

Downtown Waterfront Municipal Harbor Planning Advisory Committee



CITY OF BOSTON
Martin J. Walsh
Mayor



Boston
Redevelopment
Authority
Brian Golden, Acting Director

Consultants:
Utile, Inc.
Durand & Anastas
Noble & Wickersham

Agenda

- I. **Planning Updates**
- II. **Continued Discussion of Harbor Garage Site Analysis**
- III. **MHPAC Questions and Comments**
- IV. **Public Questions and Comments**

Planning Updates

Continued Discussion of the Harbor Garage Site Analysis and Proposal

What we heard from the MHPAC and the public

- a. Building Footprint / Lot Coverage**
- b. Wind**
- c. Shadow Impacts**
- d. Building Height**
- e. Ch. 91 / MHP Process Questions**

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- a. Building Footprint / Lot Coverage**
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 - e. Ch. 91 / MHP Process Questions**
- Provide more clarity on the implications of Harbor Square not functioning as regulatory open space and alternatives for meeting the 50% open space requirement.

What we heard from the MHPAC and the public

- a. Building Footprint / Lot Coverage
 - b. Wind**
 - c. Shadow Impacts
 - d. Building Height
 - e. Ch. 91 / MHP Process Questions
- Provide additional information on wind conditions, analysis, standards, and wind levels that need to be complied with.
 - Greater clarity on process and discussion on magnitude of offsets necessary to mitigate wind and shadow presented.

What we heard from the MHPAC and the public

- a. Building Footprint / Lot Coverage
 - b. Wind
 - c. Shadow Impacts**
 - d. Building Height
 - e. Ch. 91 / MHP Process Questions
- Additional shadow analysis is needed to better assess impacts of shadow throughout the year.
 - Clearer graphics of the shadow analysis are needed to better evaluate impacted areas.

What we heard from the MHPAC and the public

- a. Building Footprint / Lot Coverage
 - b. Wind
 - c. Shadow Impacts
 - d. Building Height**
 - e. Ch. 91 / MHP Process Questions
- Review how the bulk and mass of the proposed project relates to wind and shadow.

What we heard from the MHPAC and the public

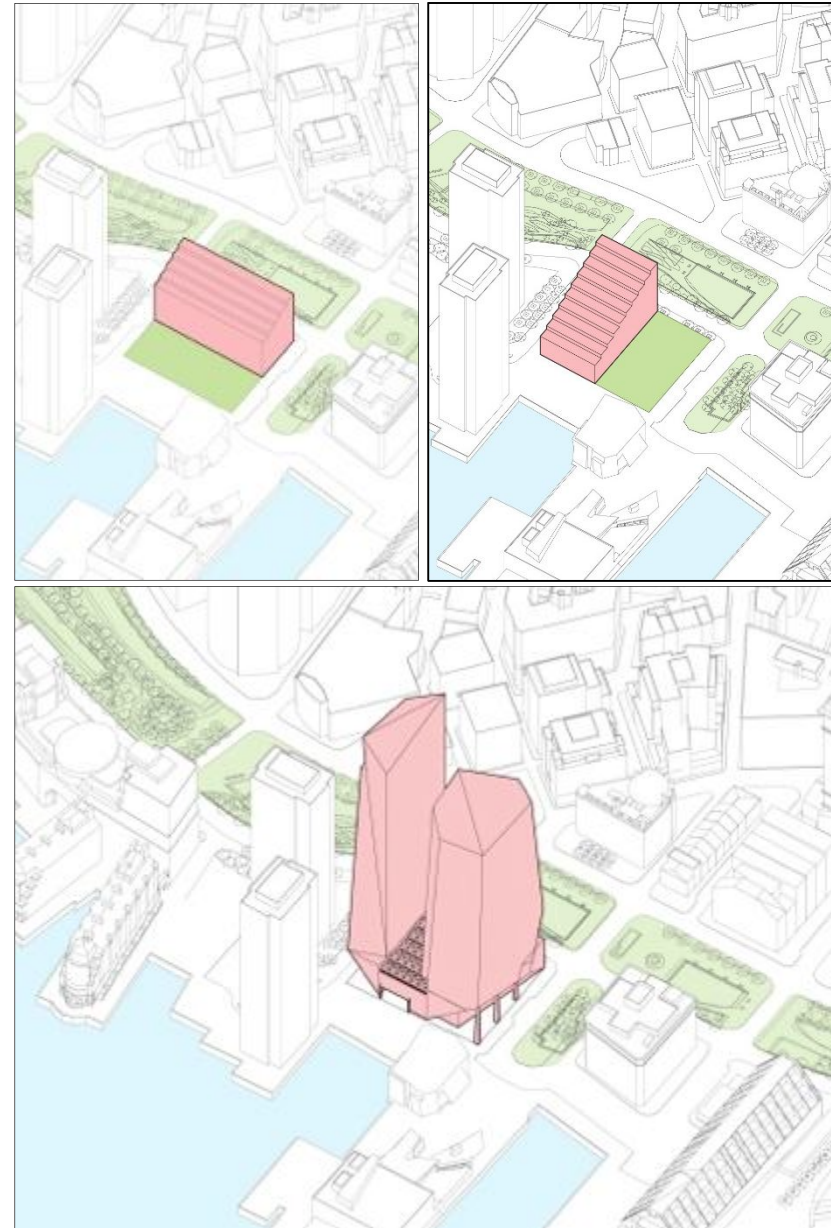
- a. Building Footprint / Lot Coverage
- b. Wind
- c. Shadow Impacts
- d. Building Height
- e. **Ch. 91 / MHP Process Questions**
 - Have a more balanced discussion including the Marriott Long Wharf and Hook Lobster property before getting into further detail on the Harbor Garage site and making any recommendations on any one site.

Building Footprint

Building Footprint

Chapter 91 requires one square foot of open space on-site for every square foot of building footprint

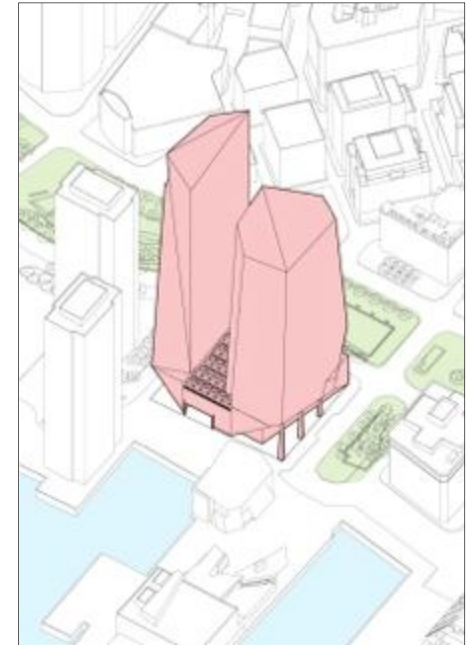
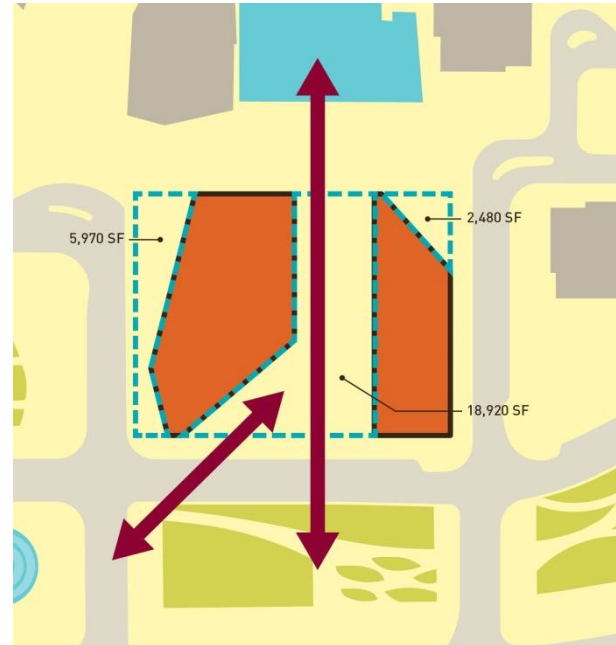
- Harbor Garage Parcel is approx. 58,000 SF
- Chapter 91-compliant scenario would require 50% open space, or approx. 29,000 SF
- Past MHPs & DEP define Open Space as clear to the sky
- Under that definition, 0% of the proposed development is open space...
- But other approaches could be developed based on the MHPAC's priorities.



Building Footprint

An MHP “...must specify alternative site coverage ratios and other requirements that ensure that, in general, buildings for nonwater-dependent use will be relatively condensed in footprint, in order that an amount of open space commensurate with that occupied by such buildings will be available to accommodate water-dependent activity and public access associated therewith, as appropriate for the harbor in question”

301 CMR 23.05



Wind

Wind

Key measurements of the impact of building height on the ground level environment are wind and shadow.

Wind: the 2000 South Boston MHP established a wind analysis based on a pedestrian comfort standard that must be met in the final design of the project. This approach, which requires no offset, has been used in subsequent MHPs and incorporated in other City wind standards (e.g., Article 49A of the Greenway Overlay District).

Wind

Greenway Guidelines Wind Standard, pp. 4-5, Sec. 49A of the Zoning Code

Wind. Buildings shall be designed to avoid excessive and uncomfortable downdrafts on pedestrians. Each proposed project shall be shaped, or other wind-baffling measures shall be adopted, so that the proposed project will not cause ground level ambient wind speeds to exceed the standards below. Wind tunnel or other appropriate means of testing shall be required for a proposed project over one hundred feet (100') in height.

TABLE A – Pedestrian Safety/Comfort Wind Standards

<u>Permitted Occurrence</u> <u>Activity Area Frequency</u>	<u>Effective Gust Velocity</u>	<u>Annual [Not to Exceed]</u>
Limit for all Pedestrian Areas	13.8 m/sec (31 mph)	1%
Major Walkways - Especially Principle Egress Path for High-Rise Buildings	13.8 m/sec [31 mph]	1%
Other Pedestrian Walkways - Including Street and Arcade Shopping Areas	11.2 m/sec (25 mph)	5%
Open Plazas and Park Areas, Walking and Strolling Areas	6.3 m/sec (14.1 mph)	15%
Open Plaza and Park Areas, Open-Air Restaurants	4.0 m/sec (9 mph)	20%

Wind

Wind conditions and impacts associated with new development are analyzed through the Article 80 design review process, and have not been mitigated through MHP offset provisions. Required wind mitigation design measures may include alterations to building massing, location and installation of structural elements closer to the ground plane to baffle and dampen wind speeds.

The BRA has adopted two criteria for assessing the relative wind comfort of pedestrians which have been utilized to establish wind standards for prior MHP's.

BRA Design Criteria:

Effective Gust Velocity of 31 mph – the fastest one-minute gust in an hour, not to exceed more than one percent of the time.

Pedestrian Level Wind standard based on location and comfort level for activities such as sitting, standing, or walking, expressed in terms of the one-hour mean wind speed exceeded one percent of the time:

<u>Level of Comfort</u>	<u>Wind Speed</u>
Comfortable for Sitting	<12 mph
Comfortable for Standing	>12 and <15 mph
Comfortable for Walking	>15 and <19 mph
Uncomfortable for Walking	>19 and <27 mph
Dangerous	> 27 mph

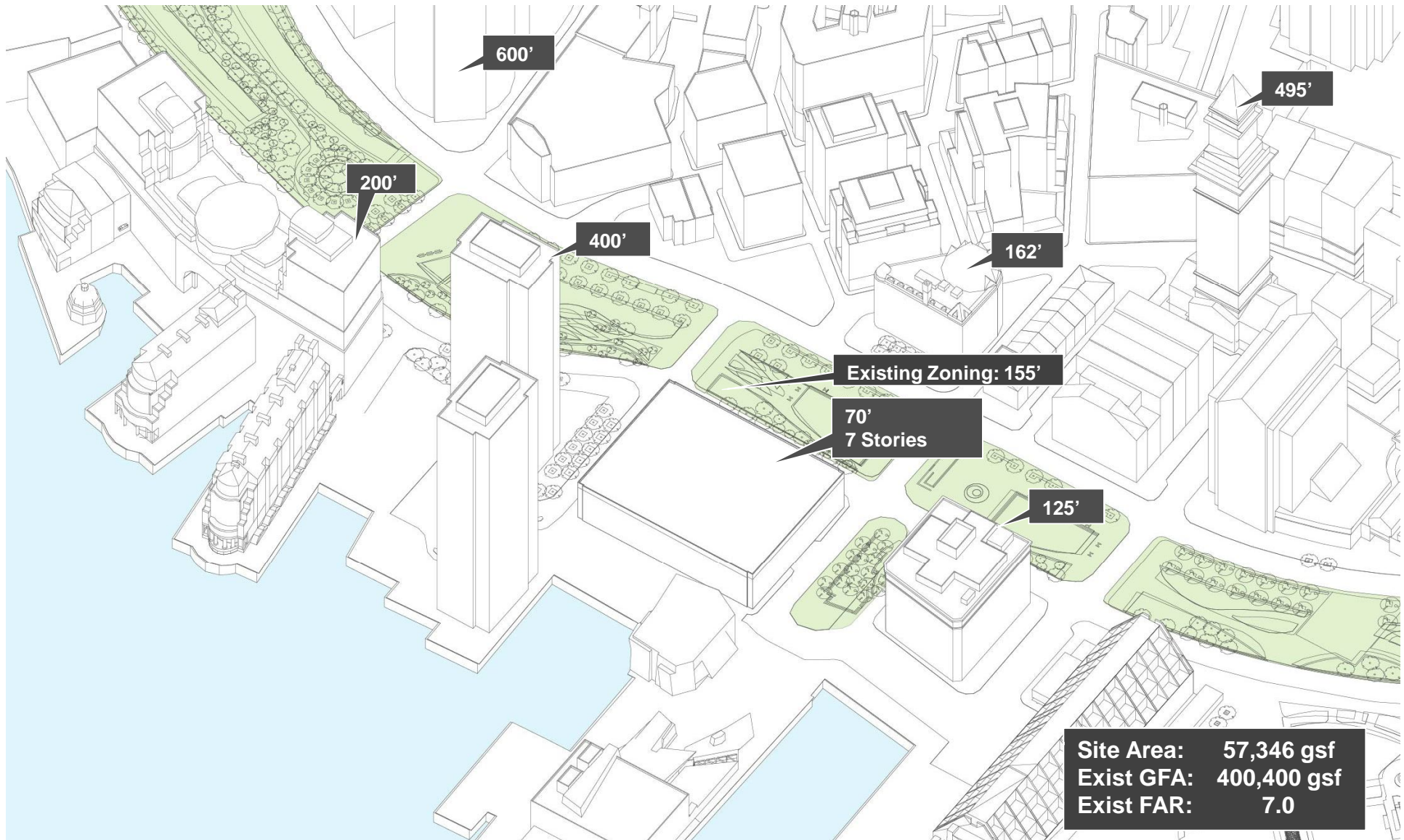
Shadow Impacts

Shadow Impacts

- I. Review Ch. 91 shadow analysis
- II. Shadow difference between highest occupiable floor shadow and total building height shadow
- III. Shadow impacts at different times of year
 - a. March 21 (vernal equinox)
 - b. June 21 (summer solstice)
 - c. September 21 (autumnal equinox)
 - d. December 21 (winter solstice)

