Exploratory Impact Analysis of the New York City Zoning Amendment for Quality and Affordability

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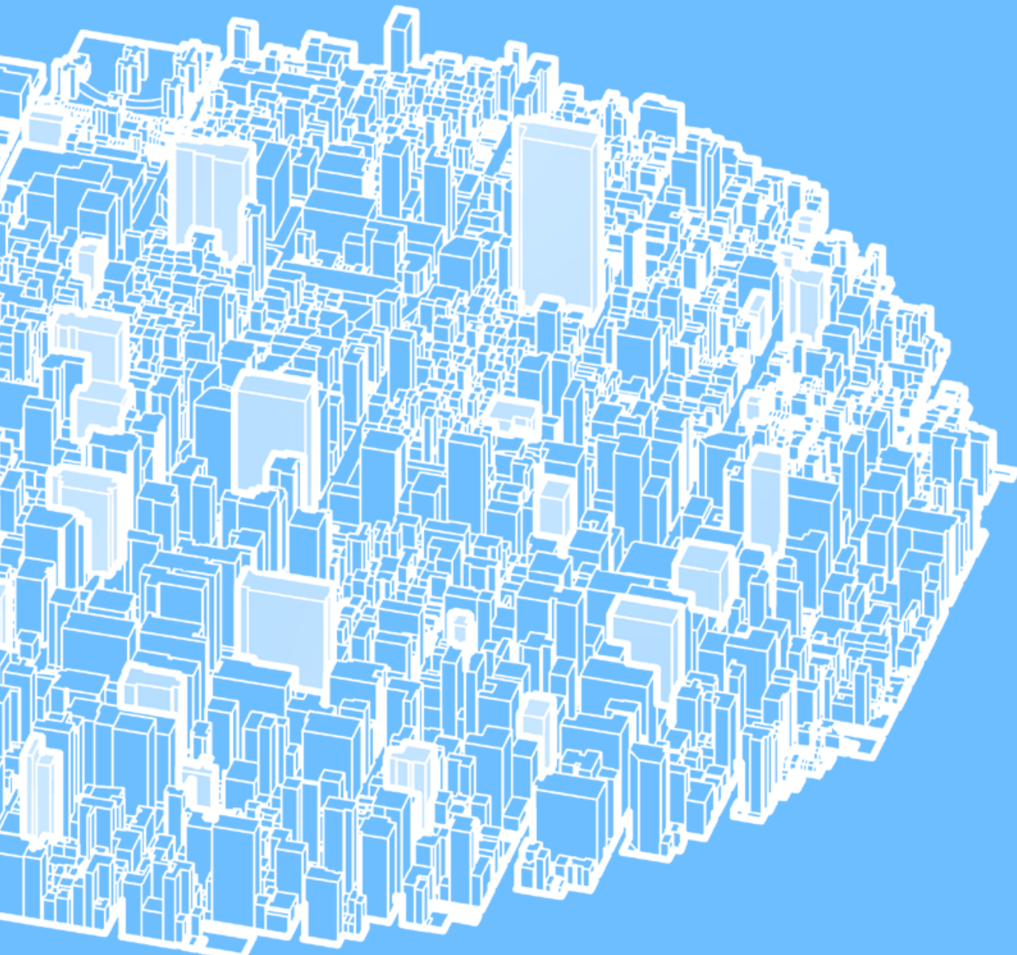

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ABSTRACT

This paper represents a critical methodological and technological advancement in engaging the broader public discourse as to the precise impacts of urban development and associated zoning calibrations. The "Zoning for Quality and Affordability" amendment to the New York City (NYC) zoning code is the first city-wide zoning effort since 1961 (ZQA). The legislative intent of the ZQA is to provide greater flexibility for accommodating economically viable housing production within the context of promoting a wider range of design alternatives that advances both housing and contextual urban quality. The research design is centered on evaluating the spatial distribution and geometric characteristics of lots subject to the ZQA rules across NYC (Macro Analysis), as well to evaluate the daylight access and visibility impacts associated with lots within each of the applicable zoning districts (Micro Analysis). The Macro Analysis evaluates the extent to which the ZQA is addressing larger development constraints within existing rules relative to underbuilt lots. The Micro Analysis tests the hypothesis that environmental impacts from the ZQA are marginal and are not consistent with a broader public critique of the overwhelming negative impacts of the ZQA. The results of the Macro Analysis support the legislative intent of the ZQA and the results of the Micro Analysis support an affirmation of the hypothesis. To the contrary, a majority of districts are projected to experience positive measured impacts.

INTRODUCTION

This paper explores the application of a technological advancement in measuring the precise impact of urban development and associated zoning calibrations. The zoning amendment known as the "Zoning for Quality and Affordability" (ZQA) is the first city-wide zoning effort in New York City (NYC) since 1961. The legislative intent of the ZQA amendment is to allow for higher quality housing development within use districts zoned with contextual and quality housing bulk regulations. The bulk regulations of the districts revised by the ZQA were largely established in 1980's and were calibrated to very specific building standards prevalent at the time. Since then, construction and design standards have significantly evolved, as has the public's desire for advancing higher quality architecture and urban space. The result is that in order for new buildings to maximize economic efficiencies as dictated by increasing land costs, buildings must be built to the street line; the building entry must be at grade; and, the floor-to-floor heights must be approximately 8 feet. As a result of these spatial limitations, new buildings are sacrificing quality for economy (DCP, 2015). While the ZQA amendment does not create additional buildable square footage (FAR), an additional policy goal is to accommodate irregular lots that have remained underutilized or unbuilt due to technical restrictions on the bulk and massing of any proposed future building (Been, Madar & McDonnell, 2009; Keenan & Chakrabarti, 2013). However, while the exact economic constraints and strategies of owners of underutilized lots that may benefit from the ZQA amendment are unknown, the planning authorities anticipate that additional housing development—at a higher level of quality—would manifest from adoption of the ZQA.

For recent buildings that were constructed subject to then-existing contextual and quality housing constraints, the form of the buildings were deemed to be inferior on several fronts. First, the floor-to-floor height restraints resulted in ground floors without retail space. Retail is beneficial not just in terms of cross-subsidizing the operation of residential buildings, but it also provides for a more socially dynamic streetscape (Zukin, 1998; Lowe & Wrigley, 2000; Argo, Dahl, & Manchanda, 2005). In addition, low income neighborhoods are often subject to an undersupply of retail space, which often leads to additional cost burdens for accessing basic items such as food and medicine (Kwate, et al., 2013). The second negative attribute of these buildings are that their forms tend to be flat and without articulation that would otherwise be desirable for matters relating to contextual urban design (Stamps, 1999, 2001, 2013). At the ground plane, these building are generally not able to incorporate setbacks and courtyards that would otherwise be consistent with an historical urban context or would otherwise be desirable to break a continuous, monotonous plane (Kasprisin, 2011).

In order to remediate these unnecessary spatial constraints within the zoning envelope, the ZQA proposed to: (i) expand the height limit of building by approximately 5 feet, (ii) expand the floor-to-floor heights; (iii) limit the number of floors in order to maintain reasonable ceiling heights; and, (iv) allow set-backs from the property line in situations where rear-yard requirements restrict requisite massing allocations (DCP, 2015). While these modifications may appear to be benign calibrations, the public response at the community level to the ZQA amendments has been consistently negative (Grynbaum & Navarro, 2015). The bulk of the critiques have been grounded in an underlying fear of density—irrational or otherwise.

This paper seeks to explore the spatial and environmental impacts of the ZQA on NYC. The relevance of this work is to provide a methodology and set of empirical outputs that may advance a more well-informed public dialogue concerning the impact of zoning modifications. This paper seeks to explore the impacts of the proposed elements of the ZQA proposal at three-scales: the lot, the block and the city. At the city scale, the analysis focuses on the nature and distribution of the types of lots that are potentially impacted by the ZQA (Macro Analysis). The block and lot scale, the analysis seeks to measure the impact of post-ZQA development on daylight access and visibility (Micro Analysis). The Macro Analysis evaluates the extent to which the ZQA is addressing larger development constraints within existing rules relative to underbuilt lots. The Micro Analysis tests the hypothesis that the measured environmental impacts from the ZQA are marginal and are not consistent with a broader public critique of the overwhelming negative impacts of the ZQA. This hypothesis is critically relevant for addressing, through objective scientific processes, the subjective underlying popular fear of density that accompanies zoning and land uses changes.

RESEARCH DESIGN & METHODOLOGY

The research design of this paper is centered on evaluating the spatial distribution and geometric characteristics of lots subject to the ZQA rules across NYC (Macro Analysis), as well to evaluate the daylight access and visibility impacts associated with interior and corner lots within each of the applicable districts (Micro Analysis). The design was predicated a comprehensive review of zoning texts relating to those provisions being amended by the ZQA. These baseline conditions and rules (i.e., pre- and post-ZQA) were then modeled into Grasshopper/Rhino models to simulate the basic spatial parameters of zoning envelopes and massings for new construction (Ferreira, et al. 2015). Subsequent to the random sampling and validation of these model outputs, the models were calibrated to reflect the changes proposed under the ZQA. The models and samples from the models were reviewed by various municipal zoning and planning staff for further calibration—particularly for nuances in overlay districts. Modules were then coded to take any given massing from the aforementioned models and measure floor heights, stories, and gross floor area approximations based on known ranges for net square footage by program—in this case, housing and retail. R9D and R10X districts were included in the data because they are contextual districts, but they were removed from the analysis as they were not ultimately subject to the revised textual amendments under ZQA.

For the Macro Analysis, the research team extracted geometric measurements for all of the registered building lots in NYC using the Department of City Planning's (DCP) 2015 PLUTO data sets. These lots were filtered to identify those lots whose geometry (e.g., rear yard setback limitations) would result: (i) in precluding any economically viable development; (ii) in developments that would be under-built relative to the context as measured in total allowable zoned square feet (i.e., as-of-right); or, (iii) in developments that would otherwise be constrained by those parameters previously identified. These lots were then filtered and mapped in Grasshopper/Rhino and patterns of concentration were identified so as to create boundaries for further sampling at the block and lot level. The filtering of lots impacted by the ZQA were derived by the following methodology, subject to those limitations identified in Appendix 1:

1. Lots were then subject to an 'underbuilt' calculation which is expressed as a percentage measured by the total residential gross floor area over the total lot area;
2. Lots were culled if they were over 50% built;
3. Lots were culled if they had fewer than 6 residential units;
4. Lots were culled if they had landmarked buildings; and
5. Lots were culled if they had frontage of less than 45 feet[1]; or
6. Lots were included if they had lot depths between 70 and 95 feet.

Geographic boundaries of patterned concentrations of filtered lots were identified and drawn. Each lot and building volume within the boundaries were measured. Thereafter, blocks based on random simulations of representative building distributions relative to their positioning within blocks were generated. The intent was to create a unit of analysis that could be removed from the on-the-ground politics that biased external interpretation. However, ultimately, actual blocks, lots and buildings were identified for further evaluation. This decision was reinforced by the argument that the validity of the results would have broader recognition if based on actual physical parameters.

The methodology for the Micro Analysis at the scale of the block and lot is based on measuring the spatial differential of heights and building massing before and after the incorporation of the ZQA rule set within the aforementioned parametric models. These differentials examine: (i) façade visibility; (ii) contextual elevations; (iii) sky exposure; and, (iv) sky mask. For each zoning district a corner lot and an interior lot were simulated and evaluated relative to pre- and post-ZQA rules. Wide

[1] This filtration step accounts for the 'Silver Rule,' under Sections 23-692 and 33-492 of the Zoning Resolution of the City of New York, which, in part, imposes height restrictions on narrow lots.

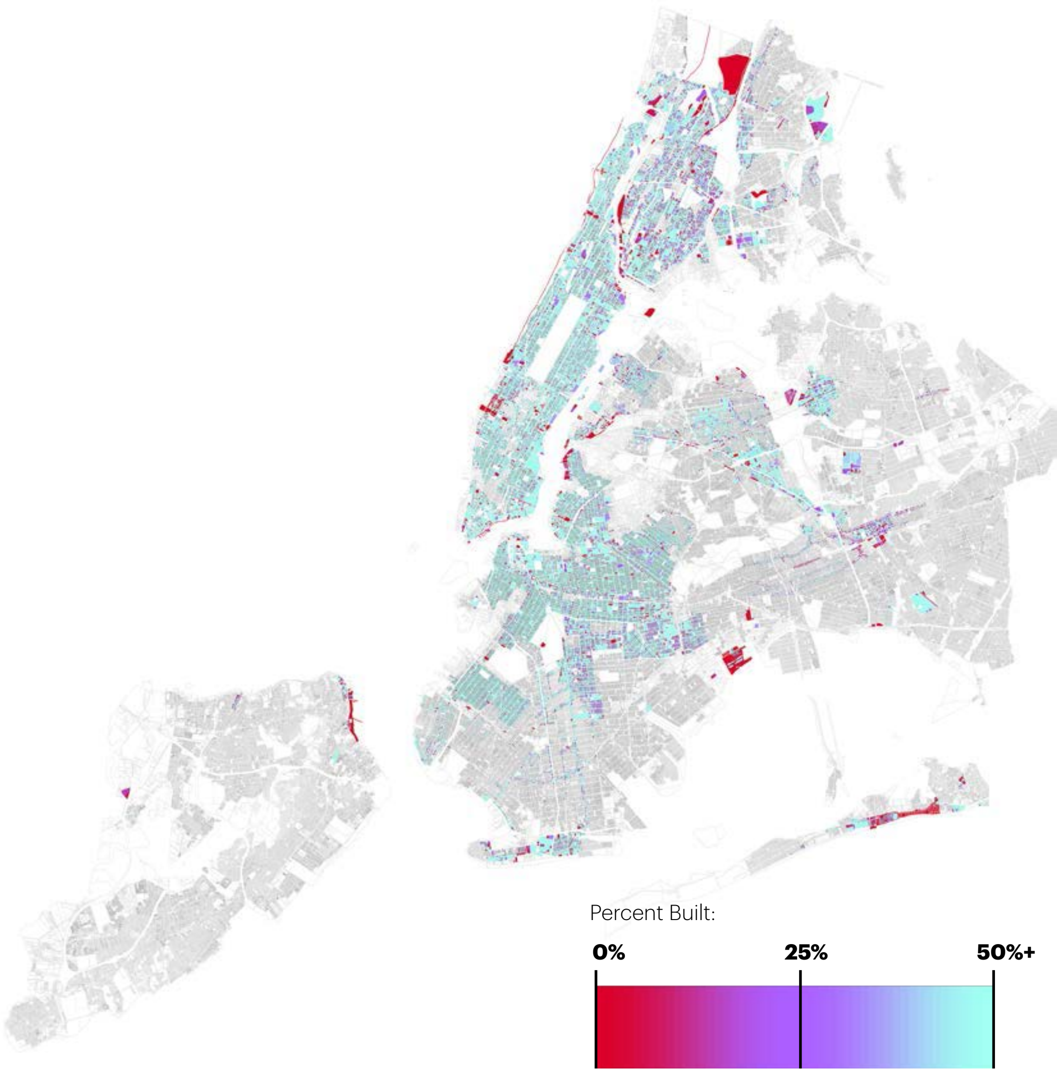

Figure 1: All Lots (n=98, 950) Subject to Contextual or Mandatory Housing Bulk Regulations

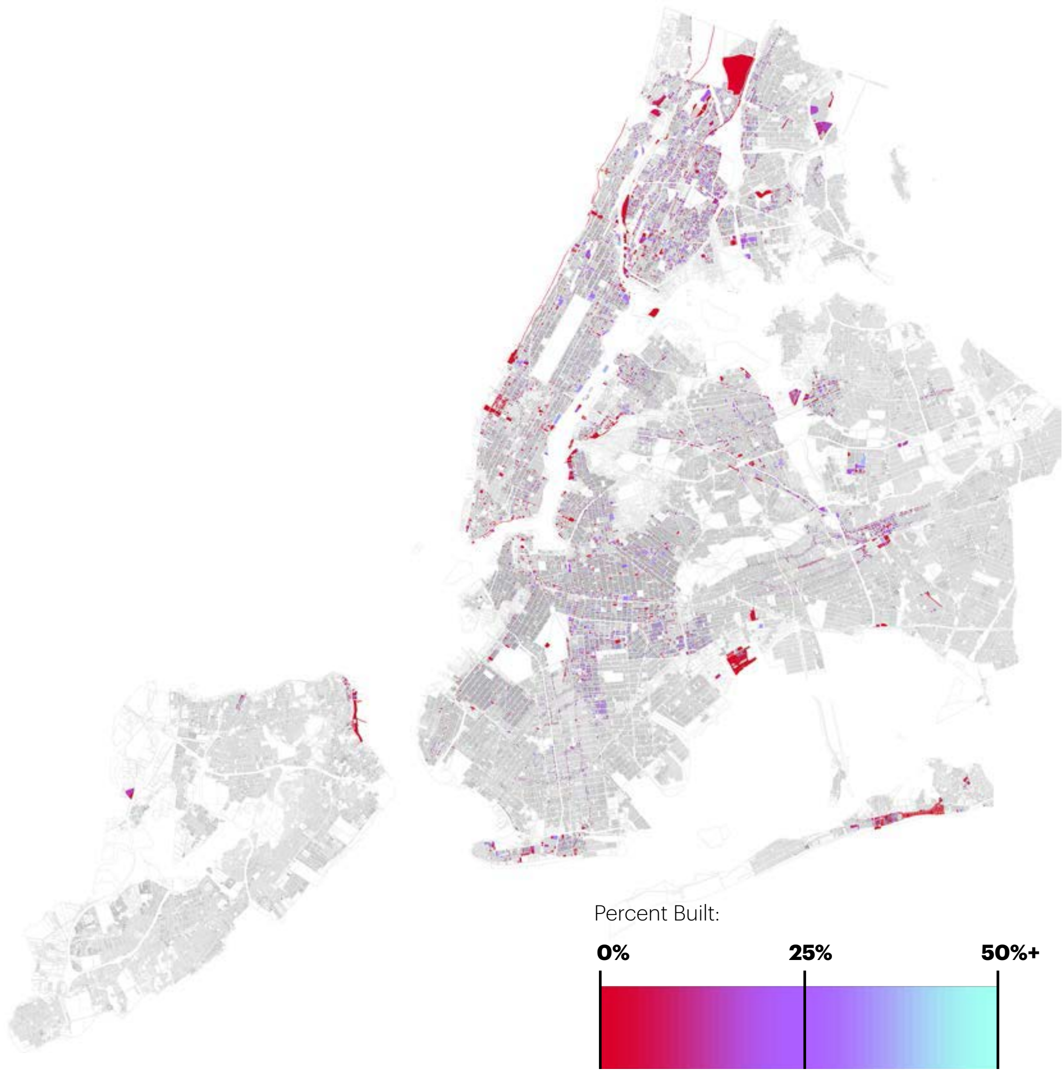

Figure 2: Lots Subject to Step 1 through 4 of the Filtering Process (n=26,445

and narrow street regulations were applied as appropriate. Façade visibility tests for the building's visible presence at the street level. An analysis grid is populated over a 700 feet by 700 feet square centers on the tested lot at 10 foot intervals clipped to public space ending at building lot lines at a 5 foot elevation

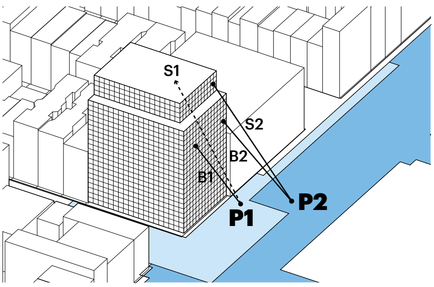

Figure 3: Base and Setback Portions of Designs are Tested Separately for Visibility on the Street to Measure Efficacy of Setback and Base Height Regulations

representing eye level. Each analysis panel is tested for exposure to either the building's street wall or setback, as represented in Figure 3. Any visibility, no matter how minor, registers as a positive. Areas that can view only the street wall or setback are shown in light blue, areas that are exposed to both are shown in dark blue. Numeric values displayed represent the percentage of public space tested where either the setback or street wall is visible. An examination of the elevations also evaluated the contextual areas adjacent to the subject lot for average street wall height in order to compare this against existing regulation for max street wall height. Buildings with street facing surfaces within 250 feet of the test building's street face were considered in the calculation.

Sky exposure measures the direct occlusion of the sky. The same 700 feet by 700 feet analysis area clipped to public space from the façade visibility analysis is used, except taken at ground level rather than eye level. For each analysis point, exposure to the sky is measured every 24 degrees in altitude and azimuth, resulting in a 61 point sky sampling. The score per panel is the percentage of these rays that are not occluded by a structure. The overall score is the average of all per panel scores. An alternative method utilized to validate to a final score is to apply an acceptable exposure percentage and measure the area that successfully achieves that standard. Sky mask, also known as a spherical projection, can be thought of as the in-graphic equivalent of sky exposure. A vantage point is placed at the street centerline, at the center of each street wall. The circumference of the graphic represents direction (azimuth, 360 degrees around) and the distance from edge to center represents altitude (0 at the edge, 90 degrees or directly above, at the center). By drawing this projection one is able to view the instantaneous sky exposure for a single point, as well as the encroachment of urban bulk over a single location. By taking these projections at the center of each street wall, one can see and compare the worst case impact of the tested building. In addition, additional allowable retail space is measured in terms of net rentable square footage based on generalizable loss calculations by program for gross floor area estimations.

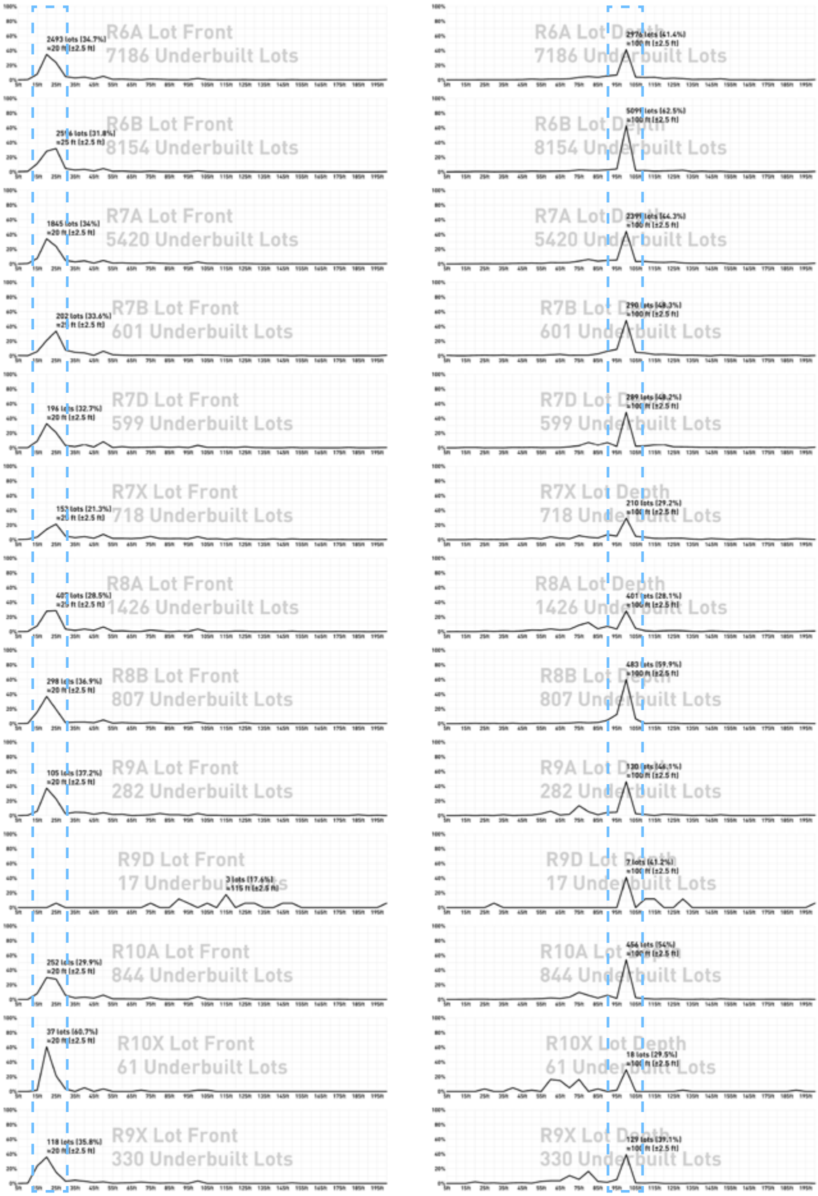

Figure 4: Percentage of Underbuilt Lots Per Zoning District By Lot Width and Lot Depth

RESULTS AND DISCUSSION

MACRO ANALYSIS

The Macro Analysis takes into account applicable residential district equivalencies throughout NYC, as represented in Figures 1 and 2.Of all filtered ZQA lots, 26.73% are underbuilt. Among the majority of underdeveloped lots across all five boroughs, there's a discernable concentration of underdeveloped lots at approximately 20 feet in lot width or 100 feet of lot depth, as represented in the histograms contained in Figure 4. The comparatively disproportionate distribution of lots with 100 foot lot depth may not necessarily indicate that there is a deterministic or causal barrier to development related to that dimension range. But, this finding reflects that a great majority of applicable filtered NYC lots are 100 feet and that distribution carries into this analysis, as well as the relevance of the intent of the ZQA. The exception to this pattern is within the R9D zoning district, exclusive to 17 lots in the Bronx, whose small number renders them statistically insignificant. The high concentration of lots at approximately 15 to 20 feet in lot width likely indicates a specific threshold that warrants further investigation.

