Floor Area Ratio Transfer Program
Feasibility Analysis

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Prepared for: Prosper Portland

FINAL REPORT

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ECONorthwest prepared this report for Prosper Portland. It received substantial assistance from The City of Portland Bureau of Planning and Sustainability. As part of the process for gathering assumptions, interviews with numerous general contractors were conducted to gather cost and development assumptions, we are appreciative of their participation.

That assistance notwithstanding, ECONorthwest is responsible for the content of this report. The staff at ECONorthwest prepared this report based on their general knowledge of real estate development economics, and on information derived from government agencies, private statistical services, the reports of others, interviews of individuals, or other sources believed to be reliable. ECONorthwest has not independently verified the accuracy of all such information, and makes no representation regarding its accuracy or completeness. Any statements nonfactual in nature constitute the authors' current opinions, which may change as more information becomes available.

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EXECUTIVE SUMMARY:

FLOOR AREA RATIO (FAR) TRANSFER PROGRAM FEASIBILITY ANALYSIS

BACKGROUND

The City of Portland is evaluating the feasibility of creating a standardized and centralized system for the transfer of unused City-owned development rights within Portland's Central City. At Commissioner Fritz's request, Prosper Portland engaged ECONorthwest to evaluate the feasibility of a City managed system – an FAR Bank – to make unused FAR or floor area entitlements from publicly owned property available for purchase for private developers in need of additional density.

Developers often seek to construct buildings at a higher density than allowed under a parcel's base entitlement, as illustrated in Exhibit 1. To do so they must acquire additional floor area (also called development rights) by participating in a City sponsored FAR bonus program and/or purchasing additional FAR from another site (private transfer)—the remainder of this report focuses on FAR transfer as the mechanism through which additional development rights can be acquired.

If implemented, an FAR Bank would add a new, transparent source of FAR to the existing development rights market, increasing the potential for higher density development in Portland's Central City.

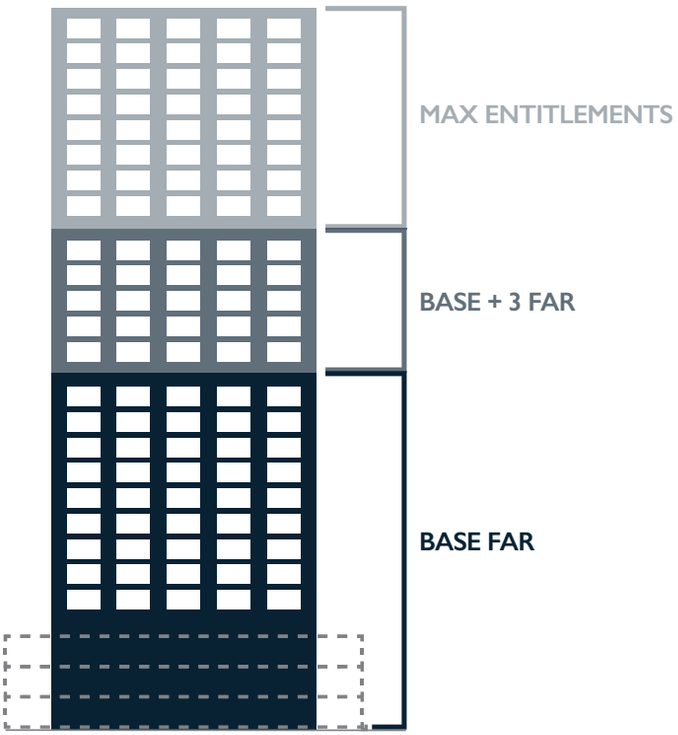
OBJECTIVE

The objective of this analysis is to evaluate the supply of City-owned FAR, the market demand for FAR transfer, and the potential revenue the sale of City-owned FAR might generate to determine the feasibility of implementing an FAR Bank.

FLOOR AREA RATIO (FAR) is the relationship between a building's usable floor area to the size of the parcel. For example, a ratio of 2 to 1(or 2:1) means 2 square feet of floor area for every 1 square foot of site area. A higher ratio allows for increased density.

Local governments use FAR in zoning codes to limit the maximum size of a building. Portland's zoning code establishes a base FAR entitlement and a maximum building height for each parcel. With some limitations, an owner can build above the base entitlements up to the maximum height allowable if it purchases additional FAR from another site.

EXHIBIT 1. CITY OF PORTLAND ENTITLEMENTS



BASE = base FAR allowed in zone.

BASE+3 = base FAR plus the additional 3:1 FAR available through current bonus and transfer programs (see Central City Plan District.)

MAX ENTITLEMENTS = maximum height limit allowed in zone. After the Base+3 is achieved, a developer can reach the maximum entitlements by purchasing additional FAR, up to the building's maximum height limit.

THE EVALUATION

In this report, ECONorthwest assesses the supply and demand for City-owned FAR, tests the willingness of private developers to purchase additional FAR, and estimates the revenue that the sale of City-owned FAR could generate through 2035. ECONorthwest worked with staff from the Bureau of Planning and Sustainability (BPS) and Prosper Portland to review prior City-led studies and develop a methodology for this analysis. More information about each step in the analysis can be found in the Technical Appendix that follows this summary.

NOT INCLUDED IN THE EVALUATION

The scope of work for the project did not analyze or recommend:

- How to structure and implement the FAR Bank
- How to define and evaluate public benefit requirements
- How to calibrate a fee structure and the frequency of calibration review

Should the City Council decide there is value in exploring the FAR Bank concept further, additional work will be needed in these areas.

THE RESULTS: SUPPLY AND DEMAND

1. ESTIMATE OF CITY OWNED SUPPLY OF FAR (~31 MILLION SQUARE FEET)

BPS analyzed all City owned property in the Central City and determined that there is approximately 31.2 million total square feet of unused FAR available for transfer. This estimate is based on the zoning entitlements of each parcel less any FAR already used for existing buildings (See Appendix A). If the FAR Bank goes forward, the inventory list will need to be refined by each bureau by reviewing existing development plans, covenants and title reports.

2. TOTAL MARKET CAPACITY FOR FAR TRANSFER (~32 MILLION SQUARE FEET)

To estimate market potential, the study used the Central City's Buildable Lands Inventory to identify vacant and underutilized sites that have the capacity to add additional density, subject to the maximum zones height limit (Appendix B). Building prototypes were created for each parcel and were compared to base+3 entitlements (the minimum threshold before any additional FAR can be transferred per the City's policy). The capacity to add additional FAR was calculated for each parcel in order to achieve the maximum height allowed on each site. The vacant and underutilized parcels have the capacity to receive, through transfer, an additional 32 million square feet of FAR. *Capacity to transfer should not be interpreted as market demand to transfer.*

3. ESTIMATED TOTAL MARKET DEVELOPMENT THROUGH 2035 (~23 MILLION SQUARE FEET)

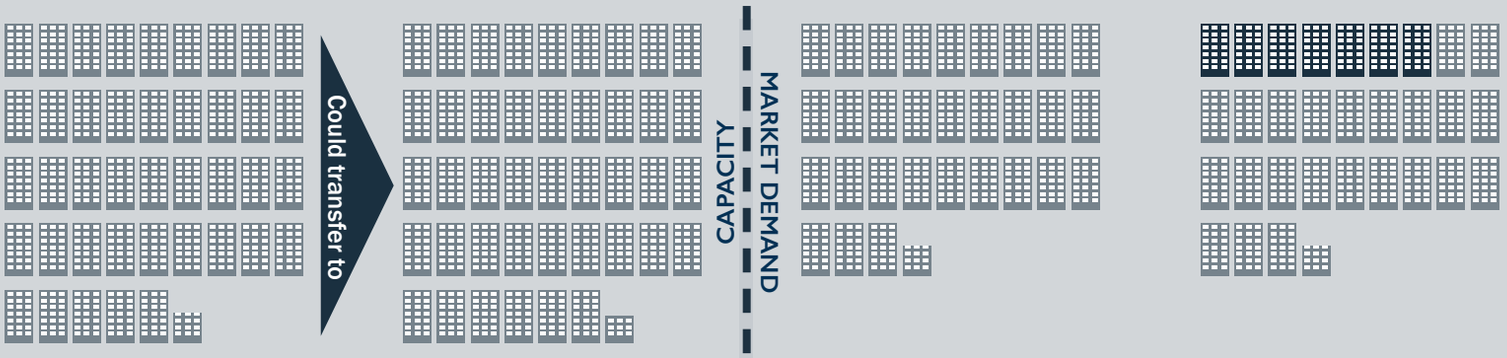
In order to estimate the demand for FAR transfer through 2035, the first step was to calculate the total amount of development projected in the Central City. Using historic annual production, future development in the Central City is estimated to produce approximately 23 million square feet through 2035. The demand for FAR transfer is a subset of the total development projection, as many sites will not require any transfer. Additionally, for those that do transfer FAR, it will only be a portion of the total building area.

4. ESTIMATED MARKET DEMAND TO PURCHASE FAR THROUGH 2035 (~5 MILLION SQUARE FEET)

Of the 23 million square feet of total development projected in the Central City through 2035, approximately 18 million square feet will be developed using the base or base+3 entitlements and therefore would not require any transfer of FAR. The remaining 5 million square feet would require an FAR transfer in order to achieve the total development projected in the Central City through 2035.

EXHIBIT 2. SUPPLY AND DEMAND RESULTS EXPRESSED AS "BIG PINK"

In order to provide a reference for the above supply and demand results, we compare the total square feet in increments of Portland's U.S. Bancorp Tower "Big Pink" building, which is approximately 750,000 square feet and 42 stories high. In the graphic below, each building represents one "Big Pink".



1. Estimate of City Owned Supply = ~31M sq ft or 41.6 Big Pinks

2. Market Capacity for FAR Transfer = ~32M sq ft or 42.4 Big Pinks

3. Projected Total Market Development through 2035 = ~23M sq ft (30.6 Big Pinks)

4. Of the 23M sq ft, of total development, 18 million would not require any FAR transfer. The remaining 5 million (7 Big Pinks) is the estimated demand for an FAR transfer.

The supply of City owned FAR available to transfer is roughly equal to the maximum capacity to transfer in the Central City.

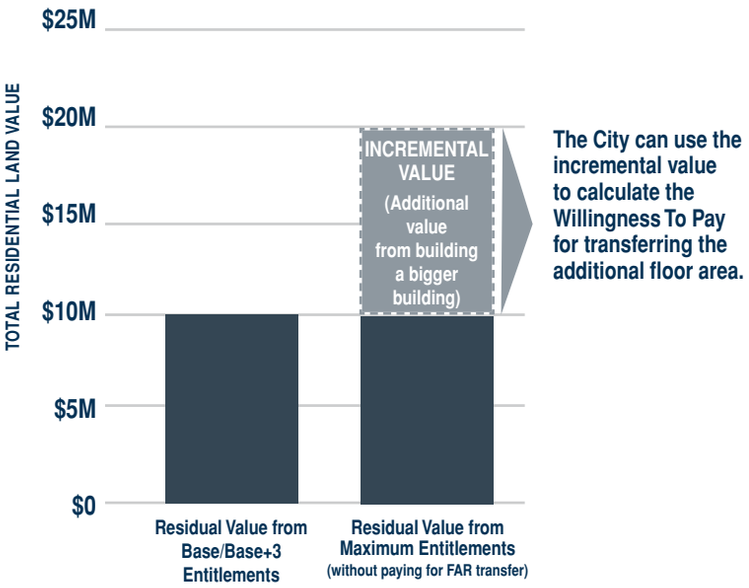
Only ~5 million square feet would require an FAR transfer to achieve the total development projected in the Central City through 2035.

THE RESULTS: MARKET DEMAND AND PRICING FAR

DEVELOPER WILLINGNESS TO PAY FOR FAR

The value of FAR is a key input to understanding the viability of a potential FAR bank. How much might developers be willing to pay to purchase FAR? ECONorthwest evaluated a developer's "willingness to pay" for more FAR by using a residual value analysis. Residual value is one way to understand development feasibility. It is determined by subtracting all of the development costs (including profit) from the total value of the property after construction is complete and occupancy is stabilized. To determine the willingness to pay for more FAR, ECONorthwest analyzed the residual value of a smaller building (one built at base or base+3 entitlements) and the residual value of a bigger building (one built at maximum height allowances). If there is residual value from the bigger building (what we are calling "incremental value") a developer has an incentive to purchase additional FAR. It is within this 'incremental value' range that the price of City-owned FAR could be established. Setting a fee based on the full incremental value would eliminate the incentive for a developer to build a bigger building, since it is equivalent in financial terms to a smaller building as shown in Exhibit 3. In order to estimate the revenue potential of the program, ECONorthwest assumed fifty percent (50%) of the incremental value would be retained by the City. If the City proceeds with program implementation, the split should be investigated further to determine the implications of various levels of revenue sharing.