Existing Conditions

100% Building Coverage
0% Open Space

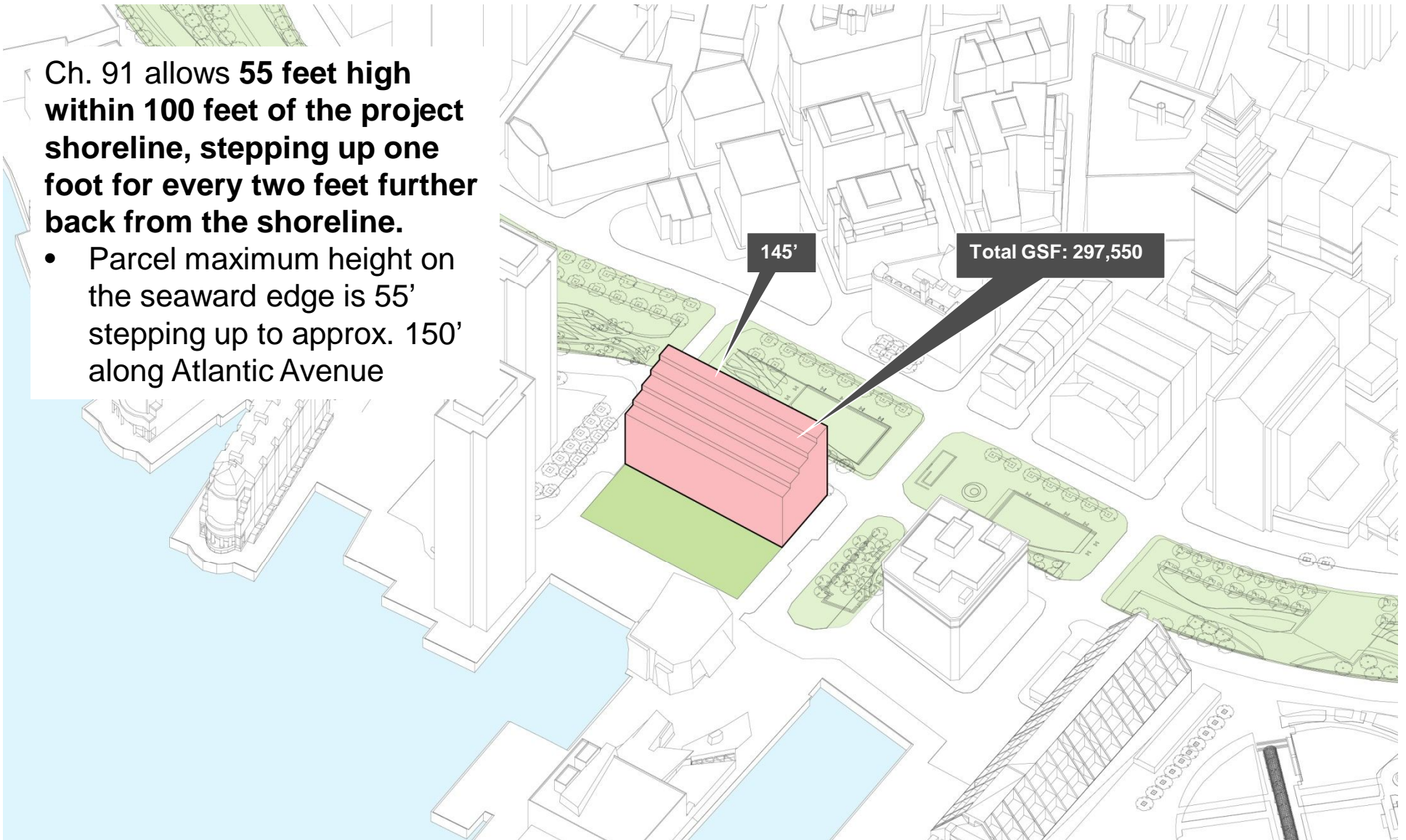


Ch. 91 Baseline

50% Building Coverage
50% Open Space

Ch. 91 allows **55 feet high within 100 feet of the project shoreline, stepping up one foot for every two feet further back from the shoreline.**

- Parcel maximum height on the seaward edge is 55' stepping up to approx. 150' along Atlantic Avenue



Proposed Building

100% Building Coverage
0% Open Space

For Ch. 91 purposes, shadows are calculated based on the highest occupiable floor.

582'

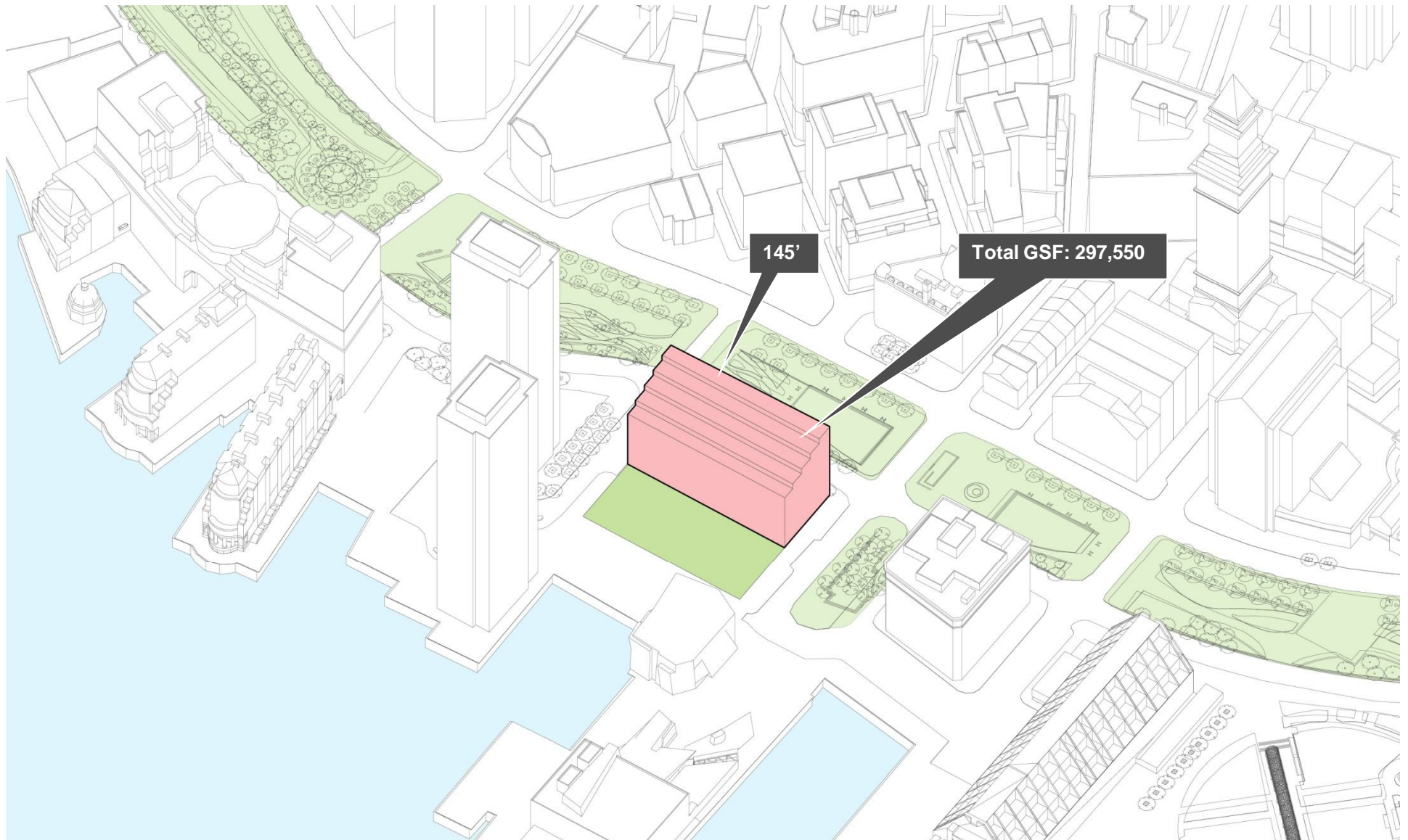
485'

Tower 1
Highest Occupiable floor – **582'**
Total height – **615'**

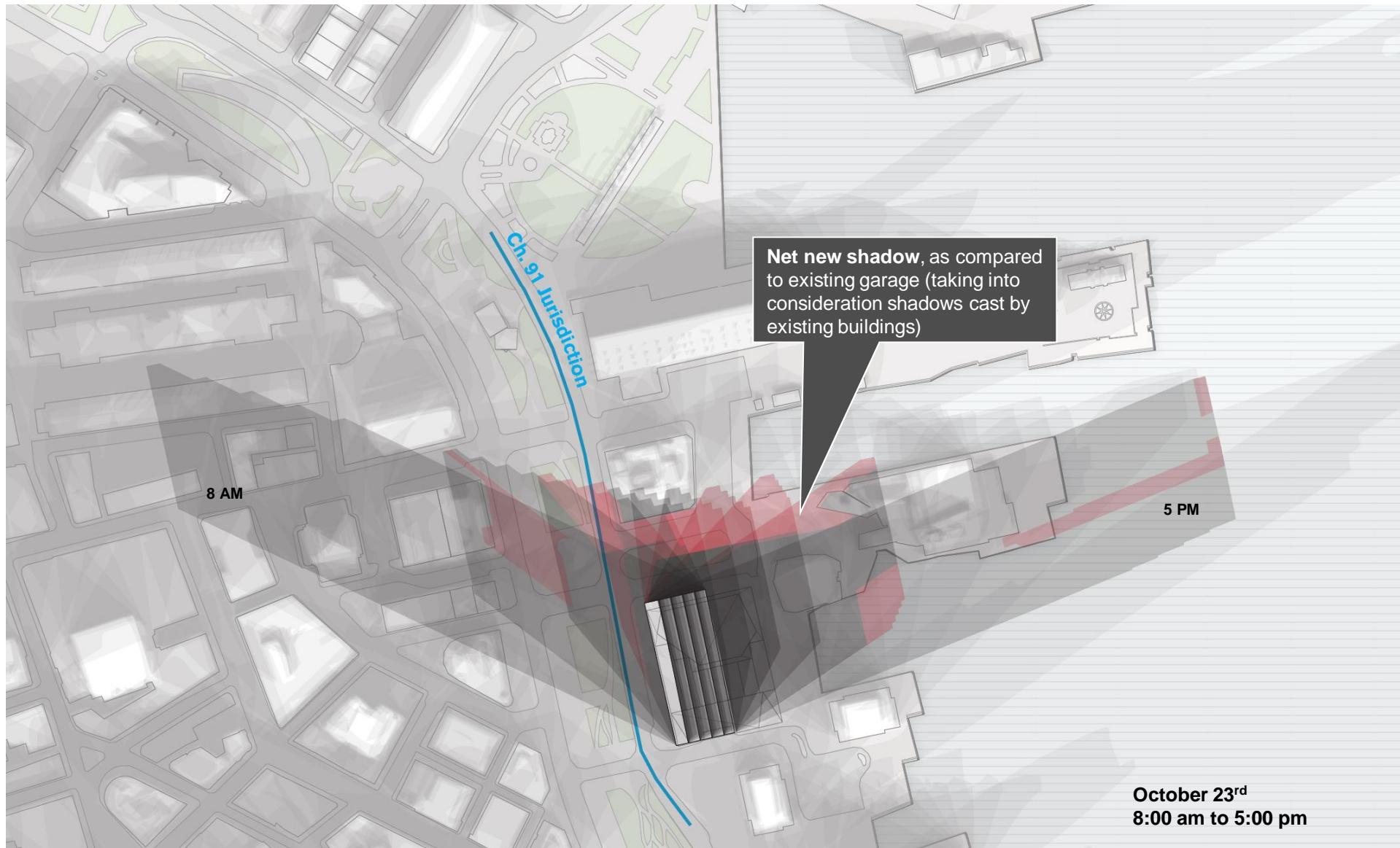
Tower 2
Highest Occupiable floor – **485'**
Total height – **538'**

Ch. 91 Baseline and the Proposed Redevelopment Scenario
Chapter 91 Compliant Scenario

50% Building Coverage
50% Open Space

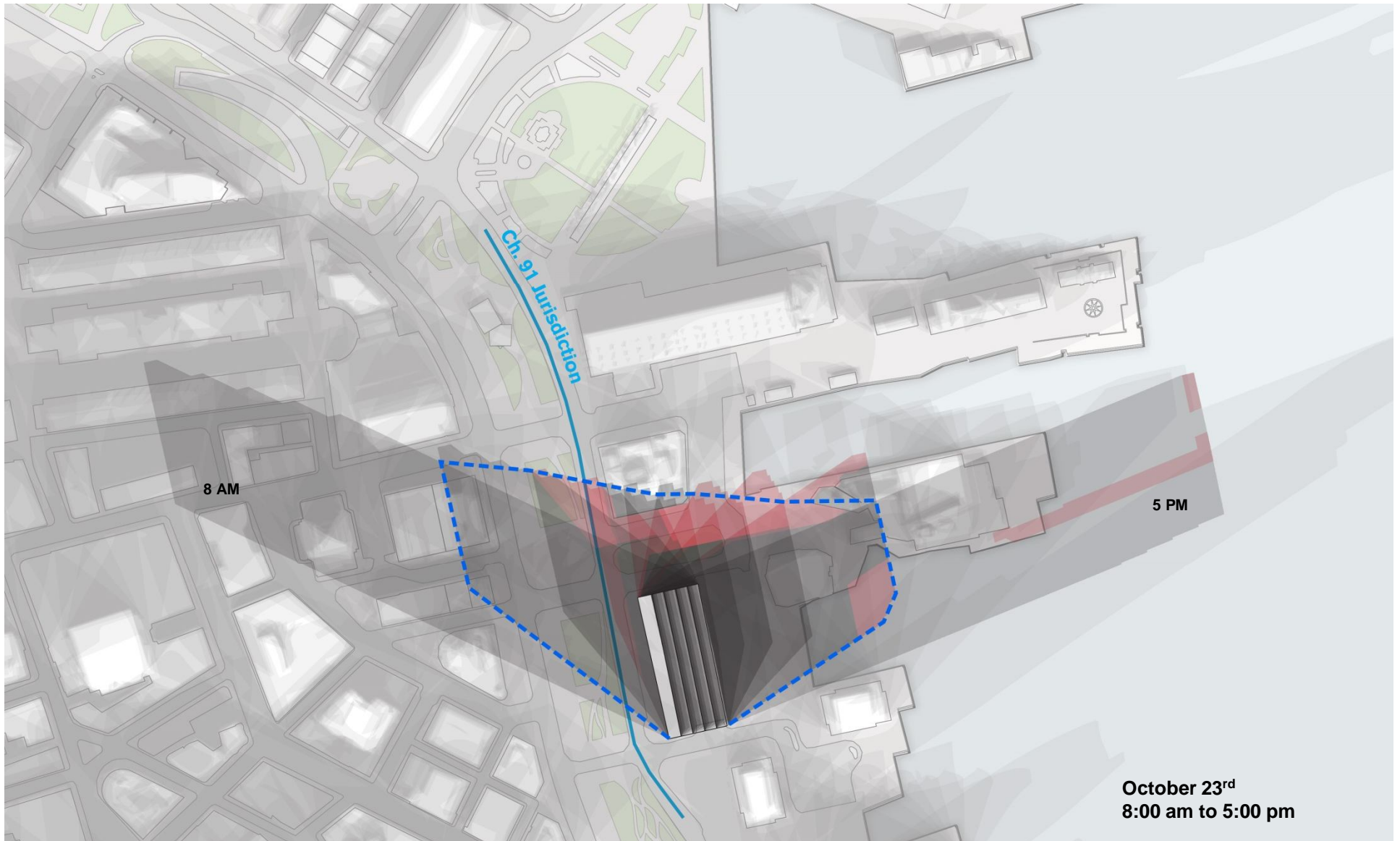


Ch. 91 Baseline and the Proposed Redevelopment Scenario
Chapter 91 Compliant Scenario



Ch. 91 Baseline and the Proposed Redevelopment Scenario
Chapter 91 Compliant Scenario

— Minimum 1 hour or more continuous shadow extent for Chapter 91 Compliant scenario



Proposed Building

For Ch. 91 purposes, shadows are calculated based on the highest occupiable floor.