ZQA Lots Percentage Underbuilt						
	MN	BX	BK	QN	SI	NYC
R6A	9.51%	67.01%	33.80%	51.52%	100.00%	40.02%
R6B		45.24%	13.41%	24.73%		16.03%
R7A	23.44%	69.82%	51.37%	68.28%		46.09%
R7B	10.05%	41.73%	11.87%	30.98%		18.62%
R7D	25.00%	75.00%	75.70%			74.04%
R7X	39.32%	75.98%	90.48%	80.99%		75.42%
R8A	34.90%	86.41%	74.03%	87.50%		42.66%
R8B	11.09%		31.82%	58.33%		11.23%
R9A	35.88%		95.00%			37.45%
R9D		100.00%				100.00%
R10A	53.60%		54.10%			53.62%
R10X	71.76%					71.76%
R9X	76.39%					76.39%
Total	**23.31%**	**63.59%**	**22.36%**	**37.32%**		**26.73%**

Table 1: Percentage of Underbuilt Lots Per Zoning District

The macro evaluation of underbuilt lots within ZQA districts identified two sets of lot types with geometric characteristics not typical to NYC that represent significant percentages of the total number of underbuilt lots: (i) lots with widths 45 feet or less; and, (ii) lots with depths between 70 and 95 feet. Additionally, as represented in Table 2, regardless of physical lot characteristics, there are four districts that with total underbuilt lots 50% or greater: R7D, R7X, R9D, R9X and R10A.

Lots with Widths 45 feet or Less

Lots with widths of 45 feet or less represent 79.4% of all underbuilt lots within ZQA districts. This is consistent with the finding that they represent 84% of all ZQA lots. This finding should be contextualized to the fact that the typical width for a row home is 20 to 25 feet. However, certain districts show a significant increase in the percent underbuilt over the average for all ZQA lots: R9A (+8.10%); R9X (+15.82%); and, R10A (+30.85%). Zoning Resolution section 23-692, commonly referred to as the 'Sliver Law,' dictates height limitations for narrow buildings or enlargements and applies to all of the filtered lots in these cited districts. This sets the maximum building height at 100 feet or the width of widest street the building fronts, whichever is less. These districts have FARs ranging from 6 to 12 and maximum heights from 135 feet to 210 feet. The maximum heights were calibrated to these FARs, and would be increased through the ZQA because they have been shown to no longer accommodate the FAR. Reducing the maximum height to 100 feet or less—or by 35 feet to 150 feet—dramatically reduces the FAR possible on the site and would otherwise deter housing development.

The stated intent of the Sliver Law is, "to prevent narrow buildings that are taller than adjacent buildings" (DCP, 2011). However, in a situation where a 45 feet wide building would be taller than adjacent buildings (given the same FAR) a 50 foot wide building would be just about as tall. One way to revise the Sliver Law is to accommodate the unbuilt lots identified in this filtering as exempt lots with widths of 45 feet or less. Given the same FAR, a development on a lot with widths of 45 feet or less would not be taller than adjacent buildings. In any case, the logic of the original legislative intent would suggest that the height limit of the Sliver Law should be proportional to the FAR and not the street width. A revision to the Sliver Law would ease housing development constraints on 1,218 lots and could be easily constructed to meet the original intent.

In the micro analysis the Sliver Law was not applied allowing for the evaluation of the impact of removing or revising the regulation. This is notable in higher density districts where the FAR would not be achievable due to the sliver law. In the micro analysis the following districts and lots, all inside, illustrate buildings that exceed the height limit set by the sliver law: R7D, R7X Inside, R8, R8a, R9, R9a, R9x, and R10a.

Underbuilt Mandatory Quality Housing Lots <45 Lot Width							
	MN	BX	BK	QN	SI		NYC
R6A	79	684	2,930	2,016	4		5,713
R6B	0	72	4,731	2,043	0		6,846
R7A	640	278	2,662	653	0		4,233
R7B	93	156	102	119	0		470
R7D	4	57	371	0	0		432
R7X	35	66	43	239	0		383
R8A	690	35	331	5	0		1,061
R8B	631	0	6	3	0		640
R9A	203	0	17	0	0		220
R9D	0	1	0	0	0		1
R10A	643	0	15	0	0		658
R10X	56	0	0	0	0		56
R9X	284	0	0	0	0		284
Total	**3,358**	**1,349**	**11,208**	**5,078**	**4**		**20,997**

Table 2a: All Lots (< 13.71 meters) with Mandatory Contextual Zoning or Quality Housing Bulk Regulations Amended by ZQA

<45ft Lot Width Percentage Underbuilt							
	MN	BX	BK	QN	SI		NYC
R6A	8.52%	73.71%	33.30%	51.12%	100.00%		39.12%
R6B		35.82%	12.52%	21.16%			14.37%
R7A	24.11%	76.58%	60.06%	80.52%			51.25%
R7B	9.65%	61.90%	9.81%	43.91%			18.60%
R7D	25.00%	81.43%	75.71%				75.00%
R7X	39.77%	75.00%	95.56%	91.92%			79.63%
R8A	38.57%	87.50%	84.01%	100.00%			47.62%
R8B	10.69%		40.00%	50.00%			10.81%
R9A	43.56%		100.00%				45.55%
R9D		100.00%					100.00%
R10A	84.38%		88.24%				84.47%
R10X	94.92%						94.92%
R9X	92.21%						92.21%
Total	**24.10%**	**69.43%**	**21.13%**	**33.96%**			**25.03%**

Tables 2b: Percentage of Underbuilt Lots (< 13.71 meters) Per Zoning District

Lots with Depths between 70 feet and 95 feet

Lots with depths between 70 and 95 feet represent 13.5% all underbuilt lots within ZQA districts. Of these lots, 25.32% are underbuilt. Lots with these depths are of interest because the 30 foot rear yard requirement (Zoning Resolution 23-44) is calibrated to 100 foot deep lots, and lots with depths less than 70 feet get relief from the rear yard. Optimal residential floor depths for adequate daylight are between 60 feet and 65 feet. A 30 foot rear yard applied to lots between 70 and 95 feet results in: less than optimal residential floor depths for some if not all of the floors; podium floors between 50 and 65 feet; and, setback floors between 40 and 55 feet. The massing inefficiency associated within these constraints is a strong detriment to development and is especially restrictive in higher density districts where at least two elevators are required which magnifies the inefficiency across multiple floors. This outcome likely supports the comparatively large increase in percentage of underbuilt lot in the higher density districts of: R8A (+6.41%,) R8B (+5.57%,) R9X (+5.16%,) and R10A (+18.48%). During the course of this research this increase in underbuilt lots between 70 and 95 feet was brought to the attention of the DCP and as a result a revision to the rear yard requirements were included in ZQA textual amendments.

R7D, R7X, R9D and R9X Districts

In districts R7D, R7X, R9D and R9X, 50% or more of the lots (n=2,500) are underbuilt. This finding suggests significant impediments to economically viable utilization of the zoned FAR. With comparatively higher zoned FARs between 4 and 12, these lots, while a relatively small percentage of the total number of underbuilt lots (9.5%), represent a potentially significant housing capacity. As previously referenced, R9D is only zoned for 17 lots in the city and can be eliminated as statistically insignificant. The other districts are constrained by height limits, which ZQA would increase. However, the increases in height for these districts pursuant to the ZQA are relatively small. When compared with the aggregate numbers of lots which they are underbuilt, it is uncertain if the ZQA will sufficiently stimulate additional housing development.

MICRO ANALYSIS

A consistent popular criticism of the ZQA has been that the increase in building height will result in a set of wide ranging negative impacts. While the increase in height is only 5 to 15 feet, it has been argued that this increase will negatively impact the daylight at the street, results in non-contextual development, and have a far greater visual presence to the detriment of the streetscape. This micro analysis tests the hypothesis that such concerns are limited in their validity given the marginal anticipated impact of future development under the ZQA. This hypothesis is tested by analyzing massings allowable under the existing bulk regulations and comparing the massings allowable under the revised bulk regulations of the ZQA. This analysis

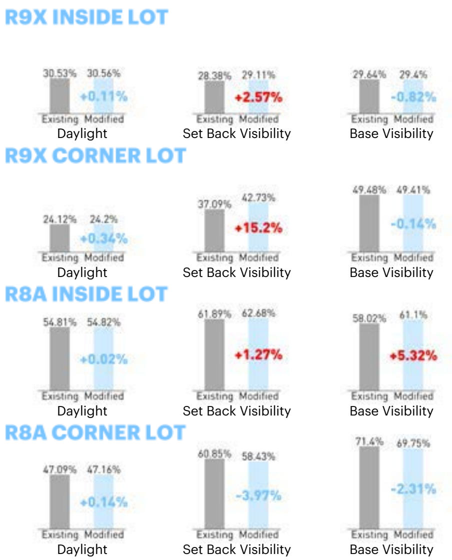

Figure 5: Example Daylight and Visibility Comparisons for Zoning Districts R9X and R8A

tested (i) façade visibility; (ii) contextual elevations; (iii) sky exposure; and, (iv) sky mask. For each zoning district a corner lot and an interior lot were evaluated.

In order to economically maximize FAR under the current bulk regulations in contextual and quality housing districts, new developments must be built right up to the sidewalk. One of the goals of ZQA is to provide flexibility in the design, including the ability to setback up to 10 feet from the sidewalk to better correspond with the context. For example, row homes in New York are often setback 5 to 10 feet from the sidewalk and are the most common building type in contextual districts. Of historical note, it is not possible to develop a row home (and not lose FAR) under the current contextual bulk regulations. In the subject analysis, a typical street level setback of 10 feet was applied to ZQA modified massings.

In 26 out of the 32 districts, lot types tested for daylight at the street were improved under the ZQA. The districts that saw a decrease in daylight are R8, R9A, and R10A, as represented in Figure 5. This finding is consistent with the fact that these higher density districts allow greater increases in maximum height. However, when examined in the spherical projections, any increase or decrease in visible sky appears negligible. This is consistent with an affirmation of the hypothesis. Generally, corner lots have more visibility for both the base and the setback. This finding is due primarily to the removal of a side yard requirement for corner lots and can be seen in the high visibility scores in R9X districts. Of the districts analyzed, R8 and R9A had aggregate negative impacts for both daylight and visibility.

Consistent with the hypothesis, relative changes in scores between existing and modified (i.e., ZQA) conditions are quantitatively minimal and are most evident in elevations and select perspectives. As represented in Table 3 and in the Appendix, massing simulations for corner and interior lots for each of the districts support an affirmation of the hypothesis as to marginal nature of the impacts. As previously referenced with higher density districts, modified corner lots experience the greatest impact primarily due to the removal of a side yard requirement for corner lots. With regards to façade visibility, there are general improvements due to the setback provided by the modified regulations. Improvements to such an outcome are defined by less visibility of the façade. Of particular note is the finding that the majority of simulations perform better with regards to a daylight score due to the freedom to set back at the ground level. But, this does not necessarily translate to a decrease in visibility which reflects more of the particular contextual conditions that have been selected and tested.

CONCLUSIONS

The ZQA represent a set of modifications to the NYC zoning code that are seeking to keep up with the architectural design standards and technologies, as well as shifting demands and preferences in the residential housing market. The public process for advancing the ZQA has underscored the necessity to clearly communicate the trade-offs between urban housing quality and the externalities associated with greater housing density. Paradoxically, while the public has demanded a greater supply in housing units, individual neighborhoods and districts are reluctant to bear the incremental burden of greater physical density. This paper represents an attempt to articulate several aspects of measuring potentially negative externalities and impacts. The results of this paper suggest the potential for positive externalities which is contrary to the perception of many critics.

EXISTING REGULATIONS

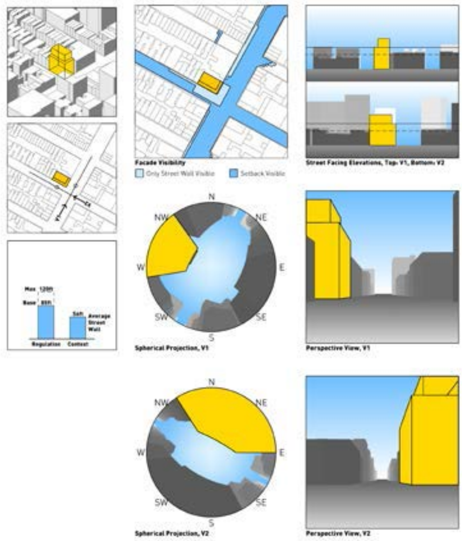

Figure 6: Example Micro Analysis for Existing R8A Massing

ZQA MODIFIED REGULATIONS

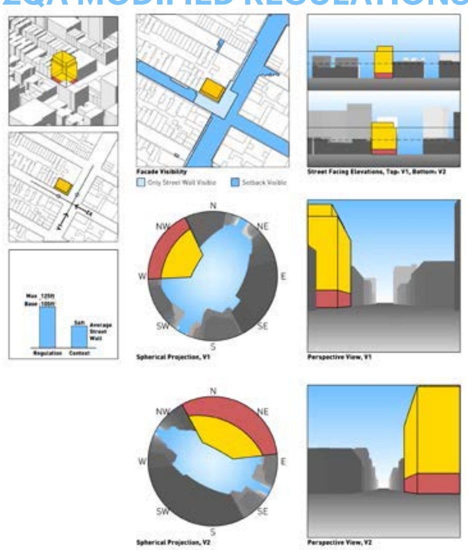

Figure 7: Example Micro Analysis for ZQA Modified R8A Massing

Lot Type	Daylight	Setback Visibility	Base Visibility
R6 InsideLot	0.11%	0.00%	-53.42%
R6 CornerLot	1.21%	-4.11%	-0.77%
R6A InsideLot	0.11%	48.89%	-19.21%
R6A CornerLot	0.36%	5.86%	0.61%
R6B InsideLot	0.03%	3.86%	1.44%
R6B CornerLot	0.54%	12.03%	-1.92%
R7-2 InsideLot	0.23%	-100.00%	-8.06%
R7-2 CornerLot	0.69%	-12.62%	-1.95%
R7A InsideLot	0.14%	7.76%	4.61%
R7A CornerLot	0.15%	-7.10%	1.51%
R7B InsideLot	0.15%	-3.32%	-2.30%
R7B CornerLot	0.87%	-17.93%	0.09%
R7D InsideLot	0.18%	2.33%	-0.51%
R7D CornerLot	0.96%	14.08%	0.43%
R7X InsideLot	0.16%	0.26%	1.03%
R7X CornerLot	1.25%	0.25%	3.25%
R8 InsideLot	-0.06%	9.57%	11.63%
R8 CornerLot	-0.16%	5.73%	0.32%
R8A InsideLot	0.02%	1.27%	5.32%
R8A CornerLot	0.14%	-3.97%	-2.31%
R8B InsideLot	0.13%	-0.64%	-32.03%
R8B CornerLot	0.67%	-29.39%	-0.65%
R8X InsideLot	0.00%	0.79%	1.03%
R8X CornerLot	0.43%	3.87%	2.83%
R9A InsideLot	-0.22%	5.47%	-5.50%
R9A CornerLot	-0.51%	3.25%	1.18%
R9 InsideLot	0.16%	1.81%	4.92%
R9 CornerLot	0.37%	4.87%	-4.57%
R9X InsideLot	0.11%	2.57%	-0.82%
R9X CornerLot	0.34%	15.20%	-0.14%
R10A InsideLot	-0.35%	7.63%	7.64%
R10A CornerLot	-0.02%	8.71%	-1.79%

Table 3: Daylight and Visibility Comparison Averages Across All Zoning Districts. Beneficial Impact is Highlighted in Blue and Detrimental Impact is Highlighted in Red.

Consistent with the hypothesis, this paper demonstrates that this incremental burden represents, in most cases, a marginal environmental impact in terms of urban experience defined by daylight access and visibility. While 3 higher density districts demonstrated negative results, the results—with the exception of the R9X district—were marginal and likely not perceptible to even the most observable resident. To the contrary, the Micro Analysis results demonstrated that a majority of the districts would have a superior environmental outcome.

While the findings of the Macro Analysis support the legislative intent of the ZQA, the Macro Analysis also supports the breadth of the intended objects of the textual amendments. The analysis demonstrated the logical correlation between underbuilt lots and the geometric restrictions of lots who would otherwise be restricted by pre-ZQA rules. While the exact distribution and explanations for why any given lot is underbuilt is not entirely explained by pre-ZQA rules due to a variety of economic and legal exogeneities, the logical alignment between future capacity and existing geometry is likely to support future economic utilization of under-utilized land and FAR. The relevance of this research is reinforced by its impact on the text of the ZQA by virtue of the researchers' identification of additional lot parameters for inclusion into the amendment.

As NYC's built environment continues to grow and evolve, so too must its zoning code. Moving forward, it is incumbent upon public and private actors to more clearly communicate the range of impacts and externalities associated with increased housing development. A failure to do so will result in the local preferencing of a few at the cost of the collective. As a matter of necessity, NYC is shifting its focus from greenfield development to infill development. As such, contextual analysis and sensitivity in the zoning code is necessary not only as a matter of political necessity but also to advance environmental and urban quality. This paper represents a critical methodological advancement in engaging the broader public discourse as to the precise nature of contextual infill development and associated zoning calibrations. A failure to communicate will only result in protracted accommodations of zoning legislation that undermine the broader policy objectives of promoting the development of housing.

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APPENDIX

METHODOLOGICAL QUALIFICATIONS

1. Data does not distinguish between narrow and wide streets, although simulations of particulars lots utilized in the micro analysis do make such distinctions.

2. Data does not account for floor area bonuses or the transferal of development rights. For instance, if a building is underbuilt but sells air rights to an adjacent property, or sells Inclusionary Housing certificates to another lot within the same community district, the blended FAR may achieve the maximum allowable, though the model used in this analysis would otherwise indicate a result of underbuilt. There are several other factors that contribute to allowable FAR that are defy deduction from data in the PLUTO data.

3. The built floor area data is inclusive of basements and other spaces that may not contribute to FAR as defined in the zoning resolution.

4. The methodology utilized has not given recognition to historic zoning changes. A building constructed under more restrictive zoning regulations than those in place today will show as underbuilt, but may in fact not be limited by either physical conditions or today's regulations. In this case, a straight-forward as-of-right redevelopment would be likely achieve FAR maximization, unless it is subject to the aforementioned transfer of development rights.

MANDATORY QUALITY HOUSING LOTS BY ZONING DISTRICT AND BOROUGH APPENDIX TABLES 1-9

All Mandatory Quality Housing Lots (n=98,950)							
	MN	BX	BK	QN	SI		NYC
R6A	1,041	1,343	10,432	5,113	27		17,956
R6B	0	294	39,601	10,962	0		50,857
R7A	3,494	656	6,226	1,384	0		11,760
R7B	1,075	496	1,188	468	0		3,227
R7D	24	180	605	0	0		809
R7X	117	204	63	568	0		952
R8A	2,716	103	516	8	0		3,343
R8B	7,151	0	22	12	0		7,185
R9A	733	0	20	0	0		753
R9D	0	17	0	0	0		17
R10A	1,513	0	61	0	0		1,574
R10X	85	0	0	0	0		85
R9X	432	0	0	0	0		432
Total	**18,381**	**3,293**	**58,734**	**18,515**	**27**		**98,950**

Appendix Table 1

All Underbuilt Mandatory Quality Housing Lots							
	MN	BX	BK	QN	SI		NYC
R6A	99	900	3,526	2,634	27		7,186
R6B	0	133	5,310	2,711	0		8,154
R7A	819	458	3,198	945	0		5,420
R7B	108	207	141	145	0		601
R7D	6	135	458	0	0		599
R7X	46	155	57	460	0		718
R8A	948	89	382	7	0		1,426
R8B	793	0	7	7	0		807
R9A	263	0	19	0	0		282
R9D	0	17	0	0	0		17
R10A	811	0	33	0	0		844
R10X	61	0	0	0	0		61
R9X	330	0	0	0	0		330
Total	**4,284**	**2,094**	**1,3131**	**6,909**	**27**		**26,445**

Appendix Table 2

Percentage Underbuilt							
	MN	BX	BK	QN	SI		NYC
R6A	9.51%	67.01%	33.80%	51.52%	100.00%		40.02%
R6B		45.24%	13.41%	24.73%			16.03%
R7A	23.44%	69.82%	51.37%	68.28%			46.09%
R7B	10.05%	41.73%	11.87%	30.98%			18.62%
R7D	25.00%	75.00%	75.70%				74.04%
R7X	39.32%	75.98%	90.48%	80.99%			75.42%
R8A	34.90%	86.41%	74.03%	87.50%			42.66%
R8B	11.09%		31.82%	58.33%			11.23%
R9A	35.88%		95.00%				37.45%
R9D		100.00%					100.00%
R10A	53.60%		54.10%				53.62%
R10X	71.76%						71.76%
R9X	76.39%						76.39%
Total	**23.31%**	**63.59%**	**22.36%**	**37.32%**			**26.73%**

Appendix Table 3

Mandatory Quality Housing Lots <45ft LotWidth (n=83,884)							
	MN	BX	BK	QN	SI		NYC
R6A	927	928	8,800	3,944	4		14,603
R6B	0	201	37,798	9,657	0		47,656
R7A	2,654	363	4,432	811	0		8,260
R7B	964	252	1,040	271	0		2,527
R7D	16	70	490	0	0		576
R7X	88	88	45	260	0		481
R8A	1,789	40	394	5	0		2,228
R8B	5,902	0	15	6	0		5,923
R9A	466	0	17	0	0		483
R9D	0	1	0	0	0		1
R10A	762	0	17	0	0		779
R10X	59	0	0	0	0		59
R9X	308	0	0	0	0		308
Total	**13,935**	**1943**	**53,048**	**14,954**	**4**		**83,884**

Appendix Table 4

Underbuilt Mandatory Quality Housing Lots <45 Lot Width							
	MN	BX	BK	QN	SI		NYC
R6A	79	684	2,930	2,016	4		5,713
R6B	0	72	4,731	2,043	0		6,846
R7A	640	278	2,662	653	0		4,233
R7B	93	156	102	119	0		470
R7D	4	57	371	0	0		432
R7X	35	66	43	239	0		383
R8A	690	35	331	5	0		1,061
R8B	631	0	6	3	0		640
R9A	203	0	17	0	0		220
R9D	0	1	0	0	0		1
R10A	643	0	15	0	0		658
R10X	56	0	0	0	0		56
R9X	284	0	0	0	0		284
Total	**3,358**	**1,349**	**11,208**	**5,078**	**4**		**20,997**

Appendix Table 5

<45ft Lot Width Percentage Underbuilt							
	MN	BX	BK	QN	SI		NYC
R6A	8.52%	73.71%	33.30%	51.12%	100.00%		39.12%
R6B		35.82%	12.52%	21.16%			14.37%
R7A	24.11%	76.58%	60.06%	80.52%			51.25%
R7B	9.65%	61.90%	9.81%	43.91%			18.60%
R7D	25.00%	81.43%	75.71%				75.00%
R7X	39.77%	75.00%	95.56%	91.92%			79.63%
R8A	38.57%	87.50%	84.01%	100.00%			47.62%
R8B	10.69%		40.00%	50.00%			10.81%
R9A	43.56%		100.00%				45.55%
R9D		100.00%					100.00%
R10A	84.38%		88.24%				84.47%
R10X	94.92%						94.92%
R9X	92.21%						92.21%
Total	**24.10%**	**69.43%**	**21.13%**	**33.96%**			**25.03%**

Appendix Table 6

Mandatory Quality Housing Lots Between 75 and 90ft Deep (n=14,102)							
	MN	BX	BK	QN	SI		NYC
R6A	97	186	2,712	835	1		3,831
R6B	0	37	4,624	1,534	0		6,195
R7A	552	58	1,220	145	0		1,975
R7B	79	87	130	42	0		338
R7D	1	28	124	0	0		153
R7X	20	23	10	84	0		137
R8A	595	13	194	1	0		803
R8B	236	0	1	1	0		238
R9A	129	0	1	0	0		130
R9D	0	0	0	0	0		0
R10A	178	0	12	0	0		190
R10X	9	0	0	0	0		9
R9X	103	0	0	0	0		103
Total	**1,999**	**432**	**9,028**	**2,642**	**1**		**14,102**

Appendix Table 7

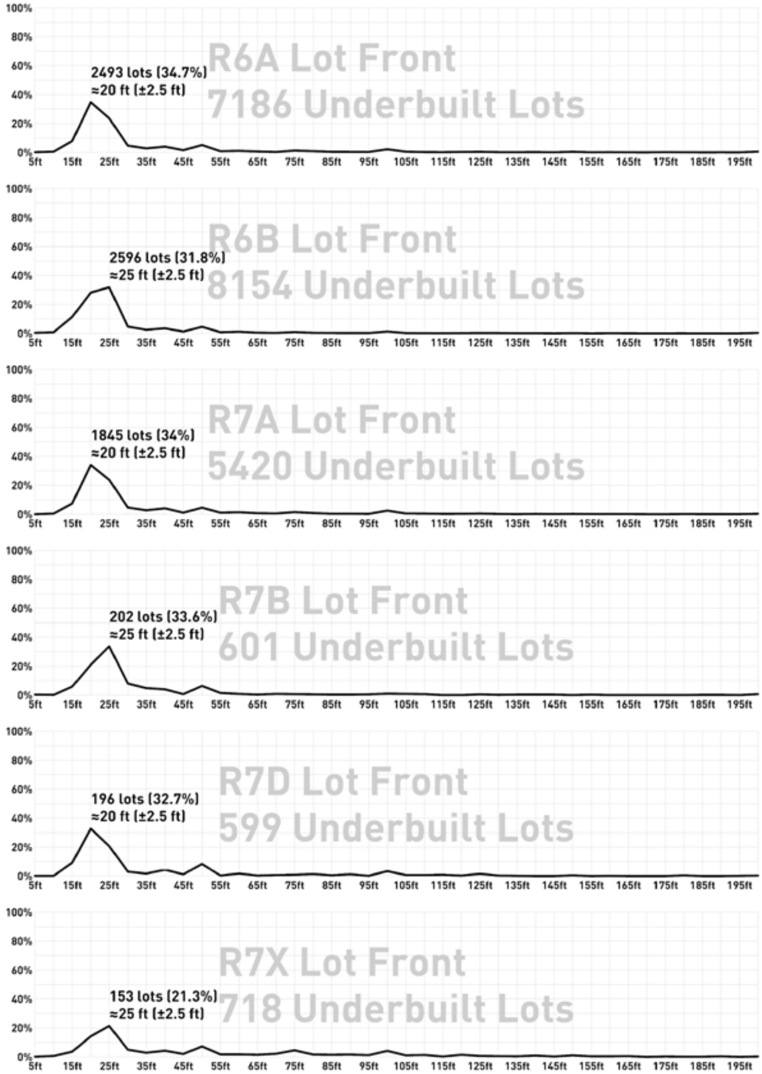
Underbuilt Mandatory Quality Housing Lots Between 75 and 90ft Deep							
	MN	BX	BK	QN	SI		NYC
R6A	7	99	630	336	1		1,073
R6B	0	23	361	254	0		638
R7A	101	44	627	117	0		889
R7B	3	27	10	14	0		54
R7D	0	21	87	0	0		108
R7X	7	14	7	71	0		99
R8A	224	11	158	1	0		394
R8B	39	0	0	1	0		40
R9A	46	0	1	0	0		47
R9D	0	0	0	0	0		0
R10A	128	0	9	0	0		137
R10X	8	0	0	0	0		8
R9X	84	0	0	0	0		84
Total	**647**	**239**	**1,890**	**794**	**1**		**3,571**

