

Power lines and crops can be good neighbors

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Two of the Pacific Northwest's greatest economic assets are its wealth of agriculture and its clean and reliable electricity fueled largely by hydropower.

Sometimes the two intersect. Transmission lines carrying electricity to the region's farms, businesses and homes must, of necessity, span large areas where people grow crops and orchards. To ensure a safe and reliable flow of electricity across these expanses, trees and other vegetation must be managed to certain standards.

At the same time, the Bonneville Power Administration — which owns and operates three-quarters of the region's high-voltage transmission — recognizes the importance of our region's agricultural bounty. We are committed to working with individuals and agricultural communities to facilitate ongoing land-use activities in transmission rights-of-way as long as those uses are compatible with transmission safety and reliability standards.

Our goal with vegetation management is to keep you and your property safe while protecting the reliability of our region's electricity system. By working together, BPA and landowners can protect the system and public safety.

What's changed

Following two major blackouts, Congress passed legislation requiring more stringent reliability standards to prevent such widespread blackouts in the future. These standards apply to all transmission owners and operators, including BPA.

To ensure that the reliability standards are met, the North American Electric Reliability Corp. (a national regulatory body that oversees reliability of the U.S. power grids) issued new, more rigorous vegetation management requirements for electric transmission lines. BPA and other utilities must comply or face the possibility of severe sanctions. The costs of these sanctions would be borne by electricity consumers.



Under the new requirements, BPA (and all transmission owner/operators) must have a Vegetation Management Plan. Our plan serves as the operative standard for clearing all of BPA's right-of-ways of potentially hazardous vegetation, including those with agricultural trees. Any vegetation clearing is subject to the terms and conditions of the transmission line easements and, if applicable, any vegetation agreements — for example, the right to grow Christmas trees to a certain height.

What does this mean for agriculture

Agriculture and associated activities such as irrigation systems, support structures, etc., and many other land-use activities may be allowed within transmission



rights-of-way as long as they are compatible with BPA's safety and reliability standards.

Because these standards have recently been revised, BPA must review all existing and new land-use activities on its rights-of-way to ensure that they meet these new regulatory requirements. BPA is working with individual landowners on a case-by-case basis to ensure a fair, reasonable, balanced and flexible decision-making process.

What are BPA's authorities

The terms and conditions may vary on a case-by-case basis, but generally BPA has the right to keep its rights-of-way clear. Implementation of BPA's Vegetation Management Plan will be consistent with our easement documents and vegetation agreements.

Our Vegetation Management Plan applies to the entire 15,000 circuit miles of BPA's transmission rights-of-way, including those areas where maintenance of some lines has been assigned to other utilities by lease or other contract. BPA does not intend to revise the existing easement documents which cover the 15,000 circuit miles.

If BPA determines that it needs to acquire additional land rights to control vegetation, we will work with landowners to come to an agreement. If negotiations fail to produce one, BPA may seek alternative means to acquire necessary rights-of-way rights. This could involve an eminent domain action. However, BPA views condemnation as a method of last resort and uses its condemnation authority reluctantly.

It's best to stop potential power line problems before they start. If your property borders a transmission corridor, avoid planting new trees directly beneath power lines or too close to electrical equipment.

Why the concern about vegetation

Vegetation growing near high-voltage lines is hazardous in two respects — safety and reliability. Trees, crops and other vegetation can conduct electricity, posing a threat to people, pets, livestock, wildlife and property.

If electricity flows through vegetation to the ground, that vegetation and the nearby ground essentially become "electrified," and anyone who touches it can be seriously

It just takes one tree ...

It may surprise many, but even one tree can create widespread problems. It happened in the Pacific Northwest in August 1996 in a filbert orchard that had not been managed. One of the trees grew into a transmission line's normal operating space. As a result, the transmission line flashed over to the tree. This triggered a number of events, which culminated in a black-out that affected nine Western states and nearly 7.5 million customers.