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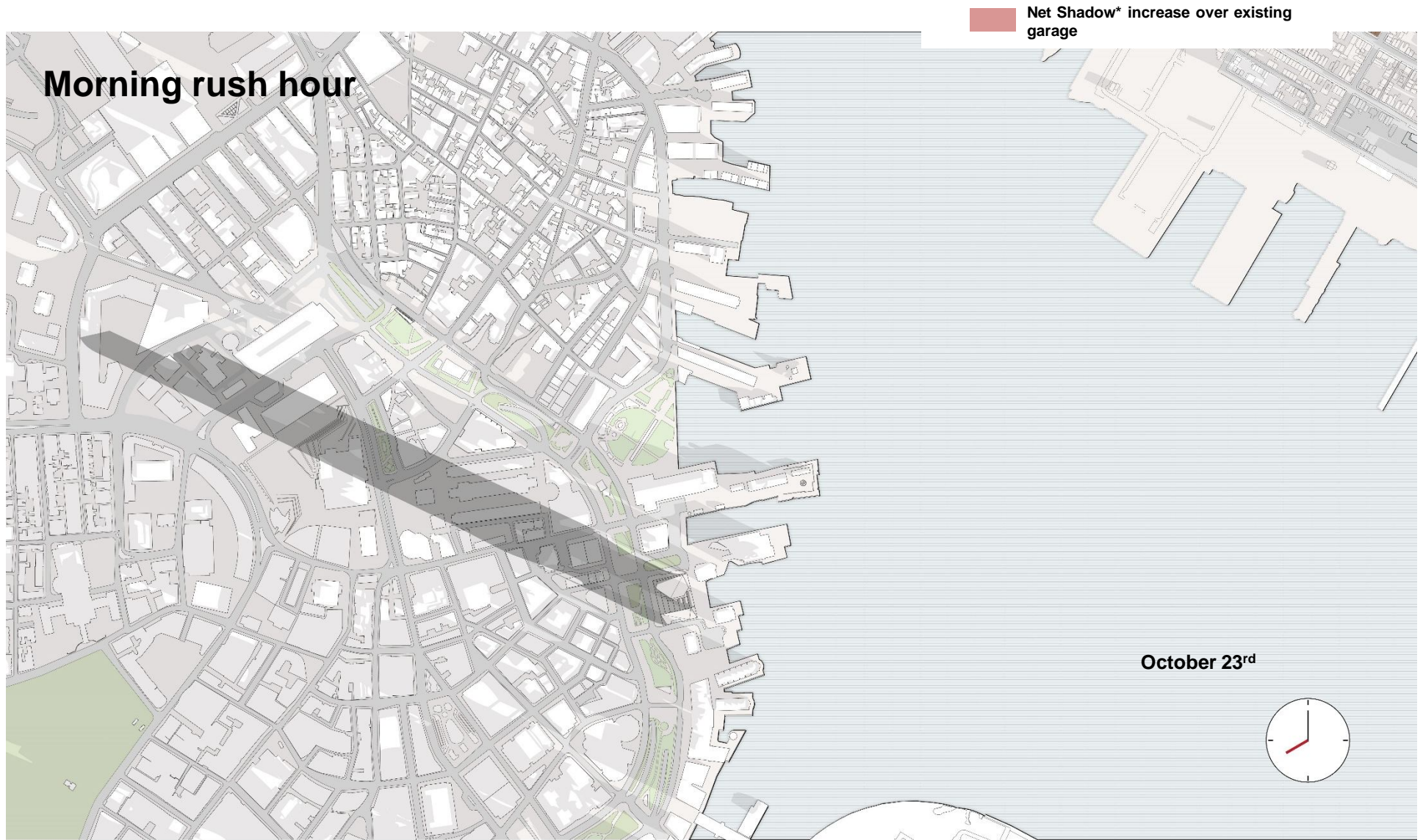
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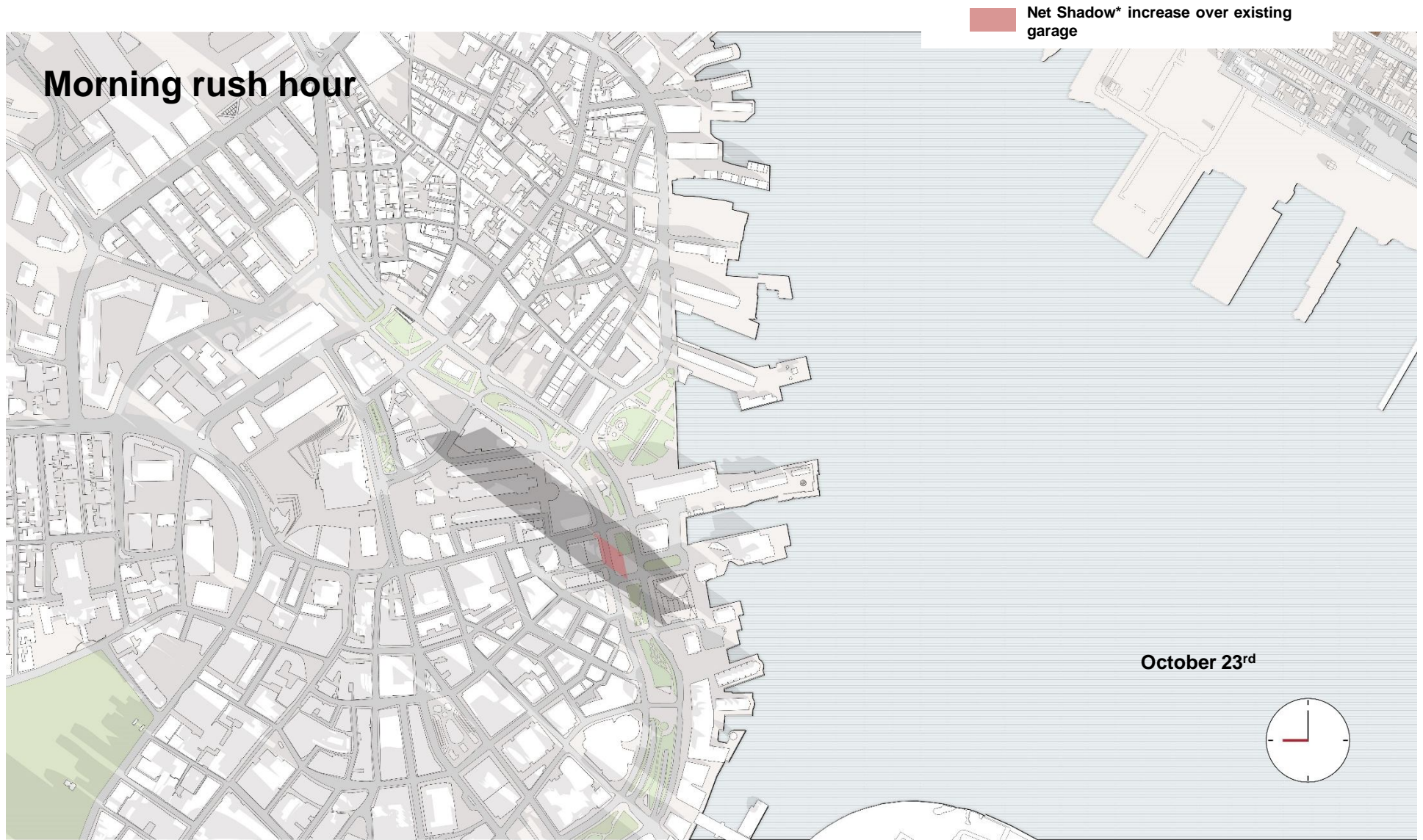
Ch. 91 Baseline and the Proposed Redevelopment Scenario
Chiofaro Co. Proposal – October 23rd

Shadow based on Highest Occupiable Floor



Ch. 91 Baseline and the Proposed Redevelopment Scenario
Chiofaro Co. Proposal – October 23rd