Appendix Table 8

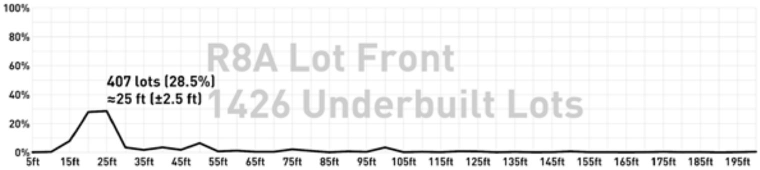
Lots Between 75 and 90ft Deep Percentage Underbuilt							
	MN	BX	BK	QN	SI		NYC
R6A	7.22%	53.23%	23.23%	40.24%	100.00%		28.01%
R6B		62.16%	7.81%	16.56%			10.30%
R7A	18.30%	75.86%	51.39%	80.69%			45.01%
R7B	3.80%	31.03%	7.69%	33.33%			15.98%
R7D	0.00%	75.00%	70.16%				70.59%
R7X	35.00%	60.87%	70.00%	84.52%			72.26%
R8A	37.65%	84.62%	81.44%	100.00%			49.07%
R8B	16.53%		0.00%	100.00%			16.81%
R9A	35.66%		100.00%				36.15%
R9D							
R10A	71.91%		75.00%				72.11%
R10X	88.89%						88.89%
R9X	81.55%						81.55%
Total	**32.37%**	**55.32%**	**20.93%**	**30.05%**			**25.32%**

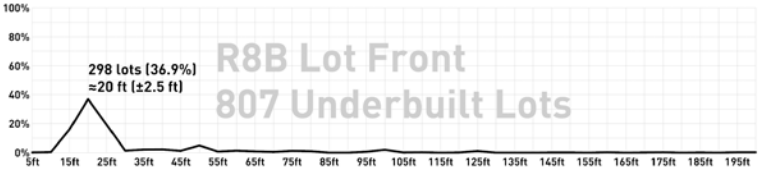
Appendix Table 9

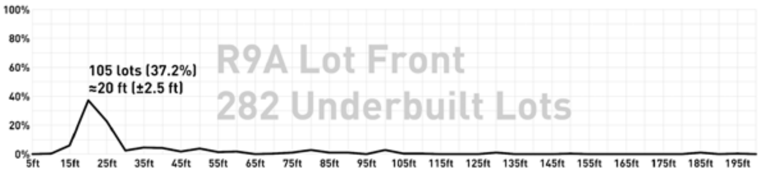
UNDERBUILT PROPERTIES
LOT WIDTH DISTRIBUTIONS

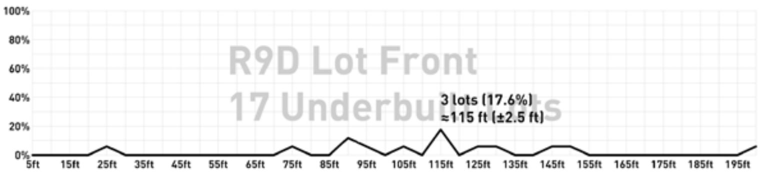


Appendix Figure 1: Underbuilt Properties Lot Width Distributions

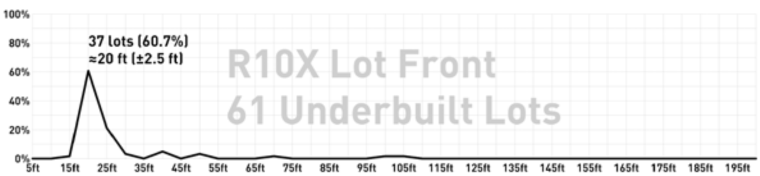

R8A Lot Front
1426 Underbuilt Lots
407 lots (28.5%)
≈25 ft (±2.5 ft)
100% 80% 60% 40% 20% 0%
5ft 15ft 25ft 35ft 45ft 55ft 65ft 75ft 85ft 95ft 105ft 115ft 125ft 135ft 145ft 155ft 165ft 175ft 185ft 195ft

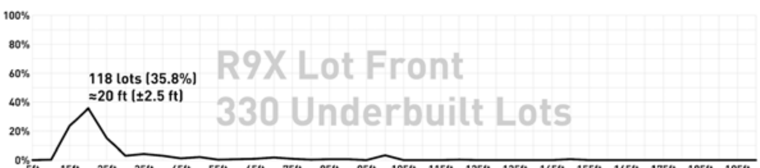

R8B Lot Front
807 Underbuilt Lots
298 lots (36.9%)
≈20 ft (±2.5 ft)
100% 80% 60% 40% 20% 0%
5ft 15ft 25ft 35ft 45ft 55ft 65ft 75ft 85ft 95ft 105ft 115ft 125ft 135ft 145ft 155ft 165ft 175ft 185ft 195ft


R9A Lot Front
282 Underbuilt Lots
105 lots (37.2%)
≈20 ft (±2.5 ft)
100% 80% 60% 40% 20% 0%
5ft 15ft 25ft 35ft 45ft 55ft 65ft 75ft 85ft 95ft 105ft 115ft 125ft 135ft 145ft 155ft 165ft 175ft 185ft 195ft

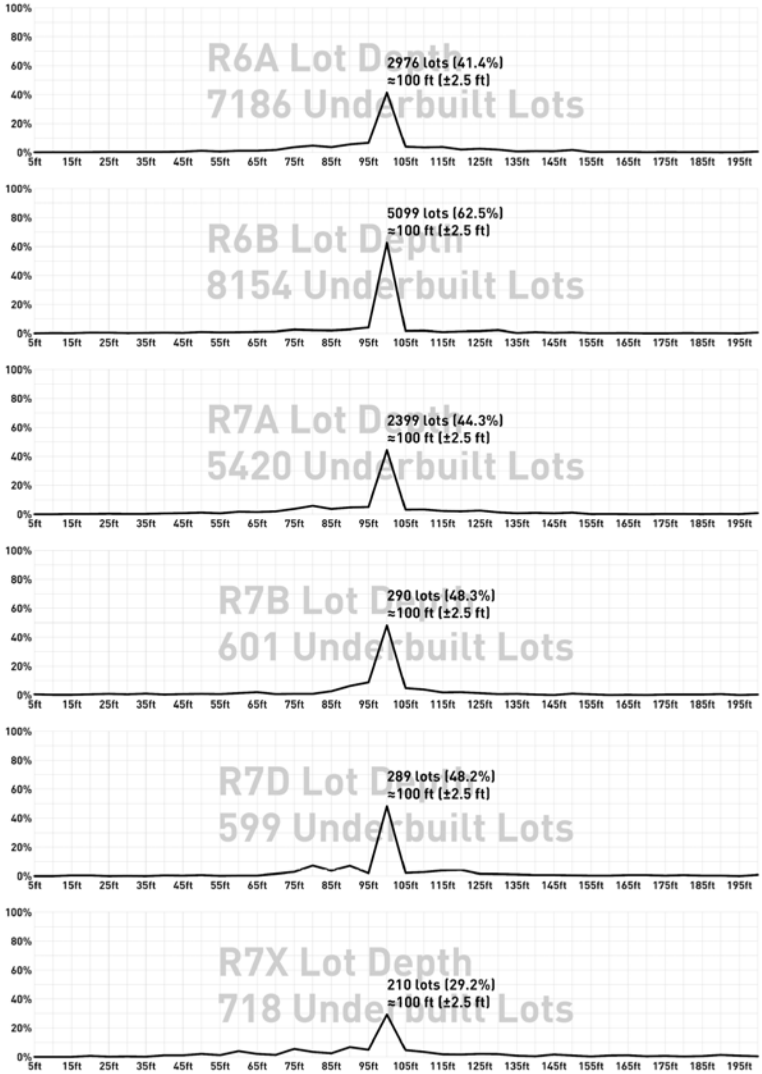

R9D Lot Front
17 Underbuilt Lots
3 lots (17.6%)
≈115 ft (±2.5 ft)
100% 80% 60% 40% 20% 0%
5ft 15ft 25ft 35ft 45ft 55ft 65ft 75ft 85ft 95ft 105ft 115ft 125ft 135ft 145ft 155ft 165ft 175ft 185ft 195ft


R10A Lot Front
844 Underbuilt Lots
252 lots (29.9%)
≈20 ft (±2.5 ft)
100% 80% 60% 40% 20% 0%
5ft 15ft 25ft 35ft 45ft 55ft 65ft 75ft 85ft 95ft 105ft 115ft 125ft 135ft 145ft 155ft 165ft 175ft 185ft 195ft

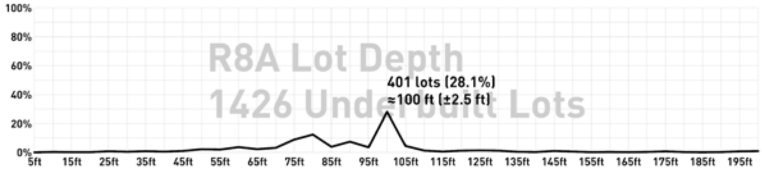

R10X Lot Front
61 Underbuilt Lots
37 lots (60.7%)
≈20 ft (±2.5 ft)
100% 80% 60% 40% 20% 0%
5ft 15ft 25ft 35ft 45ft 55ft 65ft 75ft 85ft 95ft 105ft 115ft 125ft 135ft 145ft 155ft 165ft 175ft 185ft 195ft

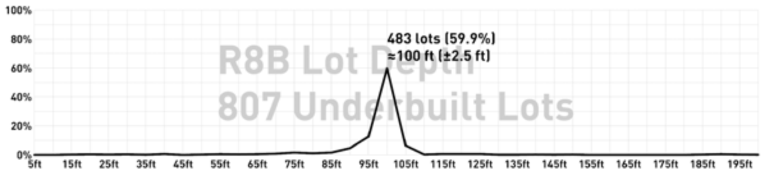

R9X Lot Front
330 Underbuilt Lots
118 lots (35.8%)
≈20 ft (±2.5 ft)
100% 80% 60% 40% 20% 0%
5ft 15ft 25ft 35ft 45ft 55ft 65ft 75ft 85ft 95ft 105ft 115ft 125ft 135ft 145ft 155ft 165ft 175ft 185ft 195ft

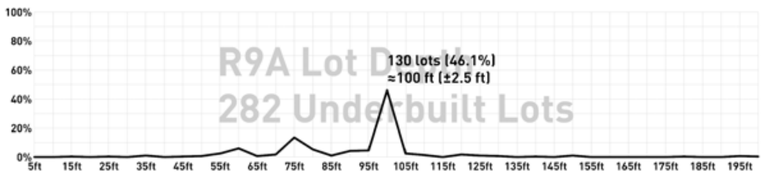
UNDERBUILT PROPERTIES LOT DEPTH DISTRIBUTIONS



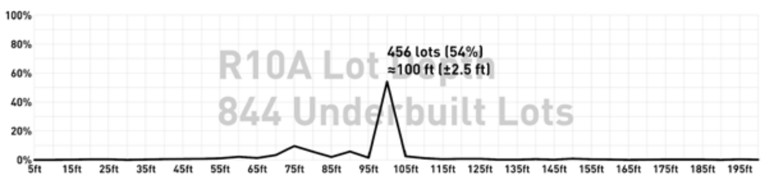
Appendix Figure 1: Underbuilt Properties Lot Depth


R8A Lot Depth
1426 Underbuilt Lots
401 lots (28.1%)
≈100 ft (±2.5 ft)

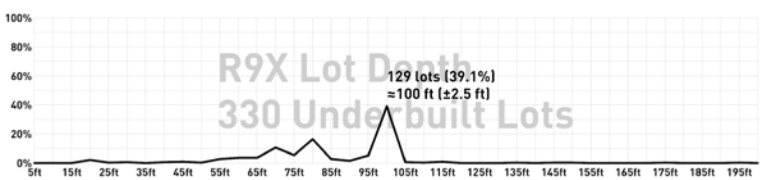

R8B Lot Depth
807 Underbuilt Lots
483 lots (59.9%)
≈100 ft (±2.5 ft)


R9A Lot Depth
282 Underbuilt Lots
130 lots (46.1%)
≈100 ft (±2.5 ft)


R9D Lot Depth
17 Underbuilt Lots
7 lots (41.2%)
≈100 ft (±2.5 ft)


R10A Lot Depth
844 Underbuilt Lots
456 lots (54%)
≈100 ft (±2.5 ft)


R10X Lot Depth
61 Underbuilt Lots
18 lots (29.5%)
≈100 ft (±2.5 ft)


R9X Lot Depth
330 Underbuilt Lots
129 lots (39.1%)
≈100 ft (±2.5 ft)

RESIDENTIAL ZONING DISTRICT EQUIVALENCIES

Residential Equivalent	**Zoning Districts**
R6A	C4-2A,C4-3A,M1-2/R6A,M1-4/R6A
R6B	M1-2/R6B,M1-4/R6B
R7A	C1-6A,C2-6A,C4-4A,C4-5A,M1-4/R7A
R7B	
R7D	C4-5D,M1-1/R7D
R7X	C4-5X,M1-3/R7X,M1-4/R7X,M1-5/R7X
R8A	C1-7A,C4-4D,C6-2A,M1-4/R8A
R8B	M1-2/R8A,M1-5/R8A
R9A	C1-8A,C2-7A,C6-3A
R9D	C6-3D
R10A	C1-9A,C2-8A,C4-6A,C4-7A,C5-1A,C5-2A,C6-4A
R10X	C6-4X
R9X	C1-8X,C2-7X,C6-3X

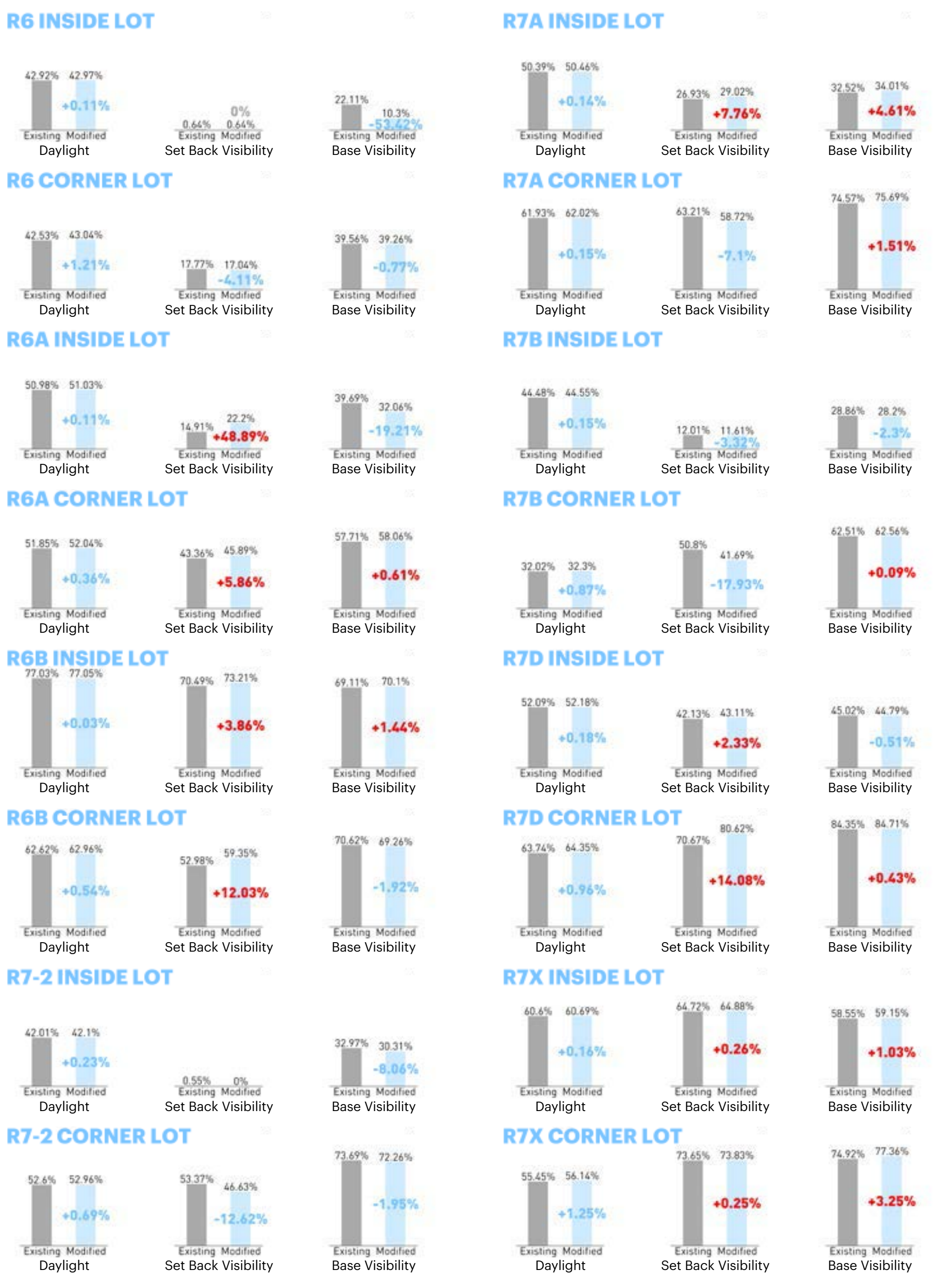
Appendix Table 10: Residential Zoning District Equivalencies

MICRO ANALYSIS IMPACT SUMMARIES

Lot Type	Daylight	Setback Visibility	Base Visibility
R6 InsideLot	0.11%	0.00%	-53.42%
R6 CornerLot	1.21%	-4.11%	-0.77%
R6A InsideLot	0.11%	48.89%	-19.21%
R6A CornerLot	0.36%	5.86%	0.61%
R6B InsideLot	0.03%	3.86%	1.44%
R6B CornerLot	0.54%	12.03%	-1.92%
R7-2 InsideLot	0.23%	-100.00%	-8.06%
R7-2 CornerLot	0.69%	-12.62%	-1.95%
R7A InsideLot	0.14%	7.76%	4.61%
R7A CornerLot	0.15%	-7.10%	1.51%
R7B InsideLot	0.15%	-3.32%	-2.30%
R7B CornerLot	0.87%	-17.93%	0.09%
R7D InsideLot	0.18%	2.33%	-0.51%
R7D CornerLot	0.96%	14.08%	0.43%
R7X InsideLot	0.16%	0.26%	1.03%
R7X CornerLot	1.25%	0.25%	3.25%
R8 InsideLot	-0.06%	9.57%	11.63%
R8 CornerLot	-0.16%	5.73%	0.32%
R8A InsideLot	0.02%	1.27%	5.32%
R8A CornerLot	0.14%	-3.97%	-2.31%
R8B InsideLot	0.13%	-0.64%	-32.03%
R8B CornerLot	0.67%	-29.39%	-0.65%
R8X InsideLot	0.00%	0.79%	1.03%
R8X CornerLot	0.43%	3.87%	2.83%
R9A InsideLot	-0.22%	5.47%	-5.50%
R9A CornerLot	-0.51%	3.25%	1.18%
R9 InsideLot	0.16%	1.81%	4.92%
R9 CornerLot	0.37%	4.87%	-4.57%
R9X InsideLot	0.11%	2.57%	-0.82%
R9X CornerLot	0.34%	15.20%	-0.14%
R10A InsideLot	-0.35%	7.63%	7.64%
R10A CornerLot	-0.02%	8.71%	-1.79%

Appendix Table 11: Daylight and Visibility Comparison Averages Across All Zoning Districts. Beneficial Impact is Highlighted in Blue and Detrimental Impact is Highlighted in Red.

MICRO ANALYSIS IMPACT SUMMARIES



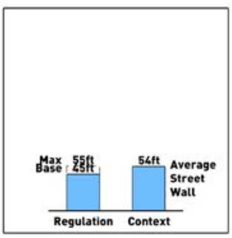
Appendix Figure 3: Micro Analysis Impact Charts. Beneficial Impact is Highlighted in Blue and Detrimental Impact is Highlighted in Red.

Appendix Figure 3: Micro Analysis Impact Charts Cont.

MICRO ANALYSIS DIAGRAMS

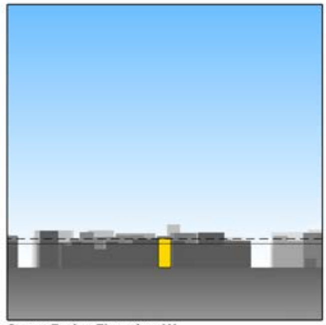
R6 INSIDE LOT

EXISTING REGULATIONS

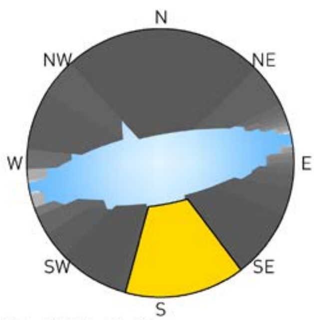


Facade Visibility

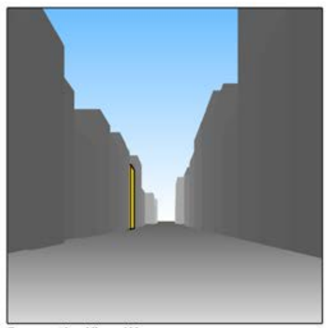
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1

