

SECTION III.F SHADOWS

III.F.1 Introduction

This section of the EIR examines the potential impacts of shadows cast by buildings that would be developed with the Project. New shading could occur on existing and proposed open space, parks, and recreation areas. The section describes the extent of potential new shading on existing open space owned by or under the jurisdiction of the San Francisco Recreation and Park Department (SFRPD), consistent with *Planning Code* Section 295. The *Planning Code* prohibits the issuance of building permits for structures over 40 feet in height that would cast shade on SFRPD park land that would have a significant effect on the use of the property. Section 295 is further discussed in Regulatory Framework, below. In addition, this section describes the extent of potential new shading on the Candlestick Point State Recreation Area (CPSRA) and on open space proposed as part of the Project at Candlestick Point and at Hunters Point Shipyard Phase II (HPS Phase II). The section evaluates the effects of new shading on the basis of changes in shadow patterns on open space and on the current and expected uses of the existing and proposed open space. The analysis in this section concludes that no potentially significant or significant environmental impacts would result from the Project; therefore, no mitigation measures are included.

The analysis in this section is based on a shadow modeling study completed by CADP, LLC, to evaluate the Project's potential effects on the Project site and in the Project vicinity.¹³⁹ The section also uses information on existing conditions and uses in the potentially affected public open space.

III.F.2 Setting

Figure III.F-1 (Existing and Proposed Parks and Open Space) illustrates existing public parks and open space on the Project site and in the Project vicinity.¹⁴⁰ Parks and open space owned by or under the jurisdiction of the Recreation and Park Department include:

- **Candlestick Park**, bounded by Jamestown, Ignacio, and Gilman Avenues on the southwest, northwest, and northeast, respectively; Giants Drive on the northwest; and Hunters Point Expressway to the east. The 83-acre Candlestick Park is the site of Candlestick Park stadium, which is owned by the SFRPD and leased by the San Francisco 49ers National Football League team. The existing stadium, built in 1960, occupies 14.5 acres, seats 70,000, and is used for football games and other non-football entertainment events. The rest of the site is devoted to ancillary uses such as parking, driveways, and service areas.
- **Gilman Park** is a 4.6-acre playground owned by SFRPD immediately northwest of Candlestick Park. It includes plastic and metal play equipment with restrooms, picnic tables, a dog area, and a baseball diamond.

¹³⁹ The CADP analysis prepared the graphic shadow output presented in DEIR Figure III.F2 thru Figure III.F27 herein.

¹⁴⁰ The Project vicinity is defined by the Bay and US-101 and includes the nearby surrounding areas of the Bayview Hunters Point neighborhood, CPSRA, Candlestick Point, Hunters Point, and India Basin.



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
EXISTING AND PROPOSED PARKS AND OPEN SPACE

FIGURE III.F-1

- **Bayview Park** is a 44-acre park off Third Street and Key Avenue immediately west of the Project site. It is primarily open space on Bayview Hill, rising to about 420 feet. It includes picnic areas, natural habitat areas, and recreational trails. There are no active or developed uses such as playgrounds or recreation facilities.
- **India Basin Shoreline Park**, which is 11.8 acres, is on the India Basin Shoreline north of HPS Phase II and Innes Avenue and includes two children's playgrounds, picnic areas, shoreline access to the Bay for water-dependent recreation, and recreational trails.
- **India Basin Open Space** (about 4.5 acres) is unimproved SFRPD property located along the shoreline of the India Basin Flats, northwest of the Project site, off of Innes Avenue.

Other SFRPD open space within a quarter-mile of the Project site includes:

- **Le Conte Avenue Mini Park** (0.5 acre) is adjacent to Bayview Park.
- **Little Hollywood Park** (0.3 acre) is west of the Project site across US-101.
- **Bayview Playground** is a children's playground on Third Street between Armstrong and Carroll Streets.
- **Milton Myer Recreation Center** at Kiska Road is a multipurpose facility with meeting spaces, an indoor gymnasium, outdoor game courts, and a children's playground.
- The **Bayview Hunters Point Multipurpose Senior Center**, at Yosemite Avenue and Third Street, offers a range of services and activities for seniors.

Heron's Head Park (24 acres), formerly known as Pier 98, is a restored wetland owned by the Port of San Francisco and used for research, education, after school activities, and natural habitat.

CPSRA, totaling 154 acres, is generally bounded by the southeastern extent of the San Francisco shoreline, Harney Way, Jamestown Avenue, Hunters Point Expressway, Donahue Street, Egbert Avenue, and Arellious Walker Drive. Approximately 120.2 acres of the CPSRA is located within the Project site, and an additional approximately 34 acres are located off site, adjacent to the Yosemite Slough. CPSRA is a former landfill on the shoreline of Candlestick Point that was purchased by the State in 1977 for development as a state recreation area. CPSRA includes picnic areas, a fitness course for seniors, a bike path, shoreline access to the Bay for water-dependent recreation, and recreational trails, but much of the land within the CPSRA is not improved enough to support intensive recreational use. For example, land to the north and east of the Candlestick Park stadium is currently used for stadium parking. Other portions of the CPSRA site contain construction rubble and debris, such as the Last Rubble disposal site. Until recently, the Last Rubble area was characterized by large piles of debris, remnants of the site's previous use as a dumping ground. The Integrated Waste Management Board completed a rubble and debris removal project in April 2009. As a result of this, the majority of the rubble and debris was either removed or crushed on site.

III.F.3 Regulatory Framework

■ Federal

There are no applicable federal regulations relating to solar access or shading effects.

■ State

There are no applicable state regulations relating to solar access or shading effects.

■ Local

San Francisco General Plan

The Recreation and Open Space Element of the *City of San Francisco General Plan* (1996) includes the following policy applicable to potential solar access or shading impacts of the Project:

Policy 2.3 Solar access to public open space should be protected.

The policy promotes solar access and avoiding shade to maintain the usability of public open space, and states that the requirements of *Planning Code* Section 295 apply to the review of projects that could shade SFRPD property. (*Planning Code* Section 295 is discussed further below). Policy 2.3 further states that:

A number of other open spaces designated in this Element or elsewhere in the General Plan are under the jurisdiction of other public agencies, or are privately owned and therefore not protected by the Planning Code amendments. These spaces should be given other forms of protection to assure they are not shaded during the hours of their most intensive use. Any new shading should be remedied to the extent feasible by expanding opportunities for public assembly and recreation in indoor and outdoor settings.

San Francisco Planning Code

Planning Code Section 295, adopted in 1984 pursuant to voter approval of Proposition K, “The Sunlight Ordinance,” prohibits the issuance of building permits for structures over 40 feet in height that would cast shade or shadow on property under the jurisdiction of, or designated to be acquired by, the Recreation and Park Commission between one hour after sunrise to one hour before sunset at any time of year, unless the Planning Commission determines that the shade or shadow would have an insignificant adverse impact on the use of such property. *Planning Code* Section 295 provides that:

The City Planning Commission shall conduct a hearing and shall disapprove the issuance of any building permit governed by the provisions of this Section if it finds that the proposed project will have any adverse impact on the use of the property under the jurisdiction of, or designated for acquisition by, the Recreation and Park Commission because of the shading or shadowing that it will cause, unless it is determined that the impact would be insignificant. The City Planning Commission shall not make the determination required by the provisions of this Subsection until the general manager of the Recreation and Park Department in consultation with the Recreation and Park Commission has had an opportunity to review and comment to the City Planning Commission upon the proposed project.

