



1930s – 1940s

Pioneers in the Electrical Industry

1960s – 1980s

Developers and Early Adopters of Technology

2000s – Today

Stewards of Power

SURVEYING

BPA lays the ground-work for the future.

Surveyors chart the territory for BPA's transmission system.




A worker surveys for new transmission line. Feb. 20, 1939.

Workers study a proposed transmission line route to send power to Salem, Albany and Eugene over the right of way of the Oregon Electric Railway Company. 1938.

Workers calculate BPA's path.

Small tools like calculators assisted surveyors in doing their work, which was primarily done manually with pencils and lettering sets until 1985, when computer drafting and mapping (CADD-Bentley MicroStation) emerged and became the norm by 1990.




Worker uses early model 1980s HP hand-held calculator on hand-drawn plan map before computer-aided drafting was implemented at BPA. ca. 1985.

Workers survey in the field. ca. 1989.

Surveyors maximize technology.

Surveyors use a combination of ground, aerial, satellite and office technology to acquire and use information to support design engineering, survey maps, property acquisition, line rating, asset location and post-construction review, among other activities.




Surveyor works on mile 49 of the John Day-Marion No. 1 transmission line to perform an access road survey using dual-frequency, GPS/GNSS, Trimble R10 receivers. These receivers collect points using satellites, ultimately used in software programs like MicroStation and InRoads. Nov. 30, 2016.

Worker reviews 3-D point cloud data derived from aerial light detection and ranging (lidar) scans in support of vegetation management. Feb. 7, 2017.

OFFICE

Many hands make great progress.

Workspaces are typically open to maximize productivity. Workers often sit close together in an assembly line fashion. Government agencies, like BPA, pioneered the bureaucratic workspace of today, with spaces designed around order and function.




Workers draft plans for future projects in the drafting room. May 24, 1940.

Employees perform administrative tasks in the office. Nov. 25, 1939.

Staff use personal electronics.

Employees work in both personal and collaborative workspaces and begin to use personal electronic devices such as calculators and phones.




A worker enjoys desk technology, with a phone, calculator and magnifying glass. ca. 1984.

Staff work collaboratively in a conference room using a calculator and radio. ca. 1984.

Flexible workspaces achieve efficiency.

The advent of personal laptop computers, smartphones and WiFi create a mobile staff, which can perform just as efficiently in a cubicle, in a meeting or anywhere in between.




Workers use the WiFi and laptops to work in the BPA Library & Visitor Center. Feb. 9, 2017.

Workers across BPA locations use cubicles like these in the Construction Services Building in Vancouver. Feb. 9, 2017.

TRANSMISSION

Manual labor makes towers rise.

Workers use the gin pole technique, among others, in BPA's early line construction. This technique requires workers to lean the pole over to raise the other half of the waist section, and the cross bracing between the two sections is then filled in piecemeal. With the tightening of the bolts in this section, the tower is rigid enough to permit the raising of the gin pole to complete the tower.




Workers set a pole for the Bonneville-Eugene Line. Oct. 5, 1939.

Workers employ the gin pole technique on the Chehalis-Covington line. 1940.

Machines assist the crew.

Workers use equipment, like cranes, to raise transmission towers.




Workers erect a tower on the Intertie near Bend, Oregon. May 1968.

Workers raise a tower on the intertie near Bend, Oregon. Nov. 30, 1965.

Crews continue to build and maintain BPA's lines.

BPA's current transmission line and substation work is 60 percent sustain and 40 percent expand, a ratio expected to continue for at least the next five years.




Contract construction line crew erects a single-circuit suspension tower on the new McNary-John Day 500-kV transmission line near Paterson, Washington. Oct. 7, 2009.

On the McNary-John Day line construction, a Sikorsky Aircrane helicopter lifts and places transmission tower segments with the assistance of a BPA guide helicopter. ca. 2010.

COMPUTING

Engineers pave the way for computer-assisted work.

The A-C Network Analyzer is a large analog computing device that helps engineers solve problems quickly, in hours rather than weeks or months. By acting as a miniature power system, the A-C Network Analyzer is used to determine how the electric systems of the Northwest could best serve loads.




Workers meet in the A-C Network Analyzer room. Oct. 10, 1946.

A man operates a component of the A-C Network Analyzer. Nov. 16, 1940.

BPA develops the first computerized system to manage its operations.

Dozens of BPA employees dedicate their careers to the development of Real Time Operations Dispatch and Scheduling (RODS), BPA's first computerized system to manage operations.




Worker operates computer at Dittmar. The specially designed console had multiple screens, a keyboard with special function keys and a hand-held control that moved the cursor dot on the display. Feb. 1979.

Worker performs RODS computing in the Dittmar computer room. ca. 1975.

Servers manage BPA's operations.

Today, large-scale computing equipment operates in the background in closed rooms, accessed only by information technology experts. BPA uses low-density and high-density server environments. All servers have redundant components, and mission and business critical servers have redundancies in separate geographic locations.




Low-density servers process data at BPA's headquarters. Feb. 8, 2017.

BPA worker poses next to high-density servers in the BPA headquarters data access room. Feb. 8, 2017.

TRANSPORTATION

Crews travel to remote landscapes.

Early mobile communication devices allowed crews to stay in contact with each other as they traversed remote territory to plan new lines.




Survey team works on the Midway-Ellensburg line. 1940.

Worker uses a mobile radio set in the field. ca. 1941.

BPA experiments with transportation technology.

BPA begins electric car evaluations in the 1970s as a response to the energy crisis, in fear that oil would be unavailable in the future. Vehicles, like the jeep, continue innovation, in efforts to reach difficult areas with ease. Vehicles like this are the predecessors of today's SUVs.




Worker drives BPA's electric car, the Letric Leopard. ca. 1975.

Worker drives jeep with high-flotation tires, which allows workers to access remote areas through sand and snow without sinking. ca. 1975.

BPA transportation goes back to the future.

After a lengthy hiatus from electric cars, BPA's motor pool began acquiring electric vehicles again in 2012, this time in an effort to generate cost and fuel efficiency, rather than as a response to the energy crisis. Seventy-two percent of BPA's trips using BPA's fleet of vehicles are between Portland and Vancouver, making the use of electric cars ideal, as they remain charged for the entirety of the trip. BPA continues to minimize environmental impact by performing aerial work using its fleet of helicopters and planes.




BPA's latest electric vehicle is the 2016 Ford C-MAX Hybrid. Feb. 21, 2017.

BPA helicopters and a plane rest at BPA's hangar in Portland, Oregon. March 30, 2006.