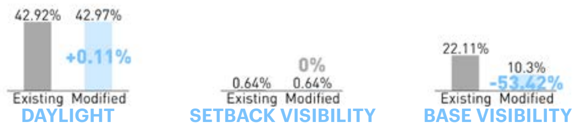


Spherical Projection, V1

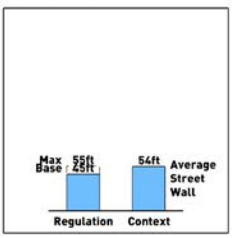


Perspective View, V1

IMPACT COMPARISON

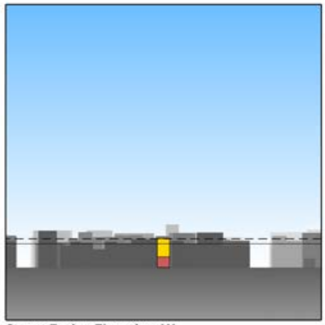


ZQA MODIFIED REGULATIONS

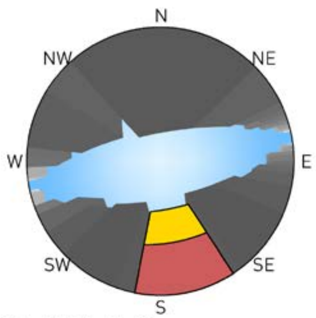


Facade Visibility

Only Street Wall Visible Setback Visible



Street Facing Elevation, V1



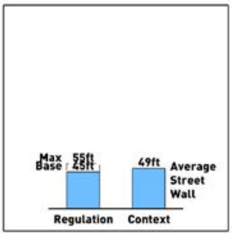
Spherical Projection, V1

Potential Ground Floor Retail

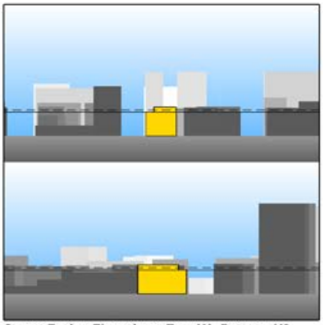
Perspective View, V1

R6 CORNER LOT

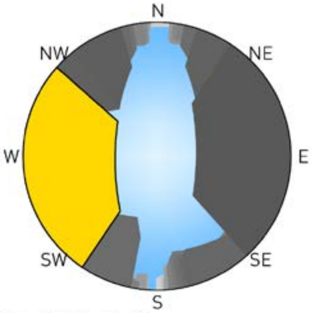
EXISTING REGULATIONS



Facade Visibility

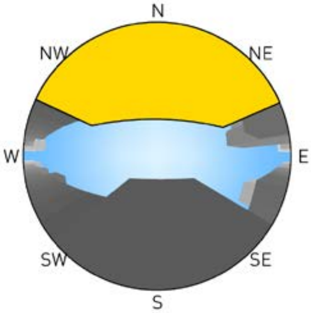


Street Facing Elevations, Top: V1, Bottom: V2

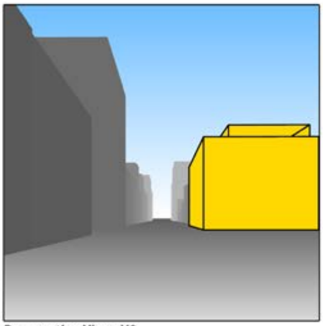


Spherical Projection, V1

Perspective View, V1

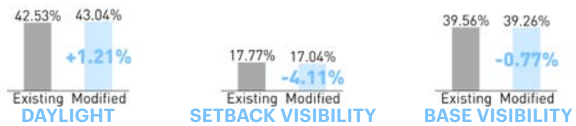


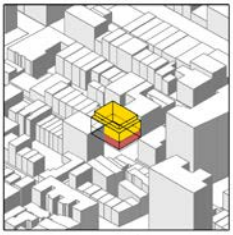
Spherical Projection, V2

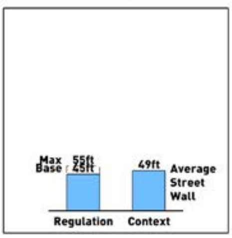


Perspective View, V2

IMPACT COMPARISON

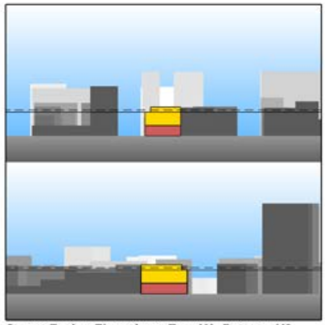




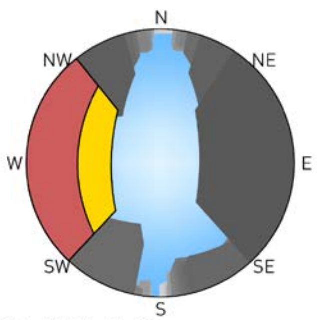


Facade Visibility

Only Street Wall Visible   Setback Visible

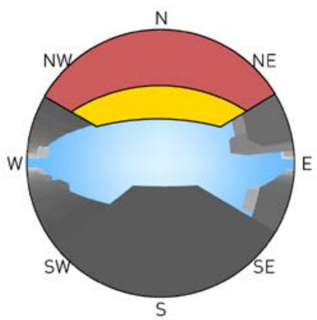


Street Facing Elevations, Top: V1, Bottom: V2



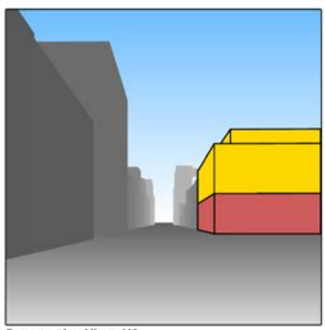
Spherical Projection, V1

Perspective View, V1



Spherical Projection, V2

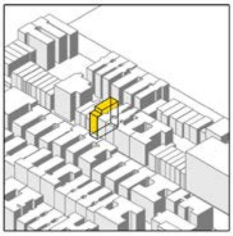
Potential Ground Floor Retail

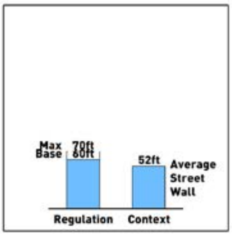


Perspective View, V2

R6A INSIDE LOT

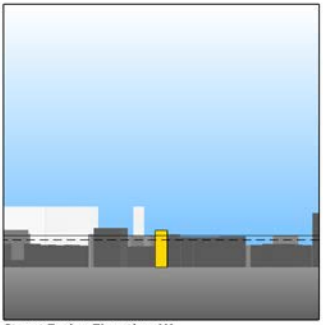
EXISTING REGULATIONS



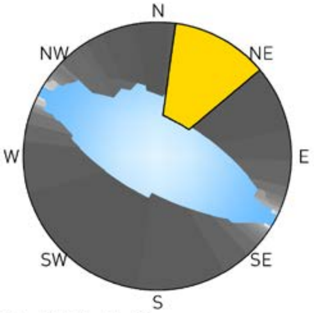


Facade Visibility

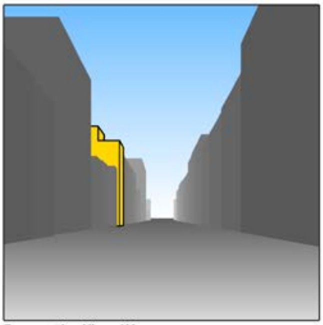
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1

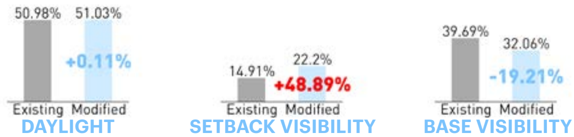


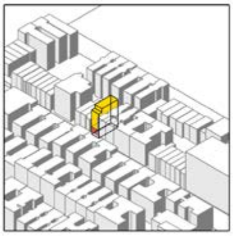
Spherical Projection, V1

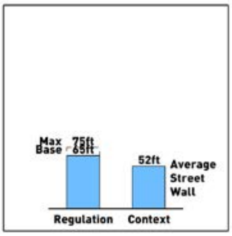


Perspective View, V1

IMPACT COMPARISON

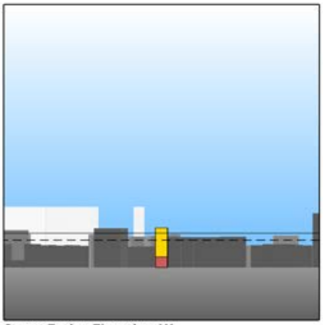




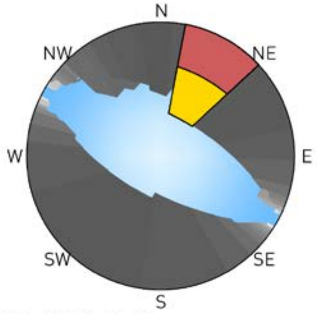


Facade Visibility

Only Street Wall Visible　Setback Visible

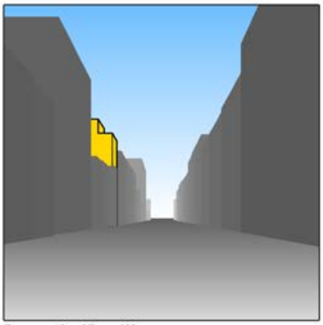


Street Facing Elevation, V1



Spherical Projection, V1

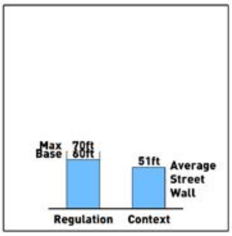
Potential Ground Floor Retail



Perspective View, V1

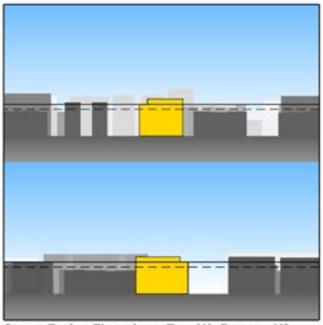
R6A CORNER LOT

EXISTING REGULATIONS

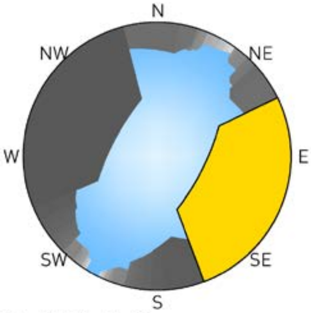


Facade Visibility

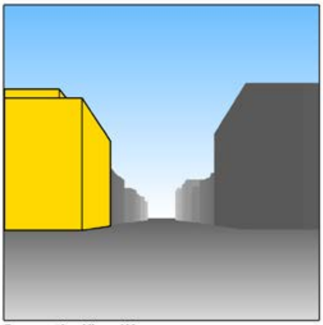
Only Street Wall Visible   Setback Visible



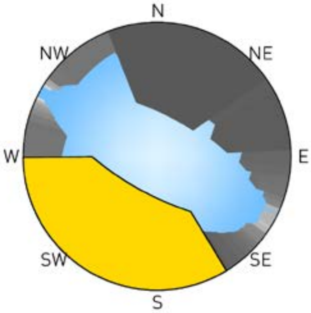
Street Facing Elevations, Top: V1, Bottom: V2



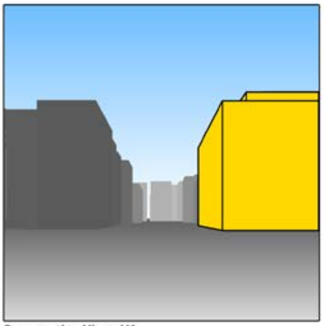
Spherical Projection, V1



Perspective View, V1

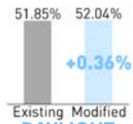


Spherical Projection, V2



Perspective View, V2

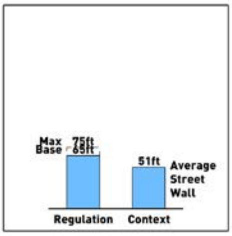
IMPACT COMPARISON



DAYLIGHT

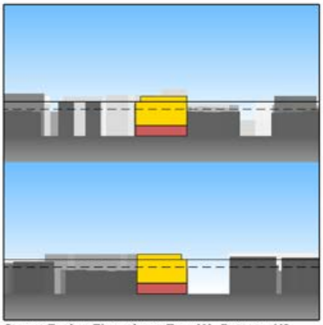
SETBACK VISIBILITY

BASE VISIBILITY

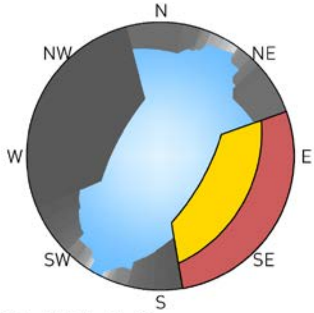


Facade Visibility

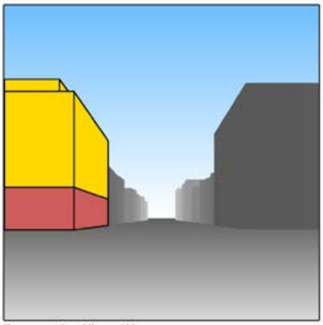
Only Street Wall Visible   Setback Visible



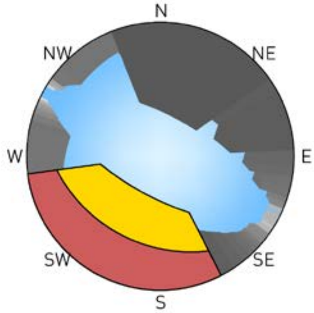
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

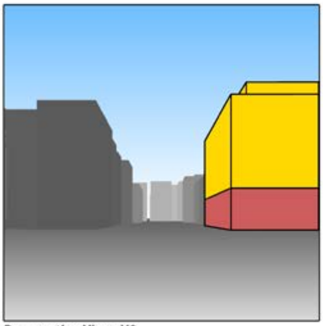


Perspective View, V1



Spherical Projection, V2

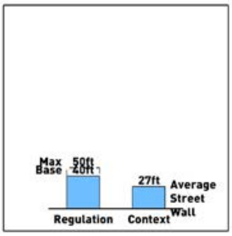
Potential Ground Floor Retail

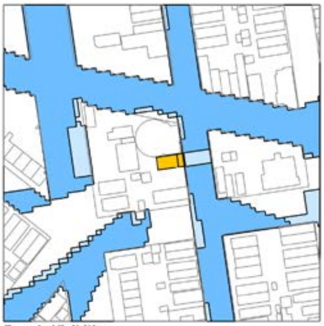


Perspective View, V2

R6B INSIDE LOT

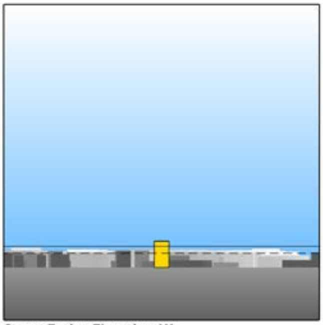
EXISTING REGULATIONS



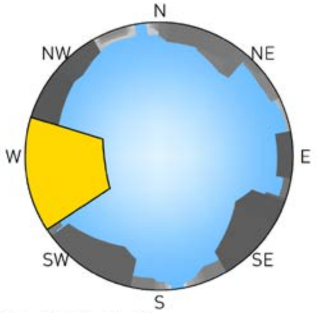


Facade Visibility

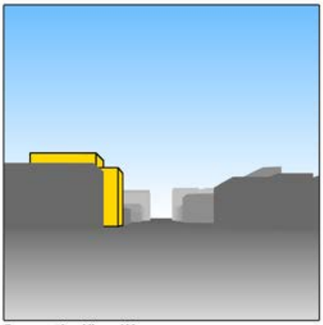
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1

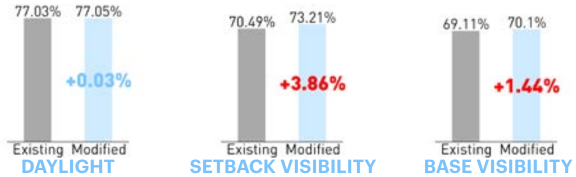


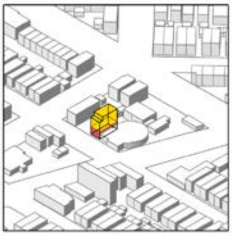
Spherical Projection, V1

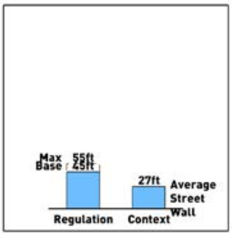


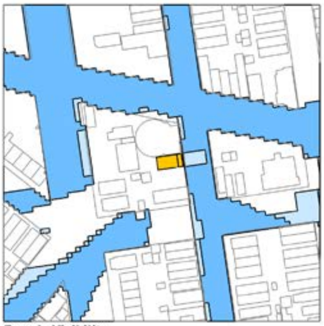
Perspective View, V1

IMPACT COMPARISON



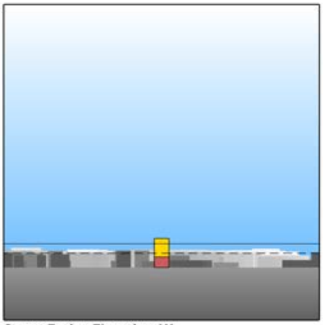




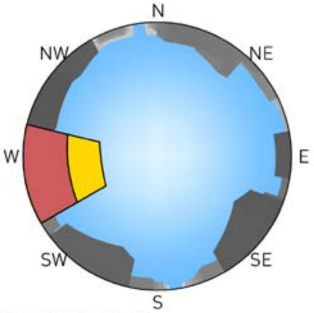


Facade Visibility

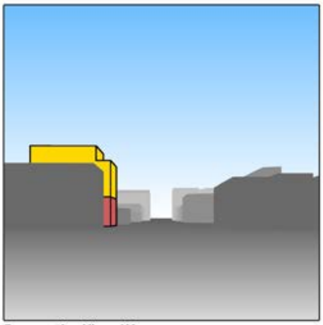
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1



Spherical Projection, V1

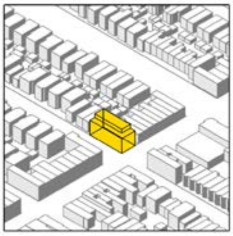


Perspective View, V1

Potential Ground Floor Retail

R6B CORNER LOT

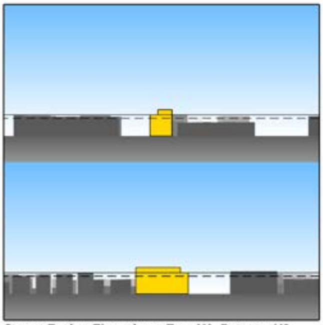
EXISTING REGULATIONS



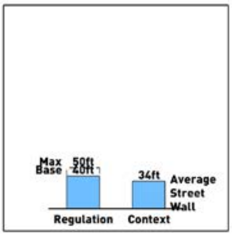
Facade Visibility

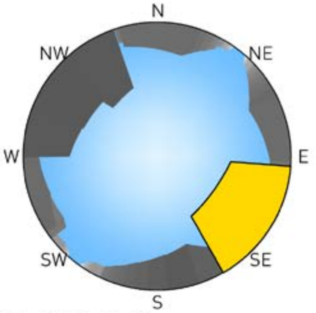
Only Street Wall Visible

Setback Visible

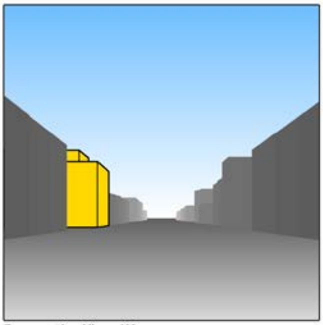


Street Facing Elevations, Top: V1, Bottom: V2

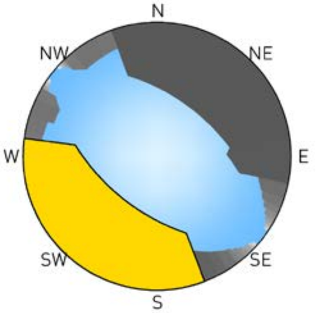




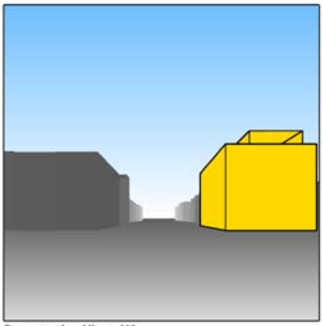
Spherical Projection, V1



Perspective View, V1

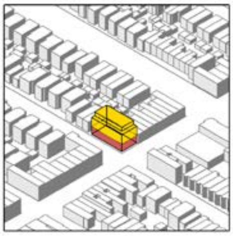


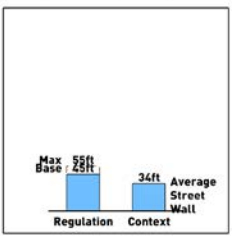
Spherical Projection, V2



Perspective View, V2

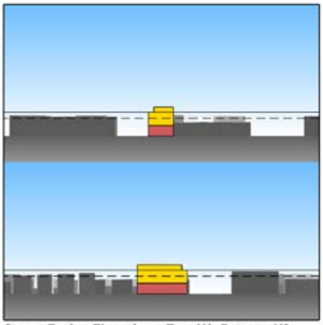
IMPACT COMPARISON



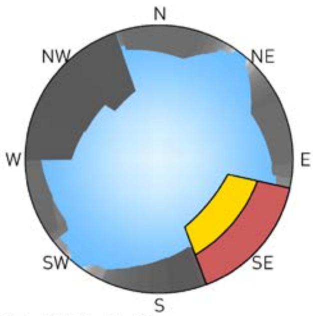


Facade Visibility

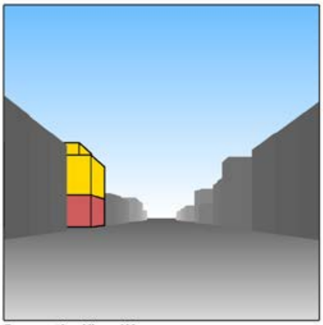
Only Street Wall Visible   Setback Visible



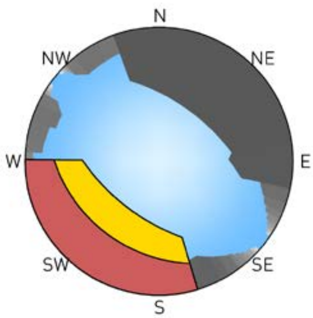
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

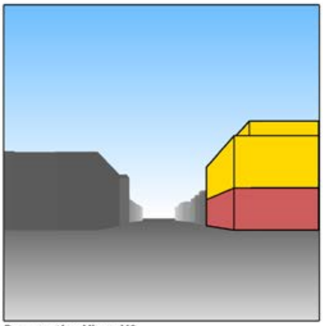


Perspective View, V1



Spherical Projection, V2

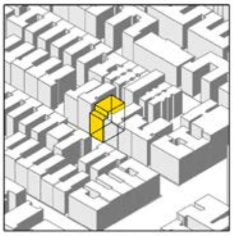
Potential Ground Floor Retail

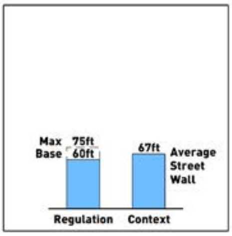


Perspective View, V2

R7-2 INSIDE LOT

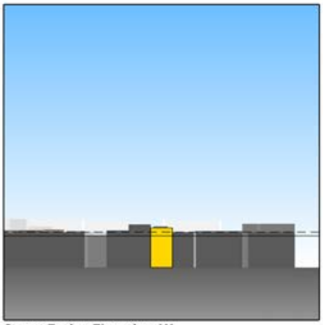
EXISTING REGULATIONS



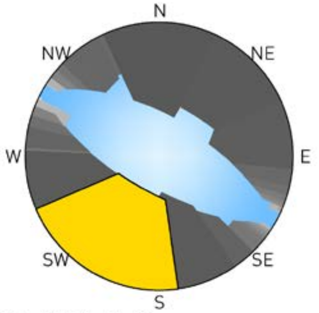


Facade Visibility

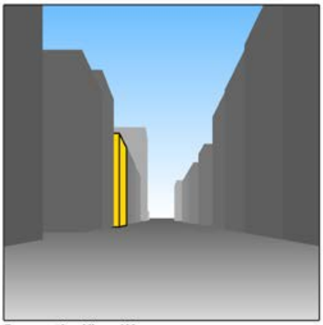
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1



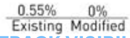
Spherical Projection, V1



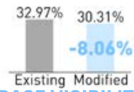
Perspective View, V1

IMPACT COMPARISON

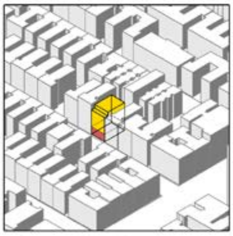
DAYLIGHT

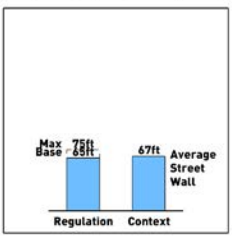


SETBACK VISIBILITY



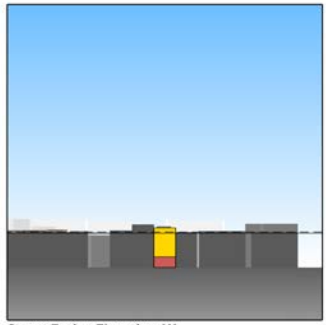
BASE VISIBILITY



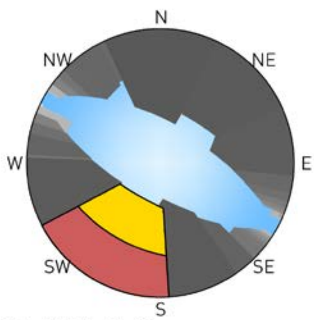


Facade Visibility

Only Street Wall Visible   Setback Visible

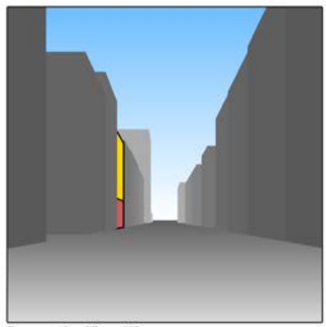


Street Facing Elevation, V1



Spherical Projection, V1

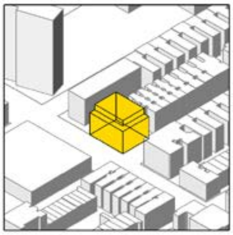
Potential Ground Floor Retail

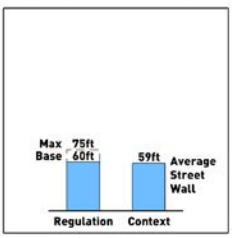


Perspective View, V1

R7-2 CORNER LOT

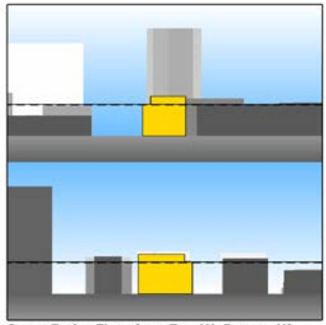
EXISTING REGULATIONS



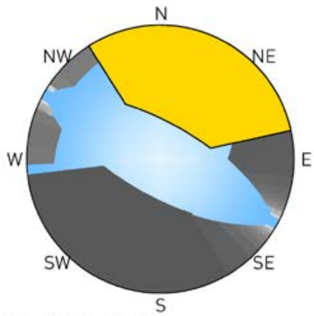


Facade Visibility

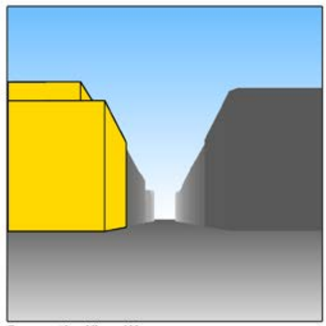
Only Street Wall Visible — Setback Visible



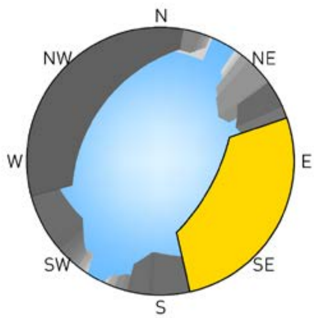
Street Facing Elevations, Top: V1, Bottom: V2



