September 2020

Environmental Quality Council
Sonja Nowakowski

FINAL REPORT TO THE 67TH MONTANA LEGISLATURE

HJ 38: POWERING DOWN DECOMMISSIONING ENERGY GENERATION FACILITIES IN MONTANA

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Senate Members

Senator Mike Lang, Vice Chair
P.O. Box 104
Malta, MT 59538-0104
(406) 654-1117
Mike.Lang@mtleg.gov

Senator Pat Flowers
11832 Gee Norman Road
Belgrade, MT 59714-8416
(406) 580-0035
Pat.Flowers@mtleg.gov

Senator Steve Hinebauch
610 Road 118
Wibaux, MT 59353-9058
(406) 365-7967
SteveHinebauch@midrivers.com

Senator JP Pomnichowski
222 Westridge Drive
Bozeman, MT 59715-6025
(406) 587-7846
pomnichow@gmail.com

Senator Cary Smith
6133 Timbercove Drive
Billings, MT 59106-8544
(406) 698-9307
Cary.Smith@mtleg.gov

Senator Gene Vuckovich
1205 W 3rd Street
Anaconda, MT 59711-1801
(406) 563-2313
Gene.Vuckovich@mtleg.gov

House Members

Representative Jim Keane, Chair
2131 Wall Street
Butte, MT 59701-5527
(406) 723-8378

Representative Willis Curdy
11280 Kona Ranch Road
Missoula, MT 59804-9790
(406) 546-0523
Willis.Curdy@mtleg.gov

Representative Steve Gunderson
310 Conifer Road
Libby, MT 59923-2965
(406) 334-4370
Steve.Gunderson@mtleg.gov

Representative Brad Hamlett
P.O. Box 49
Cascade, MT 59421-0049
(406) 799-5885
Bradley.Hamlett@mtleg.gov

Representative Theresa Manzella
640 Gold Creek Loop
Hamilton, MT 59840-9742
(406) 546-9462
Theresa.Manzella@mtleg.gov

Representative Kerry White
4000 Blackwood Road
Bozeman, MT 59718-7621
(406) 587-3683
winwithwhite@gmail.com

Public Members

Mr. Scott Aspenlieder
7100 Commercial Ave., Suite 4
Billings, MT 59101
(406) 461-8392
scott@performance-ec.com

Mr. John C. Brenden
P.O. Box 970
Scobey, MT 59263-0970
(406) 783-5394
senatorbrenden@gmail.com

Mr. Rex Rogers
P.O. Box 1338
Boulder, MT 59632

Mr. Matt Vincent
P.O. Box 830
Butte, MT 59703
(406) 565-0234
Mattvincent.butte@gmail.com

Governor's Representative

Mr. Patrick Holmes
Governor's Office
P.O. Box 200801
Helena, MT 59620-0801
(406) 444-3111
Patrick.Holmes@mt.gov

Legislative Environmental Policy Office Staff

Joe Kolman
Legislative Policy Analyst
jkolman@mt.gov
(406) 444-3747

Hope Stockwell
Resource Policy Analyst
hstockwell@mt.gov
(406) 444-9280

Jason Mohr
Resource Policy Analyst
JasonMohr@mt.gov
(406) 444-1640

Trevor Graff
Resource Policy Analyst
Trevor.Graff@mt.gov
(406) 444-4975

Dawn Field
Research and Publications
dfield@mt.gov
(406) 444-3742

Joe Carroll
Legal Staff
Joe.Carroll@mt.gov
(406) 444-3804

Nadine Spencer
Legislative Secretary
Nspencer@mt.gov
(406) 444-4838

LEGISLATIVE SERVICES DIVISION

P.O. Box 201704
Helena, MT 59620-1704
Phone: (406) 444-3742
Fax: (406) 444-3971
Website: http://leg.mt.gov/eqc

Environmental Quality Council
Legislative Environmental Policy Office

This report is a summary of the work of the Environmental Quality Council (EQC) specific to the council's 2019-2020 work pertaining to the bonding and decommissioning of energy generation facilities in Montana, as outlined in the EQC's 2019-2020 work plan and House Joint Resolution No. 38 (2019). Members received additional information and public testimony on the subject, and this report is an effort to highlight key information and the processes followed by the EQC in reaching its conclusions. To review additional information, including audio minutes and exhibits, visit the EQC website: www.leg.mt.gov/eqc.

