METROPOLITAN TRANSPORTATION COMMISSION
ASSOCIATION OF BAY AREA GOVERNMENTS

MEMORANDUM

PLAN BAY AREA 2050

Attachment A

TO:	ABAG Executive Board	DATE:	September 19, 2019
FR:	Cynthia Kroll, Chief Economist and Assistant Director		
RE:	Plan Bay Area 2050: Regional Growth Forecast Methodology		

Summary

The Regional Growth Forecast is an important element of the Plan Bay Area 2050 long-range planning process. While the future is always uncertain, the forecast identifies how much the Bay Area might grow between today and 2050, and for characteristics of that growth. These include total employment and employment by major industrial sectors, total population and population by age and ethnic characteristics, and the number, size, demographic characteristics and income of households. This information in turn informs *where* growth (employment and households) may go and the nature and amount of travel demand associated with it, as well as expectations for housing production. The Regional Growth Forecast is a key analytical underpinning of much of the policy work associated with the regional planning process.

This document describes the forecast methodology at the regional level, explains its relation to other forecasting and modeling work for Plan Bay Area 2050. A draft version of this methodology was circulated for public comment over in July and August; this version incorporates clarifications and minor technical revisions, including a few modifications in response to comments, and updates the schedule.

Opportunities for Input on the Methodology

Staff has sought public and stakeholder input on the Regional Growth Forecast methodology through public meetings in June and July, including:

- Regional Advisory Working Group (June 2019)
- MTC Policy Advisory Council (June 2019)
- MTC Planning Committee & ABAG Administrative Committee (July 2019)
- ABAG Executive Board (July 2019)

To allow for additional public comment before the public hearing and adoption by the ABAG Executive Board in September, ABAG/MTC opened a public comment period on this document between **July 19, 2019** and **August 19, 2019**. Comments will be addressed by staff and results reported at the **September 19, 2019** public hearing on the Regional Growth Forecast Methodology at the ABAG Executive Board meeting, consistent with the BIA Bay Area settlement agreement.

Further public input will be sought through fall 2019 and spring 2020 public outreach on the Blueprint for Plan Bay Area 2050. As the final Regional Growth Forecast will not be adopted in September – just the methodology needs to be approved at this juncture – there will be additional time and further opportunities for review of the Regional Growth Forecast in the months ahead.

Tools and Expertise Underlying the Regional Growth Forecast Methodology

The Plan Bay Area 2050 Regional Growth Forecast is produced by ABAG/MTC Planning staff with consultant and technical advisory committee input. The Regional Growth Forecast makes use of multipurpose tools that can be used to describe future possibilities and to test the effects of different assumptions and strategies on future projections.

Expertise

The Regional Growth Forecast is being developed in consultation with the Center for Continuing Study of the California Economy, with input and review by a technical advisory committee of experts as well as from ABAG and MTC advisory committees.

The technical advisory committee (list and affiliation at the end of this memo) includes:

- 6 Bay Area economists
- 3 California Department of Finance experts *(chief economist, senior economist and demographer)*
- 3 megaregion representatives *(Sacramento Area Council of Governments, San Joaquin Council of Governments, University of the Pacific)*
- 3 experienced REMI users *(from the Atlanta Regional Commission, a Michigan think tank, and a Colorado nonprofit)*

Staff met with the technical advisory committee in October 2018 and in May 2019. Staff will seek further input from the TAC in the fall as the preliminary forecast is developed, through individual consultations and/or an additional meeting.

ABAG/MTC staff also spoke with California Department of Finance (DOF) and Housing and Community Development (HCD) staff in July 2019 to discuss methods for estimating households from population and housing unit estimates. Staff will continue to speak with DOF and HCD staff working on developing accurate counts of housing units and occupancy, as well as with other experts.

Tools

Central to the Regional Growth Forecast development is the REMI (Regional Economic Modeling Inc.) model for the San Francisco Bay Area [version 2.2]. The REMI model integrates into one package a dynamic accounting of the core components of the economy – industry structure and competitiveness relative to other regions; propensity to export; and population and labor market structure. The population is explicitly connected to industry growth and demand for labor, with migration increasing in times of strong employment growth.[1] The model specifically characterizes the local economy in the context of the national economy, recognizing the relationships to the state, nation, and surrounding metropolitan planning areas. Downstream, separate staff modules are used to compute households, income distribution, and in-commute levels. The Regional Growth Forecast then serves as an input into the small-scale distribution of land uses (including employment, population and households) using UrbanSim 2.0, a land use model that simulates the

[1] REMI is an integrated set of input-output, computable general equilibrium, econometric, and economic geography methodologies that describe the key relationships in the economy. See Regional Economic Modeling Inc., *REMI PI+ v. 2.2, REMI Transight v.4.2, REMI Tax-PI v.2.2, Metro PI v. 2.2 Model Equations.*