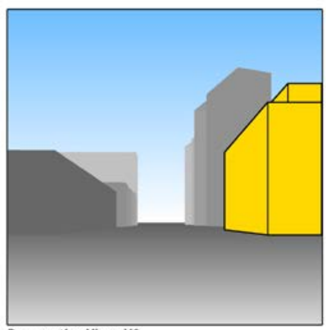
Spherical Projection, V1



Perspective View, V1

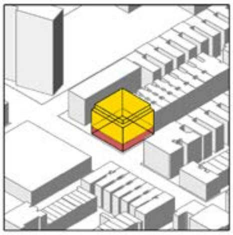


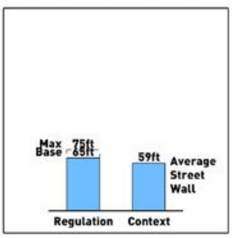
Spherical Projection, V2



Perspective View, V2

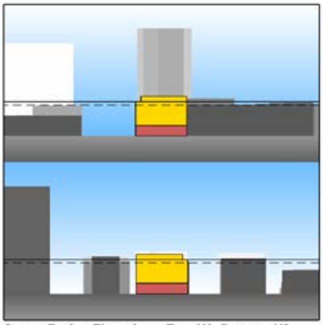
IMPACT COMPARISON



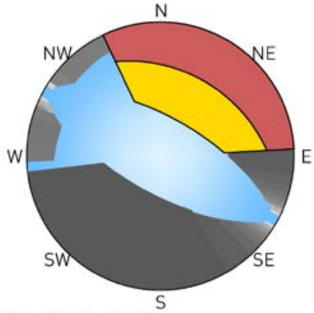


Facade Visibility

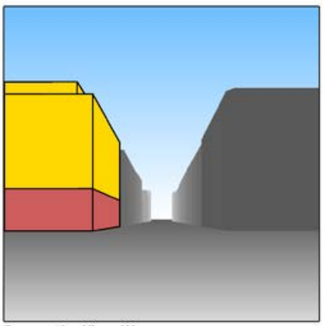
Only Street Wall Visible   Setback Visible



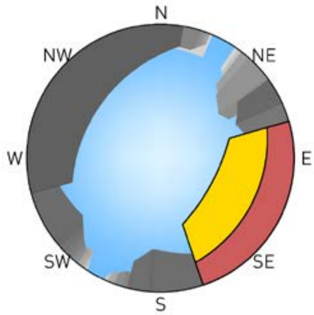
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

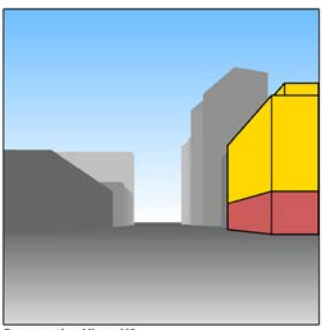


Perspective View, V1



Spherical Projection, V2

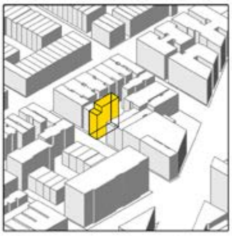
Potential Ground Floor Retail

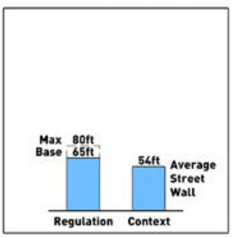


Perspective View, V2

R7A INSIDE LOT

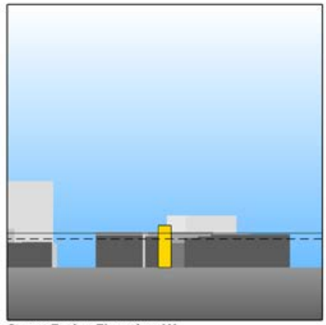
EXISTING REGULATIONS



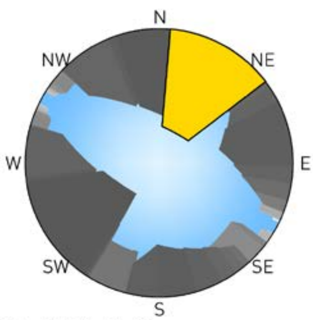


Facade Visibility

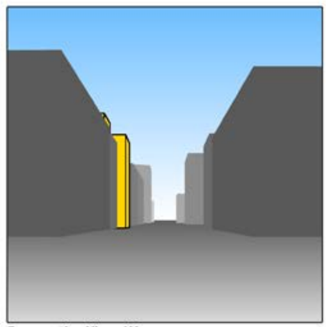
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1

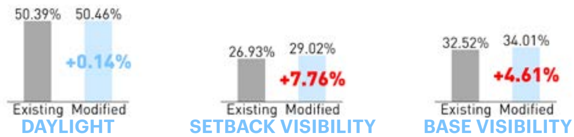


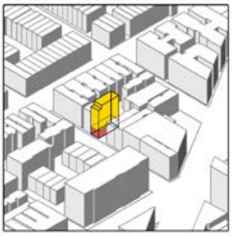
Spherical Projection, V1

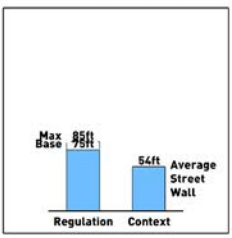


Perspective View, V1

IMPACT COMPARISON

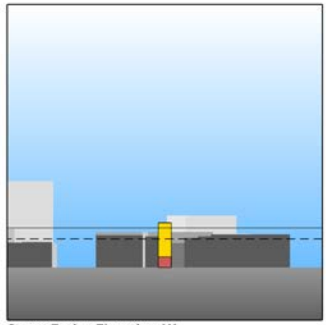




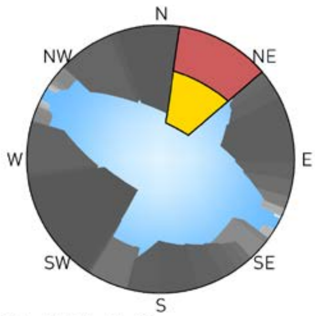


Facade Visibility

Only Street Wall Visible   Setback Visible

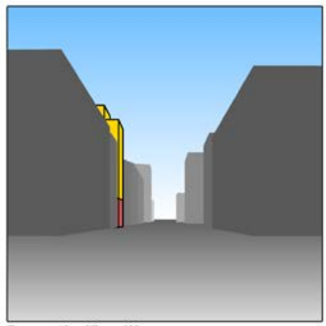


Street Facing Elevation, V1



Spherical Projection, V1

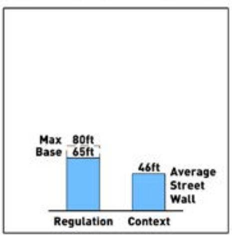
Potential Ground Floor Retail



Perspective View, V1

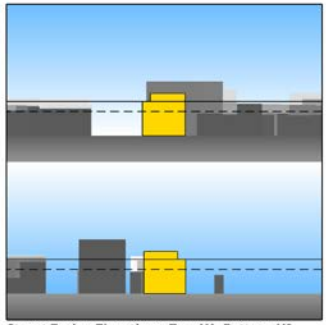
R7A CORNER LOT

EXISTING REGULATIONS

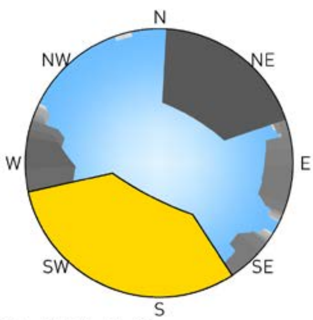


Facade Visibility

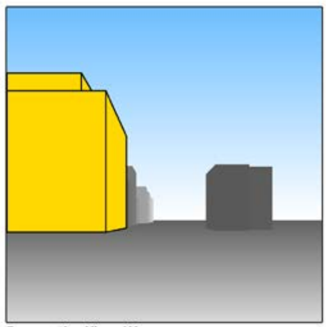
Only Street Wall Visible Setback Visible



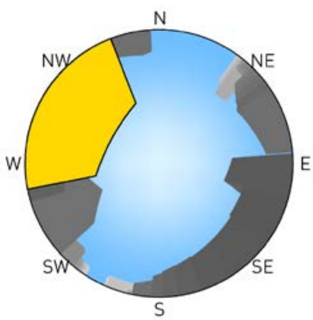
Street Facing Elevations, Top: V1, Bottom: V2



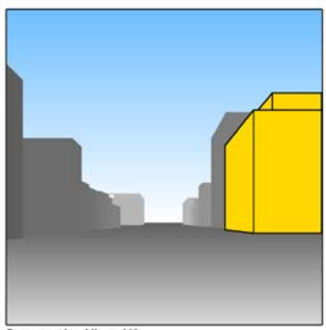
Spherical Projection, V1



Perspective View, V1

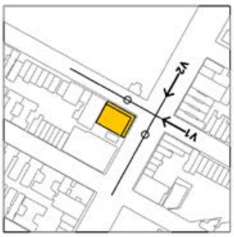


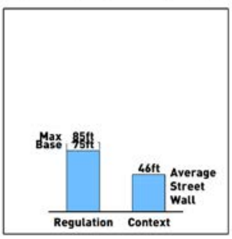
Spherical Projection, V2



Perspective View, V2

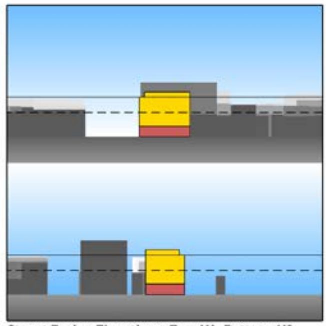
IMPACT COMPARISON



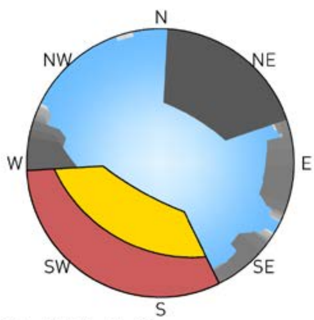


Facade Visibility

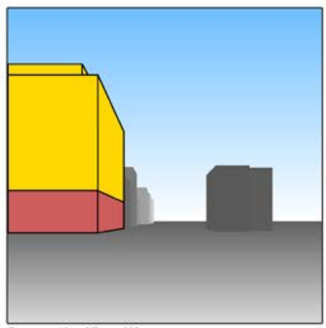
Only Street Wall Visible   Setback Visible



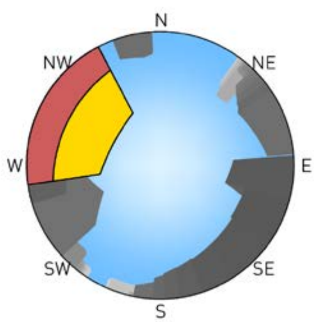
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

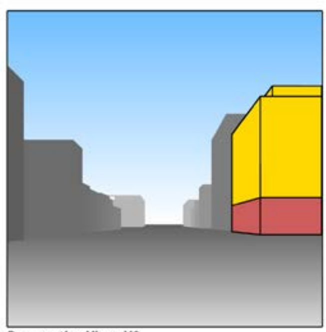


Perspective View, V1



Spherical Projection, V2

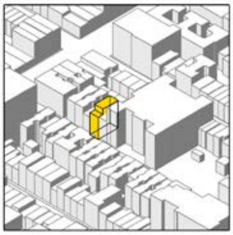
Potential Ground Floor Retail

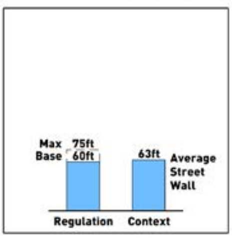


Perspective View, V2

R7B INSIDE LOT

EXISTING REGULATIONS

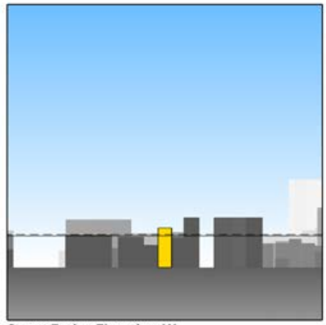




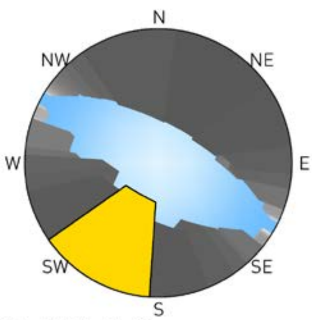
Facade Visibility

Only Street Wall Visible

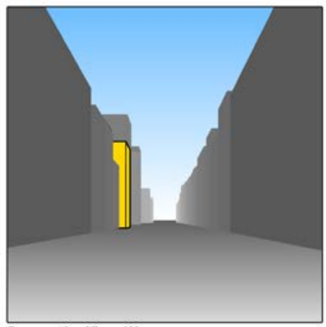
Setback Visible



Street Facing Elevation, V1

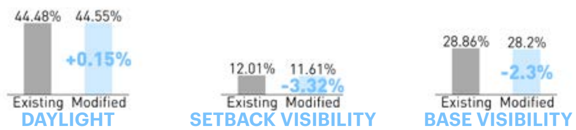


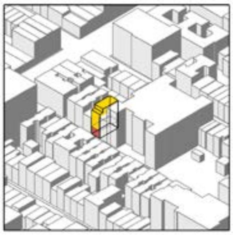
Spherical Projection, V1

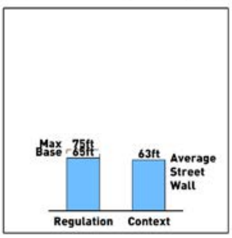


Perspective View, V1

IMPACT COMPARISON

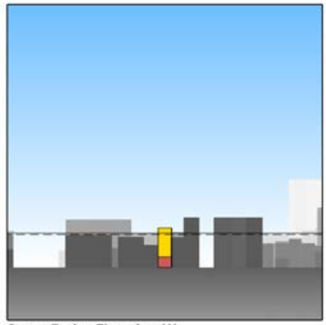




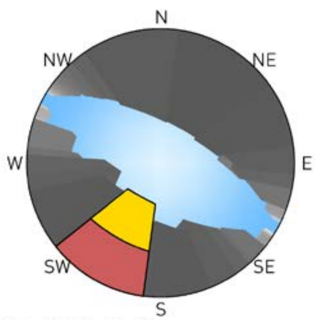


Facade Visibility

Only Street Wall Visible   Setback Visible

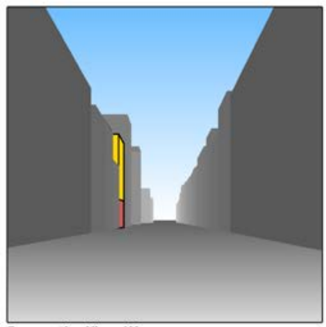


Street Facing Elevation, V1



Spherical Projection, V1

Potential Ground Floor Retail



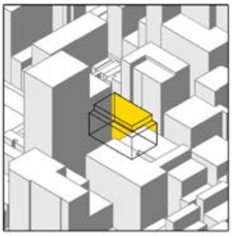
Perspective View, V1

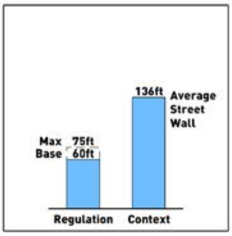
R7B

Modified Regulations
Narrow Street
InsideLot

R7B CORNER LOT

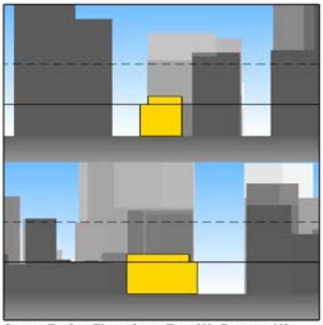
EXISTING REGULATIONS



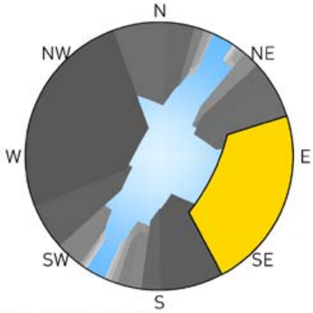


Facade Visibility

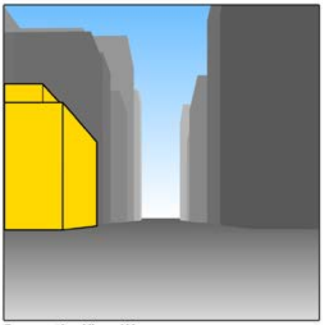
Only Street Wall Visible   Setback Visible



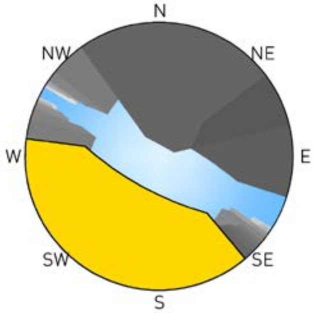
Street Facing Elevations, Top: V1, Bottom: V2



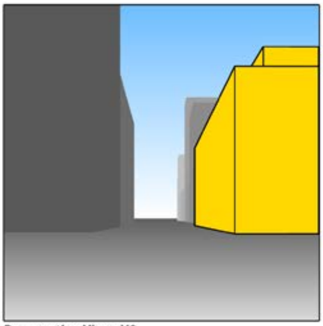
Spherical Projection, V1



Perspective View, V1

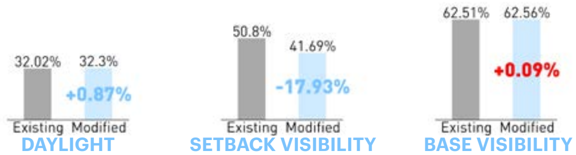


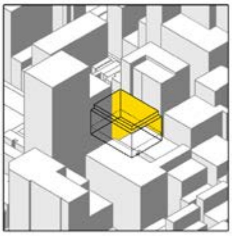
Spherical Projection, V2

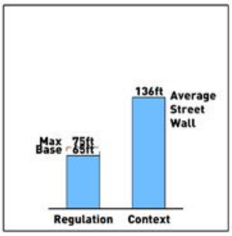


Perspective View, V2

IMPACT COMPARISON

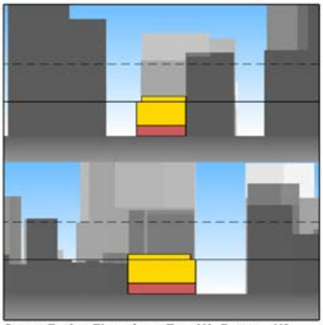




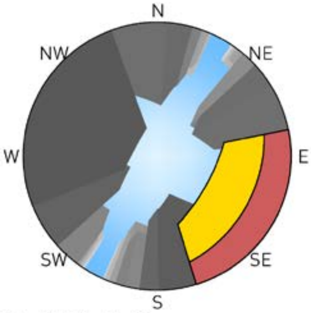


Facade Visibility

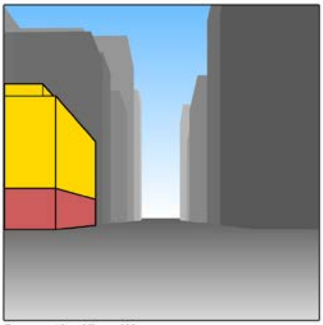
Only Street Wall Visible
Setback Visible



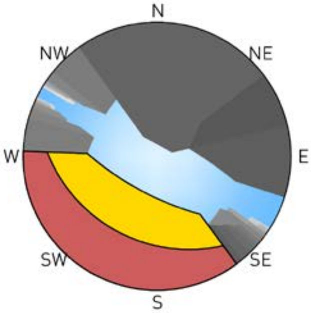
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

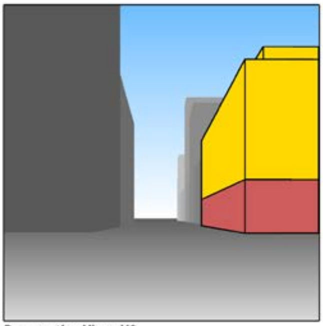


Perspective View, V1



Spherical Projection, V2

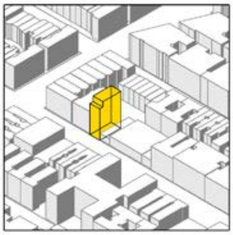
Potential Ground Floor Retail

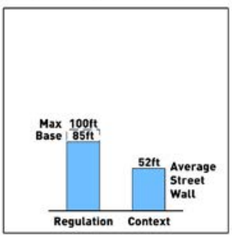


Perspective View, V2

R7D INSIDE LOT

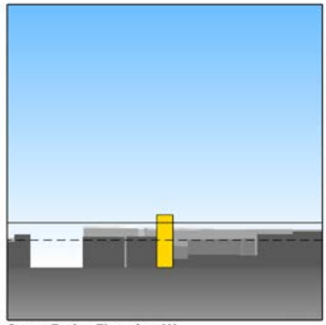
EXISTING REGULATIONS



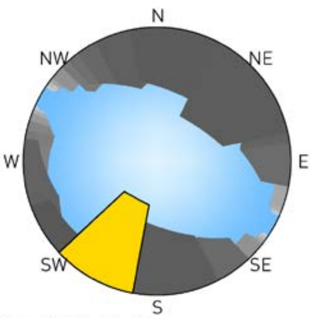


Facade Visibility

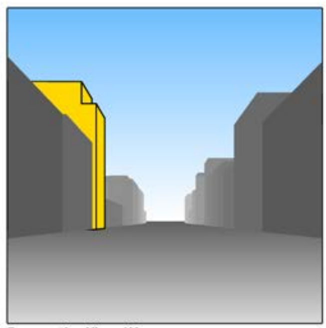
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1



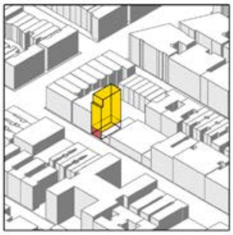
Spherical Projection, V1

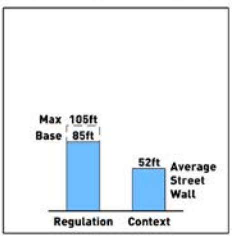


Perspective View, V1

IMPACT COMPARISON

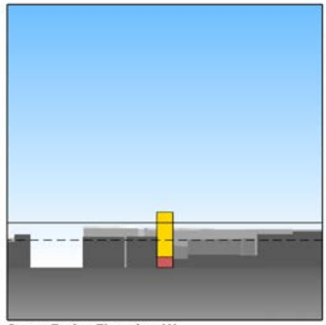
DAYLIGHT SETBACK VISIBILITY BASE VISIBILITY



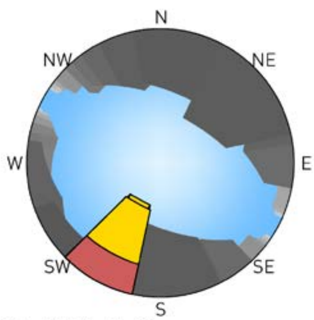


Facade Visibility

Only Street Wall Visible Setback Visible

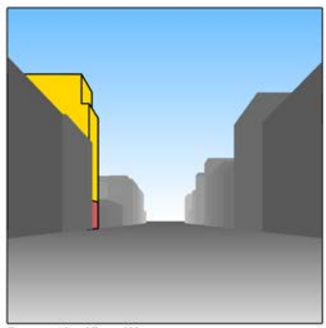


Street Facing Elevation, V1



Spherical Projection, V1

Potential Ground Floor Retail

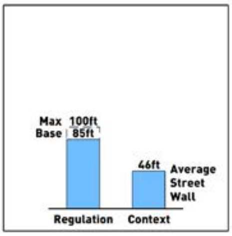


Perspective View, V1

CURE.

