

Adapting to Rising Tides



Oakland International Airport Vulnerability and Risk Profile

Oakland International Airport (OAK) is one of the three primary commercial airports in the San Francisco Bay Area. It is owned and operated by the Port of Oakland, which is an autonomous department of the City of Oakland that is governed by a Board of Commissioners and funds its own operations. The airport served 9,266,570 passengers in 2011, representing 16 percent of regional passenger traffic, with flights between Oakland and approximately 40 cities, including several international locations. Over half of the region's domestic freight and air mail is handled by OAK, which moved 490,064 metric tons of air freight and 9,543 metric tons of air mail. The airport also serves a critical role in the region during emergency response.

Key Issues

The climate impacts that were considered in the ART project will have relatively early impacts on Oakland International Airport. Both the commercial runway at South Field Airfield and the general aviation runway at North Field Airfield are exposed to the high tide or storm events with 16 inches of sea level rise. Additionally, the access roads and the new Bay Area Rapid Transit connection to the airport are all exposed to the high tide or storm events with 16 inches of sea level rise. Further complicating the issue, the inundation of the airfields and the roadways has different sources, so improving the flood protection at South Field would not likely reduce the exposure of either North Field or the access ways to the airport. The airport is surrounded by a variety of adjacent land uses and conditions that could contribute to flooding or be affected by adaptation measures, including the residential development on Bay Farm Island to the West, Martin Luther King Jr. Regional Shoreline to the Northeast and a number of marshes surrounding and on airport property. The region's airfield capacity could not accommodate the loss of the commercial runway at OAK, and it would be difficult to compensate, at the regional level, for the loss of the general aviation capacity at OAK. The temporary or permanent disruption of OAK due to flooding would likely result in serious consequences for the region's economic health, as well as public health and safety.

<h3>Vulnerabilities</h3>	<h3>Consequences</h3>
<p>Timing</p> <ul style="list-style-type: none">• Near term: Some areas will be exposed to the daily high tide with 16 inches of sea level rise.• Mid-century: Nearly all assets analyzed will be exposed to three or more feet of flooding during storm events with 16 inches of sea level rise. <p>Physical and Functional Qualities</p> <ul style="list-style-type: none">• Airport and access roads are vulnerable to sea level rise and storms due to location near the shoreline and low elevation.• Much of the airport is built on Bay fill, which has a high liquefaction potential. During a seismic event, liquefaction could cause damage to runways and other infrastructure, and could cause the perimeter levee to fail.• The region lacks the overall capacity to absorb air traffic from OAK if runways are inoperable.	<p>Scale</p> <ul style="list-style-type: none">• Adjoining properties and neighborhoods• Cities of Alameda and Oakland• Region• National• International <p>Ecosystem Services</p> <ul style="list-style-type: none">• Flood water could flow through sewage facilities at the airport, causing contamination of groundwater beneath the airport.• Changes to takeoff and landing or rerouting of air traffic to other airfields could result in greater air emissions. <p>People</p> <ul style="list-style-type: none">• Employment at the airport or at locations dependent on the airport would be affected by temporary or permanent disruption of the airport.• The role of the airport in emergency response could be compromised by temporary or permanent disruption of the airport.• A lack of airfield capacity in the region could increase the cost of airfare in the region and reduce air service and markets served in the region.• Changes to takeoff and landing restrictions due to flooding could result in noise pollution in local neighborhoods.

Vulnerabilities

Management Control

- The Port of Oakland manages Oakland International Airport, but does not control or manage much of the surrounding land or roads and transit that lead to the airport, meaning that responsibility for adaptation strategies to ensure that the airport remains accessible rests with other entities.
- The land and infrastructure surrounding OAK, where some flooding could originate, is owned or regulated by a number of agencies, including the Cities of Oakland and Alameda, East Bay Regional Park District, the Federal Aviation Administration, Bay Area Rapid Transit, the Bay Conservation and Development Commission, which will need to work together to develop strategies to reduce exposure to flooding at the airport.
- Financing strategies are currently inadequate to fund the necessary planning and implementation of strategies to reduce exposure to flooding at the airport or to quickly make repairs when damage does occur.

Consequences

Economy

- Temporary or permanent flooding at OAK would have regional economic consequences on jobs, cargo movement, and economic activity that is supported by the proximity of the airport, such as businesses that rely on frequent travel or ready access to cargo shipment and receiving.