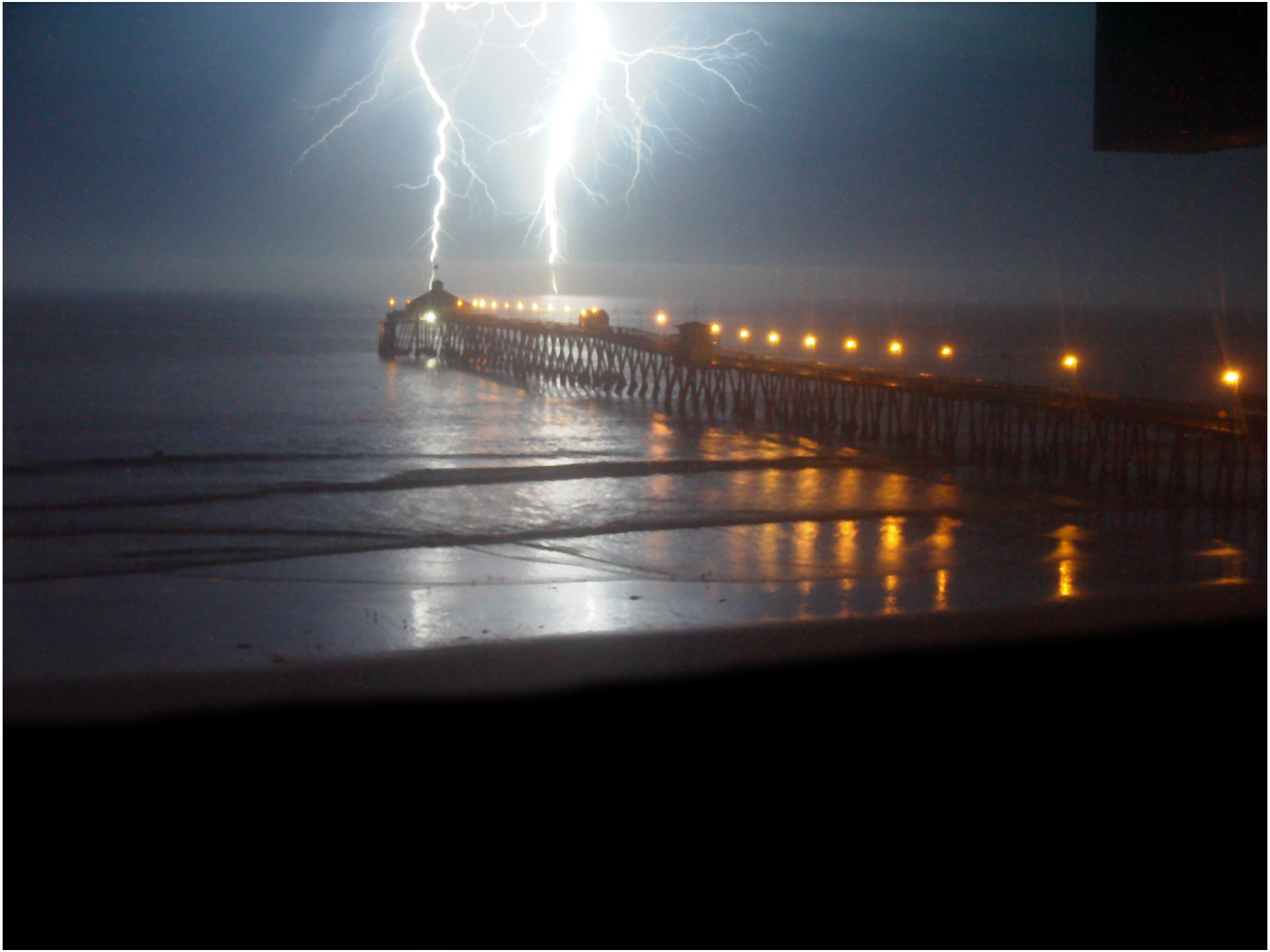
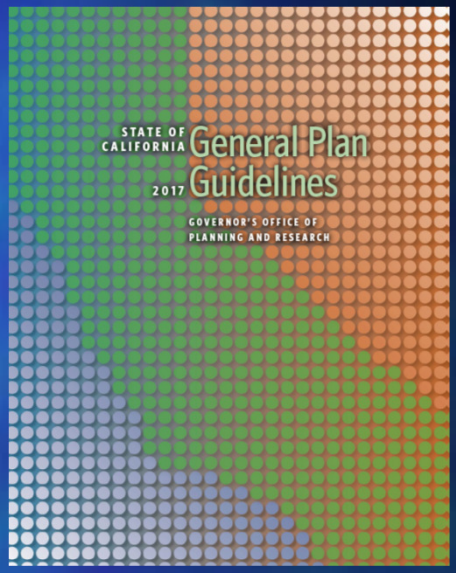