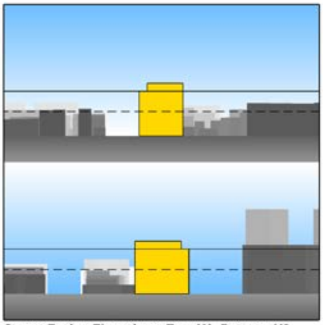
R7D CORNER LOT

EXISTING REGULATIONS

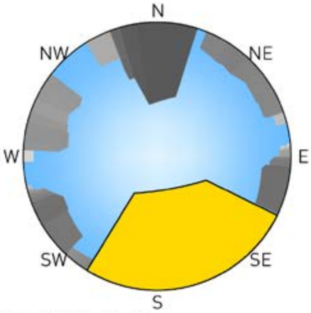


Facade Visibility

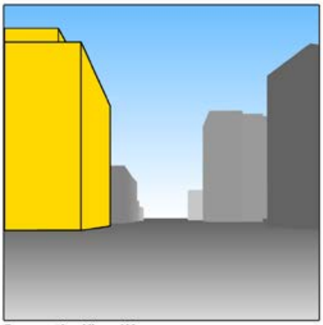
Only Street Wall Visible   Setback Visible



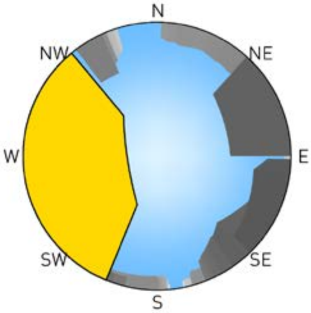
Street Facing Elevations, Top: V1, Bottom: V2



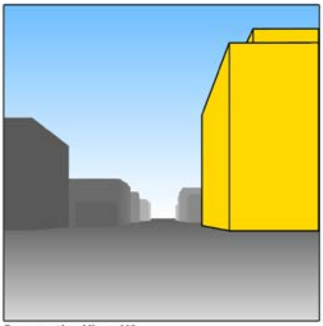
Spherical Projection, V1



Perspective View, V1

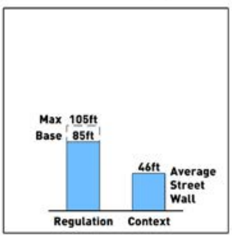


Spherical Projection, V2



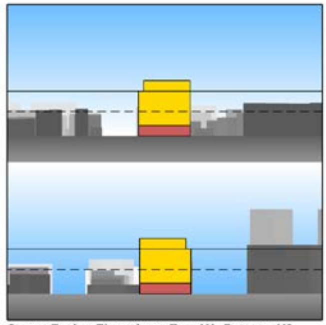
Perspective View, V2

IMPACT COMPARISON

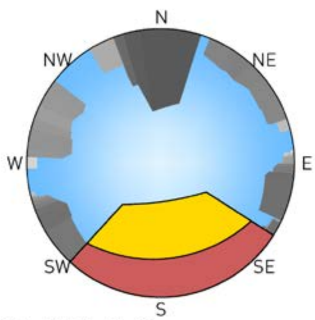


Facade Visibility

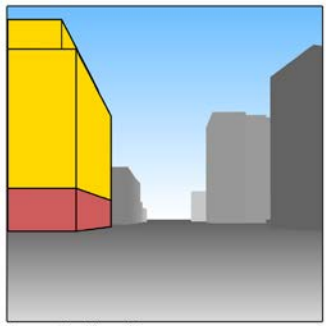
Only Street Wall Visible
Setback Visible



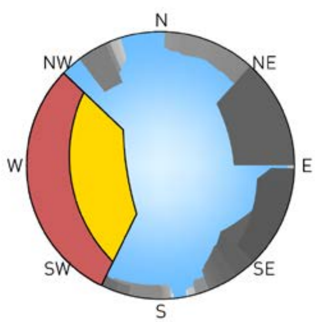
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

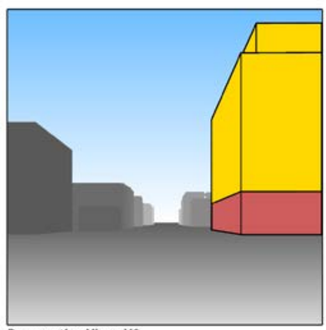


Perspective View, V1



Spherical Projection, V2

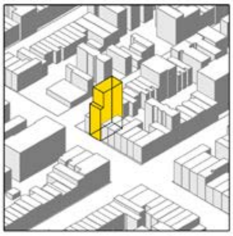
Potential Ground Floor Retail

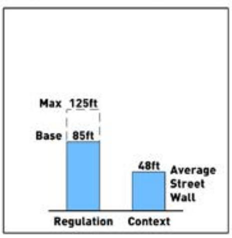


Perspective View, V2

R7X INSIDE LOT

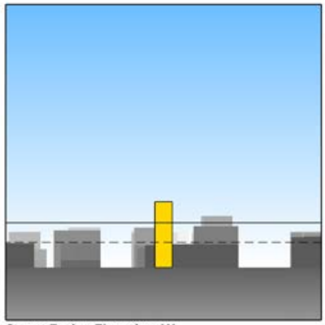
EXISTING REGULATIONS



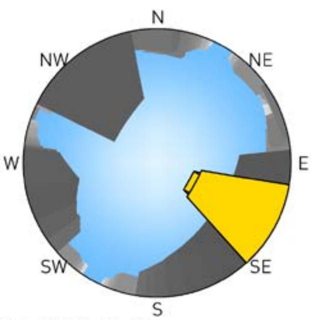


Facade Visibility

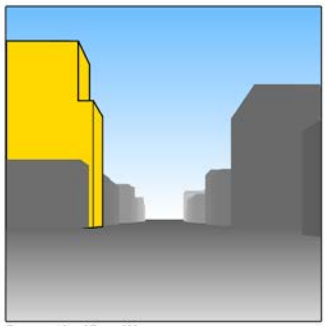
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1

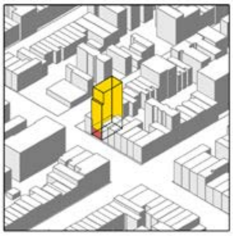


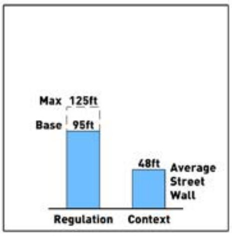
Spherical Projection, V1



Perspective View, V1

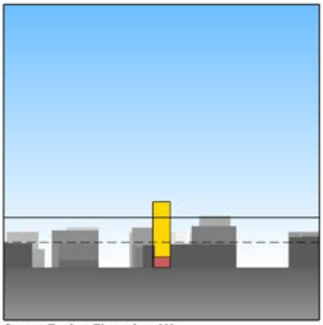
IMPACT COMPARISON



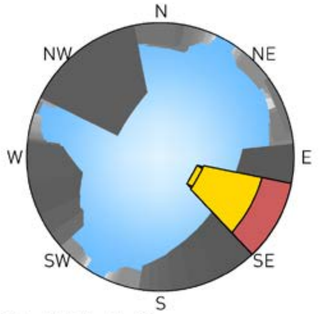


Facade Visibility

Only Street Wall Visible   Setback Visible

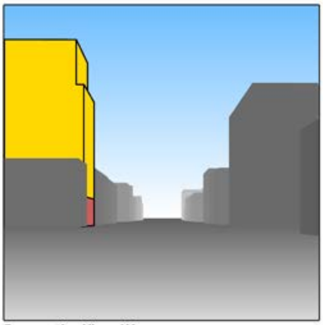


Street Facing Elevation, V1



Spherical Projection, V1

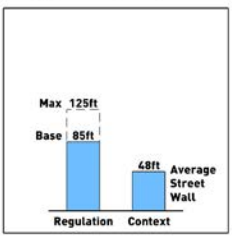
Potential Ground Floor Retail



Perspective View, V1

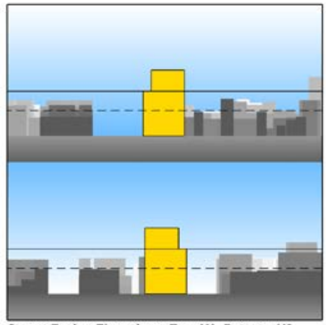
R7X CORNER LOT

EXISTING REGULATIONS

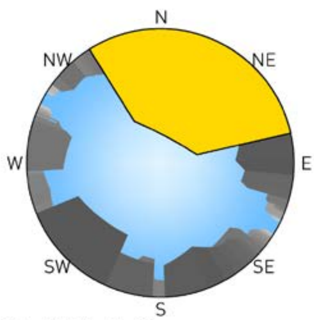


Facade Visibility

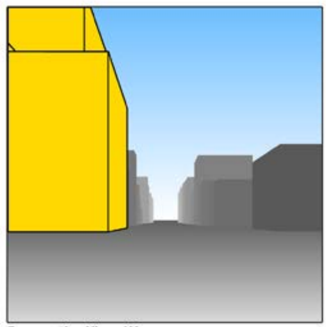
Only Street Wall Visible   Setback Visible



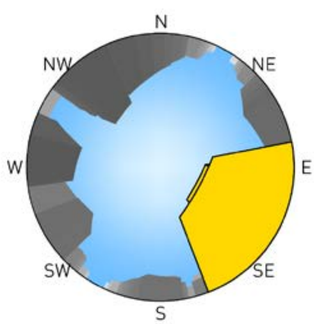
Street Facing Elevations, Top: V1, Bottom: V2



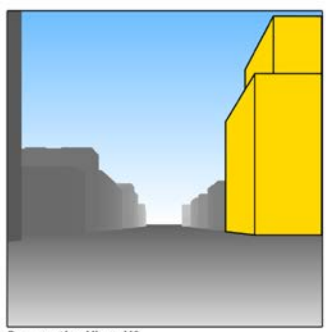
Spherical Projection, V1



Perspective View, V1

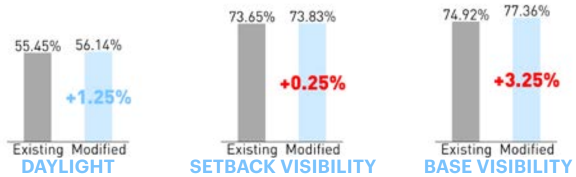


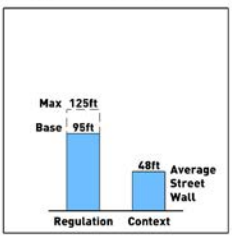
Spherical Projection, V2



Perspective View, V2

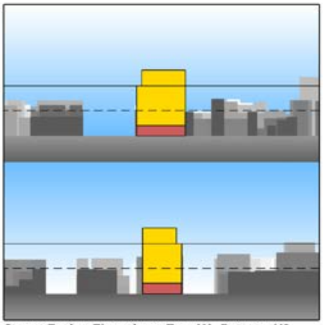
IMPACT COMPARISON



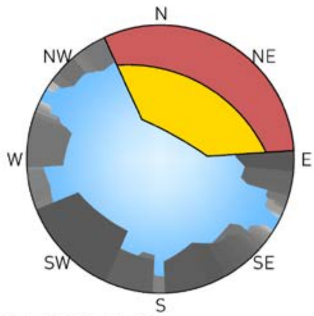


Facade Visibility

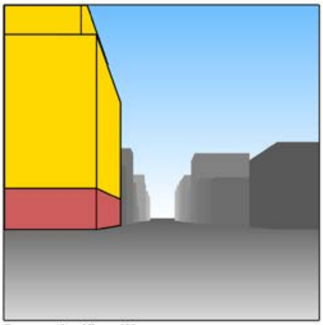
Only Street Wall Visible
Setback Visible



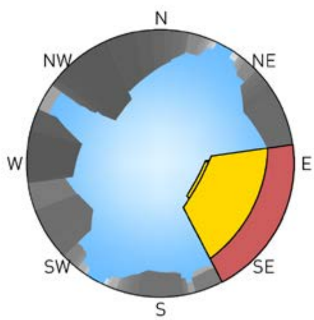
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

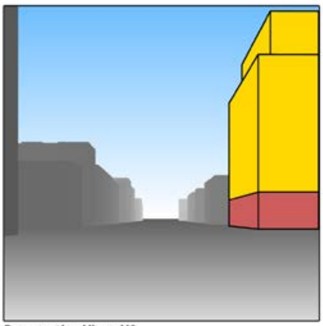


Perspective View, V1



Spherical Projection, V2

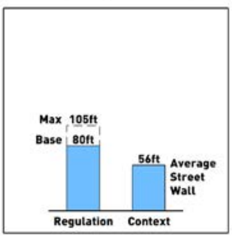
Potential Ground Floor Retail



Perspective View, V2

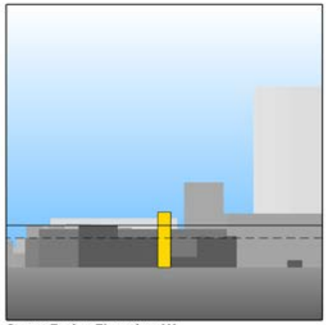
R8 INSIDE LOT

EXISTING REGULATIONS

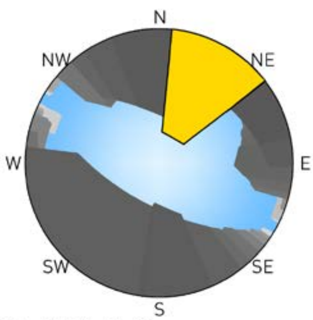


Facade Visibility

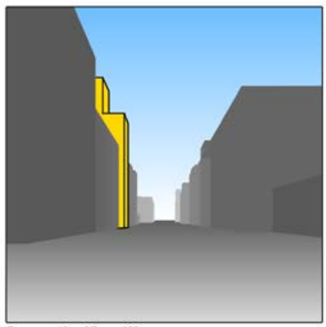
Only Street Wall Visible Setback Visible



Street Facing Elevation, V1



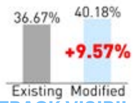
Spherical Projection, V1



Perspective View, V1

IMPACT COMPARISON

DAYLIGHT

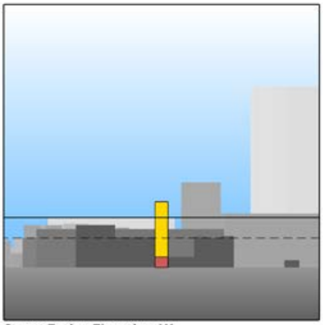


SETBACK VISIBILITY

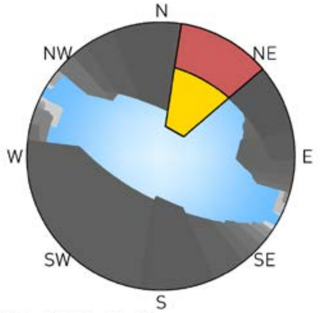
BASE VISIBILITY

Facade Visibility

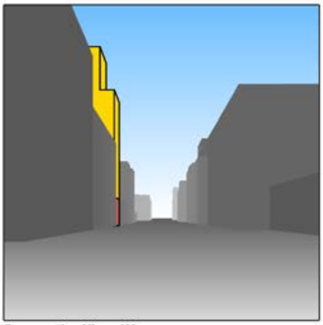
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1



Spherical Projection, V1

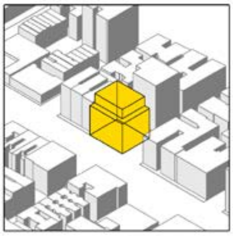


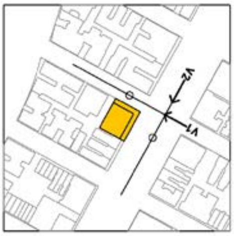
Perspective View, V1

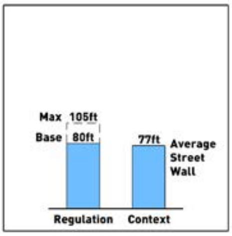
Potential Ground Floor Retail

R8 CORNER LOT

EXISTING REGULATIONS

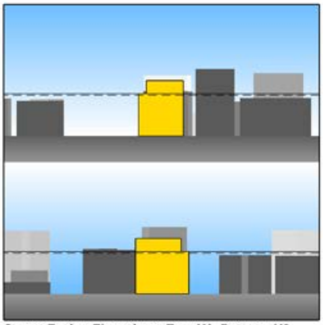




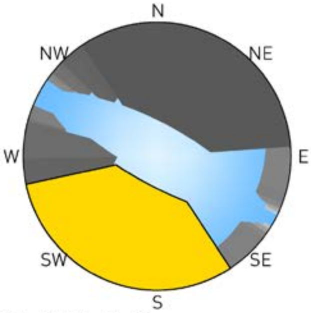


Facade Visibility

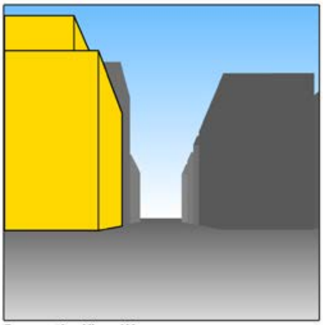
Only Street Wall Visible   Setback Visible



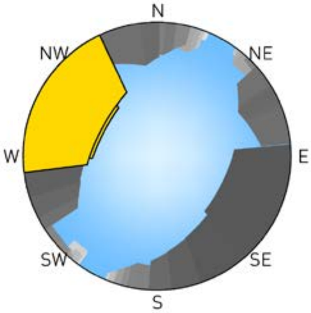
Street Facing Elevations, Top: V1, Bottom: V2



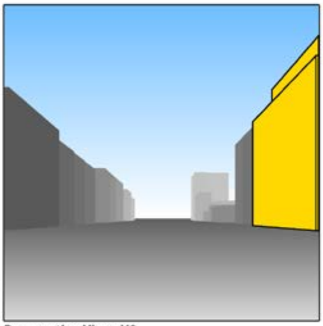
Spherical Projection, V1



Perspective View, V1

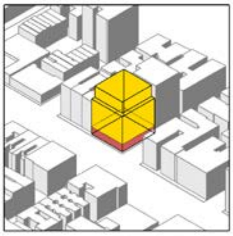


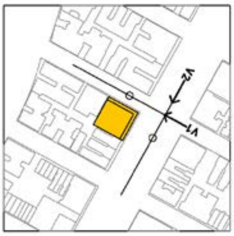
Spherical Projection, V2

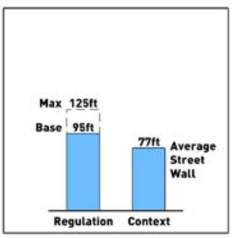


Perspective View, V2

IMPACT COMPARISON

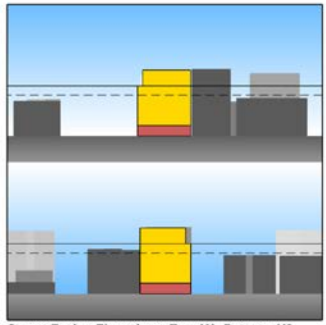




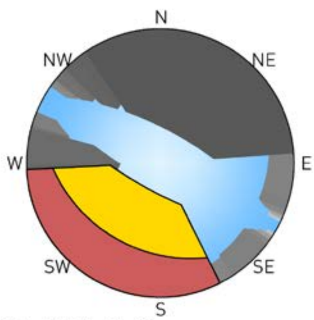


Facade Visibility

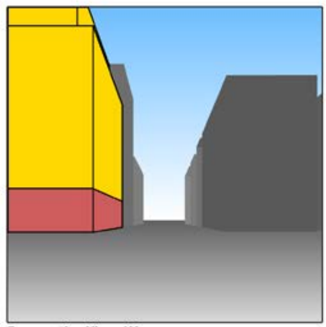
Only Street Wall Visible   Setback Visible



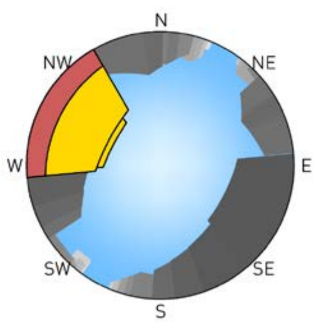
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

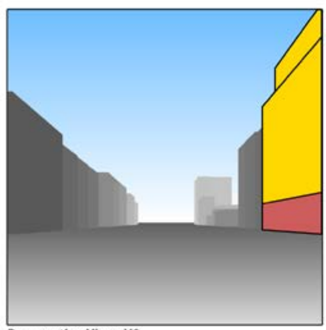


Perspective View, V1



Spherical Projection, V2

Potential Ground Floor Retail

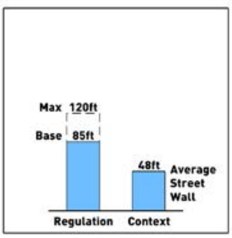


Perspective View, V2

R8
Modified Regulations
Narrow Street
CornerLot

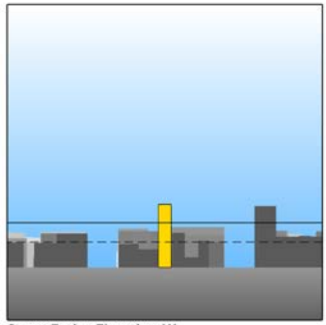
R8A INSIDE LOT

EXISTING REGULATIONS

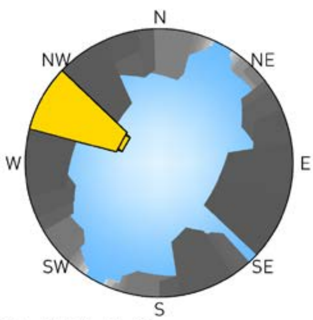


Facade Visibility

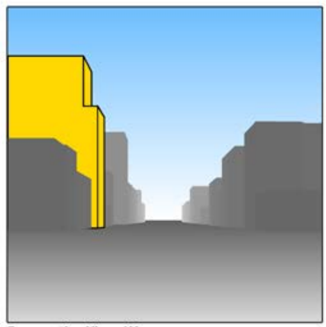
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1

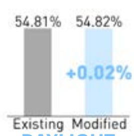


Spherical Projection, V1



Perspective View, V1

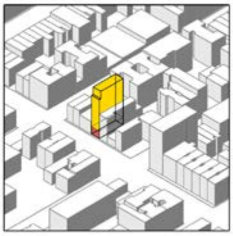
IMPACT COMPARISON

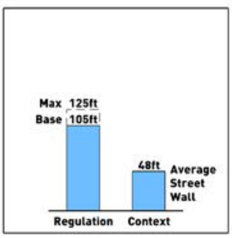


DAYLIGHT

SETBACK VISIBILITY

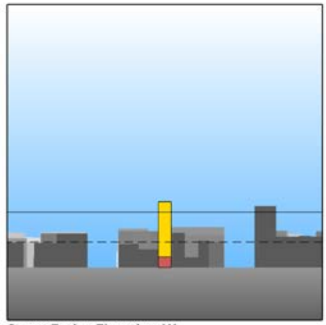
BASE VISIBILITY



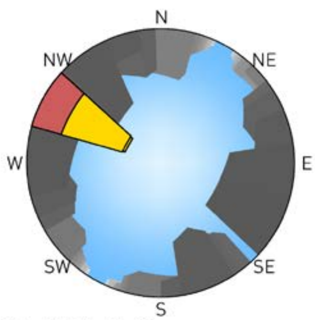


Facade Visibility

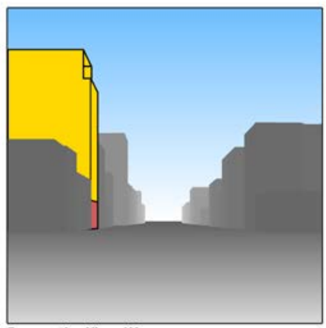
Only Street Wall Visible
Setback Visible



Street Facing Elevation, V1



Spherical Projection, V1

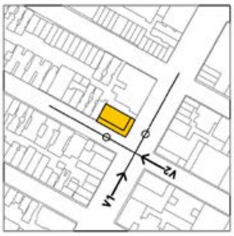


Perspective View, V1

Potential Ground Floor Retail

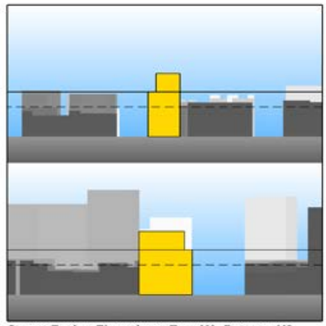
R8A CORNER LOT

EXISTING REGULATIONS

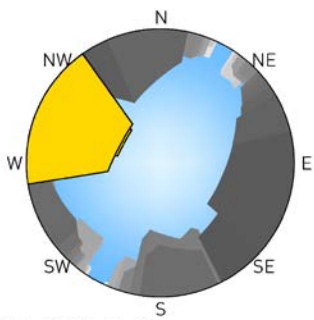


Facade Visibility

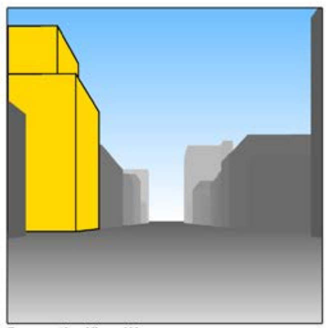
Only Street Wall Visible   Setback Visible



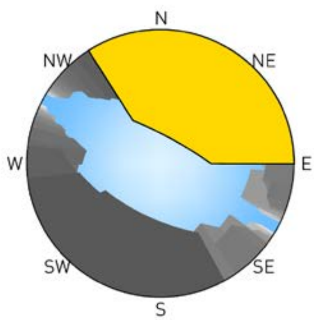
Street Facing Elevations, Top: V1, Bottom: V2



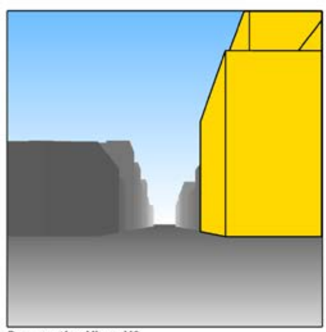
Spherical Projection, V1



Perspective View, V1

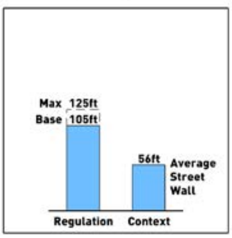


Spherical Projection, V2



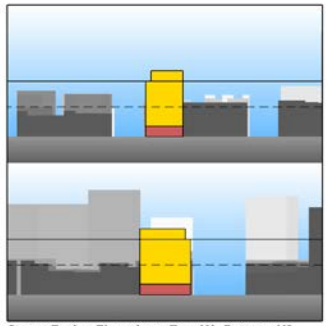
Perspective View, V2

IMPACT COMPARISON

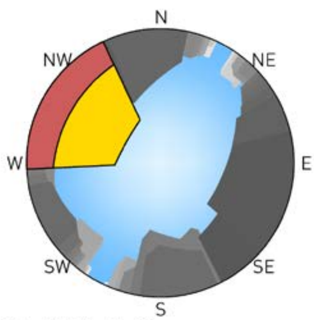


Facade Visibility

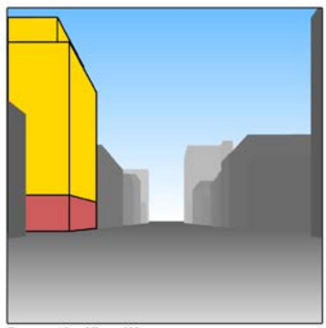
Only Street Wall Visible Setback Visible



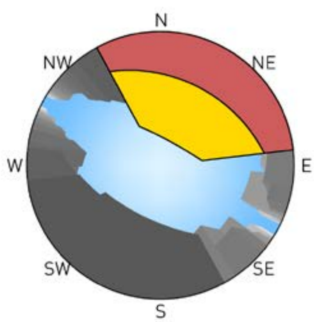
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

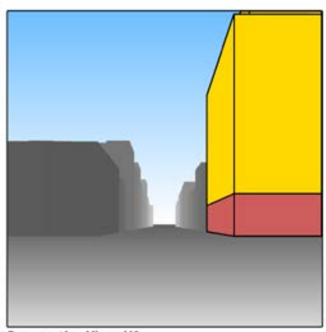


Perspective View, V1



Spherical Projection, V2

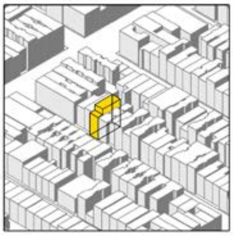
Potential Ground Floor Retail



Perspective View, V2

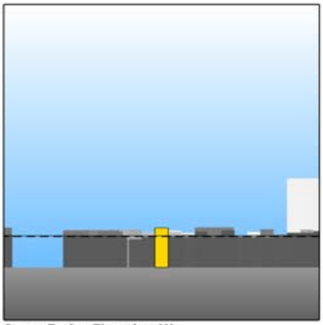
R8B INSIDE LOT

EXISTING REGULATIONS

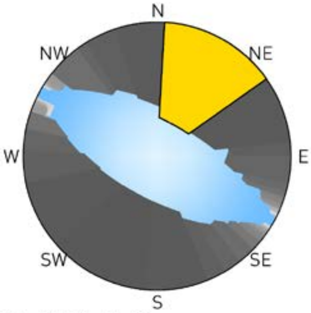


Facade Visibility

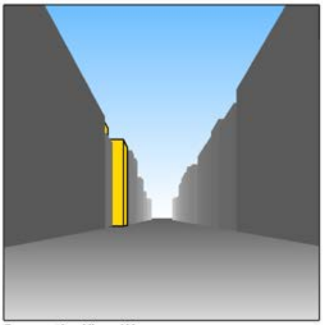
Only Street Wall Visible　　Setback Visible



Street Facing Elevation, V1

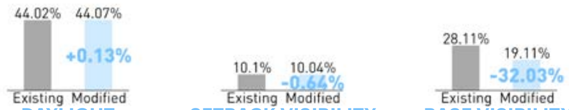


Spherical Projection, V1

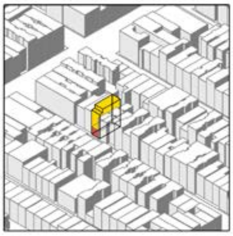


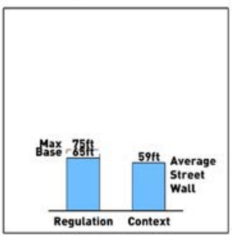
Perspective View, V1

IMPACT COMPARISON



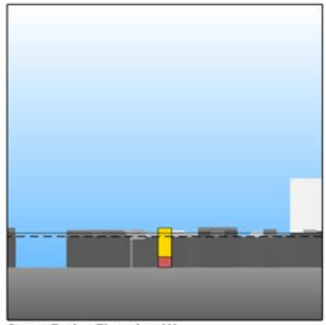
DAYLIGHT SETBACK VISIBILITY BASE VISIBILITY



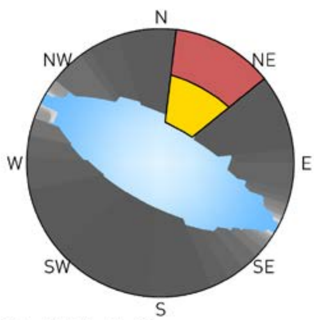


Facade Visibility

Only Street Wall Visible Setback Visible

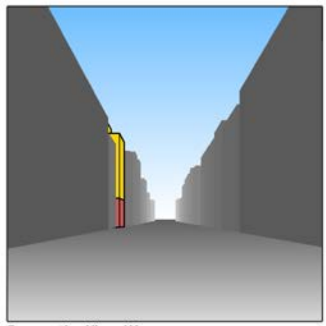


Street Facing Elevation, V1



Spherical Projection, V1

Potential Ground Floor Retail

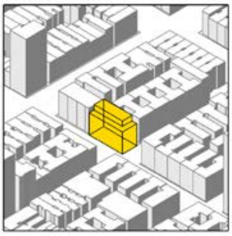


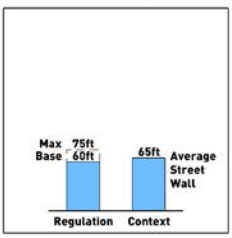
Perspective View, V1

CURE.

