

# Coastal cities prepare for rising sea levels

*Newport Beach and other communities on California's coast are planning to build up wetlands, construct levees and seawalls or move structures inland as climate change raises sea levels.*

**Tony Barboza, Los Angeles Times, 3-6-11**

Cities along California's coastline that for years have dismissed reports of climate change or lagged in preparing for rising sea levels are now making plans to fortify their beaches, harbors and waterfronts.

Communities up and down the coast have begun drafting plans to build up wetlands as buffers against rising tides, to construct levees and seawalls to keep the waters at bay or to retreat from the shoreline by moving structures inland.

Among them is Newport Beach, a politically conservative city where a council member once professed to not believe in global warming. Now, the wealthy beach city is considered to be on the forefront of preparing for climate change.

Though some in Newport Beach remain skeptical that global warming caused by humans is elevating sea levels, city planners are looking at raising seawalls by a foot or more to hold back the ocean. New homes along the city's harbor are being built on foundations several feet higher than their predecessors as a precaution against flooding.

"I feel a real sense of urgency to begin planning for this right now," Mayor Michael Henn said. "To me it's irrelevant what the causes of global warming are. What we are dealing with is the reality that sea levels are rising."

Sea levels have risen about 8 inches in the last century, and scientists expect them to rise several feet by the end of this century as climate change warms the ocean.

The focus on adaptation is a marked shift for cities such as Newport Beach that just a few years ago had made few preparations for the effects of climate change or were focusing on reducing their carbon footprints. Even as the California Legislature passed a landmark law in 2006 to reduce greenhouse gas emissions, few coastal cities had any plans to confront rising waters on their own shores.

"The state of preparedness was close to zero in terms of looking forward to climate change and what it's going to bring," said Susanne Moser, a social science researcher at the Woods Institute for the Environment at Stanford University, who has surveyed coastal cities and counties about planning for rising sea levels. "Since then there's been an explosion of interest on the local level."

In Newport Beach, the attitude change came in response to concerns about the future of its harbor, an expansive waterfront dotted with islands and sheltered from the open ocean by the densely populated Balboa Peninsula. Tens of thousands of people live in the area, much of it just a few feet above sea level.

After a sea level rise of just over a foot, a 2008 city-commissioned study said, an extreme high tide would result in widespread flooding on Balboa Peninsula and "near-complete flooding of Balboa Island."

With that in mind, Newport Beach officials are focusing on low-lying Balboa Island, a tightly packed neighborhood of homes and beach cottages where locals zoom through the streets on golf carts and navigate the harbor in electric boats. A narrow sand spit that was dredged into an island a century ago, Balboa Island now houses nearly 2,000 homes, which are considered to be at the greatest risk of flooding in the city.

To protect against that possibility, new homes are already being built on foundations about three feet higher than the historic beach cottages they replace. And the city is conducting a study of the island's seawalls, built in the 1920s and '30s, to determine how high they will have to be raised.

Longtime residents point to eroding beaches and an increase in the number of unusually high tides over the years as evidence of a worsening problem.

In December, when a major storm hit during an extremely high tide, waves broke over the seawall and water pooled on sidewalks and streets. There was no serious damage to homes, but city workers had to pump the water back into the harbor.

Still, many islanders don't believe in human-induced climate change and remain unconvinced that an encroaching sea is a pressing problem.

Seymour Beek, whose family operates the ferry that connects the island to Balboa Peninsula and lives in an island home his parents built in 1922, said the threat has been overblown.

"The projections," he said, "I don't trust any of them. There's going to be plenty of time to cope if there is a significant amount of sea level rise."

Others think the risk is more imminent.

John Corrough, a coastal planner and former city harbor commissioner who lives on the island's south bayfront, said he would welcome the city raising the island's defenses.

"We now have four generations that have lived a good chunk of their life on this piece of sand and their cousins and grandpas and uncles lived on the next piece of sand over," he said. "We're counting on being able to continue this tradition into the future."

Statewide, government officials are moving to prepare for the risks posed by the rising sea. Under a resolution to be considered Friday, the California Ocean Protection Council would direct state agencies to incorporate science-based sea level rise projections into all decisions, projects and regulations.

And like Newport Beach, some of the coastal communities at greatest risk of inundation are already going ahead with their own adaptation plans.

In the San Francisco Bay Area, where the threat is more acute because of a history of filling in and developing the bay, planners are thinking about elevating the Embarcadero seawall and raising the height of levees around the San Francisco and Oakland airports. A proposed development on Treasure Island would raise the elevation of the ground to place homes farther above sea level.

In Hayward, southeast of Oakland, rising sea levels are expected to overtake marshes along its 4-mile coastline and threaten its water treatment plant and industrial district within the next generation or two. Planners are searching for ways — and funds — to build up those wetlands as a buffer.

The city of Ventura broke ground last year on a "managed retreat" project designed to protect Surfers Point, a popular beach and surf spot, by moving a bike path and parking lot some 65 feet from the shore.

Newport Beach Councilwoman Nancy Gardner, who encountered resistance to the idea of adapting to climate change when elected four years ago, said she is proud of the progress the city has made. But she remains conscious of the limitations.

Funding for public works projects is scarce, and relocating structures out of harm's way is an unlikely option in built-out Newport Beach, where homes with harbor views are worth several million dollars.

"We aren't going to retreat — we've got so much invested in real estate," Gardner said. "But the sooner we can start to think long-term, the more creative we can be in our solutions."