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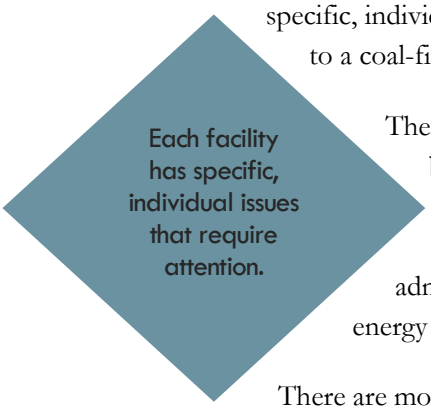
INTRODUCTION

Constructing an energy generation facility is complex and contentious. Decommissioning those facilities raises the same complexities and at times controversies. As hundreds of U.S. power plants move through the process of closure, remediation, and potential reuse, there is increased deliberation about the requirements -- remediation and bonding -- attached to the final disposition of power generation facilities. Each facility has specific, individual issues that require attention. And every facility, ranging from a wind farm to a coal-fired power plant, comes with unique variables and costs.



The 2019 Montana Legislature passed House Joint Resolution No. 38, a study of bonding, decommissioning, and remediation for energy generation facilities. The Legislative Council assigned the study to the Environmental Quality Council (EQC), and the council focused on existing Montana statutes and administrative rules related to bonding, decommissioning, and reclamation for energy generation facilities in Montana.

There are more than 50 major generating facilities in Montana. Montana generation is powered primarily by coal and hydropower. The largest includes the four privately owned coal-fired generating units at Colstrip. Most of the small amount of petroleum used for electric generation is petroleum coke from the refineries in Billings. A small amount of natural gas and increasing amounts of wind and solar round out the generation picture. The fuel used to generate electricity at a power plant sets the stage for the level of permitting required, and that permitting most often provides the regulatory authority for future remediation.

Prior to 2001, power generation facilities in Montana, specifically Colstrip, also were subject to the Major Facility Siting Act. The main provisions of the act were certification of an energy facility by the state prior to construction, fact finding, applicant-paid funding, and public involvement. To issue the certificate, the state determined that the project was environmentally compatible and that a public need for the facility existed.

When enacted in 1973, the legislation stated:

> "The legislature finds that the construction of additional power and energy conversion facilities may be necessary to meet the increasing need for electricity and other energy, and that such facilities have an effect on the environment, an impact on population concentration, and an effect on the welfare of the citizens of this state. Therefore, it is necessary to ensure that the location, construction and operation of power and energy conversion facilities will produce minimal adverse effects on the environment and upon the citizens of this state by providing that no power or energy conversion facility shall hereafter be constructed or

operated within this state without a certificate of environmental compatibility and public need acquired pursuant to this act."[1]

The Legislature amended the Major Facility Siting Act multiple times after its enactment. An overview of those amendments is documented in a program evaluation of the act prepared for the Council in 2015.[2]

In 2001, the Montana Legislature removed power generators or energy conversion facilities from the siting act, leaving certain transmission lines, pipelines, and geothermal and hydroelectric facilities subject to the provisions of the law.[3]

With the changes made to the act over time, energy generation facilities, overall, are no longer subject to the certification. However, facilities remain subject to a variety of permitting requirements, depending on the type and size of facility. This report provides a short overview of those various regulations.

Montana Coal-Fired Generation

Cleaning up after a coal plant closes requires millions of dollars and thousands of hours to plan for remediation and to clean up contaminants and support the potential new use of a property.

With the closure of Units 1 and 2 at the Colstrip Generating Station in early 2020, the owners of the generating units along with Montana's Department of Environmental Quality (DEQ) are navigating the regulations that guide the plant's closure and the decommissioning, reclamation, and potential redevelopment of the plant site. In January, the EQC received detailed information about coal and Colstrip, including a timeline and an overview of the economic impacts of closing Units 1 and 2.