R8B CORNER LOT

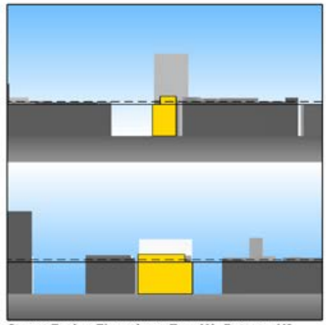
EXISTING REGULATIONS



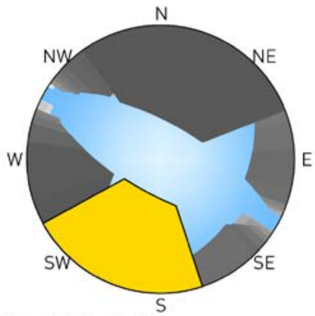


Facade Visibility

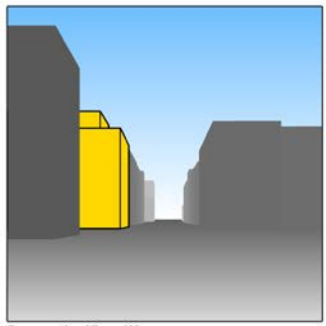
Only Street Wall Visible   Setback Visible



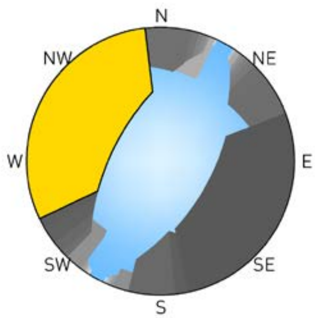
Street Facing Elevations, Top: V1, Bottom: V2



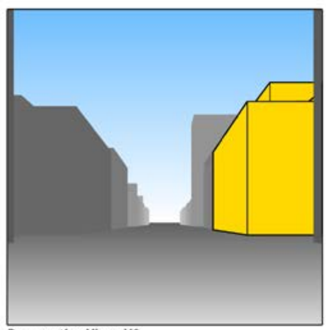
Spherical Projection, V1



Perspective View, V1

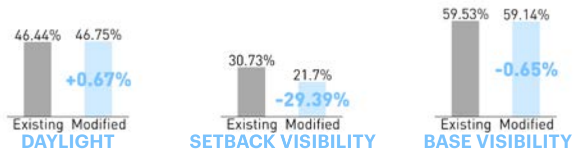


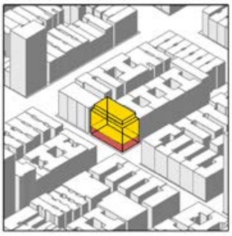
Spherical Projection, V2

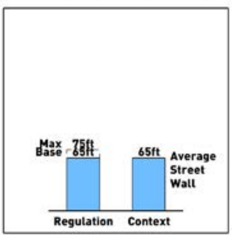


Perspective View, V2

IMPACT COMPARISON

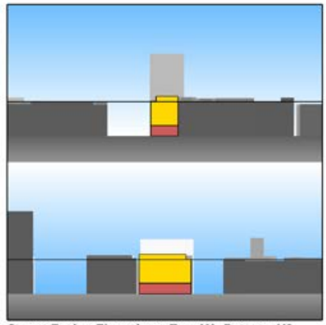




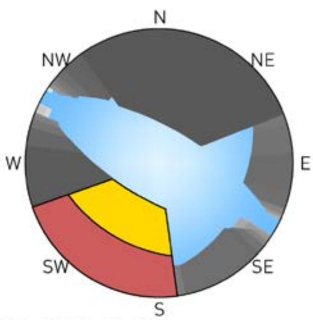


Facade Visibility

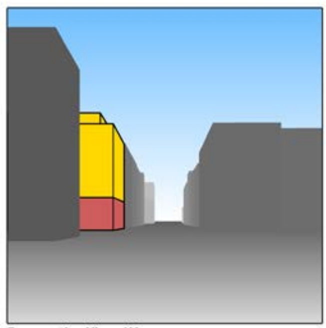
Only Street Wall Visible   Setback Visible



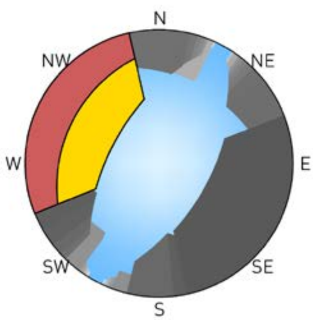
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

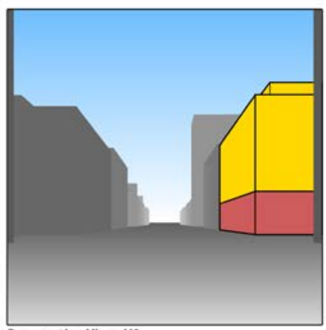


Perspective View, V1



Spherical Projection, V2

Potential Ground Floor Retail



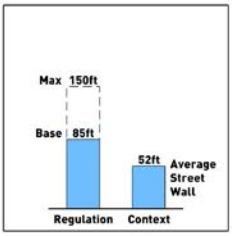
Perspective View, V2

R8B

Modified Regulations
Narrow Street
CornerLot

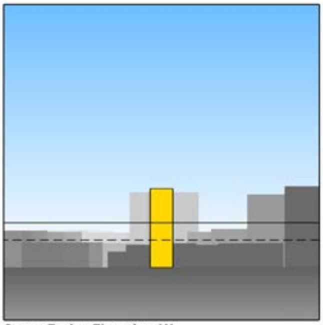
R8X INSIDE LOT

EXISTING REGULATIONS

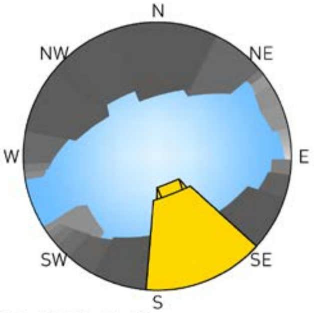


Facade Visibility

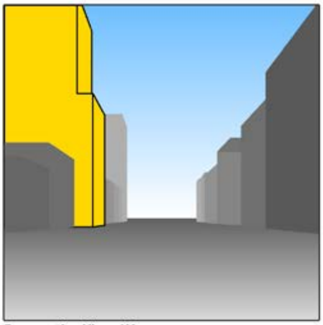
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1

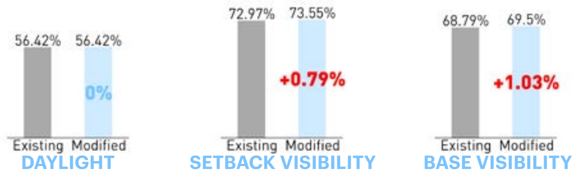


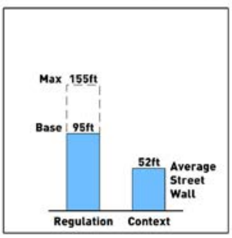
Spherical Projection, V1



Perspective View, V1

IMPACT COMPARISON

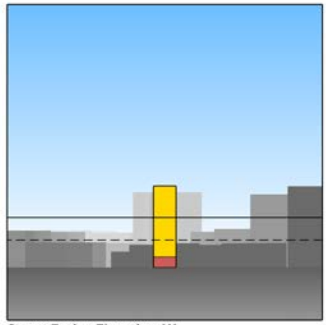




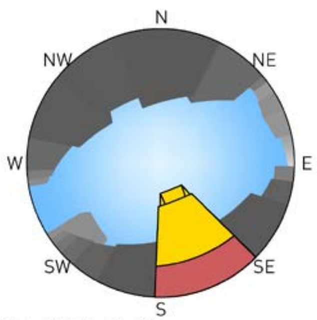
Facade Visibility

Only Street Wall Visible

Setback Visible

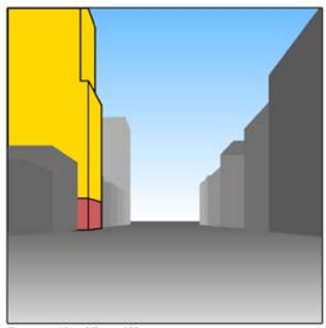


Street Facing Elevation, V1



Spherical Projection, V1

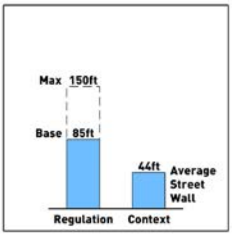
Potential Ground Floor Retail

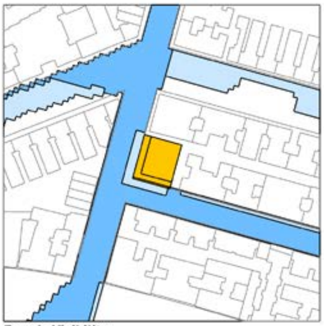


Perspective View, V1

R8X CORNER LOT

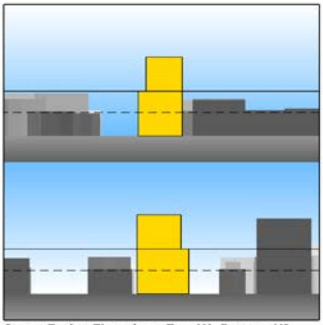
EXISTING REGULATIONS



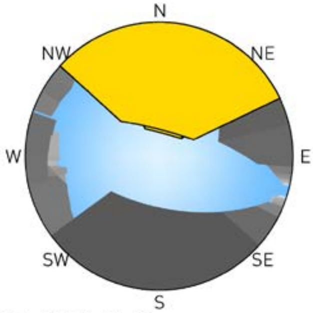


Facade Visibility

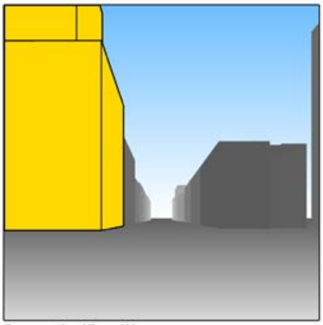
Only Street Wall Visible   Setback Visible



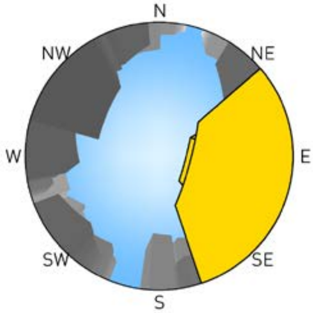
Street Facing Elevations, Top: V1, Bottom: V2



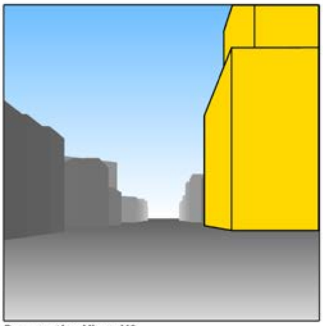
Spherical Projection, V1



Perspective View, V1

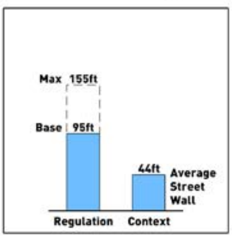


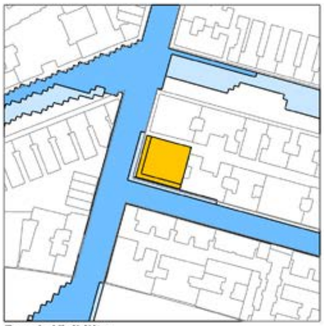
Spherical Projection, V2



Perspective View, V2

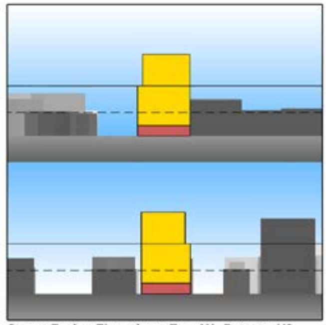
IMPACT COMPARISON



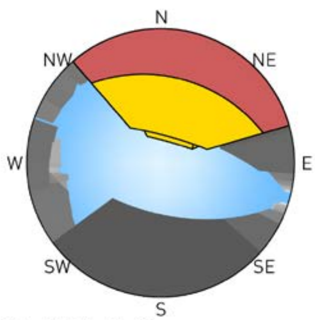


Facade Visibility

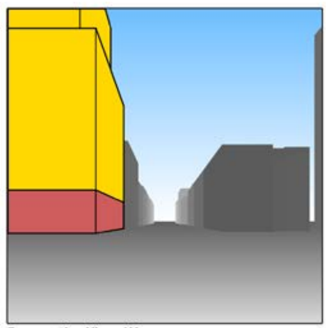
Only Street Wall Visible   Setback Visible



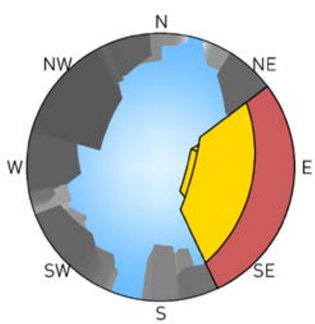
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

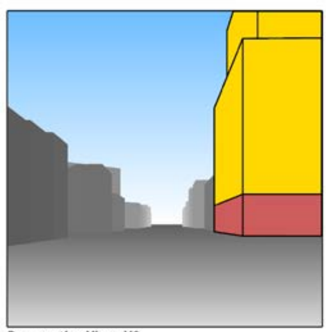


Perspective View, V1



Spherical Projection, V2

Potential Ground Floor Retail

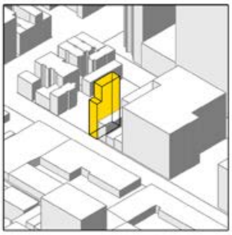


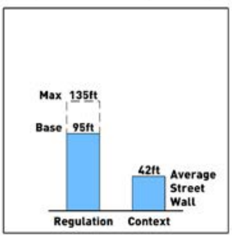
Perspective View, V2

CURE.

R9 INSIDE LOT

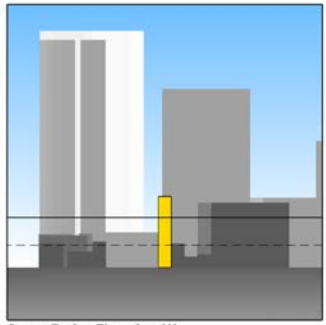
EXISTING REGULATIONS



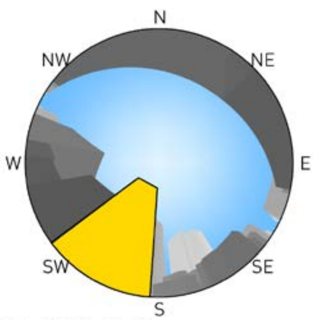


Facade Visibility

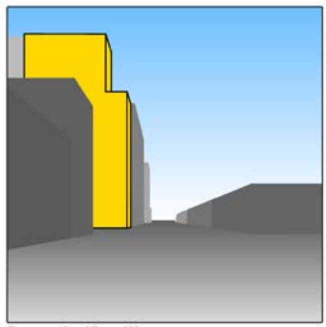
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1

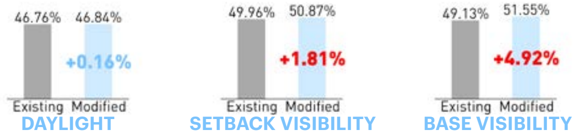


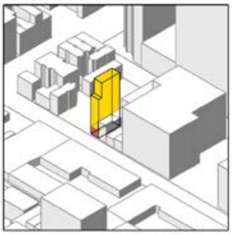
Spherical Projection, V1

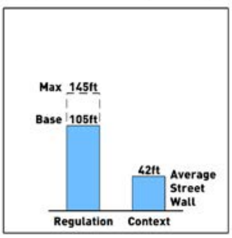


Perspective View, V1

IMPACT COMPARISON

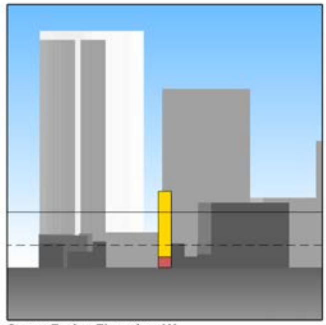




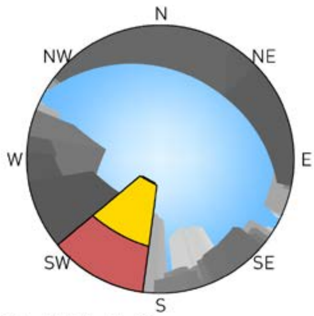


Facade Visibility

Only Street Wall Visible   Setback Visible

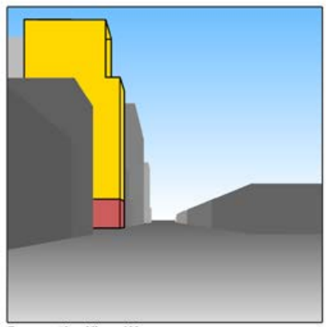


Street Facing Elevation, V1



Spherical Projection, V1

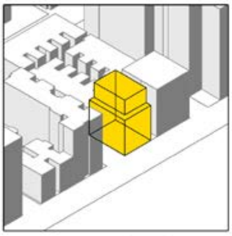
Potential Ground Floor Retail

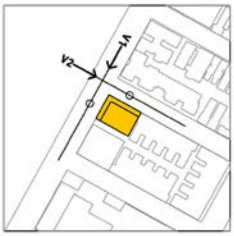


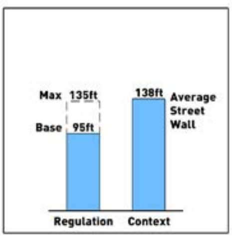
Perspective View, V1

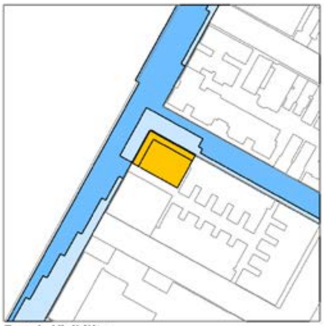
R9 CORNER LOT

EXISTING REGULATIONS





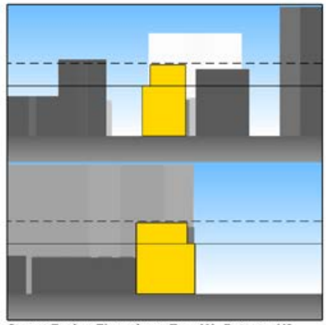




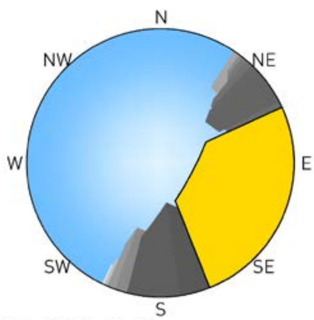
Facade Visibility

Only Street Wall Visible

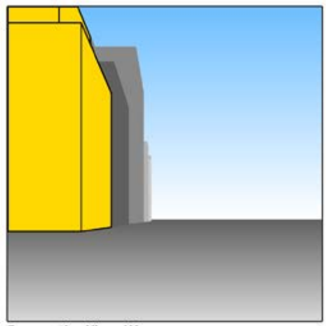
Setback Visible



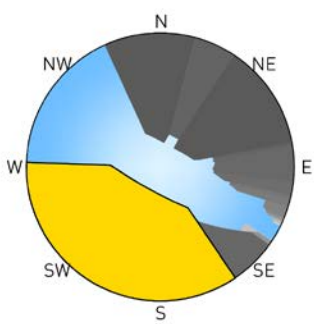
Street Facing Elevations, Top: V1, Bottom: V2



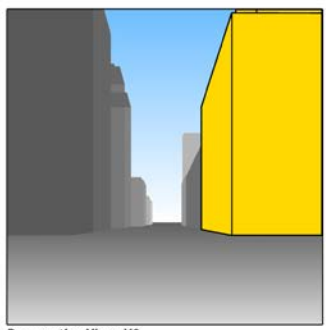
Spherical Projection, V1



Perspective View, V1

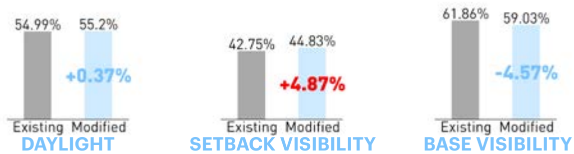


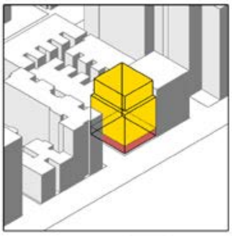
Spherical Projection, V2

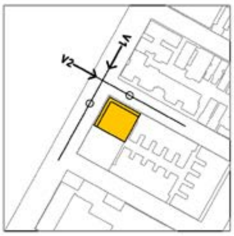


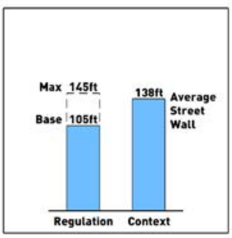
Perspective View, V2

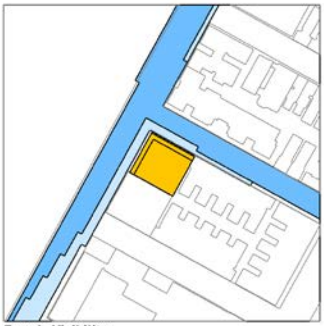
IMPACT COMPARISON





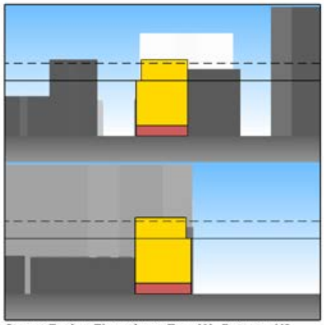




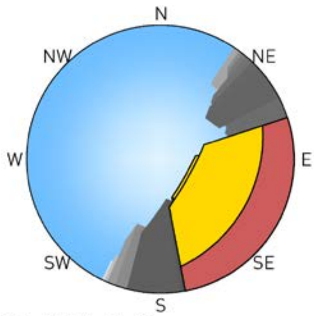


Facade Visibility

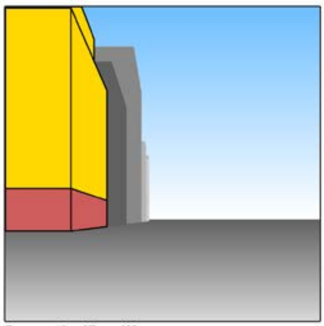
Only Street Wall Visible   Setback Visible



