2019 ENVIRONMENTAL STEWARDSHIP: OUR COMMITMENT IN ACTION

OUR VISION

Enriching lives through a safe, sustainable energy future.

OUR MISSION

Working together to deliver safe, reliable and innovative energy solutions that create value for customers, communities, employees and investors.

OUR VALUES

We live our values through a strong and binding commitment to safety in our work practices, excellence in service to our customers, treating everyone with respect, creating value for our stakeholders, conducting our business with the utmost integrity, community involvement, and environmental responsibility, each and every day.

OUR ENVIRONMENTAL POLICY AND PRINCIPLES

NorthWestern Energy's policy is to provide cost-effective, reliable and stably priced energy while being good stewards of the natural resources and complying with environmental regulations.

We apply the following environmental principles in our day-to-day business:

1. Our business practices reflect a respect for, and a commitment to, sustainability and the long-term quality of the environment.
2. One of our priorities is being good stewards of natural and cultural resources at our hydroelectric projects.
3. We comply with the spirit as well as the letter of environmental laws and regulations.
4. Environmental issues and impacts are an integral part of our planning, operating and maintenance decisions.
5. We promote our customers' efforts to be energy efficient.
6. We support providing energy through non-carbon emitting and renewable resources when consistent with our statutory requirement to provide cost-effective energy.
7. We strive to minimize the generation of wastes and promote the reuse and/or recycling of materials.
8. We seek to improve our environmental compliance and stewardship continuously.
9. We embrace a team culture where positive environmental stewardship and compliance are encouraged, mentored and rewarded.
10. Our contractors and consultants must comply with this policy when working for or representing NorthWestern Energy.

Cover photo: Grant Grisak, NorthWestern Energy fish biologist, holds up a northern pike captured during electrofishing on the Missouri River. NorthWestern utilizes electrofishing to monitor fish populations for effects from its hydro facilities.

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ABOUT THIS REPORT

The Environmental Stewardship Report report profiles NorthWestern Energy's stewardship efforts and commitment to the quality of the environment. If you have comments or questions about the content published here, please contact Mary Gail Sullivan at 406-497-3382 or marygail.sullivan@northwestern.com.

ACKNOWLEDGMENTS

Many NorthWestern Energy employees throughout the company contributed time to the activities highlighted here, along with the work to design and produce a final report. Thanks to all our employees for their professional contributions, especially those in Environmental Permitting and Compliance and Creative Services.

NorthWestern Energy's environmental team is made up of biologists, engineers and environmental compliance specialists.

MESSAGE FROM MARY GAIL SULLIVAN

This Environmental Stewardship Report is intended to let customers, policy makers and partners see how NorthWestern Energy carefully considers and responds to the environmental impacts of providing energy.

At NorthWestern, we understand that almost everything we do to produce and deliver energy to our customers impacts the environment. We know that having the privilege to be your energy provider comes with both a profound obligation and wonderful opportunity to be good stewards of the environment.

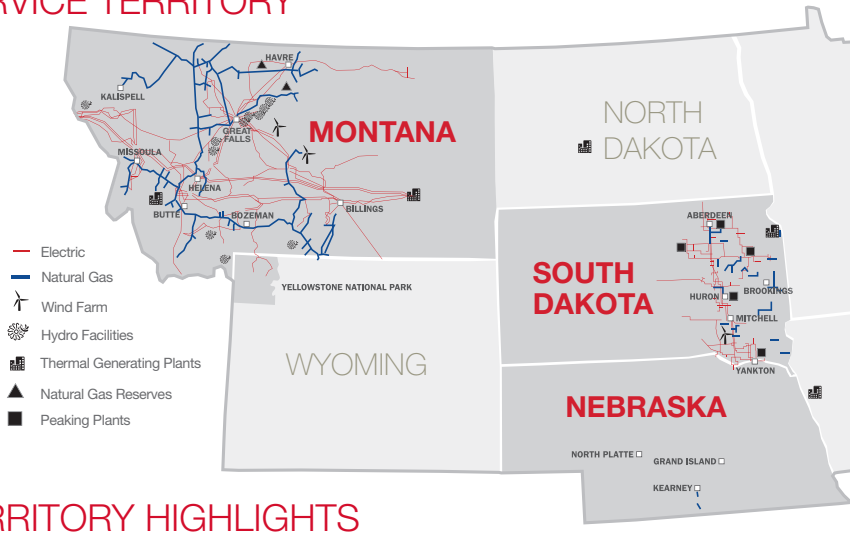
The Environmental Team responsible for keeping this focus is actively involved throughout our system, from the planning of new transmission lines to the licensing requirements of our hydroelectric plants to evaluating the impacts of new energy resources being added to our supply portfolio. Every business decision at NorthWestern must consider the environmental consequences of that decision. The Environmental Team charged with identifying, analyzing and mitigating those impacts is comprised of 10 highly qualified environmental professionals with over 250 years of combined experience and multiple advanced degrees, professional certifications and licenses.

Working with this team has been one of the most rewarding aspects of my career. Each member brings a unique strength, outlook and expertise. We have something in common, though, and that is just like so many of you, we all love the outdoors. We look forward to the caddis fly hatch on the Madison River in the spring, to summer hikes in the high country and fall pheasant and big game hunting season. We teach our kids and grandkids the difference between osprey and eagle, and the fragility of both. It is that lens, combined with solid education and long experience, that propels us to seek the balance between providing energy and protecting the environment.

Our job is to help make sure that being careful managers and complying with environmental regulations are an integral part of NorthWestern's everyday business. This report describes some of the many projects we work on collaboratively with resource agencies and other stakeholders to put our environmental stewardship commitment and compliance in action. I hope you enjoy it.

Mary Gail Sullivan,
Director of Environmental & Lands Permitting & Compliance

SERVICE TERRITORY



TERRITORY HIGHLIGHTS

MT Electric

374,000 customers in 208 communities

6,872 miles of transmission lines

17,895 miles of distribution lines

871 MW nameplate owned power generation

MT Natural Gas

199,200 customers in 118 communities

4,781 miles of distribution pipelines

2,100 miles of intrastate transmission pipelines

18 Bcf gas storage

52 Bcf owned proven natural gas reserves

SD Electric

63,800 customers in 110 communities

3,572 miles of transmission & distribution lines

440 MW nameplate owned power generation

SD Natural Gas

46,900 customers in 59 communities

1,642 miles of pipelines

55 miles of intrastate transmission pipelines

NE Natural Gas

42,500 customers in 3 communities

795 miles of pipelines

The Two Dot Wind Farm in central Montana is a 9.7-megawatt wind project.

OUR CARBON REDUCTION VISION FOR MONTANA

NorthWestern Energy has made a commitment to reduce the carbon intensity of our electric energy portfolio for Montana by 90% by 2045.

Today, NorthWestern Energy serves Montana with an electric portfolio that is already 60% carbon free. That's more than two times better than the total U.S. electric power industry. Over the last decade, we have reduced the carbon intensity of our energy generation in Montana by more than 50%.

