Shadow Analysis

Key Open Spaces of Concern and Investigation

Portsmouth Square
Maritime Plaza
St. Mary’s Square
Embarcadero Plaza I & II
Union Square
Shadow Analysis

Distances from Transit Tower to Open Spaces

- Portsmouth Square: 2,900'
- Maritime Plaza: 3,000'
- St. Mary’s Square: 2,400'
- Union Square: 2,000'
- Embarcadero Plaza I & II: 1,700'
Shadows reach these distant parks only in early hours in certain months when the sun is low in the sky and lines up precisely with the towers.

As a result…

• Shadows *sweep quickly* through the spaces and generally last for *no longer than 15-45 minutes*

• Different parks would be affected in different months – generally only one or at two parks can be affected during any one particular day.

• Because the parks are such a far distance from the buildings, the shadows are *more diffuse than if the buildings were close-by or immediately adjacent to the spaces.*

• Transit Center and District Plan would add *over 6 acres of new public open spaces.*
Embarcadero Plazas

Potentially affected in late November through early January in the mid-to-early afternoon.

** Transit Tower: At 1,000’ in height, Tower’s shadow would reach a very small portion of one section of available sun in the plaza for about 20 minutes, but above 1,000’ the shadow would sweep across all of the pockets of available sun in the plaza for over an hour and could reach across the Embarcadero to the Ferry Building.
Early Qualitative Analysis

Union Square

Potentially affected in mid-April through May and mid-July thru mid-August for some portion of the time between 7:00-8:00 a.m.

Shadows from Transit Tower and nearby building at 1st/Mission would pass through the northwest and southwest corner of Square.
St. Mary’s Square

Potentially affected in mid-February through mid-March and mid-September through mid-October for some portion of the time between 8:00-9:00 a.m.

Shadows from Transit Tower and nearby building at 1st/Mission could pass through the southwest corner of Square.

**1st/Mission site: Shifting the tallest building on the site to the Mission Street side of the site (from further north on 1st Street) and limiting its height to under 900’ would eliminate shadows on St. Mary’s Square from buildings on this site.**
Portsmouth Square

Potentially affected in January and mid-November to early-December for some portion of the time between 8:00-9:00 a.m.

Shadows from Transit Tower and nearby building at 1st/Mission could pass through most of the Square.

** Shifting the Transit Tower to the east side of its site would reduce some of the shadow it would cast on Portsmouth.
Technical Memo to be completed in the next few months regarding:

1. Accuracy

*Uncertainty/Margin of Error:* Current standard of “de minimis” shadow is potentially smaller than actual margin of error of the models themselves

*Refraction:* How to consider the blurring of long shadows in the atmosphere?

*Sun:* disc vs. point source; results in shadows of varying densities and blurred edges.

2. Significance

*Shadow density:* At what point is a shadow so diffuse as to be imperceptible?

*Opacity of materials:* How to consider glass screens and other transparent materials that do not block all sunlight?
Historic Resources
Existing Historic Districts

Historic District Boundaries

New Montgomery-Second Conservation District
Existing Historic Districts

Historic District Boundaries
- New Montgomery-Second Conservation District
- Second and Howard National Register District
Historic Survey Area
Areas of Examination for Potential District Expansion
Howard Street between 1\textsuperscript{st} and 2\textsuperscript{nd} Streets

South side of Howard Street
Mission Street between New Montgomery and 3rd Streets

South side of Mission Street
Howard Street between 1st and 2nd Streets

Potential Expansion of New Montgomery-2nd St Conservation District

• Article 11 Rating of individual buildings (Category 1-5) in expanded district

Protection of individual resources not in Conservation District

• Article 11 Rating (Category 1-5) and/or Article 10 Landmark Designation

Other considerations:
• Ability of building owners to sell Transferable Development Rights (TDR)
• Potential adjustment of height limits
• Design guidelines within Conservation District
Other Urban Design Issues (upcoming workshops)

- Tower Bulk/floorplate
- Ground floor design and uses
- Podium/streetwall interface
- Materials
- Pedestrian circulation
- Building open space requirements and public amenities
Ground Level Wind Analysis

Wind analysis to be completed within coming 2 months.

Preliminary testing, including all projects filed with Planning Department to date, indicates that there are no wind hazard exceedances at 1st/Mission in the heart of the Plan area (adjacent to the Transit Tower).

Further testing will be done for the current proposed heights and throughout the entire plan area.
Regional sustainability and Increasing Capacity to reach Smart Growth Goals

Raising revenue for Transit Center and public infrastructure

Elegant urban form, skyline and views

Moderating shadow impacts on public spaces

Protecting historic resources
Current Urban Form proposal
Current Urban Form proposal

Potential expanded historic district:
-- enable sale of TDR up to current potential
-- analyze height limits further to preserve scale and character of district
Create light, transparent sculptural vertical expression to terminate Transit Tower (above 1,000’ height limit) to enhance skyline expression while avoiding casting shadows.
Current Urban Form proposal
Current Urban Form proposal
## Buildout Potential

<table>
<thead>
<tr>
<th>Net Additional Space</th>
<th>Increment over Existing Zoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Space</td>
<td>5.82 million gsf</td>
</tr>
<tr>
<td>Housing Units</td>
<td>1,350</td>
</tr>
<tr>
<td>Hotel Rooms</td>
<td>1,370</td>
</tr>
<tr>
<td>Retail Space</td>
<td>85,000 gsf</td>
</tr>
<tr>
<td><strong>Total Space</strong></td>
<td><strong>9.2 million gsf</strong></td>
</tr>
</tbody>
</table>
Potential Public Revenue

Rough estimate of additional revenue for Transit Center and other public improvements, based on current projected buildout

Mello-Roos District $152-$220 million*

Other revenue additions:
Increased land sales value (TJPA parcels only)
Increased Tax Increment (Redevelopment Area)

Complete analysis and discussion of revenue plan, mechanisms, and public improvements in upcoming workshops

Notes:
* Range depending tax rate, net of cost of funds and land discount on TJPA parcels.