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A State-by-State Assessment of Financial Assurances Required for Decommissioning Wind and Solar Facilities

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Introduction from the Executive Director of NCEA

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For two decades, federal and state policies have provided generous subsidies and extensive mandates for the installation of utility-scale wind and solar generation. Wind turbines and solar panels have since proliferated across the countryside in many states, with even more projects in the planning phases. The recently enacted One Big Beautiful Bill Act did not end all the billions of dollars in subsidies for developers of pending projects. Thus, hidden or ignored questions arise related to the massive quantities of hardware installed across America: What are the rules, if any, for ensuring the removal and disposal of the worn-out equipment? Will the original builders and owners bear responsibility for restoring the landscape—and if not, who will?

In other words, have states neglected to address and account for the decommissioning process?

Given that the future viability of the original owners cannot be counted on, it is common practice to require various forms of financial guarantees for anticipated decommissioning costs so that taxpayers and ratepayers are not left footing the bill. Without adequate financial protections for decommissioning, wind and solar developers receive additional subsidies.

While many states have long had various forms of decommissioning requirements for other large energy installations such as oil and gas drilling and nuclear plants, we found it difficult to determine the answers to questions about similar requirements for wind and solar. To uncover what the various states have in place, we partnered with Curtis Schube, a lawyer and the executive director of the Council to Modernize Governance. Schube undertook a comprehensive state-by-state review of the rules and regulations that are currently on the books for decommissioning wind and solar facilities. As his analysis shows, the current state of affairs is not pretty, especially from a consumer perspective.

And we should note that this assessment does not include the costs to decommission grid-scale battery storage that is being added now at a rapid pace, all of which will, unavoidably, eventually entail millions of tons of worn-out batteries that will need to be removed and safely disposed of, costing tens of billions of dollars. (That's a subject we may turn to later.)

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Curtis Schube

Executive Summary

All energy facilities have an end to their useful lives. When they reach that end, social policy would dictate that the structures be removed. In many cases, regulations require such. As a society, we do not want abandoned oil and gas wells, deserted turbines, or fields filled with obsolete solar panels littering our beautiful American landscape—for environmental as well as aesthetic reasons. The process of removing physical structures and restoring a site back to its original or usable condition is called "decommissioning."

The policy at issue is not *how* to decommission. The sticky part is how to ensure that in the future, someone—not consumers—is around to pay for decommissioning.[1]

In nearly all jurisdictions, the company operating an energy facility is obligated to pay. But what happens if the company fails financially or is not around when it is decommissioning time? Either ratepayers or taxpayers would be on the hook. Accordingly, states typically require laws providing financial assurance so that those who build or own the sites guarantee the funding for decommissioning.

As this paper reveals, taxpayers are at far greater risk for footing the bill for decommissioning wind and solar facilities than they are for facilities involving oil and natural gas production. There is also an estimated total cost of at least $52 billion for decommissioning both existing wind and solar facilities and those that the U.S. Energy Information Administration (EIA) predicts will be planned for development by 2030.

We examined the existing requirements for wind and solar decommissioning in each state to assign the equivalent of a grade, from A to F, for the robustness of the requirements. Only one state—Virginia—received an A grade. Meanwhile, 30 states received a failing grade (D or F) for renewable decommissioning. By comparison, for oil and gas well decommissioning, 25 states received an A while just one state—West Virginia—received a failing grade.

Notably, the record so far shows that many renewable energy facilities are deteriorating more rapidly than predicted, thus hastening the need for decommissioning and, by extension, the need to have financial assurances in place.

Wind turbines, for example, suffer from erosion and lightning strikes.[2] The sensors, hydraulics, gearboxes, and generators require frequent repair.[3] Currently, the typical life span of a wind turbine is 20 years, dependent upon location, which contrasts with typical initial estimates of 30 years.[4]

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[1] The history motivating policies for energy-related reclamation can be traced to the early days of the coal industry: "Reclaiming Abandoned Mine Lands," Office of Surface Mining Reclamation and Enforcement, U.S. Dept. of the Interior (DOI), accessed Oct. 3, 2025, https://www.osmre.gov/programs/reclaiming-abandoned-mine-lands.

[2] "Wind Turbines Maintenance and Reparation," RENOLIT, accessed Nov. 29, 2024, https://www.renolit.com/en/industries/wind-energy/renolit-cp/wind-turbines-maintenance-and-reparation/wind-turbines-maintenance-and-reparation.

[3] Ibid.

[4] Mitch Rolling, "Limited Lifespans of Wind Turbines Result in Higher Costs of Energy," American Experiment, June 26, 2018, https://www.americanexperiment.org/limited-lifespans-of-wind-turbines-result-in-higher-costs-of-energy.

Similarly, solar facilities can suffer from production quality, installation, and unexpected maintenance and are particularly susceptible to damage from hail.[5] In general, many utility-scale solar facilities are unlikely to have the life spans originally claimed.[6] The electronics that are critical for connecting solar panels to the grid often do not meet expectations, with some failing a decade earlier than the 20- to 25-year design life span.[7]

The cost to decommission wind and solar facilities ranges from $30 million to over $100 million per 1,000 megawatt (MW) of capacity (see Appendix 2). Offshore wind decommissioning is far more expensive. The tasks entail removing all the hardware, underground electricity systems, substations, roads, maintenance buildings, and (for wind turbines) foundations.[8] Although the steel and aluminum are recyclable, wind turbine blades and much of what constitutes the hardware in solar facilities cannot be recycled.[9]

Despite evidence that solar and wind facilities are deteriorating faster than previously claimed and despite significant costs for decommissioning, the majority of states have failed to protect consumers from the inevitable financial costs of decommissioning wind and solar facilities, in contrast to the rules imposed on oil and natural gas companies.

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[5] kWh Team, "Broker's Key Takeaways from kWh Analytics' 2025 Solar Risk Assessment," kWh Analytics, July 2, 2025, https://kwhanalytics.com/brokers-key-takeaways-from-kwh-analytics-2025-solar-risk-assessment.

[6] Mark Richardson, "How Long Do Solar Farms Last?" U.S. Light Energy, Nov. 17, 2023, https://uslightenergy.com/how-long-do-solar-farms-last.

[7] Emma Penrod, "U.S. Solar Farms Are Aging. Is It Time to Begin Repowering?" Utility Dive, Oct. 6, 2023, https://www.utilitydive.com/news/us-solar-farms-are-aging-is-it-time-to-begin-repowering/690978.

[8] Daniel Pardo Tovar, "Begin at the End: The Cost of Decommissioning Renewable Energy Projects," DNV, Oct. 16, 2023, https://www.dnv.com/article/begin-at-the-end-the-cost-of-decommissioning-renewable-energy-projects-248187; IER (Institute for Energy Research), "The Cost of Decommissioning Wind Turbines Is Huge," IER Commentary, Nov. 1, 2019, https://www.instituteforenergyresearch.org/renewable/wind/the-cost-of-decommissioning-wind-turbines-is-huge.

[9] Smruthi Nadig, "Recycling Renewables: What Happens to Waste from the Solar Industry?" Power Technology, Aug. 10, 2023, https://www.power-technology.com/features/recycling-renewables-what-happens-to-waste-from-the-solar-industry.

Grading Decommissioning Preparedness for Wind and Solar Facilities: Summary

State	Grade	Estimated Decommissioning Cost ($million)[10]
Virginia	A	$877
Alabama	B	$149
Connecticut	B	$55
Georgia	B	$683
Iowa	B	$1,172
Maryland	B	$111
Ohio	B	$610
Vermont	B	$29
Indiana	C	$918
Kentucky	C	$218
Louisiana	C	$157
Maine	C	$203
Michigan	C	$648
Montana	C	$280
New York	C	$986
Oklahoma	C	$1,193
Tennessee	C	$135
Texas	C	$8,791
Wisconsin	C	$368
California	D	$2,713
Delaware	D	$20
Illinois	D	$1,266
Minnesota	D	$628
New Hampshire	D	$18
New Jersey	D	$89
North Carolina	D	$629
North Dakota	D	$435
South Dakota	D	$303
Washington State	D	$470
West Virginia	D	$87
Arizona	F	$881
Arkansas	F	$264
Colorado	F	$803
Florida	F	$1,050

[10] See Appendix 2.

Hawaii	F	$62
Idaho	F	$199
Kansas	F	$876
Massachusetts	F	$183
Mississippi	F	$231
Missouri	F	$380
Nebraska	F	$354
Nevada	F	$605
New Mexico	F	$974
Oregon	F	$805
Pennsylvania	F	$352
Rhode Island	F	$97
South Carolina	F	$261
Utah	F	$352
Wyoming	F	$1,049
Alaska	N/A	$6

A State-by-State Assessment of Financial Assurances Required for Decommissioning Wind and Solar Facilities

This report assesses how well each state's required financial assurances for decommissioning energy facilities are able to protect taxpayers from clean-up costs in the event of default by an energy company. For context and comparison, we also examined (and rated) each state's regulations regarding similar decommissioning of oil and gas wells, though that was not the primary focus of this analysis.

Regarding land-based wind and solar installations in each state, we sought to answer the following questions:

- Does state law use mandatory terminology, such as "shall," or discretionary language, such as "may"?
- Does the law fix the amount of financial assurance with certainty, as opposed to giving discretion that could lead to insufficient assurance? Many states articulate something such as "sufficient to cover the cost of decommissioning," but the idea here is to establish a firm minimum.
- Is the financial assurance of a sufficient amount? Bonds that comprise a small fraction of the cost to decommission do not satisfy this criterion.
- Is the financial assurance guaranteed (i.e., is the financial instrument irrevocable)?
- Is the financial assurance required before the start of a project, or can it be waived or delayed?

Based upon these factors, the following grades were assigned to each state:

A	All five categories are covered by the regulations.
B	Four categories are covered by the regulations.
C	Three categories are covered by the regulations.
D	The state has regulations but covers only one or two categories.
F	The state should regulate but does not (or effectively does not).
N/A	Regulation is not necessary because the state does not have relevant installations.

The results show stark contrast. If calculating grade-point averages (GPA), renewable energy financial assurance regulations would have a GPA of just 1.18. Oil and gas well regulations have a GPA of 3.40. Just one state—Virginia—received an A grade for renewable energy—whereas 30 states received an A for oil and gas well regulation. Clearly, there is differential treatment between the two industries.

Appendix 1 contains some perspectives and a rating grade for the decommissioning rules associated with:

- Nuclear reactors (A)
- Federal lands for onshore wind (C), solar (A), or oil and gas (A)
- Federal lands for offshore wind (D) or oil and gas (A)

Alabama

Renewable Grade: B

Alabama does not have utility-scale wind energy; the state does have a few locations within its Appalachian Mountains ridges and on the coastline,[11] but not enough to measure as part of its electrical grid portfolio.[12]

Some county-specific regulations still regulate wind and create financial assurance. For example, for Etowah County, "an applicant shall maintain financial assurance[13] in an amount equal to the costs associated with the reclamation plan and the removal of abandoned or unused wind energy conversion systems."[14] Additionally, the applicant must maintain financial assurance in the amount of $1 million to cover liability of damages to adjoining property.

Alabama does have two solar plants.[15] However, no decommissioning regulations exist for solar plants.[16]

The laws governing local wind are produced by the state. It is commendable that regulations exist for such a small portion of the state's energy grid. However, the regulation does not clearly state when the financial assurance must be posted.

