

## 4 Windsurfing Sensitivity to Development

The reality is that very few outdoor recreational activities are so impacted by human development than near-shore wind-oriented activities. Windsurfing is incredibly sensitive to environmental conditions and suffers immensely from an increase in turbulence, the introduction of wind shadows, and reduction in mean speeds.

### 4.1 Special Risk to Off-Shore Wind Sites

Many instances of upwind development have damaged or rendered downwind activities unusable in off-shore wind locations. The infamous case of Aruba, for example, demonstrates how the positioning of hotels along the beach can decimate nearby windsurfing serviced by off-shore wind flow (Figure 23). Even a 1/2 mile offshore, windsurfing in the wake of these hotels is almost impossible. Though wind does pass between the buildings, the wind speeds regularly range from nearly zero to 30 mph in a matter of a few feet along a reach. The minimum reach of unobstructed wind flow is not sufficient to sail. By contrast, the minimum distance between the Project and the Practical Sailing Area is roughly 500'.



Figure 23: Palm Beach, Noord, Aruba

Aruba windsurfing is world famous. It is the home training location for the top-ranked female freestyle windsurfer in the world (Sarah-Quita Offringa) and hosts annual windsurfing and kitesurfing racing and other competitions drawing entrants from the entire Caribbean region. Steady trade winds blow continually throughout the summer months. However development along Palm Beach (shown here) and Hadikurari Beach (to the North) has made windsurfing in the shadow of these buildings nearly impossible. Even low structure and vegetation is immediately distinguishable by the lulls and gusts that they create along ever shortening reaches.

Most remaining sailing locations in the Bay are shielded from potential damage due to shoreline development. This is because the wind source at most sites is on-shore or side-on-shore or there is an accessible “wind line” at a distance of a few hundred yards (e.g. Treasure Island, Crissy Field) to a few miles (e.g. Third Avenue). Candlestick, being one of the few remaining windy off-shore sailing locations, is extremely susceptible to shoreline development. Clean off-shore wind is highly desirable as it keeps wind swell from accumulating so the water state remains relatively calm even in high winds.

Simplifying assumptions used in impact modeling, the lack of contingency factors to account for unmodeled effects, or simply indifference can have devastating consequences on off-shore windsurfing locations. As evidence of this, consider how some former windsurfing sites near to CPSRA have been dramatically impacted by adjacent development. Despite tremendous accessibility and former regular use, sites such as Oyster Point Marina and Foster City Lagoon have been rendered unsailable due to upwind office building construction.

It is critical to avoid the mistakes that have been made in the past in projected impacts. Good engineering practice demands that modeling assumptions be realistic and validated with on-the-ground observations, that a sufficient nexus between the quantity being measured and the actual resource be established, and that a contingency factor for unmodeled effects is included. In our review of the DEIR, we found none of these provisions were included.

## **4.2 Importance of the Bay Area to Windsurfing in the United States**

In the continental United States, only a handful of locations provide the right combination of steady strong wind, accessible and sufficient water, and proper temperature for windsurfing. The San Francisco Bay Area, the Columbia River Gorge in Oregon, Cape Hatteras in North Carolina, Corpus Christi area in South Texas, select locations on the Great Lakes, Lake Isabella in Southern California, and Long Island and Cape Cod on the Northeast Coast comprise nearly the entire list of regions that have more than a few sailable days per year. Within this list, the San Francisco Bay Area undoubtedly provides the highest number of high quality sailable days per year.

## **4.3 Importance of CPSRA to Windsurfing in the Bay Area**

Within the San Francisco Bay Area, Candlestick point has been well known for over 30 years as one of the most consistent, most accessible, and most accommodating windsurfing spots for beginners, intermediates, and experts. It is one of only three windsurfing locations in San Francisco County and is the only one of the three sites that is not affected by tidal currents or dangerous shipping channels. Out of the entire Bay Area, only eight other sites provide usable access and fairly regular sailable conditions. See Table 4 for details.

