management purposes (for example, resulting in either under- or overutilization of land or energy resources). After

⁶⁴ Heather Richards, “Biden Unveils Aggressive Rules for Public Land Oil Drilling,” *E&E News*, July 20, 2023, <https://www.eenews.net/articles/biden-unveils-aggressive-rules-for-public-land-oil-drilling/>.

⁶⁵ BLM’s authority to issue regulations including bonding requirements is codified at 30 U.S.C. §1023 for geothermal operations and 30 U.S.C. §226(g) for O&G operations. Some example bills from the 117th Congress include H.R. 2415, which was reported amended by the House Committee on Natural Resources, and S. 2177, which was referred to the Senate Committee on Energy and Natural Resources.

⁶⁶ U.S. Department of the Interior, “Interior Department Takes Steps to Modernize Oil and Gas Leasing on Public Lands, Ensure Fair Return to Taxpayers,” July 20, 2023, <https://www.doi.gov/pressreleases/interior-department-takes-steps-modernize-oil-and-gas-leasing-public-lands-ensure-fair>; Bureau of Land Management, “Fluid Mineral Leases and Leasing Process,” 88 *Federal Register* 47562, July 24, 2023, <https://www.federalregister.gov/documents/2023/07/24/2023-14287/fluid-mineral-leases-and-leasing-process>.

⁶⁷ U.S. Bureau of Land Management, “Fluid Mineral Leases and Leasing Process,” 89 *Federal Register* 30916, April 23, 2024, RIN 1004–AE80, <https://www.blm.gov/sites/default/files/docs/2024-04/BLM-Fluid-Minerals-Leasing-FinalRule.pdf>.

⁶⁸ For more information on wells and reclamation, see CRS In Focus IF12134, *The Federal Role in Orphan Oil and Gas Well Reclamation*, by Lance N. Larson, and CRS Report R47263, *Ecosystem Restoration in the Infrastructure Investment and Jobs Act: Overview and Issues for Congress*, coordinated by Anna E. Normand and Pervaze A. Sheikh; U.S. Department of the Interior, “Through President Biden’s Bipartisan Infrastructure Law, 24 States Set to Begin Plugging over 10,000 Orphaned Wells,” June 5, 2023, <https://www.doi.gov/pressreleases/through-president-bidens-bipartisan-infrastructure-law-24-states-set-begin-plugging>.

⁶⁹ The Secretary is permitted to “waive, suspend or reduce the rental or minimum royalty” as a production incentive (43 C.F.R. §3103.4-1(a)).

⁷⁰ U.S. Bureau of Land Management, “June 2022 Oil & Gas Lease Sale: Set a Royalty Rate of 18.75 Percent,” April 18, 2022, <https://eplanning.blm.gov/eplanning-ui/project/2017575/510>.

August 2032, the rate becomes a minimum rate. BLM will be able to set higher rates for leases as needed, but not lower rates.

Geothermal Leasing

The 117th Congress's Enhancing Geothermal Production on Federal Lands Act (H.R. 5350) would have addressed multiple elements relating to geothermal testing, CXs, and designated leasing areas. The broad goal of this bill of enhancing geothermal development was supported by BLM, though BLM recommended allowing these definitions and decisions to be made administratively.⁷¹ The Fiscal Responsibility Act of 2023 (P.L. 118-5) allows federal agencies, including BLM, to adopt the CXs of other agencies where appropriate.

Issues for Both Oil and Gas and Geothermal Leasing

In the 118th Congress, the Lower Energy Costs Act (H.R. 1) would change leasing and NEPA compliance for O&G and geothermal development and requirements for lease offerings, decisions on drilling permit applications, and many other leasing and permitting elements.

Other efforts at permitting reform such as H.R. 5376 (117th Congress) continue in more recent bills such as the Building American Energy Security Act of 2023 (S. 1399).