At a coal-fired power plant, remediation generally focuses on addressing coal combustion residuals, referred to as coal ash. Colstrip burns coal in the boiler where steam is generated from water contained in boiler tubes. The steam rotates turbines that generate electricity. Exhaust and flue gases generated from burning coal are directed to scrubbers. Flue gas scrubbers, the plant's main pollution control equipment, captures SO_2, particulates, and other potential pollutants generated. Burning the coal leaves two residuals: bottom ash and fly ash. Fly ash, which is less dense than bottom ash, is exhausted with flue gases through the scrubbers. Scrubbers remove the particulates creating scrubber slurry. The bottom and fly ash is placed in ponds that surround the facility, as is the case in Colstrip where nine coal ash ponds are used. The contaminants of concern in the ponds are boron, sulfate, molybdenum, manganese, lithium, selenium, and cobalt.

A coal-fired power plant in Montana operates in accordance with the Montana Water Quality Act, the Montana Air Quality Act, and federal Coal Combustion Residuals (CCR) rules under the federal Resource Conservation and Recovery Act. These legal requirements also guide remediation. The 2017 Legislature

[1] House Bill 127, Laws of 1973.
[2] https://leg.mt.gov/content/Committees/Interim/2015-2016/EQC/Meetings/July-2016/programeval-environmentalmgmt.pdf
[3] Senate Bill 319, Laws of 2001.

passed and approved a Coal-Fired Generating Unit Remediation Act. The act provides guidance for the decommissioning process at Colstrip and reinforces remediation requirements DEQ has in place.

In 1991 Montana exempted coal ash from the Solid Waste Management Act. As discussed previously, in 2001 Montana exempted most power plants from the Major Facility Siting Act, which included removal of other coal ash requirements. However, because Colstrip Units 3 and 4 were authorized through the certificate process, the DEQ finds that Units 1 and 2 are also grandfathered in under aspects of the certification. Portions of remediation and the DEQ's authority at Colstrip then also fall under the Major Facility Siting Act.

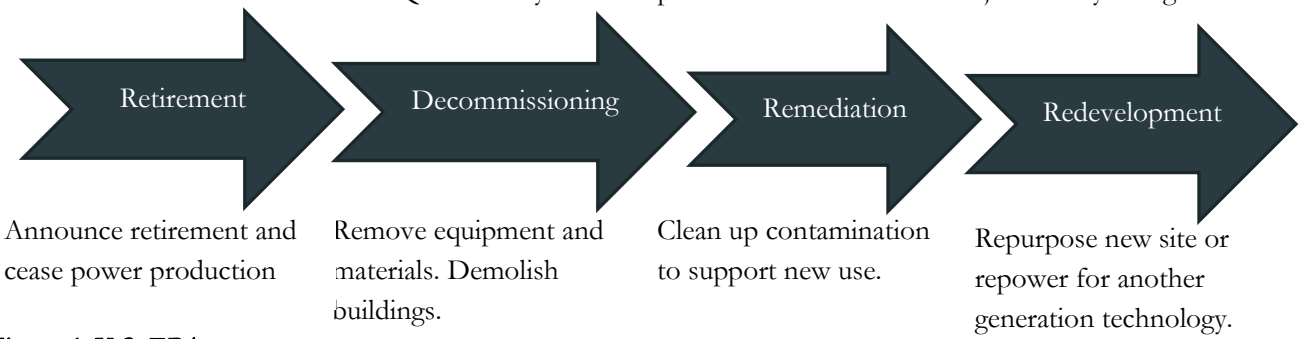


Figure 1: U.S. EPA

In January 2020, Units 1 and 2 closed, and in accordance with Montana's Coal-Fired Generating Unit Remediation Act, Talen and Puget Sound Energy (PSE), the owners of Units 1 and 2, submitted a remediation plan. DEQ approved the plan in September 2020. The plan is now open for public comment, and a public meeting is set for October. The DEQ Colstrip website includes additional details.

Coal-Fired Decommissioning

Montana's Coal-Fired Generating Unit Remediation Act is imposed on coal-fired generation facilities that are 200 MW or larger, which includes Colstrip. Remediation at the Colstrip ponds is already occurring in some areas, under another process outlined later in this report. As Colstrip owners decommission or dismantle and address the cleanup of the plant site itself, the DEQ will use its authority under the act to ensure cleanup of, for example, asbestos that could be in buildings and underground petroleum storage tanks.

