GOVERNMENT OF THE DISTRICT OF COLUMBIA
ADVISORY NEIGHBORHOOD COMMISSION 3D
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Washington, DC 20016

PALISADES · KENT · SPRING VALLEY · WESLEY HEIGHTS · NEW MEXICO/CATHEDRAL · THE AMERICAN
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November 7, 2018

At a regularly-scheduled and publicly-advertised meeting on November 7, 2018 with a quorum (6) present, ANC3D voted to submit this letter in Zoning Case 04-33I.

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Stephen Gardner, Chair ANC3D

FROM: Troy Kravitz[1]
TO: Members of the Zoning Commission
SUBJECT: Comment on Zoning Case 04-33I
DATE: 19 October 2019

INTRODUCTION

In Zoning Case 04-33I, the Office of Planning (OP) recommends several changes to Title 11 DCMR pertaining to inclusionary zoning (IZ). Amendment #1 "clarifies that the bonus density is the amount actually utilized by the project and not the theoretical 20 percent permitted by Section 1002.3."[2] Specifically, OP's proposed change to Section 1001.1 reads as

> 1001.1 Achievable bonus density is the amount of the permitted bonus density that ~~potentially may be~~ **is** utilized within a particular inclusionary development provided in Subtitle C Section 1002.

The strike-through text is proposed for deletion and the bold underlined text is proposed for addition.[3]

OP states during the September 20, 2018 hearing of the Zoning Commission that they "believe that [the changed referenced above] is closer to the Zoning Commission's intent and the practice of administering IZ over the last nine years."[4]

Witness Marilyn Simon took issue with this proposed change, stating "This proposal does not clarify the formula. It changes the formula."[5] Ms. Simon further states, "In the current regulations, there is a clear formula for calculating the set-aside requirement which is based on either the residential square footage or the achievable bonus density."[6] According to Ms. Simon, "If you can physically build a full 20 percent increase, it is based on that calculation even if you only build 15 percent."[7]

This submission makes two points. First, based solely upon the formula used to calculate the set-aside requirement, the intent of the formula is unlikely to have been the view advanced by Ms. Simon. Under Ms. Simon's conception of how the formula is supposed to be applied, the comparison between residential square footage and achievable bonus density is moot: mathematically, the residential square footage calculation is always exceeded by the achievable bonus density calculation, so there is no need to ever follow the formula and perform both calculations. The second point I make pertains to policy. Ms. Simon raises the question of whether her interpretation of the intent of the formula represents good policy.[8] This submission asserts that it does not represent good policy.

CALCULATING INCLUSIONARY ZONING SET-ASIDE REQUIREMENTS

The amount of inclusionary zoning that must be provided in an inclusionary development is given by the sum of four amounts: 1) the amount of IZ generated by the base building; 2) the amount generated by the penthouse; 3) the amount generated by dwelling units below-grade; and 4) the amount generated by projections over the property line.

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[1] This comment is submitted as an individual and not in my capacity as an ANC Commissioner (3D02).
[2] Office of Planning, November 3, 2017, Zoning Case 04-33I, Exhibit 2, "ZC 04-33I Inclusionary Zoning ZR16 Corrections and Reorganization," p. 1.
[3] Office of Planning, November 3, 2017, Zoning Case 04-33I, Exhibit 2, "ZC 04-33I Inclusionary Zoning ZR16 Corrections and Reorganization," p. 2.
[4] Zoning Commission Hearing Transcript, September 20, 2018, Zoning Case 04-33I, p. 7.
[5] Zoning Commission Hearing Transcript, September 20, 2018, Zoning Case 04-33I, p. 17.
[6] Zoning Commission Hearing Transcript, September 20, 2018, Zoning Case 04-33I, p. 17.
[7] Zoning Commission Hearing Transcript, September 20, 2018, Zoning Case 04-33I, p. 24.
[8] Zoning Commission Hearing Transcript, September 20, 2018, Zoning Case 04-33I, p. 20.

Specifically, the set-aside requirement for an inclusionary development is determined as the sum of:[9]

1.   Amount generated by **base building**: set aside the greater of ten percent (10%) of the gross floor area devoted to residential use **or** seventy-five percent (75%) of its achievable bonus density.[10]

2.   Amount generated by **penthouse**: set aside ten percent (10%) of penthouse habitable space.[11]

3.   Amount generated by **cellar space**: set aside ten percent (10%) of residential floor area including dwelling units located in cellar space.[12]

4.   Amount generated by **projections**: set aside ten percent (10%) of enclosed building projections that extend into public space.[13]

The amount of inclusionary zoning generated by the base building is determined by the greater of two calculations. The second half of this formula is the subject of OP's proposed Amendment #1 and Ms. Simon's response.

AN ILLUSTRATIVE EXAMPLE

The following stylized but accurate example helps illuminate the determination of a stick-built inclusionary development's set-aside requirement.

Consider a 100,000 square foot lot in a MU-4 zone admitting by-right FAR and height of 2.5 and 50 feet, respectively. This implies an all-residential project of 250,000 square feet can be constructed by-right. By satisfying the inclusionary development set-aside requirement, the project size could increase by twenty percent to 300,000 square feet.

