MAINE GRADES

Aviation	Bridges	Dams	Drinking Water
B	D+	D+	C-

Energy	Hazardous Waste	Levees	Ports
C-	C-	D+	B-

Public Parks	Rail	Roads	Schools
C	B-	C-	C+

Solid Waste	Stormwater
C-	C

Transit	Wastewater
D+	C-

GPA

C

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:

- **A** – Exceptional, Fit for the Future
- **B** – Good, Adequate for Now
- **C** – Mediocre, Requires Attention
- **D** – Poor, At Risk
- **F** – Failing/Critical, Unfit for Purpose
- **I** – Incomplete

SOLUTIONS TO RAISE THE GRADE

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

1. **Prioritize Public Safety:** Prioritize funding for statewide dam and levee needs, PFAS remediation, and reducing traffic fatalities. There are significant hazards posed by dam or levee failures, including risks to public safety, property, infrastructure, and the environment. Additionally, increasing investment will be required for Maine's efforts to address PFAS contamination in the environment, including soil and groundwater assessments and remediation measures. Traffic crashes typically cause over 150 fatalities on Maine roads annually. Investing in recommendations in the state's highway strategic safety plan will save lives.

2. **Implement Climate Resilience.** In recent years, the increasing frequency of severe storms has significantly impacted Maine's infrastructure. With our state's "Maine Won't Wait" plan for future maintenance and improvements, it's essential to strategically invest in enhancing the resiliency of our state's infrastructure. This will ultimately reduce long-term costs for users. All projects should consider climate impacts in their decision-making process regarding infrastructure investments. As an example, increasing investments in transit to attract more to users will help reduce greenhouse gas emissions.

3. **Create sustainable funding sources.** A continued reliance on federal grants, non-indexed user fees, and one-time increases in funding is not sustainable. Infrastructure projects require extensive time to plan, design, and permit. While transportation has historically benefitted from the fuel tax and state bonding, its purchasing power has diminished over the years. To address rising construction costs and accommodate the shift to electric vehicles, we must grow user fees, such as the Passenger Facility Charge (PFC), and identify new funding sources to replace the declining fuel tax.

4. **Set responsible, resilient utility rates and user fees.** User fees should accurately reflect the true costs of using, maintaining, and improving our infrastructure. While many infrastructure owners can evaluate their own needs and set appropriate fees or bonding plans, a sustained educational initiative is crucial to inform the public about fee changes and assist smaller or resource-constrained utilities in financing options and outreach strategies. The public's willingness to accept increased user fees for necessary infrastructure upgrades is essential, particularly when significant investments are needed.

5. **Educate and Innovate:** Maine has an aging population possessing a wealth of expertise and practical knowledge that must be harnessed and shared to cultivate a skilled workforce for the future. The industry must adapt to the next generation to foster a dynamic and resilient work environment. By investing and embracing innovation and new technologies, opportunities exist to empower the workforce and ensure its ability to thrive and adapt in the years to come.