Decommissioning costs for a typical 500-megawatt coal-fired power plant range from $5 million to $15 million net of scrap, according to an industry publication.[4] The schedule is typically 18 to 30 months. Decommissioning costs are affected by:

- The quantity of asbestos and regulated materials
- The presence or absence of buildings
- Labor markets
- Demolition means and methods
- Proximity to scrap markets[5]

[4] Power, "Coal Power Plant Post-Retirement Options," Ed Malley, September 2016.
[5] Ibid.

Montana's law requires the owner of a coal-fired plant to submit a remediation plan to the DEQ no later than three months after the facility closes. Talen and Puget Sound Energy met that requirement. The plan submitted by Talen, on behalf of itself and Puget, includes a general overview of the site, current and reasonably anticipated future use of the property, remediation information, a commitment to comply with workforce requirements and cleanup levels, information on asbestos on-site, and information on all other hazardous materials on-site.

> A 2017 study found the mean cost of retiring a coal-fired power plant per megawatt at $117,000--with a range of $21,000 to $466,000 per megawatt.

Based on local land and resource use requirements, the historical and current use of the area, patterns of development in the area, and the ongoing operation of Units 3 and 4, the reasonably anticipated future use of the site is industrial use and pasture-land use. The Southeastern Montana Development Corporation also has identified the area north of the Units 1 and 2 plant sites to be a potential industrial development area. Because of the significant electrical and other infrastructure that exists on and adjacent to the Units 1 and 2 plant sites, it is anticipated that some or all the affected property and infrastructure may be used for renewable energy production, energy storage, or both, according to the remediation plan.

In the plan, Talen and Puget also commit to meet the remediation requirements to hire skilled and trained contractors and subcontractors and pay the standard prevailing rate of wages as defined in 18-2-401, MCA, for remediation.[6]

The owners also commit to meet existing legal obligations, including the 2012 Administrative Order on Consent (AOC) regarding impacts related to wastewater; the Federal Coal Combustion Residuals Rule; the National Emissions Standards for Hazardous Air Pollutants Act; the Toxic Substances Control Act, as incorporated into DEQ rules; and Montana's Solid Waste Management, Hazardous Waste, Clean Air, and Water Quality Acts.

The plan, in general, includes:

- a list of reports, studies, or other evaluations related to remediation and specific remediation measures already completed or under way pursuant to any applicable legal obligation; and
- how the remediation measures will clean up the property consistent with, but not more stringent than, applicable legal obligations.

While the DEQ has the authority to approve and enforce a plan, the plan does not include financial assurance from the operator or owner. However, to the extent costs are not recovered or recoverable under other "applicable legal obligations", the DEQ may recover its actual costs for its review of a plan and for its monitoring, inspection, and enforcement activities related to the approved plan.

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[6] https://leg.mt.gov/content/Committees/Interim/2019-2020/EQC/Meetings/may-2020/hj-38-colstrip-update-may2020.pdf

A 2017 study found the mean cost of retiring a coal-fired power plant per megawatt at $117,000--with a range of $21,000 to $466,000 per megawatt.[7] "Full decommissioning often involves extensive environmental remediation, the costs of which are uncertain until work has begun," according to the study.[8]

The DEQ estimates the total cost of the remedies, the ash ponds, and seepage at Colstrip (1-4) could be between $400 million to $700 million. However, overall cleanup costs at Colstrip have not been determined.

Coal-Fired Remediation

Remediation at Colstrip will incorporate aspects determined through the decommissioning process outlined above. However, the AOC focus on the coal ash ponds largely guides remediation at Colstrip. The AOC does not cover the plant itself; it covers the ash ponds and related contamination from seepage. In the early 1990s, monitoring wells indicated the ash ponds around Colstrip were leaking into the groundwater. In 2012, the DEQ and the plant operator Talen Energy (formerly PPL Montana) signed an AOC to address the seepage. The AOC is an enforcement action taken by the DEQ exercising the authority it is granted under the Montana Water Quality Act and the Major Facility Siting Act. Talen is responsible for the remediation of the coal ash ponds, and the AOC is binding upon Talen's successors.

