

To:  
Committee on Parks and Recreation

From:  
Luc Wilson, KPF

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Re:  
Proposed Shadows Task Force

I work at the architecture firm Kohn Pedersen Fox, an international firm known for large scale work such as skyscrapers and master plans. Here in New York we are designing Hudson Yards and One Vanderbilt, a new skyscraper near Grand Central Terminal. My work at Kohn Pedersen Fox focuses around spatial urban analytics, with a particular interest in how global cities regulate the impact of new development on public spaces developed through research with the Center for Urban Real Estate at Columbia University, and the Department of Computer Science at NYU.

The key question today is whether shadows cast by tall buildings have the capacity to impact the comfort level of park goes such that they need to be regulated city wide. Assuming that regulations beyond existing zoning height and setback requirements are necessary, who does the review and what criteria is used for evaluation? My research has shown that height alone is not the only consideration.

In Boston, the city can regulate new buildings based on the duration of new shadow created. They quantify the new continuous 1 hour shadow cast on specified areas (Fig 1.) The duration of continuous shadow is directly related to user comfort level. They do this in certain cases where the proposed building will exceed the zoned bulk for the site. In a comparative analysis between the new supertalls south of central park with the Time Warner Center using this criteria, I found that the total impact of the new supertall towers was very similar to the impact of the Time Warner Center (Fig 2.)

Given the same amount of built area, tall skinny buildings have a much smaller net new shadow duration impact as compared with short wide buildings. In fact, as is the case with the supertalls south of Central Park, it is the bottom 25% of the towers that have the greatest impact on shadow duration. This implies that absolute height as the reason for which buildings need to be evaluated is counter to the intent of the proposed legislation.

San Francisco also regulates the impact on new construction on parks. In general, no new construction over 40 ft tall that will cast new shadows on parks during specified dates and times is allowed. When the zoned FAR of a site would result in unavoidable shadows, the department of planning sets the acceptable level of impact based on a generic massing for the site by area of shadow cast (Fig 3, Appendix A.)

For New York, it would be beneficial to determine what an acceptable level of new shadow on parks would be for certain sites given their current zoned as-of-right FAR. This would create performance based criteria that protects the comfort level of parks while providing certainty to developers who know that a project will be approved if it meets the specified criteria.

I will end with a few recommendations:

- First we need to establish the criteria by which we will evaluate the impact of shadows cast by new towers near parks.
- Based on current zoning, we need to determine which parks are near potential tall towers that may cast shadows on the parks. If only a few parks across the city get identified then a city wide solution may not be appropriate. Additionally, for those parks that new development may cast shadows on, we need to determine if the shadow casting is significant enough to impact park goer comfort levels.
- Given park goer comfort level as a primary concern, the distinction between shade (desirable during summer months) vs shadow (not desirable during winter months) is important to consider.
- Related to this, we need to determine not only impact relative to comfort levels, but impact relative to park use. This can be done using time dependent, geolocated social media data such as twitter or facebook check-ins to determine when (time of year and time of day) people are using what parts of parks.

Along with the computer science department at NYU, we are currently developing a software platform (fig 4) to analyze city wide shadow impact of new development and would be happy to help the city study this issue.

