APPENDIX G

TECHNICAL MEMORANDUM: MHA EIS GROWTH ESTIMATES.

OVERVIEW

The Mandatory Housing Affordability (MHA) Environmental Impact Statement (EIS) includes an estimate for each EIS alternative of potential residential and commercial growth that could occur and its distribution across the city. The EIS will compare environmental impacts from additional growth in the Action and No Action Alternatives. Because we don't know with certainty the amount and location of future development that will occur over a 20-year study time horizon, we developed estimates using a model that considers several variables, including the following key factors:

- The formally adopted Seattle 2035 Comprehensive Plan housing and job growth estimates citywide and in each urban village;
- The increment of land use change resulting from a specific parcel-based citywide zoning proposal for each alternative;
- Unique baseline conditions in each urban village (e.g., the existing proportions of multifamily and commercially zoned lands);
- The specific parcels most likely to redevelop considering their existing development; and
- Relative market strength in different geographic areas of the city.

This technical memo describes the modelling method and provides information about the assumptions. At a high level, the model involves the following steps for the EIS study area[1]:

1. Identify the Seattle 2035 growth estimates for Seattle and each urban village in the study area.
2. Create a unique zoning map for each EIS action alternative.

1 See Exhibit 2–1 on page 2.3 for a map of the EIS study area.

3. Identify the parcels where redevelopment could potentially occur in the future.
4. Calculate the increase in development capacity for urban villages between existing zoning and the EIS action alternative zoning maps.
5. Estimate overall housing and job growth for urban villages under each EIS alternative.
6. Estimate MHA affordable housing production for urban villages based on the alternative growth estimates.
7. Assign the urban village housing and job growth estimates to parcel locations.

SEATTLE 2035 GROWTH ESTIMATES

To estimate potential growth under each EIS alternative, we began with the minimum estimates for future housing and job growth in each urban village in the Seattle 2035 Comprehensive Plan. Adopted in 2016, these 20-year growth estimates are based on statewide population forecasts from the Washington State Office of Financial Management (OFM) and reflect policy guidance from regional and countywide growth management plans. By 2035, Seattle's comprehensive plan anticipates growth of 120,000 new residents, 70,000 net new housing units, and 115,000 jobs. The urban village growth estimates in Seattle 2035 represent the minimum growth the City must plan for and identify a distribution of those new housing units and jobs throughout the city. As part of the Seattle 2035 planning process, the City also conducted a sensitivity analysis that considered growth of 100,000 net new housing units. These adopted growth estimates are the product of extensive review, including formal adoption by the Seattle City Council and approval by the Washington State Department of Commerce.

The Seattle 2035 growth estimates consider several factors, including land use constraints in urban villages, the proportion of growth expected for different types of urban villages, physical factors such as transportation infrastructure, and historical growth patterns. The EIS model incorporates the amount and location of housing and job growth estimated in Seattle 2035 but adjusts the comprehensive plan estimates upward to acknowledge the possibility of additional growth resulting from zoning changes to implement MHA. By building on the comprehensive plan growth estimates, the many assumptions and analyses that informed the Seattle 2035 planning process are integrated into the estimation of additional growth due to MHA implementation.

MHA ZONING MAPS FOR EIS ALTERNATIVES

For each action alternative in the MHA EIS, we developed a specific zoning proposal. Using GIS, we created a citywide zoning map for all parcels in the study area in Alternative 2 and Alternative 3 showing specific zoning changes to implement MHA. (See Chapter 2 for a full discussion of the EIS alternatives and how they vary.) Each alternative's map identifies the zoning designation and parcel square footage for all specific zoning changes where MHA requirements would apply.

IDENTIFY POTENTIAL REDEVELOPMENT PARCELS

To estimate growth under each EIS alternative, we need to know where development could theoretically occur in the future. To identify these places, we used the City's analytical model that estimates development capacity citywide and in designated urban villages. Development capacity is an estimate of how much new development could occur theoretically over an unlimited time period. It represents the difference between the buildings and uses that exist today and the likely amount that could be built according to zoning regulations.