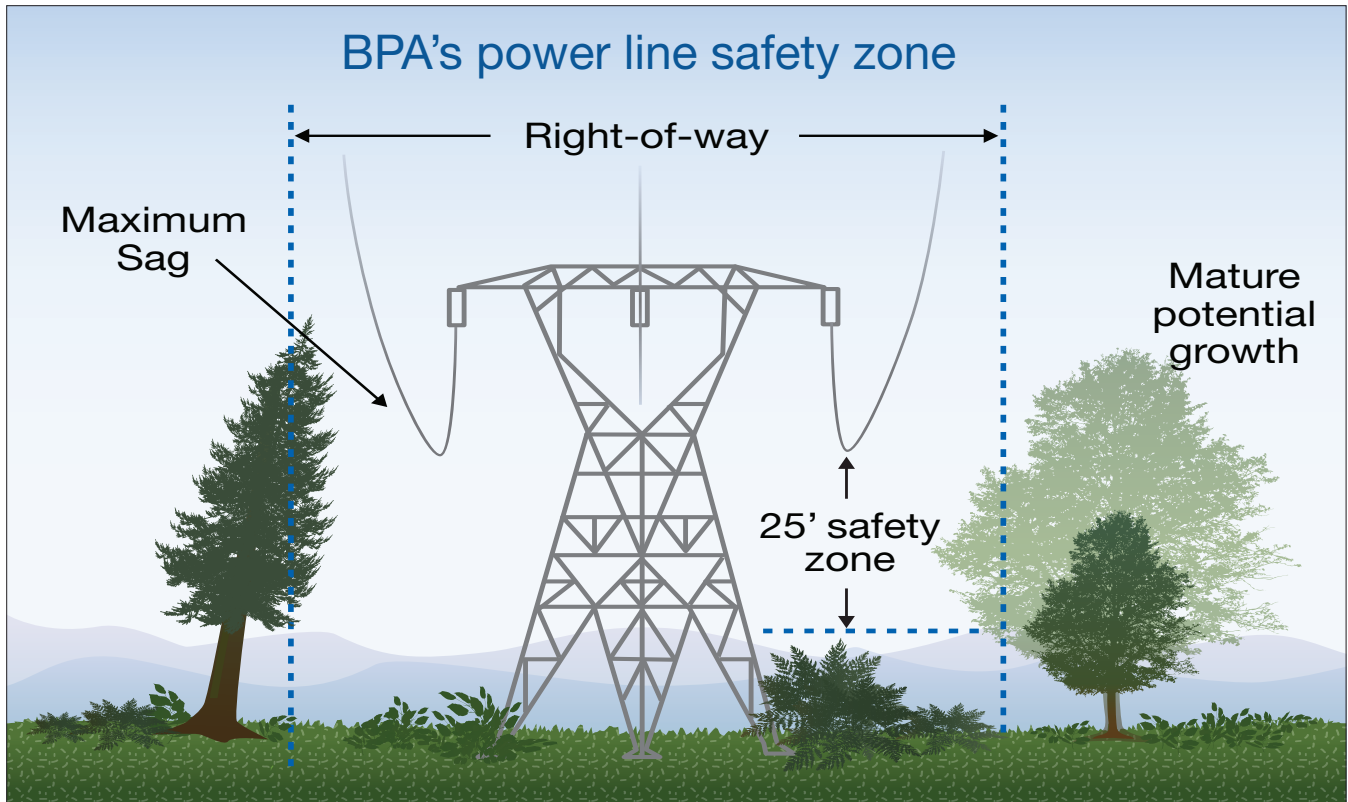
The scenario was repeated on a larger scale in another part of the United States in August 2003, when three transmission lines in Ohio failed due to contacts with trees. This kicked off a cascade of events that led to a massive power outage affecting eight Northeast states and Ontario, Canada. Over 50 million people were without power.

injured or even killed. Another danger is that electricity from the line can set vegetation on fire, threatening homes in residential neighborhoods and sparking wildfires in rural areas.

Reliability comes into play when trees or tall brush come into contact with a transmission line or grow too near a line. Such vegetation can shut down that line and disrupt the flow of electricity. Because a single line in BPA's system serves thousands of homes and businesses — and operates in a coordinated and interdependent fashion with other lines — just one tree incident can trigger outages affecting large areas and sometimes several states.

Vegetation doesn't even have to touch power lines to be dangerous. In the case of high-voltage transmission lines, under certain circumstances electricity can jump or arc several feet across the space between wires and vegetation or between wires and other objects connected to the ground.

The position of a transmission line within its normal operating space varies dramatically with atmospheric and operational conditions. For example, when transmission lines carry more electric load, they heat up,



BPA crews will maintain a 25-foot safety zone between the highest point the vegetation will potentially grow and the lowest point the power line will sag under extreme conditions. Sometimes, even though a tree is outside the right-of-way boundary, BPA crews will remove any growth that comes within the 25-foot clearance zone or remove the tree if it's unstable and likely to topple over on the power line.

which causes the wire to expand and sag. On hot summer days, when demand for electricity is great, lines can sag several feet.