Colstrip Owners	Financial Assurance Provided as of 12/15/2019	Financial Assurance Provided as of 7/01/2020
Talen	**$51.3 million**	**$68.3 million**
Puget Sound Energy	**$51.6 million**	**$83.6 million**
NorthWestern Energy	**$13 million**	**$22.8 million**
Portland General Electric	**$17.4 million**	**$30.4 million**
Avista	**$13 million**	**$22.8 million**
PacifiCorp	**$8.7 million**	**$15.2 million**
Total	**$171.4 million**	**$243.1 million**

FIGURE 2: MONTANA DEQ

Colstrip consists of four separate coal-fired generating units, collectively owned by PSE, Talen Energy, Portland General Electric (PGE), Avista Corporation, PacifiCorp, and NorthWestern Energy. PSE has the largest ownership interest in Colstrip, owning 50 percent of Units 1 and 2 and 25 percent of Units 3 and 4. Colstrip also represents about 30 percent of Montana's total electric generation capacity. Colstrip's six owners have provided their portion of the financial assurance to date as surety bonds under agreements they have with Talen, as the operator.

[7] Resources for the Future, "Decommissioning US Power Plants", Daniel Raimi, October 2017.
[8] Ibid.

The AOC addresses the groundwater seepage from wastewater facilities. Talen submits plans to ensure the operation and maintenance of remediation and closure actions at Colstrip. The DEQ reviews and approves those plans. Talen also provides financial assurance in an amount set by the DEQ to cover the costs of remediation and closure. Under the AOC, Talen can provide insurance, third-party guarantee, performance or other surety bond, or letters of credit. DEQ reviews the financial assurance annually, and the DEQ can increase or decrease the amount required based on projected costs for the operation and maintenance of remedial and closure actions. Surety bonds are insurance tools aimed at limiting risk. They ensure that companies and people fulfill responsibilities according to laws, regulations, and contractual expectations. The principal is the utility or plant owner, which purchases the bond to guarantee it will meet its obligations. The obligee--the DEQ--requires the bond to limit risk and protect the people of Montana. The surety is the insurance company that backs the principal and underwrites the bonds. If a principal fails to meet the obligations under the bonds, the state can make a claim, and the claim is valid. The surety provides compensation up to the bond amount.

When reviewing the financial assurances held by DEQ, a discount rate is considered in calculating the present value of expected future costs. A discount rate accounts for the time value of money--the general idea that a dollar today is worth less than a dollar tomorrow because of inflation. However, the assumption is that if a bond is forfeited, the money is invested and earns interest. The initial amount of the financial assurance then appreciates over time at a projected growth rate minus inflation. The federal Environmental Protection Agency, for example, generally uses a 7% real discount rate when comparing alternatives for bonding requirements at federal Superfund sites. The discount rate used by DEQ is 3% based upon a conservative 5% interest rate minus 2% inflation. Under the AOC, financial assurance can only be submitted once the DEQ selects a remedy to ensure an accurate cost estimate.

Coal-Fired Bonding

Remediation under the AOC is split into three areas at Colstrip: the plant site, Units 1 and 2 coal ash ponds, and Units 3 and 4 coal ash ponds. For each of the three areas, there are six steps, broken into two parts. The first three steps of cleanup include: site characterization, cleanup criteria and risk assessment, and remedy evaluation. After DEQ selects a remedy, the next three steps follow: remedial action work plan, implementation of selected remedy, and final remediation action report. Each step under each area is subject to DEQ review and approval. The AOC also requires public participation--public comment periods are required as well as annual public meetings. DEQ also holds quarterly project updates for stakeholders.

Remediation is a lengthy a process and includes multiple steps. Closure plans also may sound like the final regulatory step; however, closure plans for the ash ponds, including long-term maintenance and monitoring plans, were required by August 2017 under the settlement. The DEQ has conditionally approved the closure plans for all three areas. With the closure plan approval, the bond was submitted to the DEQ.

According to DEQ, since the liability exists today, regardless of whether DEQ has chosen a remedy or determined the costs, a current owner retains its liability. DEQ is responsible for acquiring the appropriate amount of financial assurance from the operator (Talen). DEQ is not responsible for dividing up the liability

between the owners. The Colstrip owners determine individual liability and plan for providing the financial assurance.

MONTANA'S DAMS

There are 32 operating hydroelectric facilities in Montana and six of the state's largest generating plants are water-powered. The EQC did not examine dam removal, a process that can range from partial removal of a dam to full removal of a dam and attached facilities. This report provides a snapshot of regulations that guide decommissioning and remediation.