Oil and Gas Grade: A

An oil and gas well requires a bond before drilling, operating, etc. begins; this is set in the amount of $100,000 for up to 6,000 feet and $500,000 for 6,000 feet or more. Alternatively, a blanket bond can be posted in the amount of $1 million that can cover several wells. These bonds are to be provided "before any person(s) shall commence."[17]

Alaska

Renewable Grade: N/A

It does not appear that Alaska has renewable energy regulations in place; wind does not represent a share of the electric grid, while solar is only 1.46% of it.[18] A 2024 Alaska Department of Natural Resources report—written in response to an administrative order signed by the governor of Alaska to explore how to expand energy—recommended that "the State should provide clarity

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[11] U.S. Energy Information Administration (EIA), "Alabama: Profile Analysis," U.S. States: State Profiles and Energy Estimates, last updated Nov. 21, 2024, https://www.eia.gov/state/analysis.php.
[12] WINDExchange, "Wind Energy in Alabama," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed June 6, 2025, https://windexchange.energy.gov/states/al.
[13] Defined by Ala. Code § 45-28-260.01(2), which includes escrow, performance bond, or cash.
[14] Ala. Code § 45-28-260.04.
[15] EIA, "Profile Analysis: Alabama."
[16] Paul Goeringer and Bart L. Fischer, "Riding Off into the Sunset: State Policies and Contract Provisions That Impact Decommissioning a Solar Facility," *Southern Ag Today*, May 5, 2023, https://southernagtoday.org/2023/05/05/riding-off-into-the-sunset-state-policies-and-contract-provisions-that-impact-decommissioning-a-solar-facility.
[17] Ala. Code § 400-2-2-.03.
[18] WINDExchange, "Wind Energy in Alaska," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed June 6, 2025, https://windexchange.energy.gov/states/ak.

with respect to what financial assurances might be required, the forms such assurances may take, and at what point in the process they will be required and released."[19]

Oil and Gas Grade: A

For land-based oil wells, an operator "proposing" to drill "shall" post bond, either surety or personal. The bond amount is $400,000/well for 1–5 wells. Between 6 and 20 wells, an operator of 10 wells would pay a $2 million bond (the total for the first 5 wells), plus $250,000/well for wells 6–10, resulting in a total of $3.25 million for 10 wells. Forty wells is $6 million; 100 wells is $10 million; 1,000 wells is $20 million; and more than 1,000 wells is $30 million.[20]

Arizona

Renewable Grade: F

Arizona does not have statewide laws regarding financial assurance for renewable energy facilities. A 2023 attempt to pass legislation that would regulate wind and solar energy was vetoed by Governor Hobbs.[21] It appears that this legislation is regulated at the county level. For example, Yavapai County requires the "full decommissioning cost," as approved by its board of supervisors, to be posted in the form of a trust, surety bond, or letter of credit.[22]

A state that has 10% of its grid coming from renewable energy[23] should have statewide regulations. Local examples are inconsistent within the state, and this local example is nonspecific as to the amount and is subject to discretion.

Oil and Gas Grade: A

For land-based oil and gas wells, the Arizona Oil and Gas Conservation Commission, with support from the Arizona Department of Environmental Quality, is responsible for issuing permits and ensuring operator compliance. Bonds "shall" be posted before drilling and in the form of a surety bond, a certified check, or a certificate of deposit.

For a single well of 10,000 feet or less, the bond is $10,000. For a single well of over 10,000 feet, the bond is $20,000. For blanket or statewide bonds, the amount for up to 10 wells is $25,000; 10–50 wells is $50,000; and more than 50 wells is $250,000.[24]

Arkansas

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[19] Dept. of Natural Resources. *Administrative Order No. 355: State Leasing and Permitting Statutes and Regulations Applicable to Large-Scale Renewable Energy Project Development* (2024), 6, https://gov.alaska.gov/wp-content/uploads/2024.10.01-AO355-Final-Report-with-Appendices.pdf.
[20] 20 Alaska Administrative Code 25.025.
[21] AZ H.B. 2618; Howard Fischer, "Gov. Hobbs Vetoes Energy Bill on Arizona Solar, Wind-Generating Plants," *Arizona Daily Star*, June 20, 2023, https://tucson.com/news/state-regional/hobbs-vetoes-bill-limiting-solar-and-wind-farms/article_5e5a9b4c-0ed9-11ee-8a28-7bc4241f6635.html.
[22] PLA24-000042: Solar Facilities Zoning Ordinance Amendment, rev. July 28, 2024, https://www.yavapaiaz.gov/files/sharedassets/public/v/1/meetings/pz/second-draft-zoa-sec-501-and-sec-608-solar-facilities-ordinance-revised-7-28-24.pdf.
[23] WINDExchange, "Wind Energy in Arizona," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed June 6, 2025, https://windexchange.energy.gov/states/az.
[24] Ariz. Admin. Code § R12-7-103.

Renewable Grade: F

It does not appear that Arkansas has laws regulating wind or solar energy. The state's energy grid does not include wind and is only 1.46% solar.[25] However, those facilities—in addition to those currently planned to be added—will nonetheless entail decommissioning costs.[26] Decommissioning and financial assurance regulations should be in place.

Oil and Gas Grade: B

For oil and gas, financial assurance in the form of a surety bond or an irrevocable letter of credit "shall" be submitted with an application to drill. Bonds for a single well are $3,000. A blanket bond for 1–25 wells is $25,000; 26–100 wells is $50,000; and more than 100 wells is $100,000.[27]

The average decommissioning cost per well in Arkansas is $33,704,[28] making $3,000 insufficient.

California

Renewable Grade: D

For solar, cities or counties may require financial assurances—"if deemed necessary"—to fund restoration of the solar-use easement to the land's original condition.[29] "Cities and counties may" take assurances in the form of a bond, a letter of credit, a corporate guarantee, or another type of security.[30]

For wind, the requirements are more fragmented. For example, under provisions specific to "mined lands," the operating permit for renewable energy generation facilities—which include both solar and wind—must include a decommissioning plan and "a separate financial assurance mechanism that the lead agency determines to be sufficient to perform the removal of the renewable energy generation facility."[31] Local permitting also has decommissioning requirements. For example, Santa Barbara County requires financial assurances "acceptable to the Director to ensure restoration to natural conditions if the proposed development is not permitted."[32]

There are no concrete requirements that financial assurance must be provided. Additionally, the amount of financial assurance is subjective, and the accepted forms may be unreliable.

Oil and Gas Grade: A

For offshore and underwater wells, there is a $1 million blanket surety bond. Submerged well owners are required to furnish additional financial assurance in an amount determined by the oil and gas supervisor and derived from estimated plugging costs. This supplementary requirement

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[25] WINDExchange, "Wind Energy in Arkansas," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025. https://windexchange.energy.gov/states/ar.
[26] See Appendix 2.
[27] Arkansas Oil and Gas Commission, "Rule B-2: Proof of Financial Responsibility Required to Be Furnished," in *General Rules* (2024), https://www.aogc.state.ar.us/rules/rulesregs.pdf.
[28] Ohio River Valley Institute, *Methodology for Estimating Unplugged Onshore Abandoned and Active Wells in the United States* (n.d.), 3, https://ohiorivervalleyinstitute.org/wp-content/uploads/2024/11/Methodology-for-US-Well-Liability.pdf.
[29] Cal. Code Regs. tit. 14 § 3109(b)(3).
[30] Ibid., tit. 14 § 3111.
[31] Cal. Pub. Res. § 2773.4.
[32] Santa Barbara Code § 35.56.120.

is subject to periodic revision for fluctuations in costs and may be self-insured if the operator has sufficient financial capability.[33]

For land-based oil and gas wells, the bond for a single well under 10,000 feet is $25,000; over 10,000 feet is $40,000. A blanket or statewide bond for fewer than 50 wells is $200,000; 50–500 wells is $400,000; 500–10,000 wells is $2,000,000; and more than 10,000 wells is $3 million. For offshore and submerged wells, it is a blanket bond of $1 million. Additionally, financial assurance shall be posted with the notice of drilling.[34]

Colorado

Renewable Grade: F

Colorado does not have a regulatory scheme for decommissioning on a statewide basis. In Yuma County, for example, applicants must submit financial security for decommissioning and request an inspection upon completion of decommissioning in order to have their deposits returned. For some counties, the amount is reevaluated every three to five years. Some counties require bonding up front; others require it partway into the project. Some bonds are self-bonds; others are surety bonds or written agreements.[35]

There are no statewide protections. Local examples are inconsistent and allow for bonding to occur late or to be fulfilled through unreliable forms of financial assurance.

Oil and Gas Grade: A

For wells "subject to approval," operators are to submit a financial assurance plan that will detail how the operator is financially capable of fulfilling its obligations to decommission. Different types of operators have different options as to financial assurance. Assurance will be $12,000–$18,000/well for 50 or fewer wells; $10,000–$15,000 per well for 50–150 wells; $5,000–$12,000 per well for 150–1,500 wells; $3,000–$10,000 per well for 1,500–4,000 wells; and $1,500–$8,000 per well for more than 4,000 wells. Another option is $40 million for comprehensive financial assurance. The plan is up to the discretion of the director of the agency that is overseeing these plans.[36] They can be in the form of cash or surety bond, with other negotiable instruments subject to approval.[37]

Despite lacking mandatory language such as "shall," the regulations are clearly comprehensive and take care to account for many variables, leaving little discretion for the agency. Therefore, an A grade is assigned because of the detail of the regulation.

Connecticut

Renewable Grade: B

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[33] Austin Igleheart, *State Oil and Gas Bonding Requirements* (National Conference of State Legislatures, 2022), https://www.ncsl.org/energy/state-oil-and-gas-bonding-requirements.
[34] California Public Resources Code, div. 3, chap. 1, art. 4, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=3.&title=&part=&chapter=1.&article=4.
[35] Allison Jackson et al., *County Land-Use Regulations for Solar Energy Development in Colorado* (National Renewable Energy Laboratory, 2024), 24, https://www.nrel.gov/docs/fy24osti/88556.pdf.
[36] 2 CCR 404-1-702.
[37] 2 CCR 404-1-701.

"Any application" for a wind turbine facility shall include "financial assurance to ensure that sufficient funds are available for decommissioning the facility."[38] Financial assurance can include bonds, surety bonds, letters of credit, corporate guarantees, escrow accounts, deposits, insurance, certificates of deposit, domestic securities, trusts, or any combination of these.

For solar, if located on "prime farmland or forestland," the applicant must furnish a "bond to cover all costs associated with the decommissioning of such facility and restoration of such prime farmland, including, but not limited to, an inspection."[39]

Oil and Gas Grade: A

For oil and gas wells, the "registration shall be submitted" that "shall include" surety or performance bond for a single well; $25,000 for each well. The oil and gas commissioner may increase the amount required at any time, based on potential pollution caused by the activity and potential costs of abandonment over the established bond amount.[40]

No minimum amount of assurance is stated.

Delaware

Renewable Grade: D

The Delaware Energy Solutions Act of 2024, passed on September 5, 2024,[41] gives the state Public Service Commission authority to ensure that "no person or entity shall abandon or discontinue any renewable energy interconnection facility without first having received Commission approval." Further, "the Commission may require financial assurance, including a bonding requirement, as a part of any certificate of public convenience and necessity to ensure appropriate decommissioning of such facilities."[42]

This is far too discretionary and provides no specificity as to timing.

Oil and Gas Grade: N/A

Delaware does not have oil reserves or production facilities.[43]

Florida

Renewable Grade: F

Florida does not have statewide regulations for renewable energy. A currently introduced bill would permit counties to require financial assurance for solar projects. It contains "may" language. It does not appear that Florida has wind energy production.[44]

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[38] Conn. Agencies Regs. 16-50j-94.
[39] Conn. Gen. Stat. Ann. § 16-50k.
[40] "Sec. 22a-472-1. Oil and Gas Exploration and Production," in *Regulations of Connecticut State Agencies*, https://eregulations.ct.gov/eRegsPortal/Browse/getDocument?guid=%7BABDF12C7-B11F-41DD-8E2C-B4C9C29222C6%7D.
[41] Delaware S.B. 265, Sept. 5, 2024, https://legiscan.com/DE/bill/SB265/2023.
[42] Ibid.
[43] EIA, "Delaware: Profile Analysis," U.S. States: State Profiles and Energy Estimates, last updated Mar. 20, 2025, https://www.eia.gov/state/analysis.php?sid=DE.
[44] WINDExchange, "Wind Energy in Florida," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/fl.

Nothing is in place to ensure financial assurance, and even the proposed bill uses "may" language.

Oil and Gas Grade: A

Bond or other approved security "shall" be produced "before a permit." For oil and gas wells, the bond for a single well is $50,000 if under 9,000 feet and $100,000 if over 9,000 feet. The blanket bond is $1 million for up to 10 wells; this bond is to be in place before a permit is issued. There is an option for an annual fee in lieu of bond: $4,000 for the first year and $1,500 per year thereafter. There is a maximum $30,000 annual fee. Cash, surety bonds, or an irrevocable letter of credit may be accepted in lieu of a bond. Operators may pay an annual fee in lieu of a bond.[45]

Georgia

Renewable Grade: B

For solar, the grantee "shall" obtain evidence of financial assurance "equal to the estimated cost of removing the solar power facilities," minus the salvage value and plus the amount pledged to secure debt.[46] Georgia does not have wind energy.[47]

Despite not stating a specific number, a clear formula to determine that number is described. However, the form of financial assurance is not stated.

Oil and Gas Grade: B

For oil and gas wells, the Georgia Department of Natural Resources Environmental Protection Division requires a surety bond before drilling new wells, as well as before plugging or deepening existing wells. Bond amounts may vary up to a maximum of $100,000 and are to be determined by the Board of Natural Resources without any specified directives other than "shall furnish."[48]

The amount of financial assurance is deferential.

Hawaii

Renewable Grade: F

Hawaii requires only certain solar plants to decommission.[49] For this category, proof of financial security is required to the satisfaction of "the appropriate county planning commission prior to commercial generation."[50] Wind energy is not produced in Hawaii and has no regulation, but solar accounts for roughly 18% of the grid.[51]

The regulations are far too deferential to the counties and should be regulated statewide.