The City's development capacity model follows a method used by all jurisdictions in King County. First, the model identifies which vacant and underdeveloped parcels could be available for development.

Second, the model estimates the type of development likely to occur on that parcel based on zoning. Lastly, the model calculates the difference between potential and existing development. The analysis uses several specific assumptions about development in Seattle's various zones to identify the parcels considered likely to redevelop. We outline the most salient assumptions below. For a full discussion of methods and assumptions, see Appendix 2 in this Development Capacity report.

1. To identify underdeveloped parcels that could be redeveloped, the model generally compares the current level of development on a parcel with the level that current zoning allows or proposed zoning would allow. When the difference between these levels exceeds a given threshold, the model considers the parcel susceptible to redevelopment. Depending on the type of land use, this threshold is either ratio of existing residential units to potential residential units, existing building floor area to potential building floor area, or the value of buildings on the parcel to its assessed land value.

2. Seattle has several mixed-use zones that allow both residential and commercial development. To estimate development capacity, the model applies an "observed" ratio assumption to each parcel based on the average split of residential and commercial floor area in new construction over the last ten years for each mixed-use zoning category. We apply the assumption to every parcel in that zoning category. In the EIS model, we used the same ratios from the City's previous development capacity analyses. For new MHA zones, we used the same ratio as the existing zone, i.e., the same ratio applies to an existing NC-40 zone and an NC-55 zone under MHA.
3. The calculation of development capacity is based largely on floor area ratio (FAR) limits for each zone. The City's development capacity model uses observed FARs (i.e., calculations of FARs from actual historical development projects in each zone) rather than the maximum FARs contained in the Land Use Code.[2] However, because we cannot create "observed" FARs for a set of proposed zones that do not yet exist anywhere in Seattle, we have calculated the change in development capacity in each EIS alternative based on the difference in existing and proposed code-maximum FARs. See Appendix 6 for detail on FAR assumptions.
4. Seattle's Lowrise (LR) zones have different FAR limits for different housing types. For example, the maximum FAR limit for a townhouse development is different than the maximum for an apartment development. Because we cannot predict the type of housing development parcel by parcel in Lowrise zones, the City's development capacity model typically uses a "blended" FAR limit that comprises a weighted average of the various observed FARs in each Lowrise zone. To analyze the change in development capacity in each EIS alternative, we must use corresponding blended FARs for MHA zones. To account for the possibility that a larger portion of Lowrise development under MHA is apartments rather than townhouses or rowhouses, we increased the weighting of the highest FAR limit for each Lowrise zone in the action alternatives.
5. In each action alternative, many parcels currently zoned Single Family Residential are proposed to be rezoned to Residential Small Lot (RSL), where the proposed FAR limit is 0.75. To identify where redevelopment is possible, the capacity model relies on a redevelopment threshold for every zone, calculated as ratio of existing to potential development for each zone. For RSL zones, we assumed that only those parcels

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2 This is compliance with comprehensive planning policy outlined in the Growth Management Act (GMA).

where the existing FAR (i.e., the ratio of floor area in existing structures to the size of the parcel) is at most 0.375 would be identified as redevelopable. This is a higher threshold than other multifamily zones (i.e., it assumes redevelopment is possible on a larger number of parcels). Above this threshold, the largest new development allowed under RSL zoning would be less than twice the size of existing development. Due to the high value of the existing development, it is unlikely that demolition of the existing structure and redevelopment of a slightly larger structure would be profitable in most cases.