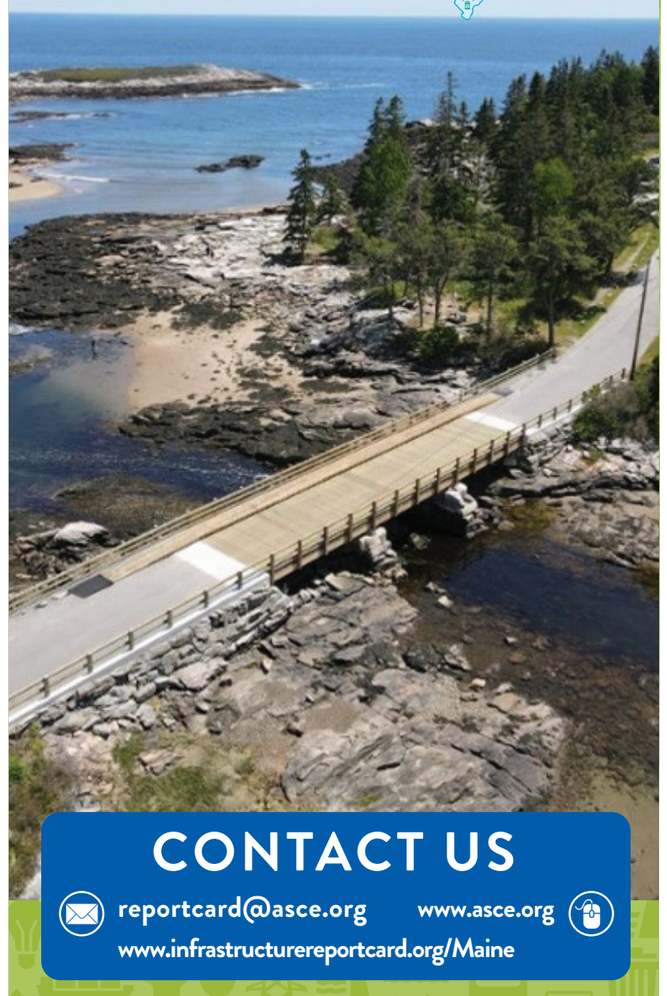
About ASCE-MAINE

The Maine Section of the American Society of Civil Engineers (ASCE) was formed in 1950 and today represents over 700 civil engineer members across the great state of Maine. Since its founding, the Section has been actively involved in the advancement of the science and profession of civil engineering in Maine.

With our commitment to serve and protect the public, the Report Card released by the ASCE Maine Section is a public, voluntary service to citizens and policymakers to inform them of infrastructure needs in their communities.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

2024 REPORT CARD FOR MAINE'S INFRASTRUCTURE



CONTACT US

reportcard@asce.org www.asce.org

www.infrastructurereportcard.org/Maine

Infrastructure Is Important

The *2024 Report Card for Maine's Infrastructure* marks the fifth evaluation of its kind, climbing to an overall grade of C this year. The Maine Section of the American Society of Civil Engineers (Maine Section ASCE) analyzed fundamental components of each infrastructure area: Condition, Capacity, Operations & Maintenance, Innovation, Resiliency, Public Safety, Funding, and Future Needs. Of the 16 categories, only three infrastructure categories are in good condition (B or B-), ten categories ranged in the fair to mediocre range (C+, C or C-), and four categories were in poor condition (D+ or D). Five areas are struggling due to age and lack of attention, while the others are seeing improvements or holding steady through dedicated investments such as one-time infusions of state and federal funds, federal grants, private funds, and user fees.

In 2024, 39 ASCE infrastructure leaders and industry experts volunteered countless hours to review publicly available data and provide an overview of the state of infrastructure in Maine. The team analyzed the current conditions and needs to assign a simple A to F letter grade to 16 infrastructure categories. The maintenance and improvement of Maine's infrastructure is vital to our economy, health, safety, security, and environmental sustainability. Decisions regarding public infrastructure, which are paid for through user fees, taxes, and private investments, must be guided by long-term comprehensive planning, with sustainable and reliable funding sources.

The *Report Card on Maine's Infrastructure* aims to raise public awareness of the importance of modern and well-maintained infrastructure. It highlights that Maine's infrastructure requires on-going maintenance and strategic planning. We believe discussing the issues detailed in this Report Card will lead to a greater understanding of our state's current and future needs, encouraging community leaders, the state legislature, and our congressional delegation to formulate policies and provide the necessary funding to address these critical infrastructure needs. Civil engineering is a broad field dealing with the planning, design, construction, maintenance, and management of infrastructure networks and the resulting vitality and safety of the public. The Maine Section of ASCE represents over 700 civil engineering professionals who live and work in Maine.

How You Can Get Involved

1. **Get the full story behind this Report Card at www.infrastructurereportcard.org/Maine.**

2. **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.**

2024 MAINE'S INFRASTRUCTURE REPORT CARD

The 2024 Report Card for Maine's Infrastructure gave the state an overall GPA of a C. Maine's civil engineers studied 16 categories of infrastructure. Of those 16, three infrastructure categories are in good condtition, nine 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 Maine's infrastructure grades. By learning more today about the conditions of the infrastructure you use every day, you too can help raise the grade.