As required by *Planning Code* Section 295, the Recreation and Park Commission and the Planning Commission adopted criteria in 1987 and 1989 for the review of shade, solar access, and shadow effects.¹⁴¹ According those adopted criteria, shadow is measured by multiplying the area of the shadow by

¹⁴¹ San Francisco Planning Department. *Planning Code Section 295, Presentation for Planning Commission Hearing on October 23, 2003*. This report is an overview of current procedures for Planning Department review of applications that are subject to Section 295, and includes a review of the *Planning Code* requirements and of the implementation document adopted jointly by the Recreation and Park and the Planning Commissions, and a description of the technical methodology for analysis of shadow impacts on protected properties.

the amount of time the shadow is present on the park, in units called “square foot-hours.” Determining the shadow impact caused by a project begins with a calculation of the number of square foot-hours the project casts on a protected property over the course of a year during the each day an hour after sunrise to an hour before sunset summed over the course of a year, ignoring shadow from any surrounding structures, and from clouds, fog, and solar eclipses. This is called the “Annual Available Sunlight” (AAS) for that park. The shadow impact of the project is defined as the shadow in square foot-hours cast by the project divided by the AAS, expressed as a percentage. Further, in addition to quantitative criteria, the adopted criteria set forth qualitative criteria for evaluation of shadow. Those criteria for assessing new shadow would be based on existing shadow profiles, important times of day, important seasons in the year, location of the new shadow, size, and duration of new shadows and the public good served by buildings casting new shadow.

Also, the adopted criteria state that small parks, less than two acres in area, with existing shadow loads of 20 percent or larger should not be subjected to additional shadow by new development. Larger parks (two acres or more), with shadow loads between 20 percent and 40 percent would have an additional new shadow budget of 0.1 percent. Larger parks with existing shadow loads of less than 20 percent would have an additional new shadow budget of 1.0 percent. (The adopted criteria also include absolute cumulative limits for increase in percent shading for 14 parks in the downtown. However, none of those parks are in the Project vicinity; therefore, the limits for smaller and larger parks noted above would apply to SFRPD property.)

As noted above, parks and open space within the Project site or in the Project vicinity that are under the jurisdiction of the SFRPD include Candlestick Park, Bayview Park, Gilman Park, India Basin Shoreline Park, and India Basin Open Space. Development near these parks is subject to shadow review under *Planning Code* Section 295, except for Candlestick Park, which would be removed from the jurisdiction of the Recreation and Park Department as a result of the Project.

III.F.4 Impacts

■ Significance Criteria

The CCSF and Agency have not formally adopted significance standards for impacts related to shadows, but generally consider that implementation of the Project would have significant impacts if it were to:

- F.a Create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas

In addition, shadow effects would be significant if they would affect, in an adverse manner, the use of any park or open space under the jurisdiction of the SFRPD, or significantly detract from the usability of other existing publicly accessible open space.

■ Analytic Method

For purposes of this analysis, “outdoor recreation areas or other public areas,” as described in the above significance criteria, refers to parks, outdoor recreational facilities (i.e., sports fields), or other public open space. The term “open space” is used herein generally to refer to such public areas that may be affected

by shadows. The analysis considers the Project's potential effects on SFRPD property subject to *Planning Code* Section 295, including Bayview Park, Gilman Park, India Basin Shoreline Park, and India Basin Open Space. In addition, the analysis considers the Project's potential effects on other existing publicly accessible open space (CSPRA) and the new parks and open space that would be provided by the Project.

As noted above, a shadow modeling study was completed by CADP, which depicts the shadows that would be cast by buildings that would result from the Project. This analysis accounts the effects of existing topography, but does not include shadows caused by existing buildings on the site, as they would either be demolished (e.g., Candlestick Park stadium and Alice Griffith Housing) or if retained (e.g., Building 101 and certain historic buildings as described in Section III.J, Cultural and Paleontological Resources) are generally all less than 40 feet and would only cast limited shadows. In addition, in order to identify Project impacts, the analysis does not include shadows cast by any existing or proposed development in the project vicinity.

The results of the shadow modeling analysis are depicted in two types of illustrations: (1) "shadow fans" or "shadow traces" that identify the maximum extent of all project-related shadows from one hour after sunrise to one hour before sunset over an entire year (per the review requirements of *Planning Code* Section 295); and (2) time-specific shadow patterns for 10:00 A.M., noon, and 3:00 P.M. Pacific Standard Time (PST) in December (the winter solstice) and March (the vernal equinox), and at 10:00 A.M., noon, and 3:00 P.M. Pacific Daylight Time (PDT) in June (the summer solstice) and September (the autumnal equinox), which depict shadow impacts at specific times of the day for the minimum, midpoint, and maximum elevations of the sun.

Figure III.F-2 (Candlestick Point Proposed Project Year-Round Shadow Trace) and Figure III.F-15 (Hunters Point Shipyard Phase II Proposed Project Year-Round Shadow Trace) identify the maximum extent of all Project-generated shadows from one hour after sunrise to one hour before sunset over an entire year. The year-round shadow trace provides a conservative assessment in that it includes shadow from all buildings within the Project site, including buildings that would not exceed 40 feet in height and therefore would not require review under the requirements of Section 295. While the shadow trace provides information on parks and open space that could be affected by new shading from Project structures over an entire year, it does not provide information on the specific shadow effects experienced by a park or open space at any particular time of the day or year.

Figure III.F-3 through Figure III.F-14 (Candlestick Point Shadow Patterns) and Figure III.F-16 through Figure III.F-27 (Hunters Point Shipyard Phase II Shadow Patterns) depict Project-generated shadow patterns for particular times of the day during the four seasons: at the winter and summer solstices, when the elevation of sun is at its lowest and highest point, and at the spring and fall equinoxes, when the elevation of the sun is at its midpoint.

Planning Code Section 295 identifies both a quantitative methodology for assessment of shadow impacts (for land under the jurisdiction of the SFRPD, as discussed above in Regulatory Framework) and provides qualitative criteria for determining whether impacts would be adverse. If the quantitative



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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CANDLESTICK POINT: PROPOSED PROJECT YEAR-ROUND SHADOW TRACE

FIGURE III.F-2

assessment determines that the standards established in *Planning Code* Section 295 would be exceeded, this EIR provides additional analysis of the shadow effects for a variety of qualitative factors, which may include: open space usage; time of day and/or time of year during which the shadow occurs; physical layout and facilities affected by the shadow; intensity, size, shape, and location of shadow; and proportion of open space affected by shadow. If, upon balancing the above factors, the qualitative analysis determines that the enjoyment of the park or public space by users would be substantially and adversely affected, then the Project would be determined to have a significant shadow impact under CEQA.

For parks and open space that are not subject to the review requirements *Planning Code* Section 295, only provides a qualitative assessment of shadow effects is provided, to determine whether enjoyment of the park or public space by users would be substantially and adversely affected by shadow effects. The specific times selected for analysis and depiction on the shadow pattern figures (10:00 A.M., noon, and 3:00 P.M.) are customarily evaluated to identify effects on use of open space as they represent the midday periods of the most intensive use of parks and open space areas. It is acknowledged that park users could be present before 10:00 A.M. or after 3:00 P.M. when additional Project shadows may occur, but levels of use at those times would be lower than the midday periods. Therefore, shadow effects before 10:00 A.M. or after 3:00 P.M. would affect fewer uses and open space and would not be considered to be significant adverse impacts for this analysis.

Figure III.F-2 indicates that the Project would add shade to two SFRPD parks, Gilman Park and Bayview Park. However, as discussed herein, the effects on Gilman Park would result from Project buildings up to 40 feet in height. Those effects would not be subject to review under Section 295. The Project would not include other structures over 40 feet in height close enough to Gilman Park to cause such effects. As noted above, Bayview Park consists of open space, including steep topography and informal trails. There are no active uses (such as playgrounds and recreational fields) and access is only provided via a gated road off of Key Avenue, north of Bayview Hill. The Project would shade an area of Bayview Park that does not provide any active uses, and is relatively steep. Based on the shadow trace, the Project would only shade Bayview Park during the first hour after sunrise in spring, summer, and fall months, and would not create any new shadow by 10:00 A.M. at any time of year.

