

The Seattle Aquarium: Piers 59 and 60

Climate resiliency on Seattle's waterfront



Photo Credits: Marcela Gara

Climate change is warming our ocean and planet, disrupting ecosystems, and impacting our food systems. The Seattle Aquarium knows sustainable stewardship of our lands and water is necessary to combat climate change. Their plan to build a regenerative aquarium — to produce more environmental benefit than harm — embodies their commitment to mitigating the impact of climate change by reducing greenhouse gas emissions while maintaining their campus' energy efficiency and status as a premier Seattle attraction.

The Seattle Aquarium's campus contains three separate buildings that together tell a story about our connection to the ocean. In 2024, the Ocean Pavilion, focusing on warm-water marine habitats, opened as a new, all-electric building on the aquarium's campus with a plan to offset 100% of the building's operational energy use with new renewable energy. However, the two other buildings on the campus — Piers 59 and 60 — require more investment and time to transform into decarbonized, climate-resilient buildings. Built in the early 1900s as a fishing warehouse, Pier 59 is now a historic landmark on Seattle's waterfront. It houses the aquarium's main hall, gift shop, café, and various habitats that spotlight local Pacific Northwest ecosystems. Pier 60 is also home to hundreds of Pacific Northwest plants and animals, from seals to sea urchins, and also houses the aquarium's veterinary clinic.

About

Address:
1483 Alaskan Way,
Seattle, WA 98101

Size: 73,000 SF

**Original
construction of
Pier 59:** 1901

**Original
construction of
Pier 60:** 1977

**Number of animals
housed:** 20,000+

**Number of visitors
in 2024:** 1,000,000+

Steps towards a climate-resilient, regenerative future

The Seattle Aquarium partnered with the City of Seattle and Ecotope on a building energy and emissions audit for Piers 59 and 60 to identify cost-effective actions that support compliance with Seattle's new Building Emissions Performance Standard (BEPS) and the State of Washington Clean Buildings Performance Standard. The audit offered a roadmap for the aquarium to strategically get to net-zero emissions and improve energy efficiency over time, which is essential to meeting both laws. The work included the following steps and findings:



Energy audit — Ecotope partnered with the aquarium to identify the best strategy to eliminate carbon-based fuel from daily facility operations. The buildings' systems operate 24/7 to support animal life, in addition to housing a veterinary clinic, so it was necessary to design a plan that ensured the health, safety, and comfort of the animals.



Efficient ventilation — To reduce the amount of energy needed to heat the buildings, Ecotope recommended using better air ventilation controls and scheduling and adding an energy recovery ventilation (ERV) system. ERV systems reclaim wasted heat from the exhausted air, which is used to warm the fresh incoming air. This reduces the energy needed to heat the buildings.



Boilers and furnaces for heat — High emissions gas systems currently heat the older Piers 59 and 60 buildings for the comfort of aquarium guests and staff. Ecotope recommended replacing this equipment with lower-emissions electric heat pumps to meet the community's heating and cooling needs in a more climate-friendly way.



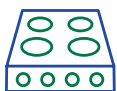
Habitat water heating — Gas boilers used to warm the seawater for Pier 59's former Pacific Coral Reef habitats were eliminated and the tropical species now moved to the new Ocean Pavilion, which is a low-emissions, energy efficient, all-electric building.



Energy from seawater — Ecotope has outlined a plan for the remaining gas boilers to be transitioned to heat pumps using a seawater heat exchanger. The boilers serving pier 59 and pier 60 space heating will be replaced with heat pumps that harvest energy from the seawater flowing out of the exhibits after it is used in the aquarium tanks. The heat pumps will put that energy into the water that is used to condition the people spaces in the building.



Renewable energy — Both solar and electric water heaters serve the restrooms, kitchen and divers' showers. The Aquarium has a 50 kW solar photovoltaic system that partially offsets the facilities' electric consumption.



Café kitchen — Gas-powered stoves, ovens, grills and warming stations have been replaced with electric kitchen equipment, ensuring the café cooking will be very low-emissions. The aquarium's food service team provided their expertise on what was needed. The final step for eliminating the kitchen's climate polluting emissions will be to replace gas used to heat the incoming kitchen air.

The Seattle Aquarium is a complicated operation. We are not a restaurant, but we have one. We are not an office building, but we have office space. We are not a hospital, but we have vet facilities. If we can go all-electric, anyone can.

Jesse Phillips-Kress, VP of Facilities and Operations



Net-zero emissions is achievable, even for older, complex buildings

Getting to net-zero emissions from buildings is a necessary step to build a climate-resilient community. Even while doing this important work, the aquarium will be able to stay open, provide a wonderful guest experience, and support animal wellbeing. Transforming the aquarium campus into an environmentally regenerative aquarium will continue to be a multi-step process, considering the wide variety of challenges Piers 59 and 60 pose. Seattle Aquarium sees this work as an opportunity to step up as a regional conservation leader and demonstrate how climate-positive solutions are possible even for large, complex buildings.

Why reduce building emissions?

In Seattle, buildings are one of the largest sources of climate pollution, responsible for 40% of our City's greenhouse gas emissions. These emissions pollute our air, accelerate climate change, and harm people's health and the environment, disproportionately affecting communities of color and people with lower incomes. Seattle's new [Building Emissions Performance Standard \(BEPS\)](#) requires buildings greater than 20,000 SF to reach net-zero emissions by 2041-2050, and is one of the most impactful climate actions Seattle is taking.

Get started today.

Addressing emissions from buildings is one of the most powerful levers for tackling climate change. Get started on your own path by talking with your facility staff and independent service providers to explore lower emissions options like heat pumps well before you need to replace equipment. Contact cleanbuildings@seattle.gov for more information about free City technical support.