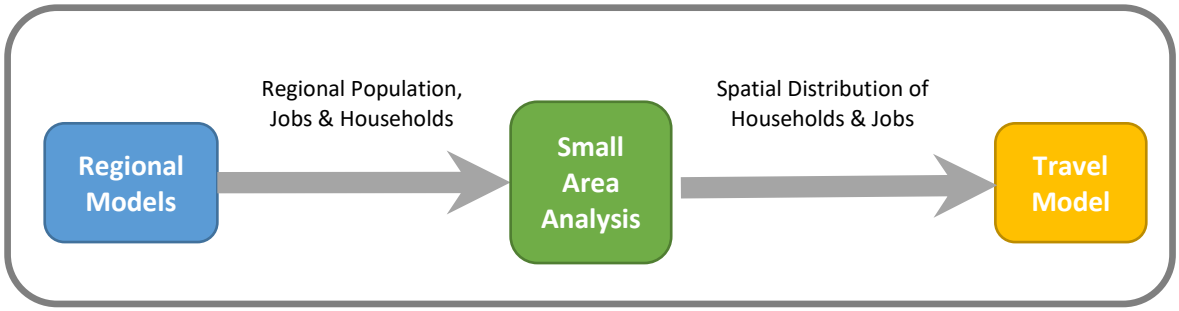
urban development process and the location choices of employers and households.[2] The local allocation in turn informs the modeling of travel patterns and investments using Travel Model 1.5. The relationship among these models is described further below, followed by brief discussions of major elements of the models. Detailed descriptions of the versions of these tools used for *Plan Bay Area 2040* can be found in http://2040.planbayarea.org/reports (under the Land Use and Transportation sections).

Adjustments to the Overall Forecast Methodology from Plan Bay Area 2040

This will be the first Plan Bay Area done with a consolidated regional planning team for ABAG and MTC, the two regional agencies responsible for crafting the long-range plan. While the overall suite of tools is similar to the Plan Bay Area 2040 approach, staff will make use of the model output and analytic results in a more iterative fashion between models to better capture feedback mechanisms in the economy. This will ideally create stronger bridges among the different technical elements of the forecast for Plan Bay Area 2050, including the Regional Growth Forecast, the small area distribution of the forecast using UrbanSim 2.0, and forecasts of travel patterns and transportation impacts using Travel Model 1.5.

For decades, the general approach to forecasting proceeded in a linear fashion consisting of the steps outlined in Figure 1, although the specific tools used at each step changed over time. The Regional Growth Forecast of employment, population and households fed directly into the small area analysis, which then provided data used by the travel model.

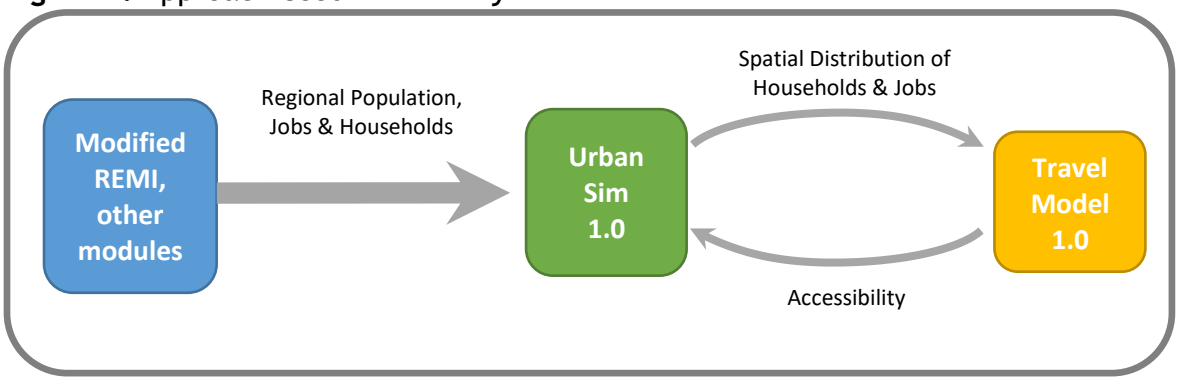
Figure 1: Historic Approach to Regional, Spatial and Transportation Forecasts



With a changeover of tools for the Plan Bay Area 2040 forecast, the land use and travel modelers added additional feedback loops between the small area analysis (developed using UrbanSim 1.0) and Travel Model 1.0, as shown in Figure 2. We have long known that land use impacts transportation demand, but it has also been recognized that transportation, through accessibility, in turn impacts land use patterns. The model system was modified to include this two-way connection, so that the location of growth can be influenced by improved accessibility following planned transportation investments. At the same time, growth and location affect congestion and multimodal accessibility, shifting transportation investment decisions. This coupling of land use and transportation was reflected in the modeling approach for the first time in *Plan Bay Area 2040* but did not include a feedback loop to the Regional Growth Forecast.