EXHIBIT 3. INCREMENTAL VALUE AND WILLINGNESS TO PAY METHODOLOGY



PARKING INFLUENCES FEASIBILITY

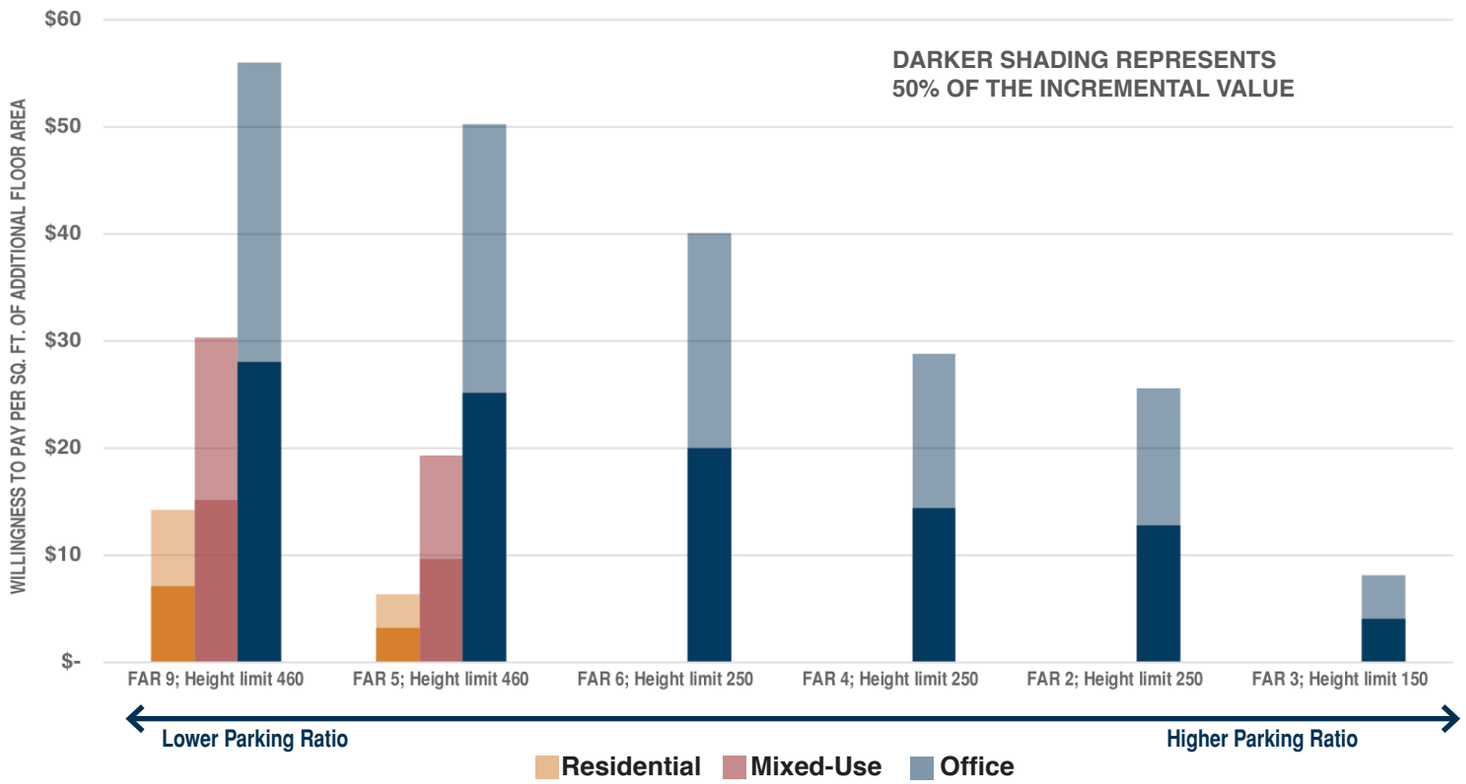
In the Central City, the zoning code sets maximum parking ratios but does not set minimum parking ratios. Minimums are driven by market expectations based upon what is needed to attract tenants and satisfy lender requirements. In addition to market expectations, the amount of parking is also constrained by design, ground floor active use requirements, and parcel size which influence the amount of parking a site can accommodate.

To meet the market's parking expectations, a developer must decide whether to construct parking above or below ground, or both. In Portland, developers rarely build more than four stories of parking below ground due to escalating costs, or more than three stories above ground because of design review expectations and the desire to construct revenue generating, leasable square footage. As a result, actual parking ratios generally decrease as the height of the building increases.

WILLINGNESS TO PAY

Willingness to pay is driven by market conditions and will change throughout economic cycles. ECONorthwest evaluated different development scenarios (residential, office and mixed use) on parcels with varying height and FAR entitlements to assess the value additional FAR would provide to different types of development. Exhibit 4 illustrates the developer's willingness to pay by use and parcel entitlements.

EXHIBIT 4. WILLINGNESS TO PAY BY USE AND BASE ENTITLEMENTS FOR FULL BLOCK PARCELS



WILLINGNESS TO PAY BY USE

Exhibit 4 also illustrates that 'willingness to pay' is influenced by height limits and parking ratios. Under current market conditions, a developer would:

- Be willing to pay for additional density (FAR) for office development due to the recent strong rent growth and stabilized vacancy rate;
- Have minimal willingness to pay for more FAR for mixed-use office/residential because of a weaker housing market; and
- Would not be willing to pay for high-rise residential development because residential prices have stagnated while construction costs have increased. (note only apartments were modeled)

CITY REVENUE GENERATION FROM FAR TRANSFER

In the next step in the analysis, ECONorthwest translated the estimated willingness to pay ranges established in Exhibit 4 into willingness to pay per square foot by use. This complex calculation included weighting of multiple variables including the amount of development by use and height. (See the Technical Appendix for details on this calculation.) Exhibit 5 displays the range of values calculated - including the minimum, maximum, and average willingness to pay.

To estimate potential City revenue generated through 2035, both the minimum and weighted average prices per square foot were multiplied by the estimated ~5 million square feet demand for FAR transfer by use. (Note: The per square foot maximum prices were not used as they would overstate the potential revenues because only owners of parcels with the greatest height allowance would consider paying this price.) The results in Exhibit 6 demonstrate the cumulative revenue potential for the City through 2035, as well as the annual average revenue.

It should be noted that annual revenues will fluctuate based upon market conditions (including competition for floor area from the private market), and, based on where within the range of 'incremental value' the price is set.

EXHIBIT 5. RANGE OF WILLINGNESS TO PAY PER SQUARE FOOT

PRICE PER SQUARE FOOT ESTIMATES			
	MINIMUM	WEIGHTED AVERAGE	MAXIMUM
RESIDENTIAL	$0.00	$1.75	$8.94
MIXED-USE	$0.00	$4.71	$15.42
OFFICE	$4.09	$18.88	$28.04

NOTE: The minimum values are associated with parcels with lower height limits and the maximum value with higher height limits.

EXHIBIT 6. POTENTIAL CITY REVENUE THROUGH 2035

TOTAL REVENUE ESTIMATES		
	MINIMUM	WEIGHTED AVERAGE
CUMULATIVE THROUGH 2035	$12,834,000	$62,919,000
ANNUAL ESTIMATE	$755,000	$3,701,000

NOTE: Maximum per square foot price estimates were not used as they would over-state potential revenues.

SUMMARY OF FINDINGS

The study concludes that:

- There is sufficient supply of City-owned FAR to exceed market demand well beyond 2035, and with which to establish an FAR Bank and generate revenue for the City.
- In order to achieve growth and density goals in the Central City, many developers will need to acquire FAR, creating an opportunity and demand for a mechanism to easily purchase additional development rights.
- Based upon current market conditions, the office development market has the greatest potential willingness to pay for FAR.
- Revenue estimates are based on current market conditions. Once a pricing methodology is established, regular calibration of the policy is recommended to ensure that developers continue to have an incentive to purchase additional development rights as market conditions change.

Technical Appendix: Floor Area Ratio (FAR) Transfer Program Feasibility Analysis

The City of Portland is evaluating the feasibility of creating a standardized and centralized system for the transfer of unused City-owned development rights within Portland's Central City. At Commissioner Fritz's request, Prosper Portland engaged ECONorthwest to evaluate the feasibility of a City managed system – *an FAR Bank* – to make unused FAR or floor area entitlements from publicly owned property available for purchase for private developers in need of additional density. This document serves as the technical appendix to the Executive Summary of this feasibility analysis.

ECONorthwest completed an analytical process that can be broken down into a series of six steps, supplemented by work completed by staff at the City's Bureau of Planning and Sustainability (BPS) and Prosper Portland. This technical memorandum is divided into the following sections describing the methodology used in the analysis:

- Step 1: Review City-led Work/Key Assumptions
- Step 2: Model Typical Building Prototypes
- Step 3: Conduct Financial Feasibility Analysis
- Step 4: Determine Developer Willingness to Pay (by use)
- Step 5: Estimate Total Demand for 2010 – 2035 and 2018 - 2035
- Step 6: Estimate Total Potential Revenue for 2018 – 2035

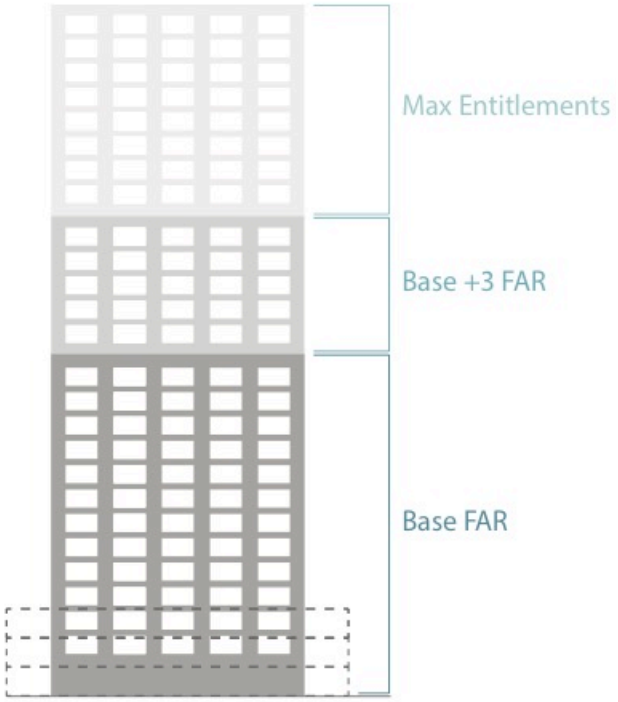
Step 1: Review City-led Work/Key Assumptions

Step 1.1: Review existing zoning code regulations and determine the process for a transfer of additional development rights

In order for a developer to acquire additional density through a City-managed FAR bank, they would first need to conform to the existing FAR bonus and transfer prioritization policies. An individual parcel would need to utilize the base entitlements, then acquire an additional 3:1 through the inclusionary housing or historic transfer programs before acquiring additional development rights from the City.

There are three distinct components of the current city bonus and transfer program. Exhibit 1 describes these three categories in more detail below.

Exhibit 1. City of Portland Entitlements



Maximum/Max Entitlements = maximum height limit allowed in zone. After the Base+3 is achieved, a developer can reach the maximum entitlements by purchasing additional FAR, up to the building's maximum height limit.

Base+3 = the base FAR allowed plus an additional 3:1 FAR that is required to be transferred through current programs (see Central City Plan District).

Prior to any FAR transfers (city or private), the full 3:1 must be acquired through Inclusionary Housing or Historic Transfer.

The majority of parcels in the Central City do not reach the maximum heights allowed when the building design utilizes the base zoning plus an additional 3:1 FAR. This creates an opportunity to acquire additional density through a transfer of development rights, allowing for the construction of a taller building.

Base = base FAR allowed in zone. All parcels in the city have a *"base"* floor area ratio (FAR) in addition to a maximum height limit.

Step 1.2: Determine City-owned supply of FAR available for transfer

BPS conducted an analysis of all city owned properties located in the Central City to determine which parcels have unused FAR that could be used to capitalize an FAR bank (supply). The estimate calculated the zoning entitlements of each city-owned parcel, then subtracted any FAR already used for the existing building. BPS calculated approximately 31.2 million square feet available to transfer—this is the maximum supply of FAR to capitalize the FAR bank from City owned parcels (see map in Appendix A).