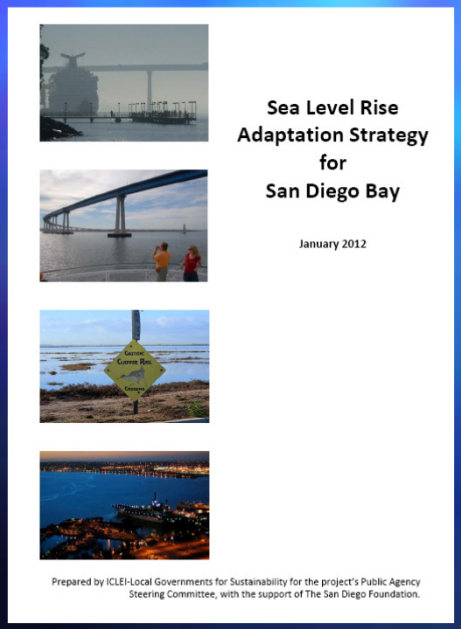
MF 1234 Imperial Beach LCP/GP Update

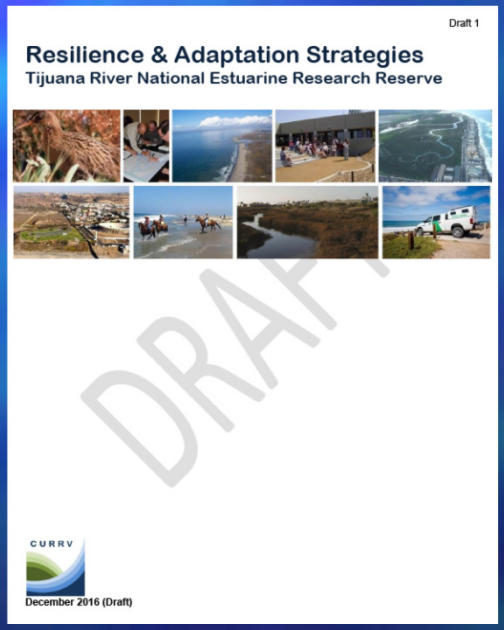
- Cities and counties required to prepare and adopt a general plan (GP) to guide growth. Coastal cities and counties also need to adopt a Local Coastal Program (LCP).
- 7 mandated elements: land use, circulation, housing, conservation, safety, noise, and open space.
- Imperial Beach adopted 3 optional elements: design, parks, recreation and access, and facilities and services.
- Current Imperial Beach GP/ LCP adopted in 1994 in response to citizens' initiative Proposition P.
- Since 1994 new laws required local jurisdictions to address climate change, most notably AB 32 (the Global Warming Solutions Act of 2006).



MF 1234 Imperial Beach LCP/GP Update

- 2012 San Diego Bay Sea Level Rise Adaptation Strategy funded by the San Diego Foundation
- 2015 Climate Understanding and Resiliency in the River Valley (CURRV) study funded by NOAA.
- $300,000 grant from the Coastal Conservancy and a $70,000 grant from the San Diego Foundation to develop a Sea Level Rise (SLR) study that was completed by our consultant Dave Revell in 2016