Suppose a 268,000 square foot stick-built residential development is under consideration. For simplicity, assume there is no space occupied by the penthouse, cellar or projections; thus, the set-aside requirement is determined solely by the amount generated by the base building (amount 1, above).

The set-aside requirement is determined as the greater of 10% of the gross floor area devoted to residential use, which is assumed here to be 268,000 square feet, or 75% of the achievable bonus density. The first amount – 10% of the gross floor area – is 26,800 square feet. (This part of the calculation is not being debated in ZC 04-33I.) Under OP's proposed clarification for the second amount – 75% of the achievable bonus density – the set-aside requirement is $13,500 = .75*18,000$ square feet. Since the first amount based upon the gross floor area is greater than the amount based upon achievable bonus density, the set-aside requirement for this development is 26,800 square feet according to OP.

By contrast, according to Marilyn Simon, the achievable bonus density calculation resolves to $37,500 = .75*50,000$ square feet. That is, the achievable bonus density asserted by Ms. Simon is the full 50,000 square feet permitted by-law even though only 18,000 square feet are proposed for

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[9] For convenience, I will provide the relevant calculations for stick-built construction in a zone with a by-right height limit of 50 feet or less; the calculations are applied slightly differently for concrete (Type 1) construction and for stick-built construction in zones permitting greater by-right height, but every conclusion offered in this submission applies exactly the same for all types of construction. For concrete construction, the ten percent terms are replaced with eight percent and the seventy-five percent term is replaced with fifty percent (Title 11, Subtitle C, Chapter 10, Section 1003.2 DCMR).

[10] Title 11, Subtitle C, Chapter 10, Section 1003.1 DCMR.

[11] Title 11, Subtitle C, Chapter 10, Section 1003.1 DCMR.

[12] Title 11, Subtitle C, Chapter 10, Section 1003.9 DCMR.

[13] Title 11, Subtitle C, Chapter 10, Section 1003.9 DCMR.

construction. Since this calculation exceeds the 26,800 square feet determined by the gross floor area, the set-aside requirement under Ms. Simon's interpretation of the IZ formula is 37,500 square feet.

LIKELY INTENT OF IZ SET-ASIDE FORMULA

The set-aside requirement for the base building is determined as the greater of two calculations. Under Ms. Simon's interpretation of the set-aside formula for the above example, the latter calculation pertaining to achievable bonus density exceeds the former calculation pertaining to gross floor area. It turns out this is always the case, which I now show mathematically.

The gross floor area (GFA) calculation is stated as:

$$\underline{\text{GFA set-aside requirement}} = 10\% * \textit{Residential Gross Floor Area}$$

The GFA set-aside requirement increases with the size of the proposed construction. It can never exceed the set-aside requirement determined by utilizing the full 20% available for an inclusionary development:

$$\underline{\text{GFA set-aside requirement}} \leq 10\% * 1.2 * \textit{By-Right Project Size} = 12\% * \textit{By-Right Project Size}$$

In summary, the gross floor area set-aside requirement – the first calculation used to determine the amount of inclusionary zoning generated by the base building – can never exceed 12% of the by-right project size.

The achievable bonus density (ABD) calculation is stated as:

$$\underline{\text{ABD set-aside requirement}} = 75\% * \textit{Achievable Bonus Density}$$

When bonus density is expressed as a percentage, the calculation can be written to produce the set-aside amount in square footage:

$$\underline{\text{ABD set-aside requirement}} = 75\% * \textit{Achievable Bonus Density Percentage} * \textit{By-Right Project Size}$$

Ms. Simon asserts that the bonus density percentage for this calculation should be 20% even if the full amount of potential bonus density is not constructed.[14] The bonus density calculation then becomes:

$$\underline{\text{ABD set-aside requirement}} = 75\% * 20\% * \textit{By-Right Project Size} = 15\% * \textit{By-Right Project Size}$$

Under this conception, the achievable bonus density set-aside requirement is 15% of the by-right project size. This necessarily exceeds the gross floor area set-aside requirement that is showed above to never be greater than 12% of the by-right project size.

If Ms. Simon's contention about the intent of the formula were maintained, there is never any reason to compare the two calculations stipulated by the formula because the bonus density calculation always exceeds the gross floor area calculation. Paradoxically, if the intent of Section 1003.1 is as Ms. Simon contends, Section 1003.1 itself becomes unnecessary.[15] I therefore contend that OP's proposed

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[14] Zoning Commission Hearing Transcript, September 20, 2018, Zoning Case 04-33I, p. 24.

[15] The same conclusion applies to Section 1003.2 for concrete (Type 1) construction. For concrete construction, the gross floor area set-aside requirement can never exceed 9.6% of the by-right project size while Ms. Simon's proposed achievable bonus density set-aside requirement is 10% of the by-right project size.

Amendment #1 can only represent a clarification of the intent of the inclusionary development set-aside requirements. In particular, it does not change the formula; on the contrary, it clarifies the formula.