If the program is implemented in the future, each bureau would need to confirm any prior easements or sale of development rights from these identified parcels to verify the accurate amount of FAR available for transfer.

Step 1.3: Estimate the market capacity for FAR transfer

To estimate market potential, BPS used the Central City's Buildable Lands Inventory to identify vacant and underutilized parcels that have the capacity to add additional density (subject to the

maximum height limit).[1] A map of these parcels is shown in Appendix B. Parcels are color-coded based on their total capacity (demand) to transfer additional FAR.

An initial analysis of the vacant and underutilized parcels identified many that are smaller than 10,000 square feet—these are unlikely to redevelop into high density development. BPS consolidated these smaller parcels to reflect sizes that are more likely to redevelop into high density projects, and therefore are candidates for FAR transfer. As part of this program feasibility analysis, ECONorthwest calculated the capacity to add additional FAR for each identified parcel (subject to the maximum height allowed). The vacant and underutilized parcels in the Central City have the capacity to receive, through transfer, an additional 32 million square feet of FAR. Capacity to transfer should not be interpreted as market demand to transfer.

The example below describes how the capacity for transfer was calculated for a parcel with base FAR of 15:1 and a maximum height of 460 feet (see step 2 below for more detail)

Example: Full block office development proposal

- **Base entitlements:** 15:1 FAR, with a maximum height of 460 feet
- **Base+3:1 FAR bonus (using existing program allowances):** 18:1
  - ***Bonus and Transfer prioritization:*** The project is required to first acquire an additional 3:1 FAR by participating in the inclusionary housing program or transferring FAR from an historic resource, bringing the total base+3 FAR to 18:1 before being able to purchase additional FAR.
  - ***Maximum building height:*** The height of a building differs based on floorplate size and floor-to-ceiling height of each level. For example, assume the ground floor is 15 feet tall and each additional floor has a height of 12 feet. If the building floor plate has 100% lot coverage (40,000 sf) for 3 floors, and an 18,000 sf floorplate for the remaining floors, the building would utilize all of the base+3 FAR (18:1) and achieve a height of 435 feet.
- **Additional FAR Capacity:** Using an 18,000 SF floorplate with a 3-floor podium (40,000 sf per floor), the building would be constrained by FAR before achieving the maximum height limit of 460 feet. Two additional floors with an 18,000 sf floorplate could be built before reaching the 460 ft height limit. This amounts to 36,000 sf of capacity to transfer FAR that a developer could purchase from the City.

Step 1.4: Determine frequent combinations of base FAR and height limits for the identified vacant and underutilized parcels

ECONorthwest reviewed the underutilized and vacant parcel data provided by BPS, focusing on two common lot sizes for new development—a half block of 20,000 square feet, and a full

[1] Note that the BLI methodology will be changing for future estimates. Given that these sites, and therefore the potential demand, were based on the current BLI methodology, it is possible that some properties were not included, and the potential demand estimate is conservative.

block of 40,000 square feet. The entitlements of the underutilized and vacant half block and full block parcels identified were tabulated to determine the distribution of base FAR and maximum height combinations. ECONorthwest evaluated parcels in the Central City residential zones (i.e. RH, RX) and zones that allow a mix of uses (i.e. EX, CX).

For example, a base FAR of 3 is disbursed throughout the Central City, but with various height limits. Analysis of the underutilized and vacant site data from BPS indicates that a base FAR of 3 in the Central City could have a range of maximum height limits of 90, 100, 125, or 150 feet. A similar process was conducted for all of the base FAR limits in the Central City (i.e. FAR of 2, 3, 4, 5, 6, 8, 9, 12, 15) to identify all the combinations of base FAR and maximum heights. Rather than analyzing all of the possible combinations (both full-block and half-block parcel sizes), ECONorthwest selected a subset of the most commonly occurring combinations to reflect the maximum range of FAR and heights in the Central City. Exhibit 2 below lists the combination of base FAR and maximum height combinations that were selected for the analysis.

Exhibit 2. Subset of common FAR and height combinations for full-block and half-block parcels

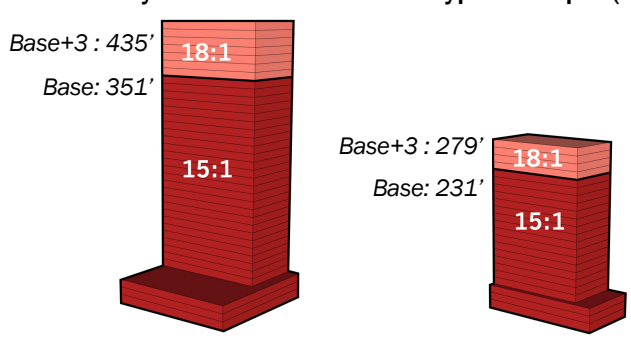
Height	150	250			460	
Base FAR	3	2	4	6	5	9
Residential						
1/2 Block (~20,000 sf)	X	X		X	X	X
Full Block (~40,000 sf)	X	X		X	X	X
Office						
1/2 Block (~20,000 sf)		X		X	X	X
Full Block (~40,000 sf)	X	X	X	X	X	

Step 2: Model Typical Building Prototypes

ECONorthwest utilized building prototypes created by BPS for the Scenic Resources Inventory to understand the potential transfer capacity for a parcel. BPS created building prototypes for all potential base and base+3 FAR entitlements in the Central City. ECONorthwest then analyzed various combinations of FAR and maximum height limits to understand the capacity for additional building area that could be purchased and transferred.

These prototypes informed the key assumptions for common lot sizes (e.g. full block versus half block), common tower floorplates on these lot sizes (18,000 sf versus 15,000 sf) as well as typical number of floors in an above-ground podium (three floors). BPS provided the assumption for typical height of each floor (a 15-foot ground floor with 12 feet for each additional floor). Examples of a full block and half block building prototype, with base FAR (in dark red) and base+3 FAR (in pink), is shown in Exhibit 3.

Exhibit 3. City of Portland BPS Prototype Example (full block and half block respectively)



Shared Specs
(3) floors of podium
15' tall ground floor
12' tall upper floors

Full block
40,000 sq ft floorplates in podium
18,000 sq ft floorplates in tower

Half block
20,000 sq ft floorplates in podium
15,000 sq ft floorplates in tower

Source: City of Portland Bureau of Planning and Sustainability

Step 2.1: Determine additional physical assumptions for building prototypes

ECONorthwest developed the following assumptions for building use and parking configuration to be utilized in conjunction with building prototypes provided by BPS as follows:

- **Building use:** BPS' prototypes are not specific to the primary use of the building – office, residential, or mixed-use. ECONorthwest made vertical use assumptions that conform to the zoned uses in the Central City and the types of projects that are currently being developed. ECONorthwest conducted interviews with BPS staff and members of the development community to determine how residential and office uses influence the design of a building (e.g. parking ratios and gross-to-net building efficiency).
- **Parking**: ECONorthwest created both an underground and an integrated above ground parking scenario for each prototype. This approach allowed for an analysis to determine the physical efficiencies that come from both parking options.

For the full list of assumptions, see Appendix C.

Step 2.2: Model participation in the City of Portland's Inclusionary Housing program

In this step, ECONorthwest modeled the different use-related requirements of the existing inclusionary housing (IH) program.[2] The IH program provides up to an additional 3:1 FAR bonus for either (1) a fee-in-lieu with office (for the additional FAR) or (2) to offset the impact of the IH requirements on residential buildings greater than 20 units (for on-site delivery, off-site delivery, or fee in lieu options).

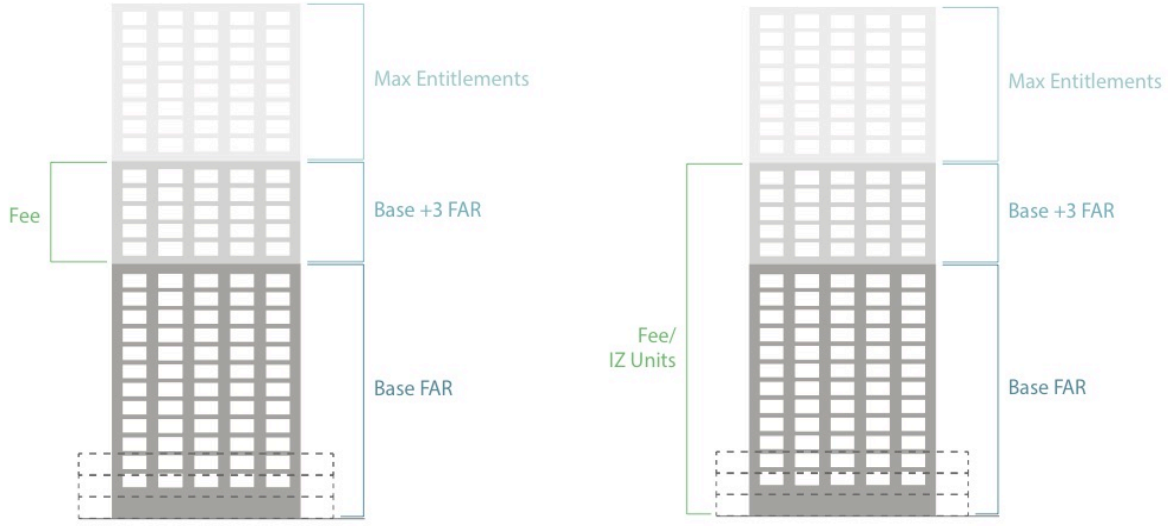
[2] We assumed development area up to "base+3" entitlements would be achieved through the requirements of the inclusionary housing program. The other existing program – historic resource transfer – is more difficult to model as the prices for the transfers vary by development proposal.

For the office prototypes, ECONorthwest modeled a fee per square foot of bonus area (from the additional 3:1 FAR) using the City of Portland's Fee-in-Lieu Factor Schedule from July 2018.

- **Non-residential use:** The fee schedule for non-residential occupancy/use is $24 per square foot of additional FAR to be transferred (up to a maximum of 3:1 FAR).
- **Residential:** Residential uses are required to either pay a fee-in-lieu or set aside units for any building with greater than 20 units. ECONorthwest evaluated multiple options for meeting the IH requirements: fee-in-lieu, 10% set-aside of units at 60% of median family income (MFI), and 20% set-aside of units at 80% of MFI. The fee-in-lieu for residential in the Central City is $27 per gross square foot. The MFI calculations were based on HUD's April 2018 methodology for the Portland metro region, where $81,400 represents 100% of MFI for a family of four.

The methodology for incorporating these IH requirements is shown in Exhibit 4. The green bar on the respective building models demonstrate the impact of the IH requirements. These impacts are included in the financial feasibility modeling described in the following section (Step 3).

Exhibit 4. Financial elements of IZ program (office and residential respectively)



Additional Prototype Considerations

For this analysis, we assumed perfectly scalable buildings rather than more nuanced massing diagrams (e.g. for use and parking). These assumptions included:

- **Full use of the podium**: Office buildings are more likely to be able to use a full podium floorplate than residential buildings, especially on the full block prototypes. Residential units need light and air access, which is typically not achievable on a full block. A recent Portland development on SW 4th and Harrison achieved the maximum residential square footage possible on a full block by building a double-loaded corridor in a donut shape with air and light access in the middle in order to maximize the potential leasable area.
- **Exact provision of parking:** Parking floors, whether below or above grade, have a maximum number of stalls that are influenced by the parcel size and ramping. It is rare to be able to design the exact desired parking ratio unless the architect refines the primary use to fit the total number of stalls available. This level of architectural rendering was not available; therefore, the desired parking ratios were assumed to be possible in all modeled scenarios.

Prior to program implementation, ECONorthwest recommends modeling additional building prototypes to gain a more nuanced understanding of how design impacts financial feasibility. For instance, a separate residential prototype for full-block developments that have a smaller podium (less than 100% lot coverage).

Step 3: Conduct Financial Feasibility Analysis

After conducting the analysis of the physical elements associated with the building prototypes, the next step was to conduct a financial analysis. The analysis calculated the financial feasibility of the building prototypes and the capacity of a developer to purchase and transfer additional floor area.