Nonfederal hydroelectric power plants on navigable waters of the United States, those that occupy federal land or use water power from a government dam, or those that, under certain circumstances, affect the interest of interstate or foreign commerce are licensed by the Federal Energy Regulatory Commission (FERC).

As a result, FERC is the lead agency in the licensing of new hydropower facilities and in the relicensing of existing facilities. FERC, acting under federal statutory authority, processes and evaluates the federal applications required for all hydropower dams, diversions, and other hydropower developments, reviews and analyzes environmental impacts of hydropower projects and determines appropriate mitigation and enhancement measures, and sets requirements governing the sale of the hydropower generation at the wholesale level. This includes remediation.

There are five primary subject areas in which Montana regulation of hydroelectric power is considered in addition to the federal requirements established by FERC. These areas are:

- water rights permit;
- 310 permits for altering a perennial stream;
- water quality certification under Section 401 of the federal Clean Water Act;
- fish and wildlife impact evaluation (no permit required); and
- Montana Major Facility Siting Act state filing with FERC for hydrofacilities over 50 megawatts.

Those are the areas where Montana derives its authority in relation to the remediation and future restoration of a hydroelectric facility site. For example, the DEQ provided state recommendations to FERC in 2000 during the FERC relicensing of the nine dams on the Madison and Missouri Rivers.

Dam decommissioning generally requires the involvement of applicable federal, state, and local government agencies and any affected tribal governments. For example, if the dam is licensed by FERC, the FERC license requires federal oversight. Permitting agencies also likely include the U.S. Army Corps of Engineers. Water quality certifications and permits from Montana's DEQ and water quantity permits through the Department of Natural Resources and Conservation also provide regulatory guidance for decommissioning. The presence of endangered species and other fish and game also triggers the involvement of the U.S. Fish and Wildlife Service and Montana's Fish, Wildlife, and Parks. Proposed actions affecting tribal interests, including fishing

rights and cultural resources, involve the affected tribal governments and, potentially, the Bureau of Indian Affairs.[9]

In Montana, the removal of Milltown Dam provides an example of the role of the Environmental Protection Agency, as well as the state. In 1992, the EPA designated the Clark Fork River upstream from the Milltown Dam to the Warm Springs Ponds part of the Superfund Site. As proposed by the EPA and endorsed by the Montana DEQ, the Milltown superfund cleanup included removal of the contaminated sediments from Milltown Reservoir--about 2.6 million cubic yards of mine and smelter wastes carried down the Clark Fork River. And in 2004, a final remediation plan released by the EPA required the removal of Milltown Dam. The $120 million project wrapped up in 2009, with mining company Atlantic Richfield Co. found to be the liable party and covering the costs of the rehabilitation.[10]

Natural Gas Power Plants in Montana

In 2015, Montana produced 51.4 billion cubic feet (Bcf) of gas and consumed 75.0 Bcf.[11] Electricity is generated at a handful of natural gas generation facilities in the state.

The 53-megawatt (MW) Basin Creek electric generation plant near Butte began operations in late 2005. The 150 MW capacity Dave Gates Generating Station near Anaconda began operations in 2011. Neither plant functions as a base load resource. The Culbertson Generation Station, a nearly 90-MW facility, began operations in 2010. The Culbertson Generation Station operates sporadically and not as a base load resource.

As discussed previously, a specific permit to build a natural gas plant is not required. Gas wells are permitted through the DNRC's Board of Oil and Gas Conservation. Gas pipelines require permitting under numerous regulations, including the Major Facility Siting Act, depending on size. DEQ also issues air quality permits for natural gas facilities that emit regulated pollutants. The authority for remediation requirements generally grows from those various regulatory functions.

In 2015, a 46-megawatt natural gas-fired power plant east of Great Falls closed. The Highwood Generating Station was sold off piece by piece and reassembled as a whole power plant elsewhere. The decommissioning of that facility largely focused on permits through the Department of Transportation to move the large equipment off the property. Additional regulations provided guidance for the removal of transmission lines and associated facilities at the site.

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[9] "Guidelines for Dam Decommissioning Projects", United States Society of Dams, July 2015.
[10] https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0800445
[11] "Understanding Energy in Montana", DEQ report updated for Energy and Telecommunications Interim Committee 2017-2018.