BLM Authority to Set Leasing Terms

Congress could consider changing how much authority BLM has to set the terms and conditions for O&G and geothermal leasing. As an example of alternative authority levels, the Energy Act of 2020 (P.L. 116-260) modified FLPMA to give BLM the ability to set the rates (for acreage rents and capacity fees) for solar and wind rights-of-way “to promote the greatest use” of those energy resources.⁷² Since then, BLM has made multiple revisions to the solar and wind rates including setting uniform capacity fees regardless of the technology deployed and has a proposed rule change adjusting those fees to be based on the actual electricity generated and its current market value (rather than on the prior basis of the potential maximum capacity of the project). Congress could decide to grant BLM similar flexibility to support policy goals and to support lower-carbon and renewable energy sources, or to promote energy development in general (such as expanded O&G development or more widely available geothermal power deployment potentially enabled by EGS). Authority could be given to BLM to set minimum bid values or set rates for rents or royalties for O&G and geothermal leases.⁷³ BLM might, for example, establish state- or zone-based rates (similar to those for solar and wind leasing) to account for regional differences in project costs and energy values. However, Congress could also decide that the current terms and authorities for leasing are suitable to support the various federal goals and make no changes.

⁷¹ See testimony from Michael Nedd, Deputy Director, Operations, Bureau of Land Management, to the House Committee on Natural Resources, Subcommittee on Energy and Mineral Resources, on July 19, 2022, at <https://www.doi.gov/ocl/hr-5350>.

⁷² BLM typically issues leases for the development of O&G and geothermal resources. In contrast, BLM issues rights-of-way grants for certain wind and solar projects. Similarly, BLM charges royalties to geothermal and O&G producers based on the value of production from the lease. For wind and solar leases, BLM charges a capacity fee based on the estimated capacity of electricity that could be generated. For the purposes of this comparison, CRS has treated these terms as analogous.

⁷³ Congress, through P.L. 117-169, mandates the rate for O&G at 16⅔% until 2032.

Productive and Non-Productive Leases

Congress could consider modifications of leasing terms or requirements related to non-productive leases to allow BLM to implement its multiple-use mission and potentially make additional use of the lands and resources involved. Congress could decide to shorten the initial lease periods for either resource to reduce non-productive periods, to maintain the initial lease durations as sufficient to support development, or to lengthen the initial lease periods to support development of these energy resources. Congress could consider modifying requirements for BLM's regular review of non-productive leases, requirements for lessees to show progress, and/or requirements relating to the termination or re-competition of non-productive leases. Congress could also decide whether adjusting rent rates (which are paid by lessees prior to achieving production) would be useful. For example, higher rent rates or rates that increase over time could further disincentivize extended non-productive lease periods. Partial rent rebates for projects that ultimately become productive could incentivize leases of lands with the best resource development potential. Congress could also consider guidance to BLM on the development of RMPs or activity plans that specifically accommodates and encourages intermediate uses during non-productive lease periods, as appropriate.

Congress could consider changing whether noncompetitive lease offerings are available for either O&G or geothermal leases. Some critics of noncompetitive leases say that those leases are wasteful and unnecessary and some Members of Congress criticize them as being leases on land that the "market has determined have little or no potential for ... development."⁷⁴ Congress, through the IRA, eliminated noncompetitive offerings for O&G but not for geothermal leases. Congress could determine that noncompetitive leases are still appropriate for the geothermal industry due to its smaller size—meaning there is generally less competition or potential funding for project development—or because of other development or operational challenges. Additionally, as the geothermal industry develops, Congress could determine these challenges are no longer decisive and thus noncompetitive leases should be eliminated as well. Congress could determine that the effects of some markets and policy trends—for example those that support lower-carbon and renewable energy projects—may once again support the suitability of noncompetitive leases to O&G.