Step 3.1: Conduct general development feasibility analysis

To compare the financial feasibility across different prototypes, ECONorthwest used a financial *pro forma* model and a *residual land value analysis.*

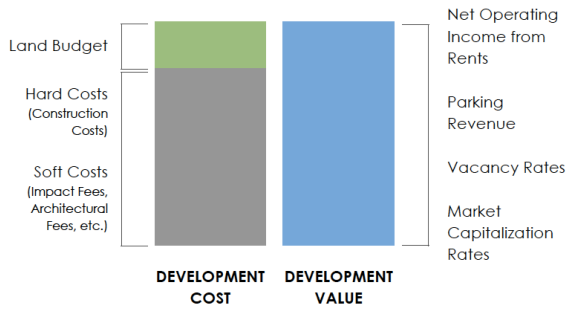
- ***A pro forma*** is the standard financial analysis completed by the development community to assess the financial feasibility of a development proposal. A pro forma contains a set of market assumptions (e.g. rental revenue, construction costs) which are then used to determine a projected rate of return for a project over a specific period of time. There are many possible financial metrics that can be utilized to calculate the financial feasibility. In this case, a return on cost metric was used to calculate the residual land value.
- ***Residual land value (RLV)*** is a measure of what a developer is able to pay for land, given expected construction, operating costs, and revenue. In other words, it is the budget that developers have remaining for land after all the other development constraints have been accounted for. It is a useful metric for assessing how code changes and potential development incentives interact to impact development feasibility. Generally, policy changes are priced into the land in the short run. This makes the RLV analysis an appropriate tool for policy analysis.

Exhibit 5 summarizes the RLV method by illustrating two example developments (or *prototypes)*. In both scenarios, the blue right-hand column illustrates the total value of the project (derived from rental revenue less any operating expenses and vacancy costs). The grey left-hand column shows the total costs to build the project—comprised of the hard construction costs and the soft costs (such as the design cost or city permit fees). The exhibit shows one project, which is feasible and the other, which is likely infeasible:

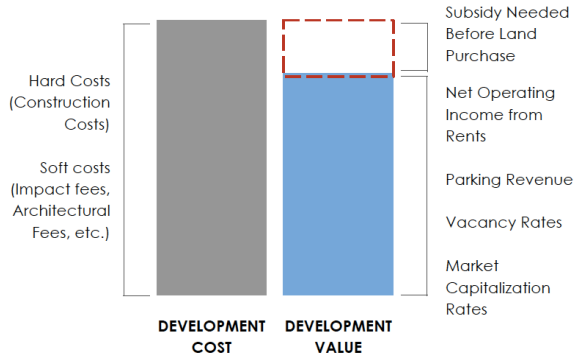
- **Feasible projects**: If the blue column is greater than the grey column, there is budget available to purchase land (shown in green). A positive land budget indicates that a proposed development project is likely to be feasible (contingent on the market transaction price for land).
- **Infeasible projects:** If the blue column is lower than the grey column, then a subsidy is needed to get the project to be feasible (shown in a red outline). A land budget below $0 indicates that a proposed development project is not feasible, absent offsetting incentives that can cover the difference (plus any cost required to acquire the land).

Exhibit 5. Land Budget Method for Pro Forma Modeling

(A) Likely Feasible– Developer has money to pay for land



(B) Likely Infeasible– Development requires subsidy, even before land purchase



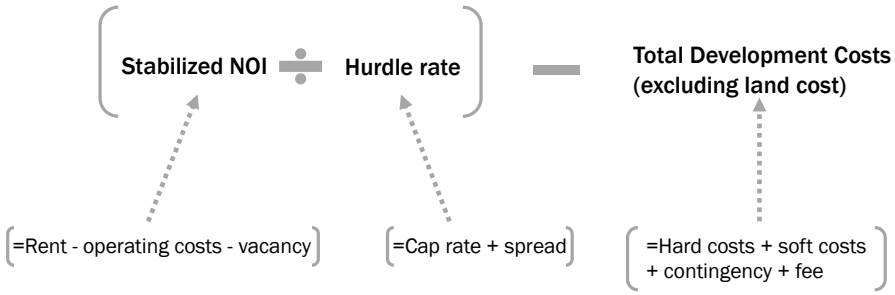
Source: ECONorthwest and SERA Architects

An RLV model does not consider the many unique conditions that can influence development feasibility (e.g., increased predevelopment costs, low land basis from longtime land ownership). For these reasons, the City should consider the RLV analysis as a strong indicator of the relative likelihood of feasibility, rather than an absolute measure of return to the investor or developer.

Using the RLV approach, ECONorthwest analyzed each of the development scenarios to measure high-level development feasibility. ECONorthwest used the following steps (also illustrated in Exhibit 6) to calculate the estimated RLV per square foot of land:

1. Determine current market assumptions (such as rent, operating costs, and construction costs) for each type of development product (shown in Appendix C).
2. Define the available building areas.
3. Calculate the revenue from the leasable square feet and then remove the vacancy and operating costs (such as taxes, insurance, maintenance, management, select utilities) to arrive at an annual net operating income (NOI).
4. Determine the value indicated based on the NOI by dividing by the desired return on cost rate (hurdle rate) for each programmed vertical use.
5. Apply the cost per square foot values to the gross square feet for each product type (e.g., office, residential, retail) and the cost per stall for parking.
6. Sum the individual programmed use costs to determine a total hard cost.
7. Add soft costs, contingency, and developer fee to the total hard costs to determine the total development cost.
8. Calculate the RLV by subtracting the total development cost (step 7) from the total development value (step 4).
9. Divide the total RLV by the parcel square footage to determine RLV per square foot of land.

Exhibit 6. Residual Land Value Formula



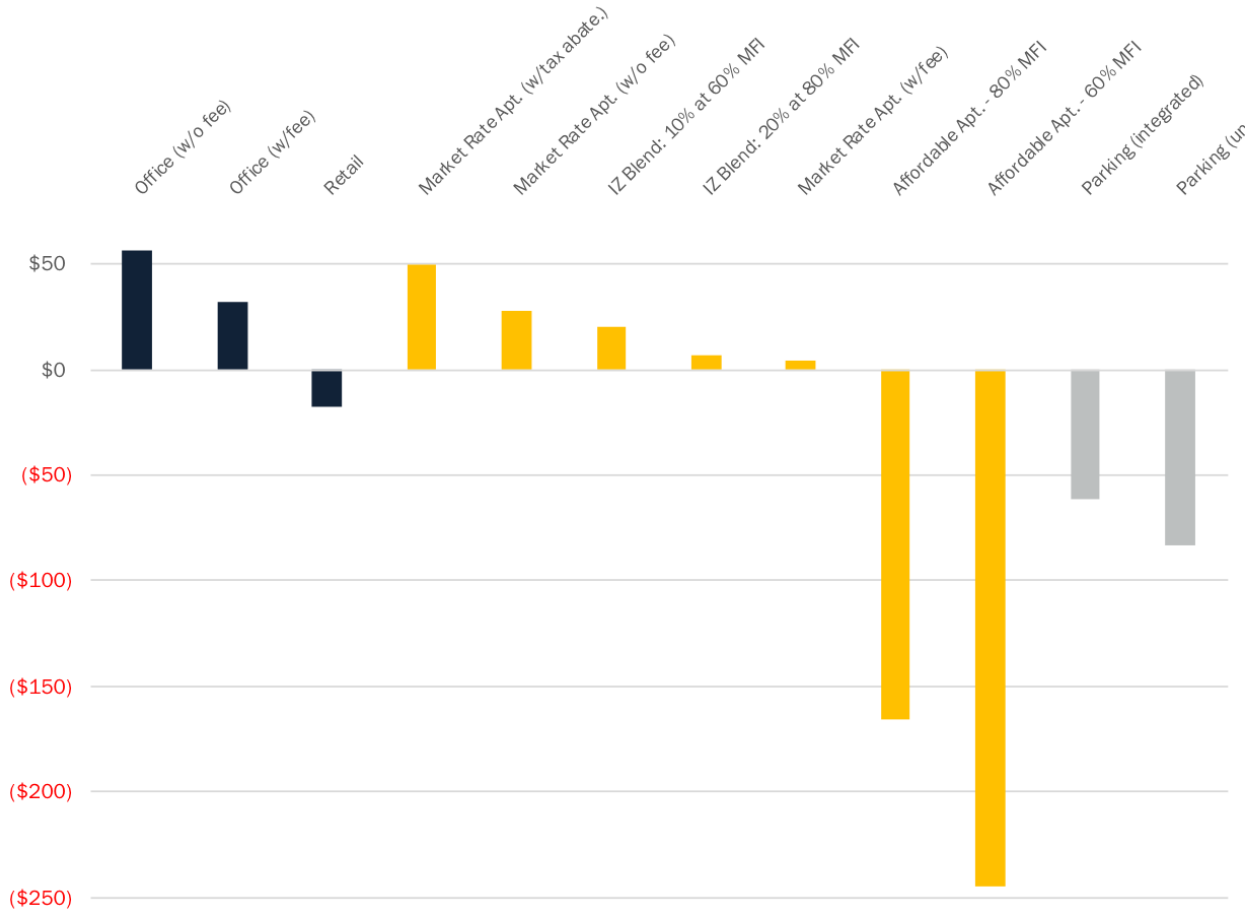
Step 3.2: Determine uses that are market feasible

ECONorthwest used the RLV approach to evaluate each use independently. This is known as a pencil-out methodology, which is a simplified modeling approach to isolate and understand the influence of each programmed use in a building (e.g. office, residential, retail, parking). Evaluating the value of each use, on a per square foot basis, allows for a high-level understanding of which uses are most valued in the market and which ones are not market feasible:

- **Office**: Calculate the value of office without paying a fee-in-lieu, then separately calculate building area above base entitlements that are acquired through the IH program at a cost of $24 per square foot.
- **Retail:** Ground floor retail as part of a mixed-use development.
- **Residential:** Several categories of apartments were evaluated: market rate apartments (with the incentive of a tax abatement), market rate apartments (without a tax abatement), market rate apartments (without a tax abatement and paying the fee-in-lieu), affordable apartments at 80% of MFI, affordable apartments at 60% of MFI, and then two different IH blends of market rate and affordable apartments (10% units at 60% MFI and 20% units at 80% MFI).
- **Parking:** Evaluate both underground and integrated above ground parking, irrespective of the primary use of the building.

The results of the valuation of individual uses are shown in descending order of value in Exhibit 7.

Exhibit 7. Market Feasibility of Individual Use Components – Residual Land Value PSF



Source: ECONorthwest

Initial Feasibility Findings

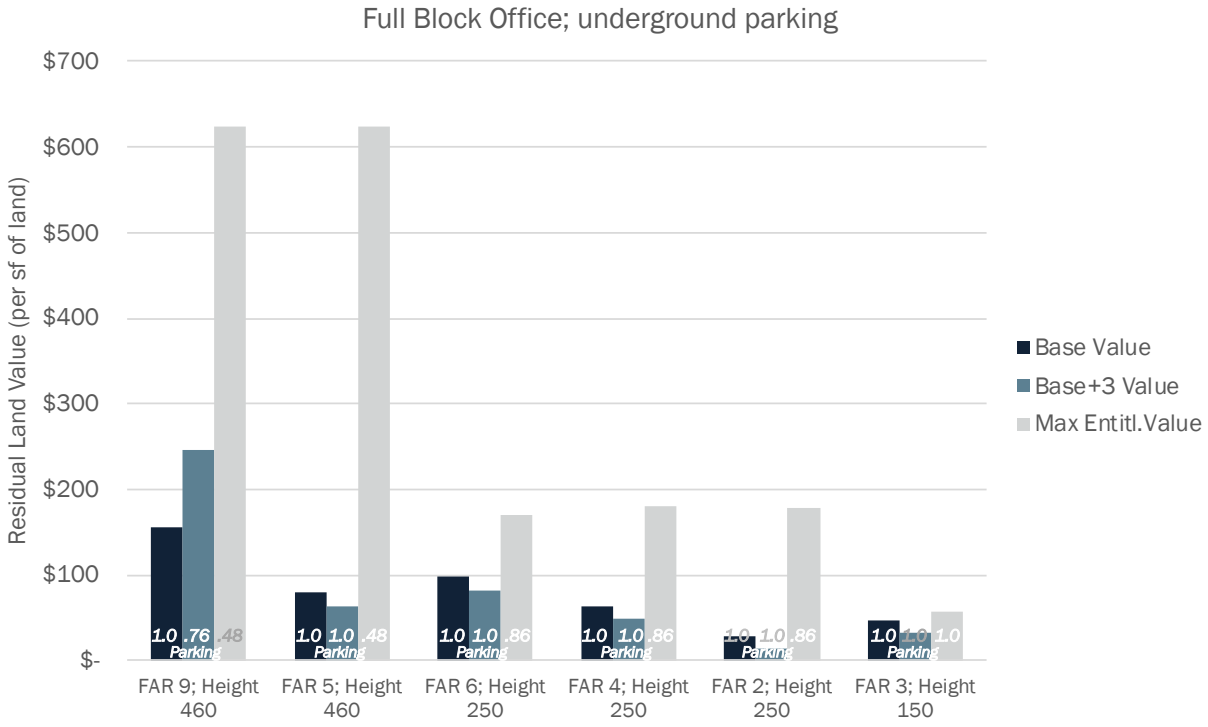
Isolating the RLV of individual uses allowed for a comparison of modeling parking above grade (integrated) or below grade (underground). Both parking scenarios produced similar RLV results when evaluating an entire building prototype. Although it costs more to construct parking below grade, this approach allows for more leasable development area above ground. When the primary programmed use has positive RLV, the tradeoff of more expensive parking underground in exchange for more revenue producing leasable area above ground can be financially advantageous.