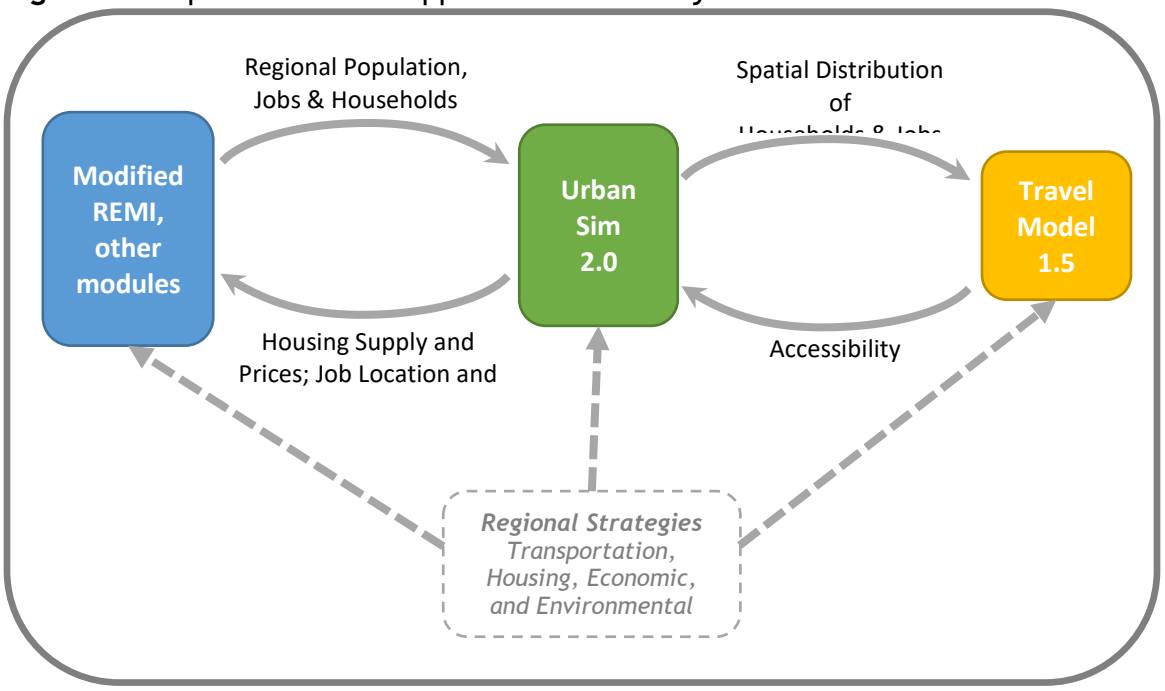
[2] http://www.urbansim.com/urbansim

Figure 2: Approach Used in *Plan Bay Area 2040*



Land use and transportation are not the only connected systems, however. Local land markets may have regional implications. For example, economists have pointed to constrained housing markets as in turn reducing the overall size of the economy. When preparing a Regional Growth Forecast for Plan Bay Area 2050, we intend to consider how model results from UrbanSim 2.0 and Travel Model 1.5 could be factored into the modified REMI model, altering the Regional Growth Forecast. For example, where and how much housing is built could change the cost of housing, as well as the cost and demand for labor. Similarly, a change in housing prices and location overall could further change the number and types of jobs that can be generated in the region as well as the labor force that can live in the region (see Figure 3).

Figure 3: Proposed Iterative Approach for *Plan Bay Area 2050*



The first aim of this integration is to seek a fuller representation of these types of effects. The second aim is, by having a better accounting of housing markets across the model systems, to better capture effects of policy interventions (i.e., strategies) addressing housing and labor markets. If we are successful in incorporating housing changes into the regional employment and population analysis, we may also be better positioned to then analyze the effects of other strategies, such as economic development strategies like workforce training programs and Priority Production Areas, which could affect the ability of middle-wage jobs to remain in the region.

The remainder of the memo focuses on the first of the three elements of the Regional Growth Forecast: the projection of jobs, population, and households at the *regional level*.

What Does the Regional Forecast Do?

The Regional Growth Forecast projects total employment, population, households, income distribution and in-commute change for the region as a whole between the Plan baseline year of 2015 and the Plan horizon year of 2050. As part of the iterative process, we will begin with a baseline employment and population forecast that will be consistent with likely national economic and demographic trends, layering in new strategies as the Blueprint for Plan Bay Area 2050 is developed. Table 1 summarizes the approach this cycle and how this was done in the last cycle.