AVIATION — B

Maine airports have undergone significant improvements in the past four years, from rehabilitation of airport pavement and commitments to installing weather reporting stations and remote surveillance cameras among other upgrades. While the state's two largest airports have minor landside capacity issues in terminal space and vehicle parking, airside and airspace capacity is not an issue statewide. However, revenue from the Airport Improvement Program (AIP) entitlement and Passenger Facility Charge (PFC), essential infrastructure project resources, are struggling to keep pace with inflation. The need for relief with these funding constraints is urgent. Without it, maintaining Maine airports at a high level will become increasingly difficult.

BRIDGES — D+

Maine's highway system includes a total of 2,521 bridges, more than half of which are over 50 years old. Historic funding levels have been insufficient to replace bridges before they exceed their design life and nearly one out of every seven Maine bridges (15%) is in poor condition. In recent years, the state's bridge funding outlook has significantly improved, thanks to increased state and federal funding. According to MaineDOT, this has enabled substantial progress in bridge investment and many projects are now underway. The benefits of this additional investment won't be fully realized for several years considering the time required to advance projects from funding implementation to construction completion. Looking ahead, the expiration of the current federal infrastructure funding allocation program in 2026 and the need to maintain sustainable funding sources at the state level will be primary factors in maintaining funding to support much-needed bridge improvements in Maine.

DAMS — D+

The average age of Maine's 672 dams is 108 years; of the 53% of these dams whose conditions have been assessed, half are in satisfactory condition. Overall, 159 Maine dams are classified as significant- and high-hazard potential dams, meaning failure would result in considerable damage and/or loss of life. Unfortunately, a quarter of these high-hazard dams are in poor or unsatisfactory condition. Despite inconsistent funding and three years without a State Dam Safety Inspector, the Maine Dam Safety Program has achieved 100% compliance with emergency action plans for significant- and high-hazard dams, exceeding the national average of 75%. However, to raise the grade, the Maine Dam Safety Program needs increased and dedicated funding, additional staff, and increased authority to continue ensuring public safety and oversee nearly $1 billion of estimated repairs to improve the condition of Maine's dams.

DRINKING WATER — C-

An estimated two-thirds of Maine residents are served by public drinking water systems. Aging water mains continue to be a serious issue as utilities miss the 1% annual replacement rate, effectively adding 10-50 years to the existing 100-year replacement cycle. The issue is largely due to project funding needs exceeding the resources available at the state and local levels. The Drinking Water Program estimates $60 million per year is needed over the next 20 years for drinking water infrastructure projects which equates to an annual $27.7 million shortfall in funding. Considering the impending U.S. Environmental Protection Agency (EPA) PFAS limits, the shortfall will grow by another $150 million in the next five years.

ENERGY — C-

Maine is a leader in renewable energy and has sufficient electricity generation to meet peak demands today. As older plants continue to retire, these renewable resources will be called on to meet increasingly challenging reliability and resilience needs, which is currently not technologically feasible. Until such a time that grid and/or storage technologies are capable of storing and dispatching several days of demand, Maine will continue to rely heavily on natural gas to maintain a reliable and cost-effective base load. In the near term, increased research, deep water ports, purpose-built vessels, and other infrastructure are needed to facilitate offshore wind; new transmission and distribution is needed to interconnect new renewables; and storage is needed to help meet peak demands and improve system efficiency. For the near future, additional improvements of more than $2 billion annually will be required to meet these needs.