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[45] Florida Dept. of State, "Rule 62C-26: Conservation of Oil and Gas Permitting," Florida Administrative Code & Florida Administrative Register, https://flrules.org/gateway/ChapterHome.asp?Chapter=62c-26.
[46] Ga. Code Ann. § 46-3-691.
[47] WINDExchange, "Wind Energy in Georgia," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/ga.
[48] GA Code § 12-4-47.
[49] H.R.S. § 205-4.5(21).
[50] Ibid.
[51] See, generally, H.R.S. § 205-4.5.

Oil and Gas Grade: N/A

Hawaii has no proven crude oil reserves or production.[52]

Idaho

Renewable Grade: F

It does not appear that Idaho has current regulations for decommissioning renewable energy. However, House Bill 387—currently introduced in Idaho—would create a "decommissioning deposit" in the form of a cash deposit "in an amount determined by the department to be equal to the reasonably anticipated cost of fully decommissioning a wind turbine site prior to commencing construction."[53] Solar is a very small portion of Idaho's energy grid;[54] further, Idaho regulates only residential solar, not commercial.

No protections are in place for an industry that uses renewable energy for about 21% of its energy grid, and the proposed law is far too deferential.

Oil and Gas Grade: B

For oil and gas wells, the Idaho Department of Lands "shall" require financial assurance. Cash may be used in lieu of a corporate surety bond, with any interest from the cash going to the state general fund. For a single well, the bond is $10,000, plus $1/foot. For blanket or statewide bonds, the amount is $50,000 for up to 10 wells; $100,000 for 11–30 wells; and $150,000 for more than 30 wells. For inactive wells, it is $10,000, plus $8/foot.[55]

It is unclear as to when the bond is required to be posted.

Illinois

Renewable Grade: D

Both wind and solar plants are to enter an agricultural mitigation agreement, which is to include financial assurance for deconstruction or abandonment. The statute requires only that financial assurance be provided prior to the commencement of construction and "consistent with the Department's standard agricultural impact mitigation agreement."[56] The amount of decommissioning payment is limited to the cost identified in the decommissioning or deconstruction plan.[57]

Regulations are too deferential as to the amount, and the form of assurance is not specified.

Oil and Gas Grade: C

For oil and gas wells, assurances "shall" be posted and may be surety bonds, certificates of deposit, or irrevocable letters of credit. The bond amounts for a single well are $1,500 for under

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[52] EIA, "Hawaii: Profile Analysis," U.S. States: State Profiles and Energy Estimates, last updated May 15, 2025, https://www.eia.gov/state/analysis.php?sid=HI.
[53] Idaho S.B. 387, https://legislature.idaho.gov/wp-content/uploads/sessioninfo/2025/legislation/H0387.pdf.
[54] WINDExchange, "Wind Energy in Idaho," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/id.
[55] Idaho Administrative Procedures Act 20.07.02, subchap. C, 220.01 and 220.02, https://adminrules.idaho.gov/rules/2023%20Archive/20/200702.pdf.
[56] 505 ILCS 147/15.
[57] Ill. P/A. 102-1123, § 30(j).

2,000 feet and $3,000 for over 2,000 feet. For blanket or statewide bonds, it is $25,000 for up to 25 wells; $50,000 for up to 50 wells; and $100,000 for more than 50 wells. The bond requirement for test holes is $2,500/well or a $25,000 blanket amount. This is enforced against new operators and those who have had the rights transferred to them.[58]

Illinois is estimated to require just under $48,000 to decommission a well.[59] A $1,500 assurance is so low that the state might as well have no minimum requirement, thus reducing the grade further.

Indiana

Renewable Grade: C

The project owner of wind power facilities must post a bond or security equal to 25% of the total estimated decommissioning costs by the start of the commercial operation, 50% by 15th anniversary of the start date, and 100% by the 20th anniversary.[60] The cost is calculated by a third-party engineer.[61] The same applies to solar.[62]

The timing is deferred, and the amount is not specific.

Oil and Gas Grade: C

For oil and gas wells, an application for a permit "must" provide surety or cash bonds. Single wells require a $2,500 bond. An applicant may instead maintain a blanket or statewide bond of $45,000.[63] For both single and blanket bonds, an annual fee is required. That fee is $150 for 1 permit; $300 for 2–5 permits; $750 for 6–25 permits; $1,500 for 26–100 permits; and $1,500, plus $15 per permit, for more than 100 permits.[64]

The cost to decommission in Indiana is $64,341.[65] A $2,500 bond is so low that there might as well be no minimum.

Iowa

Renewable Grade: B

Iowa leaves the decommissioning regulation to the counties. For example, Des Moines County requires a financial security that guarantees payment for all costs associated with

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[58] Ill. Admin. Code tit. 62, § 240.1500; IL Dept. of Natural Resources, *New Operator Packet* (State of Illinois, 2023), https://dnr.illinois.gov/content/dam/soi/en/web/dnr/oilandgas/documents/new-operator-packet.pdf.
[59] Ohio River Valley Institute, *Methodology for Estimating Unplugged Onshore Abandoned and Active Wells*, 4.
[60] Ind. Code Ann. § 8-1-41-16a (1)-(3).
[61] Ibid.
[62] Ibid., § 8-1-42-18.
[63] Indiana Dept. of National Resources, "Oil & Gas Program FAQs," 2025, https://www.in.gov/dnr/oil-and-gas/division-of-oil-and-gas-faqs.
[64] Ind. Code. Ann. § 14-37-5-1.
[65] Ohio River Valley Institute, *Methodology for Estimating Unplugged Onshore Abandoned and Active Wells*, 4.

decommissioning, with the security being three times the cost estimate.[66] The same applies to solar in Des Moines County.[67]

There are no statewide guarantees, but local examples are sufficient and consistent.

Oil and Gas Grade: A

For oil and gas wells, surety bonds "shall" be required. The bond for a single well is $15,000, and the blanket or statewide bond is $30,000.[68]

Kansas

Renewable Grade: F

Kansas does not have wind or solar regulations and appears to leave regulation to the counties. Senate Bill 233 is currently in the legislature for both wind and solar. It would require a facility owner to provide financial assurance in an amount sufficient to cover the costs of decommissioning, a value that updates every five years and can be in the form of a bond, payment guarantee, or credit rating.[69]

There are no assurances for a state heavily involved in wind, and the proposed bill is nonspecific.

Oil and Gas Grade: A

For oil and gas wells, every operator "shall" file an application, which includes bonding. Blanket or statewide bonds for wells under 2,000 feet are $7,500 for 1–5 wells; $15,000 for 6–25 wells; and $30,000 for more than 25 wells. For wells deeper than 2,000 feet, the bond is $15,000 for 1–5 wells; $30,000 for 6–25 wells; and $45,000 for more than 25 wells.

A single performance bond totaling $0.75 times the total aggregate depth of all wells, including inactive and disposal wells, may also be paid in lieu of those listed. A $100 annual fee may be paid by operators under certain conditions, including a long-standing record of compliance, in lieu of a bond.[70]

Kentucky

Renewable Grade: C

All electricity generators, including solar, are required to provide financial assurance sufficient to cover decommissioning and to submit a detailed management agreement. Financial assurance is to be in the form of a surety bond, escrow agreement, or other similar form of security and is

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[66] Des Moines County, Iowa, *Regulations for the Siting and Operation of Wind Energy Conversion Systems: Ordinance No. 62* (2023), 11, https://desmoinescounty.iowa.gov/files/county_ordinances/62_wind_energy_conversion_systems_207.pdf.

[67] Des Moines County, Iowa, *Regulations for the Siting and Operation of Solar Farm Energy Systems: Ordinance No. 63* (2023), https://desmoinescounty.iowa.gov/files/auditor/proposed_ordinance_63_regulations_for_the_siting_and_operation_of_solar_farm_energy_systems_84985.pdf.

[68] Iowa Admin. Code 561—17.5(458A), https://www.legis.iowa.gov/docs/iac/rule/561.17.5.pdf.

[69] Kansas S.B. 233, https://trackbill.com/bill/kansas-senate-bill-233-establishing-requirements-for-decommissioning-of-commercial-solar-and-wind-energy-facilities/2651795.

[70] K.S.A. 55-155(d)(1).

subject to approval.[71] Kentucky does not yet have a wind industry[72] and therefore does not have regulations.

Too many financial assurance calculations are self-performed, with no minimum threshold in place.

Oil and Gas Grade: A

For oil and gas wells, the bond is required along with an application. For a single well, it is $2/foot of depth; $25,000 for a vertical deep well; and $40,000 for a horizontal deep well. For blanket or statewide bonds, it is $20,000 for 1–25 wells; $50,000 for 26–100 wells; $200,000 for 101–500 wells; and $300,000 for 501–1,000 wells. These figures represent minimums and can be adjusted upward.

Individual or single well bond amounts are determined by the depth of the well. For operators of more than 1,000 wells, bonds are tiered and range from $320,000 up to $1.5 million for 4,500–5,000 wells.

The Division of Oil and Gas requires a performance bond to be on file before a well is drilled or acquired from another operator, per KRS 353.590. This bond is posted to ensure that wells are properly plugged and abandoned and that well records are filed with the division. Failure to comply may lead to seizure of the bond.[73]

Louisiana

Renewable Grade: C

For solar, there "shall" be a bond "in an amount determined by the secretary to ensure proper site closure." It can take the form of "any financial security provided." Factors that the secretary will consider to determine the proper amount include assets, debts, compliance history, condition and capacity of the facility, and estimated cost to remove the facility and infrastructure.[74]

For wind, joint and several responsibility is in place for decommissioning. There is not a financial assurance requirement within the wind regulations.[75]

For solar, the amount of security is indefinite, and the assurances account for assets, debts, etc., which can change, go away, or be discharged in bankruptcy. For wind, there are no financial assurance numbers, but joint and several responsibility is somewhat redeeming.

Oil and Gas Grade: A

For oil and gas wells, the bond amount is based on the depth of the wells, the number of wells, and whether the well is on land, coastal waters, or offshore waters. Certain land-based wells are grandfathered in to lower blanket bond amounts. Bonds may be performance bonds, letters of

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[71] 401 KAR 103:030.
[72] WINDExchange, "Wind Energy in Kentucky," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/ky.
[73] KRS 353.590, https://eec.ky.gov/Natural-Resources/Oil-and-Gas/Documents/BONDING%20REGULATIONS%20EFF%206%2027%202019.docx.
[74] La. Stat. Ann. § 30:1154.
[75] La. Admin. Code tit. 43 § V-733.; see, generally, tit. 43.

credit, certificates of deposit, or plugging credits received from plugging orphan or inactive wells.[76]

For single land-based wells, the bond is $2/foot of depth for under 3,000 feet; $5/foot for 3,000–10,000 feet; and $4/foot for over 10,000 feet. For single coastal wells, the bond is $8/foot for all depths. For offshore wells, the bond is $12/foot for all depths. For blanket or statewide bonds on land-based wells, the amounts are $50,000 for up to 10 wells; $250,000 for 11–99 wells; and $500,000 for 100 wells or more. For coastal wells, the bond amounts are $250,000 for up to 10 wells; $1.25 million for 11–99 wells; and $2.t million for 100 wells or more. For offshore wells, the bond amounts are $500,000 for up to 10 wells; $2.5 million for 11–99 wells; and $5 million for 100 wells or more. These assurances are required and "must" be submitted with the permit application.[77]

Maine

Renewable Grade: C

For solar, the company must demonstrate "current and future financial capacity" to fully fund decommissioning. It can come in the form of a bond, surety bond, irrevocable letter of credit, or "other form of financial assurance acceptable to the environmental permitting entity." The financial assurances must be updated 15 years after approval of the plan and every five years thereafter.[78]

For wind, the applicant shall submit documentation of financial assurance covering full funding of decommissioning, to be provided before starting construction. It can be in the form of a bond, surety bond, irrevocable letter of credit, or other form acceptable to the agency. This documentation is to be reevaluated every two years.[79]

The forms of financial assurance are discretionary and may lead to unreliable assurances. The amounts are not specified.

Oil and Gas Grade: N/A

Maine does not have any proven oil and gas reserves, according to the U.S. Energy Information Administration (EIA), and does not have associated bonding requirements for oil and gas wells.

Maryland

Renewable Grade: B

Currently, Maryland's small solar decommissioning process is regulated locally. However, H.B. 1036 is currently in front of the legislature and would require that financial assurances be 125% of estimated future costs for decommissioning.[80]

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[76] State of Louisiana Dept. of Energy and Natural Resources, "Financial Security," Office of Conservation, https://www.dnr.louisiana.gov/page/financial-security#pc.
[77] La. Admin. Code tit. 43, § XIX-104.
[78] Me. Rev. Stat. tit. 35-A, §§ 3494–95.
[79] Code Me. R. tit. 06-096, chap. 382, § 7.
[80] Workplace AI, "House Bill 1036 Mandates Regulations for Solar Energy Generating Stations," Citizen Portal, Apr. 4, 2025. https://citizenportal.ai/articles/2883404/Maryland/House-Bill-1036-mandates-regulations-for-solar-energy-generating-stations#:~:text=The%20bill%20mandates%20that%20owners,facility%2C%20minus%20any%20salvage%20value.