I'd like to thank the Committee on Parks and Recreation for their time,

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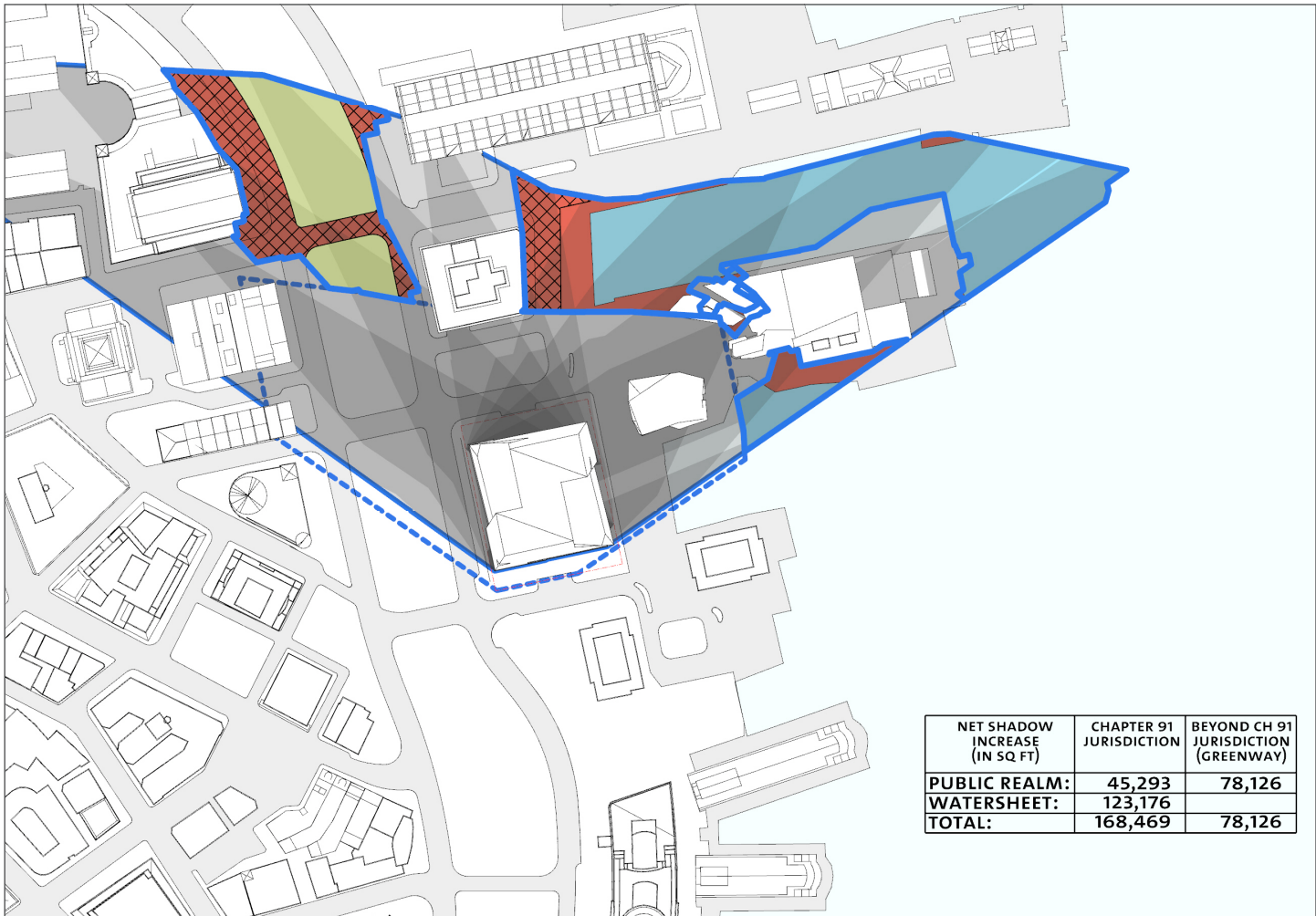


Figure 1.  
Example of 1 hour net new shadow duration regulation in Boston on October 21st.

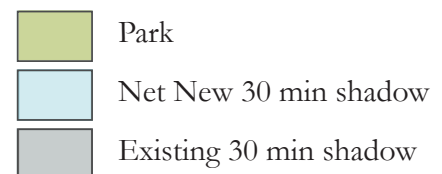


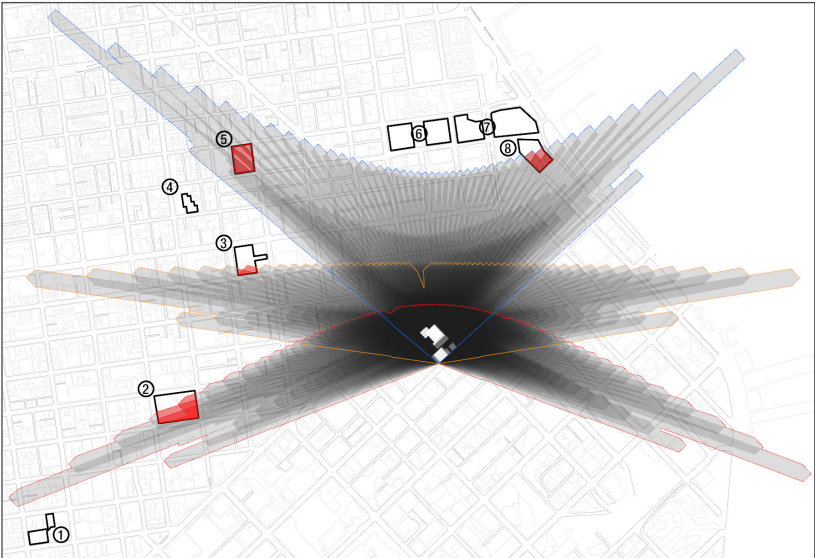
**Time Warner Center: 600,000 sq ft**  
30 minute shadow duration, Oct 21st



**57th St Towers: 700,000 sq ft**  
30 minute shadow duration, Oct 21st

Figure 2.  
Boston shadow duration regulations  
applied to New York on October 21st.  
Thirty minute shadow duration used  
instead of one hour.