HAZARDOUS WASTE — C-

Funding for hazardous waste assessment and cleanup has increased significantly. Substantial progress has been made on contaminated sites, including the Portsmouth Naval Shipyard, Brooksville Callahan Mine Superfund site, and Orrington HoltraChem site. Even so, Maine faces several hazardous waste management challenges, including emerging contaminants, funding limitations, aging infrastructure, and climate resiliency. Polyfluoroalkyl substances (PFAS) contamination from septage sludge and landfill leachate in soil, groundwater, and flora/fauna is a critical issue. Proactive measures, such as new laws and impact studies, are underway. While remediation and affected landowner compensation costs are uncertain, they are both substantial and necessary. Additionally, the resilience of hazardous waste and petroleum sites to natural hazards is an increasing concern, despite the enactment of new regulations. The Maine DEP's remediation sites database has grown since 2016 and 2020, with more sites entering through the Voluntary Response Action Program and Brownfields program, indicating renewed interest in cleanup and redevelopment.

LEVEES — D+

The National Levee Database identifies five levees in Maine that protect 624 citizens and $133 million of property from flooding. While Federal regulators consider the risk associated with Maine's five levees to be "Low," this risk level is relative to levee systems nationwide. Maine's levees were not designed to be overtopped, even though an overtopping event is feasible. Overtopping could result in a breach that could be catastrophic to the communities they protect. Funding for the maintenance and improvement of Maine's levees is generally the burden of the local community and is often insufficient. Federal funding is available for the upgrade of levees but has historically been competitive or required local funding matches beyond the capacity of local communities. Maine has no Levee Safety Program, and the 2023 Maine State Hazard Mitigation Plan does not recognize levees as a potential hazard.

PORTS — B-

Maine's ports are in good condition but are starting to show signs of wear that requires attention. More than $130 million in state, federal, and private funds have been invested in ports over the last eight years, $102 million of which were committed in the last four years alone. Focus has been on growth in freight traffic, cold storage, and tourism, with nearly half of the recent investments from private funds. The Portland International Marine Terminal (IMT) continues to see growth in container shipping, while tourism and cruise ship calls remain strong throughout the state. Over $170 million in future investments are needed to realize continued growth.

PUBLIC PARKS — C

Maine's parks are a key contributor to tourism – one of Maine's top industries. Outdoor recreation contributes $3.3 billion to Maine's economy, representing 3.9% of Maine's overall economy, and 5% of all jobs in the state, more than 32,000 in total. Despite this impact, Maine state parks have not seen substantial investment to maintain and improve parks in over fifteen years, leading to a maintenance backlog estimated at $75 million. Governor Janet Mills announced her Maine Jobs and Recovery Plan initiative in 2021, which designated $50 million to rebuild and improve park infrastructure across the state. The key objectives of the initiative were ensuring safety and stewardship, accommodating increased visitation, and boosting tourism and outdoor recreation. Despite the one-time surge in support, most projects remain in planning or design and their estimated construction costs often exceed previous budgets thanks to workforce challenges and materials inflation. A long-term approach to funding, such as tourism revenue capture into dedicated accounts, is needed to improve and maintain the quality and safety of state parks, roads, and facilities.

RAIL — B-

Maine has 1,320 miles of active railroad, with the largest rail customers being pulp and paper and lumber industries. In addition to freight rail service, the Amtrak Downeaster provides passenger service several times per day from Brunswick, Maine, to Boston – with plans to extend the northern terminus. Five federal grants in recent years have invested $94 million between rail infrastructure and inter-city rail programs, contributing to ongoing projects improving over 380 miles of track. These big projects come with $8.3 million in state support and $54 million from the private rail companies that own the corridors. State funding programs have also contributed smaller grants to improve freight access beyond the major thoroughfares. It will be critical to continue to build on these projects with consistent funding that deliver improvements to safety, operational capacity, and road congestion relief. MaineDOT has identified freight and passenger projects for the future: 17 for the short-term (2023-26) – some already in development – and 16 more projects identified as long-term (2027-2042).