HARMFUL EFFECTS OF POLICY DISCONTINUITIES

Setting aside the mathematical demonstration above, the question remains whether Ms. Simon's interpretation of the set-aside requirement makes good policy. Vice Chairman Miller raises the same question, asking "I don't know what the original intent was, but I don't know why --- why wouldn't we want to clarify it in the other direction too so that we're getting more IZ than less?"[16] Contrary to Vice Chair Miller's initial inclination, modifying the set-aside formula to use the maximum permissible bonus density instead of the bonus density actually constructed is likely to result in *less* IZ provision. This is because the specific modification under discussion creates a large discontinuity in the amount of IZ that must be provided for developments near the by-right project size. Discontinuities like this strongly distort behavior and are, in general, avoided in public policy settings for that reason.[17]

Several graphics help illustrate the incentive effects of the IZ calculation interpretations. The graphs that follow are entirely general in that they apply equally to any stick-built project, regardless of the zoning classification or project configuration (e.g., penthouses, cellars and projections). Analogous graphics are effectively the same for concrete construction and all conclusions apply equally to both types of construction.[18]
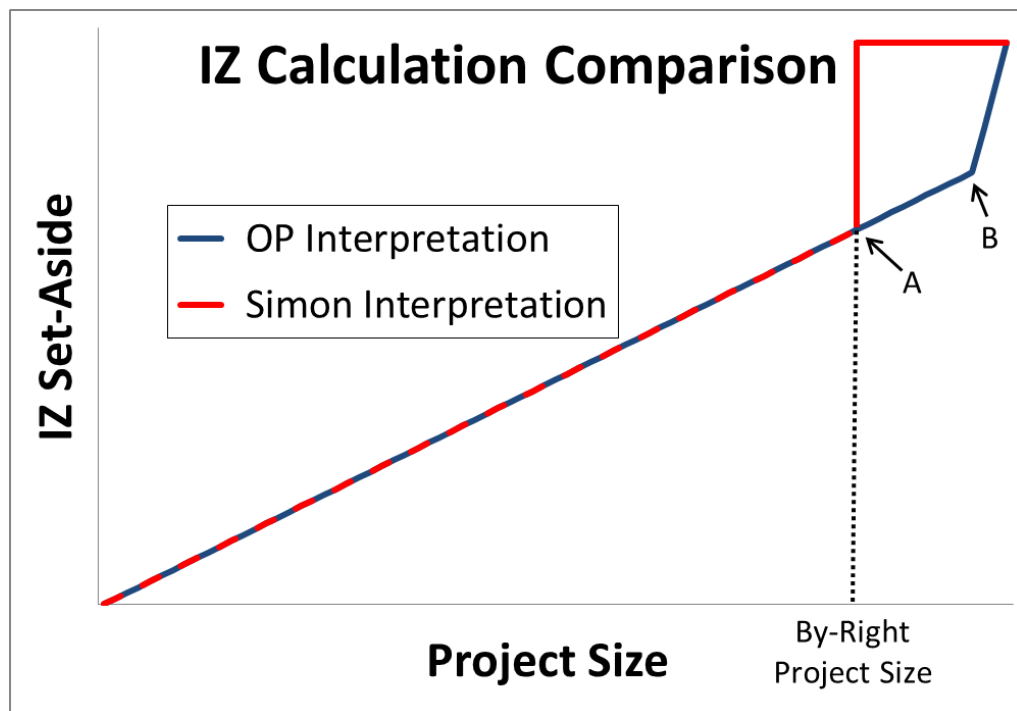

IZ Calculation Comparison

— OP Interpretation
— Simon Interpretation

IZ Set-Aside

Project Size

By-Right Project Size

Figure 1

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[16] Zoning Commission Hearing Transcript, September 20, 2018, Zoning Case 04-33I, p. 22.

[17] For example, marginal income tax rates apply to income exceeding the tax threshold. If the marginal tax rate changes from 5% to 10% at $50,000, all income less than $50,000 is taxed at 5% while only income over $50,000 is taxed at the higher 10% rate. This implies that an individual earning just above the tax threshold pays approximately the same total tax as an individual earning just below the tax threshold even though the tax rate increased from 5% to 10% at the threshold.

[18] The sole difference between graphics for stick-built and concrete construction is in the slope of the lines.

The difference between the OP interpretation and the Simon interpretation of the set-aside formula can be seen in Figure 1, above. The lines plot the IZ set-aside requirements under both interpretations as the project size increases up to and beyond the by-right project size. Under the OP interpretation, the set-aside increases steadily but smoothly as bonus density is utilized. Eventually, the ABD set-aside calculation exceeds the GFA set-aside calculation and the binding set-aside requirement increases more sharply. This transition occurs at the point labeled "B" in Figure 1.

Under the Simon interpretation, the IZ set-aside jumps largely and discontinuously at the by-right project size (labeled "A" in Figure 1). As soon as a proposed project uses one square foot beyond the by-right project size, the IZ set-aside requirement jumps significantly. This jump serves as a strong impediment towards a project utilizing any bonus density.