With these assumptions, the model identified the parcels susceptible to redevelopment based on existing zoning. For several reasons, we assume that the parcels identified using the City's development capacity model as most likely to redevelop under existing zoning are the best available estimation of the parcels that would be most likely to redevelop after zoning changes to implement MHA.[3] One reason is that MHA implementation involves both increases in development capacity (which add value to property owners) and a mandatory contribution to affordable housing (which adds a cost to new development). MHA requirements are proposed to be set so that the value of additional development capacity offsets, at least to some extent, the additional cost of the affordable housing payment or performance amount. To achieve this, we have proposed three tiers of MHA payment and performance amounts and proposed to apply higher MHA requirements for larger increases in development capacity. An MHA economic feasibility analysis concluded that, after MHA requirements and the proposed zoning increases, development on a particular site in some cases is feasible and in other cases is infeasible. Additionally, the study found that, in most cases, factors aside from the MHA requirement are a bigger determinant of a potential development's feasibility than the MHA requirement. Therefore, the analysis of all EIS alternatives includes these parcels.

However, we also recognized that certain zoning changes could, in some cases, make development possible on a parcel that wasn't identified as susceptible to redevelopment under existing zoning. For this reason, for all parcels that would receive an increase of more than one zoning category, we compared current development to potential development based on the proposed MHA zoning standards. These larger zoning changes are identified with an (M1) or (M2) suffix in the zone name, and higher tiers of MHA requirements apply to development in these

3 *For parcels currently zoned Single Family Residential, we used the MHA zoning for each alternative to determine if a parcel is likely to redevelop.*

zones. For example, consider a parcel with Lowrise 1 zoning today and Lowrise 3 (M1) zoning in an EIS alternative. Depending on its existing buildings, the parcel may not show up in the City's model as susceptible to redevelopment based on existing zoning. But for all parcels in (M1) and (M2) zones, we included in our analysis those redevelopment parcels meeting the model's thresholds based on the proposed zoning standards, irrespective of the higher MHA requirements in these zones.

CALCULATE THE INCREASE IN DEVELOPMENT CAPACITY

After determining the potential redevelopment parcels, we calculated the increase in development capacity based on the proposed MHA zoning designations in Alternative 2 and Alternative 3. For all redevelopment parcels, we calculated the difference between potential development under existing zoning standards and under the proposed MHA zoning