Drilling Activities and Review Processes

Congress could consider changes to applications for permits to drill (APDs, or geothermal drilling permits (GPDs) for geothermal) and the timelines associated with reviewing, processing, and deciding upon applications, notifying applicants, and issuing permits. APDs/GPDs can contribute to the administrative overhead and to the length of the development timeline for O&G or geothermal projects.⁷⁵ The Energy Policy Act of 2005 (P.L. 109-58) provided timeline requirements and introduced a pilot program in an attempt to streamline the permitting process. Following the act's passage, BLM noted the NEPA processing time (one step in the overall

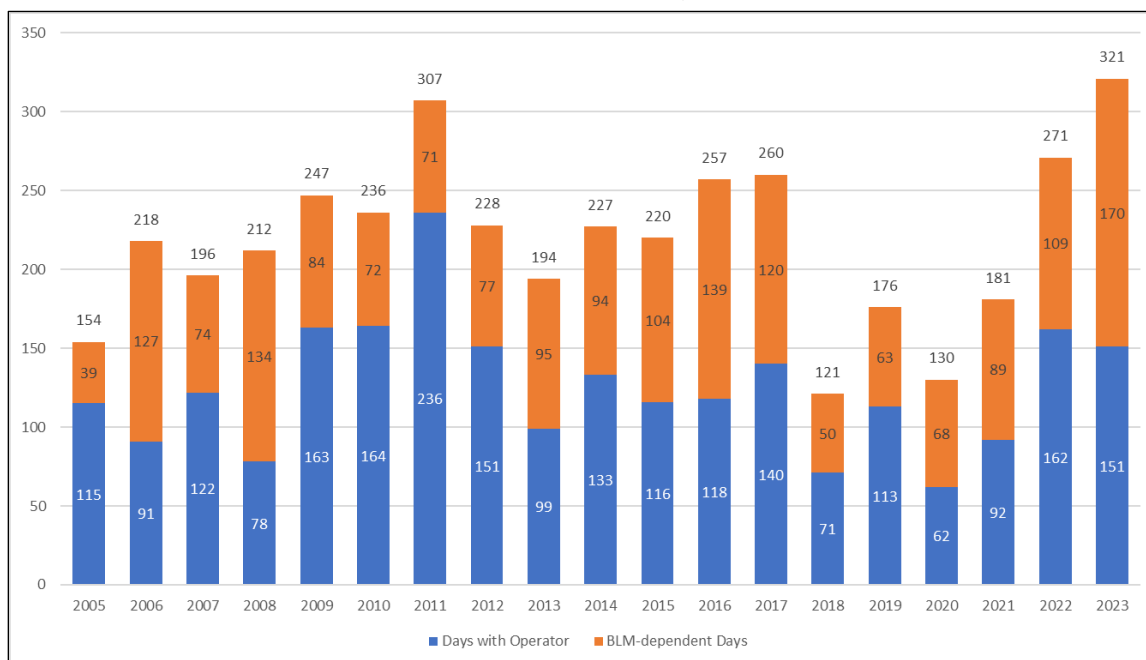
⁷⁴ Senator Jon Tester, "Tester Announces Bill to End Wasteful Non-Competitive Oil and Gas Leasing, Increase Government Efficiency," July 16, 2020, <https://www.testersenate.gov/newsroom/press-releases/pr-7584/>; for additional commentary, see Kate Kelly, Jenny Rowland-Shea, and Nicole Gentile, "Backroom Deals: The Hidden World of Noncompetitive Oil and Gas Leasing," The Center for American Progress, May 23, 2019, <https://www.americanprogress.org/article/backroom-deals/>.

⁷⁵ After a geothermal or O&G lease has been obtained, a geothermal drilling permit (GDP) or an application for a permit to drill (APD) must be approved for each well to be drilled. For more information on GDPs/APDs see the following BLM pages: <https://www.blm.gov/programs/energy-and-minerals/renewable-energy/geothermal-energy/geothermal-guidance> and <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/permitting/applications-permits-drill>.

process) for APDs and rights-of-way applications fell from 81 to 61 days, or roughly 25%, due to “colocation” of agency staff.⁷⁶ BLM reported mixed results at specific field offices. While some of the offices processed more permits in 2007 than they did in 2005, all the pilot sites reported more completed environmental inspections.⁷⁷ Funding for the pilot program was made permanent under the FY2015 National Defense Authorization Act (P.L. 113-291).

