

OREGON GRADES

Bridges



C

Dams



D+

Drinking Water



C-

Energy



D+

Inland Waterways



C-

Levees



D+

Ports



C-

Rail



C

Roads



C+

Wastewater



D

GPA



About the Grades

Infrastructure is graded based on eight criteria: capacity, condition, funding, future need, operation and maintenance, public safety, resilience, and innovation. ASCE grades on the following scale and defines these grades as:



**Exceptional,
Fit for the
Future**



**Good,
Adequate
for Now**



**Mediocre,
Requires
Attention**



**Poor,
At Risk**



**Failing/Critical,
Unfit for Purpose**

SOLUTIONS TO RAISE THE GRADE

To raise Oregon's infrastructure grade, ASCE developed the following three recommendations:

- 1 Improve our infrastructure's ability to withstand a major seismic event.** The likelihood of experiencing a 9.0 Cascadia Subduction Zone earthquake event over the next 50 years is about 20%. Our growing understanding of both the likelihood and severity of such an event requires immediate attention to our at-risk infrastructure. Bridges, dams, drinking and wastewater systems and more were not designed for ground acceleration that would come with such a largescale seismic event. We need strong leadership, extensive planning, and most importantly, robust funding to prepare our infrastructure to be resilient. Our built systems must aid recovery efforts, rather than hinder them.
- 2 Prioritize investment in Oregon's bridges to protect the transportation network in the aftermath of a major seismic event.** The Oregon Resilience Plan calls for the development of a mitigation policy and retrofit plan for vulnerable bridges and other infrastructure. Bridges are critical lifelines to rural populations, not to mention metropolitan neighborhoods that reside on different sides of the Willamette and Columbia rivers. New bridges must be built to withstand a major earthquake, and old bridges must be retrofitted so that they can stay in service and provide access to communities. Emergency vehicles and supplies will need to be moved quickly and efficiently in the aftermath of a major earthquake.
- 3 Provide additional funding to the Connect Oregon multi-modal, competitive grant program.** Connect Oregon has provided much-needed grants for Oregon's air, rail, marine, and bicycle/pedestrian infrastructure. The program has a proven track record of increasing connectivity, strengthening the freight system, and improving the overall condition of Oregon's transportation network. Robust funding should be provided by the state legislature to ensure the continuation of the program.

About ASCE-OREGON

The American Society of Civil Engineers (ASCE), founded in 1852, is the oldest national professional engineering society in the United States. The Oregon Section of ASCE was founded in 1913 and currently represents over 2,400 members covering most of Oregon and Southwest Washington. ASCE has a proud history of supporting and promoting sound infrastructure policies and practices. Our members represent all disciplines of civil engineering and include private and public sector agencies, academia, and students. Our section includes two branches (Capital Branch based in Salem, OR and the Southwest Washington Branch based in Vancouver, WA), three technical groups (structural, geotechnical, and environmental & water resources), a younger members forum, and four student chapters (OIT, OSU, UofP, PSU). Visit us at <https://www.asceor.org>.

CONTACT US

reportcard@asce.org www.asceor.org
www.infrastructurereportcard.org/Oregon



2019 REPORT CARD FOR OREGON'S INFRASTRUCTURE



Infrastructure Is Important

Infrastructure is critical to supporting the way Oregonians live, get to work, and stay healthy. Our roads take us to vacations in the Cascades or at the Coast, our bridges provide access to work, schools, and hospitals, and our water pipes bring us clean, potable drinking water. Our infrastructure is also critically important to commerce and trade, which Oregon depends on.

Oregon has a long history of supporting infrastructure through funding and innovation. We were the first state to implement a gas tax and we were home to the first transmission line in the U.S. More recently, we became the first state to pilot a road usage charge program to pay for necessary transportation infrastructure repairs.

Oregon's long legacy of supporting its infrastructure is something to be proud of. However, we face significant challenges that need to be addressed head on through substantial planning, strong leadership, and adequate financial assistance. Oregon's population continues to steadily grow and some of our infrastructure systems are experiencing capacity challenges. Meanwhile, many of Oregon's assets, including bridges, dams, and pipelines, were built 50 to 100 years ago and are at the end of their service life. Additionally, we now better understand the likelihood that Western Oregon will experience a potential 9.0 magnitude earthquake – "the Big One" – sometime during the next generation. Protecting our residents and our infrastructure against a major seismic event requires substantial funding.

The Report Card was created to help Oregonians understand the state of our infrastructure. As civil engineers, our job is to plan, design, construct, and maintain our infrastructure networks. This document allows us to share that information with the public. The Report Card provides a snapshot for residents and policymakers to engage in a conversation about where we are and where we want to be.