The Regional Growth Forecast begins with the structure of the REMI model, which describes employment, population, gross regional product, and total personal income for the historical period back to 2000 and for a forecast period through 2060 (our forecast goes only to 2050). The model includes a built-in forecast that reflects one of several possible sets of assumptions about the factors underlying growth at the national level and a set of interrelated regional forecasts for 22 custom-designed "regions" for our Bay Area version of the model. The regions include each of the nine Bay Area counties, metropolitan areas bordering our region and an aggregation of small non-MPO counties at the north of the region, each of the southern California counties in SCAG, the rest of California, and the rest of the US. Our focus when developing the Regional Growth Forecast described here is on the nine Bay Area counties as aggregated into one region. REMI is designed to be adjusted to be customized by the user to better reflect expectations about national trends, as well as their detailed knowledge about the relevant region.

As described in Table 1, we propose to use the REMI model with multiple adjustments, after consultation with CCSCE and the technical advisory committee, to describe the employment and population forecasts. We then separately forecast households, income distribution, and any change in the level of in-commuting. The types of assumptions underlying the adjustments to the REMI model and the other elements of the Regional Growth Forecast are summarized below, by element of the forecast.

Table 1: Summary of Approach to Regional Growth Forecast

Forecast Element	Plan Bay Area 2040	Plan Bay Area 2050 *(Draft)*
Employment	Adjustments to REMI, with input from CCSCE and TAC	**Update** – different base compared to *Plan Bay Area 2040*, CCSCE and TAC recommended adjustments to REMI
Population	Minor REMI adjustments only	**Update** – REMI adjusted to some DOF fertility assumptions and calibrated to match labor force requirements.
Households	Average headship rates for the most recent 5 years, some decrease over time for seniors and multigenerational households	**Update** - Goal in this cycle is to provide a more detailed accounting of households by size, number of workers, and income level categories. Headship, or household formation rates in consultation with TAC and CCSCE, are applied to population age and race estimates. ACS workforce characteristics will be added to households. Distribution of income among households will be based on historic patterns and regional economic forecast trends.
Income distribution	Econometric equations for each of four categories based on national cross-sectional data by income category. Reconciliation of numbers to total household control.	
In-commute change	Took the larger of two alternative estimates drawn from REMI data on residence workforce, labor force and jobs	**No change** in method, but further informed by iterations with other models and by multiregional results of REMI model.

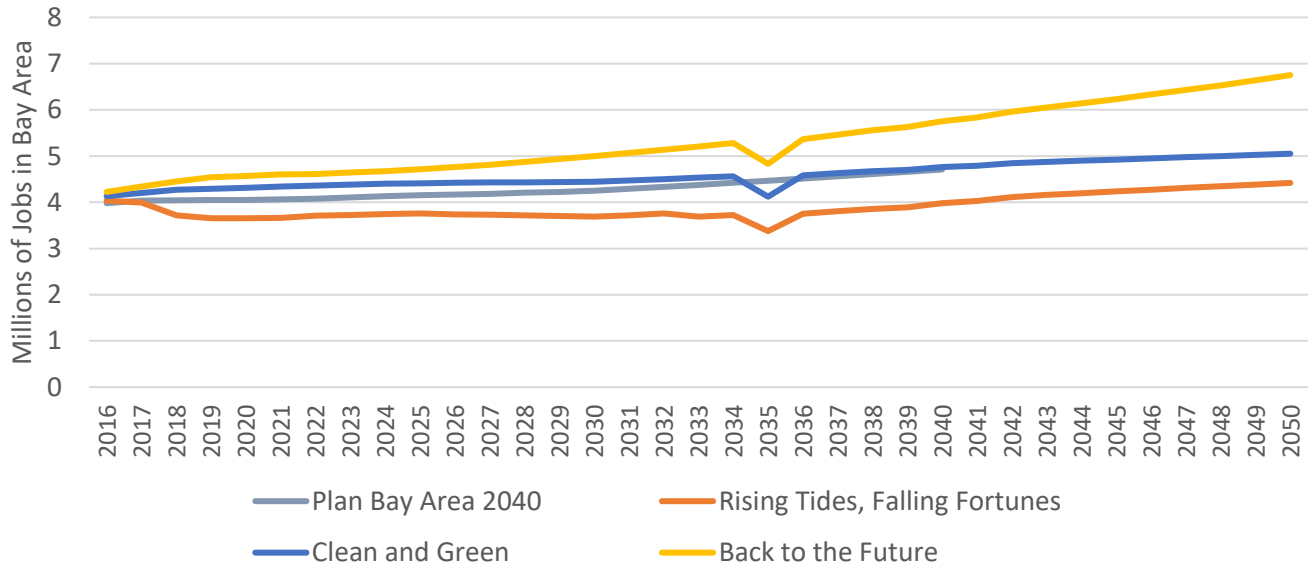
Employment

Baseline employment for the Bay Area is driven by national trends in population growth and employment, by the Bay Area employment mix by sector and by the competitiveness of Bay Area sectors relative to the equivalent sectors in the US. REMI accounts for the Bay Area's strong competitiveness in many industries relative to other regions, leading to a representation of a generally favorable jobs outlook across a range of sectors, which in turn grows the labor force through migration. At the same time, REMI represents the relatively high cost of housing and labor as well, which all other things equal serves to temper the growth outlook.

