HAWAII GRADES

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

ABOUT THE GRADES

The American Society of Civil Engineers (ASCE) represents more than 150,000 civil engineers nationwide providing technical support for civil engineering content. Formed on October 4, 1937, the Hawaii Section of ASCE represents over 1,000 members locally. The mission of the Hawaii Section is to develop leadership, advance technology, advocate lifelong learning, and promote engineering throughout the State. The Hawaii Section activities include promoting civil engineering in local grade schools, providing affordable technical seminars, providing technical assistance to government entities, supporting the University of Hawaii Student Chapter and the Hawaii Section Younger Member Forum, funding for scholarships, honoring individuals and notable civil engineering projects in Hawaii, and supporting the civil engineering profession in the State Legislature.

SOLUTIONS TO RAISE THE GRADE

- Hawaii needs to fund short and long-term strategies to address the impacts of sea-level rise. In the short term, education regarding beach nourishment should continue to take place, and adequate funding should be identified and directed toward shoreline protection projects. In the longer term, funding to address the impacts of sea level rise is needed. Projections show that by 2100, sea levels will rise by approximately 3.2 feet, meaning over 20,000 people would be displaced, roughly 5,700 structures would be impacted, and approximately 40 miles of coastal roads would be at risk of sea inundation. Portions of the major coastal arteries or ‘belt roads’ in each county would be impassable, affecting certain communities that lack parallel facilities and rely solely on these corridors for access. Strategic and comprehensive planning and robust funding to support necessary projects is needed now to plan for tomorrow.

- Hawaii’s roadways are among the most congested in the nation, and there is a $23 billion transportation infrastructure funding gap over the next 20 years. To help close the investment gap and to address growing construction costs, the state legislature should increase the state gas tax and support innovative funding mechanisms. New revenue can help toward paving potholes, managing congestion, and reducing the number of structurally deficient bridges in Hawaii.

- 93% of Hawaii’s dams are high-hazard potential, meaning failure could result in significant loss of life and property. According to the Association of State Dam Safety Officials, 76% of Hawaii’s High Hazard Potential dams are in poor condition and 8% are rated unsatisfactory. Significant funding for engineering investigations, repairs and maintenance are necessary to help Hawaii’s dams meet current safety standards and minimize the risk to downstream communities and the general public.

- Hawaii’s drinking water and wastewater systems are plagued by infiltration of saline groundwater and both exhibit significant funding gaps when it comes to available revenue versus total needs. Additionally, the impact of sea level rise and wave inundation on facilities could potentially release wastewater or hazardous waste to local waters and habitats. Rates for both drinking water and wastewater utilities should reflect the true cost of service. Additionally, Hawaiian communities should leverage available loan and grant programs to ensure public safety and the environment is protected.

- Stormwater in Hawaii drains directly into the ocean. Pollutants, trash, and debris entering Hawaii’s water resources is especially harmful as the state has experienced an increase in extreme flooding caused by high tides, storm surges, hurricanes, tsunamis and sea level rise. Dedicated funding from stormwater utilities can provide funding for drainage system upgrades, but there are currently no user fees or charge rates in place. Better recognition of stormwater as a utility and resource and further development of county stormwater utility fees to pay for the retrofitting of flood control infrastructure and water quality improvement projects.

HOW YOU CAN GET INVOLVED

1. Get the full story behind this Report Card at www.infrastructurereportcard.org/hawaii.
2. Find out the condition of the infrastructure near you at Save America’s Infrastructure app available on the Apple App store and the Google Play store.
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.
The 2019 Report Card for Hawaii’s infrastructure gave the state an overall GPA of D+. Based on publicly available information, the ASCE Hawaii Section evaluated 11 infrastructure categories. Of those 11, five categories are in mediocre condition and six are in poor condition. Some elements exhibit significant deficiencies in conditions and functionality, putting the public’s health, safety, and welfare at risk.

