**SOLAR MURMURATION**

The Santa Monica Pier is a staple location to Angelenos and tourists of Los Angeles. Growing up, a day at the pier brought joy and families together. On a hot summer day, the pier and surrounding beach provide a fun and relaxing get away. People escape the heat by swimming in the water. This location provides memories. Whether it be a day with family, a group of tourists, or a first date, the Santa Monica Pier has always been a reliable area to have fun and explore.

In 2013, harmful chemicals were released into the ocean by nearby power and waste plants. The 2015 Water Report by UCLA gave astonishing data. 33 million pounds of ammonia, 100 thousand pounds of nitrates, and 140 pounds of lead and much more were discharged into the Santa Monica Bay. These three chemicals are most poisonous to marine life. As a child, one can remember scaring their mom peering over the ledge of the pier. You could see fish swimming below that dark navy water. People strung poles over the side to catch fish. Now, marine life has nearly vanished due to the chemicals released. In the same report by UCLA, the quality of water in Santa Monica was given a D. Surrounding beaches were given F ratings. Malibu used to thrive with marine life. Now, despite efforts to restore natural habitat, the marine life decreases every year. To an Angeleno, who has visited the spot and viewed it as home, the current quality of water is devastating.

A Marine Expo provided the opportunity to learn about saltwater tanks and the most poisonous living conditions. By starting a 20-gallon tank, the water needed a filtration process to restore the quality of saltwater. First and most important, ammonia must be removed from the water. To do this, adding healthy bacteria, a carbon filter, and solution agent neutralized the ammonia. After two weeks, the ammonia was gone. The process continued for nitrates and lead during those two weeks. The tank is now able to house aquatic life and successfully grow coral. This same process can be applied on a large scale to the Santa Monica water.

**ENVIRONMENTAL IMPACT STATEMENT**

As an extension of the pier, Solar Murmuration provides a solution to our water quality problem. The massive filtration tanks hold up to 3.4 billion gallons and filter a minimum of 4 trillion gallons per year.

Powered by Solar Energy, the filtration system can work throughout the year with minimal impact on the electron grid. The custom panel roofing can provide 11,601,408 kWh/month DC. Annually, the photovoltaic roofing will provide 139,216,896 kWh/year DC. That is enough energy to power the filtration system and the entire Santa Monica Pier. The formation of the photovoltaic panels took form inspiration from the mathematical transforming relation of birds in flight patterns. The shape of the panels follows that of a bird flock flying together over clean ocean waters.

Solar Murmuration provides all guests with an educational purpose in addition to their joyful experience on the pier. People can walk through the platform and observe the difference in water quality as it filters through each tank by peering into the side windows of each. Along the extension walking west, a space for collaborative marine mosaics from local artists will provide the walking path to our water quality problem. The entire experience of Solar Murmuration leaves an educational impact on those who visit.

By combining photovoltaic power with water filtration, Solar Murmuration is able to assist two problems within our environment. It provides a natural source of power with minimal impact on the electron grid and filters the saltwater for improved quality. Marine life will begin to come back to the shores of the Santa Monica bay area and will be a safe place for people to swim and enjoy Santa Monica Pier.