Montana Wind and Solar Generation

Montana law requires that owners of wind and solar generation facilities obtain a surety bond to secure the decommissioning of a facility. The bonding requirements also provide for remediation planning. However, there are exemptions under the law, and bond requirements are delayed at least 15 years. [12]

Decommissioning and remediation for wind and solar projects in Montana is guided by requirements established in Title 75, chapter 26, part 3, MCA. In 2017, the Legislature adopted requirements for owners of wind facilities greater than or equal to 25 megawatts to provide bonding and decommissioning plans. In 2019, the Legislature amended the act and added solar facilities, greater than or equal to 2 megawatts to the requirements. The EQC received a detailed overview of these regulations in May 2020.

To date, 10 wind facility owners submitted a decommissioning plan to the DEQ. Six decommissioning plans for solar also are submitted.

In Montana, wind and solar facility owners, like other energy generators, aren't required to obtain a specific certification from the state to construct a large energy generation facility. Other permits, however, are required. A wind farm, for example, may need a storm water discharge permit. In Montana local governments also can use their traditional land use planning and zoning authority to regulate the development of wind and solar facilities within their jurisdictions. Setback requirements, for example, are common. The permitting or regulation occurs prior to the facility's construction.

Montana law also requires the owners of wind and solar facilities to submit a plan for decommissioning the facility to the DEQ, including the scope of decommissioning work to be completed and cost estimates for completion. The DEQ then will determine the amount of bond an owner should submit to satisfy the requirements.

Enercon Services, an engineering and environmental firm focused on energy generation, estimates that between 2017 and 2030, about 29,000 wind turbines will reach the end of their useful life. The American Wind Energy Association (AWEA) doesn't peg the numbers nearly as high. In 2017 only about 43 megawatts of installed wind capacity were fully decommissioned, according to AWEA.

[12] Title 75, chapter 26, part 3, MCA. (House Bill No. 216, 2017, and Senate Bill No. 93, 2019)

NextEra, the largest renewable developer in the country, also notes that modern wind farms are designed to operate for at least 25 to 30 years, and aging wind turbines are often replaced with newer technology to extend their useful lives.

The estimates by Enercon set decommissioning costs per turbine at about $25,000. However, costs can vary depending on the type of turbines, location, and the ability to repurpose or repower generators. Assumptions for decommissioning costs for wind are also largely based on the assumption that salvage prices will continue to mostly cover costs. Steel, copper, and other metals that make up the generators have salvage value and can be recycled. "It's in a company's best interest to not let valuable machines sit abandoned—they can maximize value by reusing materials," according to the AWEA.[13]

Wind and Solar Decommissioning

Montana's wind and solar decommissioning requirements apply only after a facility begins producing energy. The bonding requirements come into play when facilities begin to reach the end of their useful life. To date, 10 wind facility owners notified the DEQ and submitted a decommissioning plan. The DEQ won't collect its first bond until 2022, when the 135-megawatt Judith Gap Wind Energy Center submits a bond. It began commercial operation in 2005.

Bonding and decommissioning apply to any person who owns a wind or solar generation facility used for the generation of electricity. A wind generation facility is any combination of physically connected wind turbines, associated prime movers, and other associated property with a nameplate capacity of 25 megawatts or more. A solar facility is a combination of solar panels or plates, including a canopy or array, that captures and converts solar radiation to produce electricity and includes flat plate, focusing solar collectors, or photovoltaic solar cells that have a nameplate capacity greater than or equal to 2 megawatts.

If a facility owner reaches an alternative restoration agreement with the property owner where the facility is located, then a copy of that agreement suffices as a decommissioning plan. No wind owners to date submitted alternative restoration agreements, but four wind facilities indicated that they will submit landowner agreements for alternative plans for restoration. Adapture Renewables (formerly Enerparc, LLC) submitted six decommissioning plans for each of its facilities that are 2 MW and greater operating in

[13] https://www.awea.org/policy-and-issues/project-development/state-and-local-permitting/decommissioning

Montana. Their bond, in general, will be due 15 years after their commercial operation date. The final decommissioning plan for a facility is due 12 months prior to the bond due date.