Maryland places wind regulation under the "powers of [the] counties." However, it places specific standards for the counties to follow. A permit applicant "shall" post a bond that is 100% of a cost estimate performed by an independent engineer. Financial assurances are to be in place before the project.[81]

Renewable energy constitutes roughly 5% of Maryland's energy grid, so regulations are commendable.[82] The existing regulations provide no statewide guarantees but do identify standards that should be regulated for wind, and the wind regulations address each category. Because solar is not regulated, the state receives a B grade rather than an A.

Oil and Gas Grade: C

For oil and gas wells, a surety bond or an irrevocable letter of credit must be included in an application for a new drilling and operating permit. For a single well, the bond is $100,000 maximum per well; there is a $500,000 maximum on blanket or statewide bonds.[83]

Bond requirement creates a maximum threshold, not a minimum. Therefore, the assurance is neither fixed nor sufficient because the amount is not known.

Massachusetts

Renewable Grade: F

Massachusetts is governed locally for both wind and solar. However, the state government offers model bylaws. For wind, the permitting authority "may" require utility-scale wind facilities to provide surety in the form of an escrow account or a bond, or otherwise to cover the cost of removal.[84]

For solar, the financial assurance requirement does not exist, but the commentary of the model zoning ordinances suggests that some communities can require surety in circumstances for which a valid planning purpose exists. But the default does not have a requirement because of the possibility that "the municipality must remove the installation and remediate the landscape."[85]

There are no statewide guarantees. Guidance does not guarantee financial assurance, even locally. There are no solar guarantees or recommendations.

Oil and Gas Grade: N/A

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[81] MD Local Government Code § 13-706 (2024).
[82] WindExchange, "Wind Energy in Maryland," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed June 6, 2025, https://windexchange.energy.gov/states/md.
[83] Md. Code Regs. 26.19.01.06.
[84] Massachusetts Dept. of Energy Resources, *Model Amendment to a Zoning Ordinance or By-Law: Allowing Conditional Use of Wind Energy Facilities* (Massachusetts Executive Office of Environmental Affairs, 2011), https://www.mass.gov/doc/wind-not-by-right-bylaw-june13-2011pdf/download.
[85] Massachusetts Dept. of Energy Resources, *Model Zoning for the Regulation of Solar Energy Systems,* (Massachusetts Executive Office of Energy and Environmental Affairs, 2014), https://www.mass.gov/doc/model-solar-zoning-0/download.

Per the Massachusetts Geological Survey, "no companies have expressed any interest in exploring for or developing shale gas in Massachusetts."[86] Accordingly, bonding requirements are not necessary and are not in place. Oil and gas wells used for conventional or enhanced hydrocarbon recovery are designated as Class II wells, which are prohibited in Massachusetts.[87]

Michigan

Renewable Grade: C

For solar on the Farmland Development Rights Program, financial surety must be in place for the entire deferment period, to be calculated by a licensed engineer and approved by the Michigan Department of Agriculture and Rural Development, payable to the State of Michigan.[88]

For any other "electric provider" for wind, storage, or solar, the financial assurance is not to be less than the estimated cost of decommissioning. The financial assurance can be posted incrementally: 25% at commencement, 50% by year five, and 100% by year 10.[89]

The minimum threshold is not established. The incremental timeline poses a risk that a company might have changing financial circumstances and might not pay.

Oil and Gas Grade: A

For oil and gas wells, the Michigan Department of Environment, Great Lakes, and Energy's Geologic Resources Management Division requires a conformance bond and "shall not issue a license" unless financial assurance is in place. A maximum of 100 wells may be under a blanket bond. Any additional wells require a single well bond or another blanket bond. Cash bonds, certificates of deposit, letters of credit, surety bonds, or a statement of financial responsibility are accepted. Bonds for single wells are $20,000 for up to 2,000 feet; $40,000 for 2,000–4,000 feet; $50,000 for 4,000–7,500 feet; and $60,000 for over 7,500 feet. Blanket or statewide bonds are $100,000 for up to 2,000 feet; $200,000 for 2,000–4,000 feet; and $250,000 for over 4,000 feet. These bonds are to be in place before a license to operate is issued.[90]

Minnesota

Renewable Grade: D

For wind, the applicant must submit a plan that includes the estimated decommissioning costs "in current dollars," a method and schedule for updating these costs, and an assurance that the

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[86] Massachusetts Geological Survey, "Shale Gas and Hydraulic Fracturing in Massachusetts," (University of Massachusetts–Amherst, 2025), https://mgs.geo.umass.edu/frequently-asked-questions-about-shale-gas-and-hydraulic-fracturing-massachusetts.
[87] 310 CMR: Dept. of Environmental Protection, https://www.mass.gov/doc/310-cmr-2700-underground-injection-control/download.
[88] Michigan Dept. of Agriculture and Rural Development, *Policy to Allow Commercial Solar Panel Development on P.A. 116 Lands,* last updated Mar. 28, 2023, https://www.michigan.gov/mdard/-/media/Project/Websites/mdard/documents/environment/farmland/MDARD-Policy-on-Solar-Panel-and-PA116-Land-rev20230328.pdf.
[89] Mich. Comp. Laws Ann. § 460.1225.
[90] Ibid., § 324.11523; Mich. Dept. of Environment, Great Lakes, and Energy, "Bonds for Permits to Drill Oil and Gas Wells," Geologic Resources Management Division, 2025, https://www.michigan.gov/en/egle/about/Organization/Geologic-Resources-Management/Oil-and-Gas/Bonds.

funds will be available for decommissioning.[91] It appears that this is an "as approved" standard, not a preset standard.

Solar appears to be local. For example, Center City's regulation requires financial resources to be available to fully decommission the site.[92] To obtain a grant, the locality should submit to the state government the cost of decommissioning.[93]

For wind, everything is discretionary. While it appears that the regulations are trying to establish financial assurance, nothing is firmly required. For solar, local regulations permit the amount of financial assurance to be self-determined.

Oil and Gas Grade: N/A

Minnesota has "no indigenous fossil fuel resources," according to a 2018 legislative report, and no oil and gas bonding requirements.[94]

Mississippi

Renewable Grade: F

Wind energy is not in Mississippi, and solar energy constitutes only 1% of the state's energy grid.[95] However, an increasing decommissioning liability exists in the state because EIA data show plans for significant expansion of solar installations,[96] meaning that financial assurance regulations should be in place.

Oil and Gas Grade: A

For oil and gas wells, the bond for a single well is $20,000 for up to 10,000 feet; $30,000 for 10,000–16,000 feet; $60,000 for over 16,000 feet; and $100,000 for a submerged offshore well. For blanket or statewide bonds, the cost is $100,000 but is $200,000 if submerged offshore. The financial assurance is a "prerequisite" to being issued a permit; it is to be in the form of a surety signed by the principal and approved by a board supervisor.[97]

Missouri

Renewable Grade: F

Despite Missouri having wind energy,[98] it does not appear that decommissioning is regulated. One Missouri article stated that "the burden of decommissioning and land restoration falls on the

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[91] Minn. R. 7854.0500.
[92] Center City, MN Code of Ordinances § 215.03.
[93] Minn. Stat. Ann. § 216C.377.
[94] Bob Eleff, *Natural Gas in Minnesota* (Research Dept., Minnesota House of Representatives, 2018), https://www.house.mn.gov/hrd/pubs/natgasmn.pdf.
[95] WINDExchange, "Wind Energy in Mississippi," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/ms.
[96] See Appendix 2.
[97] State of Mississippi Oil and Gas Board, *Statutes, Rules of Procedure, Statewide Rules and Regulations* (2020), https://www.ogb.state.ms.us/rulebook.php.
[98] WINDExchange, "Wind Energy in Missouri," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/mo.

landowners, while energy companies move on."[99] It appears that decommissioning is privately negotiated with local government.[100] Missouri's grid is less than 1% from solar.[101]

Private contracts do not provide sufficient assurance that decommissioning will occur or be paid for.

Oil and Gas Grade: A

For oil and gas wells, bonds may be in the form of surety bonds, certificates of deposit, or irrevocable letters of credit.

The bonds for a single well are "no less" than $1,100 for up to 500 feet; $2,200 for 500–1,000 feet; $3,300 for 1,000–2,000 feet; $4,400 for 2,000–5,000 feet; and $5,500, plus $2/foot, for over 5,000 feet. For blanket or statewide bonds, it is $22,000 for up to 800 feet (limited to 40 wells) and $25,000 for 801–1,500 feet (limited to 10 wells). They are to be posted "prior to commencement of drilling or other operations."[102]

The minimum amount is low because decommissioning a well in Missouri costs only $5,200.[103]

Montana

Renewable Grade: C

A bond for decommissioning is to be posted within 12 months of a wind facility beginning to operate, and the bond must be posted in an amount determined by the overseeing department. Factors include the character and nature of the site, as well as the current market salvage value of the facility (wind or solar). If the facility predated 2007, the bond had to have been posted by the 15th year of operation.[104]

A bond is not required prior to construction. The amount is not certain and is subject to discretion.

Oil and Gas Grade: B

A bond is mandatory for oil and gas wells. For blanket bonds, if a well is already covered by a previous bond amount of $10,000, operators must increase the bond to $25,000. Bonds for a single well are $1,500 for up to 2,000 feet; $5,000 for 2,000–3,500 feet; and $10,000 for over 3,500 feet. Blanket or statewide bonds are $50,000. These amounts are subject to increases at the agency's discretion. The timing is unclear, yet "bonds are required." They can be in the form of a

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[99] Blake Jackson, "Wind and Solar Farms—Impact on Missouri Landowners," *Missouri Ag Connection*, Febr. 25, 2025, https://missouriagconnection.com/news/wind-and-solar-farms-impact-on-missouri-landowners.
[100] See, e.g., Northeast Missouri Wind's agreement with Knox County, MO, https://www.knoxcountymo.org/documents/3.%20Wind%20Project%20Decommissioning%20Agreement.pdf.
[101] WINDExchange, "Wind Energy in Missouri," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/mo.
[102] 10 CSR 50-2: Dept. of Natural Resources, Oil and Gas Council, https://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c50-2.pdf.
[103] Ohio River Valley Institute, *Methodology for Estimating Unplugged Onshore Abandoned and Active Wells*, 4.
[104] Mont. Code Ann. § 75-26-304.

surety bond, federal insured certificate of deposit, or letter of credit from an FDIC-insured bank.[105]

The timing of financial assurance is unclear.

Nebraska

Renewable Grade: F

Nebraska is entirely local for a renewable energy decommissioning requirements, including financial assurance.[106]

There are no assurances that decommissioning will be paid for.

Oil and Gas Grade: A

The Nebraska Oil and Gas Conservation Commission regulates oil and gas production. Financial assurance must be in place "prior to commencement of dirt work." It can be provided in the form of a surety bond, but cash or a certificate of deposit may be accepted under certain conditions. The bond for a single well is "not less than" $10,000, and blanket or statewide bonds are $100,000.[107]

Nevada

Renewable Grade: F

Nevada does not have decommissioning regulations for renewable energy. In 2023, a bill was introduced to put this regulation into place, but it did not pass.[108]

For a state heavily involved in wind, the industry should be regulated.

Oil and Gas Grade: C

For oil and gas wells, operators that are drilling on federal lands and that have a bond on file with the Bureau of Land Management are not required to have a bond with the state. Additionally, the financial assurance requirement is that the state "may" require—not "shall." Bonds for single wells are "not less than" $10,000, and blanket or statewide bonds are $50,000.[109]

Amounts are definite and may be sufficient, but no timing is mentioned and the term "may" makes the requirement discretionary.

New Hampshire

Renewable Grade: D

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[105] Administrative Rules of Montana 36.22.1308 (1)(a)–1(c), https://rules.mt.gov/search?query=36%2E22%2E1308&v=.
[106] Taylor L. Curtis et al., *A Survey of Federal and State-Level Solar System Decommissioning Policies in the United States*, National Renewable Energy Laboratory (2021), viin5, https://www.nrel.gov/docs/fy22osti/79650.pdf.
[107] 267 NAC 3.004.
[108] 2023 Bill Text NV S.B. 421.
[109] Nevada Admin. Code 522.230, https://www.leg.state.nv.us/NAC/NAC-522.html#NAC522Sec230.

New Hampshire's wind and solar facilities are to submit a plan that includes decommissioning and financial assurances for a committee to approve.[110]

This is entirely discretionary, with no amount, method of payment, or timing mentioned.