Figures 2 and 3 show the evolution of market-rate and IZ square footage as a project increases in size. Figure 2 incorporates the OP interpretation of the ABD set-aside calculation while Figure 3 incorporates the Simon interpretation of the ABD set-aside calculation. Figure 3 shows that the amount of market-rate housing provided within an inclusionary development actually *decreases* as the project grows larger under the Simon interpretation.
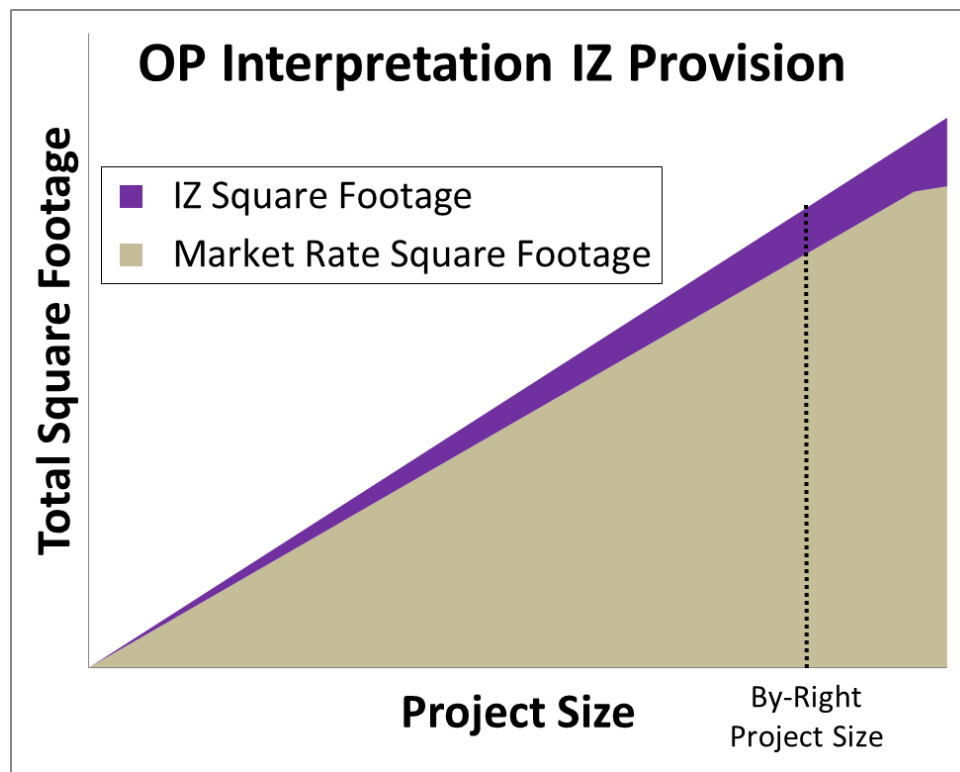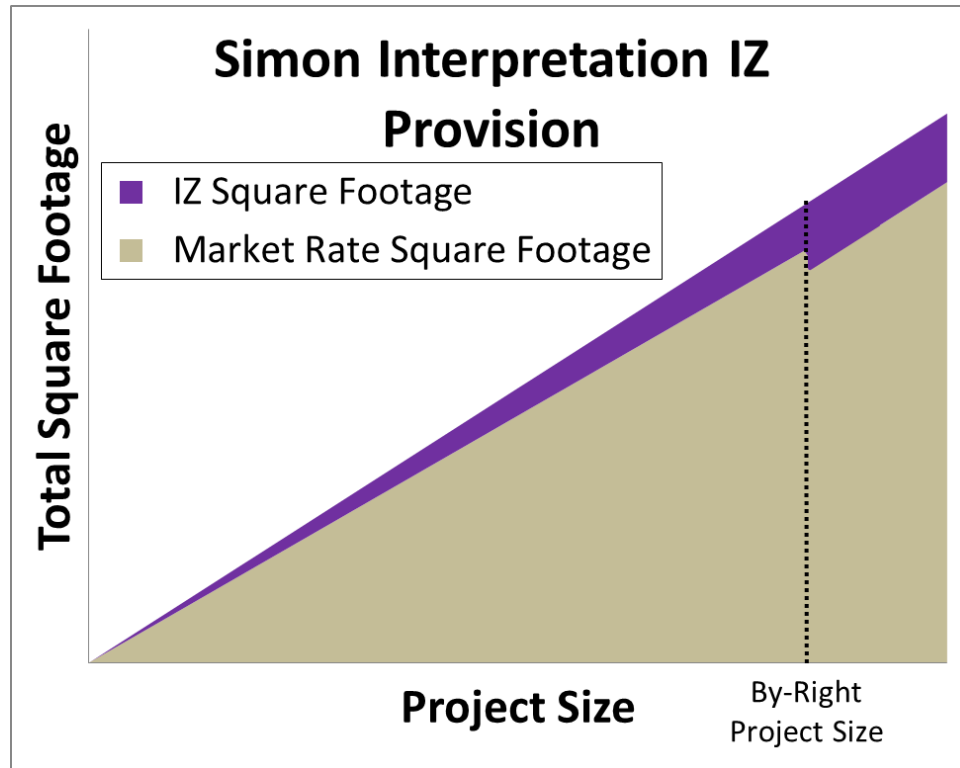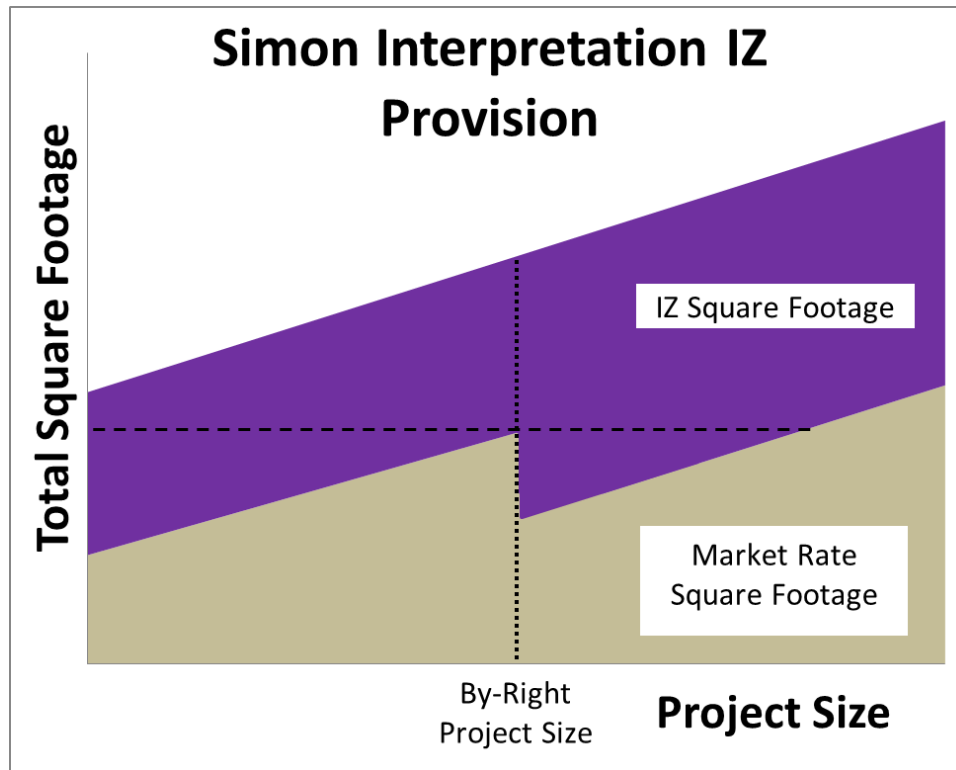