In the previous Regional Growth Forecast, there was a great deal of uncertainty about how the region would fare both in the near future and over the decades of the plan's forecast. The forecast for *Plan Bay Area 2040* is quite low compared to recent experience, when Bay Area knowledge sectors rapidly expanded employment for almost a decade. Should we adjust the forecast upward to account for this continued strength, or consider the possibility that going forward a national recession or a reversal of fortunes of our leading sectors could lead to an extended period of stagnant growth or job loss? In the last three decades, formation of new industries has led to strong surges of growth in the region following downturns. Will we continue to have this generative capacity over the next 30 years?

These uncertainties were initially addressed as part of Horizon, the predecessor planning process to *Plan Bay Area 2050*. As part of the Futures Planning effort, we modified the built-in REMI forecast based on widely varying assumptions about external forces beyond our control—national policy, international events, and the possibility of severe natural hazards. We modeled the range of possible Futures for the region should these events occur in the policy framework encompassed in the last Plan Bay Area (*Plan Bay Area* 2040). These forecasts gave several possible trajectories of growth, as shown in Figure 4. In one future, Rising Tides, Falling Fortunes, with high sea level rise and low government spending, there is a long period of stagnation followed by modest job growth, leaving little net change overall. At the other extreme, Back to the Future, with few land use constraints on growth and generous public spending leads to growth that far exceeds our projections from *Plan Bay Area 2040*. The third future, Clean and Green, is closer to our previous projected level of growth, but with a very different occupation mix, high levels of taxation through a carbon tax, but also selected high levels of public investment.

Figure 4: Plan Bay Area 2040 Forecast Compared to Three Horizon Futures



Source: ABAG/MTC Analysis, 2019

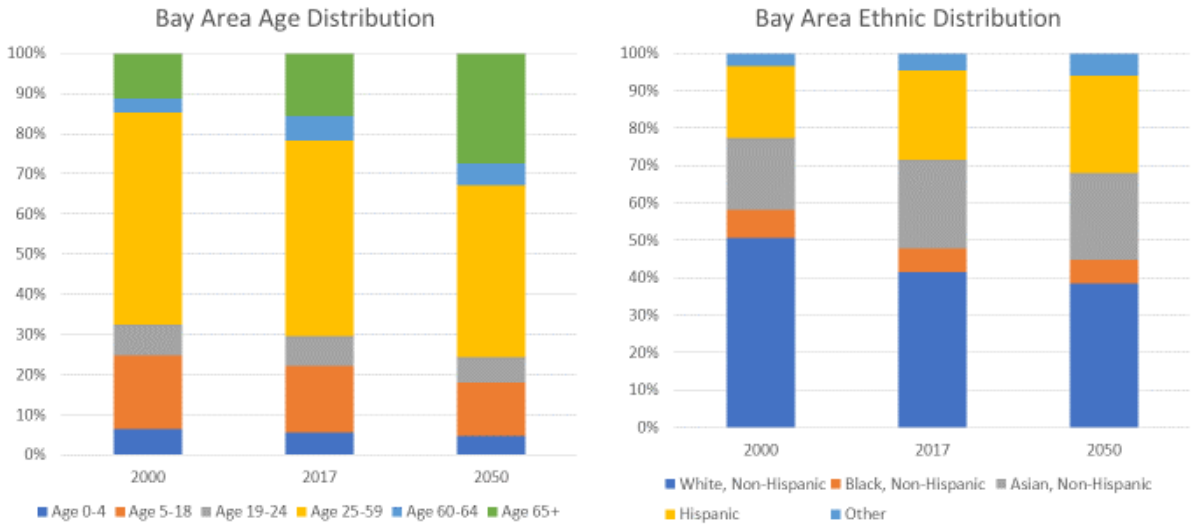
As we proceed into analysis for *Plan Bay Area 2050*, we will craft a base employment forecast with a less divergent set of assumptions at the national level, assuming policies similar to those today and those encompassed in *Plan Bay Area 2040*. We will also examine how additional strategies proposed for *Plan Bay Area 2050* could affect employment. Strategies to be tested iteratively before reaching a final employment figure could include, for example:

- **Improved access to housing in the region:** this can change the cost of labor, affecting rates of growth of middle and lower wage sectors.
- **Workforce training:** this could have complex effects, improving productivity, allowing higher output without necessarily more jobs, although a more skilled workforce could also attract additional employers.
- **Priority Production Area protections:** this could slow further declines in industrial sectors and associated middle-wage jobs, especially in production, distribution, and repair sectors.