Oil and Gas Grade: N/A

New Hampshire does not have oil and gas reserves, according to EIA, and therefore does not have associated bonding requirements for oil and gas wells.[111]

New Jersey

Renewable Grade: D

For solar, facilities on land protected under the Right to Farm Act must submit a conservation plan that includes decommissioning plans. These are to be approved by the soil conservation district. It does not specify how the decommissioning plan is to be calculated with regard to financial assurance.[112] Most of New Jersey's wind energy is offshore, which is regulated federally.

This state almost received an N/A grade, as very little renewable energy is regulated at the state level.[113] However, for solar, the regulation is inadequate because the financial assurance requirement gives no instruction.

Oil and Gas Grade: N/A

New Jersey does not have significant current oil and gas drilling activity, with previous exploration finding insufficient reserves, according to the New Jersey Department of Environmental Protection's Division of Water Supply and Geoscience.[114]

New Mexico

Renewable Grade: F

New Mexico appears not to have regulations for solar or wind. Other sources that have cataloged solar and wind regulatory requirements also do not have any information for New Mexico.

New Mexico's grid is 35% wind and 6% solar. To regulate neither is a failure.

Oil and Gas Grade: A

For oil and gas wells, bonds must be in the form of an irrevocable letter of credit, plugging insurance policy, or cash or surety bond. Inactive well bonds apply to those in temporarily abandoned status for over two years and for which the operator is seeking "approved abandoned" status. Financial assurance is required for an operator that "has drilled or acquired, is drilling or proposes to drill."

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[110] New Hamp. Rev. Stat. § 162-H:7.
[111] EIA, "New Hampshire State Energy Profile," last updated Nov. 21, 2024, https://www.eia.gov/state/print.php?sid=NH.
[112] N.J. Admin. Code § 2:76-2A, 12(b), (m).
[113] WINDExchange, "Wind Energy in New Jersey," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed May 19, 2025, https://windexchange.energy.gov/states/nj.
[114] Dept. of Environmental Protection, "New Jersey Geological & Water Survey," last updated Aug. 20, 2025, https://dep.nj.gov/njgws.

Bonds for a single well are $25,000, plus $2/foot. Bonds for inactive wells are $25,000, plus $2/foot. Blanket or statewide bonds are $50,000 for 1–10 wells; $75,000 for 11–50 wells; $125,000 for 51–100 wells; and $250,000 for more than 100 wells. Bonds for inactive state wells are $150,000 for 1–5 wells; $300,000 for 6–10 wells; $500,000 for 11–25 wells; and $1 million for more than 25 wells.[115]

New York

Renewable Grade: C

Applicants must submit renewable energy decommissioning and site restoration plans with their compliance filings. These plans are to include a calculation for restoring the site, in addition to the assessed salvage value and a 15% contingency cost based on the overall decommissioning and site restoration estimate. These letters and plan will be given to the relevant locality.[116] The amount shall be the net decommissioning and site restoration estimate, plus 15% and less the projected salvage value. However, the amount ultimately is agreed to by the local municipality and the operator. The assurance "shall be in the form of a letter of credit . . . or other financial assurance approved by the Office [of Renewable Energy Siting and Electric Transmission]."[117]

The form of assurance could potentially not be secured, should financial circumstances change. The amount of assurance is too indefinite, and the timing of producing assurance is unclear.

Oil and Gas Grade: B

For wells less than 2,500 feet, the amount is $2,500/well but is not to exceed $25,000. For 26–50 wells, the total is $25,000, plus $2,500/well, not to exceed $40,000—and so on. For wells 2,500–6,000 feet, it is $5,000/well, not to exceed $40,000. For 26–50 wells, it is $40,000, plus $5,000/well.[118]

Bonds for wells over 6,000 feet are to be in the amount of anticipated costs, up to $250,000, with a $2 million maximum for all wells.[119]

These bonds are to be surety, personal, or "any other comparable financial security that the department accepts" and must be maintained continuously.[120]

There is discretion in the form of assurance, which leaves room for assurances that could change with circumstances.

North Carolina

Renewable Grade: D

Wind energy permittees must provide a plan for, among other things, financial assurance sufficient for decommissioning the facility and restoring the property to its condition prior to the

[115] New Mexico Administrative Code 19.15.8.9.C and D.
[116] N.Y. Comp. Codes R. & Regs. tit. 16, § 1100-2.24.
[117] Ibid., § 1100-6.6.
[118] N.Y. Comp. Codes R. & Regs. tit. 6 § 551.5.
[119] Ibid., tit. 6 § 551.6.
[120] Ibid., tit. 6 § 551.4.

commencement of the activities of the site.[121] The assurance may be offered in the form of insurance, financial tests, trusts, surety bonds, or another financial device.[122]

For solar, financial assurance is in "an amount acceptable to the Department . . . even if the owner becomes insolvent" and can be in the form of "insurance, financial tests, third-party guarantees . . . guarantees by corporate parents . . . irrevocable letters of credit, trusts, surety bonds, or any other financial device."[123]

The amount is too discretionary, and the timing of the assurance is unclear. The forms of assurance create a risk of the money not being available if circumstances change.

Oil and Gas Grade: A

For oil and gas wells, the bonds for a single well are $5,000, plus $1/foot of depth. The environmental damage bond is $1 million per permit. Bonds may be in the form of an irrevocable letter of credit, surety bond, assignment of savings account (this states "an amount to be held"), or a cash deposit.[124] The bond is to be in place before the project commences.

North Dakota

Renewable Grade: D

For wind, decommissioning is to be "sufficient to ensure decommissioning," 5% before construction and entirely before operation. It can be a bond, escrow, insurance, a surety bond, an irrevocable letter of credit, a guarantee, a parent guarantee, or another form of assurance. The total amount cannot exceed 25% of the owners' tangible net worth. The financial assurance can be modified if the current financial assurance becomes insufficient.[125] Solar is substantially similar.[126]

The security is not required until after construction. Additionally, the 25% cap could potentially limit the amount to less than the cost of decommissioning, which means that there would be no minimum threshold and potentially insufficient assurance.

Oil and Gas Grade: A

For oil and gas well bonds, for a single well it is $50,000. Blanket and statewide bonds are $100,000. Wells under 2,000 feet may be approved for lower bond amounts. Blanket bonds are subject to a six-well limit. The bond is to be in place prior to commencing construction and is to be "executed by a responsible surety company."[127]

Ohio

Renewable Grade: B

A decommissioning plan for wind or other major utility, which includes a timetable for decommissioning, is to be submitted to the Ohio Power Siting Board. Before construction, an independent estimate for decommissioning, which is calculated per turbine, must be provided.

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[121] N.C. Gen. Stat. Ann. §§ 143-215.119(a)(13), 121.
[122] Ibid., §§ 143-215.121.
[123] Ibid., §§ 130a-309.240(d).
[124] 15A NCAC 05H §§ 1402-03.
[125] N.D. Admin. Code, chap. 69-09-09.
[126] Ibid., chap. 69-09-10.
[127] Ibid., chap. 43-02-03-15, https://ndlegis.gov/information/acdata/pdf/43-02-03.pdf.

The owner or applicant must post a bond equal to the per-turbine decommissioning costs when multiplied by the number of turbines. This amount is to be recalculated every five years, with a new bond amount if necessary.[128] This regulation is inclusive of solar facilities but does not have a specific method of calculation, as wind does.

The bond amount is indefinite.

Oil and Gas Grade: B

Before being issued a permit, owners are required to have a surety bond in place or, alternatively, cash, certificates of deposit, irrevocable letters of credit, or financial documentation of twice the bond amount.[129] For oil and gas well bonds, the amount is $5,000 for a single well, and blanket or statewide bonds are $15,000. Bonds may be in the form of a cash bond, certificate of deposit, irrevocable letter of credit, or surety bond, in "an amount set by rule of the chief."[130]

The bond amount is subject to discretion.

Oklahoma

Renewable Grade: C

Owners of wind facilities are responsible for the proper decommissioning of facilities that generate over 500 kilowatts. After the 15th year of operation, financial assurance is required by February 1 of each year. Assurance shall be maintained at 125% of the estimated total cost of decommissioning, minus salvage value, and can be in the form of a surety bond, collateral bond, parent guaranty, cash, cashier's check, certificate of deposit, bank joint custody receipt, or other approved negotiable instrument.[131] Interestingly, just 0.2% of Oklahoma's energy grid is solar.[132] It does not appear that solar is regulated.

Financial assurance is not required until the 15th year of project, which risks changed circumstances before the due date. Additionally, forms of financial assurance may not be guaranteed negotiable instruments.

Oil and Gas Grade: C

For oil and gas wells, a surety bond is required. A bond totaling the estimated plugging and abandoning cost of each well is allowed. Alternatively, the blanket bond is $25,000[133] and "shall" be furnished. In lieu of surety, it may issue a financial statement, an irrevocable letter of credit, cash, a cashier's check, a certificate of deposit, bank joint custody, or another approved negotiable instrument.

The amount of financial assurance is indefinite unless it is over $25,000. The forms of financial assurance could lead to changed financial circumstances, leaving no money for decommissioning.

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[128] Ohio Admin. Code 4906-4-09.
[129] Ibid., 1509.07.
[130] Ohio Dept. of Natural Resources, "Bonding/Insurance for Oil & Gas Wells," Oil & Gas Permits, https://ohiodnr.gov/buy-and-apply/regulatory-permits/oil-and-gas-permits/bonding-insurance.
[131] Okla. Stat. Ann. tit. 17, § 17-160.15.
[132] WINDExchange, "Wind Energy in Oklahoma," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/ok.
[133] Oklahoma Admin. Code § 165:10-1-12.

Oregon

Renewable Grade: F

Financial assurances to restore sites to useful, nonhazardous condition are required "in a form and amount satisfactory to the county."[134]

Everything is left to the discretion of the local government.

Oil and Gas Grade: A

For oil and gas wells, surety bonds are required. Blanket bonds may be adjusted, depending on the wells involved. Regulations contain a detailed explanation, which "must" be filed before the application to drill is approved. The bonds for a single well are $25,000 (under 10,000 feet) and $50,000 (over 10,000 feet). The blanket or statewide bonds are $150,000.[135]

Pennsylvania

Renewable Grade: F

Pennsylvania does not have regulations for renewable energy industries. S.B. 211 would have established that financial assurances must be equal to the estimated cost to decommission the facility, updated every five years,[136] but the bill never passed.

Pennsylvania has only 1.6% of its grid utilizing wind and 0.4% solar,[137] so that does not appear to be a priority. However, Pennsylvania has an estimated $297 million in outstanding decommissioning liabilities.

Given the amount of outstanding liabilities, regulations should be in place.

Oil and Gas Grade: A

For oil and gas wells, bonds for a single well under 6,000 feet are $4,000/well for up to 50 wells; $35,000 for 51–150 wells; $60,000 for 151–250 wells; and $100,000 for more than 250 wells, plus $4,000 for each well over 250.

For wells over 6,000 feet, the cost is $10,000 for up to 25 wells; $140,000 for 26–50 wells; $290,000 for 51–150 wells; and $430,000 for more than 150 wells, plus $10,000 for each well over 150.

An alternative annual fee of $50/well, or $1,000 annually for more than 20 wells, may also be paid for each year that a bond is not filed. Operators of fewer than 200 wells may also pay their bonds in annual deposits. The bond maximum is $250,000 for wells under 6,000 feet and $600,000 for those over 6,000 feet. These requirements exist upon application for a permit. They may also take the form of cash, bonds, or irrevocable certificates of deposit.[138]

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[134] Or. Rev. Stat. Ann. § 215.446(3)(f). Other regulations exist for offshore renewable energy but are not included in this analysis because not enough states have comparable regulations.
[135] Oregon Administrative Rules 632-010-0205 (1)(a), https://oregon.public.law/rules/oar_632-010-0205.
[136] S.B. 211, 2023 Gen. Assemb., Reg. Sess. (2023).
[137] WINDExchange, "Wind Energy in Pennsylvania," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/pa.
[138] 58 Pa. C.S.A. sec. 3225, https://www.legis.state.pa.us/WU01/LI/LI/CT/HTM/58/00.032.025.000..HTM.

Rhode Island

Renewable Grade: F

Regulations are for "major energy facilities" and do not specifically mention wind or solar, though the definition of major energy facility likely would. This law requires the facilities to maintain a "life-cycle management plan," which includes arrangements for decommissioning.[139]

For solar, the regulation must provide "adequate financial assurance for the eventual decommissioning of such installations." The wind portion of this regulation does not mention financial assurance.[140]

While the state does not appear to rely much on renewable energy, it should have detailed financial assurance regulations in place if it is going to regulate the industries.