Shadow based on Highest Occupiable Floor

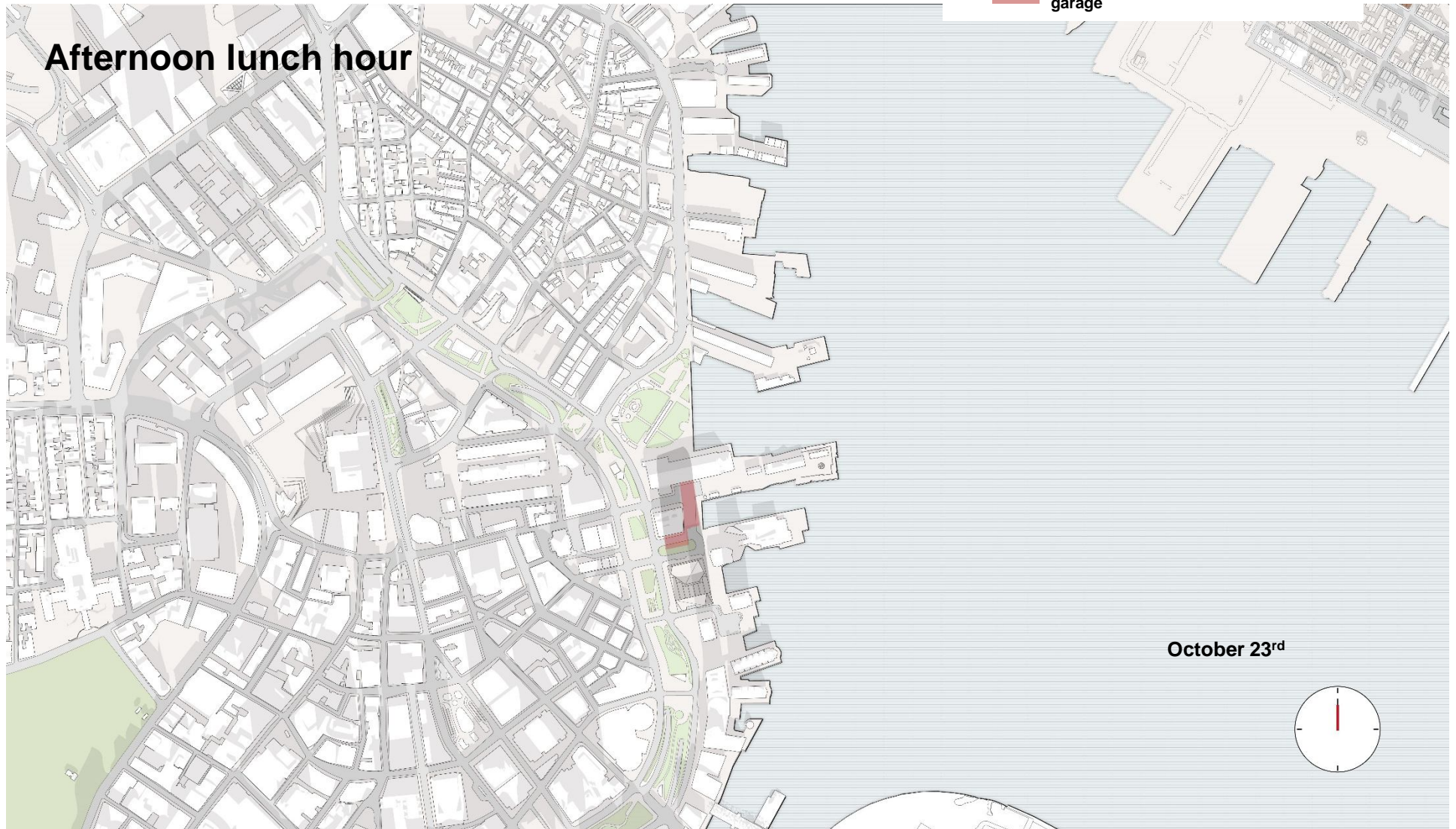


Chiofaro Co. Proposal

Shadow based on Highest Occupiable Floor

Net Shadow* increase over existing garage

Afternoon lunch hour

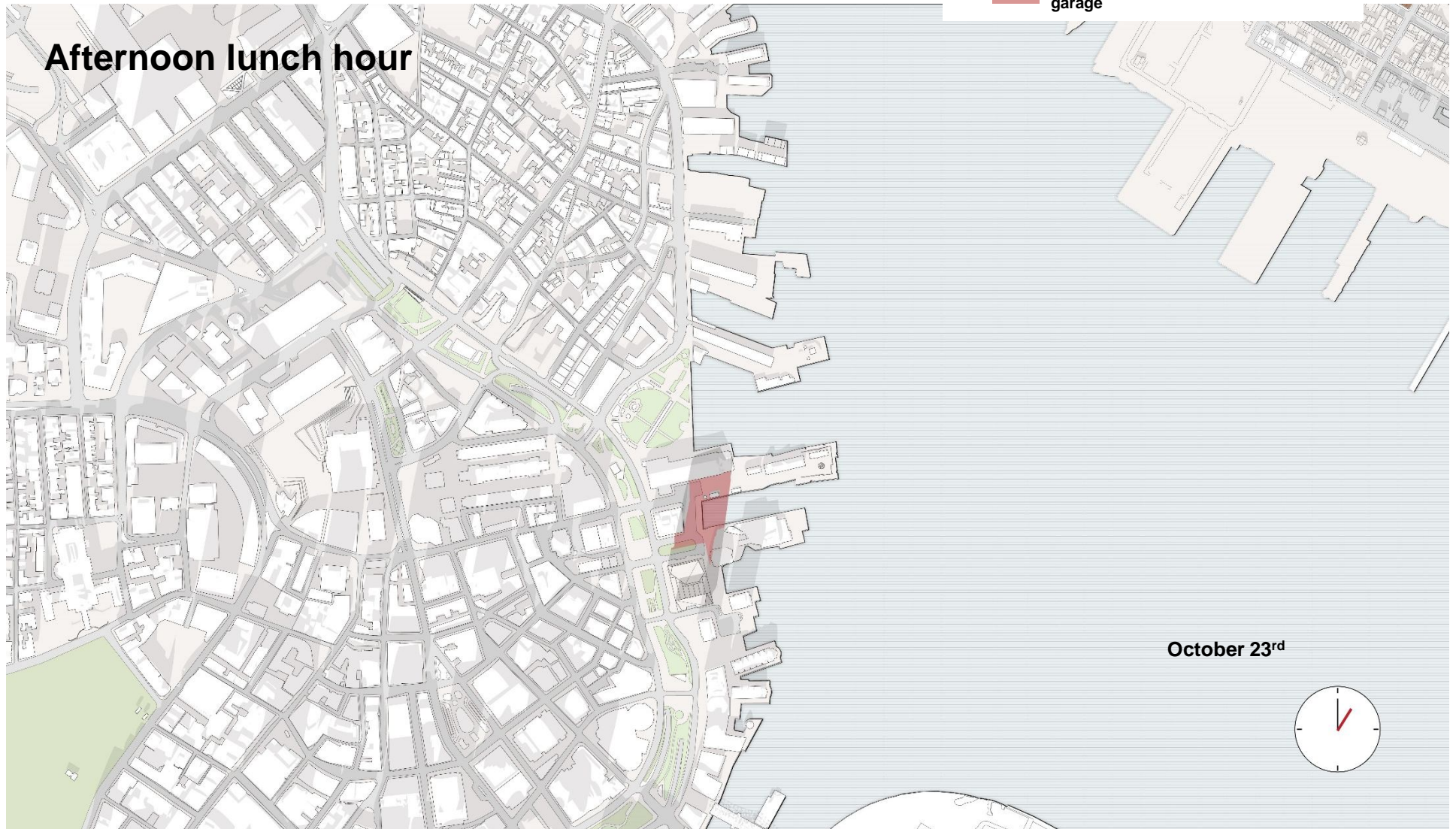


Ch. 91 Baseline and the Proposed Redevelopment Scenario
Chiofaro Co. Proposal

Shadow based on Highest Occupiable Floor

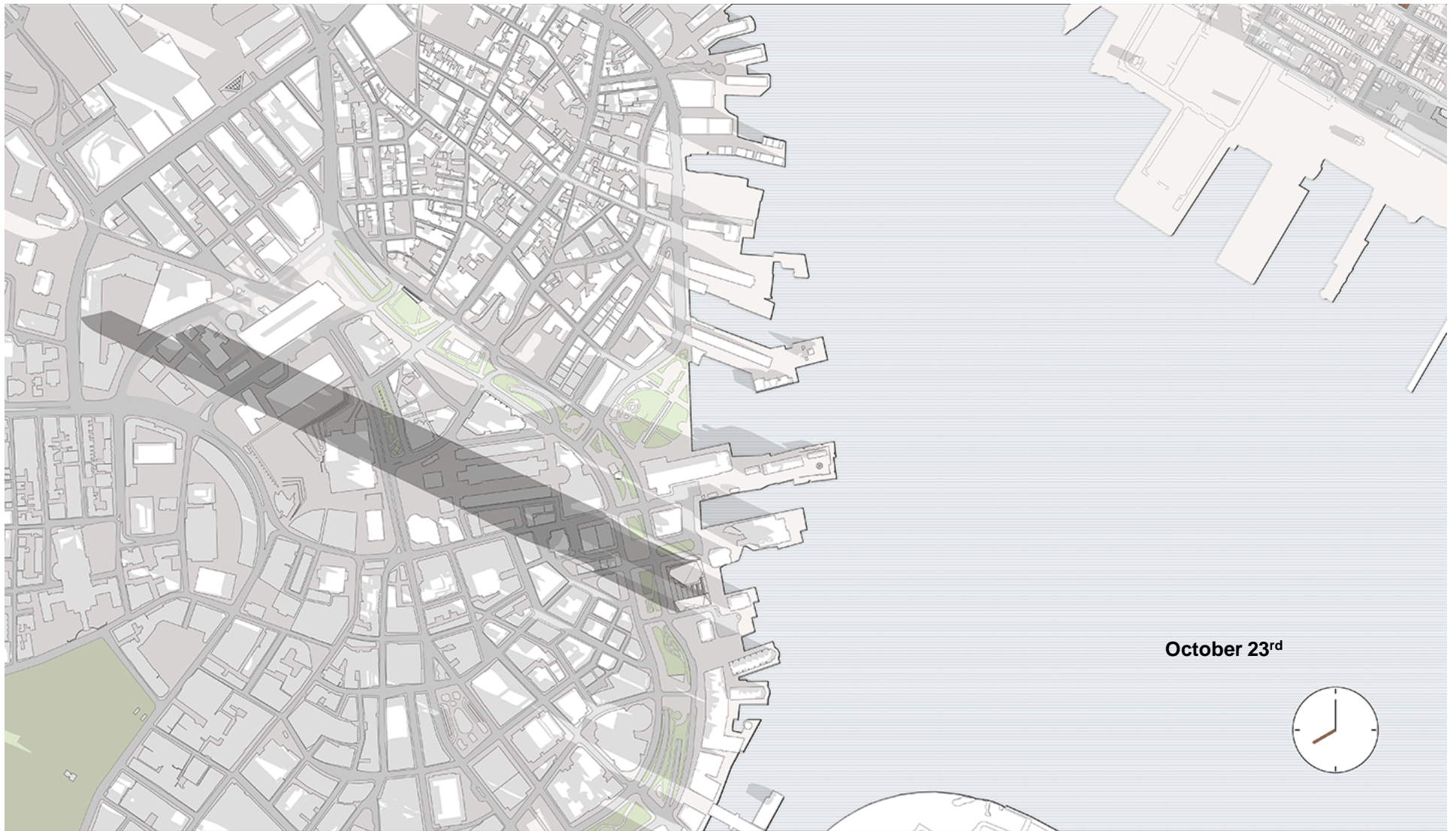
Net Shadow* increase over existing garage

Afternoon lunch hour



Ch. 91 Baseline and the Proposed Redevelopment Scenario
Chiofaro Co. Proposal – October 23rd

Shadow based on Highest Occupiable Floor



October 23rd



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal

Shadow based on Highest Occupiable Floor

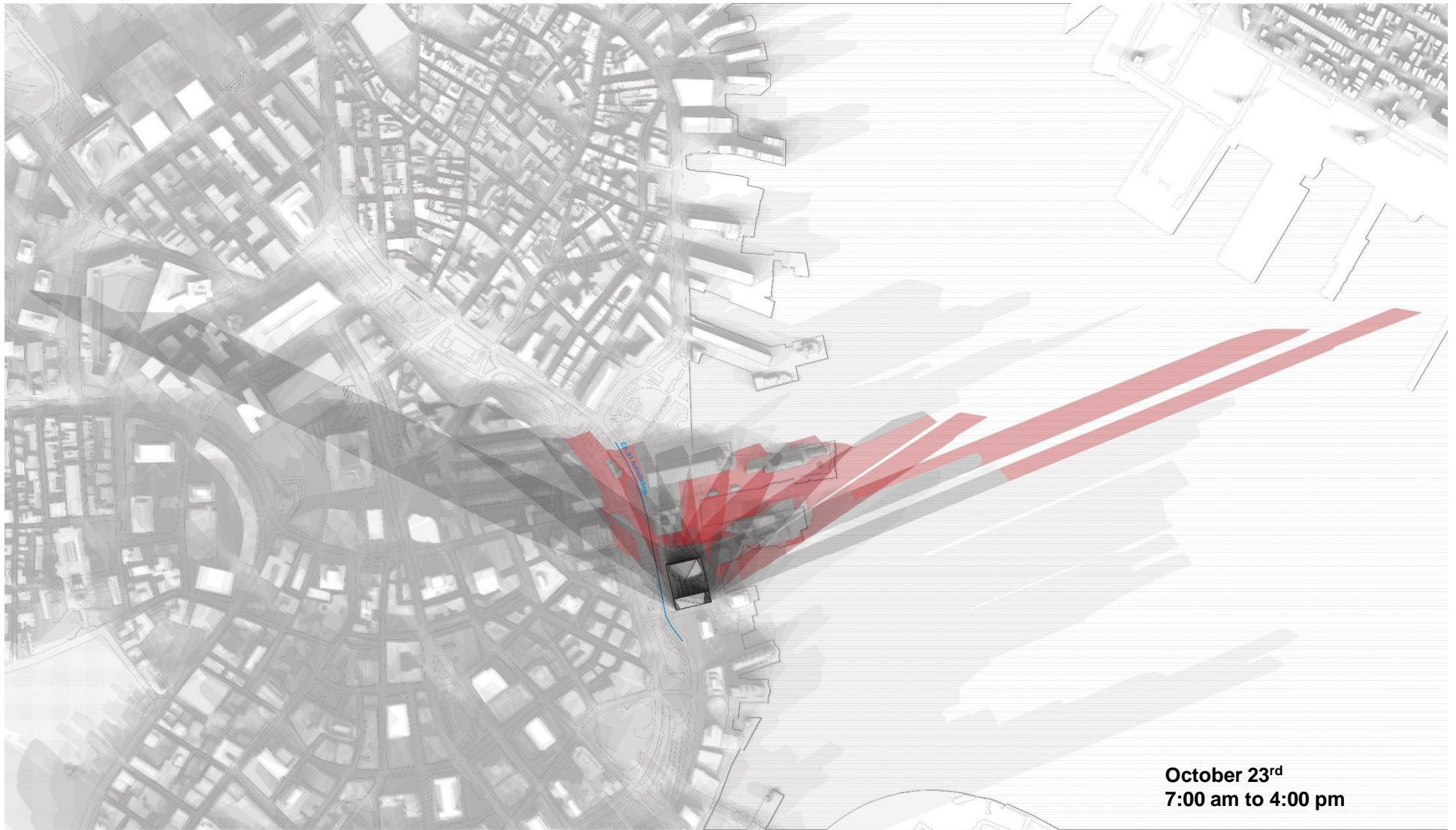
* Net shadow increase, as compared to existing garage (taking into consideration shadows cast by all existing buildings)

Net Shadow* increase over existing garage



Ch. 91 Baseline and the Proposed Redevelopment Scenario
Chiofaro Co. Proposal

Shadow based on Total Height



October 23rd
7:00 am to 4:00 pm

Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal

Shadow based on Highest Occupiable Floor

- Minimum 1 hour or more continuous shadow extent for Chapter-91 Compliant proposal
- Minimum 1 hour or more continuous shadow extent for Development Scenario
- Net Shadow* increase over existing garage



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal

--- Minimum 1 hour or more continuous shadow extent for Chapter-91 Compliant proposal

— Minimum 1 hour or more continuous shadow extent for Development Scenario

Net Shadow increase over Chapter 91 Baseline on watersheet

Net Shadow increase over Chapter 91 Baseline on public realm

Shadow based on Highest Occupiable Floor

Net Shadow increase on public realm

Net Shadow increase on watersheet

Net Shadow increase* (in square feet)	Chapter 91 jurisdiction	Beyond Ch. 91 jurisdiction (Greenway)
Public Realm	128,800	82,000
Watersheet	230,700	--
Total	359,500	82,000

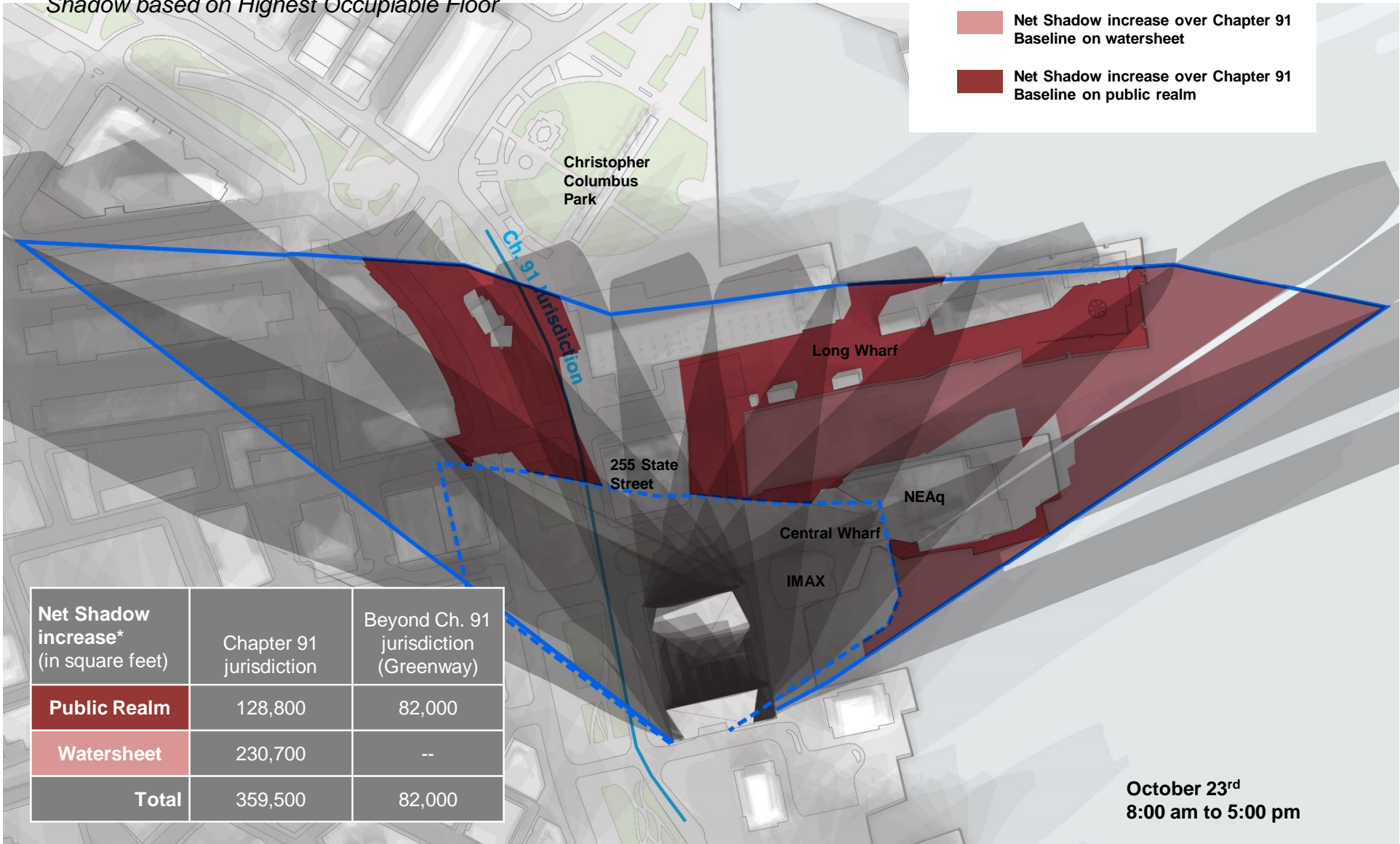
October 23rd
8:00 am to 5:00 pm

Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal

Shadow based on Highest Occupiable Floor

- - - Minimum 1 hour or more continuous shadow extent for Chapter-91 Compliant proposal
- Minimum 1 hour or more continuous shadow extent for Development Scenario
- Net Shadow increase over Chapter 91 Baseline on watersheet
- Net Shadow increase over Chapter 91 Baseline on public realm



Net Shadow increase* (in square feet)	Chapter 91 jurisdiction	Beyond Ch. 91 jurisdiction (Greenway)
Public Realm	128,800	82,000
Watersheet	230,700	--
Total	359,500	82,000

October 23rd
8:00 am to 5:00 pm

Building Height & Shadow Impact

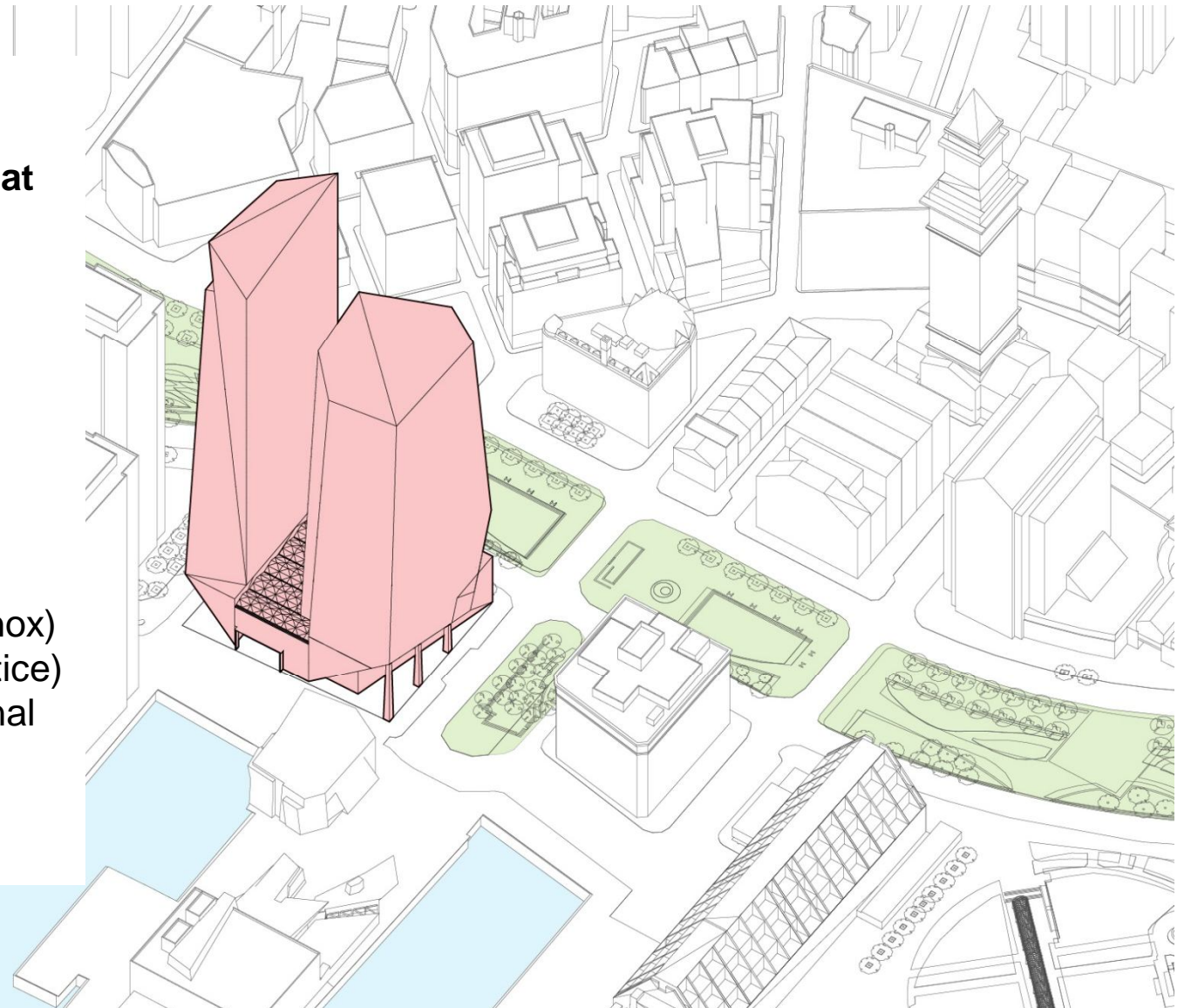
Following with BRA Development Review Guidelines, we will look at the following:

Times of day:

- 9:00 a.m.
- 12:00 noon
- 3:00 p.m.
- 6:00 p.m.