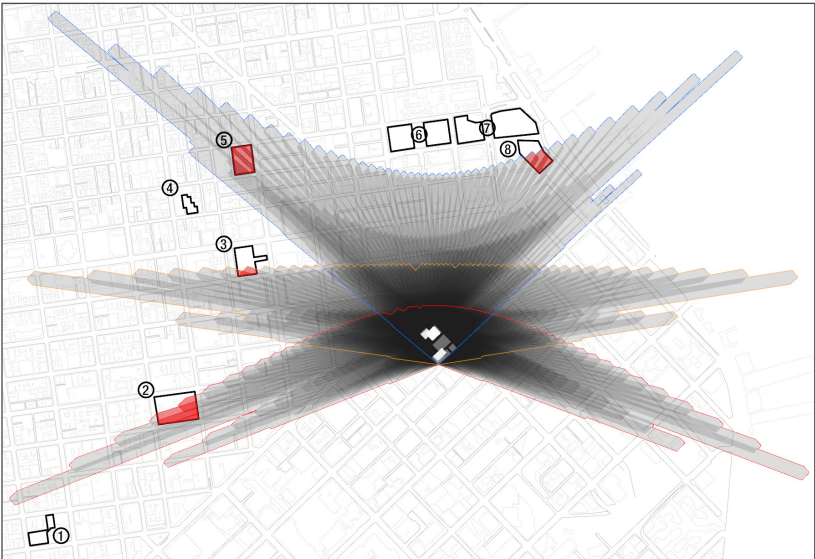




Average Shadow Area Per Day

	Solstice (Summer)	Equinox	Solstice (Winter)
① Father Alfred E. Boeddeker Park	0.0 %	0.0 %	0.0 %
② Union Square	1.51 %	0.0 %	0.0 %
③ St. Mary's Square	0.0 %	0.47 %	0.0 %
④ Willie "Woo Woo" Wong Playground	0.0 %	0.0 %	0.0 %
⑤ Portsmouth Square	0.0 %	0.0 %	3.67 %
⑥ Maritime Plaza	0.0 %	0.0 %	0.0 %
⑦ Sue Bierman Park	0.0 %	0.0 %	0.0 %
⑧ Justing Herman Plaza	0.0 %	0.0 %	2.01 %

City Approved Bulk



Average Shadow Area Per Day

	Solstice (Summer)	Equinox	Solstice (Winter)
① Father Alfred E. Boeddeker Park	0.0 %	0.0 %	0.0 %
② Union Square	1.31 %	0.0 %	0.0 %
③ St. Mary's Square	0.0 %	0.44 %	0.0 %
④ Willie "Woo Woo" Wong Playground	0.0 %	0.0 %	0.0 %
⑤ Portsmouth Square	0.0 %	0.0 %	3.56 %
⑥ Maritime Plaza	0.0 %	0.0 %	0.0 %
⑦ Sue Bierman Park	0.0 %	0.0 %	0.0 %
⑧ Justing Herman Plaza	0.0 %	0.0 %	1.68 %

Proposed Design

Improvement highlighted in Red

Figure 3.  
Example of San Francisco shadow casting evaluation. Comparison of city approved bulk with proposed design