When comparing the results of the entire building prototypes, another key finding emerged—the effective parking ratio is lower in buildings built with higher maximum heights and FARs than those built at lower heights and lower FARs. When comparing the values of the entitlements at base, base+3, and max entitlements, the larger base entitlements allowed for greater value when moving from base+3 entitlements to maximum entitlements than what was observed in prototypes with lower base entitlements.

A minimum parking requirement of 0.6 spaces per unit for residential, and 1 space per 1,000 SF for office was selected based on observed market conditions and developer interviews. The building prototypes and examples of recent precedent projects informed the capacity for parking in each prototype. Based on this information, the assumed limits used in this study were three floors of integrated or four floors of underground parking.

As buildings add more programmed space, they will eventually reach the maximum capacity to provide parking[3].Put differently, once a certain amount of programmed space is achieved, implicitly the parking ratios decrease as additional programmed space is added (in this case through a transfer of FAR). This meant that for some building prototypes, specifically those with greater base FAR entitlements, a developer would not need to add parking for the additional primary use area that they would gain from the maximum entitlements. The value for additional area is influenced by this lower provision of parking. These RLV results, and the effective parking ratios, are shown in Exhibit 8.

Exhibit 8. Example of Results: Parking Influence on Development Feasibility



Source: ECONorthwest

[3] This is due to the employed modeling assumption of maximum floors of parking in a hypothetical new development – either three floors integrated or four floors underground. This modelling assumption was based on recent precedent development in the Portland.

Residential tower development isn't feasible under the current market conditions

Calibrating a price for residential uses is difficult for multiple reasons:

- **The market rent for residential units has stagnated while construction costs have increased.**
    - To address this issue, ECONorthwest modeled a current market scenario and a future scenario where rents increased 15% (the increase in rents observed over this last cycle), while construction costs remained constant. Though we report the financial feasibility results of both scenarios, the total potential revenue for the program is based on the current market scenario.
- **Podium residential product (e.g. up to five floors of stick frame construction over one or two floors of concrete podium) is more financially feasible than the tallest residential tower.** Rent premiums observed in towers do not create enough of an incentive to cover the increased cost of tower construction compared to lower podium construction cost. However, there are multiple reasons why a developer might pursue building a tower (e.g. they want to create a legacy project, they have foreign investment, they have site control with a low-cost basis).
    - To analyze willingness to pay for residential development, we did not compare the maximum entitlements value of high-rise construction to a podium product valuation.
- **The City of Portland Inclusionary Housing program provides multiple options for residential developers.** The available choices for the IH policy include: 20% of the units at 80% of MFI, off-site provision, convert existing off-site units to affordable, pay a fee-in-lieu, or set aside 10% of the units at 60% MFI. All of these options have different impacts on financial feasibility that influence a developer's willingness to pay.
    - For this analysis multiple options were modeled: 20% units at 80% MFI, 10% units at 60% MFI, and paying the fee-in-lieu. The option with the least impact on financial feasibility is for a developer is set aside 10% of units on-site as regulated rent at 60% MFI. All of the residential modeling therefore used the preferred option of 10% set aside @ 60% MFI.

Step 4: Determine Developer Willingness to Pay (by use)

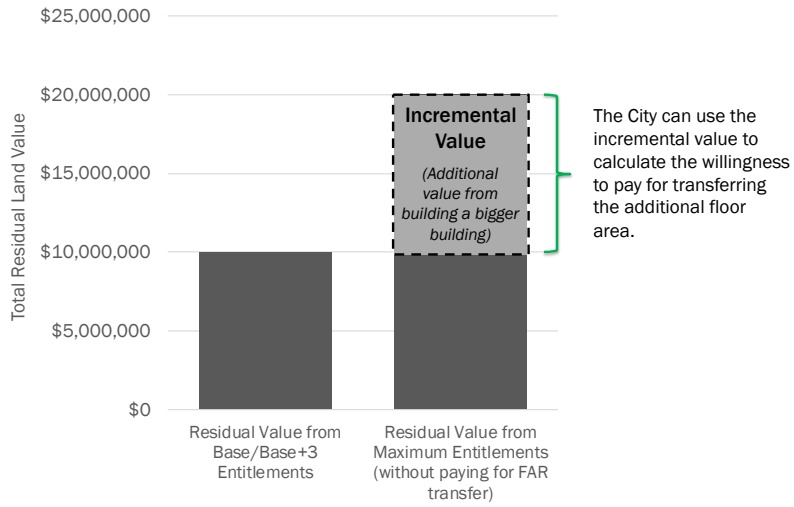
For each programmed use, we compared the RLV of the maximum entitlements to the RLV for the base and the base+3 entitlements to determine a developer's willingness to pay for the additional building area. The willingness to pay informs the transfer fee that the City can charge for the FAR.

It is common practice to provide an incentive to utilize a voluntary policy like the FAR transfer—that is to say the policy should not calibrate the price to be exactly equal to the assumed marginal benefit. There are several reasons for providing an incentive, namely it is difficult to exactly estimate the value of the density in all scenarios. Because of this uncertainty, in instances where the cost of additional FAR exceeds the value generated, a developer would not purchase additional development rights. In order to achieve a public benefit related to the policy, there must be market demand to purchase the development rights.

To illustrate this concept, Exhibit 9 creates a hypothetical scenario to compare the maximum RLV from the base (or base+3) entitlements to the RLV of the maximum entitlements possible (subject to a height requirement).

- **The left bar** shows the total RLV of a building built under the base/base+3 entitlements ($10,000,000 of RLV).
- **The right bar** shows the total RLV of the building built at the maximum entitlements, assuming no fee was paid to acquire the additional development rights ($20,000,000 of RLV). The additional RLV achieved for building a larger building using maximum entitlements ($10,000,000), is the incremental value attributable to the transferred FAR. Setting a fee based on the full incremental value of $10,000,000 would eliminate the incentive for a developer to take on more risk without any participation in the upside potential. Setting the fee greater than $0, but less than $10 million provides an incentive to transfer while generating revenue for the City.

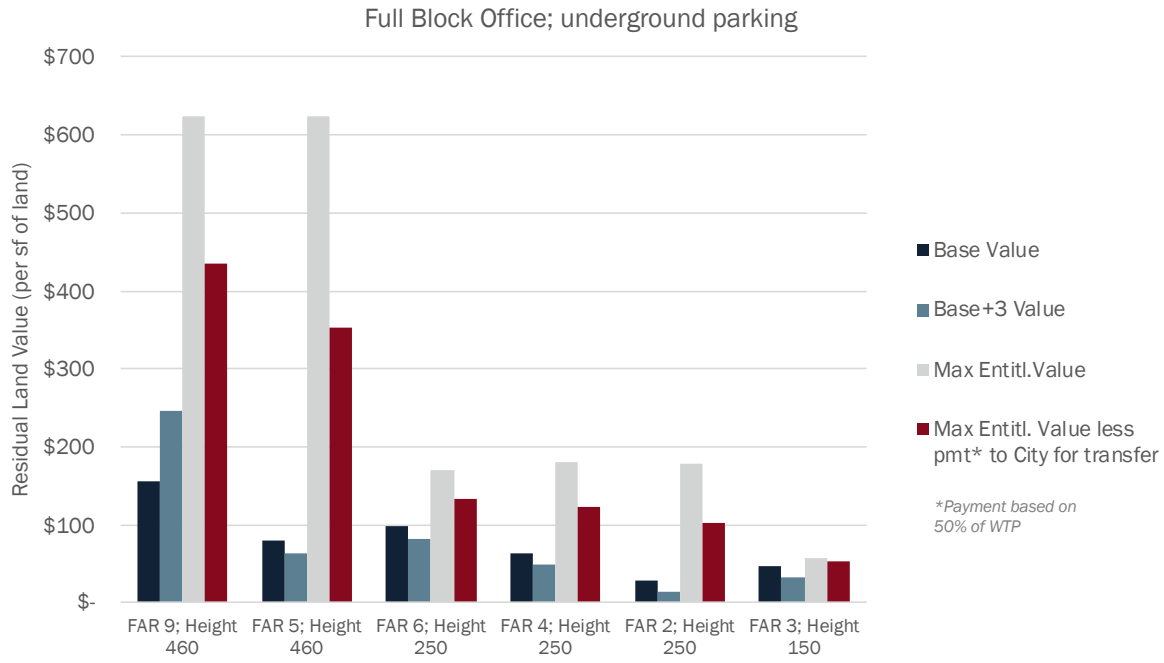
Exhibit 9. Conceptual Illustration of Methodology for Calculating Willingness to Pay (WTP)



Source: ECONorthwest

For this initial program analysis, we determined a transfer fee based on an assumption that the City and the developer equally share the incremental value (50/50 percent split). Using this methodology, the resulting total RLV per square foot of land (including paying the calculated FAR transfer fee) demonstrate how additional value is generated after paying the FAR transfer. See Exhibit 10 for an example of an office prototype with underground parking on a full block parcel. The grey bars represent the RLV per square foot of land for the office built to maximum entitlements. In each of the combinations of FAR and maximum height, there is value generated through the transfer of additional FAR—the red bars demonstrate how a transfer fee of 50% of the willingness to pay for the additional development rights would decrease the RLV.

Exhibit 10. Results Example, Including Payment for Building Area Based on 50% WTP



In order for the program to be effectively implemented, the resulting RLV per square foot of land needs to exceed the current market value of land. The value of the sites with the largest maximum heights are in the range of current market value for land in the Central City. Many developers have site control where the price of land is lower than market value—in these cases generating incremental value for the FAR is more important than the resulting RLV.

Exhibit 11 through Exhibit 13 show the results of the per square foot willingness to pay, per use. These graphics include the effective parking ratios to help illustrate the influence of parking on the ability to pay for additional area. One of the primary contributing factors to generating value for the FAR is a reduction in effective parking ratios. As effective parking ratios increase, the ability to pay for FAR decreases.