How You Can Get Involved

- 1 Get the full story behind this Report Card at www.infrastructurereportcard.org/Oregon.**
- 2 Find out the condition of the infrastructure near you on the Save America's Infrastructure app available on iTunes and GooglePlay.**
- 3 Ask your elected leaders what they're doing to make sure your infrastructure is reliable for the future. Use your zip code to find your list of elected officials at www.infrastructurereportcard.org/take-action.**



2019 OREGON'S INFRASTRUCTURE REPORT CARD

The 2019 Report Card for Oregon's Infrastructure gave the state an overall GPA of a C-. Oregon's civil engineers studied 10 categories of infrastructure. Of those 10, six infrastructure categories are in mediocre condition, and four are in poor condition.

The good news is that there are solutions to all of these challenges, and we can raise Oregon's infrastructure grades. By learning more today about the conditions of the infrastructure you use every day, you too can help raise the grade.

BRIDGES C

Oregon has 7,615 bridges and 546 culverts listed in the Federal Highway Administration National Bridge Inventory database. While the percentage of bridges in Oregon that are structurally deficient is just over half the national average, the average age of Oregon's bridge inventory is rapidly increasing. Nearly 20% of Oregon bridges are at risk of becoming structurally deficient in the near future, and the percentage of Oregon's bridges in good condition is the lowest among the western states. While funding provided in House Bill 2017 (passed by the Oregon State Legislature in 2017) has improved funding for bridge infrastructure, maintenance needs are forecasted to grow and will require nearly three times the funding levels established by HB2017. Combined with the need to improve our seismic resilience, the funding for bridges is critically low.

DAMS D+

Dams in Oregon provide flood control, drinking water, fish and wildlife protection, recreational areas, and hydroelectric power, among other social and economic benefits. Oregon has 882 dams recorded in the National Inventory of Dams 2018 database. The state regulates 820 dams. Over the last decade, Oregon has slightly improved funding for safety regulation of existing dams and increased the number of dams with Emergency Action Plans. Additional legislation is in progress to modernize Oregon dam safety regulations. However, Oregon dams are aging and there has been no change in funding made available for maintenance, repair, or replacement of state regulated private dams. About two-thirds of Oregon's dams are older than their typical 50-year design life and in the next five years, more than 70% of these dams will be over 50 years old. Meanwhile, Oregon remains unprepared for extreme hydrologic and seismic events such as the predicted Cascadia Subduction Zone earthquake.

DRINKING WATER C-

Drinking water infrastructure in Oregon faces a variety of challenges. The state's population is growing rapidly, meaning continuous investment in drinking water infrastructure is necessary to expand treatment and distribution system capacity. Additionally, there is a need to replace old or failed components of drinking water infrastructure, including cast iron pipes that are over 100 years old and still in service in some places. While investments in new infrastructure are expensive, delaying needed system upgrades is not a viable alternative. Meanwhile, there is growing recognition of resiliency challenges within Oregon's water systems, particularly following a major earthquake generated by the Cascadia Subduction Zone. Preparing for a major earthquake will require substantial additional funding to harden water networks so that they are capable of resisting this threat.

ENERGY D+

Oregon benefits from reliable and affordable energy resources and ranks among the top five states in terms of renewable energy production. Excellent strides are evident in energy efficiency, renewable energy expansion, reduction of fossil fuel consumption, as well as energy sector innovations. While renewable energy infrastructure is generally newer and in good condition much of the time, the existing energy grid is aging. Electrical transmission capacity has less reserve capacity than in the past, causing bottlenecks and constraints regarding operation of the grid. Most petroleum transmission systems and equipment are over 50 years old and storage tanks are over 100 years old. Additionally, a major concern is the ability of the energy network to perform in the instance of a major Cascadia earthquake. Large portions of the petroleum energy system would be rendered unusable, as transmission and distribution networks lack redundancy and currently exhibit poor conditions.

INLAND WATERWAYS C-

Oregon is home to two major waterways – the Columbia and Willamette rivers – that are used to move wheat, soybeans, grain, wood, mineral bulks, vehicles and more. These 681 miles of waterways and ports in Oregon support close to 21,000 jobs and contribute \$3.6 billion to the economy. Although the inland waterway network has sufficient capacity, and the infrastructure is in adequate condition to accommodate current cargo and vessel movements, much of the infrastructure is in need of repair or upgrades. Current funding has maintained the status quo and is not adequately addressing the aging and deteriorating jetties, locks, and pile dike structures. There are inadequate turning basins, anchorages, and stern buoys to accommodate the larger vessels transiting the Columbia River. With industry trends to move cargo in larger and deeper draft vessels, Oregon's deep draft channels cannot fully accommodate these large vessels and will likely require additional deepening to accommodate the larger ships and remain viable in the future.