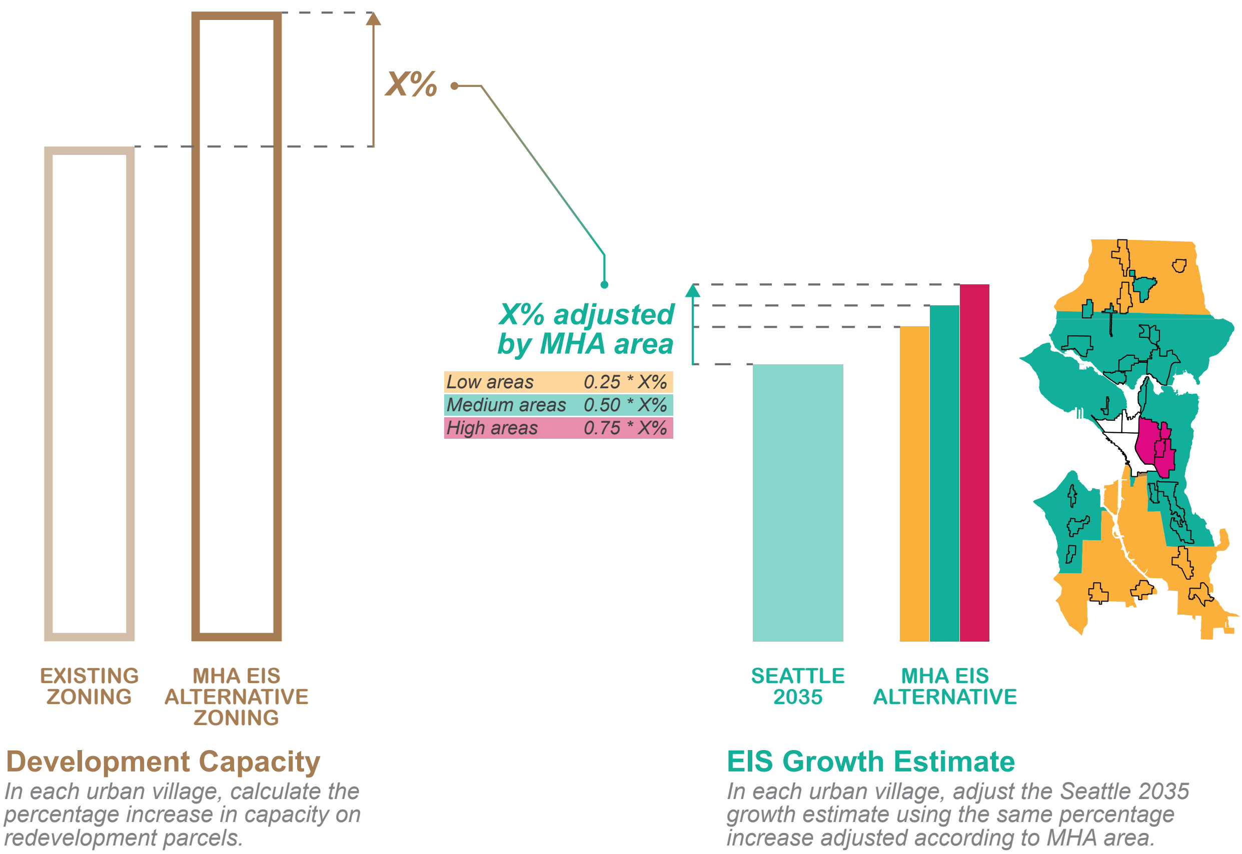

Exhibit G–1 Method of Calculating the Increase in Development Capacity

Source: City of Seattle, 2017.

standards.[4] This calculation incorporates land use regulations that govern how large a building can be, particularly FAR limits.[5]

We then summarized the difference in overall residential and commercial development capacity for each urban village, expressed as a percentage increase. For example, if an urban village has capacity for 1,000 homes under existing zoning and 1,500 homes under one of the EIS alternatives, residential development capacity has increased 50 percent. Where MHA implementation would expand an urban village boundary based on the Seattle 2035 Comprehensive Plan, we calculated the relative increase in capacity based on the expanded urban villages boundaries for each EIS action alternative.[6]

Several important caveats apply to the calculation of development capacity:

1. It does not estimate how much or how quickly development will occur in a specific time period.
2. It does not predict market demand.
3. It does not factor in financial feasibility, construction costs, or the willingness of a property owner to sell or redevelop.
4. It evaluates only the quantity of development that could theoretically eventually be produced for a given zoning scenario.

ESTIMATE INCREASE IN HOUSING AND JOB GROWTH

To estimate potential growth under each EIS alternative, we estimated how the increase in development capacity due to MHA zoning changes could potentially increase growth beyond the adopted 20-year growth estimates in the Seattle 2035 Comprehensive Plan used for Alternative 1 No Action. For study purposes, the MHA EIS assumes that increasing development capacity could result in additional growth beyond the minimum of 70,000 households and 115,000 jobs anticipated in Seattle 2035.

Development capacity is only one factor that influences where and when housing is built. Market factors, such as the cost of housing, access

4 Some parcels have two or more zoning designations. For these "split-zone" parcels we calculated development capacity based on the zone containing the parcel's centroid.

5 See Appendix F for a full list of existing and proposed FARs used in the capacity analysis.

6 See Appendix H for the zoning maps analyzed in each EIS alternative.

to jobs, local amenities, and overall regional demand, also influence housing growth.

While increases in development capacity will tend to increase the amount of development in an area, the overall demand for housing in a neighborhood also limits the effect of any development capacity changes there. The extent to which future growth will be influenced more by development capacity or by market demand varies. The influence of these factors can be summarized into two extreme viewpoints:

1. **Capacity-limited development:** The view that demand for new housing across Seattle or in a specific neighborhood is so great that all potential redevelopment sites will develop with the maximum amount of development that zoning laws allow. In this view, zoning alone determines how much growth will occur. Additional development capacity provided in a given area will be developed at the same rate as existing capacity.
2. **Market-limited development:** The view that there is a certain fixed amount of demand for housing in a given area determined by its general cost, location, school system, amenities, etc. In this view, increasing development capacity will not result in additional new development because demand determines how much development will occur.