The voltage carried by BPA's transmission lines ranges from 69,000 to 500,000 volts. That can be more than 100 times the voltage of the distribution lines that bring power to your home. Higher voltage lines require greater clearances than power lines serving homes and businesses. That's why BPA's transmission lines are supported by taller towers and why we must maintain a greater distance between the lines and other potential "conductors" such as trees.

What are the new regulations

At the time the new standards went into place, BPA had thousands of agreements with landowners, many of which would have resulted in vegetation growth that is not allowed under the new standards.

As part of the revised standards for transmission safety and reliability, BPA is reviewing all land uses in our transmission rights-of-way and making changes necessary to ensure safe distances between vegetation (crops, trees, brush, etc.) and our transmission lines. These changes may affect a significant number of agricultural activities in our rights-of-way.

Under the new standards, BPA must keep a 25-foot safety zone between high-voltage transmission conductors and vegetation beneath and around them. The 25-foot safety zone considers two key factors — the potential height of the mature vegetation and the maximum distance the power line can sag.

Taking these two factors together means that vegetation must be removed if it can grow tall enough or wide enough for a transmission line to sag within 25 feet of its closest branches.

What about respecting private property

BPA respects property rights, and that is why we strive to keep landowners informed and work toward mutually satisfactory solutions. However, we need to ensure reasonable access to our transmission facilities to perform necessary maintenance and repair and to make sure vegetation or structures do not pose a safety or electric outage threat.

Before starting vegetation management activities, BPA makes every effort to contact landowners and residents near the project area to inform them about the work to be done. We also listen to citizen concerns and work hard to find reasonable solutions. We let the local community know when we will be in the area.

When it's necessary to remove vegetation near power lines, BPA notifies landowners prior to any scheduled clearing. The only exception is if vegetation poses an imminent threat. BPA must remove the vegetation but will try to contact the landowner before or shortly after such vegetation is cut. Our crews will work with landowners to minimize the impacts to property.

What can landowners grow

Generally, smaller-scale native or ornamental shrubs, ferns and grasses are permissible in a right-of-way. However, before you plant any vegetation on BPA rights-of-way, be sure to coordinate with us by filling out one of our Land Use Applications. This will enable us to clarify our requirements to maintain a safe distance between the vegetation and our power lines and ensure that the vegetation will not block access to the lines, towers or poles.

BPA may permit vegetation agreements within its transmission line right-of-way whether we own the land in fee or only have an easement. The application should be submitted to Real Property Services at BPA. A realty specialist will be assigned to process the application. He or she will coordinate with the landowner if additional information is needed to process the application.

An application for the proposed use of a right-of-way is available at www.transmission.bpa.gov/NewsEv/documents/Application_for_use_of_BPA_Right.doc

Why not cutback instead of remove

The combination of fast-growing trees and BPA's multi-year cyclical maintenance program means that removal, rather than cutback, of tall-growing trees is the best way to ensure the new safety standards are met.

For example, if we discover a 10-foot Douglas fir tree under a line, we don't just cut it back to the proper clearance. Instead, we remove it because, at mature height, the tree will eventually violate the 25-foot clearance limit. Also, trimming trees repeatedly unnecessarily increases BPA's expenses, which runs contrary to our duty to ensure low electrical rates and to protect the financial interests of our ratepayers.

A word about safety

Routine maintenance and ongoing agricultural activities can be dangerous unless appropriate safety measures are taken. BPA wants to ensure safe practices around power lines. We are working with individuals and agricultural communities to raise awareness and educate about working safely in and around transmission corridors and electrical infrastructure.

For your own safety, it's important that you never attempt to trim or remove a tree near a transmission line because working around energized power lines is extremely hazardous. Instead, call BPA and our specially trained crews will take care of it.

For safety tips, link to the booklet "Living and Working Safely Around High-Voltage Power Lines" www.bpa.gov/corporate/pubs/Public_Service/LivingAndWorking.pdf or order a copy by calling toll free 800-622-4520.

For more information

If you have questions about our vegetation management program or would like to request a BPA Land Use Application, call us at 800-836-6619.

For more details on BPA rights-of-way and how to stay safe around high-voltage power lines, visit our website at www.bpa.gov/corporate/pubs. You can also obtain a copy of BPA's Land Use Application from the website.