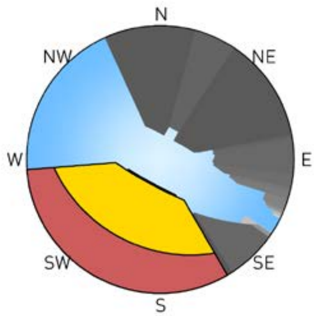
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

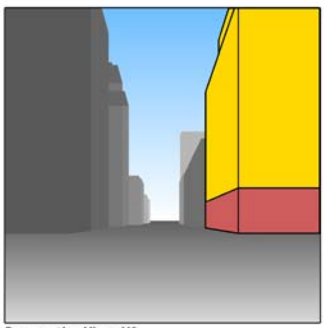


Perspective View, V1



Spherical Projection, V2

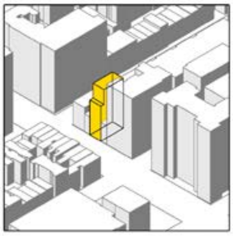
Potential Ground Floor Retail

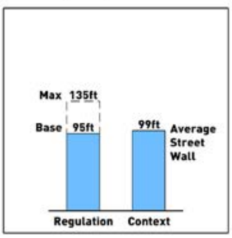


Perspective View, V2

R9A INSIDE LOT

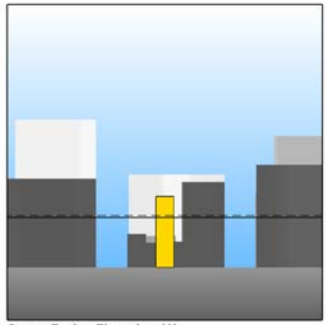
EXISTING REGULATIONS



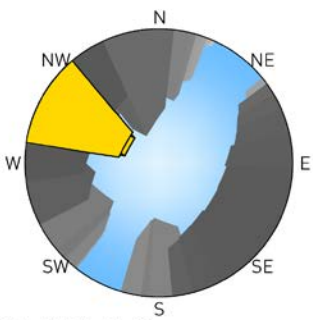


Facade Visibility

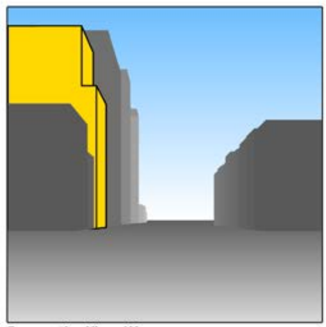
Only Street Wall Visible
Setback Visible



Street Facing Elevation, V1

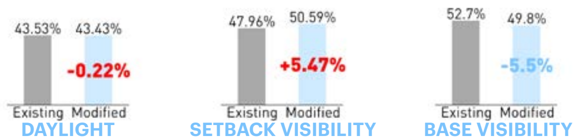


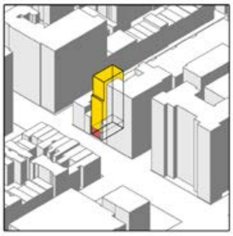
Spherical Projection, V1

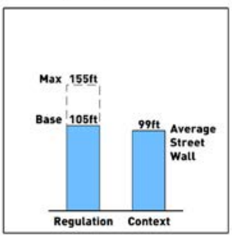


Perspective View, V1

IMPACT COMPARISON

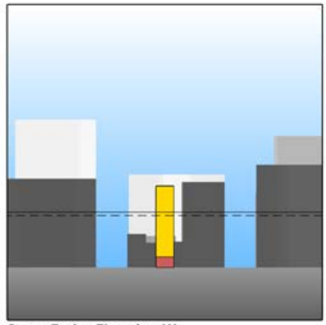




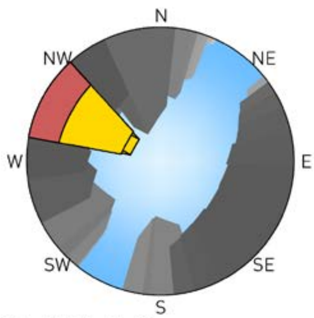


Facade Visibility

Only Street Wall Visible   Setback Visible

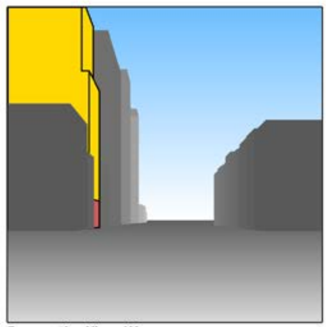


Street Facing Elevation, V1



Spherical Projection, V1

Potential Ground Floor Retail

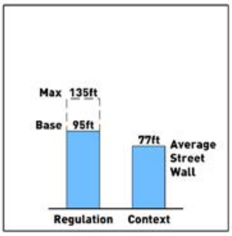


Perspective View, V1

CURE.

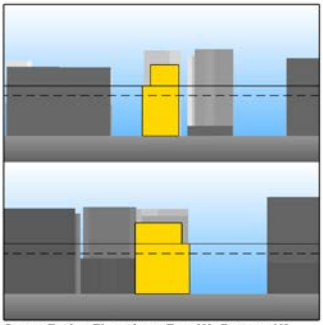
R9A CORNER LOT

EXISTING REGULATIONS

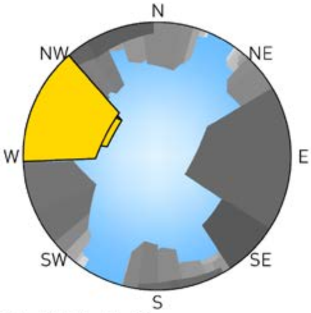


Facade Visibility

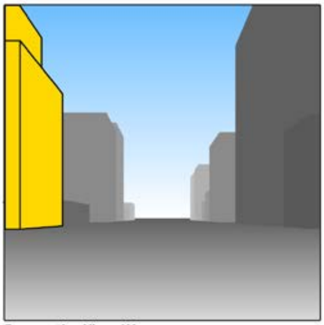
Only Street Wall Visible   Setback Visible



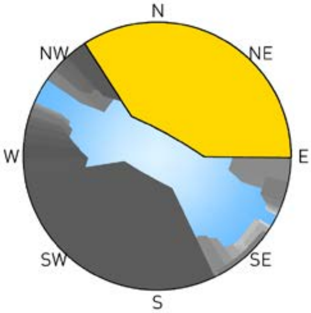
Street Facing Elevations, Top: V1, Bottom: V2



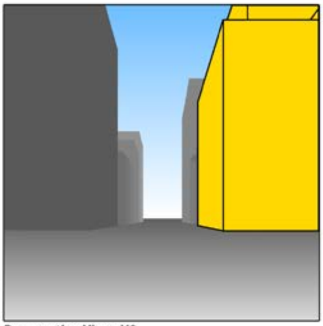
Spherical Projection, V1



Perspective View, V1

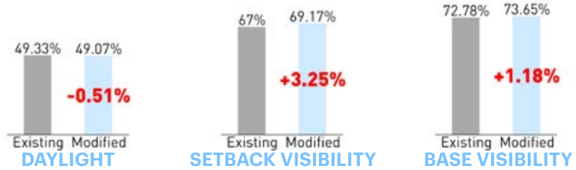


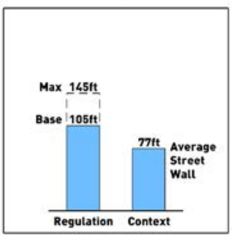
Spherical Projection, V2



Perspective View, V2

IMPACT COMPARISON

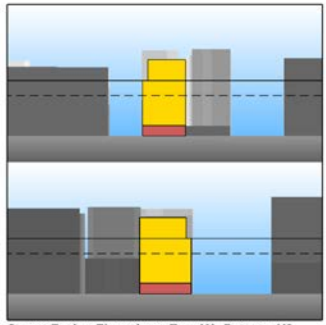




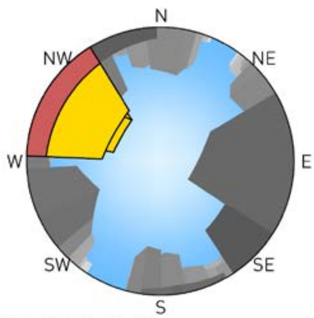
Facade Visibility

Only Street Wall Visible

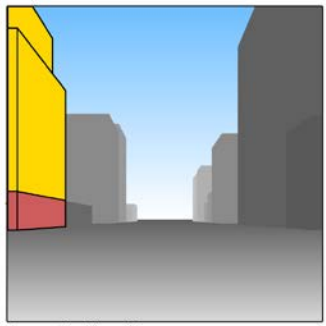
Setback Visible



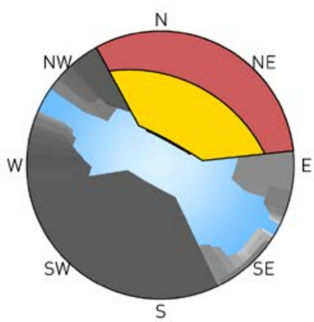
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

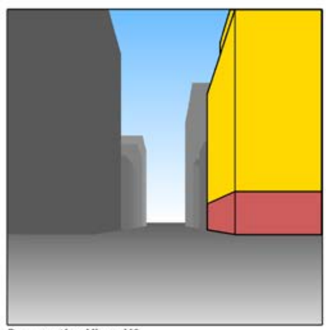


Perspective View, V1



Spherical Projection, V2

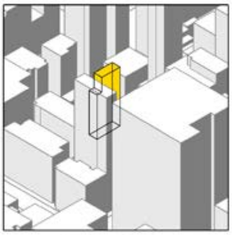
Potential Ground Floor Retail

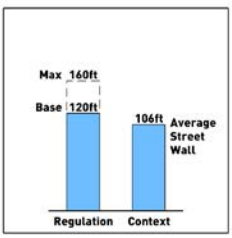


Perspective View, V2

R9X INSIDE LOT

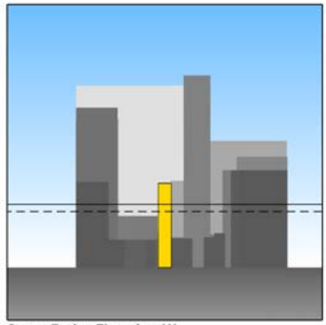
EXISTING REGULATIONS



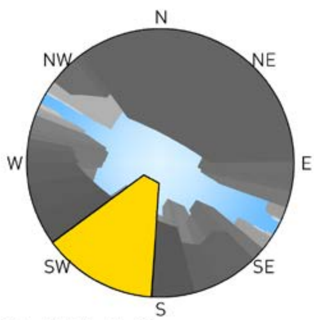


Facade Visibility

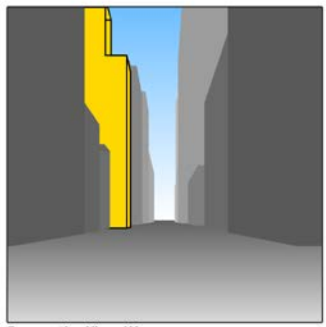
Only Street Wall Visible   Setback Visible



Street Facing Elevation, V1

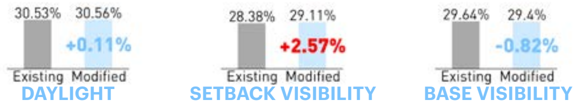


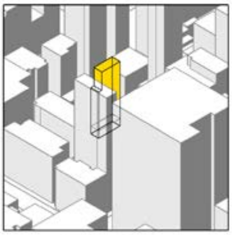
Spherical Projection, V1

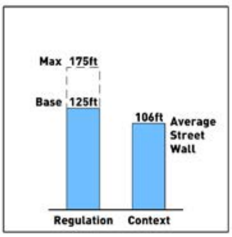


Perspective View, V1

IMPACT COMPARISON



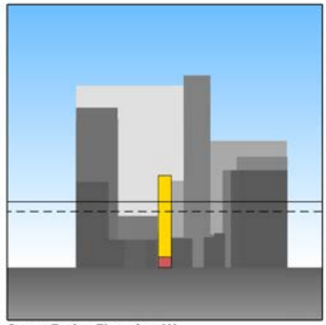




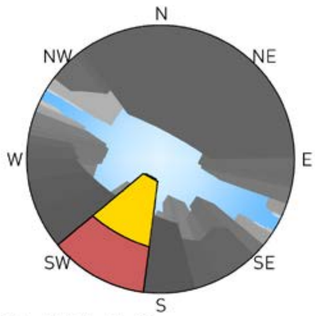
Facade Visibility

Only Street Wall Visible

Setback Visible

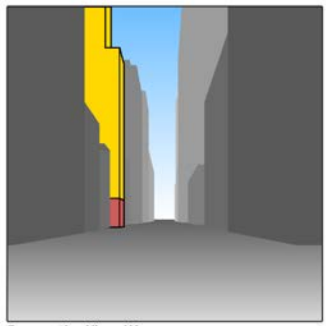


Street Facing Elevation, V1



Spherical Projection, V1

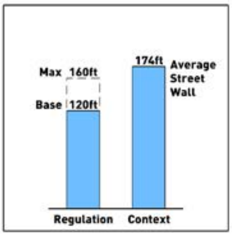
Potential Ground Floor Retail



Perspective View, V1

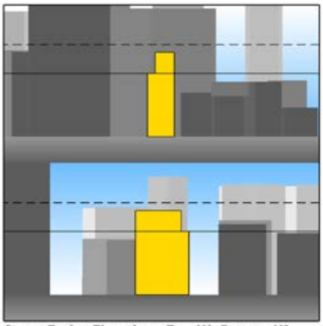
R9X CORNER LOT

EXISTING REGULATIONS

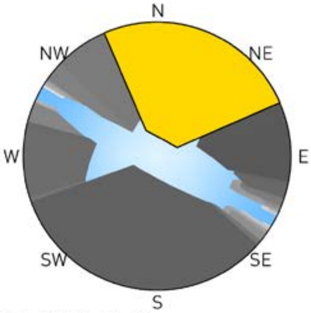


Facade Visibility

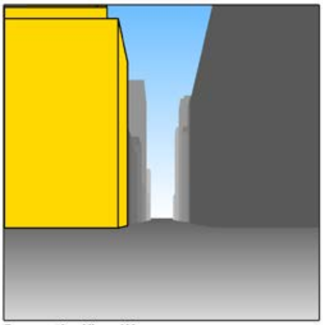
Only Street Wall Visible   Setback Visible



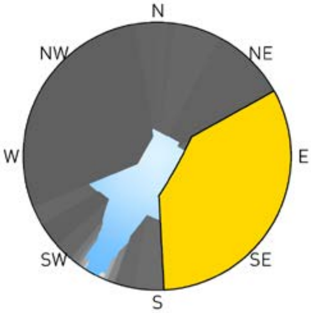
Street Facing Elevations, Top: V1, Bottom: V2



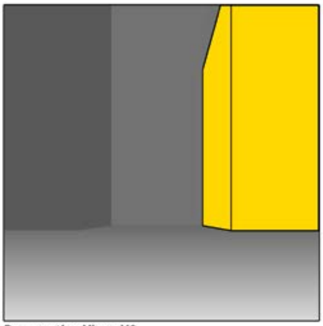
Spherical Projection, V1



Perspective View, V1

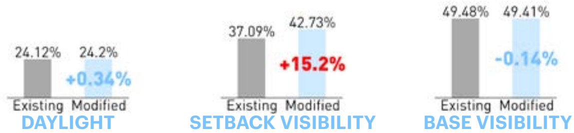


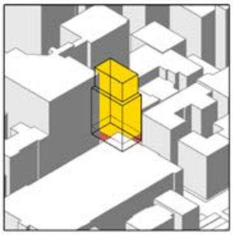
Spherical Projection, V2

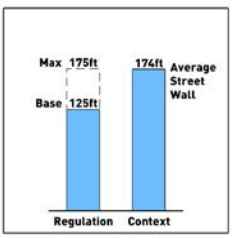


Perspective View, V2

IMPACT COMPARISON

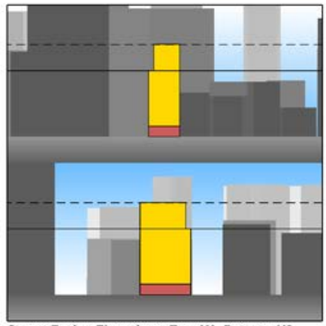




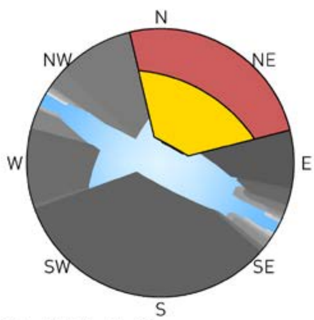


Facade Visibility

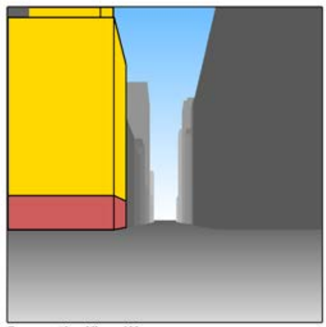
Only Street Wall Visible   Setback Visible



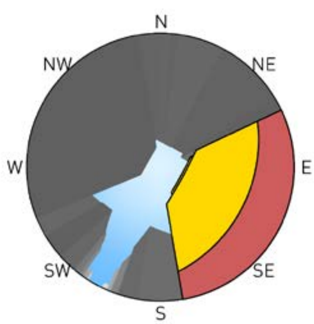
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

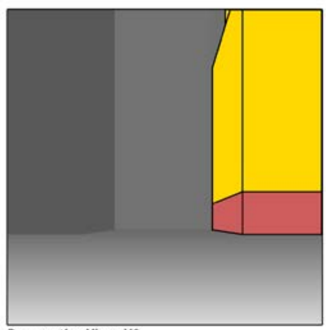


Perspective View, V1



Spherical Projection, V2

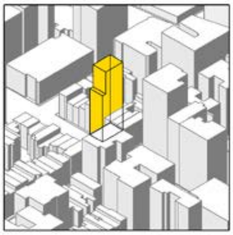
Potential Ground Floor Retail

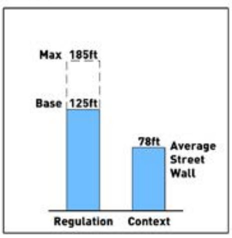


Perspective View, V2

R10A INSIDE LOT

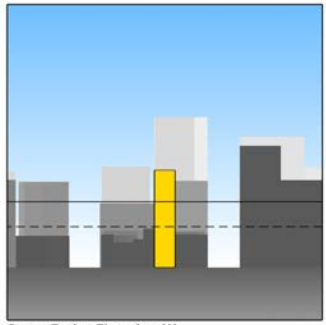
EXISTING REGULATIONS



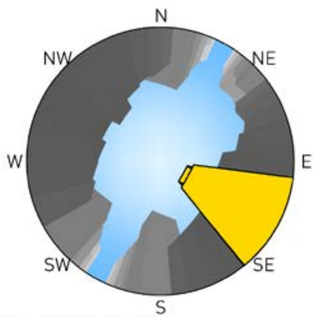


Facade Visibility

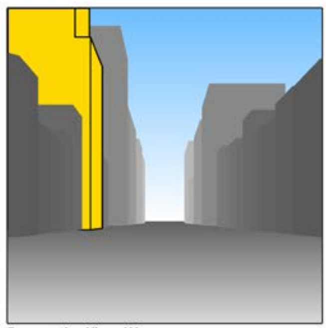
Only Street Wall Visible Setback Visible



Street Facing Elevation, V1



Spherical Projection, V1

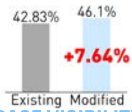


Perspective View, V1

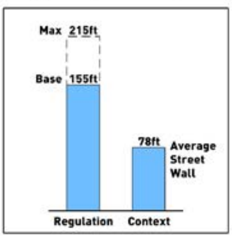
IMPACT COMPARISON

DAYLIGHT

SETBACK VISIBILITY

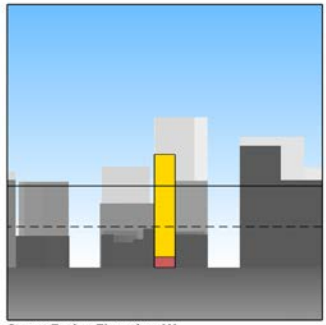


BASE VISIBILITY

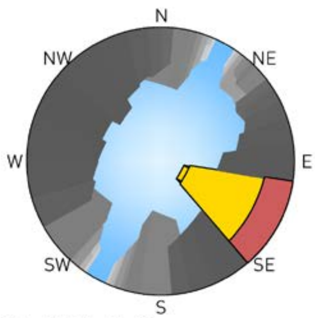


Facade Visibility

Only Street Wall Visible   Setback Visible

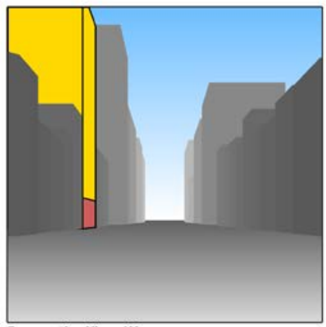


Street Facing Elevation, V1



Spherical Projection, V1

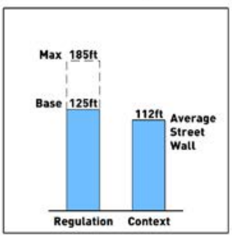
Potential Ground Floor Retail



Perspective View, V1

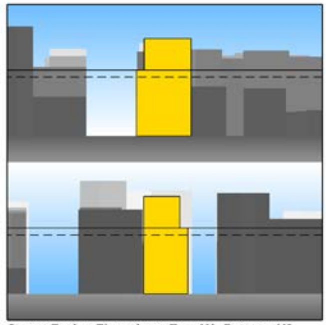
R10A CORNER LOT

EXISTING REGULATIONS

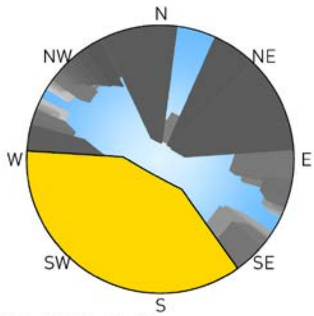


Facade Visibility

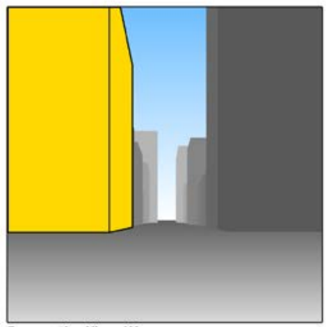
Only Street Wall Visible   Setback Visible



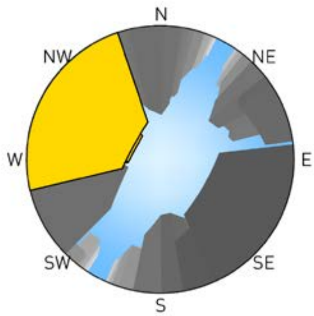
Street Facing Elevations, Top: V1, Bottom: V2



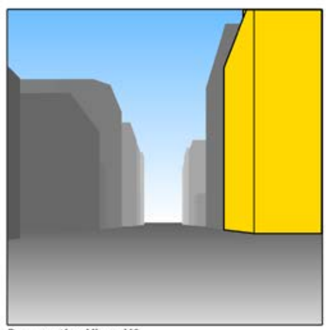
Spherical Projection, V1



Perspective View, V1

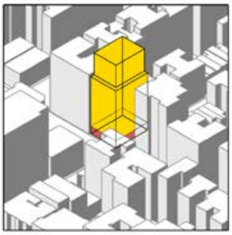


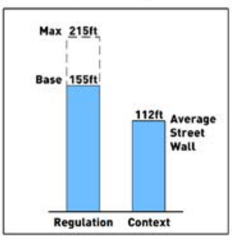
Spherical Projection, V2



Perspective View, V2

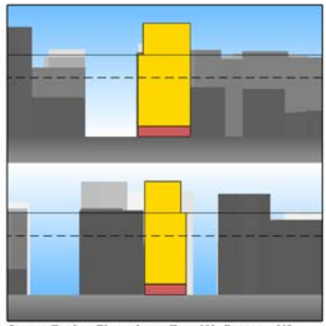
IMPACT COMPARISON



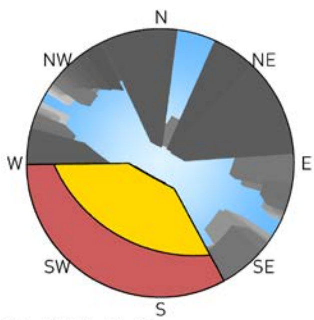


Facade Visibility

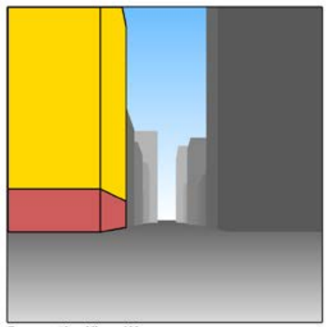
Only Street Wall Visible Setback Visible



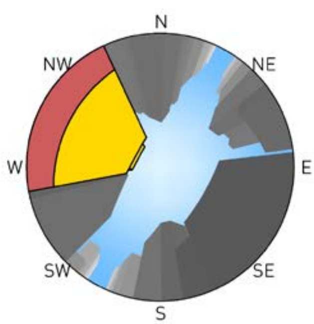
Street Facing Elevations, Top: V1, Bottom: V2



Spherical Projection, V1

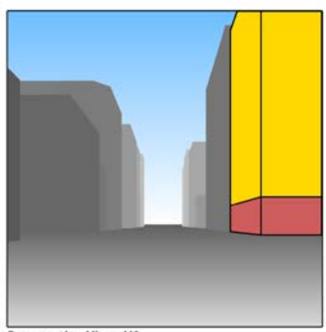


Perspective View, V1



Spherical Projection, V2

Potential Ground Floor Retail



Perspective View, V2

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