This EIS assumes that the most probable and reasonable scenario is somewhere between these viewpoints. Therefore, the analysis assumes that additional development capacity would increase growth in the following proportions:

Exhibit G–2 Method for Estimating Growth Based on Development Capacity Changes

MHA Area*	Method
High MHA areas	For every 1 percent increase in the urban village development capacity, the 20-year Comprehensive Plan growth estimate increases 0.75 percent.
Medium MHA areas	For every 1 percent increase in the urban village development capacity, the 20-year Comprehensive Plan growth estimate increases 0.5 percent.
Low MHA areas	For every 1 percent increase in the urban village development capacity, the 20-year Comprehensive Plan growth estimate increases 0.25 percent.

** MHA requirements are proposed to vary geographically based in part on market conditions, as shown in this map.*

Source: City of Seattle, 2017.

In a growing region, new development generally occurs more quickly in strong market areas and more slowly in weak market areas. Where zoning envelopes constrain the amount that can be built in a strong market, an increase in the zoning envelope (i.e., additional development capacity) has a stronger effect on the resultant amount of growth. Where the market is weak, increased development capacity has a less direct relationship with growth. We consider market strength dynamics when we estimate how increased development capacity could result in additional growth, as seen in the table above.

This method reflects and balances the effects of the unique MHA zoning proposal for each urban village (expressed as a development capacity increase); market factors; and the statewide forecasting, countywide policy, and local planning of the Seattle 2035 growth estimate.

ESTIMATE MHA AFFORDABLE HOUSING PRODUCTION

Using the methods above, we arrive at an estimate of residential and commercial growth for the study area overall and for each urban village. For residential growth, these estimates include market-rate housing and affordable housing created through the MHA performance option, because together these housing units represent residential growth that occurs through market-rate development.[7] Based on the residential and commercial growth estimates citywide and for each urban village, we calculate the number of affordable homes we can expect for each EIS alternative through the MHA payment and performance options. To do this, we used the following assumptions and steps:

- In the EIS study area, 50 percent of residential development will choose the performance option and 50 percent will choose the payment option. All commercial development will choose the payment option.
- New affordable housing funded by the Office of Housing (OH) requires a contribution of $80,000 per unit from OH (based on a model project leveraging four percent low-income housing tax credits and no additional public funds).
- 10 percent of MHA payment revenue would go to program administration.

7 Likewise, this residential growth estimate also includes affordable housing created through the Multifamily Tax Exemption (MFTE) program.

- Four percent of growth outside of urban villages over the next 20 years will occur in Single Family Residential zones, where MHA does not apply. MHA payment and performance requirements will apply to the remaining growth outside of urban villages.
- For analysis purposes, MHA requirements for new development in each urban village are calculated as a weighted average of the (M), (M1), and (M2) requirements based on the relative proportion of parcel square footage in (M), (M1), and (M2) zones in that urban village.
- For analysis purposes, the distribution of affordable housing funded through MHA payments to each urban village is proportional to that urban village's share of the 20-year citywide residential growth estimate in each EIS alternative.

ESTIMATE POTENTIAL DEMOLITION

A component of identifying how the alternatives could affect displacement is estimating the number of housing units that could be demolished as older buildings are replaced by newer ones through redevelopment. Demolitions associated with each alternative fall in two categories. First, there are demolitions already permitted by the City. Some of these housing units have already been demolished since 2015, and other demolitions are permitted to occur in the future. These demolitions will occur under all alternatives and are associated with building permits that have already been approved and therefore are not subject to MHA requirements. The number of demolitions in this category reflects the pace of growth in recent years and the pipeline of growth already permitted and underway.

Second, there are demolitions that have not already been permitted. Estimating the number of demolitions in this category is more difficult since we do not know which parcels will redevelop in the future. Therefore, we estimate the number of demolitions in this category using two different methods to provide a range of possible outcomes. One method allocates growth to parcels with the lowest development-to-capacity ratio based on Seattle's development capacity model. The other method assumes a continuation of the historic ratio of new units to demolished units. We describe each method in more detail below.