Our vision for the future builds on the progress we have already made. The foundation of our energy generation is our hydro system, which is 100% carbon free and is available 24 hours a day, 7 days a week. Wind generation is a close second and continues to grow. While utility-scale solar energy is not a significant portion of our energy mix today, we expect it to continue to grow along with energy storage. We are committed to working with our customers and communities to help them achieve their sustainability goals and add new technology on our system.

Reaching our carbon reduction goal will require a mix of energy efficiency projects, renewable energy development, energy storage, and other new, inventive solutions to reduce our carbon output.

Since 2016, we have launched several solar pilot projects across the state. We are also investing in and evaluating energy storage, including a rural reliability project near Deer Lodge and a solar-plus-super capacitor project in Yellowstone National Park. We are developing a program to help communities and school districts deploy electric buses.

We support training and continuing education for renewable energy installers. Our work in small-scale renewables has helped foster the growth of private-generation customers on our Montana system from 700 in 2010 to almost 3,000 today.

We also help customers use energy more efficiently through our energy audit program and energy rebate programs. In total, NorthWestern Energy and its customers have invested more than $121 million in energy efficiency, demand side management and small-scale renewable energy development

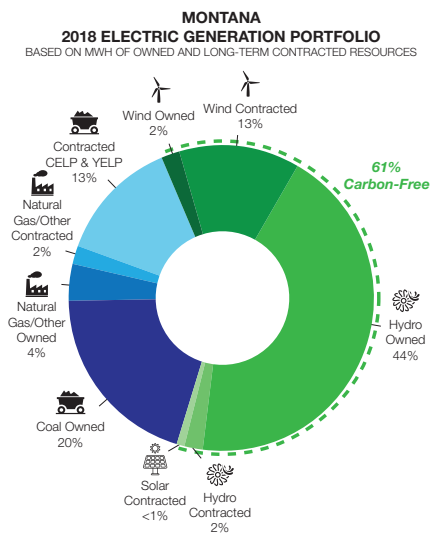
since 2006. Energy savings have totaled almost 685,041 MWhs of energy in the last 13 years. That is enough to power over 76,000 homes for a year!

We have invested more than $1 billion in clean energy projects in the last five years, including hydro, wind and solar. This includes $9.5 million for upgrades at Ryan and Hauser hydro facilities, adding an additional 5 megawatts (MW) of hydro energy. Planned upgrades at Madison, Hauser and Black Eagle hydro facilities will add 8.7 MW more hydro energy to our Montana portfolio.

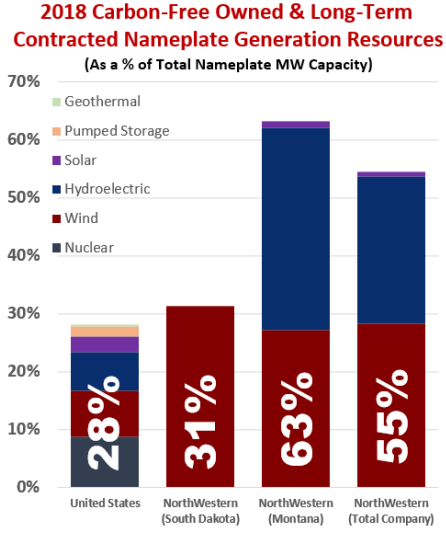
In 2020, we will begin an upgrade to our gas and electric metering system in Montana. The upgraded system will help us better assist our customers with their individual energy needs and more quickly detect and respond to power outages. The system will also provide data that will assist us in making the power grid more efficient and reliable.

We believe it is reasonable to have an electric energy portfolio for Montana that reduces carbon by 90% by 2045, compared to 2010. We are committed to working with our customers, communities and the State of Montana to develop an energy future that is affordable, reliable, environmentally responsible and capable of meeting the needs of all customers.

As our Environmental Stewardship Report reflects, we have a long history of success when we work collaboratively to put our environmental commitment and compliance in action. Together we can work for a responsible evolution of Montana's energy future. Join us in the conversation at MorePowerToYou.org.



Contracted energy from Colstrip Energy Limited Partners (CELP), Yellowstone Energy Limited Partners (YELP) as well as a majority of the contracted wind, hydro and solar are federally mandated Qualifying Facilities, as defined under the Public Utility Regulatory Policies Act of 1978 (PURPA).



NorthWestern Energy worked with Missoula County Public Schools to install solar pilot projects at four Missoula high schools, including this array at Sentinel High School.

SOLAR GENERATION

Missoula solar pilot projects

NorthWestern Energy partnered with Missoula County Public Schools (MCPS) and the city of Missoula, Mont. to install solar panels at Hellgate, Sentinel, Big Sky and Willard high schools. The $1 million pilot project, which was entirely funded by NorthWestern Energy, is part of the company's large-scale studies around creating renewable energy solutions that can meet the demands of the national energy grid.

MCPS students and teachers will play a key part in these studies, providing for hands-on learning experiences that will prepare students for jobs and help ensure a sustainable future. Students will be able to track real-time data showing solar generation and the schools' energy consumption.

Each solar installation uses different themes, designs and concepts:

Willard Alternative Learning High School Program:

- Solar array is integrated into an existing fence.
- Total Array = 15.6 kW
- Annual Production = 16,400 kWh per year
- Enphase microinverters are placed under each panel, allowing for maximized power production

Big Sky High School:

- Solar array is designed as a cover over a sidewalk
- Total array = 25.6 kW
- Annual production = 29,900 kWh per year
- High efficiency modules
- A battery storage project will be installed in the future

Hellgate High School:

- Solar array in integrated into an urban setting
- Total Array = 31.2 kW
- Annual Production = 35,000 kWh per year
- String inverters with optimizers to achieve maximum solar power production

Sentinel High School:

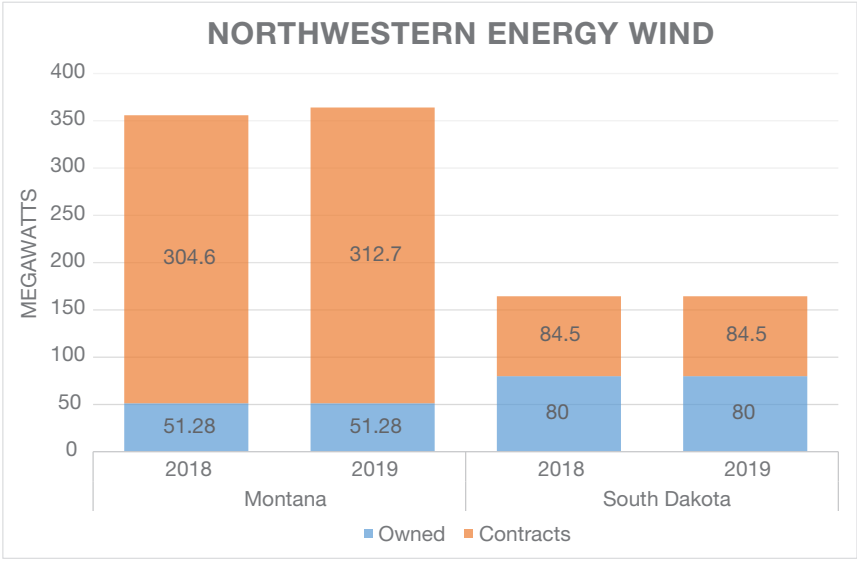
- Three separate solar arrays face slightly different directions
- Total array = 13.6 kW
- Annual production = 17,100 kWh per year
- String inverters with optimizers to achieve maximum solar power production