The analysis of Project effects presented below discusses shadow effects on Gilman Park and Bayview Park, when they would occur, and whether those effects would be adverse impacts on the open space.

The other public parks and open space in the Project vicinity that would continue to be subject to *Planning Code* Section 295 include India Basin Shoreline Park and India Basin Flats; however, no Project structures in excess of 40 feet in height are planned sufficiently close to these parks to create shadow effects. Refer to Figure III.F-1.

Parks and Open Space not Subject to Section 295 of the Planning Code

The CPSRA is not owned by or under the jurisdiction of SFRPD and is, therefore, not subject to *Planning Code* Section 295. The other public parks and open space included as part of the Project would not be owned by or under the jurisdiction of the SFRPD and, therefore, would also not be subject to *Planning Code* Section 295.

The ownership of the existing Candlestick Park would be transferred as part of the Project and the existing stadium, ancillary structures, and parking areas would be removed. As such, the area of the former stadium and associated parking lots, which are not typical parks or open space, would no longer be under the jurisdiction of SFRPD and would not be subject to *Planning Code* Section 295.

As shown in Figure III.F-1, the Project would develop new parks and open space, including neighborhood parks, destination parks, boulevard parks, and waterfront trails. The parks would include a range of passive and active recreation facilities, playgrounds, walks, and other features. While new Project buildings would add shade new Project open space, the Project would increase public open space that would serve Project residents visitors, and employees, compared to existing conditions. Therefore, the impact analysis herein discusses those shadow effects, but does not consider those to be adverse impacts.

■ Construction Impacts

Construction of the Project features would not create adverse shadow effects on open space, because construction activities and equipment, would not cast substantive shadows on existing open spaces such as the CPSRA. Although some construction equipment, such as cranes, would exceed 40 feet in height, the shadows cast by this equipment would not be substantial in size (due to the crane's lack of bulk) and would be temporary and limited to the period of construction.

■ Operational Impacts

Impact SH-1: Shadow Effects on Public Open Space

Impact of Candlestick Point

Impact SH-1a **Implementation of the Project at Candlestick Point would not result in new structures with the potential to cast shadows on existing or proposed parks and open space in a manner that would have an adverse effect on the use of the open space. (Less than Significant) [Criterion F.a]**

Project structures would range from 40 feet up to 420 feet in height would extend above surrounding buildings and would cast shadows on nearby public open space. The proposed building heights would be 40 feet near the shoreline of Candlestick Point, with buildings exceeding 40 feet and extending to 85 feet throughout the majority of the rest of the Candlestick Point site. Buildings between 85 feet and 140 feet in height would be located in the central part of the site. The Project would also include up to ten residential towers ranging from 220 feet to 420 feet in height as shown on Figure II-5 (Proposed Maximum Building Heights). Project plans have identified the locations of towers, but tower designs are preliminary. The length and duration of shadows cast would be influenced by elements of building design, such as building height, shape, massing, and setbacks.

Figure III.F-3 through Figure III.F-14 show shadow conditions at Candlestick Point with the Project at 10:00 A.M., noon, and 3:00 P.M. Pacific Standard Time (PST) on December 21 and March 21, and Pacific Daylight Time (PDT) on June 21 and September 21. December 21 (Winter Solstice), 10:00 A.M.

December 21 (Winter Solstice), 10:00 A.M.

As shown in Figure III.F-3 (Candlestick Point: Shadow Patterns—December 21 [10 AM PST]), on December 21, the Project would cast new shadow on approximately 5 percent of Gilman Park along the southeastern border. As noted above, new shadows cast on Gilman Park would be from Project buildings that would not exceed 40 feet in height and are, therefore, not subject to Section 295 of the *Planning Code*. Gilman Park includes a playground, a softball diamond, and a dog run area. The park has mature trees along its perimeter. On the basis of available observations of Gilman Park, the park is primarily used during midday and afternoon periods, by neighborhood residents and students at adjacent Bret Hart Harte Elementary School. The park is relatively less patronized in morning hours. Therefore, Project shadows on limited areas of the park in morning hours would not adversely affect the use of the park, and would not be considered significant adverse shadow impacts.

The Project would not shade Bayview Park at this time.

The Project would shade less than 1 percent of the CPSRA at this time.

The Project parks and open space would receive shadow on the winter solstice. The Alice Griffith Neighborhood Park, Candlestick Point Neighborhood Park, Bayview Gardens/Wedge Park, and Mini-Wedge Park would have shadow on approximately 15 percent, 51 percent, 79 percent, and 17 percent of their areas, respectively. The relatively narrow Alice Griffith Neighborhood Park would be shaded by buildings on the southwestern boundary of the park. The 22-story tower southeast of Candlestick Point Neighborhood Park would cast shade on the northeast portion of that park.

December 21 (Winter Solstice), Noon

As shown in Figure III.F-4 (Candlestick Point: Shadow Patterns—December 21 [Noon PST]), the Project would not shade Gilman Park or Bayview Park at this time.

New shadow on the CPSRA would be approximately 2 percent with new shadow being cast by a 27-story residential tower.

The relatively low angle of the winter sun would cast shadow on Alice Griffith Neighborhood Park, Candlestick Point Neighborhood Park, Bayview Gardens/Wedge Park and Mini-Wedge Park, approximately 37 percent, 12 percent, 37 percent, and 46 percent of their area, respectively.

December 21 (Winter Solstice), 3:00 P.M.

As shown in Figure III.F-5 (Candlestick Point: Shadow Patterns—December 21 [3 PM PST]), as the afternoon progresses, the Project would not shade Gilman Park or Bayview Park at this time.

New shadow would cover approximately 12 percent of the CPSRA, primarily in the northerly area. The Project would shade about 4 percent of Yosemite Slough lands outside the Project site.

Approximately 85 percent, 24 percent, 1 percent, and 86 percent respectively of Alice Griffith Neighborhood Park, Candlestick Point Neighborhood Park, Bayview Gardens/Wedge Park, and Mini-Wedge Park would be affected by Project shadow.



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — DECEMBER 21 (10 AM PST)

FIGURE III.F-3



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — DECEMBER 21 (NOON PST)

FIGURE III.F-4



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS —DECEMBER 21 (3 PM PST)

FIGURE III.F-5

The Hillside Open Space along Jamestown Avenue would have approximately 15 percent of shade in the northernmost area.

March 21 (Vernal Equinox), 10:00 A.M.

As shown in Figure III.F-6 (Candlestick Point: Shadow Patterns—March 21 [10 AM PST]), new shadow would be cast on less than 1 percent of Gilman Park along the southeastern fringe. As noted above, new shadows cast on Gilman Park would be from Project buildings that would not exceed 40 feet in height and are, therefore, not subject to *Planning Code* Section 295. As noted above, Gilman Park is primarily used during midday and afternoon periods, by neighborhood residents, and students at adjacent Bret Hart Harte Elementary School. The park is relatively less patronized in morning hours. Therefore, Project shadows on limited areas of the park in morning hours would not adversely affect the use of the park, and would not be considered significant adverse shadow impacts.

The Project would not shade Bayview Park at this time.

Alice Griffith Neighborhood Park, Candlestick Point Neighborhood Park, and Bayview Gardens/Wedge Park would have shadow cast on approximately 10 percent, 21 percent, and 51 percent, respectively. This would affect the southern section of Alice Griffith Neighborhood Park, a central portion of Candlestick Point Neighborhood Park, and Bayview Gardens/Wedge Park along its length.

March 21 (Vernal Equinox), Noon

As shown in Figure III.F-7 (Candlestick Point: Shadow Patterns—March 21 [Noon PST]), the Project would not shade Gilman Park or Bayview Park at this time.