Modeling Demolition by Allocating Growth to Parcels

Because the city has development capacity to accommodate more housing and job growth than is anticipated over the next 20 years, we model redevelopment given each urban village's 20-year housing and job growth estimate. This requires assumptions about which parcels are most likely to redevelop. Using the City's development capacity model, we determined which parcels have the potential to redevelop, as previously described. We then ranked all redevelopment parcels based on the ratio of existing developed floor area to the maximum allowed developed floor area under proposed zoning. Parcels with the lowest ratios were ranked highest. For example, a parcel with an existing 5,000-square-foot commercial building with proposed zoning that would accommodate a 20,000-square-foot building has a ratio of 0.25. But if this same parcel had only a parking lot and no existing buildings, its ratio would be zero, the lowest possible. For parcels with residential uses, the ratio reflects the current number of housing units compared to the maximum allowable number of housing units, assuming an average unit size of 1,000 square feet.

To determine the total amount of growth to allocate to parcels in each urban village, we first subtracted the total amount of development currently in the pipeline (i.e., development already permitted but not yet completed by 2015) from the total growth estimated for that village. We then divided the remaining residential growth into three zoning categories: Residential Small Lot, Lowrise and Midrise, and Highrise and Commercial. For each urban village, the model assumes that the share of total units allocated to parcels in each of these categories matches the share of total residential capacity in each of these categories. This helped ensure that redevelopment occurred on parcels in various zones, including current Single Family zones, rather than only the empty parking lots and vacant parcels at the top of the ranked list for each urban village.

We then allocated four different categories of growth to parcels for each urban village: housing units (in three different categories) and jobs. Parcels with the lowest development-to-capacity ratio received growth first, proceeding down the ranked list until all remaining growth was allocated. The split between job and housing growth on parcels in mixed-use zones was proportional to the overall ratio of job growth to housing growth estimated for that urban village. Finally, with the allocation process complete, we summarized the total number of existing housing units on parcels that the model assumes will be redeveloped.

This method of estimating the number of demolitions has limitations. Many complex factors affect the exact timing and location of growth, making it exceedingly difficult to predict a parcel-specific distribution of growth over 20 years. Nonetheless this model identifies a plausible growth scenario detailed enough to generate a specific estimate for the number of homes that could be demolished in each alternative. In the DEIS, the demolished unit counts from this model are represented as the "Low" estimate. We used a separate model to develop a "High" estimate.

Estimating Demolition Based on Historic Trends

To develop a "High" estimate of demolished units for each alternative, we analyzed historic permit data to calculate the ratio of net new housing units developed to the number of housing units demolished. This ratio was calculated citywide in all zones except Single Family and Downtown since the study area excludes these zone categories. We found that, from 2010 to 2016, 13.4 net new housing units were created for every housing unit demolished. We used this ratio to estimate the number of housing units demolished based on the total remaining growth (after pipeline) estimated for each urban village. In almost all cases, this estimate was higher than the result of the allocation model.

Finally, we accounted for demolitions in some single-family areas in Alternative 1. The growth allocation exercise described above relies on parcels identified as redevelopable in our capacity model. This model identifies effectively zero single-family parcels as redevelopable because no net new housing can be built there. Yet demolitions in Single Family zones do occur under existing zoning. Since the demolition estimates for Alternatives 2 and 3 derive in part from rezoned Single Family land inside and outside urban villages, we also estimated the demolitions expected in these areas under Alternative 1 No Action. From 2007 to 2016, 10.4 demolitions occurred annually in the area where single-family parcels are rezoned in either Action Alternative. Extended over the 20-year time horizon of this EIS, this results in 208 demolitions in single-family areas under Alternative 1 in addition to the estimate generated from the growth allocation method.

The results of these calculations are in Section 3.1 Housing and Socioeconomics, Exhibit 3.1–38.