To learn more about our solar projects, visit nwesolar.com

WIND GENERATION

Wind generation continues to become a larger part of NorthWestern's electric supply portfolio. At year-end 2018, NorthWestern Energy had 355.88 MW of total wind in Montana. Of that total, we own 51.28 MW and acquired another 80 MW through a contract with a wind farm, and the remaining was from long-term contracts. We own Spion Kop, a 30 MW-wind turbine facility northeast of Great Falls, and Two Dot Wind in central Montana. In 2019, 363.98 MW of our energy supply was wind in Montana, an increase from long-term contracts. We have requests to add 6,334.2 MW of wind to our system in Montana through 22 new wind projects. Eleven of these projects are still in study, and 11 of them have signed interconnection agreements.

In 2018 and 2019, NorthWestern Energy had 164.5 MW of wind in South Dakota with 80 MW of that being owned by NorthWestern.



HYDROELECTRIC GENERATION

The backbone of NorthWestern's generation is its fleet of 10 hydroelectric generation stations and one storage reservoir. The dams operate under three separate licenses issued by the Federal Energy Regulatory Commission. Thompson Falls, licensed as Project #1869, is located on the Clark Fork River in western Montana. The Mystic Project, FERC Project #2301, is on West Rosebud Creek in the Beartooth Mountains. FERC Project #2188 includes nine developments on the Missouri and Madison rivers. Together, this system provides NorthWestern customers 448 MWs of carbon-free energy. It also influences 580 miles of river and reservoir resources, which gives us a tremendous opportunity to implement our environmental stewardship values.

ENERGY EFFICIENCY PROGRAMS

Demand side management and energy efficiency

NorthWestern Energy has 40 years of experience working with customers to promote the wise and efficient use of electricity and natural gas. Energy efficiency programs were first offered to our customers in the late 1970s and have continued in some form ever since.

We offer programs and energy efficiency information under the NorthWestern Energy sub-brand of Efficiency Plus, or E+. Helpful energy savings tips, videos and other resources are available to assist our customers with their energy efficiency needs.

From July 1, 2018 – June 30, 2019, NorthWestern reported energy savings* totaling 83,926,295 kWh and 780,724 therms for a total cost of $15.2M.

In addition, Montana customers fund energy efficiency as a least-cost resource in supply rates and through the Universal System Benefits Charge (USBC). Current programs include rebates for our commercial electric customers, along with incentives for electric and natural gas commercial and industrial facilities, and free energy audits for qualifying homes and small businesses. Through a contract with the Montana Department of Public Health and Human Services, homes of income-qualified customers receive free weatherization services. A few small-scale renewable projects at non-profit and government/public buildings also receive incentives funded through the USBC.

*We base all savings and expenditures on a July 1, 2018 – June 30, 2019, tracker year. In addition to programs funded through supply rates, savings and expenditures include Montana small-scale renewables, energy audits for homes and businesses, and low-income weatherization funded through the Universal System Benefits (USB) program. We fund additional Montana activities for local conservation, market transformation, research and development, and low-income bill and energy assistance with USB dollars but those expenditures are not included in this total.

LED lights can cut energy use by more than 80 percent. LED lights convert nearly 100 percent of the energy they consume into light. Incandescent lights only convert about 10 percent of energy into light (the rest is released as heat).

Journeyman lineman Spencer P. installs an LED yard light. NorthWestern Energy will replace some 43,000 company-owned streetlights in Montana with LED lights by 2022.

MONTANA'S LED STREET LIGHTING PROJECT

NorthWestern Energy is in the process of replacing existing street lights with new, energy-efficient LED (light-emitting diode) lights. We will replace some 43,000 company-owned streetlights in Montana with LED lights by 2022. Once the Montana project is complete, we'll begin converting streetlights in South Dakota to LED.

LED streetlights use about 50 percent less electricity than traditional high-pressure sodium (HPS) lights, and last two to three times longer.

RECYCLING OLD STREETLIGHTS

NorthWestern Energy is recycling all its old high-pressure sodium street lights as the company replaces them with LED lights.

NorthWestern Energy is working with Four Corners Recycling in Bozeman, Mont. Four Corners recycles all parts of the old lights, including the metal heads, the glass lenses and the bulbs, some of which contain mercury.

The streetlight recycling program was initiated by employees in the Leadership NorthWestern program who pitched the idea. They solicited proposals from vendors and selected Four Corners Recycling. The company's proposal was all-inclusive and includes working with Helena Recycling and Earth First Aid in Billings.

"Up to 15 milligrams of mercury could be contained in just one high-pressure sodium light bulb," said NorthWestern Energy Engineer Dustin Kaste, who was part of the employee team that recommended the recycling project. "Seems relatively minute, but when looking at it on a grander scale, you can see how quickly this hazardous material would add up to become an environmental concern."

The recycling project will cost $120,000, or $2.90 a fixture. Of that, $2 pays for the certified packing and shipping of the mercury-filled bulbs.

NorthWestern Energy biologists sample for macroinvertebrates below Madison Dam on the Madison River near Ennis, Mont.

PROTECTING THE ENVIRONMENT THROUGH STEWARDSHIP AND COMPLIANCE

NorthWestern Energy is committed to protecting and preserving the fisheries and wildlife populations that thrive in and around our hydroelectric projects. The company administers Protection, Mitigation and Enhancement Programs (PM&E) in cooperation with state and federal resource agencies to monitor and offset effects from our hydroelectric projects.

In 2019, NorthWestern Energy provided $1.06 million to support 33 fisheries, wildlife and habitat improvement projects along the 550-mile Madison-Missouri River corridor from Yellowstone National Park to Fort Peck Reservoir. This funding leveraged another $900,000 in matching funds totaling $1.9 million going toward resource stewardship projects.

The program funded a broad range of projects including monitoring of species listed under the Endangered Species Act, including pallid sturgeon, bald eagles, songbirds and grizzly bears. It also funded enhancing trout spawning habitat, stream channel reconstruction, installing fences to protect river banks, wetlands development for waterfowl, native plant restoration, and counting the number of anglers using Hebgen Lake, Hauser Reservoir, Holter Reservoir and the Missouri River.

To date, nearly $60 million has been spent toward fisheries and wildlife projects under the Missouri-Madison PM&E Program.

“This represents a tremendous amount of work alongside dozens of partners culminating in a profound benefit to the fish and wildlife of Montana,” said Andy Welch, manager of Hydro Licensing and Compliance with NorthWestern Energy.

NorthWestern Energy provided funds to remove a dam from Rattlesnake Creek near Missoula, Mont. This will open upstream habitat to bull trout and other fish.