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

**2019 HAWAII INFRASTRUCTURE REPORT CARD**

**COASTAL AREAS**

**DAMS**

**ROADS**

**SCHOOLS**

**Hawaii’s beaches and oceans are one of the foundations of the state’s economy and the highlight of local culture and lifestyle. Sandy, accessible beaches are a vital piece to the recreation and tourism sector. Due to shoreline erosion, Hawaii’s coastlines are faced with the following challenges: availability of suitable sand reserves, enough funding and efficient permitting. Although limited, developing and applying local and regional beach management strategies and restoration projects will be essential to decreasing the risk exposure for coastal areas. Research projects an anticipated 3.2 feet of sea level rise by 2100, which will put approximately 5,700 structures surrounding coastal areas and 40 miles of coastal roads at risk of sea inundation. Future legislation regarding development near coastal areas are one of the keys to ensuring that beaches will remain for future generations.**

**The State of Hawaii regulates 132 dams across the state. The majority of these dams were constructed as part of irrigation systems during the rise of the sugar cane industry and many are nearly 100 years old. Due to old age, these dams have deteriorated over time and present risks to downstream, now developed, communities. Of the 132 state-regulated dams, 129 (93%) are classified as high-hazard potential (HHIP) meaning a dam failure could result in significant loss of life or property and three are classified as Significant Hazard Potential (SHP), meaning dam failures could result in significant loss of property. State law requires all HHIP dams to have an Emergency Action Plan (EAP) and require contact information and operations to maximize the safety of downstream residents in the event of a dam failure or dam emergency. 100% of state regulated HHIP dams have an EAP, which is above the national average of 77%. All SHP dams have EAPs as well. As the majority of the dams are privately owned, increased funding is needed to support engineering, repairs and maintenance necessary to help Hawaii’s dams meet current safety standards and minimize the risk to downstream communities and the general public.**

**Hawaii’s drinking water systems are comprised of groundwater, surface water, water catchment, wastewater injection, and desalination. Each of the four counties in Hawaii manage and operate separate water supply systems. Private and military systems supplement these county systems. Capacity is sufficient, but significant funding is needed to address aging infrastructure and source development. Across the state, the reliability of state regulated HHIP dams has declined due to the lack of recharge and contamination from salt water intrusion and urban pollutants. Honolulu has identified over $5 billion in infrastructure needs, Kauai requires $174 million for current deficiencies and future needs, and Maui needs $310 million over the next 20 years for source development and transmission improvements. Deterioration of the aged distribution infrastructure compounds the reliability of the system. For example, of 24,000 of Maui’s water distribution pipes were installed during the plantation era in the late 1920s. Urbanization on the island have increased water usage without replacing these sometimes undersized and deteriorating systems.**

**Hawaii is an island state that does not have any naturally occurring fuel sources, but is blessed with abundant renewable energy resources. Currently, Hawaii has the highest electricity cost per kilowatt hour in the nation, approximately 2.7 times the national average. To bring costs down and better protect the environment, Hawaii has mandated 100 percent of electricity generation with renewable sources by 2045. With solar energy readily available and significant technological advancements, solar electricity and water heating has become Hawaii’s most popular and cost-efficient energy source. The state leads the nation in terms of residential solar power generated per household and is third in total solar photovoltaic capacity installed. Meanwhile, over $1.5 billion has been spent by the Hawaiian Electric Companies to upgrade and strengthen poles, lines and equipment to prepare for increasingly severe storms.**

**In recent years, Hawaii has experienced an increase in extreme flooding caused by high tides, storm surges, hurricane rainfall, tsunamis, and sea level rise. As the frequency and intensity of rainfall events increase, it is important that Hawaii’s stormwater infrastructure is regularly maintained and can accommodate rainfall during storm events to prevent flooding of highways, businesses and residences. The majority of stormwater systems in Hawaii are owned and maintained by state and county agencies, with some agencies lacking adequate capacity. Since Hawaii’s stormwater systems drain directly into the ocean, affecting marine life, regulating agencies are emphasizing the need for improved performance, the ability to convey, and the effectiveness of stormwater systems. Based on the Environmental Protection Agency’s 2018 assessment, 88 of the 108 marine water bodies did not meet water quality standards. Dedicated funding from utility charges can provide additional sources of funding for drainage system upgrades; however, there are currently no user fees or charge rates in place.**

**Effective wastewater management is essential to safeguard public health, valuable coral reefs and aquatic ecosystems, and the tourism-based economy in Hawaii. Despite significant progress in mitigating health and environmental impacts following the 1972 Clean Water Act, Hawaii’s wastewater infrastructure remains in need of attention and substantial funding. While some owners and operators of wastewater infrastructure, including the City and County of Honolulu, have done a commendable job of upgrading assets, adding capacity, and preparing for the future, capital improvements for wastewater systems are not consistent in all the 88,000 cesspools statewide that have significant public health and water quality impacts.**