MF 1234 Imperial Beach LCP/GP Update

Vulnerability Assessment

Sector	E.S. Table 1 : Summary of Vulnerabilities
Land Use	• Neighborhoods in the South Seacoast, Seaside Point, Bayview Elementary and Carnation Ave areas are most vulnerable. Carnation Ave neighborhood sees a big increase in exposure with only 1.6 feet of sea level rise. • Residential structures and parcels are the most exposed land uses to existing and future coastal hazards. • With 6.5 feet of sea level rise, ~ 30% of all parcels could be exposed to coastal hazards with over 1500 parcels subject to episodic coastal flooding and 450 parcels subject to periodic tidal inundation. Coastal erosion hazards have higher economic vulnerabilities than all other coastal hazards combined with 594 parcels potentially being exposed to coastal erosion. • Tidal inundation has small impact under existing conditions, but impacts escalate between 3.3 feet and 6.5 feet of sea level rise.
Roads	• With 1.6 feet of sea level rise, coastal erosion without additional adaptation could impact ~90% of Seacoast Drive. • With 3.3 feet of sea level rise, nearly 20 miles of road could be closed temporarily from coastal flooding impacts and 4.3 miles of road could be destroyed by coastal erosion. About 1.2 miles could be exposed to routine tidal inundation along the low-lying parts of town. • With 6.5 feet of sea level rise, approximately ~40% of the City roads could be vulnerable to coastal storm flooding. Coastal Erosion could destroy up to 5.4 miles of roads, including the entire length of Seacoast Drive. Tidal flooding exposes 4.3 miles of roads to routine flooding.
Public Transportation	• With 6.5 feet of sea level rise, approximately 68% of the City bike paths, one-third of the bus stops, and 35% of the bus routes could be vulnerable to coastal storm flooding. Coastal erosion may result in closures of the bus and bike routes along Seacoast Drive.
Wastewater	• With only 1.6 feet of sea level rise, one pump station could become exposed to coastal erosion. With 6.5 feet of sea level rise, another pump station may be subject to tidal inundation. • Nearly 800 feet of wastewater pipe is exposed to existing erosion hazards, with 6.5 feet of sea level rise this increases to 2.7 miles. • With 6.5 feet of sea level rise, 45 manholes may be inundated by tides and 311 manholes subject to coastal flooding which would introduce additional water into the sewer system.
Stormwater	• The existing stormwater system is undersized without flap gates. Without adaptive measures, this may cause increases in tidal flooding. • With 1.6 feet of sea level rise, the potential erosion impact to oceanfront stormwater outfalls doubles. • With 3.3 feet of sea level rise more than half of the stormwater drainages are impacted by tides about 50% of the time. • With 6.5 feet of sea level rise, 7 of 9 stormwater drainages are impacted >90% of the tides, substantially increasing flood depths frequency.
Schools	• Six buildings at Bayview Elementary School are currently exposed during storm events and will become routinely exposed by tidal flooding with only 1.6 feet of sea level rise. With 6.5 feet of sea level rise, an additional building is exposed to coastal flooding. • With 1.5 feet of sea level rise, Westview Elementary becomes exposed to tidal inundation and coastal flooding. By 6.5 feet of sea level rise, the remaining school buildings become exposed.
Hazardous Materials	• With 6.5 feet of sea level rise, there is one auto-related Hazardous Materials site that becomes vulnerable to flooding by tidal inundation.

MF 1234 Imperial Beach LCP/GP Update

Adaptation Strategies

Adaptation Strategies	E.S. Table 2: Summary of Adaptation Analyses
Armoring of the entire IB coastline	• Armoring strategy leads to loss of beaches between 2050 and 2065 while protecting upland property. • Economic analysis indicates that armoring generally yields lower net benefits than other strategies, yielding the lowest net benefits over the medium (2069) and long-term (2100) time horizons. • As sea level rise increases coastal erosion and other hazards, the beach is lost and armoring becomes a much less economically viable strategy, as beach recreation and ecological value is lost. • Economic results indicate that armoring will reduce the City's income due to lower sales and transient occupancy taxes.
Phased relocation (managed retreat)	• The managed retreat strategy protects a beach through time at the expense of the upland development. • In the medium term (through 2069), managed retreat and groins have similar net benefits, which are significantly higher than armoring. If nourishment costs are high, managed retreat is a much more cost effective strategy. • Over the long run, managed retreat and groins yielded the highest net benefits with current (wide) beach width. • If the City wishes to construct a lease-back option, where it purchases property at risk and leases it back to the original owners (or someone else) the payback time is approximately 30-35 years.
"Business-as-usual" sand nourishment	• Nourishment maintains a beach while providing protection for upland development. To maintain a beach over time, will require substantial investment over shorter and shorter time periods between nourishment cycles. • Nourishment options are a potentially viable long-term choice, depending upon availability of sand, the cost of nourishment, environmental degradation, and community values.
Hybrid dune and cobble approach	• A hybrid dune option was based on the historic ecology and natural functioning of the beach, and maintains a beach while providing a more natural protection for upland development. To maintain a beach over time, will require substantial investment over shorter and shorter time periods between construction cycles. • Hybrid dune options are a potentially viable long-term choice, although expensive with the cost depending upon availability of sand and cobble, the cost of construction, environmental degradation, and community values.
5 groins with associated sand nourishment	• A groin and nourishment option is based on improving the original Army Corp concept to retain sand along Imperial Beach. • Short term, groins are slightly better than other options although this depends on assumptions made on beach width. • In the medium term (through 2069), managed retreat and groins have similar net benefits. • Over the long run, managed retreat (1st) and groins (2nd) yielded the highest net benefits with current (wide) beach width.