RIVER MANAGEMENT PARTNERSHIPS

Starting in 1901, a dam was constructed in Rattlesnake Creek to help supply water for the city of Missoula, Mont.

Some 80 years later, the city of Missoula switched to groundwater for a water source, and the dam sat defunct ever since. Now plans are in the works to remove that dam, and NorthWestern Energy has provided $70,000 toward the project through the Thompson Falls Fisheries Technical Advisory Committee. NorthWestern Energy provides funds specifically for projects benefiting bull trout to offset impacts from Thompson Falls Dam.

The Rattlesnake Dam removal fits NorthWestern's Protection, Mitigation and Enhancement Program by removing a historic migration barrier, which will allow bull trout and other fish access to quality river habitat in the Clark Fork River watershed.

The 115-year-old dam is deteriorating and poses a safety hazard. Removal of the dam, which acts as a fish migration barrier, will open up miles of habitat for native and sport fish in Rattlesnake Creek headwaters. The dam sits between federal forest land to the north and the Rattlesnake greenbelt to the south. Once restored these properties will also be linked for wildlife to roam freely.

In addition to the dam removal and restoration of the floodplain, the city of Missoula is planning a new trail, including an easement to cross NorthWestern property. NorthWestern owns a substation near the dam. The project aims to balance recreation and conservation to benefit the public, fish and wildlife.

This solar-powered remote water quality monitoring station was installed in 2019 on the Clark Fork River below Thompson Falls Dam.

WATER QUALITY MONITORING

Clean water plays a vital role in helping sustain fish and wildlife populations, as well as provide safe drinking water and recreational opportunities. NorthWestern Energy is dedicated to ensuring that our hydroelectric operations are working to maintain these important resources.

NorthWestern Energy's Madison-Missouri Water Quality Program, developed in 2001, monitors long-term trends and spatial variation of water quality from Yellowstone National Park to Morony Dam near Great Falls. In addition to long-term trend monitoring, NorthWestern Energy collects water quality data to evaluate the environmental effects from the operation and maintenance of our hydroelectric facilities.

In 2018, NorthWestern Energy staff collected water chemistry and biological data on Mystic Lake and West Rosebud Creek, as a part of the Mystic Lake Water Quality Monitoring Plan, originally developed in 2010 and recently updated in 2019.

Water chemistry and biological data are good indicators of the overall health of a waterbody and can be compared to water quality standards and biological metrics to determine how healthy a stream or lake is.

In 2019, NorthWestern Energy installed a new solar-powered remote water quality monitoring station on the Clark Fork River below Thompson Falls Dam. This new station collects water temperature, dissolved oxygen, total dissolved gas, specific conductance, pH, and turbidity at 15-minute intervals, and sends updates hourly to NorthWestern Energy staff via a cellular modem. This allows NorthWestern to monitor the effects of dam operations on river conditions in real time and can help inform operational management decisions.

Arctic grayling eggs incubate in a restored section of O'Dell Creek. Since the O'Dell Creek restoration project began in 2004, 74,629 linear feet of creek channel have been restored and 700 acres of wetlands created.

O'DELL CREEK RESTORATION

A recurring topic in the NorthWestern Energy Environmental Stewardship Report is the longstanding fish, wildlife and plant restoration project at O'Dell Creek in the Madison River Valley. Since the project began in 2004, 74,629 linear feet of creek channel have been restored and 700 acres of wetlands created. A number of rare plant species occur within the restoration zone and have flourished since wetlands and natural stream flows have been restored over the past 14 years. In 2017, 2018 and 2019 Montana Fish, Wildlife & Parks introduced fertilized eggs of fluvial arctic grayling into O'Dell Creek to establish a conservation population in this fish's historic range. O'Dell Creek is one of the largest tributaries to the Madison River and can hopefully provide refuge for this imperiled fish.

NorthWestern Energy and its partners – Granger Ranches, Longhorn Ranch and River Design Group, Inc. – were jointly awarded the Restoration Project of the Year-2018 by the Society for Ecological Restoration for our multi-year partnership to restore a historical floodplain and reconstruct and reconnect important wetland habitats. Cited in the award is the unique plan to monitor restoration success.

Funded by NorthWestern Energy, researchers from the University of Montana Bird Ecology Lab have recorded 116 bird species including 18 Montana species of concern within the project area. The significant increase in bird species and number occurred eight to 12 years after the project first began. O'Dell Creek is now home to breeding populations of wetland and riparian bird species that include songbirds and waterfowl. The site is vital habitat for a number of birds, including Sandhill cranes that breed in the lower elevation benches along O'Dell Creek then migrate to higher elevations in Yellowstone National Park to nest and raise young.

A Montana Fish, Wildlife & Parks worker spawns eggs from wild rainbow trout at Holter Lake that will be raised at the Lewistown hatchery and later stocked in Holter and Hauser reservoirs.

STOCKING RAINBOW TROUT IN RESERVOIRS

Every five years NorthWestern Energy files with the Federal Energy Regulatory Commission a plan to protect, mitigate and enhance fish habitat and populations along the Missouri and Madison river system, including Hauser and Holter reservoirs. One part of the plan involves evaluating and adjusting the number of rainbow trout stocked in these reservoirs. Combined, Hauser and Holter reservoirs account for an estimated 120,000 angler days each year and are considered high-quality fisheries.

Over the past several years, NorthWestern Energy has provided funding for the labor-intensive task of marking Arlee strain rainbow trout stocked in Holter and Hauser reservoirs. Removing the small adipose fin with a scissor provides a mark that allows biologists to evaluate the growth and survival of these fish and identify which strain of rainbow trout is being caught most by anglers. The mark also allows them to separate the strains while collecting eggs for the state's Big Spring Trout Hatchery in Lewistown, Mont., which also raises fish for stocking Hauser and Holter reservoirs. In 2019 NorthWestern staff assisted Montana FWP with collecting 225,000 rainbow trout eggs from Holter Lake. Those fish were scheduled to be stocked in Holter and Hauser reservoirs. The partnership of funding, equipment and staff allows both NorthWestern and Montana FWP to maintain valuable public recreation opportunities like rainbow trout angling at Hauser and Holter reservoirs.

Whenever lower Madison River temperatures are predicted to exceed 80 degrees F, a short-term increase of water is released from Madison Dam.

MADISON RIVER THERMAL PULSE PROGRAM

In 1988, severe drought and hot weather conditions contributed to a fish kill in the lower Madison River. In response, NorthWestern Energy began studying thermal issues, collecting information and developing effective tools to protect the recreational trout fishery downstream of Madison Dam. After many years of study and testing, a final pulse flow protocol was developed in 2004 in consultation with Montana Fish, Wildlife and Parks and other resource agencies.