Figure 2

Figure 3

Figure 4, below, zooms in on the by-right project size under the Simon interpretation of the ABD set-aside calculation. The distortion induced by the discontinuity can be clearly seen: as the inclusionary development increases beyond the by-right project size, the amount of market-rate housing that the project includes actually *decreases*. Since the decrease is discontinuous, the developer has to not only devote all additional development beyond the by-right project size to IZ, but they actually have to convert existing market-rate residential housing into IZ. Put another way, by increasing a project's size to be even one foot larger than by-right construction, the inclusionary development immediately loses 6% of the market-rate housing it was previously providing. The horizontal dashed line in Figure 4 shows how large the project must grow before it includes the same amount of market-rate housing as it was previously providing by-right.

Figure 4

The discontinuity implicit in the Simon interpretation creates a perverse incentive that substantially raises the costs of utilizing any bonus density.[19] The likely outcome is that more projects will stop at the by-right project size, thereby decreasing the amount of both market-rate residential housing and inclusionary housing compared to that provided under the OP interpretation.

POLICY ALTERNATIVES

Vice Chair Miller's concern with the amount of IZ being provided by inclusionary development is laudable. Affordable housing and displacement are critical public policy issues facing the District. If one's objective is to increase the amount of IZ, there are several ways to easily accomplish this within the existing IZ framework. Below I present three sample alternatives. These alternatives are entirely devoid of motivating analysis; they are presented here solely to advance discussion of the key features of the design of IZ set-aside requirements.

Figure 1 depicts the IZ set-aside under OP's interpretation of Section 1003.1. The inclusionary development is by-right until point A, after which it begins utilizing bonus density. Under the OP interpretation, the rate of IZ provision remains the same – 10% – on both sides of the transition from by-right to bonus density. The GFA set-aside requirement exceeds the ABD set-aside requirement until point B, after which the project must provide IZ at a greater rate as the project size increases.

Alternative 1, depicted in Figure 5 below, increases the rate of IZ provision upon utilizing bonus density. That is, the IZ set-aside rates are not the same on both sides of the by-right project size. As is

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[19] To continue the analogy with income tax rates, the Simon interpretation is akin to taxing all income at 5% when total income is below $50,000 and taxing all income at 10% when total income is above $50,000. This means that an individual earning $49,000 would owe $2,450 in tax while an individual earning $51,000 would owe $51,000. The additional $2,000 in earnings actually cost the taxpayer $2,650 in after-tax income.

the case currently, a by-right project includes IZ at the rate of 10% of residential gross floor area under Alternative 1. Upon utilizing bonus density, however, the project must set aside 30% of the additional density constructed. Importantly, these set-aside rates are marginal so that they do not create the distortionary incentives seen under the Simon interpretation. A modified version of Section 1003.1 implementing Alternative 1 is:[20]