Dates:

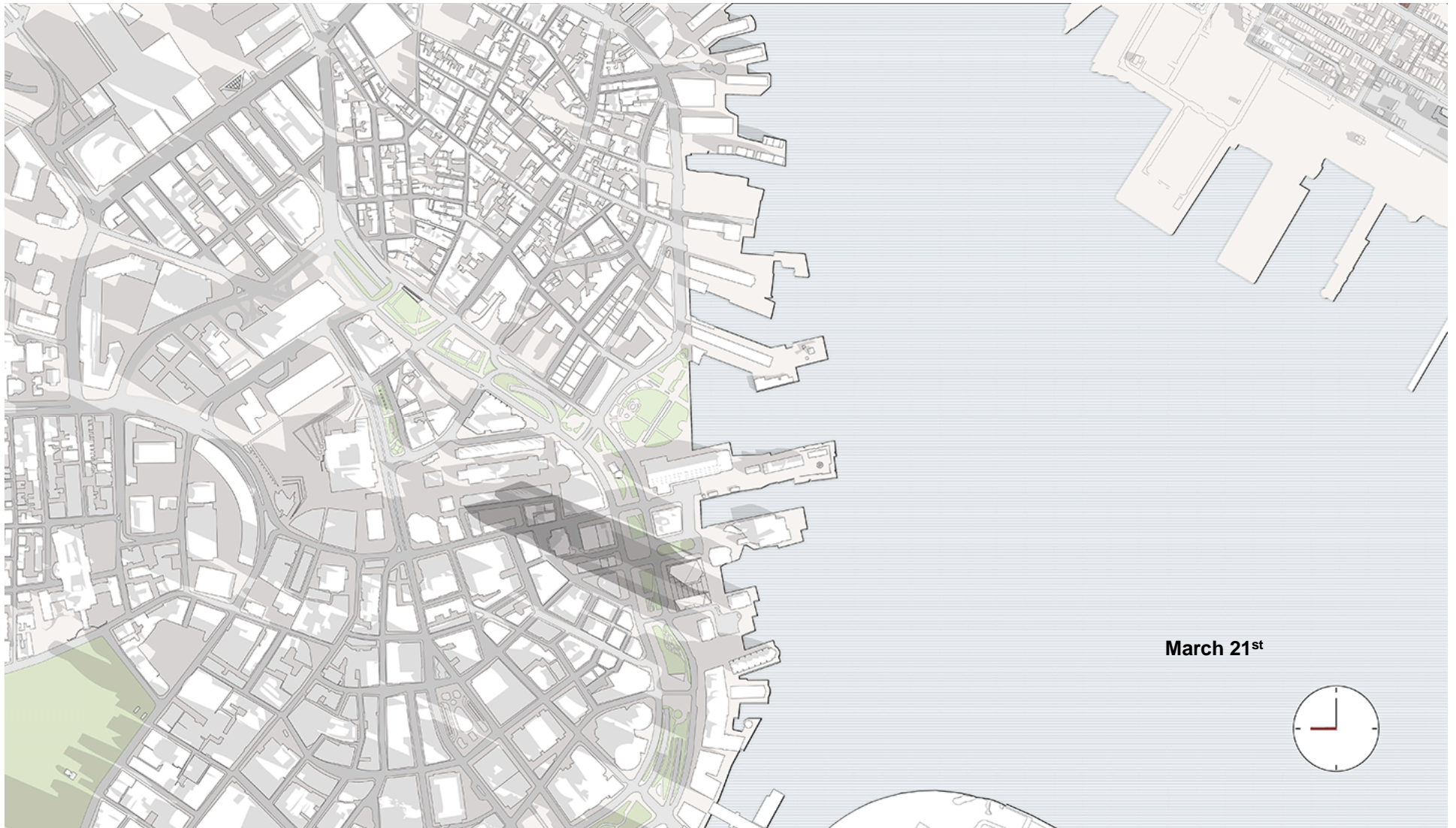
- March 21 (vernal equinox)
- June 21 (summer solstice)
- September 21 (autumnal equinox)
- December 21 (winter solstice)



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – March 21st (Vernal Equinox)

Shadow based on Highest Occupiable Floor



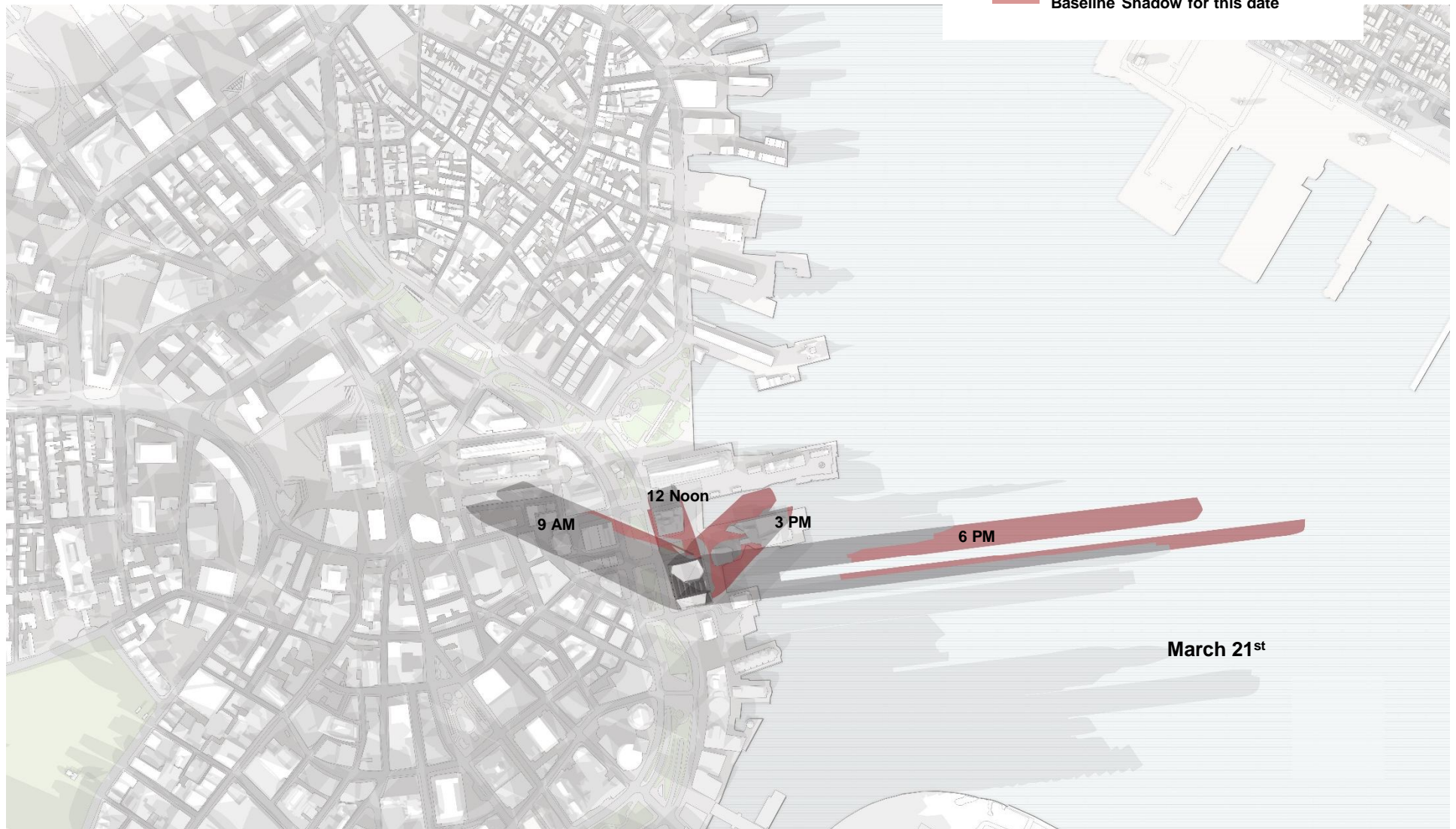
Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – March 21st (Vernal Equinox)

Shadow based on Highest Occupiable Floor

* Net shadow increase, as compared to existing garage (taking into consideration shadows cast by all existing buildings)

Net Shadow* increase over Chapter 91 Baseline Shadow for this date

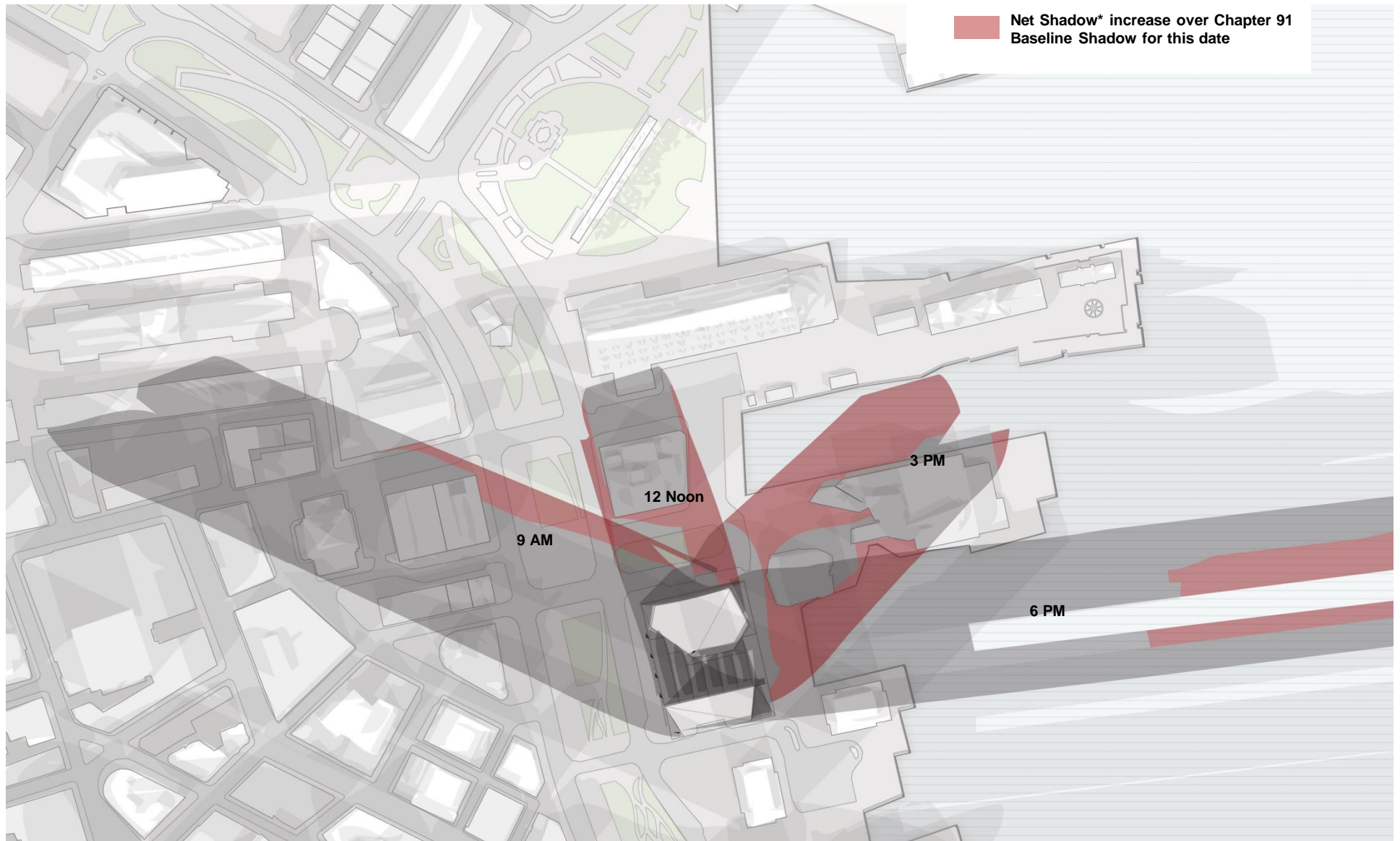


Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – March 21st (Vernal Equinox)

Shadow based on Highest Occupiable Floor

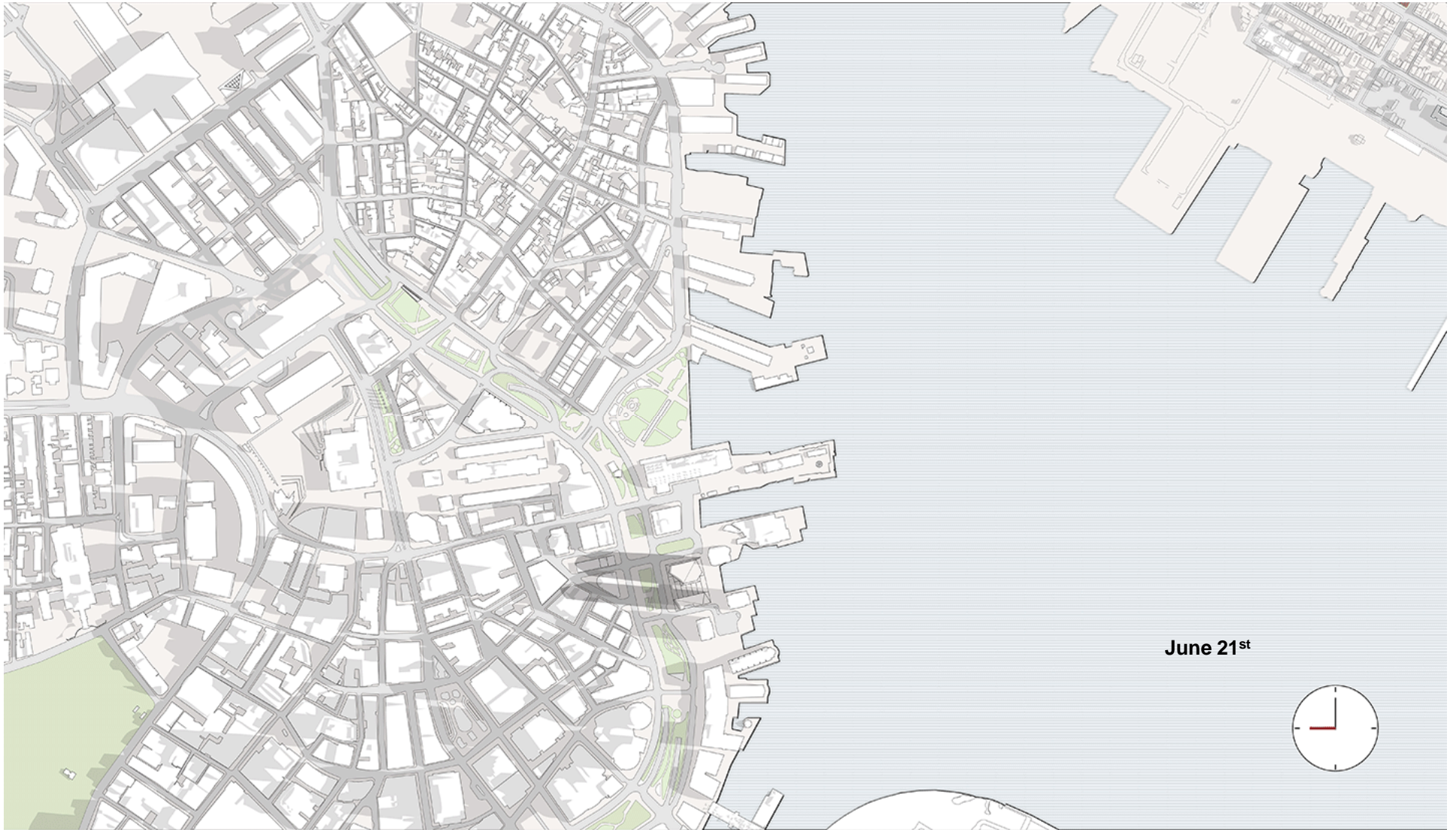
* Net shadow increase, as compared to existing garage (taking into consideration shadows cast by all existing buildings)