The Project would shade less than 1 percent of the CPSRA at this time.

Alice Griffith Neighborhood Park, Candlestick Point Neighborhood Park, Bayview Gardens/Wedge Park, and Mini-Wedge Park would have shadow on approximately 12 percent, 4 percent, 26 percent, and 7 percent, respectively.

March 21 (Vernal Equinox), 3:00 P.M.

Refer to Figure III.F-8 (Candlestick Point: Shadow Patterns—March 21 [3 PM PST]). The Project would not shade Gilman Park or Bayview Park at this time.

At CPSRA, approximately 1 percent would be affected by new shadow cast by a 27-story residential tower.

The low angle of the spring sun in the afternoon sky would cast shadow on Alice Griffith Neighborhood Park and Mini-Wedge Park, 17 percent, and 42 percent, respectively.

The Hillside Open Space would be approximately 6 percent shaded, primarily in the northernmost section.



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — MARCH 21 (10 AM PST)

FIGURE III.F-6



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — MARCH 21 (NOON PST)

FIGURE III.F-7



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — MARCH 21 (3 PM PST)

FIGURE III.F-8

June 21 (Summer Solstice), 10:00 A.M.

As shown in Figure III.F-9 (Candlestick Point: Shadow Patterns—June 21 [10 AM PDT]), the Project would not shade Gilman Park or Bayview Park at this time.

Alice Griffith Neighborhood Park, Candlestick Point Neighborhood Park, Bayview Gardens/Wedge Park, and Mini-Wedge Park would have shade on approximately 9 percent, 5 percent, 14 percent, and 15 percent of their area, respectively.

June 21 (Summer Solstice), Noon

By midday, the sun would be at its highest points and cause limited shadows. As shown in Figure III.F-10 (Candlestick Point: Shadow Patterns—June 21 [Noon PDT]), the Project would not shade Gilman Park or Bayview Park at this time.

The Project would not shade the CPSRA at this time.

Alice Griffith Neighborhood Park and Bayview Gardens/Wedge Park would have shadow on approximately 7 percent and 5 percent of their area, respectively.

June 21 (Summer Solstice), 3:00 P.M.

As shown in Figure III.F-11 (Candlestick Point: Shadow Patterns—June 21 [3 PM PDT]), the Project would not shade Gilman Park or Bayview Park at this time.

The Project would shade less than 1 percent of the CPSRA at this time.

There would be shadow on approximately 9 percent of Alice Griffith Neighborhood Park and about 8 percent of Mini-Wedge Park.

September 21 (Autumnal Equinox), 10:00 A.M.

New shadow would be cast on less than 1 percent of Gilman Park along the southeastern fringe. As noted above, new shadows cast on Gilman Park would be from Project buildings that would not exceed 40 feet in height and are, therefore, not subject to *Planning Code* Section 295. As noted above, Gilman Park is primarily used during midday and afternoon periods, by neighborhood residents, and students at adjacent Bret Hart Harte Elementary School. The park is relatively less patronized in morning hours. Therefore, Project shadows on limited areas of the park in morning hours would not adversely affect the use of the park, and would not be considered significant adverse shadow impacts. Refer to Figure III.F-12 (Candlestick Point: Shadow Patterns—September 21 [10 AM PDT]).

Alice Griffith Neighborhood Park, Candlestick Point Neighborhood Park, and Bayview Gardens/Wedge Park would have shadow on approximately 10 percent, 21 percent, and 51 percent of their area, respectively. Shadow would fall on the southern portion of Alice Griffith Neighborhood Park and on the central area of Candlestick Point Neighborhood Park while the residential towers east of Bayview Gardens/Wedge Park would cast shade along its length.



FIGURE III.F-9



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — JUNE 21 (NOON PDT)

FIGURE III.F-10



SOURCE: Lennar Urban, RHAA, CADD, 2009.

Clement Designs 11-2-09

Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — JUNE 21 (3 PM PDT)

FIGURE III.F-11



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — SEPTEMBER 21 (10 AM PDT)

FIGURE III.F-12

September 21 (Autumnal Equinox), Noon

As shown in Figure III.F-13 (Candlestick Point: Shadow Patterns—September 21 [Noon PST]), the Project would not shade Gilman Park or Bayview Park at this time.

The Project would shade less than 1 percent of the CPSRA at this time.

Alice Griffith Neighborhood Park, Candlestick Point Neighborhood Park, Bayview Gardens/Wedge Park, and Mini-Wedge Park would have shadow on approximately 12 percent, 4 percent, 26 percent, and 7 percent, respectively. Shadow would be cast on sections of Bayview Gardens/Wedge Park by the 32-story residential tower to its south and the twenty-one-story residential tower on its northern. Mini-Wedge Park would be similarly affected by shade due to the 30-story residential tower to its west.

September 21 (Autumnal Equinox), 3:00 P.M.

As shown in Figure III.F-14 (Candlestick Point: Shadow Patterns—September 21 [3 PM PDT]), the Project would not shade Gilman Park or Bayview Park at this time.

At CPSRA, approximately 1 percent would be affected by new shadow cast by a 27-story residential tower.

The low angle of the spring sun in the afternoon sky would cast shadow on Alice Griffith Neighborhood Park and Mini-Wedge Park, 17 percent, and 42 percent, respectively.

The Hillside Open Space would be approximately 6 percent shaded, primarily in the northernmost section.

Conclusions

Effects on SFRPD Open Space

The existing SFRPD open space in the Project vicinity, including Gilman Park and Bayview Park would have limited shadow effects from the Project. Gilman Park would not experience shading from Project structures exceeding 40 feet in height; consequently, any shadows cast by Project buildings would not be subject to *Planning Code* Section 295. On the basis of available observations of Gilman Park, the park is primarily used during midday and afternoon periods, by neighborhood residents, and students from adjacent Bret Hart Harte Elementary School. The park is relatively less patronized in morning hours. Therefore, Project shadows on limited areas of the park in morning hours would not adversely affect the use of the park, and would not be considered significant adverse shadow impacts.

The Project would shade an area of Bayview Park that does not provide any active uses, and is relatively steep. Based on Figure III.F-2, the Project would only shade Bayview Park during the first hour after sunrise in spring, summer, and fall months, and would not create any new shadow by 10:00 A.M. at any time of year. This would not be considered a significant adverse shadow impact.



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — SEPTEMBER 21 (NOON PDT)

FIGURE III.F-13



SOURCE: Lennar Urban, RHAA, CADD, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
CANDLESTICK POINT: SHADOW PATTERNS — SEPTEMBER 21 (3 PM PDT)

FIGURE III.F-14

Effects on CPSRA Open Space

The CPSRA would be affected by new shade in the afternoons, but most areas would experience limited to no new shadow from the Project. Other areas of the CPSRA would largely continue to remain in sun throughout the year. Project shadow would not interfere with the public's use or enjoyment of the CPSRA. Activities in these areas, such as windsurfing launching, walking, jogging, and fishing, would not be affected by the new shade.

Effects on New Project Open Space

Shadows cast by the Project on proposed new parks throughout the year would range from little or no shading to large areas of certain parks receiving new shade, particularly in the late afternoon during the vernal and autumnal equinoxes. The orientation of the relatively narrow Alice Griffith Neighborhood and Mini-Wedge Parks with respect to the path of the sun and the close proximity of Project buildings along the parks' southwestern boundaries combine to make them most susceptible to new shade.

Overall, given the heights, layouts, and orientations of the Project buildings, the neighborhood parks would experience variable levels of shading throughout the day, generally receiving some new shade from morning until noon in spring, summer, and fall with a less increase in the afternoons in winter, spring, and fall. Public use of these proposed new parks would not be expected to be adversely affected by the shade conditions.

The extent and duration of shadow on new public sidewalks would increase along street corridors in the Project. However, this new shadow would not be in excess of that which would be expected in a highly urban area.