Oil and Gas Grade: N/A

Rhode Island oil and gas bonding requirements were not found. According to EIA, Rhode Island does not have significant oil reserves.[141]

South Carolina

Renewable Grade: F

It appears that no energy regulations exist in South Carolina. The state has no wind energy on its grid, and only 2% of the grid is solar.[142] However, EIA data show plans for significant near-term expansion of solar energy in the state.[143] South Carolina's government indicates a current directive to develop regulations and end-of-life management requirements.[144]

The state is risking too much liability to continue being unregulated. The F grade is necessary until the state follows its own directive.

Oil and Gas Grade: A

For oil and gas wells, bonds for single wells are $20,000 for up to 10,000 feet; $30,000 for 10,000–15,000 feet; $40,000 for 15,000–20,000 feet; and $50,000 for over 20,000 feet. For submerged land bonds, the amount is $100,000/well. For blanket or statewide bonds, it is $100,000 (land-based only). Bonds are to be in the form of a bond surety approved by a commission and are to be in place "before any person shall be granted a well drilling permit."[145]

South Dakota

Renewable Grade: D

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[139] 42 R.I. Gen. Laws Ann. § 42-98-3; -8(a)(6).
[140] 880 R.I. Code R. 00-00-4.14(B)(1).
[141] EIA, "Rhode Island State Energy Profile," last updated Dec. 19, 2024, https://www.eia.gov/state/print.php?sid=RI.
[142] WINDExchange, "Wind Energy in South Carolina," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/sc.
[143] See Appendix 2.
[144] "Decommissioning," SC.gov, accessed Apr. 8, 2025, https://solar.sc.gov/installing-and-maintaining-system/warranties-insurance-and-maintenance/decommissioning.
[145] S.C. Code Regulation 121-8.6: Oil and Gas Exploration, Drilling, and Production.

For both wind and solar, facility applications must include a decommissioning plan, including cost estimates. The South Dakota Public Utilities Commission "may" require a bond, insurance, or other financial guarantee in an amount dependent upon the size of the facility and financial condition of the applicant.[146]

The costs are self-determined by the operator. There is neither a concrete requirement that financial assurance be posted nor a specification for the form that such assurance must take.

Oil and Gas Grade: B

For oil and gas wells, a bond "may" be required. An additional bond of $20,000 applies to nonproducing wells or those that have been unused for over six months. Bonds for a single well are $50,000 (over 5,500 feet), and blanket or statewide bonds are $100,000 (over 5,500 feet). The Board of Minerals and Environment "may" require higher amounts "if the circumstances require."[147]

The term "may" leaves too much discretion.

Tennessee

Renewable Grade: C

Tennessee has regulations for solar but not wind, as the latter is only 0.4% of the state's grid.[148] Solar facilities are governed between landowners and grantees but must include a decommissioning plan with financial assurance for its removal and the restoration of the site. The amount is 5% upon commencement, 50% at year 10, and 100% by year 15. The assurance can be a letter of credit, a parent guarantee, cash, a cashier's check, a certificate of deposit, or a bank joint custody receipt.[149]

The grade is for solar only. The amount is nonspecific and is not due at the commencement of the project.

Oil and Gas Grade: C

For oil and gas wells, "the bonds shall be written in such a manner that the Principal and Bonding Agent hereto are firmly bound to the [Tennessee] Department [of Environment and Conservation], jointly and severally." The bond for a single well is $2,000 for up to 2,500 feet; $3,000 for 2,500–5,000 feet; and $3,000, plus $1/foot, for over 5,000 feet. Blanket or statewide bonds are $20,000 for up to 10 wells (5,000 feet) and $30,000 for up to 10 wells (10,000 feet). If a well exceeds 10,000 feet, it is ineligible for inclusion in a blanket bond.[150]

The bond amounts are likely insufficient to cover the cost of plugging, meaning that there is no effective minimum threshold.

Texas

Renewable Grade: C

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[146] S.D. Admin. R. §§ 20:10:22:33; 33.01.
[147] South Dakota Legislature, Codified Laws, tit. 45, chap. 9-15, https://sdlegislature.gov/Statutes/45-9-15.
[148] WINDExchange, "Wind Energy in Tennessee," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed Apr. 8, 2025, https://windexchange.energy.gov/states/tn.
[149] Tenn. Code Ann. § 66-9-207.
[150] Tenn. Comp. R. & Regs. 0400-52-01-.01-.07.

Both wind and solar "must" have a guarantee that the grantee is responsible for removing the facility. For solar, it must be in place by year 20. For wind, it must be in place by year 10. The amount "must be at least equal to the estimated amount" that exceeds the salvage value, less the value of any debt. Further, "acceptable forms of financial assurance include a parent company guaranty with a minimum investment grade credit rating for the parent company issued by a major domestic credit rating agency, a letter of credit, a bond, or another form of financial assurance acceptable to the landowner."[151]

The amount of assurance is self-determined by the operator. The potential for delays and the varying forms of assurance create a risk of changed circumstances prior to obtaining a financial instrument.

Oil and Gas Grade: A

The operator "is required to file" either financial security of $2/foot for one or more wells or blanket assurances of $25,000 for 10 or fewer wells; $50,000 for 11–100; or $250,000 for more than 100 wells. Bay wells are $60,000. Assurances can be in the form of a bond, a letter of credit, or cash.[152]

Utah

Renewable Grade: F

Utah does not currently have decommissioning regulations. However, House Bill 241 is currently making its way through Utah's legislature and would regulate utility-scale solar power plants. This bill would require a decommissioning plan that includes financial assurance to be filed with a local government in the form of a bond, parent company guarantee, irrevocable letter of credit, or other financial security, "not less than the estimated cost of decommissioning and reclaiming of the solar power plant." The plan could be updated every five years. The financial assurance demand would use "shall" language but is unclear as to timing.[153]

Wind is regulated locally. For example, Duchesne County requires "evidence of an agreement or other financial commitment . . . that ensures proper final reclamation of the wind energy project, as well as repairing any road impacts."[154]

There is no statewide law to ensure that financial assurances are in place, and local examples are insufficient. Should the solar law pass, it would receive a C grade, given that the timing of assurance and the amount of assurance are both indefinite.

Oil and Gas Grade: C

The owner or operator "shall" furnish a bond prior to the permit being approved. For oil and gas wells, the bonds for a single well are $1,500 for under 1,000 feet; $15,000 for 1,000–3,000 feet; $30,000 for 3,000–10,000 feet; and $60,000 for over 10,000 feet.

For blanket or statewide wells, the bonds are $15,000 for under 1,000 feet and $120,000 for over 1,000 feet.

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[151] Tex. Util. Code Ann. §§ 301.0004; .0005.
[152] Texas Administrative Code, tit. 16, pt. 1, chap. 3, Rule Sec. 3.78
[153] H.B. 241, Solar Power Plant Amendments, Utah State Leg., 2025 Gen. Sess. (2025).
[154] Duchesne Co., UT Code of Ordinances § 8-9-16-4.

Bond amounts may be lowered upon request and with a show of good cause, or they may be raised based on updated cost projections from the Division of Oil, Gas, and Mining. Surety bonds, collateral bonds (including cash), or a combination may be accepted.[155]

The standard required amount is likely insufficient to cover site rehabilitation; there might as well be no fixed amount.

Vermont

Renewable Grade: B

For small facilities that produce under 500 kilowatts (kW), regulations require only that facilities be removed once they are no longer in service. For larger facilities exceeding 500 kW, owners must submit a decommissioning cost estimate that includes "all costs associated with the dismantlement and safe disposal of facility components and site restoration activities . . . [and] the salvage value of facility components," along with an "irrevocable standby letter of credit in an amount sufficient to fund the estimated decommissioning and site restorations costs" or alternative financial security. The cost must be updated every three years. The company is to submit a letter of credit or financial security sufficient to cover the cost of decommissioning, provided that the assurance of availability of funds equals or exceeds the stated forms of assurance. These requirements will be enforced by the Vermont Public Utility Commission before a "certificate of public good" is issued.[156]

The cost to decommission is self-calculated.

Oil and Gas Grade: N/A

Six exploration wells were drilled between 1957 and 1984, but Vermont currently has no producing oil or gas wells.[157]

Virginia

Renewable Grade: A

Renewable energy is governed locally, but all ordinances "shall" be required to establish reasonable requirements to address wind and solar energy generation facility decommissioning. It is to be done by written agreement.[158] Decommissioning includes disposal of equipment and facilities. The owner is responsible and must obtain certified funds, cash escrow, bond, letter of credit, or parent guarantee, based upon a professional engineer's estimate of the financial assurance required for solar decommissioning. Interestingly, the local government can hold the landowner responsible if the energy company defaults. The amount should not exceed the total estimated value, plus administrative costs and inflation, and may account for the net salvage value of the equipment, facilities, and so forth.[159]

While the amount of assurance is nonspecific, the added element of joint and several liability is an extra assurance not seen elsewhere.

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[155] Utah Administrative Code R649-3-1.5 and 1.6.
[156] Vt. Code R. §§ 5.903; 5.904.
[157] "Oil and Gas," Vt. Agency of Natural Resources, Dept. of Environmental Conservation, 2025, https://dec.vermont.gov/geological-survey/resources-energy/oil-gas.
[158] Va. Code Ann. § 45.2-1708.
[159] Ibid., § 15.2-2241.2.

Oil and Gas Grade: A

For oil and gas wells, "all permit applicants shall give bond with surety." The bond for a single well is $10,000, plus $2,000/acre. For blanket or statewide wells, the bond is $25,000 for up to 10 wells; $50,000 for 11–50 wells; $100,000 for 51–200 wells; and $200,000 for more than 200 wells. In addition to the bond, a fee of $2,000/acre of disturbed land is assessed for up to five acres, calculated to the nearest tenth of an acre. Those obtaining blanket bonds must also give $50 annually per permit to the Gas and Oil Plugging and Restoration Fund. Surety or cash bonds may be accepted.[160]

Washington State

Renewable Grade: D

Energy facilities (inclusive of wind and solar) must provide an initial site restoration plan, which "shall parallel a decommissioning plan." The plan should detail economic factors associated with the costs and benefits of restoration options, along with management costs. Financial assurance shall "include evidence of pollution liability insurance for the project, and a site closure bond, sinking fund, or other financial instrument or security."[161]

The amount is too nonspecific and self-determined, stating no minimum. The timing is unclear.

Oil and Gas Grade: A

For oil and gas wells, Washington's Oil & Gas Blanket Drilling and Production Bond amounts are set by the oil and gas supervisor. In lieu of a bond, the applicant may submit a cash deposit, a savings account assignment, or a certificate of deposit from a Washington bank. The bond for a single well is $50,000 minimum; for blanket or statewide bonds, $250,000 bond minimum for two or more wells. The bond for a shallow well used solely to obtain geologic information is $20,000.[162]

West Virginia

Renewable Grade: D

Solar and wind facilities must submit a decommissioning plan one year before commencing operation. This obligation comes with a commitment to remove all structures and disturbances. Plans must include a cost estimate and financial assurance in the form of a bond. Owners may apply for bond reductions every five years.[163]

Utility-owned facilities are exempt but must still offer a decommissioning agreement. These facilities must still provide a bond or fund for decommissioning, along with a plan for making claims under the decommissioning fund.[164]

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[160] S. 1271, chap. 351 (2019), https://legacylis.virginia.gov/cgi-bin/legp604.exe?191+ful+CHAP0351.
[161] Wash. Admin. Code 463-72-040(1).
[162] "Instructions for Oil & Gas Drilling Applicants," Washington State Dept. of Natural Resources, accessed June 6, 2025, https://www.dnr.wa.gov/Publications/ger_oil_gas_permit_application_form.pdf.
[163] W. Va. Code Ann. §§ 22-32-3; 4.
[164] Ibid., § 22-32-8.

Only a "plan" must be submitted—not the actual bond. This makes the process too discretionary. Additionally, the amount of assurance is unclear.

Oil and Gas Grade: D

For oil and gas wells, financial responsibility through bonding "shall" be in place.[165] The bond for a single well is $5,000, and the blanket bond is $50,000.[166]

The timing and methods of financial assurance are unclear. The bond of $5,000 is insufficient to cover the estimated $117,000 to decommission in West Virginia.[167] Effectively, there is no minimum requirement or requirement of a sufficient amount.

Wisconsin

Renewable Grade: C

Owners of wind facilities must maintain proof of the ability to fund costs to decommission and can provide said assurance with a bond, deposit, escrow account, irrevocable letter of credit, or any combination thereof. The owner "may" be required to ensure financials up to the actual or necessary amount to decommission in an amount prepared by a qualified third party.[168]

Wisconsin still permits local government to oversee solar energy, including decommissioning, which is typically addressed through agreements between the parties.[169] However, solar represents roughly 1% of the state's energy grid.[170]

The term "may" leaves discretion. Additionally, the amount is self-determined and discretionary.