Population

REMI, like most population projection models, predicts future population growth based on a detailed accounting of the population in terms of age, gender and ethnicity, with schedules of fertility and mortality determining natural increase, while migration is determined through the interaction with the economic portion representing labor market demand of the model. Retirement migration is also represented. While California Department of Finance (DOF) similarly uses a cohort-component model, the differences are in how some of the population is categorized, as well as assumptions for future mortality, fertility and migration rates. At this stage we note that apart from population totals, there are age and ethnic differences between the REMI forecast and the DOF 2017 forecast that we are assessing. This will help us create a population forecast that is both consistent with expected growth levels and reflective of our understanding of the composition of the California population.

Figure 5: Bay Area Age and Ethnic Distribution, 2000, 2017 and DOF 2050 Projection



Source: ABAG/MTC from US Census and California Department of Finance.

Through the iterative process, it may be possible to capture benefits from strategies to increase housing production and lower housing prices. These strategies may include market mechanisms or subsidies, helping to retain lower- and middle-wage earners while encouraging economic in-migration to increase working age population. Separately, demand-side rental subsidies would also help to retain lower- and middle-income households.

Households

The vast majority (currently 98 percent) of the population lives in households, with a small remainder living in group quarters. ABAG/MTC translates a given population age structure into households using headship rates. Headship rate is defined as the share of adults in a particular age group (e.g., 25 to 29 years old) who are heads of households. The rate underlies the average household size and thereby how much housing will be needed to house the population. The share can be applied to population projections by age and race/ethnicity to estimate the number of households by these demographic characteristics. A *higher* headship rate would imply *lower* average household sizes.

The household estimate for *Plan Bay Area 2040* was built using headship rates for the 2006 to 2014 period, with additional marginal adjustments. The *Plan Bay Area 2050* analysis will be developed in consultation with DOF staff. Two key questions:

- Are rates relatively constant over time, or do they move with other factors, such as unemployment or the cost of housing?
- What determines the differences in rates of household formation among different ethnic groups, and how does this propensity change over time for new immigrants?

Staff will explore different headship rates that come from varying assumptions about these factors, such as using the most recent headship rates (2012-2017), gradually converging rates to the previous 2005-2009 rates, averaging over a full economic cycle (2010-2017), or an approach that may be used by DOF, averaging rates from 2000 to 2010.

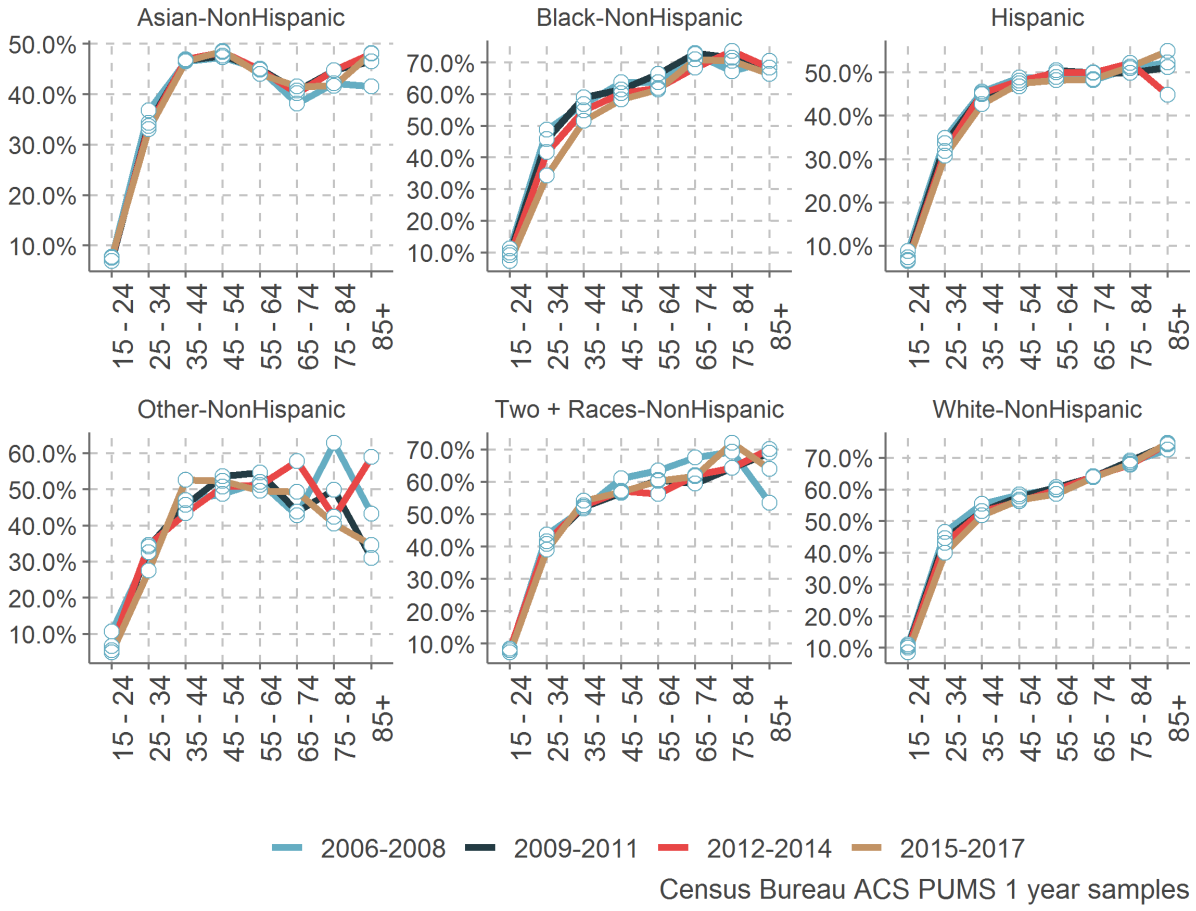
In making these tests, we want to explore potential challenges, such as:

i) The current headship rate may be artificially compressed due first to the Great Recession and then to the high cost of housing. We will seek a way to capture a wider mix of economic experiences in the rate used.
ii) Hispanic and Asian/Other headship rates may converge toward the average headship of the two other ethnic categories, as the native-born share of households in those groups increases and the household characteristics of immigrants move towards those in the U.S.

Figure 6 illustrates the variability of headship rates by age category, ethnic group and over time, with both Asian and Hispanic ethnic categories have lower headship rates (higher household sizes) than their counterpart white or black households (with generally much lower shares of immigrant households).

High housing costs may affect not only labor markets and money available for other goods, but how families form households and consume housing. Housing strategies may affect overall household formation leading to lower or higher household sizes, changing costs, and changing locations of new households. Through the iterative process, it may be possible to reflect the benefits of housing strategies that allow new households to form (increasing headship rates among young adults, for example) as well as the type of new units (which may target young adults or seniors with smaller household sizes).

Figure 6: Comparative Headship Rates by Ethnicity, Age Group and Time Period

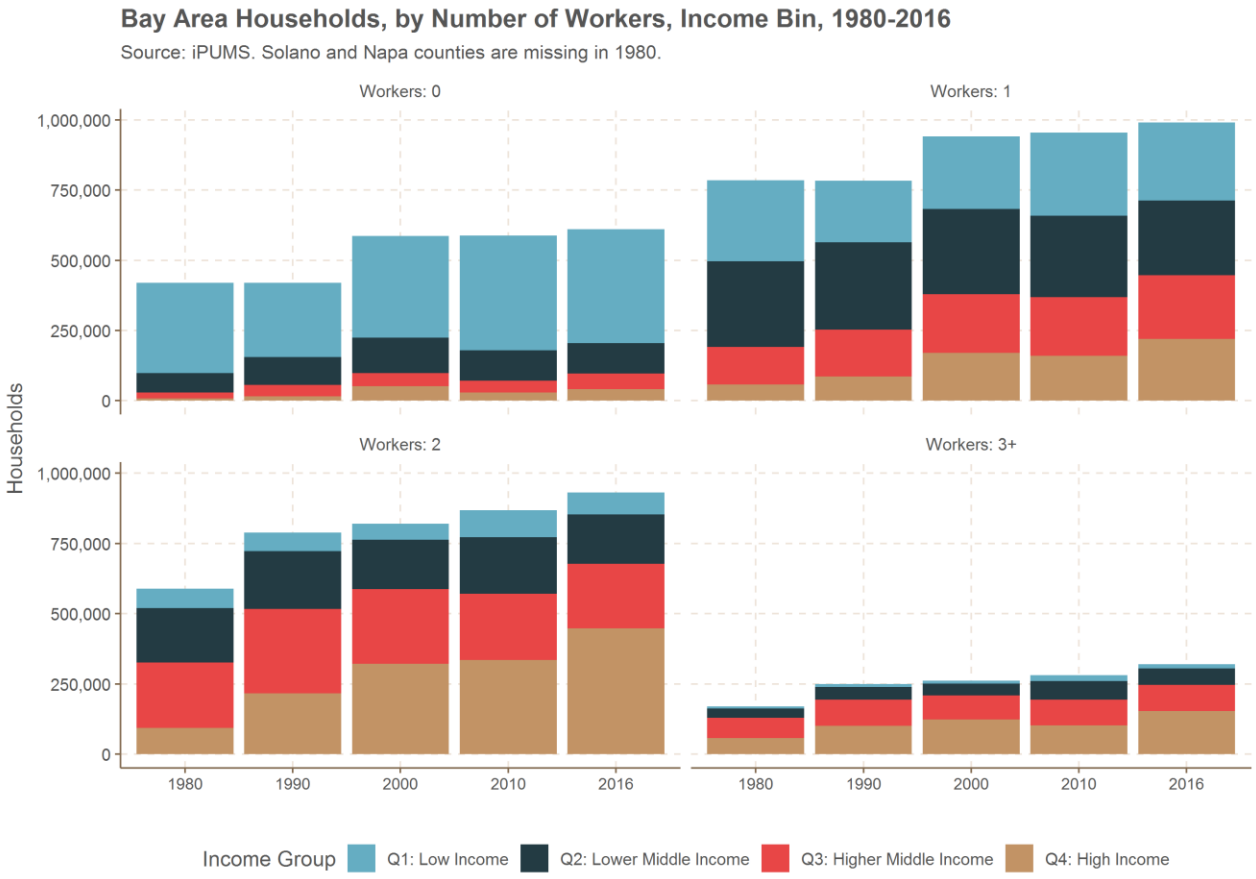


Income Distribution by Household

The household income distribution is generally determined both by overall wages and other sources of incomes, and separately by how households tend to form, including how persons in different parts of the income spectrum pair up, or not. Figure 7 offers information on how many households have, respectively, 0, 1, 2 and 3 or more workers in them, and for each of these household types, the share in different income groups. Counts are shown for 1980, 1990, 2000, 2010, and 2016. There are about the same number of households with one or two workers in them, but two-worker households are much more likely to be in the highest income quartile. Conversely, households with zero workers, typical for seniors, are frequently lower income (though some of these may be relatively wealthy).