The pulse flow protocol, deemed the Madison Thermal Decision Support System (DSS), monitors air and water temperature, and weather forecasts, and employs pulse flows, a short-term increase of water released from Madison Dam, whenever lower Madison River temperatures are predicted to exceed 80 degrees F at the Sloan Meteorological Station. The protocol uses a thermodynamic model to predict resulting river temperatures under differing flow conditions and directs a daily pulse volume for NorthWestern's operations staff to release from Madison Dam. There is no bank of cold water available; rather the protocol relies on the physics principle that a larger volume of water will warm at a slower rate than a smaller volume. The model determines and directs precisely how large a volume is needed to maintain water temperatures below 80 degrees F while conserving water by not over pulsing. Flow releases are managed out of the Upper Madison River at Hebgen Dam to be able to refill Ennis Lake following each daily pulse.

The DSS has been very successful since its implementation. NorthWestern has been able to provide a thermal regime protective to fisheries in the lower Madison River through prudent hydroelectric operations at Madison Dam and Hebgen Reservoir.

For more information on the program, please visit: madisondss.com

PALLID STURGEON RECOVERY

In July 2019, Grant Grisak, NorthWestern Energy fish biologist, and Sabrina Hanson, hydro compliance intern, picked through piles of mud and debris scooped up from the bottom of the Marias River.

“We’re looking for a needle in a haystack,” Grant said.

The “needle” is pallid sturgeon eggs and larvae, and the “haystack” is the Marias River.

NorthWestern Energy, in conjunction with Montana Fish, Wildlife & Parks, is looking for evidence that pallid sturgeon, an endangered species of fish, is traveling up the Missouri River into the Upper Missouri, Marias and Teton rivers to spawn.

The Teton and Marias, both tributaries of the Missouri River in northcentral Montana, are historical spawning grounds for pallid sturgeon. However, in part, because of the construction of dams on the Missouri River, pallid sturgeon nearly went extinct.

Recovery efforts for pallid sturgeon have been in the works for about 30 years. Populations have now reached the point that there are enough sexually mature fish in the river that they should be spawning in the Marias and Teton.

Despite looking for evidence of successful spawning for several years, biologists have yet to find it. However, this year could be the year because all the conditions – flows and water temperature – seem to be just right.

“This is kind of a big year for us,” Grant said.

After pallid sturgeon spawn, the eggs hatch very quickly.

“When these larvae hatch, they need these really long stretches of river to drift,” Grant said. “When these rivers were fragmented years ago by dams, those drift distances were abbreviated.”

If pallid sturgeon are spawning in the Maris and Teton, it gives the larvae about 200 river miles to drift before they reach Fort Peck Reservoir. Biologists are optimistic that’s a distance long enough for a larvae to survive.

Grant, Sabrina and the FWP biologists spent two days on the Marias searching for signs of pallid sturgeon. They found several sturgeon eggs and larvae, but those samples will have to be studied in the lab before they’ll know if they are pallid sturgeon or the more common shovel-nose sturgeon.

“This has huge implications if we can prove that the fish are spawning,” Grant said.

Grant G., NorthWestern Energy fish biologist, and Sabrina H., hydro compliance intern, sample for pallid sturgeon eggs and larvae in the Marias River in northcentral Montana.

NorthWestern participates in a public-private partnership to help local, state and federal recreation managers improve and maintain services.

SUPPORTING PUBLIC RECREATION

NorthWestern participates in a public-private partnership, the Missouri-Madison River Fund, to provide and enhance public recreation opportunities along the Missouri and Madison rivers. The River Fund helps local, state and federal recreation managers improve and maintain services so recreationists have a positive outdoor experience.

In 2019, funding was awarded for 14 public recreation improvement projects consisting of $370,000 contributed by NorthWestern Energy and the River Fund, combined with $70,000 from agency and project partners for a total of $440,000. In addition, NorthWestern Energy contributed another $450,000 to state, federal and local agencies for operation and maintenance at many existing recreation sites in the Missouri-Madison River corridor.

“The Missouri and Madison rivers offer a wide variety of public recreation facilities and opportunities,” said Andy Welch, Hydropower License Compliance Leader with NorthWestern Energy. “NorthWestern Energy and its employees are proud of the company’s stewardship programs, including working alongside the agencies to improve recreation facilities and opportunities on these great rivers.”

These projects raise the tally to 126 projects funded by the River Fund Trust since the first year of awards in 2007. Annual project awards by the fund total nearly $4.5 million. River Fund grants and NorthWestern Energy matching funds have helped leverage public agency and partner funding to provide more than $9 million of public recreation improvements.

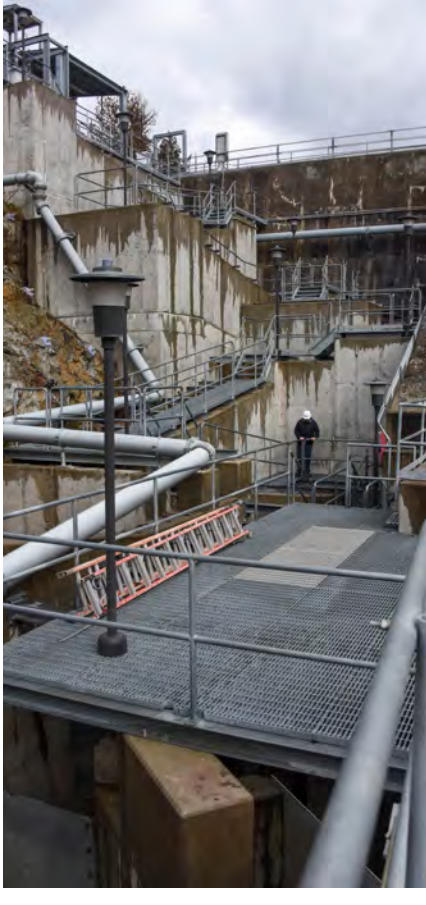
A list of projects can be found at www.missourimadison.com, a website dedicated to Missouri-Madison Recreation.

CROW CREEK RESTORATION PROJECT

Crow Creek is a tributary to upper Prospect Creek which enters the Clark Fork River downstream of Thompson Falls hydroelectric project. Sections of Crow Creek are intermittently providing a natural barrier that enables the stream to retain an entirely native fish species of westslope cutthroat trout, bull trout and cedar sculpin. However, over the years, large conifers have been removed along the creek adversely impacting the stream channel.

In 2019, NorthWestern partnered with Montana Fish, Wildlife and Parks, the Lolo National Forest and the Lower Clark Fork Watershed Group to restore more than 600 linear feet of Crow Creek by installing complex fish habitat and planting willows, alder and dogwood near the stream banks. By creating habitat and stabilizing stream conditions the project is improving the ability of westslope cutthroat trout and bull trout to increase in abundance and biomass.

A worker plants willows as part of a restoration project of Crow Creek near Thompson Falls, Mont.



THOMPSON FALLS FISH LADDER

In northwest Montana at the Thompson Falls hydroelectric facility, NorthWestern Energy operates a fish passage ladder to allow bull trout and other species to travel upstream of the dam. Bull trout are a threatened species listed under the Endangered Species Act.

Since 2011, the ladder has captured more than 33,000 fish, restoring more than 274 miles of connectivity on the Clark Fork River. A variety of fish species benefit from the ladder including bull trout, westslope cutthroat trout, rainbow trout, brown trout, largescale suckers, northern pikeminnow and smallmouth bass. Seventeen different species of fish have been recorded at the ladder.