> 1003.1 An inclusionary development which does not employ Type 1 construction as defined by Chapter 6 of the International Building Code as incorporated into the District of Columbia Construction Codes (Title 12 DCMR) to construct a majority of dwelling units and which is located in a zone with a by-right height limit of fifty feet (50 ft.) or less shall set aside ten percent (10%) of the gross floor area dedicated to residential use including penthouse habitable space as described in Subtitle C Section 1001.2(d) **for projects up to the by-right project size plus thirty percent (30%) of the gross floor area dedicated to residential use that is in excess of the by-right project size including penthouse habitable space as described in Subtitle C Section 1001.2(d)**, or seventy-five percent (75%) of its achievable bonus density to inclusionary units plus an area equal to 10 percent (10%) of the penthouse habitable space as described in Subtitle C Section 1001.2(d).[21]
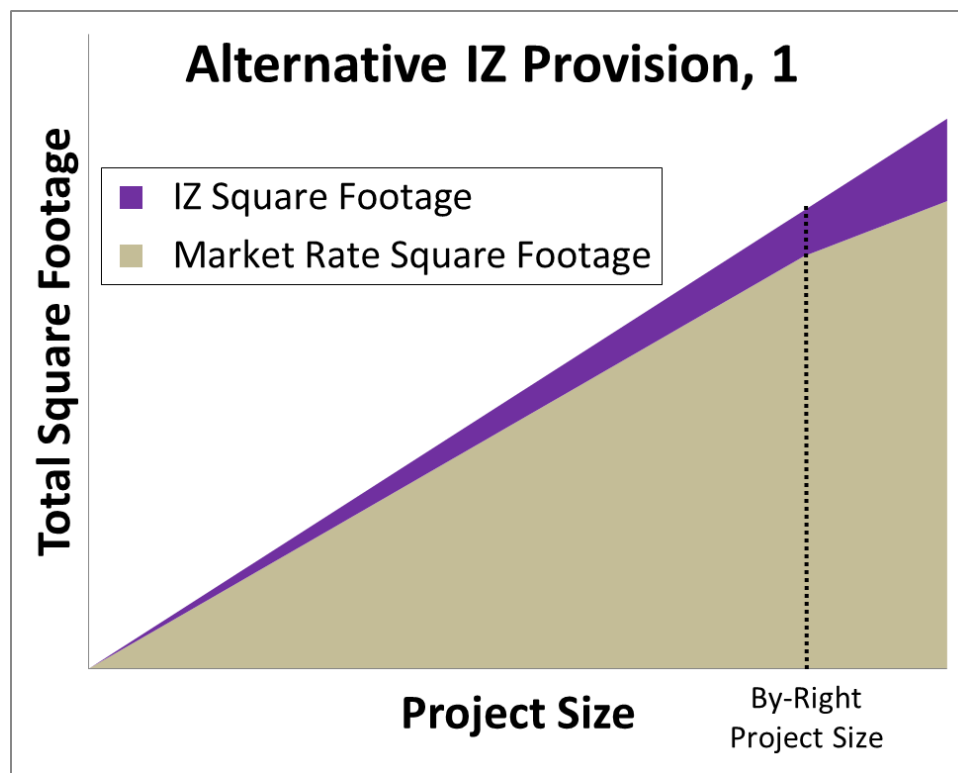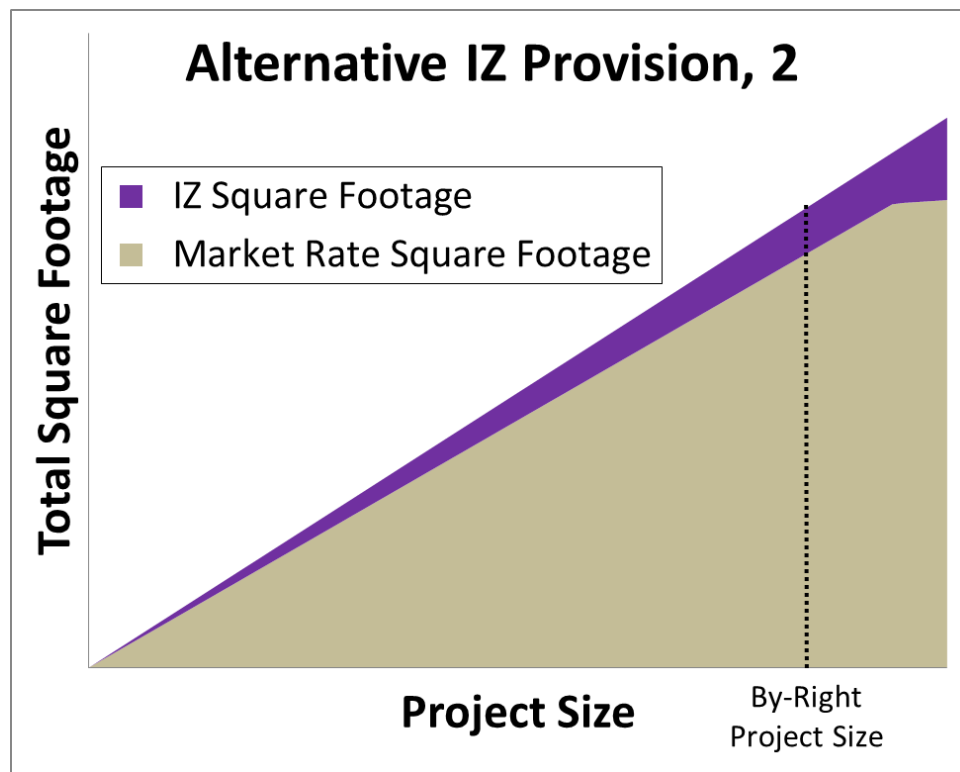