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – June 21st (Summer Solstice)

Shadow based on Highest Occupiable Floor



June 21st



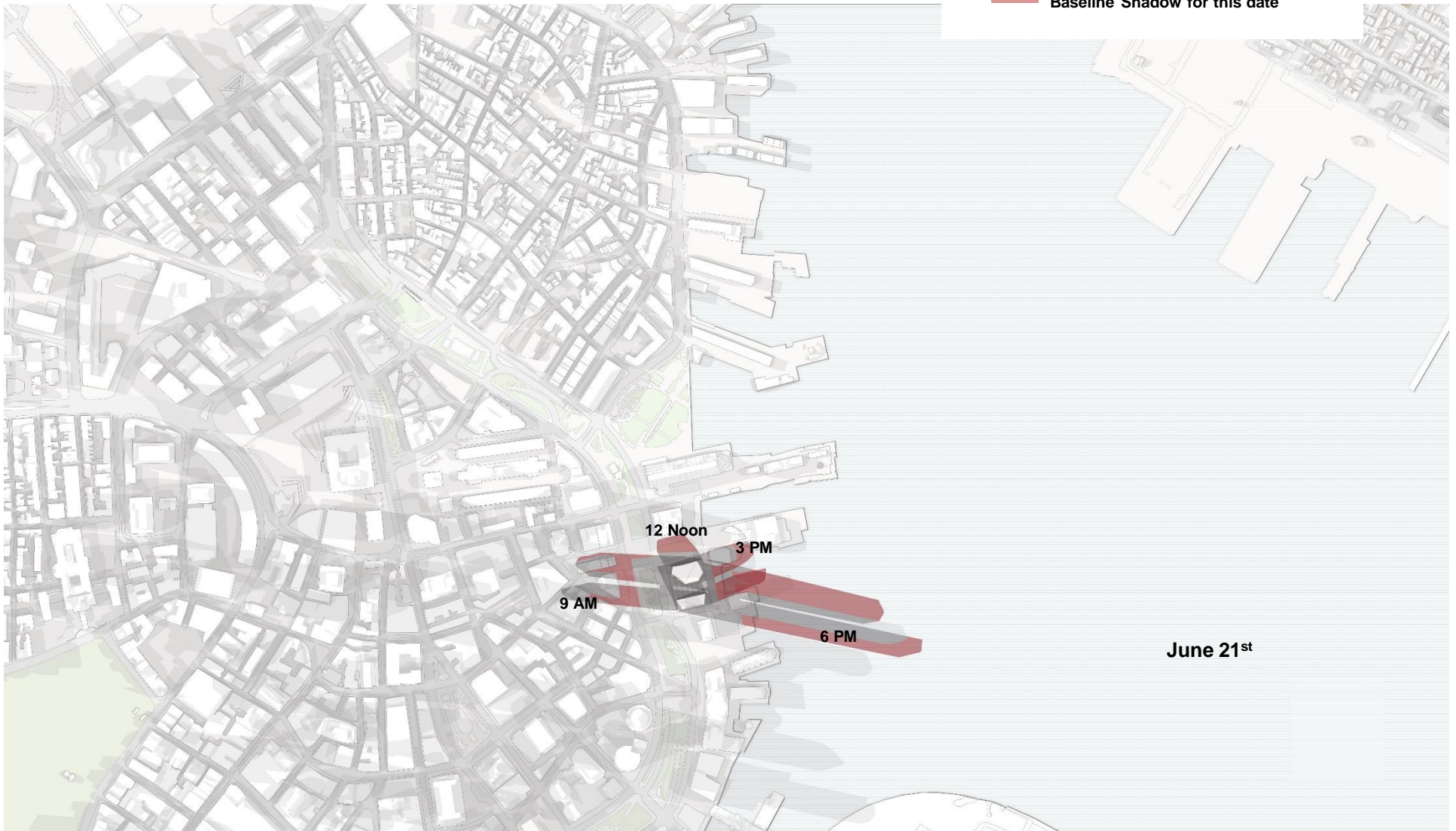
Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – June 21st (Summer Solstice)

Shadow based on Highest Occupiable Floor

* Net shadow increase, as compared to existing garage (taking into consideration shadows cast by all existing buildings)

Net Shadow* increase over Chapter 91 Baseline Shadow for this date

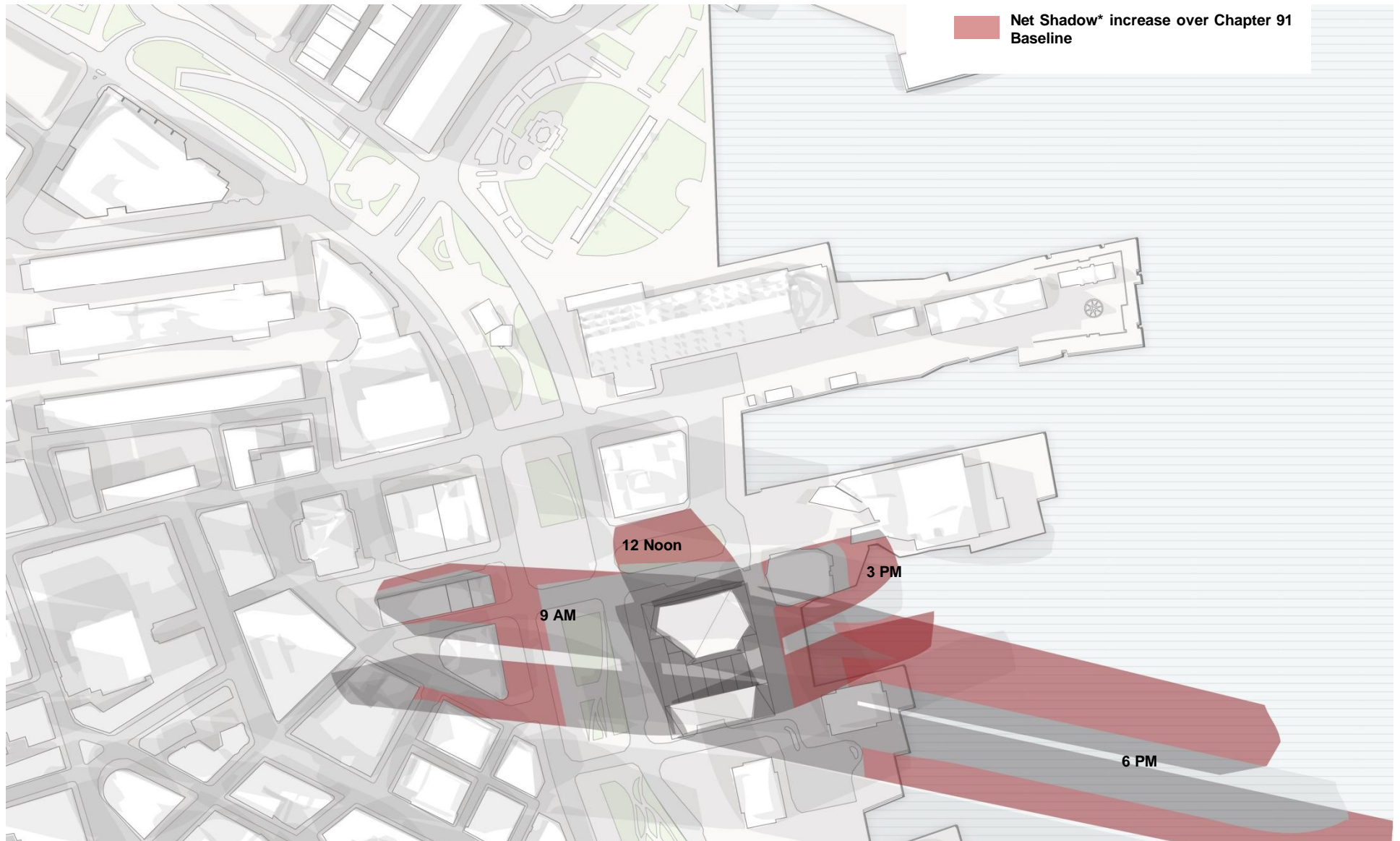


Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – June 21st (Summer Solstice)

Shadow based on Highest Occupiable Floor

* Net shadow increase, as compared to existing garage (taking into consideration shadows cast by all existing buildings)



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – September 21st (Autumnal Equinox)

Shadow based on Highest Occupiable Floor



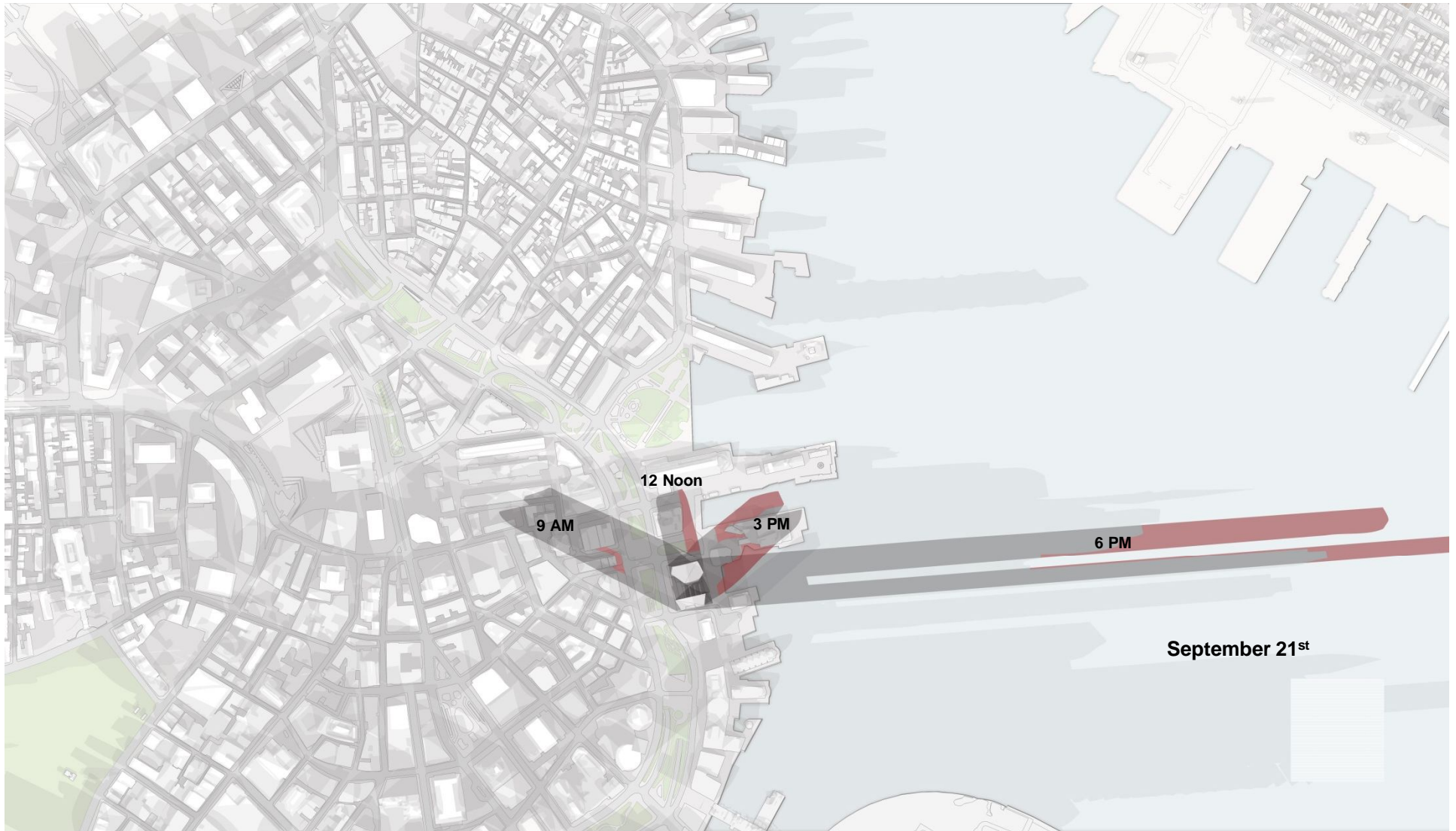
September 21st



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – September 21st (Autumnal Equinox)

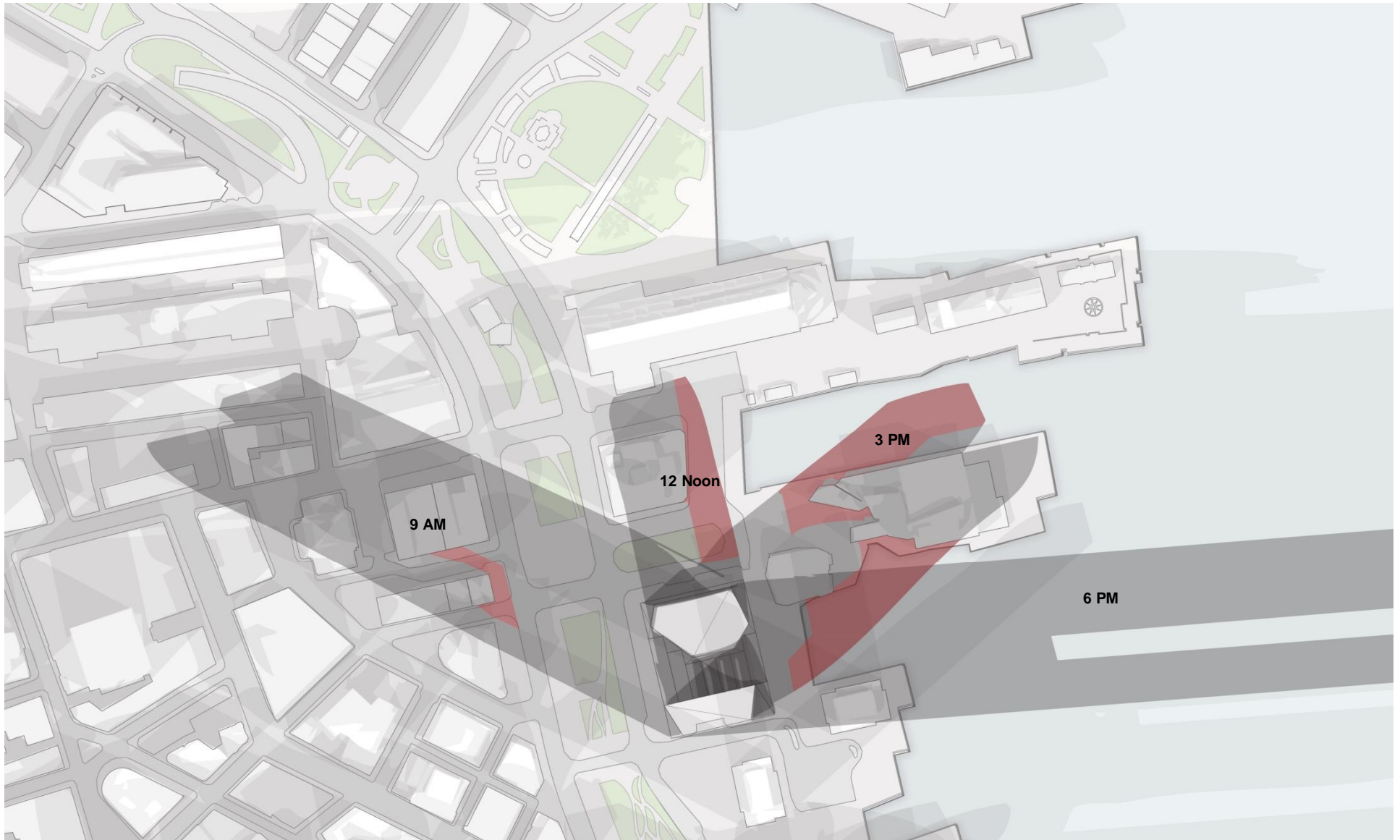
Shadow based on Highest Occupiable Floor