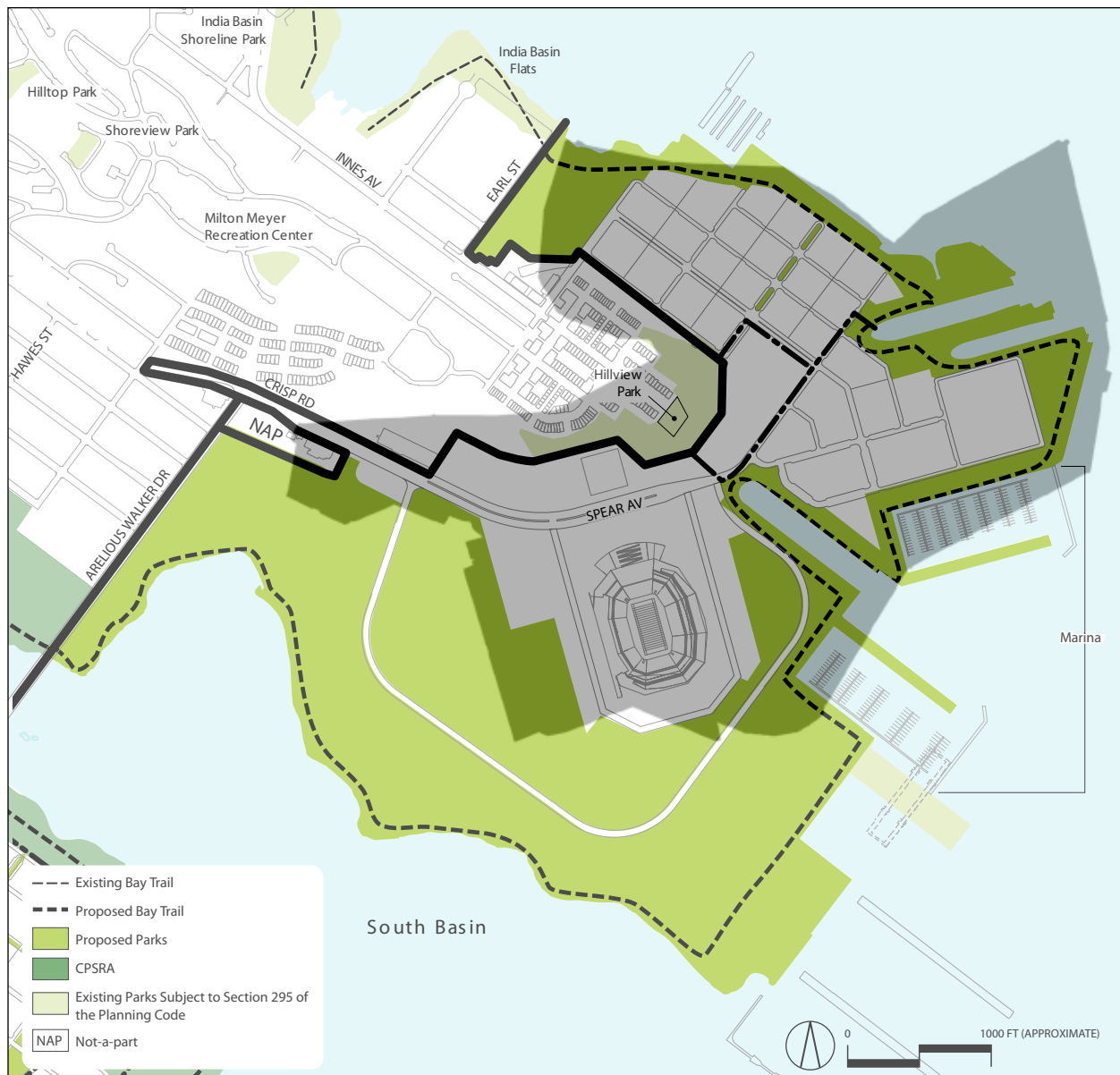
Development at Candlestick Point would have less-than-significant shadow effects on use of existing and proposed open space. No mitigation is required.

Impact of Hunters Point Shipyard Phase II

Impact SH-1b Implementation of the Project at HPS Phase II would not result in new structures with the potential to cast shadows on existing or proposed parks and open space in a manner that would have an adverse effect on the use of the open space. (Less than Significant) [Criterion F.a]

The proposed building heights would be 65 feet in most portions of HPS Phase II, with 85 to 105 foot limits farther east. The Project would include up to two residential towers ranging from 270 to 370 feet. The new 49ers Stadium would be approximately 156 feet to the top row of seating. HPS Phase II would include new open space at Grasslands Ecology Park, Dual-Use Sports Fields and Multi-Use Lawn near the proposed 49ers stadium, the Waterfront Recreation Pier, the Waterfront Promenade, Heritage Park, and Northside Park.

The HPS Phase II buildings would not add shade to existing SFRPD public open space in the Project vicinity throughout the year (Figure III.F 15 [Hunters Point Shipyard Phase II: Proposed Project Year-Round Shadow Trace]). These include India Basin Shoreline Park and India Basin Open Space. No



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 PROPOSED PROJECT YEAR-ROUND SHADOW TRACE**

FIGURE III.F-15

Project structure in excess of 40 feet in height would be sufficiently close to these parks to create shadow effects on them (refer to Figure II-5 [Proposed Maximum Building Heights]). The HPS Phase II buildings would also not shade to existing CPSRA lands. Thus, the discussion of HPS Phase II shadow effects below presents information on Project effects on open space proposed in the Project itself.

December 21 (Winter Solstice), 10.00 A.M.

The Project would cast new shadow on Grasslands Ecology Park at Hunters Point Parcel E-2, on approximately 1.7 percent of its area in the northeast part of the park along Crisp Road. Refer to Figure III.F-16 (Hunters Point Shipyard Phase II: Shadow Patterns—December 21 [10 AM PST]).

Heritage Park and the Waterfront Promenade would be shaded on approximately 17 percent and 3.3 percent of their areas, respectively. The new shade in Heritage Park would occur primarily on the northern side. New shadow on Waterfront Promenade would occur along the southern flank toward the middle of the park.

The Hillside Parks and Open Space at HPS Phase II would be affected by new shadow on approximately 7 percent of its eastern boundary

December 21 (Winter Solstice), Noon

As shown in Figure III.F-17 (Hunters Point Shipyard Phase II: Shadow Patterns—December 21 [Noon PST]), the Project would add shadow to approximately 2 percent of Grasslands Ecology Park in the area of the park along Crisp Road.

The Project would add shadow to approximately 14 percent of Heritage Park.

December 21 (Winter Solstice), 3:00 P.M.

As shown in Figure III.F-18 (Hunters Point Shipyard Phase II: Shadow Patterns—December 21 [3 PM PST]), The Project would cast shadows on about 2 percent of Grasslands Ecology Park at Hunters Point Parcel E-2 near Crisp Road. The Project would cast shadows across Heritage Park and Waterfront Promenade, on approximately 28 percent and 3 percent, respectively.

The 49ers stadium would shade a small portion of the Sports and Recreation Fields northeast of the stadium. The Project would cast shadows on approximately 6 percent of the Hillside Open Space at HPS Phase II.

March 21 (Vernal Equinox), 10:00 A.M.

As shown in Figure III.F-19 (Hunters Point Shipyard Phase II: Shadow Patterns—March 21 [10 AM PST]), the Project would cast shadow on Grasslands Ecology Park at Hunters Point Parcel E-2, on approximately 2 percent of its area along Crisp Road. The Project would cast new shadows on approximately 2 percent of Heritage Park. The Project would cast shadows on approximately 7 percent on of the Hillside Parks and Open Space in HPS Phase II along its eastern boundary.