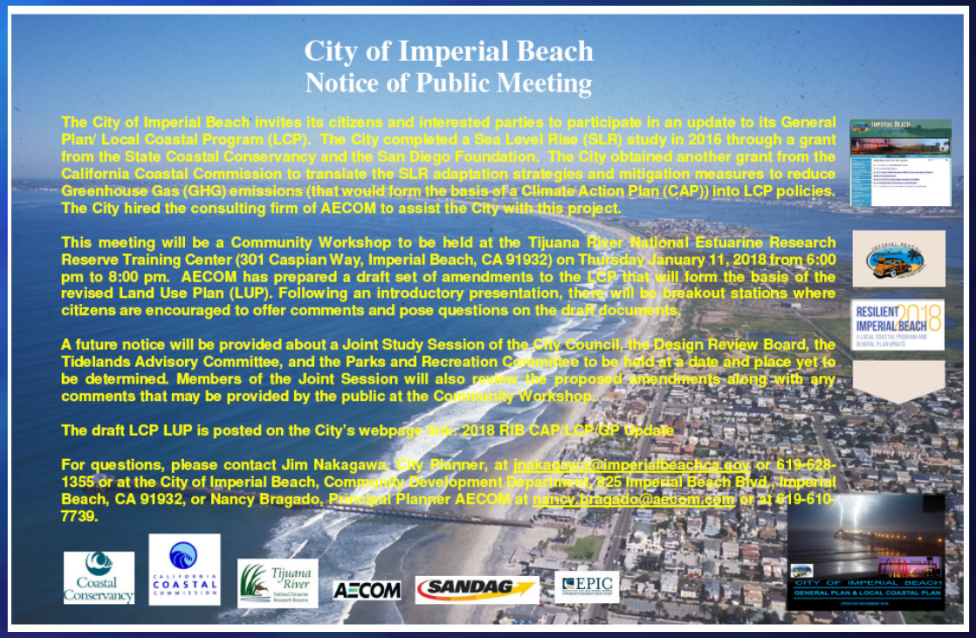
SLR impacts and adaptation strategies costs were analyzed and hybrid/trigger-based approaches were recommended.

MF 1234 Imperial Beach LCP/GP Update

- $225,000 Coastal Commission grant to :
- Translate the findings of SLR study into policies
- Develop a Climate Action Plan (CAP) and a Complete Streets policy and
- Fold them into an update to the General Plan/ Local Coastal Program.
- AECOM was hired to update the LCP
- Steering Committee, Stakeholder/Community workshops and Joint Council/DRB/TAC/PRC Study Sessions were convened.
- LCP = Land Use Plan (policies) + Implementation Plan (IP).

CALIFORNIA COASTAL COMMISSION

AECOM



MF 1234 Imperial Beach LCP/GP Update

TIMELINE

- **Status of Process: finalizing LUP and initiating IP**

MF 1234 Imperial Beach LCP/GP Update

- **Next Steps:**

- Schedule additional public meetings to optain input for Implementation Plan (IP): tentative Summer 2018
- Current project deadline: Dec 31, 2018
- Project running behind schedule.
- Grant time extension request submitted to Coastal Commission.
- https://www.imperialbeachca.gov/index.asp?Type=B_BASIC&SEC={AC3E429E-6322-4D24-B035-8B55F9CFC448}

AECOM

IMPERIAL BEACH classic southern california

CALIFORNIA COASTAL COMMISSION


IMPERIAL BEACH