Based on the law, within 12 months of any new wind or solar facility commencing commercial operation, the owner submits a decommissioning plan to the DEQ. The DEQ determines the bond required based on a plan submitted the year before closure. The bond is forfeited if the owner fails to properly decommission the facility. Facilities built before the act went to effect also have until July 2020 to submit decommissioning plans. If the facility is repurposed, bond isn't required and any existing bond is released for another 5 years.

Wind and Solar Remediation

Decommissioning plans outline steps to remove the generators, dispose of or recycle their components, and restore the land to its original state. Plans also generally include an estimated cost schedule and timeline. The plans received by DEQ meet the general requirements; however, their proposals and costs vary.

For example, NaturEner's plans for the 106-megawatt Glacier Wind Project I cover 16 miles of access roads and 19 miles of underground electrical collectors. The project is located entirely on private property. In the plan, NaturEner commits to full decommissioning and reclamation but also reserves the right to work with the private landowners as the facility reaches the end of its expected 25-year lifespan or is repurposed.

Decommissioning covers full removal of the wind turbine generators; removal of pad-mount transformers; foundation removal; removal of the electrical collection system; dismantling and removal of the overhead interconnection tie-line; some access road removal; removal of substations and maintenance facilities; dismantling, removal, and restoration of ancillary facilities; and debris removal. Based on landowner agreements or easement agreements with applicable oil and gas companies, about half of the access roads are expected to stay in place. Decommissioning could be completed in about 20 weeks.

It is anticipated that the total decommissioning costs of the project will be entirely offset by the salvage value of the recovered materials. The decommissioning estimates are between $11 million and $12 million.

MDU's plan for the 30-megawatt Diamond Willow also demonstrates a commitment to full decommissioning and remediation. The facility is located on a mix of private and county property. The plan covers turbine removal, removal of collection systems, substation removal, removal of interconnection lines, operation and maintenance building removal, foundation removal, and road removal. Costs are estimated at about $4.7 million, with about $1.1 million recoverable by salvage sales. Decommissioning is expected to take about 7 weeks.

Wind and Solar Bonding

The timing of the bond requirement in Montana's law is delayed. For example, if a facility started generating electricity before 2007, the operator doesn't submit a bond until the conclusion of the 16th year of operation. For facilities that started producing power after 2007, the bond is due after 15 years of operation.

The terms of the bond dictate that, if the owner of the wind or solar facility fails to submit a decommissioning bond acceptable to the department within the given time frame, the department may assess

an administrative penalty of not more than $1,500 and an additional administrative penalty of not more than $1,500 for each day the failure to submit the decommissioning bond continues.

In determining the bond amount required, the department considers the character and nature of the site where the facility is located and the current market salvage value of the facility. The decommissioning costs and bond estimates outlined in the decommissioning plans received to date vary greatly--from an estimated $0 to about $47 million. The large difference in decommissioning cost estimates is attributable to a variation in the estimates of salvage value for facility components, according to DEQ. Another factor is the extent that landowners agree to keep roads, buildings, and other infrastructure associated with the facility in place after decommissioning.

Because of the variation, the DEQ plans to develop and provide to facility owners a standardized methodology for estimating decommissioning costs and calculating bonds associated with wind and solar facilities.

Acceptable bonding instruments are surety bonds or collateral bonds, letters of credit, and certificates of deposit. If the owner proves responsible under the terms and conditions of a lease agreement to provide private bonding, the DEQ signs off on that requirement, as opposed to holding the bond.

The law also allows for exemptions from surety bond requirements. Owners are exempt if the owner posts a bond with a federal agency, with the DNRC for the lease of state land, or with a tribal, county, or local government. The exemption also applies to private landowners owning a 10% or greater share of the facility on the land where the facility is located. This exemption is interpreted to only cover the portion of property covered in the alternative agreement. For example, if 50 acres of a 150-acre wind farm are on state land, the bond with the DNRC for the state land only covers the 50 acres. The DEQ will request a bond to cover the additional 100 acres.

CONCLUSION

As power plants age and energy demands evolve, the landscape of energy generation in Montana continues to change. In Montana, regulations are in place in many instances and emerging in others. Each energy generation facility has unique needs and is subject to unique regulatory guidance. Decommissioning power plants has economic and environmental implications, and numerous federal, state, and local regulations and entities provide guidance for those processes.