Oil and Gas Grade: N/A

As of 2025, Wisconsin does not have oil and gas reserves, according to EIA, and does not have associated bonding requirements for oil and gas wells.[171]

Wyoming

Renewable Grade: F

Wyoming is regulated partly by the state and partly by local government. At the state level, the law applies to wind or solar facilities with a capacity of 500 kW or larger. Decommissioning plans are due to county boards before construction,[172] but regulations are silent as to the specifics for these plans.

Industrial facilities, which include wind, require financial assurance "sufficient to assure complete decommissioning and site reclamation of the facility." Public Service Commission–

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[165] Ibid., § 22-10-4.
[166] Ibid., § 22-10-5.
[167] Ohio Valley Institute, *Methodology for Estimating Unplugged Onshore Abandoned and Active Wells*, 4.
[168] PSC 128.19.
[169] Wisconsin Legislative Council, *Regulation of Solar Generation Facilities*, information memorandum (2024), 4, https://docs.legis.wisconsin.gov/misc/lc/information_memos/2024/im_2024_01.
[170] WINDExchange, "Wind Energy in Wisconsin," Wind Energy Technologies Office, U.S. Dept. of Energy, accessed May 20, 2025, https://windexchange.energy.gov/states/wi.
[171] WI Stat § 1.12, https://law.justia.com/codes/wisconsin/chapter-1/section-1-12.
[172] Wyo. Stat. Ann § 18-5-503.

regulated utilities are exempt. Financial assurances, when required, may be provided through a surety bond, a certificate of deposit, or other approved form and are dependent upon creditworthiness, financial strength, credit history, credit rating, and debt.[173]

For a state heavily involved in wind energy, better regulations should be in place.

Oil and Gas Grade: A

For oil and gas wells, acceptable forms of security include surety bonds, cashier's checks, certificates of deposit, or letters of credit. Blanket bonds cover all wells, regardless of depth. The rate of $10/foot may be adjusted every three years to account for fluctuations in plugging costs or inflation.

Bonds for a single well are $10/foot of depth. Blanket or statewide bonds are $100,000. The supervisor may require an additional bond amount up to $10/foot for each idle (nonproducing) well, taking into account the existing level of the bond in place. Split estate bonds (for which the surface land and the underlying minerals are owned by separate parties) are set at a minimum of $10,000 per well site. Disposal wells and pits receiving water waste are bonded separately.[174]

[173] 020-1 Wyo. Code R. § 1-9.

[174] Wyoming Oil and Gas Conservation Commission, Operational Rules, Drilling Rules, chap. 3, sec. 4, subsec. b (i) (A) and (i) (B), https://www.law.cornell.edu/regulations/wyoming/055-3-Wyo-Code-R-SS-3-4.

Grading Decommissioning Preparedness: Summary

Jurisdiction/State	Renewables	Oil and Gas
BLM[175]	**A/C**	**A**
BOEM[176]	**D**	**A**
Alabama	**B**	**A**
Alaska	**N/A**	**A**
Arizona	**F**	**A**
Arkansas	**F**	**B**
California	**D**	**A**
Colorado	**F**	**A**
Connecticut	**B**	**A**
Delaware	**D**	**N/A**
Florida	**F**	**A**
Georgia	**B**	**B**
Hawaii	**F**	**N/A**
Idaho	**F**	**B**
Illinois	**D**	**C**
Indiana	**C**	**C**
Iowa	**B**	**A**
Kansas	**F**	**A**
Kentucky	**C**	**A**
Louisiana	**C**	**A**
Maine	**C**	**N/A**
Maryland	**B**	**C**
Massachusetts	**F**	**N/A**
Michigan	**C**	**A**
Minnesota	**D**	**N/A**

[175] See Appendix 1.
[176] Ibid.

Mississippi	**F**	**A**
Missouri	**F**	**A**
Montana	**C**	**B**
Nebraska	**F**	**A**
Nevada	**F**	**C**
New Hampshire	**D**	**N/A**
New Jersey	**D**	**N/A**
New Mexico	**F**	**A**
New York	**C**	**B**
North Carolina	**D**	**A**
North Dakota	**D**	**A**
Ohio	**B**	**B**
Oklahoma	**C**	**C**
Oregon	**F**	**A**
Pennsylvania	**F**	**A**
Rhode Island	**F**	**N/A**
South Carolina	**F**	**A**
South Dakota	**D**	**B**
Tennessee	**C**	**C**
Texas	**C**	**A**
Utah	**F**	**C**
Vermont	**B**	**N/A**
Virginia	**A**	**A**
Washington State	**D**	**A**
West Virginia	**D**	**D**
Wisconsin	**C**	**N/A**
Wyoming	**F**	**A**

Appendix 1: Decommissioning Nuclear Reactors

Grade: A

A number of states have operating nuclear power plants, all of which are also regulated at the federal level. Nuclear energy represents a gold standard of sorts for financial assurance and is therefore worth discussing.

Financial assurances for decommissioning nuclear reactors are to be "provided in an amount which may be more, but not less, than the amount stated in" a table.[177] The assurance required is based on the generating capacity of the nuclear reactor in megawatts thermal (MWt), a unit of power used to express the thermal energy produced by nuclear reactors. For pressurized water reactors, financial assurance is to be $105 million for reactors generating over 3400 MWt, and a formula is created for smaller reactors.[178] For boiling-water reactors, it is $135 million, with a separate formula for estimating the cost for smaller reactors.[179] These sums are in 1986 dollars[180] and must be adjusted annually based upon a different, detailed formula.[181]

Financial assurance is to be paid before the start of the operation via an external sinking fund, sureties, insurance, or other guarantee method.[182]

If the reactor is owned by a public utility, financial assurances are not required because they are calculated into the rates paid by consumers. The funds are then held in trust.[183]

Bureau of Land Management (BLM) Energy Decommissioning Regulations

Solar Grade: A

Wind Grade: C

To obtain a lease on BLM-controlled land, wind and solar companies must post a performance and reclamation[184] bond.[185] For solar energy development, the bond must be in the amount of $10,000/acre.[186] For wind, it is $10,000 per authorized turbine that is less than 1 MW in nameplate capacity, or $20,000 per authorized turbine that is equal to or greater than 1 MW in nameplate capacity.[187] Lease issuance is "subject to" this term and conditions (among others).[188] BLM will adjust the bond amount every 10 years.[189] BLM must be listed as a named insured, and

[177] 10 C.F.R. § 50.75(b)(1).
[178] Ibid., § 50.75(c)(1).
[179] Ibid.
[180] Ibid., § 50.75(c).
[181] Ibid., § 50.75(c)(2).
[182] Ibid., § 50.75(e).
[183] "Backgrounder on Reactor License Transfers," U.S. Nuclear Regulatory Commission, last updated Sept. 14, 2021, https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-transfer.html.
[184] BLM uses the term "reclamation" in the same way that "decommissioning" is used elsewhere.
[185] 43 C.F.R. 2809.18(e).
[186] Ibid., 2809.18(e)(1) and 2805.20(b).
[187] Ibid., 2809.18(e)(2) and 2805.20(c).
[188] Ibid., 2809.18.
[189] Ibid., 2809.18(e)(4).

the instrument must be redeemable by BLM.[190] It must satisfy the state's agency, as specified in the right-of-way authorization.[191]

The grades differ here because of the amount of financial assurance required. Each box is checked for solar. Given the lower cost to decommission, $10,000/acre seems sufficient; however, $10,000–$20,000 per turbine—in the face of over $500,000 per turbine to decommission—is so woefully inadequate that a C is warranted for wind.

Oil and Gas Grade: A

The minimum bond amounts for oil and gas are $150,000 for a specific lease or $500,000 for a statewide bond, to be adjusted every 10 years.[192] It "must" be posted "prior to the commencement of surface disturbing activities related to drilling operations" and is to be a surety (issued by a qualified surety company) or personal bond accompanied by a certificate of deposit, cashier's check, certified check, treasury security, or irrevocable letter of credit.[193]

Bureau of Ocean Energy Management (BOEM) Energy Decommissioning Regulations[194]

Offshore Wind Grade: D

Unlike most land-based wind projects, offshore wind is regulated by the federal government. Currently, the life span of a wind project is about 20 years—lower than the original predictions, which were as long as 50 years.[195] To decommission offshore wind, one must start by removing the blades, a difficult process given that they are made of fiberglass and carbon fiber, which emit dust and toxic fumes.[196] Most of this material will have to be disposed of in landfills, as recycling is still not a viable option.[197] Then the foundations and towers must be removed.[198] They comprise steel, copper, and concrete, so at least some of this material could be repurposed or recycled.[199]

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[190] Ibid., 2805.20 (1).
[191] Ibid.
[192] Ibid., 3104.1(a).
[193] Ibid., 3104.10.
[194] On July 7, 2025, Trump signed Executive Order 14315, "Ending Market Distorting Subsidies for Unreliable, Foreign-Controlled Energy Sources," which requires DOI to identify the existence of any preferential treatment toward wind and solar facilities, in comparison with dispatchable energy sources. On July 29, 2025, DOI issued Secretarial Order 3437, which identified examples of preferential treatment, including the Bureau of Land Management reducing fees to 80% below market value for wind and solar projects while simultaneously refusing to lease to oil and gas projects. The secretary then ordered agency officials to inventory and report other examples. DOI should include financial assurance and decommissioning requirements in this inventory.
[195] IER, "The Cost of Decommissioning Wind Turbines"; Rolling, "Limited Lifespans of Wind Turbines Result in Higher Costs."
[196] IER, "The Cost of Decommissioning Wind Turbines."
[197] Ibid.
[198] Elaine Maslin, "£ Billion+ Offshore Wind Decommissioning Bill," *Offshore Engineer*, Dec. 16, 2019, https://www.oedigital.com/news/473730-10-billion-offshore-wind-decommissioning-bill.
[199] Ibid.

The sheer volume of material is high. In the U.K., which currently operates about 2,225 turbines, the materials that will need to be disposed of include 200,000 metric tons of composites; 1.3 metric tons of steel; 100,000 metric tons of copper; and 50,000 metric tons of lead.[200]

Offshore wind is relatively new, meaning that the costs are currently more theory than proven numbers.[201] The technologies are evolving quickly, which makes predictive models for cost difficult to ascertain.[202] However, the estimate used by BOEM was $191 million to decommission the nation's first wind plant, Vineyard Wind.[203] Vineyard Wind is a planned 62-turbine facility,[204] meaning that the cost to decommission would be roughly $3 million per turbine.

Nevertheless, federal regulations require a financial assurance of only $10,000–$20,000 per turbine to decommission, depending upon the wattage produced.[205] This bond is to be posted "prior to written approval."[206] BOEM waived that requirement for Vineyard Wind, however, allowing the company to delay its financial assurance requirements for 15 years after the project had commenced.[207]

When considering only the preceding information, these regulations should receive a C grade, given that three categories are not met (contains mandatory language, has a fixed amount, and guarantees the financial instrument). But, as applied, the BOEM regulations receive a D, as BOEM has demonstrated that even its meager requirements can be waived.

Offshore Oil and Gas Grade: A

Contrast the wind financial assurance demands with what is required of oil. For offshore wells, financial assurance must be provided in the form of bond. The assurance is incremental: $50,000 for a specific lease with no approved operational activity or $300,000 for an area-wide amount; $200,000 for a lease-specific exploration plan or $1 million for an area-wide amount; and $500,000 for a lease-specific development production plan or $3 million for an area-wide amount.[208] Supplemental amounts may be required. These amounts must be produced "before lease development and production activities commence" but can be waived if the company has a

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[200] Ibid.
[201] Angeliki Spyroudi, *End-of-Life Planning in Offshore Wind* (Catapult Offshore Renewable Energy, 2021), 3, https://cms.ore.catapult.org.uk/wp-content/uploads/2021/04/End-of-Life-decision-planning-in-offshore-wind_FINAL_AS-1.pdf.
[202] Ibid.
[203] Kevin Killough, "Department of Interior Emails Reveal Biden's Offshore Wind Waivers Could Cost Taxpayers Millions," *Just the News*, May 28, 2025, https://justthenews.com/politics-policy/energy/department-interior-emails-reveal-bidens-offshore-wind-waivers-could-cost.
[204] Massachusetts Governor Maura Healy and Lt. Governor Kim Discoll, "Vineyard Wind, America's First Large-Scale Offshore Wind Farm, Delivers Full Power from 5 Turbines to the New England Grid," press release, Febr. 22, 2024, https://www.mass.gov/news/vineyard-wind-americas-first-large-scale-offshore-wind-farm-delivers-full-power-from-5-turbines-to-the-new-england-grid.
[205] 43 C.F.R. § 2805.20 and § 2809.18.
[206] Ibid., § 2809.18.
[207] James F. Bennett to Rachel Pachter, accessed Nov. 29, 2024, https://budsoffshoreenergy.com/wp-content/uploads/2024/01/vineyard-wind-financial-assurance-deferral.pdf.
[208] 30 C.F.R. § 556.901.

sufficient credit rating or if the proved oil and gas reserves exceed three times the estimated cost of decommissioning.[209]

The Bureau of Safety and Environmental Enforcement (BSEE) states that estimated decommissioning costs vary, depending upon the depth of the well. Estimates are $4.8 million for 122–250 meters and range from $10 million to $80 million for 250–500 meters.[210]

[209] Ibid.