The fish ladder helps connect hundreds of miles of habitat for native species and also is a great conduit for educational opportunities to teach young and old about the importance of fisheries. Every year, local students and others get the opportunity to learn about how the ladder works and how the fish community in the Clark Fork River benefits from this upstream passage.

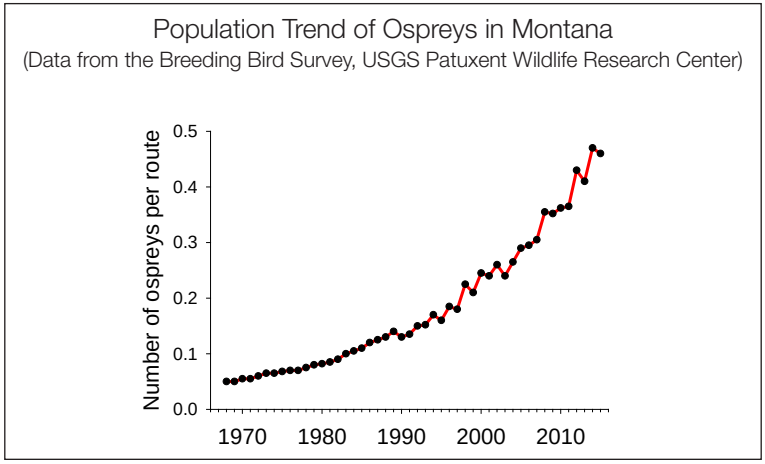
As part of providing fish passage NorthWestern Energy, along with its partners, gain valuable information on fish movements within the Clark Fork River drainage. Salmonids (trout) that are captured in the ladder are marked with a tiny tag called a passive integrated transponder, also known as a PIT tag. As a PIT-tagged fish swims over a fixed antennae, the antennae reads the tag and allows biologist to identify that particular fish and where it is at that moment. This work has shown some interesting results in that approximately 30% of the salmonids passed at the ladder enter the Thompson River, about 6 miles upstream of the ladder. We also see the same fish use the ladder multiple years, as it travels upstream into spawning habitat and then returns below the dam, only to climb the fish ladder again the next year.

On June 26, 2019, a bull trout with a fascinating history of long migrations successfully ascended the ladder. The 24-inch female was the first bull trout caught in the ladder since 2017. She was originally captured and PIT tagged in 2015 downstream below Cabinet Gorge Dam, approximately 50 miles away. Downstream partners transported her upstream around the dams and released her in the St. Regis River, closer to where genetic analysis indicated the bull trout was born. Two years later in 2017, once again this fish was captured below Cabinet Gorge Dam and then released upstream in the St. Regis River. Detected yet again in 2019 using the Thompson Falls fish ladder, she now has access to swim to where she was born just west of the city of Missoula for the third time. At a minimum, this bull trout swam more than 100 miles for each spawning migration. She is a good example of the importance of restoring river connectivity in the lower Clark Fork River.

In June 2019, a 24-inch female bull trout made its way to the top of the Thompson Falls fish ladder. This was the first bull trout to be caught in the ladder since 2017. (Note: The other fish in the tank have been anesthetized so they can safely be measured and weighed. After these fish come to, they will be released upstream of Thompson Falls Dam.)

AVIAN PROTECTION PLAN

Watching an osprey dive into the water, sometimes submerging completely before rising from the surface with a struggling fish, leaves a lasting impression. Ospreys are once again a common sight across most of Montana as their populations rebound from the negative effects of DDT, a widely used pesticide that was banned in the 1970s. However, with this wildlife management success story comes some conflict: Ospreys are relatively tolerant of human activity and frequently build nests on power poles. Nests can cause power outages and even fires, and their proximity to energized equipment puts the birds at risk of electrocution. NorthWestern Energy has installed hundreds of platforms to maintain service reliability and to provide a safe place for ospreys to raise their offspring.



NorthWestern Energy's Avian Protection Plan (APP) incorporates industry best practices developed by the Avian Power Line Interaction Committee, which is a collaboration among the Edison Electric Institute, the U.S. Fish and Wildlife Service and member utilities. The primary goal of an APP is to reduce bird injuries and mortalities from power line collisions and electrocutions. If one species epitomizes the potential for conflict between our electric system and birds it is the osprey.

Our APP reflects a commitment to environmental stewardship, and fulfilling its provisions to safeguard ospreys is just one example of responsible risk management. Osprey-power line interactions can be complicated, and solving conflicts by practical necessity must involve engineers, linemen and biologists. Implementing our APP includes designing avian-friendly power poles, training line crews, providing information on federal regulations protecting migratory birds and increasing public awareness. In fact, we cooperate with osprey research projects throughout the state and these partnerships have yielded mutually beneficial results. We learn quickly of new osprey nests discovered by citizen scientists participating on these projects, which gives us the opportunity to erect nest platforms in a timely manner. The researchers, in turn, receive donated support to access nestlings for banding.

Archeologists survey an area for historic sites that could be impacted by a proposed rebuild of a power line.

CULTURAL RESOURCE MANAGEMENT

NorthWestern is planning to rebuild a section of the Rainbow-Two Dot 100 kV transmission line to address aging infrastructure and to meet current design requirements. The line was built in 1915 from Rainbow hydroelectric dam at Great Falls to the Little Belt Mountains to power the electrified Milwaukee Railroad.

The majority of the line being rebuilt is on land managed by the Helena-Lewis and Clark National Forest, part of the U.S. Forest Service. The USFS determined that rebuilding the line is an undertaking that requires compliances with Section 106 of the National Historic Preservation Act.

NorthWestern retained the services of a professional archeologist to collect the information needed to determine the effects of the construction project on historic properties. A search of previously recorded historical and archeological sites and surveys in the area was first conducted through the Montana State Historical Society. The archeologist then conducted an archeological survey of 22 areas.

The survey revealed seven sites that had the potential to be impacted by rebuilding the line, including the transmission line itself. NorthWestern is working with the U.S. Forest Service on a plan to mitigate the adverse effects of construction on this National Register of Historic Places-eligible site.

Environmental Permitting Supervisor Sady Babcock stands next to a new power pole at the Tower Street project in Missoula.

ENVIRONMENTAL PERMITTING

Redesign of Prospect Creek Transmission Line

Plants, animals and the ecosystems were most likely never considered in the early 1900s when Montana Power Company constructed two parallel 115 kV electric transmission lines from the Thompson Falls hydroelectric project to the Montana-Idaho border. However, as NorthWestern Energy prepared to complete a major upgrade of these lines, natural resources including endangered species were at the forefront of the planning process.

Prior to starting work and environmental permitting for the project, NorthWestern conducted a baseline environmental assessment and consulted with the United States Fish and Wildlife Service to identify sensitive areas, including critical bull trout (salvelinus confluentus) habitat, and how we could mitigate potential impacts to these areas. This effort resulted in significant transmission line redesign and two reroutes in a portion of the project that runs through the Cooper Creek drainage, which has a local bull trout population and is critical habitat. The redesign eliminates one of the transmission lines, and the reroutes removes the line from its current location in the bottom of the stream corridor to uplands.