Exhibit 11. Willingness to Pay, per SF of Building Area, for Office

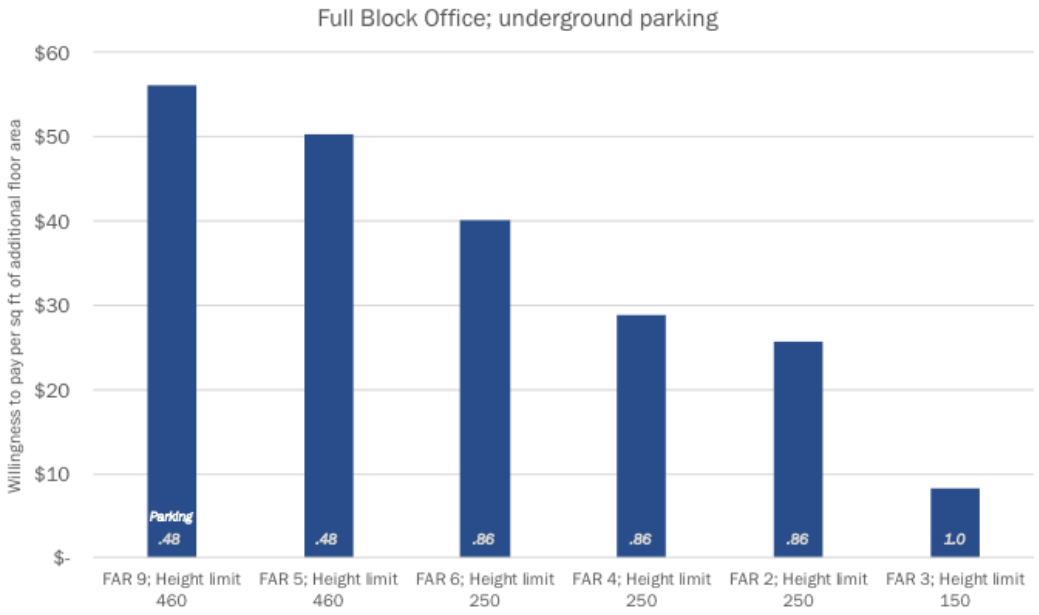


Exhibit 12. Willingness to Pay, per SF of Building Area, for Residential

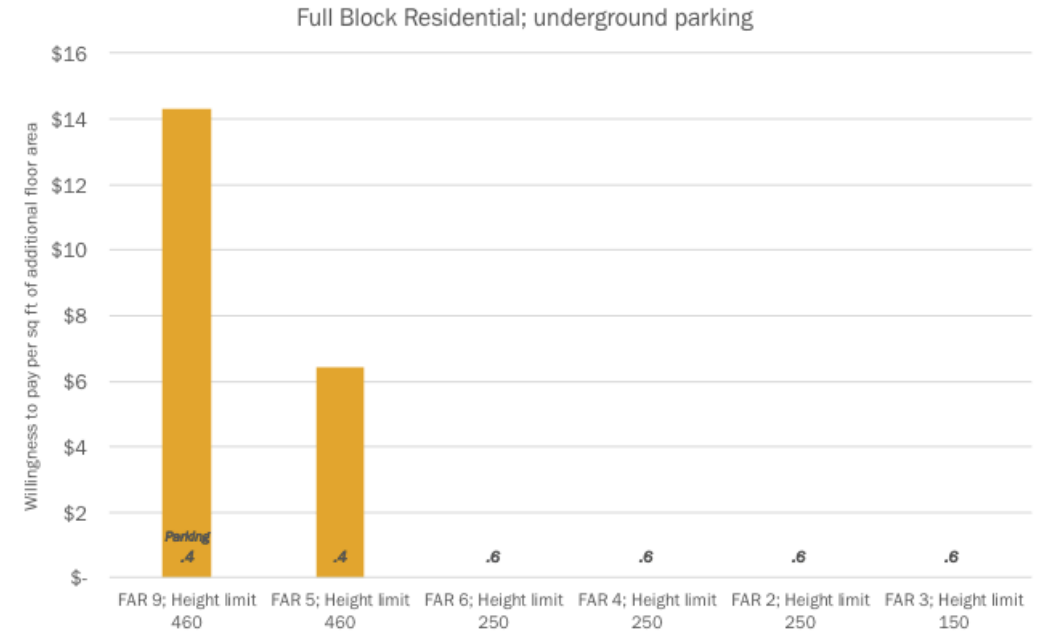


Exhibit 13. Willingness to Pay, per SF of Building Area, for Mixed-Use

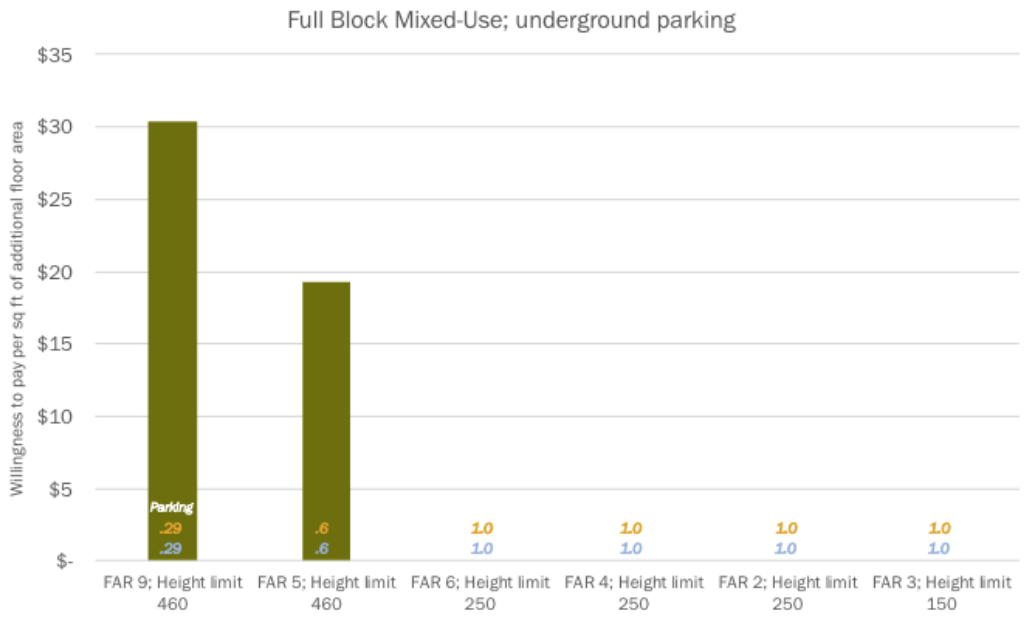


Exhibit 14 summarizes the range of a developer's willingness to pay per square foot of additional FAR for each product type for a varied set of base height and FAR combinations. These fees are calibrated assuming that the City shares the incentive equally with a developer (50% of the additional value) in all cases. The variation in the range of potential fee suggests that if the program is implemented a refined approach for fee calibration might include segmentation by programmed use and the amount of additional FAR available to transfer on an individual parcel.

Exhibit 14. Willingness to Pay by Use and Base Entitlements for Full Block Parcels

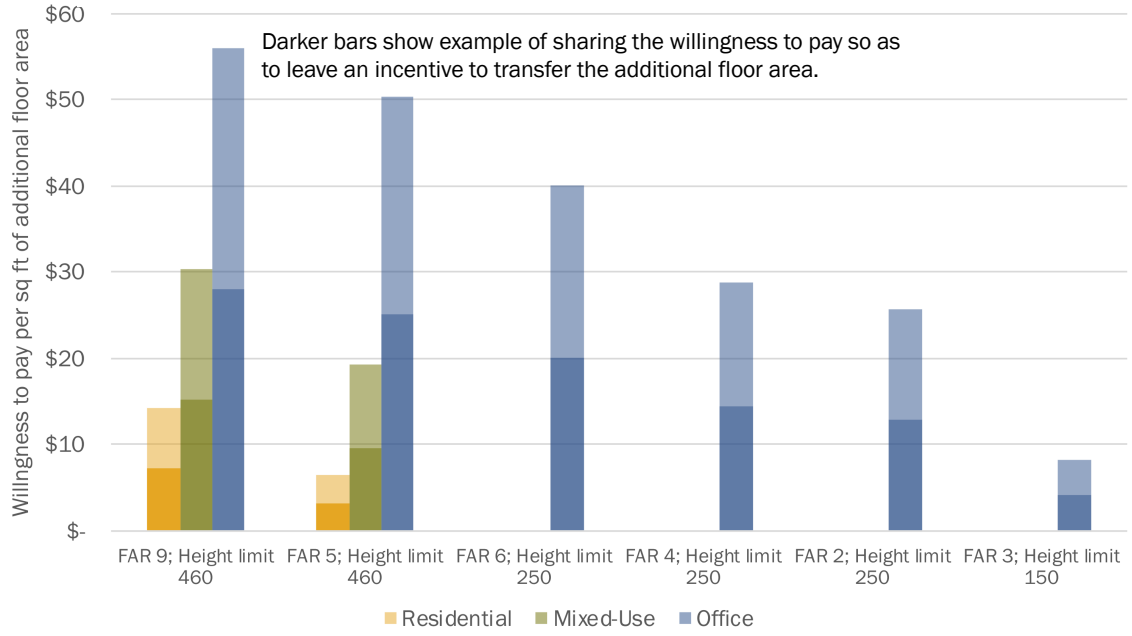


Exhibit 15 and Exhibit 16 show the results of the per square foot willingness to pay under the conditions of a future scenario where residential rents increased by 15% (see explanation in call out box on page 12).

Exhibit 15. Willingness to Pay, per SF of Building Area, for Residential (Future Scenario)

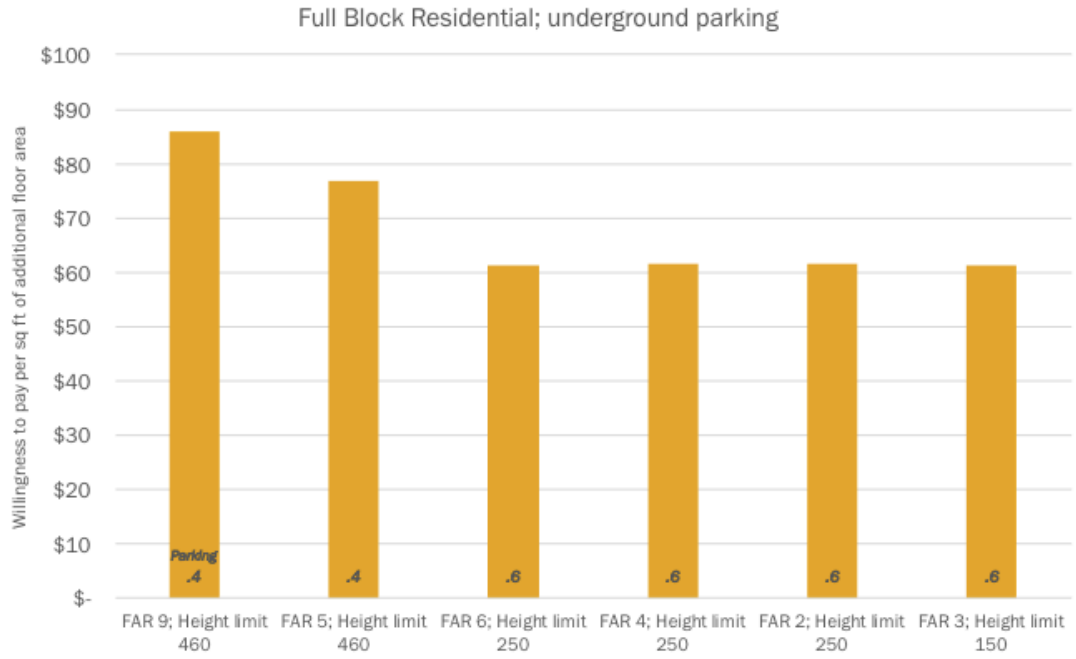


Exhibit 16. Willingness to Pay, per SF of Building Area, for Mixed-Use (Future Scenario)

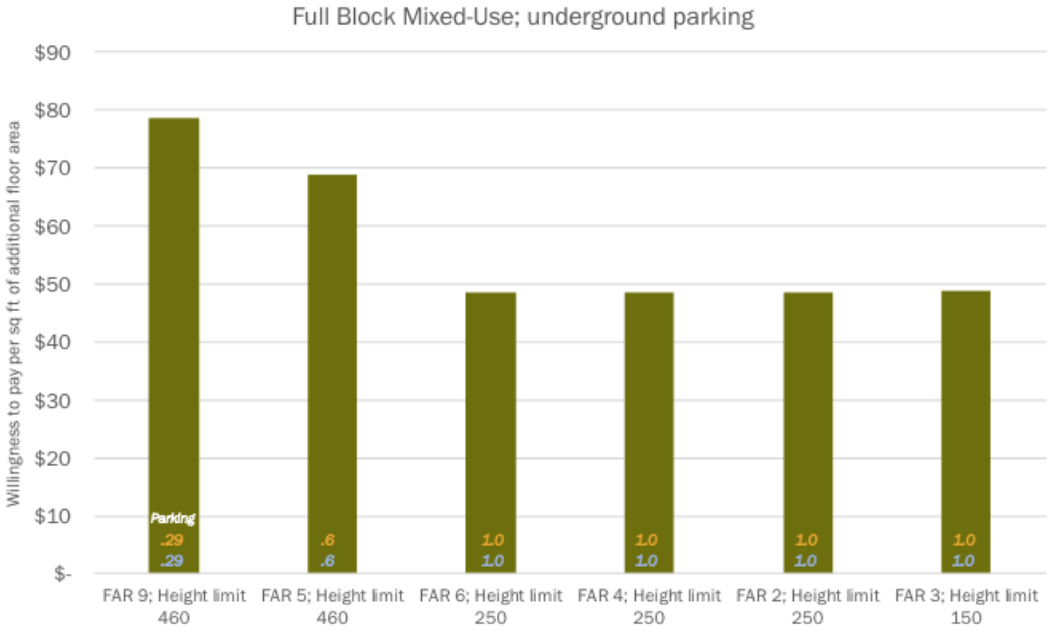


Exhibit 17 below demonstrates that the calibration of the fee is sensitive to changes in market conditions. Residential prototypes and residential/office mixed use prototypes would have a higher willingness to pay than office under a scenario where residential rents increase 15%.