Site	County	Current or Water Level Restrictions	Skill Level	Water Condition	Boats or Stranding Hazards	Sailable Frequency
Candlestick	S.F.	None	All	Flat	None	Very High
Crissy Field	S.F.	Current	Expert	Very Choppy	Both	Medium
Treasure Is.	S.F.	Current	Expert	Very Choppy	Both	Seasonal
Third Ave	San Mateo	Both	Expert	Large Swell	Both	Medium
Coyote Pt.	San Mateo	Current	All	Chop/Swell	Stranding	Medium
Berkeley	Alameda	None	Beg - Int	Choppy	None	Low
Alameda	Alameda	Level	Beginner	Small Chop	None	Very Low
Pt. Isabel	Alameda	Current	Intermediate	Choppy	Stranding	Low
Larkspur	Marin	Level	Int - Exp	Choppy	Boats	Low

Table 4: San Francisco Windsurfing Locations

Of the nine San Francisco area sailing locations, Candlestick provides by far the highest number of high quality windy days regularly serving all skill levels without tidal concerns or hazards. It is also one of only three locations in San Francisco County. East Bay sailing sites have far weaker winds and much rarer adequate conditions. Other locations are seriously impacted by tidal restrictions, hazards, or limitations on required skill. Former sailing sites such as Oyster Point and Foster City Lagoon have been eliminated by upwind development. Only windsurfing launches in the vicinity that have frequent acceptable sailing conditions are shown. See [21] for more information.

On average, 85 Sailable Days per year (from April through September) are frequented by on average 20 sailors per Sailable Day. This past year (2013) saw 102 Sailable Days, far and away exceeding the number of sailable days at any other site around the Bay. Frequency of Sailable Days derived from recent CPSRA Sensor data is shown in Table 2.

The site is uniquely suited to all skill levels. Children in their early teens as well as seniors in their 70's regularly use this site. This site is also a training location for some of the world's best sailors including US National Champions Wyatt Miller, Tyson Poor, and Bryan Metcalf-Perez and World Top-10 ranked Freestyle sailor Phil Soltysiak. An on-line record of sailability of various San Francisco area locations is accessible through iWindsurf.com.

CPSRA is special because it has an amazing confluence of desirable factors found no where else in the Bay. The water condition is amazingly flat despite having some of the best winds in the Bay. This is because the winds are largely offshore, which prevents wind swell from building in the sailing area. By contrast, most other sites in the Bay suffer from unbuffered exposure to the swell and choppy conditions that predominate the Bay by virtue of the winds, topography, and boating traffic.

Candlestick's consistent winds are fed by the well-known topographical feature referred to as the Alemany Gap, which funnels wind like a wind tunnel directly from the Pacific Ocean. In the Spring, Candlestick is fed by strong Northwest wind weather systems. In the late summer and fall, thermal pressure gradients between the cooler Pacific Ocean and warmer inland valleys create a reliability that borders on clockwork. Very often, Candlestick will be the ONLY windy site in the Bay Area accessible within a reasonable distance.

Other factors that distinguish Candlestick include the fact that it is not dependent on tidal conditions. Virtually every other site in the Bay requires either a minimum water depth or tidal current direction (ebb or flood) in order to be sailable. This has the effect of eliminating many other sites from being sailable on days even when there is wind. Crissy Field, Treasure Island, and 3rd Avenue are typically only sailed during ebb tides. Sites such as Sherman Island are often only sailed on the ebb tide or during especially strong winds. Many of the sites in the North and South Bay are too shallow during low tides due to silt accumulation near the launches. Sites in the East Bay are much less windy in general. When these tidal conditions are adverse

during favorable wind periods (typically mid-afternoon), the site is not sailable. However, Candlestick has plenty of water for safe sailing at even extreme low tides and because of the topographical configuration of the sailing area, it does not suffer the extreme limiting currents that accompany ebb or flood conditions at many other sites.

Finally, Candlestick is centrally located so as to service sailors regularly from the North Bay, East Bay, South Bay, Peninsula, and the City of San Francisco. It is at most a 45 minute drive for sailors coming from any of those areas even in most high-traffic periods.

In summary, Candlestick is a keystone to Bay Area windsurfing. No other site in the Bay Area provides such most universal access to high quality conditions on a such a frequent and dependable basis.



Figure 24: Crissy Field Sailing Boating Hazards

Ocean liner freighters such as the one shown here include some of the many boating traffic hazards with which sailors in other sites around the Bay must contend. Ferries, commercial fishing, freighters, recreational traffic, and other vessels are commonplace throughout many locations in the Bay. Candlestick is a shallow basin that receives virtually no boating traffic.