The redesign of the line and reroutes will have positive impacts within the drainage. NorthWestern is going from two lines to a single steel-pole, double-circuit design. The design eliminates approximately 170 H-frame structures (368 poles) and associated hardware and replaces them with 76 taller single-steel structures (80 steel poles). The updated design will reduce the disturbance within the corridor during construction and on-going maintenance. The higher poles will allow for less aggressive vegetation management through sensitive areas and the reliability of the line will be greatly improved. The two reroutes will completely remove portions of the line from Cooper Creek and associated riparian area eliminating the need for vegetation removal in this critical habitat.

In addition to the reroutes and redesign NorthWestern Energy is committed to weed control prior to and following construction, reclamation of all disturbed areas, planting low-growing shrubs and willows in riparian areas and supporting local habitat enhancement projects. It's a positive change for the environment compared to the 1900s.

NorthWestern works with state and local agencies to acquire discharge permits for any construction project that disturbs more than one acre.

STORM WATER MANAGEMENT

Rain and snowmelt tend to erode exposed soils and consequently runoff from construction sites may carry increased sediments to state surface waters. For projects that disturb more than one acre, NorthWestern acquires discharge permits from the state or local agencies in Montana, South Dakota or Nebraska which regulate the storm water under the Clean Water Act. Storm water permits require Storm Water Pollution Prevention Plans (SWPPPs) which are site-specific documents that describe the storm water control measures known as Best Management Practices (BMPs) that will be used to reduce or eliminate storm water discharges at construction projects. Routine inspections of the BMPs are conducted and documented and as the project progresses and goes through changes, NorthWestern updates the plan.

VEGETATION MANAGEMENT

Over the years, NorthWestern Energy has developed and executed an Integrated Vegetation Management (IVM) plan critical to the reliability of our electric system. The IVM plan encourages low-growing, productive, native vegetation that increases electric system reliability, reduces tree-trimming costs, provides vegetation preferred by many species of wildlife and improves the landscape.

The company manages vegetation along 7,200 miles of electric transmission right of way (ROW) and about 15,000 miles of electric distribution ROW in Montana. These corridors vary from 10 to 75 feet on each side of the line, depending on the voltage. Many of these electric lines pass through forested areas. On a regular and rotating schedule, NorthWestern Energy trims tree branches and removes trees inside and outside the ROW that affect the operation of the electric lines.

NorthWestern Energy employs seven full-time arborists and vegetation management technicians who, together with contractors, control trees and noxious weeds in our ROWs and around other facilities, such as substations. Working in accordance with Montana's County Noxious Weed Act, our IVM plan employs mechanical, chemical, biological and cultural techniques to inhibit weed growth, resulting in prime habitat for wildlife and native species of ground cover.

NorthWestern Energy manages vegetation in more than 22,000 miles of electric right of way.

NorthWestern implemented a pilot aerial tree trimming project to clear trees near power lines using a helicopter.

NEW AERIAL TREE TRIMMING TECHNIQUE

When NorthWestern Energy finished upgrading the transmission line through the Gallatin Canyon in southwest Montana three years ago, very few trees appeared to be dead or dying.

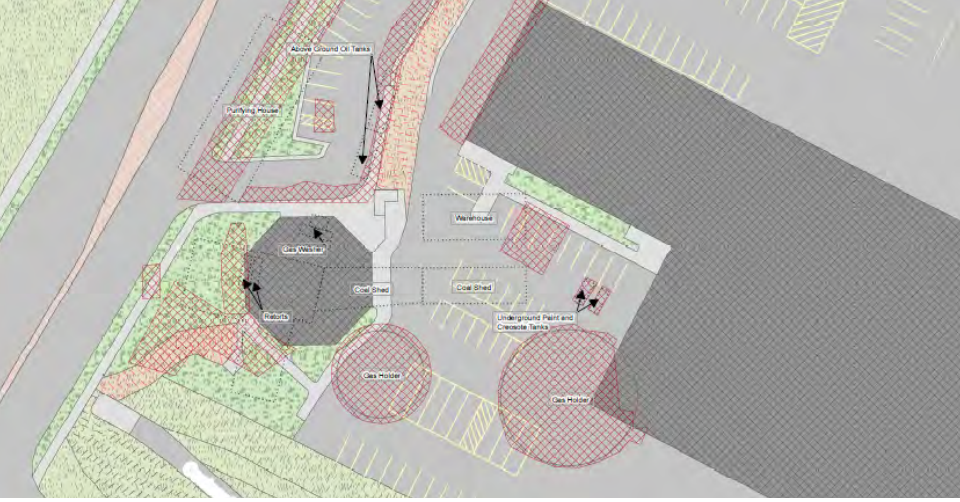
Today, the hillsides around the line are a patchwork of green trees and gray, dead trees. Those dead and dying trees, caused by spruce budworm, pose a threat to NorthWestern's Jackrabbit to Big Sky 161kV transmission line.

Traditionally, those trees would have been cleared by a hand crew. However, for the first time, NorthWestern Energy tried a different approach. We contracted with Heli-Dunn, a helicopter company based in Oregon and creator of the Heli-Feller, a saw that attaches to a helicopter.

The helicopter can remove about 35 to 40 trees an hour, or anywhere from 200 to 500 trees a day.

In easy-to-access areas, hand crews still often make sense. However, on steep slopes or remote areas, aerial tree trimming is more practical.

The Heli-Feller is the only tool of its kind. Controlled by the pilot, the Heli-Feller grabs ahold of a tree top, cuts the tree and carries it away. It's the only helicopter-operated saw that has positive control, meaning it holds onto the tree while the cut is made.



MANUFACTURED GAS PLANT IMPACTS

From the early 1800s until the 1950s, prior to the availability of natural gas, communities relied on manufactured gas – or town gas – to produce fuel for street lamps, cooking, heat and lights. During this time, at least 1,500 manufactured gas plants (MGP) operated within the U.S., including several in our service territory.

In the 1930s, utilities began installing natural gas pipelines gradually eliminating the need for MGPs. A by-product of the gas manufacturing process was coal tar, a black substance that has a viscosity and appearance similar to driveway sealer. Typically, operators burned the coal tar in a generator, used it at the plant sites, or sold it for use in manufacturing preservatives, coatings, resins and other products. Unfortunately, MGP sites released coal tar into the environment at many sites. Today, we are working diligently to address the environmental impacts associated with our predecessor companies' operation of former MGPs at three sites in Nebraska, two in Montana and one in South Dakota.

Helena manufactured gas plant site

The Helena MGP site was elevated to a high priority status by the Montana Department of Environmental Quality in 2016. Since that time, NorthWestern has been working with DEQ to develop a Remedial Investigation Work Plan (RIWP) that will fully characterize the nature and extent MPG impacts.