LEVEES D+

Based on the U.S. Army Corps of Engineers (USACE) National Levee Database (NLD), over 100,000 Oregonians live or work behind levees. However, this estimate only includes the levees in the NLD as Oregon does not have a complete inventory of its levees – especially the ones outside USACE's portfolio. While many levees were constructed or improved using federal funding, local communities are responsible for ongoing operation and maintenance costs associated with levees. Oregon provides limited funding assistance to levee owners, but many communities have been unable to access this assistance or find it insufficient to cover the cost of improvements required for Federal Emergency Management Agency (FEMA) certification. Of levees inspected by the USACE, approximately 11% (124 miles) of Oregon levees are rated "Minimally Acceptable." About 30% (113 miles) are rated "Unacceptable." The remaining levees are of unknown condition. Currently only 14 of Oregon's 236 levees are certified by FEMA.

PORTS C

Oregon's system of 23 public ports are a critical part of the state's multimodal freight transportation system. Ports facilitate the movement of timber, agricultural, and manufacturing products to regional and international markets. Each port faces different issues due to differences in waterway conditions, surrounding transportation infrastructure, and goods shipped. The condition of port infrastructure varies from good to poor and ongoing maintenance continues to be a challenge. However, in most cases, port infrastructure is nearing the end of design life and current revenue sources are inadequate to properly maintain or upgrade facilities. Funding to upgrade and/or modernize facilities are dependent on state or federal grants, and those opportunities have declined in recent years. The ports also rely on the Harbor Maintenance Trust Fund (HMTF) to pay for dredging and harbor maintenance projects to maintain access to port facilities. Unfortunately, Congress has redirected revenue from the HMTF to offset unrelated portions of the federal budget. As a result, available funding has been inadequate to address the dredging needs of many harbors.

RAIL C

Oregon has 2,782 route miles of track, over half of which is operated by Union Pacific Railroad Co. (UP) and BNSF Railway Co. (BNSF). The remainder is operated by a mix of regional, local, and switching and terminal railroads. The state's two longest short line railroads today are the Portland & Western and the Central Oregon & Pacific. Oregon rail freight tonnage in 2017 was 64.8 million tons, up from 54.4 million tons in 2012. In 2015, railroads employed 2,026 Oregonians and those employees earned \$214.8 million in wages and benefits that year. Principal commodities carried by trains are wood and paper products, farm-related products, and chemicals (largely soda ash or potash). Oregon is currently served with passenger train service by the daily Amtrak Coast Starlight that runs between Seattle and Los Angeles, and by Amtrak's daily Empire Builder between Portland and Chicago. Passenger rail operates on trackage owned by UP and BNSF.

ROADS C+

Oregon has over 74,000 total miles of roads, which is 2% of the national mileage. An improving economy and a growing population have contributed to significant capacity challenges, particularly in the Portland metropolitan region. Fortunately, Oregon lawmakers acted to provide significant new funding for the transportation system beginning in 2017. From 2017 to 2027, \$5.3 billion of additional State Highway Fund revenue will be available to go towards projects that alleviate congestion and improve roadway conditions. Additionally, Oregonians benefit from roads that are generally well-maintained. Statewide, 66% of pavement was in good condition, 24% was in fair condition, and 10% was in poor condition in 2018. Oregon's highways exceeded pavement condition targets, with 90% in fair to good condition. However, the state's roadways face challenges in the future related to population growth and seismic resilience.

WASTEWATER D

Population growth, state-wide asset deterioration, and disaster response are the primary contributors to Oregon's wastewater infrastructure deficiencies. Oregon's compliance with Clean Water Act standards depends on its ability to manage substantial demand increases on systems designed for much less capacity and address aging infrastructure on the brink of failure. These needs alone are challenging enough to fulfill but are now magnified by the threat of an upcoming natural disaster. Many of the wastewater systems are beyond useful design life and will soon need replacement or full rehabilitation. Estimates show a total investment need for Oregon's wastewater infrastructure of approximately \$5 billion. Engineers, planners, and managers must collectively decide during the creation of capital improvement plans how to allocate precious available funds, which almost always fall short of the funds needed to achieve comprehensive system improvements.



PHOTO CREDIT: HDR