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — DECEMBER 21 (10 AM PST)**

FIGURE III.F-16

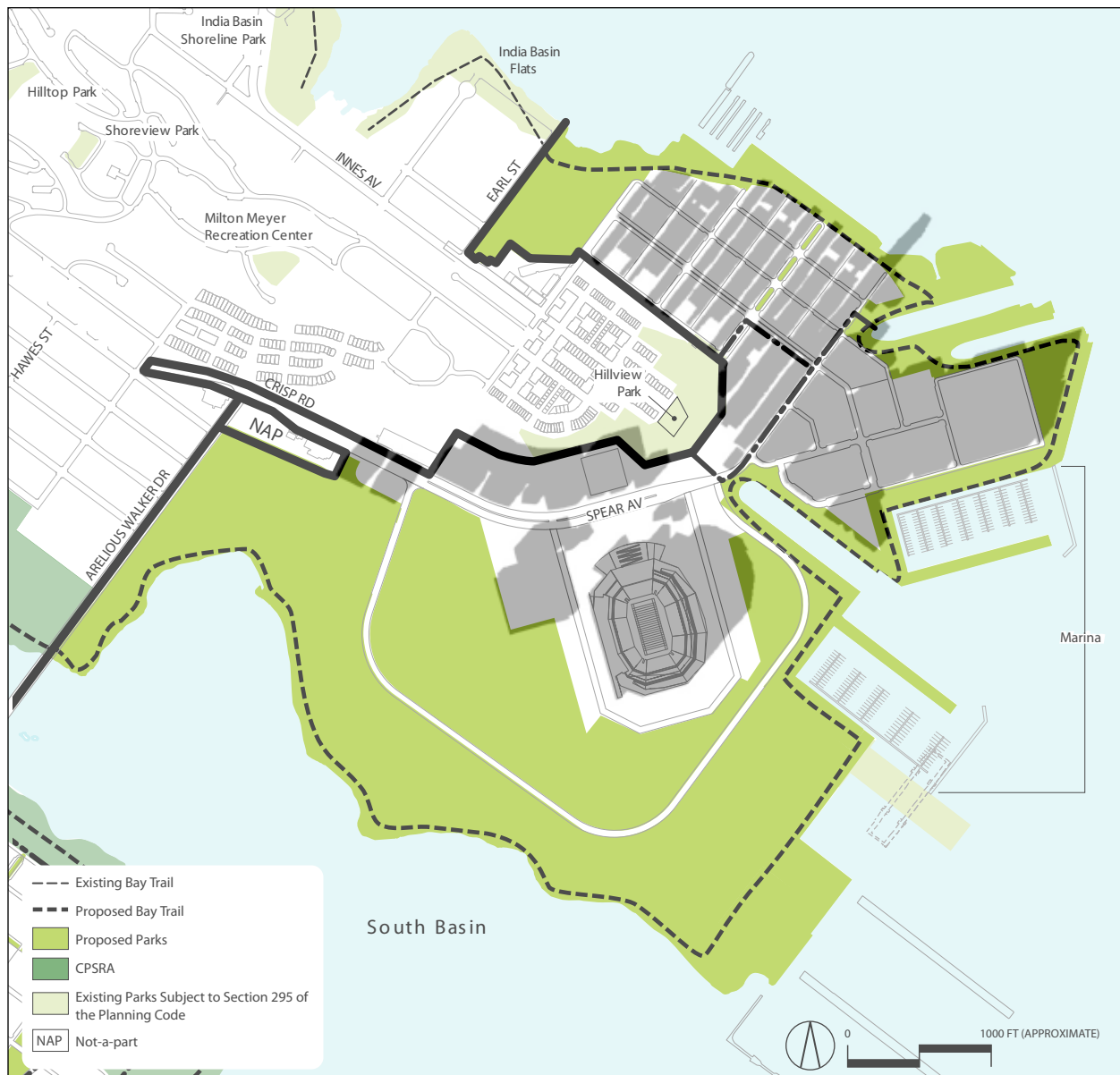


SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — DECEMBER 21 (NOON PST)**

FIGURE III.F-17

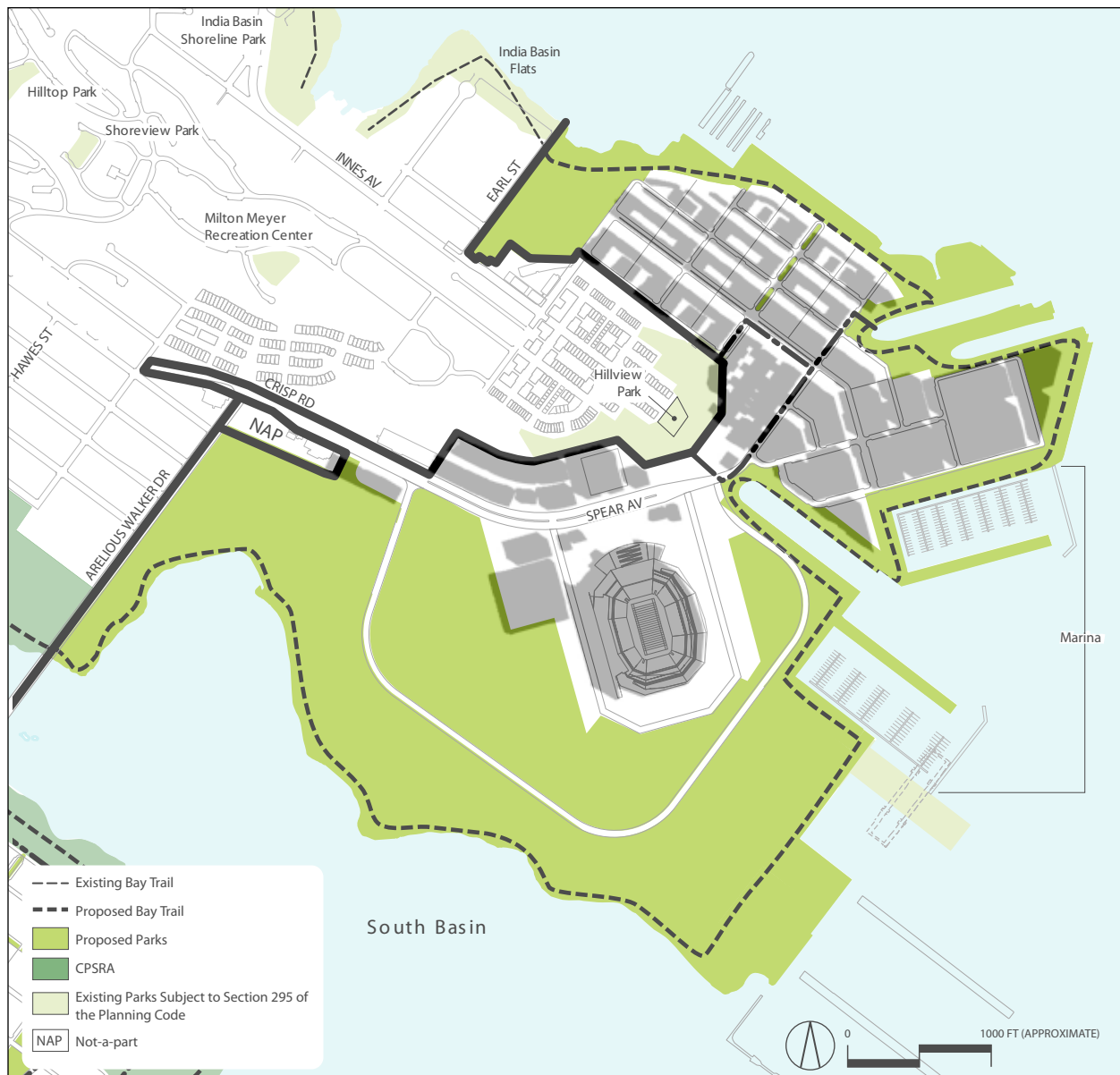


SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — DECEMBER 21 (3 PM PST)**

FIGURE III.F-18



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — MARCH 21 (10 AM PST)**

FIGURE III.F-19

March 21 (Vernal Equinox), Noon

As shown in Figure III.F-20 (Hunters Point Shipyard Phase II: Shadow Patterns—March 21 [Noon PST]), the Project would cast shadows on approximately 2 percent of Grasslands Ecology Park at Hunters Point Parcel E-2 along Crisp Road. The Project would cast new shadows on approximately 4 percent of Heritage Park.