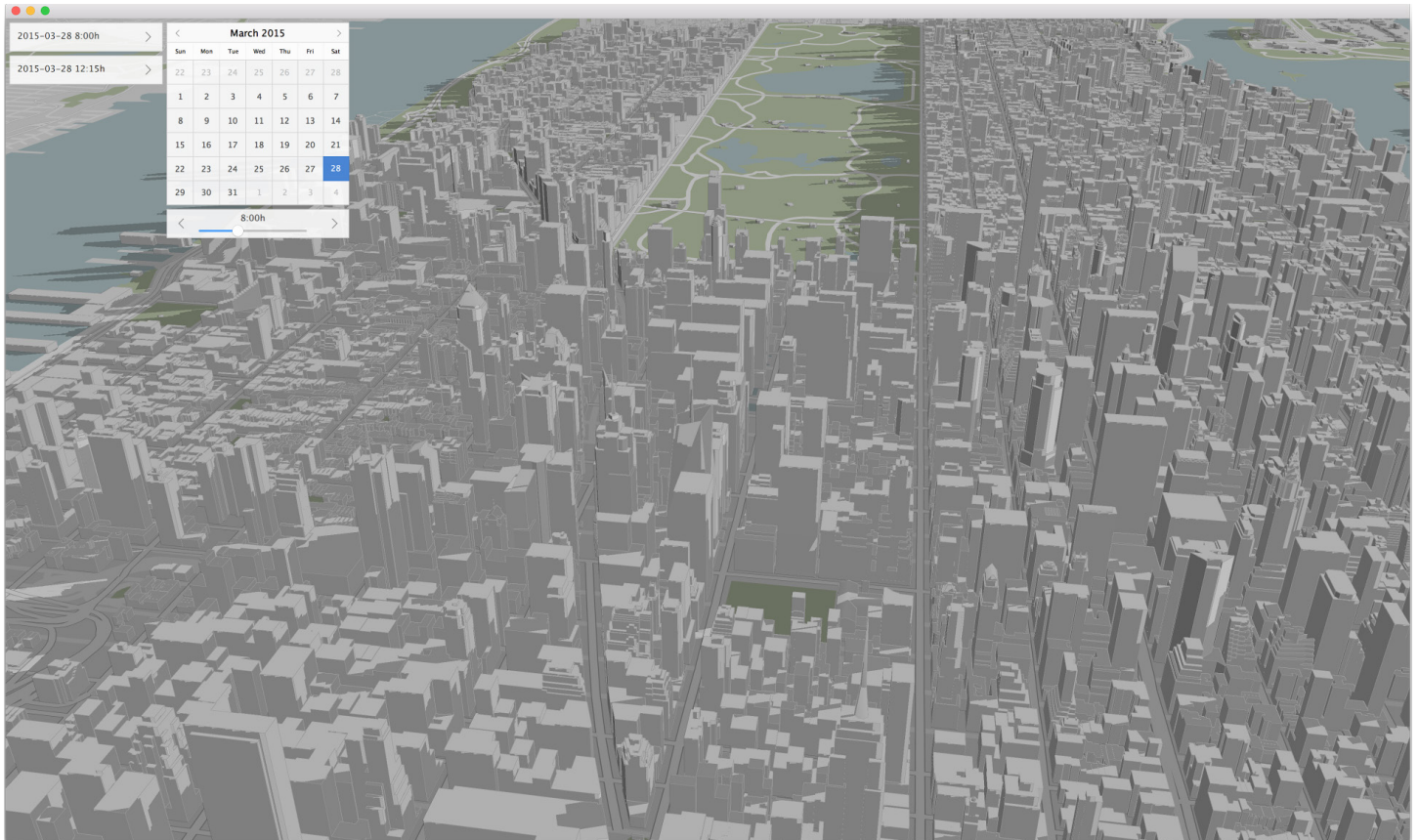


Figure 4.  
Screenshot of software being developed with NYU to study shadow impact of new development of parks.

## Appendix A

### Example of San Francisco Planning Department shadow impact evaluation from a Preliminary Project Assessment:

Shadow Study. Planning Code Section 295 generally prohibits new buildings above 40 feet that would cast new shadow on open space that is under the jurisdiction of the San Francisco Recreation and Park Commission between one hour after sunrise and one hour before sunset, at any time of the year, unless that shadow would not result in a significant adverse effect on the use of the open space. The proposed project would result in construction of a 605-foot tall building and an 850-foot tall building. The TCDP FEIR included an analysis of potential shadow impacts from development within the Plan area and determined that shadow resulting from subsequent projects in the Plan area could result in significant individual and cumulative shadow impacts. The TCDP FEIR did not identify feasible mitigation measures and determined shadow impacts to be significant and unavoidable. Potential shadow impacts from the subject property were modeled using a theoretical building envelope, based on the height and bulk limitations proposed in the Plan (not including allowable extensions above those limits). The analysis in the TCDP FEIR indicates that the Project could potentially cast shadow on Union Square, Saint Mary's Square, Portsmouth Square, and Justin Herman Plaza.

On October 11, 2012, the Planning Commission and the Recreation and Park Commission jointly adopted Planning Commission Resolution No. 18717 raising the absolute cumulative shadow limits (ACLs) for seven open spaces that could be shadowed by development sites in the Plan area, including the subject property. In revising these ACLs, the Commissions also adopted qualitative criteria for each park related to the characteristics of shading within these ACLs that would not be considered adverse, including the duration, time of day, time of year, and location of shadows on the particular parks. Under these amendments to the 1989 Shadow Memorandum, any consideration of allocation of "shadow" within these newly increased ACLs for projects must be consistent with these characteristics.

As discussed further below under "Preliminary Project Comments," the project is required to prepare a shadow analysis in compliance with Planning Code Section 295. The shadow analysis should demonstrate how the new shadow conforms with the qualitative criteria adopted in Planning Commission Resolution No. 18717 and should conclusively demonstrate that the shadow from the Project does not exceed the shadow anticipated by the modeling in the TCDP FEIR. The shadow analysis shall be prepared by a qualified consultant who would be required to prepare a proposed scope of work for review and approval by the Environmental Planning case manager prior to preparing the analysis.