Exhibit 17. Willingness to Pay by Use and Base Entitlements for Full Block Parcels (Future Scenario)

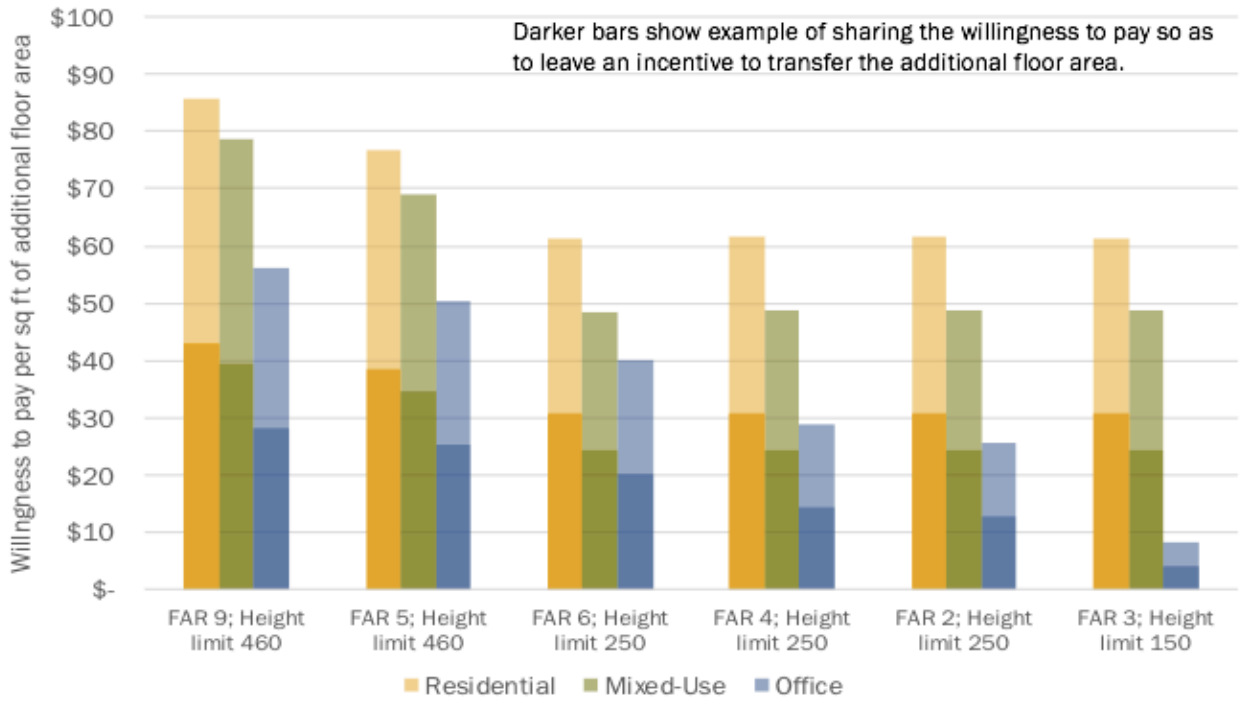


Exhibit 18 summarizes the weighted average willingness to pay for additional FAR assuming a 50% split of the incremental value between the city and a developer. The maximum is the highest amount for a parcel with certain base FAR and maximum height attributes—it is not representative of a large number of parcels, and therefore is only indicated for illustrative purposes. The weighted average is a more realistic estimate of the potential fee generation for the City per additional foot of development rights. In order to calculate the weighted average, we used the prevalence of different combinations of base FAR and maximum height for all of the identified parcels in the Central City to weight the distribution.

Exhibit 18. Summarized Willingness to Pay Results (minimum, maximum, and weighted average)

Price Per Square Foot Estimates			
	Min	Weighted Average	Max
Residential	$0.00	$1.75	$8.94
MU	$0.00	$4.71	$15.42
Office	$4.09	$18.88	$28.04

Source: ECONorthwest

Exhibit 19 lists the willingness to pay for a hypothetical future market scenario where residential rent increase by 15%. This market scenario demonstrates that the willingness to pay is highly sensitive to changing market conditions—if the policy is implemented, we recommend frequent calibration of the fee structure to ensure the policy objectives are aligned with private market incentives and financial feasibility.

Exhibit 19. Summarized Willingness to Pay Results – Future

Price Per Square Foot Estimates	Min	Weighted Average	Max
Residential	$30.65	$34.22	$43.65
MU	$24.12	$29.11	$39.31
Office	$4.09	$18.88	$28.04

Step 5: Estimate Total Demand for 2010-2035 and 2018 - 2035

This technical memo has focused on calculating the capacity for transfer up to this point. The capacity to transfer is the upper end of the market potential to transfer. In order to better inform the future market demand, we used projections about total development through 2035 in the Central City as a reference.

BPS projects the growth in the Central City from 2010-2035 will add 34,000 total jobs and 30,000 residential units. This translates to approximately 27 million square feet of residential space and 13.6 million square feet of office space, resulting in 40.6 million square feet of total building area through 2035. The distribution of programmed uses is 66% residential space and 33% for office space.

To determine how much development has already occurred in the planning period (starting in 2010), ECONorthwest used data from RLIS to calculate the total amount of residential and commercial development that occurred in the Central City from 2010 to 2017. The total building area developed over this period was 10.9 million square feet which translates to an average of 1.4 million square feet annually. We multiplied the average annual production total by the remaining 17 years in the planning period (2018 to 2035) to arrive at a potential total development amount of **22.9 million square feet.** This is lower than the average development projected by BPS through the 2035 planning period.

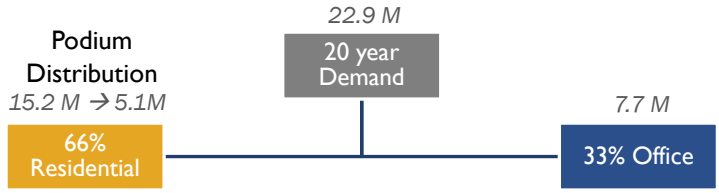
As shown in Exhibit 20, ECONorthwest multiplied the 17-year estimate of 22.9 million square feet by the same proportional split of residential and office development used for the entire planning period (66% and 33% respectively):

- **Residential:** Applying this proportion resulted in a total of 15.2 million square feet of residential. Of crucial importance to understanding the demand for additional residential density is the distribution of high-rise development vs. other lower height development that does not generally require additional FAR. In order to differentiate high-rise from other residential development, additional data from CoStar was analyzed from of 2010 to 2017. During this period, approximately 33% of the residential

development in the Central City occurred in high-rise towers[4]. The same distribution of development is assumed to occur through 2035—therefore 33% of the 15.2 million square feet of estimated residential development is scaled down to an estimate of **5.1 million square feet of potential residential development that could demand additional development rights.**

- **Office:** Applying 33% of the total 22.9 million square feet of development resulted in an estimate of **7.7 million square feet of office that could demand additional development rights.**

Exhibit 20. Estimated 20-Year Demand Split by Use



In order to determine the potential demand for FAR transfer, an important differentiation is the share of development that would occur using the base/base+3 entitlements, and therefore not require an FAR transfer. This share varied between the half block and full block prototypes. In order to determine what share of the development would be in addition to the base+3 entitlements and therefore a candidate to acquire additional development rights, we used the following methodology:

1. Evaluate the split between half block and full block sites observed in the underutilized and vacant site data. Of this subset, 36% were approximately 20,000 square feet and 64% were 40,000 square feet.
2. Assume a 36% share of sites would be half block sites, and 64% full block sites. Apply this distribution to the previously analyzed estimates for residential and office development. For residential development, this resulted in 1.8 million square feet on half blocks and 3.3 million square feet on full block sites. For office development, this resulted in 2.8 million square feet on half blocks and 4.9 million square feet on full block sites.
3. Analyze the share of development that would be built utilizing the base/base+3 entitlements, compared to the share of development that would require a transfer of

[4] This estimate included buildings, like 5 over 1 (5 floors over 1, typically stick frame over concrete ground floor) podium residential, that might not use all of the base entitlements. In this estimate, the total amount from residential podium development is approximately 10.1 million square feet, leaving 5.1 million square feet of potential residential development in towers.

FAR. For residential, 40% of the area on half block sites and 68% of the area on full block sites would occur in the base/base+3 entitlements. For office, 40% of the area on half block sites and 70% of the area on full block sites would occur in the base/base+3 entitlements. These percentages can be seen in the last row of the methodology hierarchy illustrated in Exhibit 21.

Exhibit 21. Estimated 20-Year Demand – Split by Use, Block Size and Proportion in Base/Base+3 Entitlements

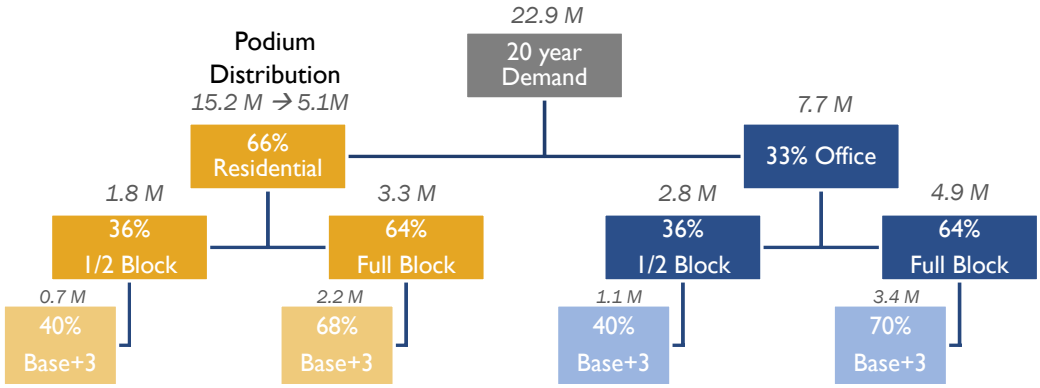


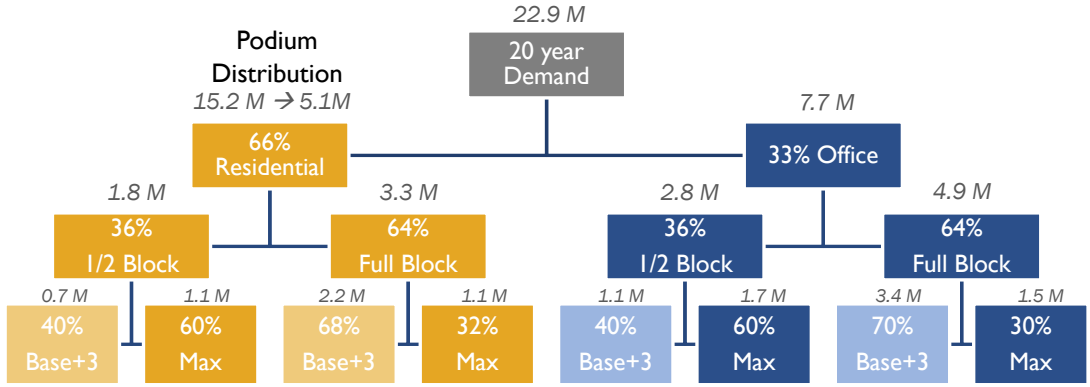
Exhibit 22 carries forward the splits of programmed use, half block vs. full block, and base+3 vs. FAR transfer required, and converts each category to cumulative square feet of demand through 2035. This decision tree distribution results in residential demand for a transfer of development rights of approximately 1.1 million square feet from half blocks and another 1.1 million square feet from full blocks, for a total of approximately **2.1 million square feet of demand for FAR transfer though 2035**.

For office, the resulting demand for a transfer of development rights was approximately 1.7 million square feet from half blocks and 1.5 million square feet from full blocks, for a total of **3.1 million square feet of demand for FAR transfer though 2035.**

The total potential demand for the transfer of FAR over the 2018 to 2035 period is therefore 5.2 million square feet,

Put differently, 5.2 million square feet (of the total 17.6 million square feet estimated to be developed in the Central City through 2035) are likely to require a transfer of FAR to achieve desired densities on individual development parcels. The 17.6 total square feet of development includes the approximate 10.1 million square feet of residential development likely to occur using lower height development prototypes (for example, 5 floors over 1 floor of podium, typically stick frame over concrete ground floor) that are not likely to demand any transfer of FAR.

