# Dana Point Harbor

*Orange County*

## Site Description

Dana Point Harbor is located in southern Orange County within the City of Dana Point. The harbor is located immediately east of Dana Point Headland, a notable landform and natural boundary between the narrow pocket beaches to the north and sandy beaches to the south. Dana Point Harbor, which was built and granted Public Trust lands by the state in the late 1960s, spans 260 acres in Dana Cove and is protected by two breakwaters. The harbor area is a valued resource for the region. In addition to recreational boat slips, it contains a calm water beach in Baby Beach, historic ships such as the *Pilgrim* and *Spirit of Dana Point*, art galleries, the Ocean Institute, the county-owned Dana Point Youth & Group Facility, whale watching and sportfishing hubs, commercial areas, hotels, and yacht clubs. With sea level rise, many of these Public Trust resources are at risk from coastal flooding and wave run up. By inventorying these resources and identifying how various coastal hazards will evolve with sea level rise, Dana Point Harbor can better understand and prepare for future challenges associated with sea level rise.

**Granted Land Type:**
Smaller Harbor/Marina

## Public Trust Uses

*Primary Uses:* Commerce, Navigation

*Secondary Uses:* Recreation


**Modeling system used for mapping:**
CoSMoS

**Sea level rise scenarios/elevations**
**LINK TO FULL ASSESSMENT**

**Coastal Hazards considered:**
tidal inundation, storms (annual, 20-year, 100-year)

| Vulnerable Public Trust Resources | |
|---|---|
| Built Facilities | Federally owned breakwaters, interior bulkhead wall, interior rock revetment, roadways, stormwater infrastructure, potable water infrastructure, electrical and irrigation water infrastructure, docks, piers, boat launches, commercial development |
| Natural Assets | Beaches and parks |

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# Other Economic Vulnerabilities

Dana Point Harbor and associated tidelands include several sources of revenue generation. Total tideland revenues were greater than $27 million in 2017. These revenues are generated almost entirely through rents and concessions, which account for more than $25 million of revenue. The next most significant source of revenue is park and recreation fees that account for more than $700,000. Other revenue streams include other charges for services, interest accruals, and other miscellaneous sources. The total value of tideland assets is approximately $102 million. Though the majority of Dana Point Harbor is engineered in nature, non-market values loss within Dana Point Harbor is likely due to projected significant loss of sandy beach area at Baby Beach as sea level rise increases. Beaches such as Baby Beach provide non-market value in several ways including recreation and storm buffering capacity. Baby Beach contains approximately 1.1 acres of sandy beach area, resulting in a total annual value of approximately $62,000 based on EPA non-market service valuations and adjustments to 2018 dollars using Consumer Price Index values.

## Proposed Adaptation and Mitigation Measures

### *Protect*

Beach nourishment and dune restoration at Baby Beach; around boating and marina infrastructure, employ “living breakwater” as a green solution, redesign or reinforce breakwater structures, and use barriers to prevent flooding of parking areas; for upland development, retrofit or replace existing bulkhead wall and rock revetment, and install berms and walls.

### *Accommodate*

For stormwater infrastructure, employ green infrastructure strategies like permeable pavement or rainwater harvesting and reduce extent and duration of flooding with bio-swales or detention basins.

### *Retreat*

Relocate park amenities at Baby Beach; for upland development, remove or relocate vulnerable structures and employ additional shoreline setbacks when designing new structures.

***Overtopping of west breakwater (April 2007)***

### Long Term Vulnerability

Under a 4.9-foot sea level rise scenario, projections extend past all interior shoreline bulkheads and significant portions of rock revetments. Water levels projected under this scenario also approach the upper limits of the western Harbor breakwater. Shoreline protection infrastructure in its current state will be highly sensitive to such hazards. Interior bulkheads are projected to be overtopped even under non-storm conditions, resulting in frequent loss of all flood protection benefits and reduced utility of landward resources. Wave overtopping of interior rock revetments is also likely to become more common due to substantial increases in wave transmission through outer breakwaters. In addition to increased flood hazards, increased wave action within the Harbor under long-term sea level rise conditions will reduce the safety of navigational channels through increased wave height and shoaling.

**Anticipated Costs of Sea Level Rise (millions)***

| | Current | 2030 (19.2 in.) | 2050 (19.2 in.) | 2100 (58–79 in.) |
|---|---|---|---|---|
| **Assets at Risk or Repair and Replacement Costs** | | | | |
| **Losses in Non-Market Value** | | **$9.6** | **$24** | **$43.2** |
| **Cost of Adaptation** | | | | |

* Information was not presented in this report on costs for the years 2030, 2050, and 2100. Non-market losses from Table 8.7.