TarGOST® technology is being used as a tool for providing a more extensive and detailed characterization of the Helena MGP site. The identification of specific locations where TarGOST® will be deployed were refined using data obtained during an underground utilities identification investigation that used a technology known as ground-penetrating radar (GPR). The GPR investigation was able to identify the presence of several historical underground features that were constructed during MGP operations (as documented in historic Sanborn Fire Insurance Maps).

POLYCHLORINATED BIPHENYLS MANAGEMENT

NorthWestern Energy routinely tests any equipment that may contain polychlorinated biphenyls (PCBs) – an organic chlorine compound once widely used as dielectric and coolant fluids in electrical equipment. PCBs are highly toxic and classified as a persistent organic pollutant and as a carcinogen. Because of this, the U.S. Congress banned the production of PCBs in 1979, followed by a ban endorsed by the Stockholm Convention on Persistent Organic Pollutants in 2001.

We test dielectric fluid in any equipment manufactured before the PCB ban or that might contain oil-filled components (e.g., bushings on a transformer) that are known or suspected to have been manufactured before to the PCB ban. As required by corporate policy, we label any tested equipment found to contain PCBs and replace or refurbish the equipment if necessary.

NorthWestern Energy's PCB equipment tagging codes:

Color	**PCB Concentration**
Blue*	Non-PCB oil as certified by manufacturer
White	No trace of PCBs
Green	Trace – 49 ppm
Yellow	50 – 499 ppm
Red	500 ppm or more
***Note: Manufacturer tags or metal plates indicating the equipment is non-PCB is sufficient.	

Field test kits, known as Clor-n-oil tests, are carried and deployed by employees in the field to provide real-time information to assist in directing emergency cleanup work or to provide information during the initial stages of project planning. The field tests are followed by appropriate confirmation sampling and analyses by an accredited laboratory.

Case-in-Point: Strong thunderstorms swept through Letcher, S.D. in May 2018, bringing down numerous poles, including one supporting an old transformer that happened to contain 100 parts per million (ppm) of PCBs. The lid of the transformer was damaged, and 22 gallons of oil was released. Responding employees, following established spill training and protocol, used a Clor-n-oil test kit and determined that the oil was positive for PCBs. Cleanup efforts began and excavated materials were consolidated into appropriate containers, then transported to a local warehouse for storage in a designated PCB storage area.

A confirmation sample of the oil was sent to a lab, and upon receiving validation of PCB levels, the release was reported to the South Dakota Department of Environment and Natural Resources (SD DENR) and the Environmental Protection Agency (EPA).

NorthWestern Energy, working in cooperation with regional EPA, sampled the excavated material and had it reanalyzed for PCB content and Total

An oil spill site near Letcher, S.D. prior to cleanup.

Petroleum Hydrocarbons. Using these sample results and soil property data, calculations were developed showing anticipated PCB concentrations in the soil at various stages of oil saturation. Utilizing an EPA-approved saturation value of 70%, the calculations showed that anticipated PCB concentrations in the affected soil at the spill site were less than 50ppm. EPA granted NorthWestern approval of the formal spill cleanup report, as well as granting approval for disposal of the effected/excavated material in an appropriately licensed municipal landfill located near Mitchell, S.D.

OIL SPILL PREVENTION MEASURES

NorthWestern Energy works hard to anticipate, prepare for and avoid occasional spills or an unpermitted release to the environment. To help prevent and prepare for oil spills, we have plans that address the EPA's Spill Prevention, Control and Countermeasure (SPCC) rules for facilities where we have equipment filled with more than 1,320 gallons of oil in locations near navigable waters. These plans identify the operating procedures to prevent spills, secondary containment requirements and countermeasures to contain, cleanup and mitigate the effects of an oil spill. Our environmental staff reviews the plans regularly to ensure they are up to date and compliant with the regulations and conduct routine facility inspections. We also provide response training for our employees to ensure they are prepared to execute specific measures.

HAZARDOUS WASTE MANAGEMENT

The proper identification of hazardous materials and management of hazardous waste generated during on-going utility operations prevents effects to human health and the environment. Over several years, NorthWestern Energy has dramatically reduced use of hazardous materials and therefore the generation of hazardous waste. We have also developed a Waste Management Plan to provide guidelines that employees can implement to manage common hazardous and non-hazardous waste streams safely and efficiently.

For the most common waste streams, the plan defines common types of a specific waste, as well as container, labeling, storage and disposal requirements along with record-keeping and waste minimization recommendations. Employees throughout our service area adhere to the guidance provided by the Waste Management Plan and our environmental staff provides expertise for special situations.

Dave Gates Generating Station, 150-megawatt (MW) natural gas facility in Anaconda, Mont., serves resources, such as wind and solar power.

AIR QUALITY CONTROLS

Dave Gates Generating Station

NorthWestern Energy operates the Dave Gates Generating Station (DGGS) in Anaconda, Mont. The 150-megawatt (MW) natural gas facility serves as a regulating resource to stabilize the transmission grid due to supply and load variations and the integration of unpredictable fluctuations from intermittent renewable resources, such as wind and solar power. DGGS consists of three 50-MW generating units with each generating unit consisting of two aero-derivative combustion turbines and one electric generator. We control carbon monoxide (CO) and volatile organic compounds (VOCs) by catalytic oxidation. Nitrogen oxide (NOx) emissions are controlled using water injection and selective catalytic reduction (SCR). We inject demineralized water into the turbines by cooling the combustion temperature, thereby reducing the formation of thermal NOx. We reduce NOx even further when the SCR injects aqueous ammonia across the face of the NOx catalyst, converting nitrogen oxides to nitrogen and water vapor. We monitor emissions with continuous emissions monitoring systems (CEMS). The CEMS measures the stack emissions and provides feedback to the SCR to optimize ammonia injection rates for better NOx reduction and preventing over injection of ammonia.

as a regulating resource to stabilize the unpredictable fluctuations from intermittent renewable

Aberdeen Generating Station

The Aberdeen Generating Station, located in Aberdeen, S.D., is a peaking facility. The site has two units. Historically, we used the facility during extreme heat or cold, or as a backup supply for renewable generators in the area. In 2016, the facility joined a new power pool and marketing group, and since then we have dispatched the units to run more frequently. Unit 1 is an existing 1976 GE Frame 5 simple cycle, fuel oil-fired combustion turbine capable of generating 27 MW. The unit does not have any emissions controls and typically operates less than 200 hours per year. Unit 2 is a Pratt & Whitney Power SystemsF T8-3 Swiftpac simple-cycle combustion unit with a maximum output of 60 MW. The Swiftpac contains two aero-derivative combustion turbines – Units 2A and 2B. These units can operate on pipeline natural gas or ultralow sulfur No. 2 fuel oil. Pipeline natural gas is the fuel of choice for normal operations and startup. Individual gas and liquid fuel flowmeters at each turbine measure fuel flow for calculation of heat input to determine compliance with 40 CFR Part 60 and AQCP emission limits. Units 2A and 2B use water injection for the control of NOx emissions. The Continuous Emissions Monitoring Systems (CEMS) provide real-time data.

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