Figure 5

Instead of changing the GFA set-aside rate to be 30% for utilized bonus density, thereby modifying the GFA set-aside requirement while leaving the ABD set-aside requirement unaffected, Alternative 2 increases the set-aside rate in the ABD calculation to be 90% of the bonus density used. This has the effect of both shifting point B towards the origin and increasing the rate of required IZ set-aside once the ABD calculation exceeds the GFA calculation. This scenario is depicted in Figure 6 and a modified version of Section 1003.1 implementing Alternative 2 is:

> 1003.1 An inclusionary development which does not employ Type 1 construction as defined by Chapter 6 of the International Building Code as incorporated into the District of Columbia Construction Codes (Title 12 DCMR) to construct a majority of dwelling units and which is located in a zone with a by-right height limit of fifty feet (50 ft.) or less shall set aside ten percent (10%) of the gross floor area dedicated to residential use including penthouse habitable space as described in Subtitle C Section 1001.2(d), or ~~seventy-five percent (75%)~~ **ninety percent (90%)** of its achievable bonus density to inclusionary units plus an area equal to 10 percent (10%) of the penthouse habitable space as described in Subtitle C Section 1001.2(d).
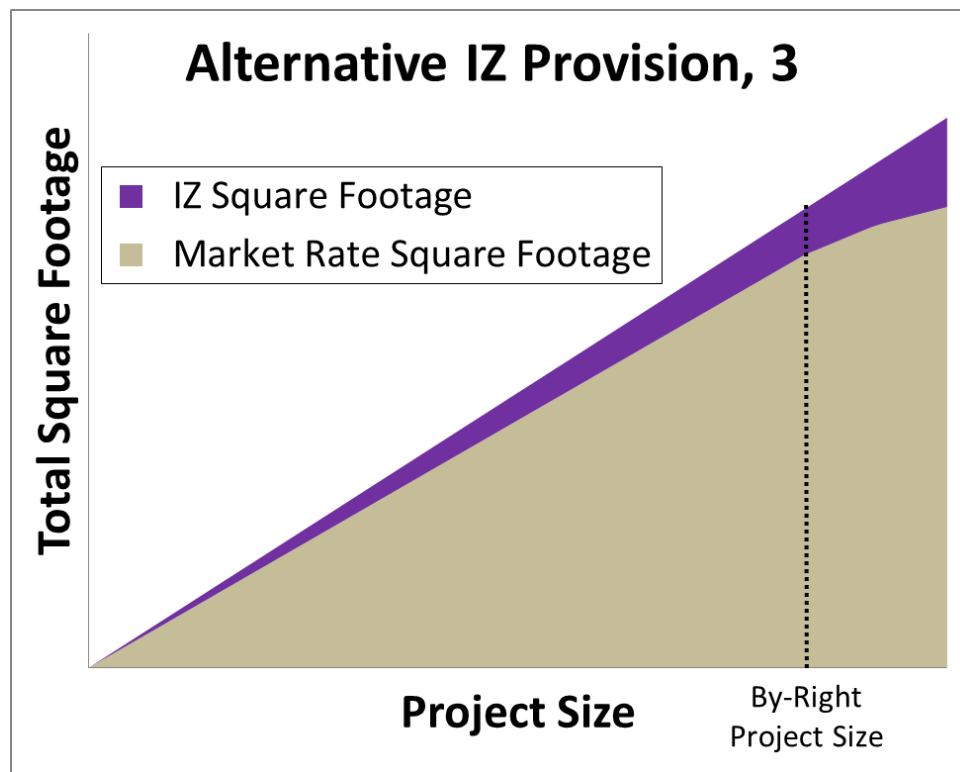

Figure 6

Finally, Alternative 3 creates an increasing schedule of IZ set-aside rates applied to residential gross floor area. (See Figure 7.) In particular, an inclusionary development must set-aside 10% of residential GFA up to the by-right project size, 25% of the constructed square footage for the first 10% of bonus density used, and 50% of the constructed square footage for the second 10% of bonus density used. A modified version of Section 1003.1 implementing Alternative 3 is:

> 1003.1 An inclusionary development which does not employ Type 1 construction as defined by Chapter 6 of the International Building Code as incorporated into the

District of Columbia Construction Codes (Title 12 DCMR) to construct a majority of dwelling units and which is located in a zone with a by-right height limit of fifty feet (50 ft.) or less shall set aside ten percent (10%) of the gross floor area dedicated to residential use including penthouse habitable space as described in Subtitle C Section 1001.2(d) **for projects up to the by-right project size, plus twenty-five percent (25%) of the gross floor area dedicated to residential use that is in excess of the by-right project size but less than one-hundred and ten percent (110%) of the by-right project size including penthouse habitable space as described in Subtitle C Section 1001.2(d), plus fifty-percent (50%) of the gross floor area dedicated to residential use that is in excess of one-hundred and ten percent (110%) of the by-right project size including penthouse habitable space as described in Subtitle C Section 1001.2(d)**, ~~or seventy-five percent (75%) of its achievable bonus density to inclusionary units plus an area equal to 10 percent (10%) of the penthouse habitable space as described in Subtitle C Section 1001.2(d)~~.