Despite the changes made in the Energy Act of 2005 and other administrative efforts within BLM, average APD processing times have been increasing. As shown in **Figure 1**, APD processing times have varied significantly between FY2005 and FY2023, with an average time of 218.7 days.⁷⁸ BLM had stated in its budget justification for FY2012 that overall processing times per APD rose to such levels in FY2011 and other years because of the complexity of the process, but that they expected shorter time frames in the future. Since then, the average has been lower at 215.5 days (FY2012-FY2023) than the previous average of 224.3 days (FY2005-FY2011). However, both average BLM-dependent days and average overall days since FY2005 have trended upward, and the average processing time hit a new high in FY2023.

Figure 1. Average Time to Complete an APD
Federal and Indian Projects



Source: BLM Oil and Gas Statistics, 2017, Table 12, https://www.blm.gov/sites/blm.gov/files/Table12_Time_to_Complete_an_APD1.pdf; BLM Oil and Gas Statistics, 2023, Table 12, <https://www.blm.gov/programs-energy-and-minerals-oil-and-gas-oil-and-gas-statistics>.

⁷⁶ Booz Allen Hamilton, *Section 365 of the Energy Policy Act of 2005: Year Two Report for the Pilot Project to Improve Federal Permit Coordination*, a report prepared for the Department of the Interior’s Bureau of Land Management (Washington, DC: February 2008).

⁷⁷ Bureau of Land Management, *BLM Year Two Report*, Section 365 of the Energy Policy Act of 2005 Pilot Project to Improve Federal Permit Coordination, February 2008.

⁷⁸ The average total time required to approve an APD includes both days waiting on operators and BLM-dependent days. BLM Oil and Gas Statistics, 2017, Table 12, https://www.blm.gov/sites/blm.gov/files/Table12_Time_to_Complete_an_APD1.pdf; BLM Oil and Gas Statistics, 2023, Table 12, <https://www.blm.gov/programs-energy-and-minerals-oil-and-gas-oil-and-gas-statistics>.

Notes: APD is application for permit to drill. The average total time required to approve an APD includes both days waiting on operators and BLM-dependent days.

Bills in both prior Congresses and the current 118th Congress would have established statutory deadlines for the approval or rejection of APDs/GPDs or otherwise sped up leasing and project approval via modified processes, technology, or funding. S. 2151 from the 115th Congress would have streamlined the O&G permitting process by removing drilling permit requirements under the Federal Oil and Gas Royalty Management Act of 1982 (P.L. 97-451) for an action occurring within an O&G drilling or spacing unit under certain circumstances. H.R. 1449 from the 118th Congress would increase the frequency of lease sales under the Geothermal Steam Act of 1970 and would establish deadlines for consideration of geothermal drilling permits. H.R. 1 from the 118th Congress would put 30-day requirements on BLM to notify applicants of whether geothermal drilling applications are complete, to issue a final decision on completed geothermal drilling applications, and to complete all requirements and issue permits for completed O&G APDs, as well as other requirements on permitting deferrals, processing, and reporting.

Other bills, from previous Congresses, would have exempted certain drilling activities on already producing sites from some review processes or otherwise adjusted regulations related to environmental review to speed up development. H.R. 6106 from the 115th Congress would have clarified the CXs authorized under the Energy Policy Act of 2005 and would have allowed the use of additional CXs to expedite O&G permitting. It also included provisions that would have allowed more flexibility in skipping the environmental review or an environmental impact statement if the action has only minimum impact on the human environment. H.R. 6088 from the 115th Congress would have allowed for an applicant to submit an existing notification of permit to drill to the Secretary of the Interior in lieu of an APD for developed fields, for existing wells, and with an approved land use plan and an environmental review prepared within the last 10 years under NEPA.