March 21 (Vernal Equinox), 3:00 P.M.

As shown in Figure III.F-21 (Hunters Point Shipyard Phase II: Shadow Patterns—March 21 [3 PM PST]), the Project would cast shadows on about 2 percent of Grasslands Ecology Park at Hunters Point Parcel E-2 near Crisp Road. The Project would cast shadows across Heritage Park and Waterfront Promenade, on approximately 26 percent and 3 percent, respectively. The Project would cast shadows on approximately 6 percent of the Hillside Parks and Open Space in HPS Phase II along its eastern boundary.

June 21 (Summer Solstice), 10:00 A.M.

As shown in Figure III.F-22 (Hunters Point Shipyard Phase II: Shadow Patterns—June 21 [10 AM PDT]), the Project would cast shadows on approximately 2 percent of Grasslands Ecology Park at Hunters Point Parcel E-2 along Crisp Road. The Project would cast new shadows on approximately 4 percent of Heritage Park. The Project would cast shadows on approximately 4 percent of the Hillside Parks and Open Space in HPS Phase II along its eastern boundary.

June 21 (Summer Solstice), Noon

As shown in Figure III.F-23 (Hunters Point Shipyard Phase II: Shadow Patterns—June 21 [Noon PDT]), the Project would cast shadows on approximately 2 percent of Grasslands Ecology Park at Hunters Point Parcel E-2 along Crisp Road. The Project would cast shadows on approximately 2 percent of Heritage Park.

June 21 (Summer Solstice), 3:00 P.M.

As shown in Figure III.F-24 (Hunters Point Shipyard Phase II: Shadow Patterns—June 21 [3 PM PDT]), the Project would cast shadows on approximately 2 percent of Grasslands Ecology Park at Hunters Point Parcel E-2 along Crisp Road, and on approximately 2 percent of Heritage Park.

September 21 (Autumnal Equinox), 10:00 A.M.

As shown in Figure III.F-25 (Hunters Point Shipyard Phase II: Shadow Patterns—September 21 [10 AM PDT]), the Project would cast shadows on approximately 2 percent of Grasslands Ecology Park at Hunters Point Parcel E-2 along Crisp Road, and on approximately 6 percent of Heritage Park. The Project would cast shadows on approximately 6 percent of the Hillside Parks and Open Space in HPS Phase II along its eastern boundary.