Figure 7

Each of the three IZ alternatives presented here stipulate greater set-aside requirements than either the OP interpretation of the Simon interpretation. Figure 8, below, compares the IZ set-aside as a percentage of the total inclusionary development under these five possibilities. The three alternatives offered here display IZ set-aside percentages that monotonically increase with project size, thereby avoiding the distortion induced by the Simon interpretation.
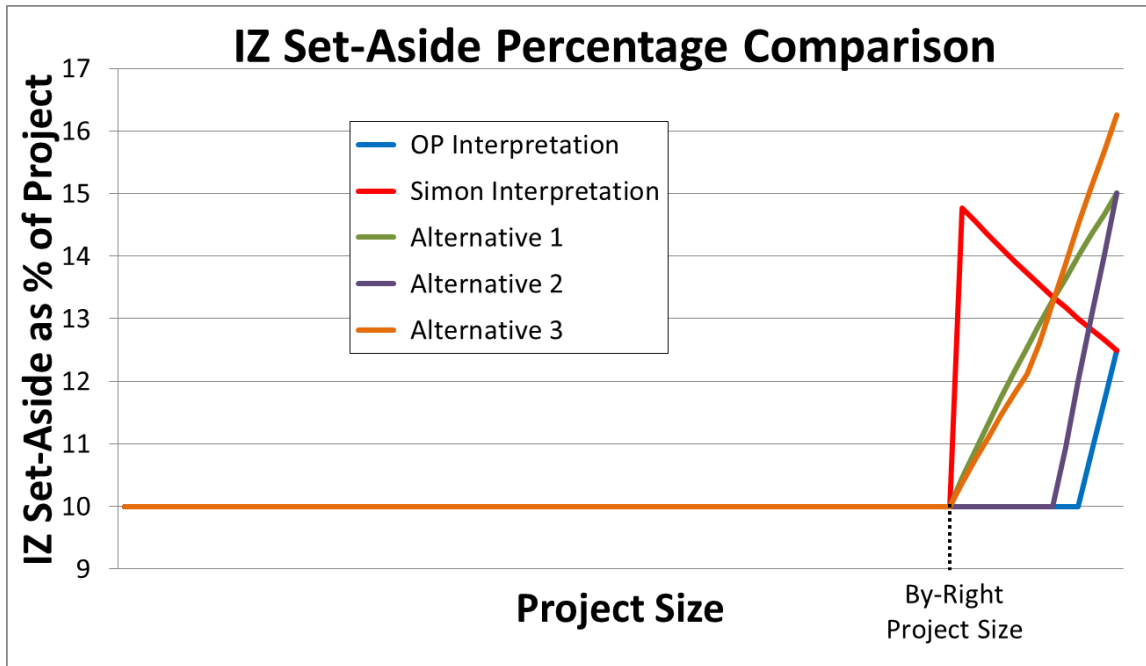
Figure 8

CONCLUSION

This submission aspires to do three things. First, it aims to shed light upon the likely intent of the IZ set-aside formula through a simple mathematical derivation. The set-aside formula entails comparison of two calculations, with the larger calculation becoming the binding requirement on an inclusionary development. OP proposes to clarify the formula, stating that the clarification is in line with the intent and practice of inclusionary zoning. A witness, Marilyn Simon, objects to OP's clarification and asserts an alternative interpretation accords with the intent of the IZ formula. The mathematical derivation in this submission shows that under Ms. Simon's interpretation, the bonus density calculation always exceeds the gross floor area calculation. As such, there is no reason to actually follow the formula in the regulation since the answer as to which calculation is larger is known with certainty from the outset. In light of this, I assert that the intent of the IZ formula is unlikely to be consistent with Ms. Simon's interpretation and that OP's proposed clarification of the formula is exactly that, a clarification.

Second, setting aside the mathematical derivation, the submission considers whether Ms. Simon's interpretation makes good policy. I assert that it does not. The discontinuity implicit in Ms. Simon's interpretation is highly distortionary and would likely lead to less affordable housing being provided in total, not more.

Finally, I offer three alternative IZ set-aside schedules for preliminary consideration. While the alternatives are not motivated by data and have not been vetted by OP, they aim to provide context to any pending discussion about changes to the inclusionary zoning program. Sample modifications to the existing regulations sufficient to implement the alternatives are offered. Each alternative would likely produce considerably greater affordable housing than either OP's interpretation or Ms. Simon's interpretation of the set-aside formula. Further, each alternative would do so without distorting incentives in the direction of poor public policy.