Critics, including some Members of Congress and environmental groups, argue that these and similar proposals to reduce review overhead and shorten review timelines could limit public input into land use decisions and may overlook significant environmental impacts, which in some cases potentially could have the effect of lengthening the time to project completion if the impacts and applicable requirements are not identified earlier in the process.

Following the enactment of the Fiscal Responsibility Act of 2023 (P.L. 118-5, FRA) CEQ issued a rulemaking to implement the FRA's amendments to NEPA.⁷⁹ The FRA codified some CEQ regulations and altered various elements of the NEPA process.⁸⁰ The outcome of the FRA amendments on the NEPA environmental review process would depend on the applicability of the amendments to specific agency actions and project-specific considerations. Congress may oversee CEQ's implementation of the FRA amendments to NEPA and how these amendments may affect BLM (and other agency) NEPA procedures.

In its rule, CEQ recommended giving agencies the ability to establish CXs using additional mechanisms and flexibilities outside of their general NEPA procedures to promote more efficient and transparent development of CXs that may be tailored to specific environmental contexts or project types. CEQ also replaced its provisions that would allow an agency to adopt a CX listed in another agency's NEPA procedures. The rule would allow an agency to immediately begin to implement new programs and new activities based on another agency's CX for similar actions

⁷⁹ CEQ, "National Environmental Policy Act Implementing Regulations Revisions Phase 2," 89 *Federal Register* 35442-35577, May 1, 2024.

⁸⁰ For a summary of FRA amendments to NEPA, see Council on Environmental Quality, "Fiscal Responsibility Act of 2023 (FRA)," <https://ceq.doe.gov/laws-regulations/fra.html>.

without the need to first develop a CX to cover them.⁸¹ In addition, CEQ created a standalone definition of extraordinary circumstances and provided several examples that CEQ intended for the standalone definition to improve clarity when this term is used for actions that normally may be categorically excluded.⁸² It remains to be seen how BLM (or other agencies) may utilize this additional flexibility. Congress may oversee the CEQ amendments and their impacts on BLM's NEPA procedures and BLM's use and adoption of CXs.

If Congress seeks to authorize additional CXs through legislation, policy considerations could include what types of projects normally would not have significant environmental effects but are not currently categorically excluded either through agency-specific procedures or in existing law. Additional policy considerations could include whether a CX would be appropriate for certain other types of projects regardless of the significance of the environmental effects, and whether Congress seeks to waive the preparation of an EA or EIS under NEPA because of other federal priorities. Regardless, project operation still may be affected in such instances if potentially applicable requirements are not identified through other means early in the process and regulatory compliance under other laws becomes an issue. Whether a CX or a broader exemption from NEPA may reduce the timing and cost of project operation would potentially depend on multiple project-specific and site-specific circumstances that may vary among projects and locations. Potential impacts on the opportunity for public input would be an additional consideration.

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⁸¹ Current provisions in 40 C.F.R. §1507.3(f)(5) allow agency procedures to establish a process that allows the agency to use a categorical exclusion listed in another agency's NEPA procedures. On April 15, 2024, BLM announced it would publish a *Federal Register* notice and adopt that "in considering permits for notices of intent to explore for geothermal resources, the BLM may use either the Forest Service or Navy categorical exclusion to support its decision." Bureau of Land Management, "BLM Adopts Categorical Exclusions to Expedite Geothermal Energy Permitting," April 15, 2024, <https://www.blm.gov/press-release/blm-adopts-categorical-exclusions-expedite-geothermal-energy-permitting>.

⁸² This list of examples would not be exclusive, and agencies would continue to have the discretion to identify extraordinary circumstances in their NEPA implementing procedures that are specific and appropriate to their particular actions and categorical exclusions consistent with 40 C.F.R. §1507.3.

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