[210] Mark J. Kaiser, "Models Describe BSEE Deepwater Decommissioning Cost Estimates," *Offshore*, Febr. 13, 2024, https://www.offshore-mag.com/decommissioning/article/14303886/center-for-energy-studies-louisiana-state-university-models-describe-bsee-deepwater-decommissioning-cost-estimates.

Appendix 2: Costs of Decommissioning

[For this appendix, data and research were provided by Rocco Arviza, a member of NCEA's research team; a constructive review was provided by NCEA Senior Fellow Jonathan Lesser.]

Ultimate decommissioning costs are still relatively unknown because of the newness of the technology. However, at least one estimated cost is $532,000 per land-based wind turbine,[211] meaning that it would cost $71 million to decommission Xcel Energy, which has 134 turbines.[212] While offshore costs are still speculative, that figure is likely much higher.

Similarly, solar panels are far too expensive to recycle and are typically hauled to landfills at a cost of about $1–$2 per panel, compared with $20–$30 for recycling.[213] The estimated cost to decommission a tiny 2-MW farm—*not* including disposal costs—is $60,200.[214] And that 1 MW involves approximately 2,857 panels.[215]

Oil and gas well decommissioning involves deactivating the oil and gas well, which requires earth movement and torch-cutting before capping the well, giving way to aboveground reclamation of the site to restore its natural ecosystem.[216] The cost to decommission varies by state, ranging from $3,474 to $3,551,354 in 2023 dollars.[217]

Renewable energy plants have greater risk than other energy sectors with proven track records. Take the Ivanpah solar facility, which is set to close just 11 years after it began operating.[218] The environmental impact statement (EIS) projected that the facility would last 30[219] to 50 years[220] (depending upon the portion of the EIS where the claim is made). The cost to decommission a facility of that size, when 20–40 years of revenue were not realized, leaves questions as to whether the company will be able to pay for its decommissioning obligations, demonstrating a

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[211] IER, "The Cost of Decommissioning Wind Turbines."
[212] Ibid.
[213] Atalay Atasu, Serasu Duran, and Luk N. Van Wassenhove, "The Dark Side of Solar Power," *Harvard Business Review*, June 18, 2021, hbr.org/2021/06/the-dark-side-of-solar-power.
[214] Sarah Lozanova, "A Guide to Solar Panel Decommissioning & Cost Estimates," Greenlancer, updated May 11, 2025, https://www.greenlancer.com/post/decommissioning-solar-panels.
[215] EnergyScape Renewables, "How Many Solar Panels Does It Take to Generate One Megawatt?" LinkedIn, Mar. 5, 2025, https://www.linkedin.com/pulse/how-many-solar-panels-does-take-generate-one-megawatt-zh3qf.
[216] NuWave Industries, "How to Decommission an Oil and Gas Well," May 18, 2023, https://www.nuwaveindustries.com/post/how-to-decommission-an-oil-and-gas-well.
[217] Ohio River Valley Institute, *Methodology for Estimating Unplugged Onshore Abandoned and Active Wells*, 4.
[218] James Leggate, "Older Ivanpah Solar Plant in California Will Close Units, as Tech Shifts," ENRWest, Febr. 13, 2025, https://www.enr.com/articles/60307-older-ivanpah-solar-plant-in-california-will-close-units-as-tech-shifts.
[219] See Shahab Khoshmashrab, "Appendix C-1: Facility Design," in Ivanpah, *Final Environmental Impact Statement* (Solar Electric Generating System, 2022), https://www.energy.gov/sites/prod/files/2014/04/f14/EIS-0416-FEIS-2010Appendix-C-Additional-Information.pdf.
[220] *California Desert Conservation Area Plan Amendment / Final Environmental Impact Statement for Ivanpah Solar Electric Generating System* (Dept. of Energy, 2010), 3–25, https://www.energy.gov/sites/default/files/nepapub/nepa_documents/RedDont/EIS-0416-FEIS-2010.pdf.

greater need for renewable energy companies to have their financial assurances in place from the start.

Estimated Decommissioning Costs, by State

	Solar and Wind Installed and Planned (MW)[221]	Estimated Decommissioning Costs ($Million)
TOTAL	***441,412***	***$34,022***
Alabama	2,057	$149
Alaska	67	$6
Arizona	11,959	$881
Arkansas	3,582	$264
California	36,373	$2,713
Colorado	10,272	$803
Connecticut	758	$55
Delaware	282	$20
Washington, DC	31	$2
Florida	14,454	$1,050
Georgia	9,402	$683
Hawaii	826	$62
Idaho	2,518	$199
Illinois	16,049	$1,266
Indiana	12,028	$918
Iowa	14,188	$1,172
Kansas	10,626	$876
Kentucky	3,004	$218
Louisiana	2,158	$157
Maine	2,617	$203
Maryland	1,498	$111
Massachusetts	2,395	$183
Michigan	8,349	$648

[221] Per EIA.

Minnesota	7,835	$628
Mississippi	3,155	$231
Missouri	4,843	$380
Montana	3,437	$280
Nebraska	4,283	$354
Nevada	8,303	$605
New Hampshire	217	$18
New Jersey	1,219	$89
New Mexico	12,235	$974
New York	12,722	$986
North Carolina	8,598	$629
North Dakota	5,274	$435
Ohio	8,171	$610
Oklahoma	14,533	$1,193
Oregon	10,433	$805
Pennsylvania	4,601	$352
Rhode Island	1,219	$97
South Carolina	3,591	$261
South Dakota	3,671	$303
Tennessee	1,853	$135
Texas	114,139	$8,791
Utah	4,791	$352
Vermont	374	$29
Virginia	11,681	$877
Washington State	5,931	$470
West Virginia	1,072	$87
Wisconsin	4,933	$368
Wyoming	12,807	$1,049

Estimated Decommissioning Costs: Wind

Summary:

	Decommissioning Expenses per Turbine	Decommissioning Expenses per MW
Min.	$157,856	$22,451
Max.	$247,197	$164,798
Avg.	$208,509	$83,134

Details and sources:

Site	MW	Turbines	Decommissioning Expenses per Turbine	Decommissioning Expenses per MW
Lincoln Land Win Project[222]	302	107	$226,119	$80,115
Buffalo Ridge II Wind Project[223]	210	105	$216,773	$108,387
Great Pathfinder Wind Project[224]	225	32	$157,856	$22,451
			$247,197	$164,798
PrairieWinds SD 1 (Crow Lake Wind Project)[225]	162	108	$181,278	$43,161
Rail Tie Wind Project[226]	504	120	$222,497	$79,463
	308	110	$207,842	$80,115

[222] Matthew Minder, *Lincoln Land Wind Project Siting Application Review: Morgan County, Illinois* (Patrick Engineering, 2020), https://morgancounty-il.com/documents/commissioners/LLWF_siting_review_reports.pdf.
[223] Joel Bahma, *Wind Project Decommissioning Plan: Buffalo Ridge II Wind Project* (Barr Engineering, 2021), https://puc.sd.gov/commission/dockets/electric/2008/EL08-031/plan.pdf.
[224] Stephen J. Battaglia, *Decommissioning Plan: Great Pathfinder Wind Project: Boone County, Iowa*, c/o Apex Clean Energy (Westwood, 2022), https://assets.nationbuilder.com/greatpathfinderwind/pages/1181/attachments/original/1655243042/Great_Pathfinder_Decommissioning_Plan_3.4.22_stamp.pdf?1655243042.
[225] Joel Bahma, *Wind Project Decommissioning Plan: PrairieWinds SD 1 (Crow Lake Wind Project)*, prepared for Basin Electric Power Cooperative (Barr Engineering, 2021), https://puc.sd.gov/commission/dockets/electric/2009/el09-028/DecommissioningPlan.pdf.
[226] Westwood, *Decommissioning Plan: Rail Tie Wind Project: Albany County, Wyoming*, prepared for ConnectGen Albany County (2021), https://www.railtiewind.com/wp-content/uploads/2021/03/Appendix_J-1_Decommissioning_Plan.pdf.

Plum Creek Wind Project[227]			$226,119	$108,387
Canisteo Wind Energy Center[228]	291	117	$216,773	$22,451
Walleye Wind[229]	111	40	$157,856	$164,798

Estimated Decommissioning Costs: Solar

Summary:

	Decommissioning Expenses per MW
Min.	$37,817
Max.	$111,765
Avg.	$72,621

Details and sources:

Site	MW	Decommissioning Expenses	Decommissioning Expenses per MW
County Road 10 Solar Farm, NY[230]	3.25	$276,354	$85,032
NY, Guilderland—2 Van Buren Blvd.[231]	2.38	$90,005	$37,817
SV CSG Waldo, WI[232]	5.5	$543,629	$98,842

[227] Westwood, *Decommissioning Plan: Plum Creek Wind Farm: Cottonwood, Murray, and Redwood Counties, Minnesota*, prepared for Geronimo Energy (2019), https://apps.commerce.state.mn.us/eera/web/project-file/11353.
[228] Energy Ventures Analysis, *Canisteo Wind Energy Center Decommissioning Assessment*, prepared for the Towns of Cameron, Canisteo, Greenwood, Jasper, Troupsburg, and West Union (2019), https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B92CC174A-9E28-4394-AEAA-CDDCC8358484%7D.
[229] Walleye Wind, *Decommissioning Plan and Reclamation Cost Estimate: Walleye Wind Project* (2020), https://apps.commerce.state.mn.us/eera/web/project-file/11450.
[230] Bergmann and Aura Solar Power, *County Road 10 Solar Project: Project Decommissioning Plan*, prepared for the Town of Canandaigua (2021), http://www.townofcanandaigua.org/documents/files/County%20Road%2010%202890%202021-07-07%20DEcommissioning%20Plan.pdf.
[231] Cipriani Energy Group, *Solar Farm Decommissioning Plan: NY, Guilderland—2 Van Buren Blvd* (2021), https://play.champds.com/ATT/guilderlandny/2021-04/e65de27ac5f8588adb88c7db9198b7a6465556db.pdf.
[232] Westwood, *A Decommissioning Plan for SV CSG Waldo LLC: Sheboygan County, Wisconsin*, prepared for SV CSG Waldo (2024), https://lyndonshebcowi.gov/wp-

Big Timber Solar Farm, IL[233]	5	$357,540	$71,508
Epsom Solar Farm, NH[234]	2.5	$102,556	$41,022
Bellflower Solar Project, IN[235]	152	$10,640,895	$70,006
White Palmetto Solar Project, SC[236]	170	$19,000,000	$111,765
Lone Tree Solar Project, IA[237]	8	$519,797	$64,975

content/uploads/2024/07/2024-07-08_Waldo-Solar_Solar-Decommissioning-Plan-Revised-7.8.24.pdf.

[233] Kimley-Horn & Associates, *Decommissioning Plan: Big Timber Solar Farm, LLC, Kane County, Illinois*, prepared for Surya Powered (2024), https://www.kanecountyil.gov/FDER/Zoning%20Petitions%20Documents/12_Big%20Timber%20Solar_Decommissioning%20Plan%20(09-09-2024).pdf.

[234] Caspian Epsom Solar, *Epsom Solar Farm Decommissioning Plan*, prepared for the Town of Epsom, NH (2023), https://www.epsomnh.org/sites/g/files/vyhlif4396/f/pages/granny_howe_solar_farm_decommissioning_plan.pdf.

[235] Stantec Consulting Services, *Decommissioning Plan Bellflower Solar Project: Henry and Rush Counties, Indiana*, prepared for Lightsource Renewable Energy Operations (2020), http://www.henryco.net/attachments/Bellflower%20Solar%20Decom_Plan_20201013.pdf.

[236] HDR Engineering, *Decommissioning Plan: White Palmetto Solar Project, Sumter County, SC (Rev: 02)*, prepared for TOCE SC Solar 1 and Treaty Oak Clean Energy (2025), https://www.sumtersc.gov/sites/default/files/uploads/Departments/Planning/BoardsCommissions/BZA/2025/May/exhibit-11-decommissioning-plan.pdf.

[237] Stantec Consulting Services, *Decommissioning Plan: Lone Tree Solar Project, Johnson County, Iowa*, prepared for PCR Investments SP 2 (2022), https://johnsoncountyiowa.gov/sites/default/files/2023-02/Attachment%20G_Lone%20Tree%20Solar%20Final%20Decom%20Plan.pdf.