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — MARCH 21 (NOON PST)**

FIGURE III.F-20

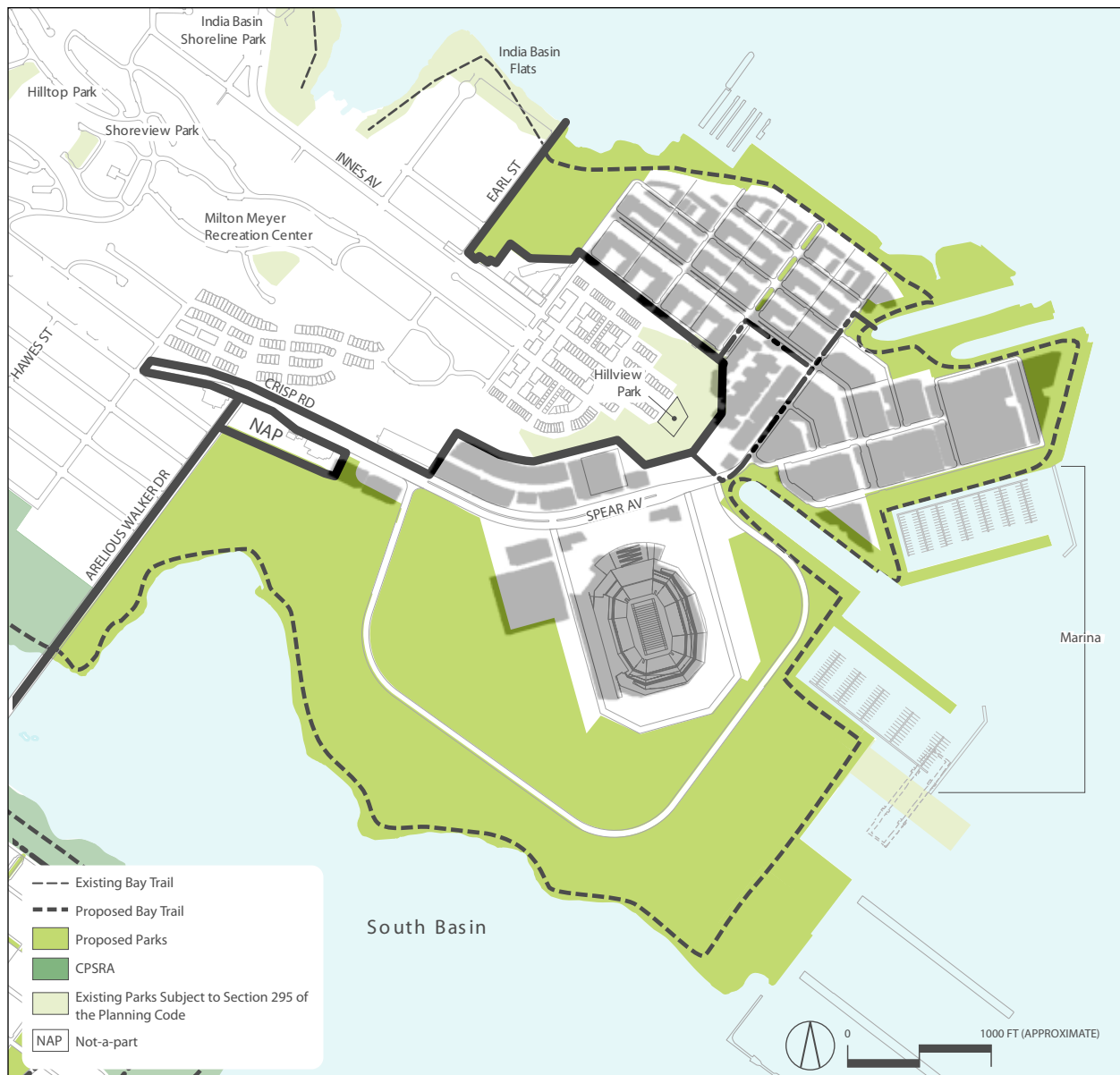


SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — MARCH 21 (3 PM PST)**

FIGURE III.F-21



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — JUNE 21 (10 AM PDT)**

FIGURE III.F-22



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — JUNE 21 (NOON PDT)**

FIGURE III.F-23

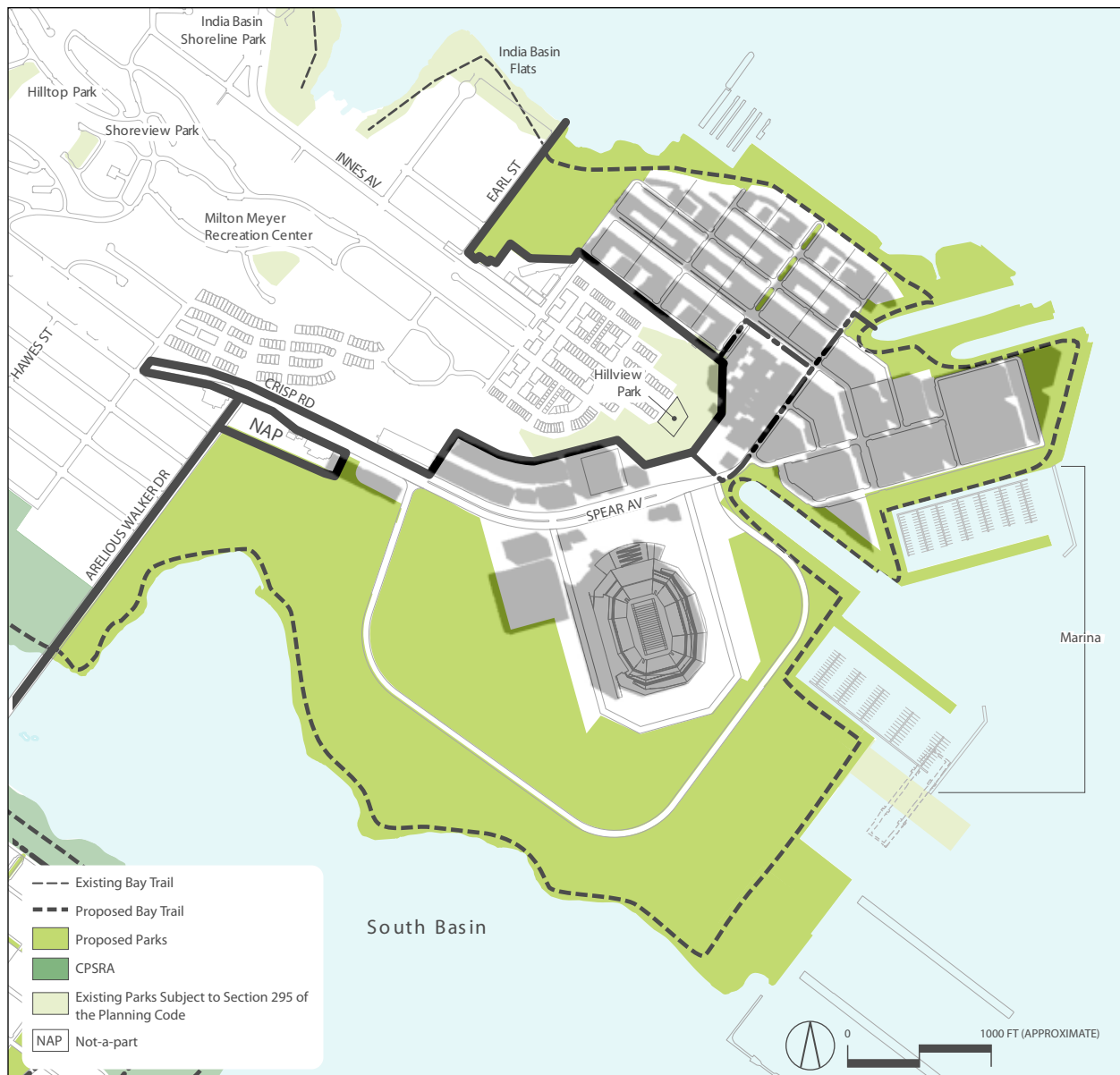


SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — JUNE 21 (3 PM PDT)**

FIGURE III.F-24



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — SEPTEMBER 21 (10 AM PDT)**

FIGURE III.F-25

September 21 (Autumnal Equinox), Noon

As shown in Figure III.F-26 (Hunters Point Shipyard Phase II: Shadow Patterns—September 21 [Noon PDT]), the Project would cast shadows on approximately 2 percent of Grasslands Ecology Park at Hunters Point Parcel E-2 along Crisp Road. The Project would cast shadows on approximately 3 percent of Heritage Park.

September 21 (Autumnal Equinox), 3:00 P.M.

As shown in Figure III.F-27 (Hunters Point Shipyard Phase II: Shadow Patterns—September 21 [3 PM PDT]), the Project would cast shadows on approximately 2 percent of Grasslands Ecology Park at Hunters Point Parcel E-2 along Crisp Road. The Project would cast new shadows on approximately 20 percent of Heritage Park. The Project would cast shadows on approximately 5 percent of the Hillside Parks and Open Space in HPS Phase II along its eastern boundary.

Conclusions

SFRPD open space in the vicinity of HPS Phase II includes India Basin Shoreline Park and India Basin Open Space. HPS Phase II would not add shade to existing SFRPD open space in the Project vicinity throughout the year.

The majority of proposed public open space at HPS Phase II would experience little to no new shade throughout the year. Heritage Park, due to its waterfront location to the east of the Project, would experience up to 27 percent new shade from the afternoon sun throughout the year however use of this resource is not expected to be adversely affected.

The extent and duration of shadow on new public sidewalks could increase along new street corridors in the Project. However, this shadow would not be in excess of that which would be expected in a highly urban area.

Development of HPS Phase II would have less-than-significant shadow effects on use of existing and proposed open space. No mitigation is required.

Combined Impact of Candlestick Point and Hunters Point Shipyard Phase II

Impact SH-1 Implementation of the Project would not result in new structures with the potential to cast shadows on existing or proposed parks and open space in a manner that would have an adverse effect on the use of the open space. (Less than Significant) [Criterion F.a]

As shown by Figure III.F-3 through Figure III.E-27 and the accompanying discussions, above, the Project would add shade to existing and proposed open space. The new shade would occur at limited times of day and year, and would not substantially affect the use of outdoor recreational facilities or open space. The impact would be less than significant. No mitigation is required. Refer to the discussions of Impact SH-1a and Impact SH-1b, above.



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — SEPTEMBER 21 (NOON PDT)**

FIGURE III.F-26



SOURCE: Lennar Urban, RHAA, CADP, 2009.

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Candlestick Point — Hunters Point Shipyard Phase II EIR
**HUNTERS POINT SHIPYARD PHASE II:
 SHADOW PATTERNS — SEPTEMBER 21 (3 PM PDT)**

FIGURE III.F-27

■ Cumulative Impacts

The geographic context for an analysis of cumulative new shadow impacts on outdoor recreation facilities or other public space is limited to the immediate Project site and vicinity. The past and present development in the City is described in the Setting section of this chapter, representing the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable future development in this geographic area includes approved or under construction development at Hunters Point Phase I, proposed development at Executive Park, and future development at India Basin Shoreline Area C. Such development could include structures that would add shade to existing public open space, or to Project open space. A significant impact would result if cumulative development combined to create new shade on open space that would have a substantial adverse effect on the use of the open space.

Because of the extent of the Project site encompassing the Candlestick Point and HPS Phase II site, cumulative development outside the Project site would be relatively distant from the Project open space or CPSRA and would not have the potential to combine with the Project to create new shadows on open spaces within the Project site.

Reasonably foreseeable development would include future projects in this geographic area. Structures over 40 feet in height could have shadow effects on open space under the jurisdiction of SFRPD. Such projects could affect shading of Bayview Park or Gilman Park. However, *Planning Code* Section 295 would require that such proposed development could not be approved unless the Planning Commission found that the project would have an insignificant effect on the use of the park. This would avoid significant cumulative shadow effects on SFRPD open space. In addition, the analysis found that the Project would not have significant adverse shadow effects on SFRPD open space at Gilman Park or Bayview Park, and would have no effect on shadow conditions at SFRPD sites at India Basin Shoreline Park or India Basin Flats; therefore, the Project would not contribute to any cumulative effects on SFRPD open space.

The shadow analysis has determined that the extent and duration of new shadow cast by the Project on public open space would not substantially affect outdoor recreation facilities or other public facilities. The analysis did not identify potential cumulative shadow effects from other potential development. Therefore, the Project would not result in considerable contribution to cumulative impacts with respect to shadows on open space.