ROADS — C-

Maine's road performance has improved. 60% of state road pavement was inspected as good or excellent condition in 2012; that number grew to 74% by 2024. MaineDOT also evaluates roads by travel time reliability, and the state's roads aren't seriously stressed – though traffic in urban areas is growing compared to rural contexts. Safety, the third leg of statewide performance evaluations, is mixed. Total traffic deaths declined to 134 in 2023 – the lowest level since 2014 – and Maine's 0.89 fatality rate per 100 million VMT was well below the national average of 1.26. However, 2024's traffic fatality total was at 154 by October, and Maine's crash rate is higher than the national mark. MaineDOT's 2024-2026 project spending plan more than doubles its 2020-22 work, thanks to increased federal investment from formula and competitive grants. However, continued federal investments are uncertain. New state-level funding methods will need to supplement the fuel tax revenues losing value to inflation and fleet electrification.

SCHOOLS — C+

Approximately 173,000 students attend Maine's 600 schools in 540 buildings, from pre-kindergarten through high school. Public data on school facilities are scarce, but overall, school buildings are aging, and educational needs are changing. There are two primary state programs providing funding for infrastructure: the Major Capital Projects (MCP) program and the School Revolving Renovation Fund (SRRF). Infrastructure needs are partially met by consolidating schools into new facilities at $50 to 170 million each; but the consolidations are unpopular locally. Communities that do not receive state funding can self-fund buildings and repairs using bonds. The Maine Department of Education (DOE) has no information about the amount of self-funding underway and the DOE is doing a survey of school maintenance conditions statewide.

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SOLID WASTE — C-

Solid waste disposal needs in Maine are growing faster than the state's population and recycling or other diversions have lost ground in the last decade. Per capita landfill waste was about equal to per capita diversion in 2013, and the former was two times the latter by 2023. This goes beyond the household kitchen: construction debris waste and wastewater treatment biosolids – landfilled instead of reused for soil improvement – drive increased demand. Capacity is moderate at Maine solid waste facilities relative to national averages; most at 20 years or less. Eastern Maine has more urgent needs but could be extended 15-20 years by expanding the State's Juniper Ridge landfill. That will be tough. A 2024 state report found that landfilling methods minimize operations and maintenance costs, but Maine hasn't approved a new facility in decades and reviews for upgrades to existing licensees are long and complex. With regulatory reviews enforcing environmental stewardships, state support is needed to break the cycle of landfilling as the default choice in solid waste streams and facility capacities decreasing.

STORMWATER — C

Maine has had a state law regulating stormwater peak flows for over five decades. The state has 30 municipal separate stormwater sewer system (MS4) communities, but comprehensive information on the capacity and condition of the state's stormwater infrastructure is not available. Urban stormwater disproportionately impacts Maine's surface water quality considering that only 2.8% of the state is developed land. Maine's stormwater needs are estimated to be $275 million in a 2022 needs survey. 87% of those needs are for natural or built systems that retain stormwater. Dedicated stormwater funding will be increasingly necessary to address the growing needs due to extreme weather events and urban growth.

TRANSIT — D+

Maine has 23 transit systems that receive state or federal funding, with most areas in Maine not having the population density to support typical transit services. Though ridership declined during the COVID-19 pandemic, ridership is now rebounding. As Maine's population ages, transportation options will become increasingly important to provide quality of life and sustainability of the transportation network. The federal Infrastructure Investment and Jobs Act has provided the opportunity for more transit investment, especially for underserved and vulnerable populations. Additionally, the state has increased funding per capita, providing $20.24 annually per capita as an operational subsidy for transit services, ranking 18th in the nation, and exceeding neighboring states New Hampshire and Vermont.

WASTEWATER — C-

Maine's wastewater infrastructure continues to age, with many of the state's treatment facilities approximately 50 years old after construction in the 1970s. With plans in place for varied upgrades at many facilities in Maine, significant funding needs remain. New design considerations impact project planning, including the need for resilience to extreme weather and new emerging water quality treatment regulations. A 2022 survey identified just over $3.1 billion in total wastewater upgrade needs to account for new considerations and meet longstanding maintenance backlogs. This included $769 million for decentralized wastewater treatment systems – primarily the septic systems used by most Maine residents. Municipal wastewater needs for the State of Maine were identified at $1.7 billion. Recent federal and state funding increases have helped, but those investment methods are unpredictable. Utility rate structures should include the full cost of services, including operation, maintenance, and capital needs.