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – September 21st (Autumnal Equinox)

Shadow based on Highest Occupiable Floor



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – December 21st (Winter Solstice)

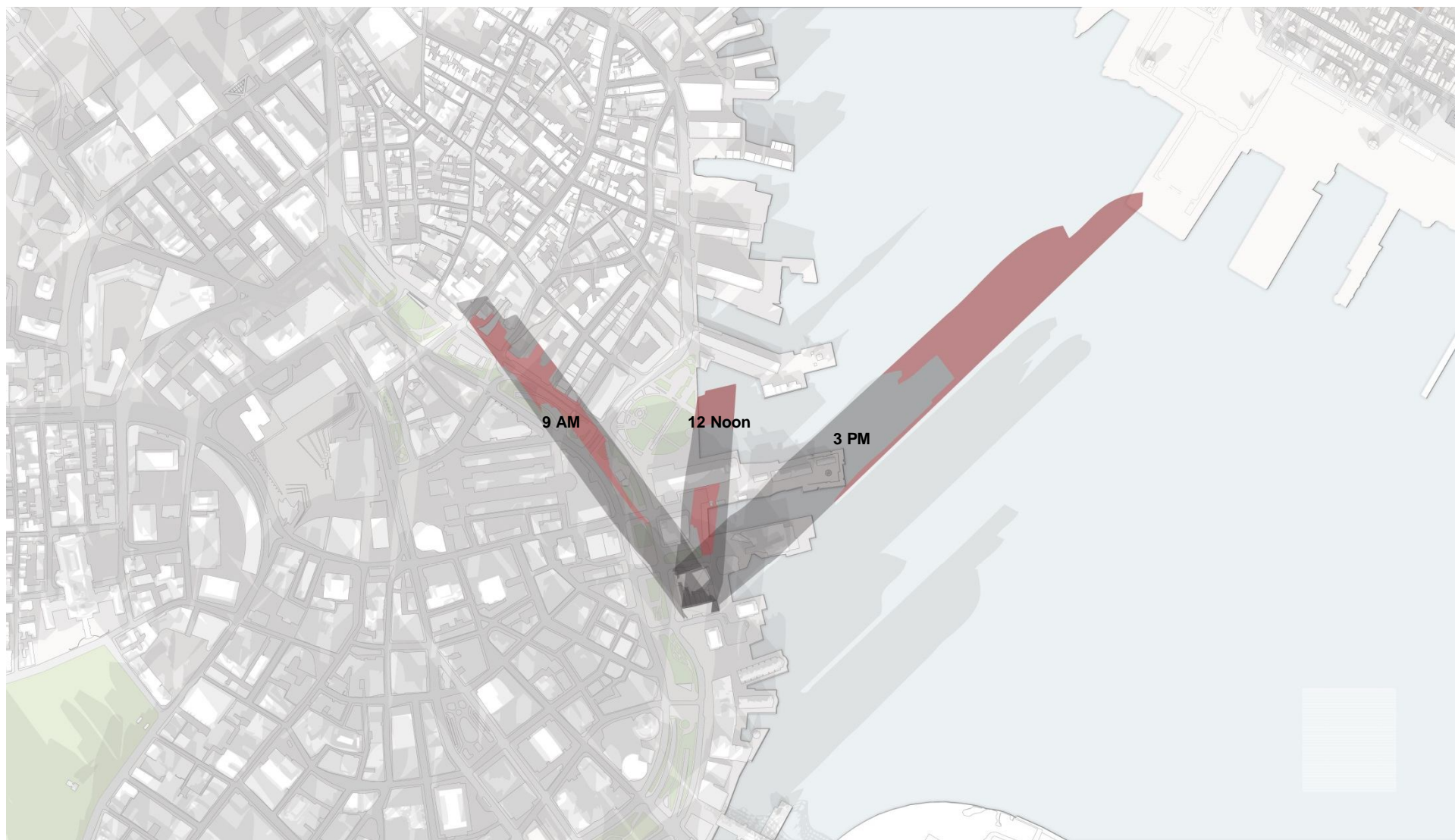
Shadow based on Highest Occupiable Floor



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – December 21st (Winter Solstice)

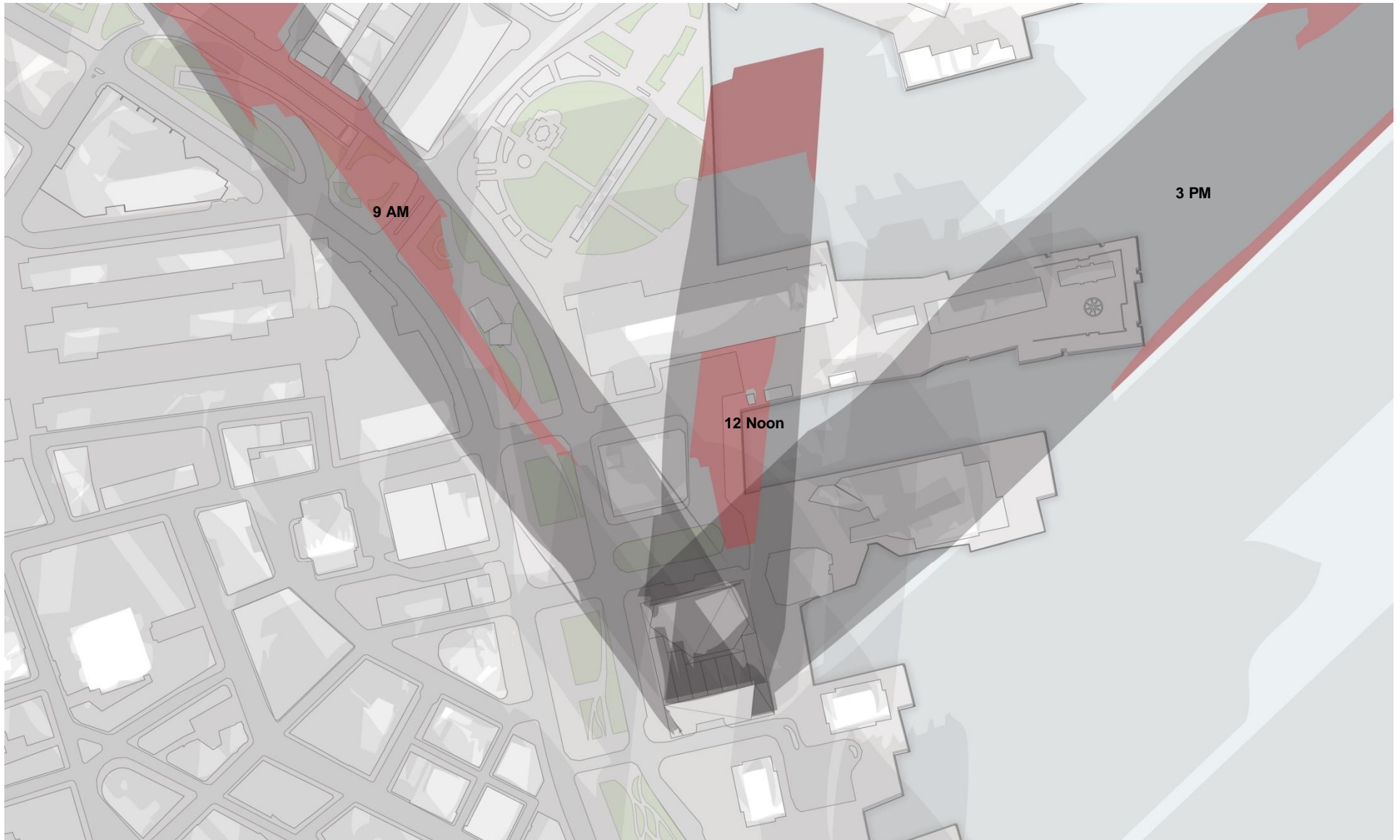
Shadow based on Highest Occupiable Floor



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – December 21st (Winter Solstice)

Shadow based on Highest Occupiable Floor



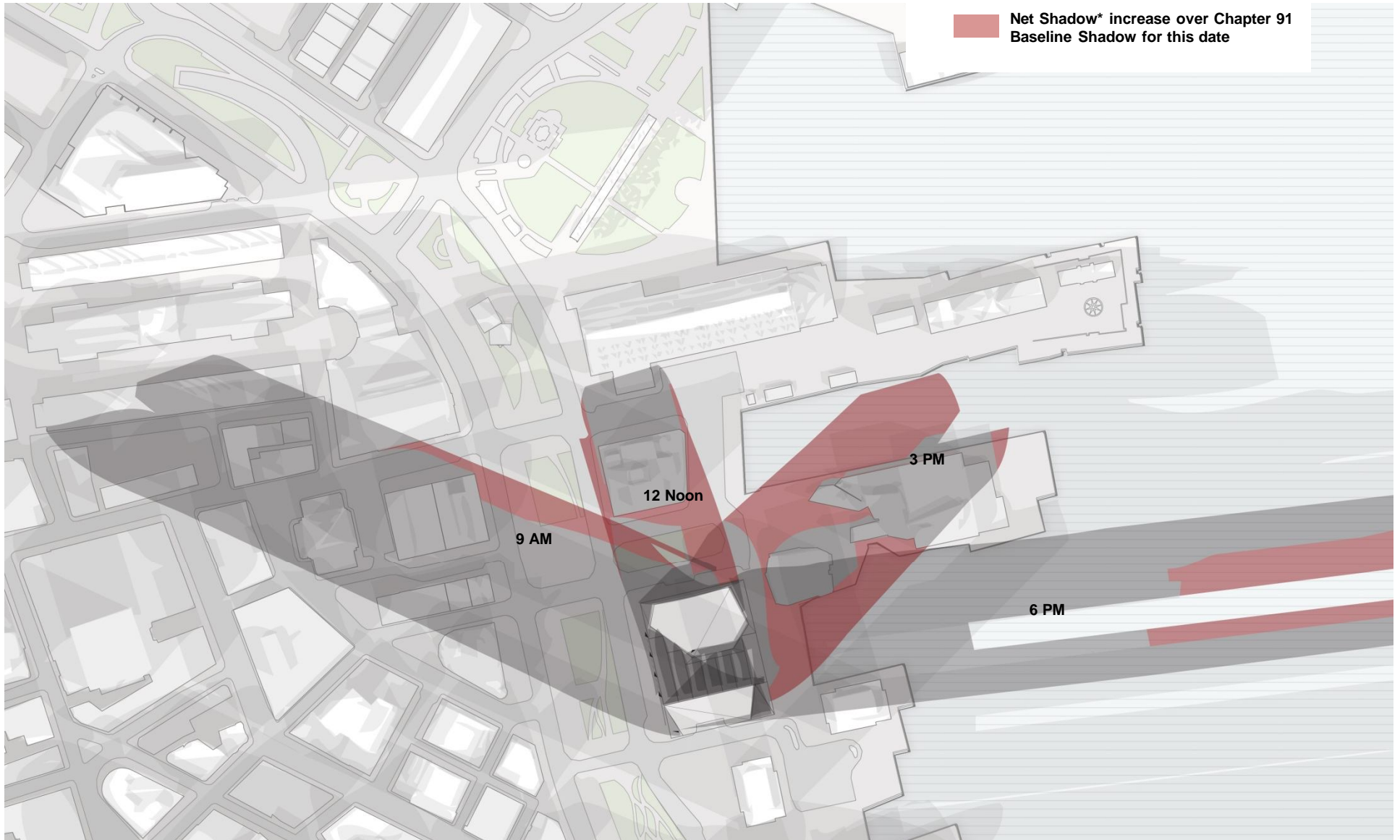
Review of Seasonal Differences in Shadow

Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – March 21st (Vernal Equinox)

Shadow based on Highest Occupiable Floor

* Net shadow increase, as compared to existing garage (taking into consideration shadows cast by all existing buildings)

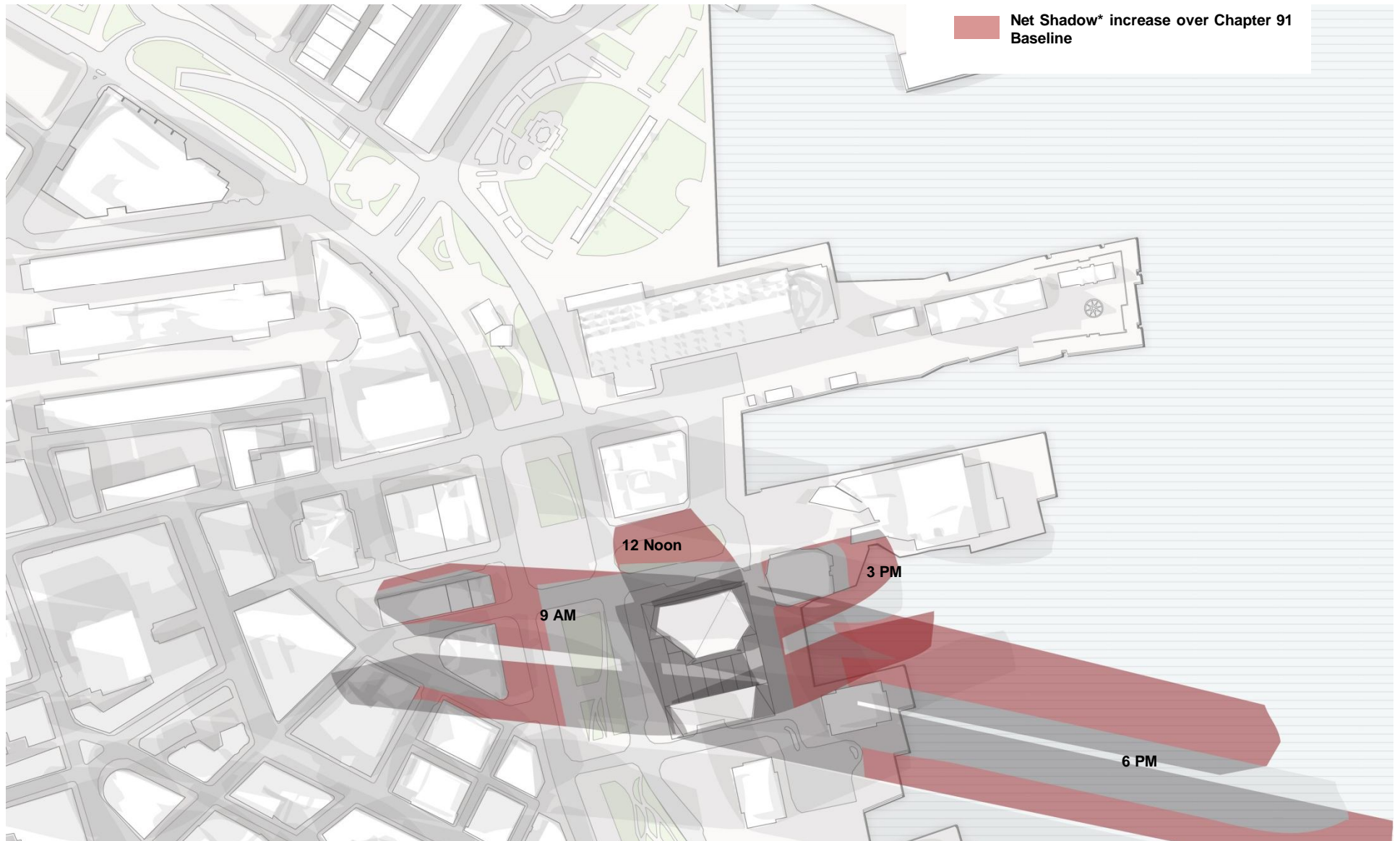


Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – June 21st (Summer Solstice)

Shadow based on Highest Occupiable Floor

* Net shadow increase, as compared to existing garage (taking into consideration shadows cast by all existing buildings)