Exhibit 22. Estimated 20-Year Demand – Full Methodology for Estimating Potential Demand From FAR Bank Transfer Program (2018-2035)



Step 6: Estimate Total Potential Revenue for 2018 – 2035

The final step in this initial program analysis was to estimate the total potential revenue of the program. Exhibit 23 lists a fee structure using an assumption that the FAR transfer fee per square foot would equal 50 percent of the incremental incentive value to build a bigger building.

Exhibit 23. Summarized Willingness to Pay Results (50% WTP)

Price Per Square Foot Estimates			
	Min	Weighted Average	Max
Residential	$0.00	$1.75	$8.94
MU	$0.00	$4.71	$15.42
Office	$4.09	$18.88	$28.04

Results

Minimum revenue estimate: The low end of willingness to pay fees were multiplied by the office and residential development area estimates for the 2018 to 2035 period to arrive at the total minimum revenue projection of $12,834,014 (shown in Exhibit 24). These total revenue projections were divided by the 17 years remaining in the planning period to get the potential minimum average revenue from the program.[5] The minimum fee structure assumes there is no current market for residential or mixed-use residential/office prototypes. This is a conservative estimate calibrated based on current market conditions.

Maximum estimate: There is no cumulative revenue projection using the maximum revenue. It is not broadly applicable to the entire Central City—it is representative of the highest

[5] The annual estimate is a straight average. Actual annual revenue could fluctuate higher or lower depending on market conditions.

willingness to pay for a specific parcel. The fee value is included only to demonstrate that individual parcels may have a higher willingness to pay for additional FAR than the weighted average value.

Weighted average estimate: The weighted average estimate is the most realistic approach and should be considered the upper bound of likely revenue that the FAR policy could generate for the City. The same methodology was utilized as in the minimum revenue scenario to derive the weighted average revenue of $62,918,940 that the FAR transfer program could generate for the City through 2035. The total revenue projection was divided by the 17 years remaining in the planning period to obtain the upper bound of annual revenue the program could generate given current market conditions.[6]

Exhibit 24. Total and Annual Estimate of Program Revenue (2018-2035)

Total Revenue Estimates	Min	Weighted Average
Cumulative Through 2035	$12,834,014	$62,918,940
Annual Estimate	$754,942	$3,701,114

[6] The annual estimate is a straight average. Actual annual revenue could fluctuate higher or lower depending on market conditions.

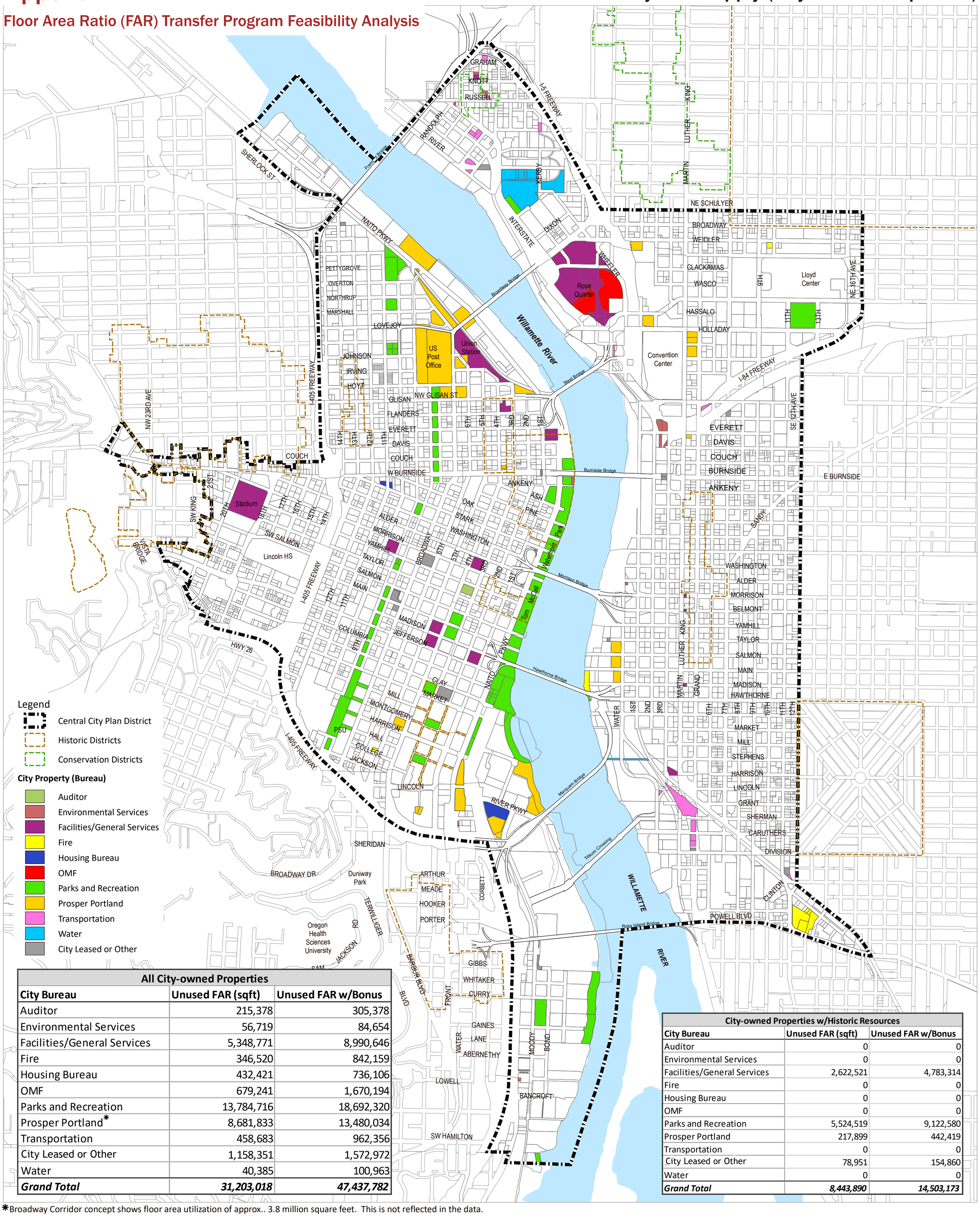
Appendix A. City-owned Parcels with Development Area Available for Transfer

See map on next page.

Appendix A

Floor Area Ratio (FAR) Transfer Program Feasibility Analysis

Central City FAR Supply (City-owned Properties)



Legend

- Central City Plan District
- Historic Districts
- Conservation Districts

City Property (Bureau)

- Auditor
- Environmental Services
- Facilities/General Services
- Fire
- Housing Bureau
- OMF
- Parks and Recreation
- Prosper Portland
- Transportation
- Water
- City Leased or Other

All City-owned Properties		
City Bureau	**Unused FAR (sqft)**	**Unused FAR w/Bonus**
Auditor	215,378	305,378
Environmental Services	56,719	84,654
Facilities/General Services	5,348,771	8,990,646
Fire	346,520	842,159
Housing Bureau	432,421	736,106
OMF	679,241	1,670,194
Parks and Recreation	13,784,716	18,692,320
Prosper Portland*	8,681,833	13,480,034
Transportation	458,683	962,356
City Leased or Other	1,158,351	1,572,972
Water	40,385	100,963
Grand Total	***31,203,018***	***47,437,782***

City-owned Properties w/Historic Resources		
City Bureau	**Unused FAR (sqft)**	**Unused FAR w/Bonus**
Auditor	0	0
Environmental Services	0	0
Facilities/General Services	2,622,521	4,783,314
Fire	0	0
Housing Bureau	0	0
OMF	0	0
Parks and Recreation	5,524,519	9,122,580
Prosper Portland	217,899	442,419
Transportation	0	0
City Leased or Other	78,951	154,860
Water	0	0
Grand Total	***8,443,890***	***14,503,173***

*Broadway Corridor concept shows floor area utilization of approx.. 3.8 million square feet. This is not reflected in the data.

City of Portland, Oregon || Bureau of Planning & Sustainability ||Geographic Information System

NORTH

0 500 1,000 Feet

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August 9, 2018

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Appendix B. Underutilized and Vacant Sites

See map on next page.

Appendix B

Floor Area Ratio (FAR) Transfer Program Feasibility Analysis

Central City FAR Demand Above Bonus

CC Subdistrict	FAR Demand above Bonus FAR (sqft)
LOWER ALBINA	0
PEARL DISTRICT	8,353,244
LLOYD DISTRICT	7,463,864
OLD TOWN / CHINATOWN	2,217,705
GOOSE HOLLOW	2,278,505
DOWNTOWN	4,617,762
UNIVERSITY DISTRICT/SOUTH DOWNTOWN	3,009,056
CENTRAL EASTSIDE	1,204,823
SOUTH WATERFRONT	excluded from study
WEST END	2,717,736
Grand Total	***31,862,695***

Legend

Tax Lots with FAR Demand above bonus

in Square Feet

- 2,516 - 37,452
- 37,453 - 96,000
- 96,001 - 176,700
- 176,701 - 290,978
- 290,979 - 500,250
- Central City Plan Boundary
- Floor Area Ratios
- Unlimited Max Height (460' for analysis)
- Historical/Conservation Landmarks or Contributing Sites
- Zero FAR Demand

September 12, 2018

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NORTH

0 0.5 Miles

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Appendix C. Development Assumptions

Operating Revenue and Cost Assumptions					
Variable	Multi Forma			Assumption	Unit of Measure
	Low	High		Modeling Assumption	
Rent					
Studio Apartment			$	2.70	Per square foot, monthly
1-br Apartment			$	2.55	Per square foot, monthly
2-br Apartment			$	2.40	Per square foot, monthly
3-br Apartment			$	-	Per square foot, monthly
Tower premium				17%	
Office Rent			$	36.00	NNN
Retail Rent			$	29.00	NNN
Vacancy Rate					
Market rate residential	5	7		5%	Percent
Affordable residential				2%	Percent
Office				10%	Percent
Retail				15%	Percent
Parking				10%	Percent
Operating Expenses					
Apartment			$	3,000	Per Unit/Year
Property tax - residential			$	2,500	per Unit/Year
Office			$	12	Per vacant SF
Retail			$	10	Per vacant SF
Parking				10%	Percent of gross revenue
Commercial Leasing Commission				7%	
Residential Parking Revenue					
Podium	75	125	$	200.00	Per stall, monthly
Underground	75	125	$	200.00	Per stall, monthly
Residential ROC	5.80%	6.50%		5.60%	
Office ROC				7.00%	
Retail ROC				7.00%	
Parking ROC				6.00%	

Construction Costs					
Variable				Assumption	Unit of Measure
Hard Construction Costs					
Mid-Rise Tower (Type I construction, up to 150')					
Upper Floor Apartment	240	300	$	280	Per square foot
Residential Lobby			$	165	Per square foot
Gross to Net ratio				87%	
5 over 1 Podium (Type V construction; up to 90')					
Upper Floor Apartment (stick)	180	220	$	180	Per square foot
Ground Floor Retail (incl. TI)	180	240	$	230	Per square foot
Gross to Net ratio				83%	
Office (incl. TI)			$	255.00	
Office/commercial gross to net ratio				90%	
Parking					
Surface			$	6,000	Per stall
Podium			$	40,000	Per stall
Underground			$	50,000	Per stall
Soft Costs (all)				27%	Percent of Hard Costs
CET				1%	Percent of Hard and Soft Costs
BES SDC			$	4,572	Per unit charge
Parks SDC			$	5,772	Per unit charge
PBOT SDC			$	2,024	Per unit charge
Other SDCs				10%	
Developer Fee				4.0%	Percent total development cost
Contingency fee				5.0%	Percent of Hard + Soft Costs
Fee-in-lieu per gross sq ft - res			$	27	Per square foot
Fee-in-lieu per bonus sq ft - office			$	24	Per square foot

Apartment/Unit Assumptions and resulting rent		
Variable	Assumption	Unit of Measure
Unit Mix (tower)		
Studio	40%	percent of all units
1 Bedroom	50%	percent of all units
2 Bedroom	10%	percent of all units
3 Bedroom	0%	percent of all units
	100%	
Unit Size		
Studio	500	Net/Rentable Square Feet
1 Bedroom	650	Net/Rentable Square Feet
2 Bedroom	1,100	Net/Rentable Square Feet
3 Bedroom	1,250	Net/Rentable Square Feet
Average residential unit size (net leasable area)	725	Net/Rentable Square Feet