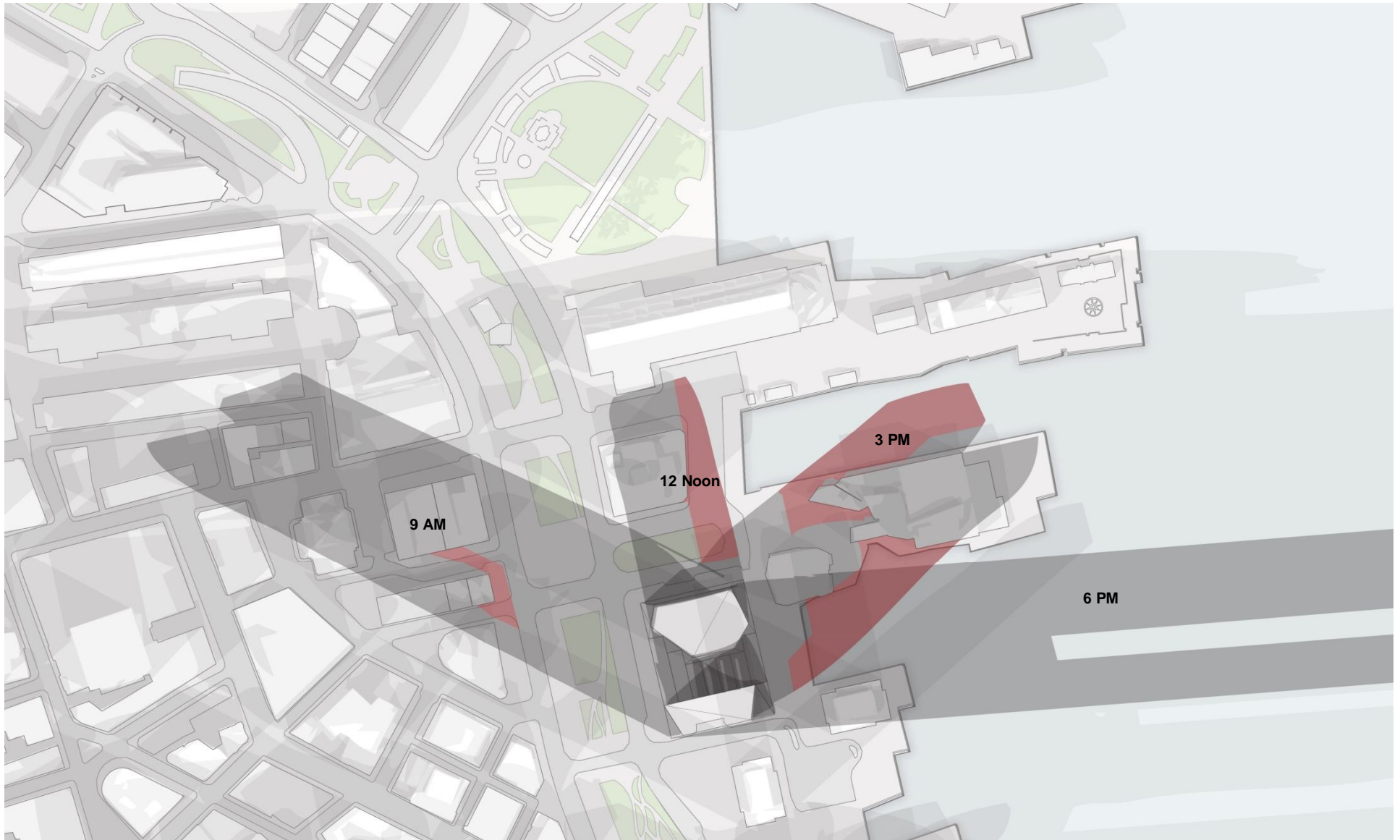


Net Shadow* increase over Chapter 91 Baseline

Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – September 21st (Autumnal Equinox)

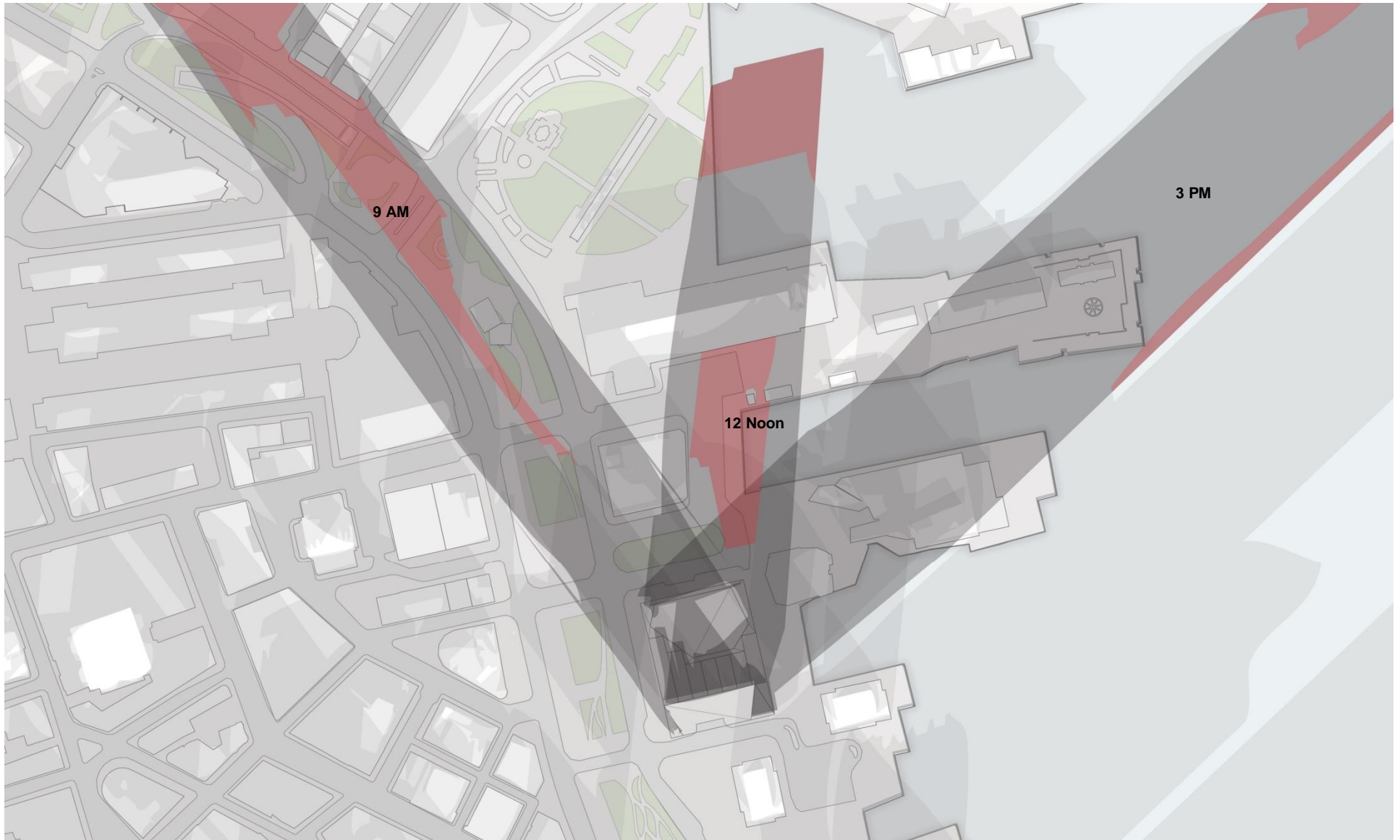
Shadow based on Highest Occupiable Floor



Ch. 91 Baseline and the Proposed Redevelopment Scenario

Chiofaro Co. Proposal – December 21st (Winter Solstice)

Shadow based on Highest Occupiable Floor



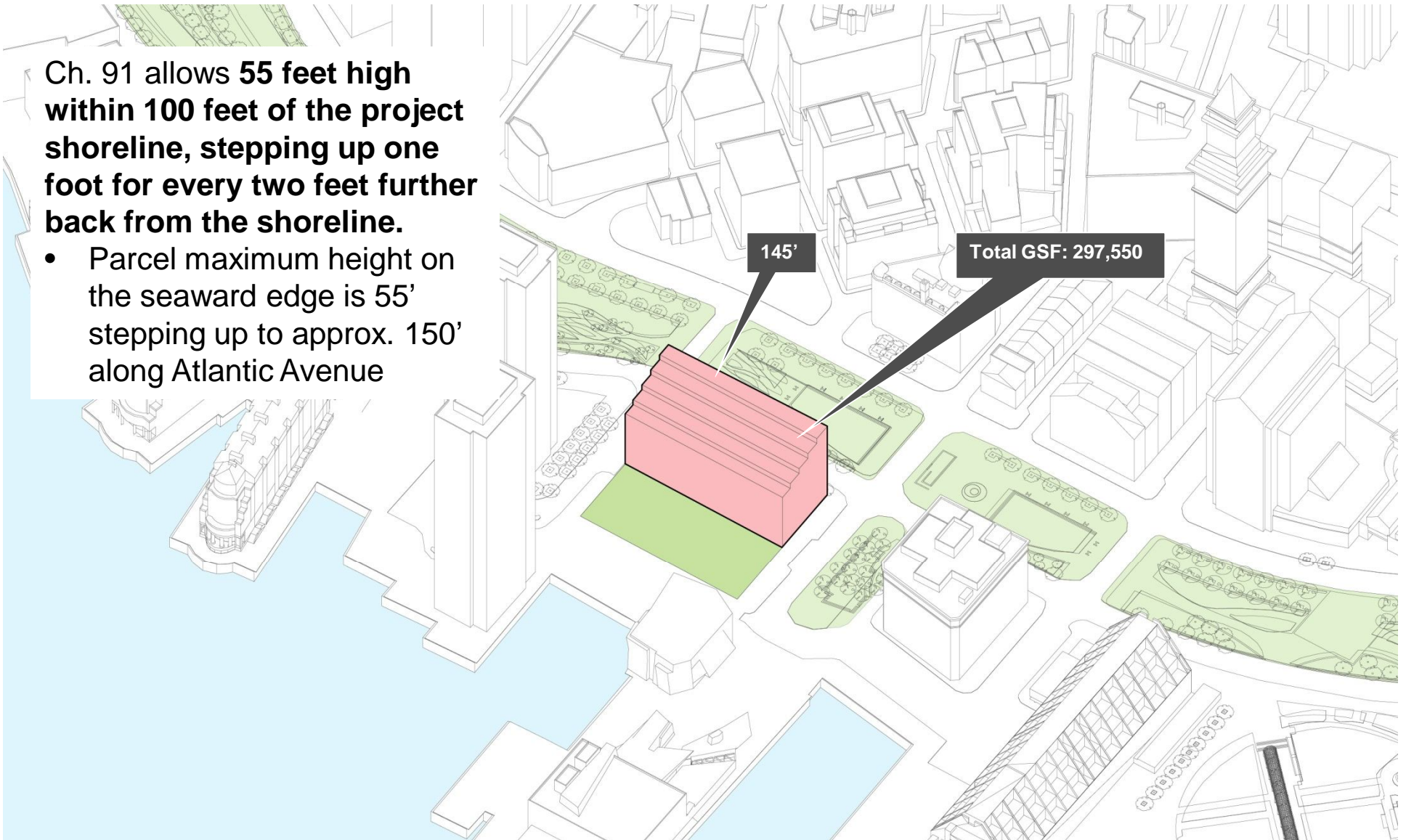
Building Height

50% Building Coverage
50% Open Space

Ch. 91 Baseline

Ch. 91 allows **55 feet high within 100 feet of the project shoreline, stepping up one foot for every two feet further back from the shoreline.**

- Parcel maximum height on the seaward edge is 55' stepping up to approx. 150' along Atlantic Avenue



Building Height

Shadows are calculated based on the highest occupiable floor.

582'

485'

Tower 1
Highest Occupiable floor – **582'**
Total height – **615'**

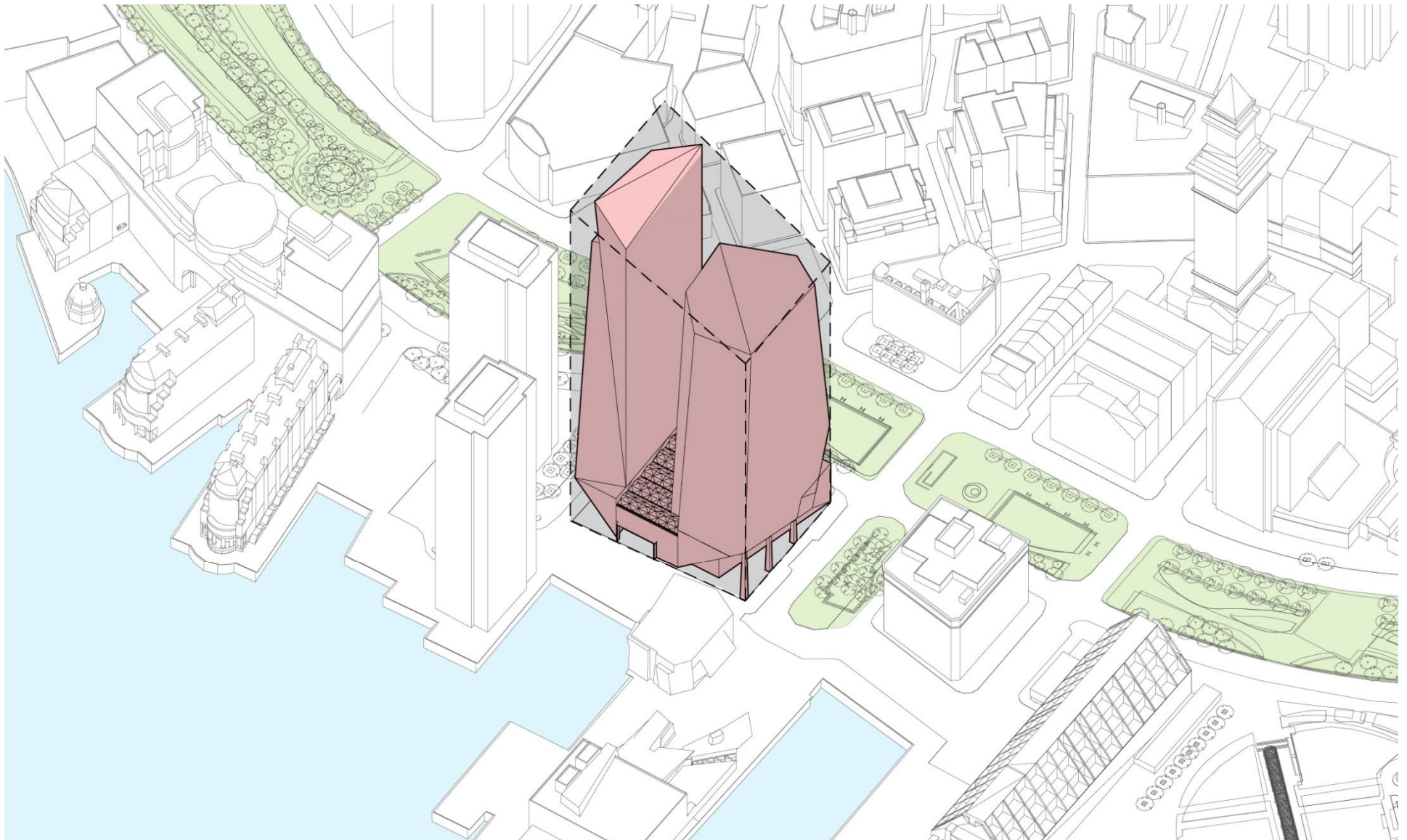
Tower 2
Highest Occupiable floor – **485'**
Total height – **538'**

Harbor Garage Site How Building Height and Mass affect Shadow



October 21st

Harbor Garage Site Chiofaro Co. Proposal – Building Envelope



Chapter 91 and the MHP Process

State Approval Standards

City's MHP objectives (RNTP and Public Realm Plan)

+ Substitute provisions

+ Impacts & offsets

+ Amplifications

+ State approval standards

+ Public input

= MHP framework

Downtown Waterfront MHP
MHP Study Area & Potential Projects



MHPAC Schedule

- October 1st: Downtown Waterfront MHPAC Climate Change Workgroup
- October 8th: MHPAC – Long Wharf Marriott
- October 22th: MHPAC – Hook site

Downtown Waterfront MHP
MHP Study Area