The method for this calculation will seek to link age of head of household and number of working household members with income levels. Other factors that may also influence overall household income categories will include the overall change in the economy between high and low wage sectors, the relationship of output to employment (e.g., is value added rising, dropping or remaining constant in the growing sectors), and any changes between the proportions of wage income compared to shares from other income sources.

Figure 7: Change in Workers per Household, by income quartile, 1980-2016 (Source: IPUMS)



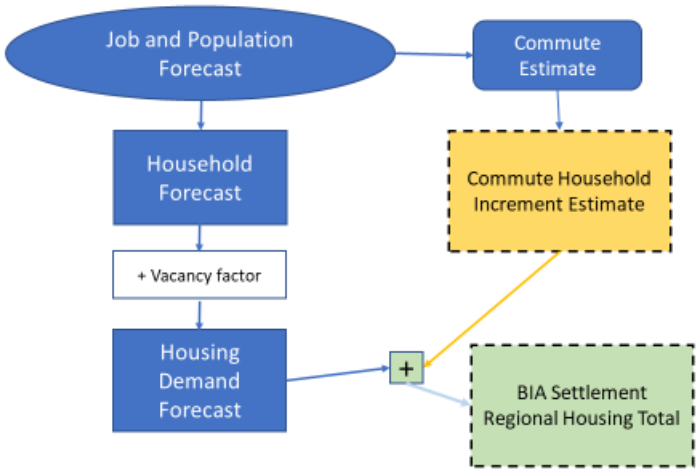
Through the iterative process, it may be possible to reflect strategies that affect the income mix of the region, ranging from incentives for middle-wage jobs in housing-rich areas to affordable housing programs to transit subsidies. To the extent that these strategies are modeled in terms of employment or population impacts, they may in turn be translated into household and income level implications. Alternatively, if the specific impacts cannot be reliably modeled, the qualitative implications will be discussed.

In-Commute

The in-commute analysis was conducted in *Plan Bay Area 2040* as diagrammed in Figure 7. We propose doing a more nuanced in-commute analysis compared to the approach used for *Plan Bay Area 2040*. Rather than simply estimating the overflow, ABAG/MTC will examine how the distribution of *employment location* may change for some sectors between the Bay Area and its neighboring MPOs in the REMI model, possibly reducing the need for in-commuting. In the iterative process, we will look at how housing availability may change based on policies affecting the amount of housing built and the cost-mix of housing between market rate and subsidized housing. Through this iterative process, ABAG/MTC can test to what extent a larger housing stock may decrease in-commuting versus increasing employment growth.

Apart from these efforts, if adjustments are needed to reduce the in-commute, we will follow the method used in *Plan Bay Area 2040*.

Figure 8: Schematic for Adding In-Commute Housing to the Regional Housing Total, PBA 2040



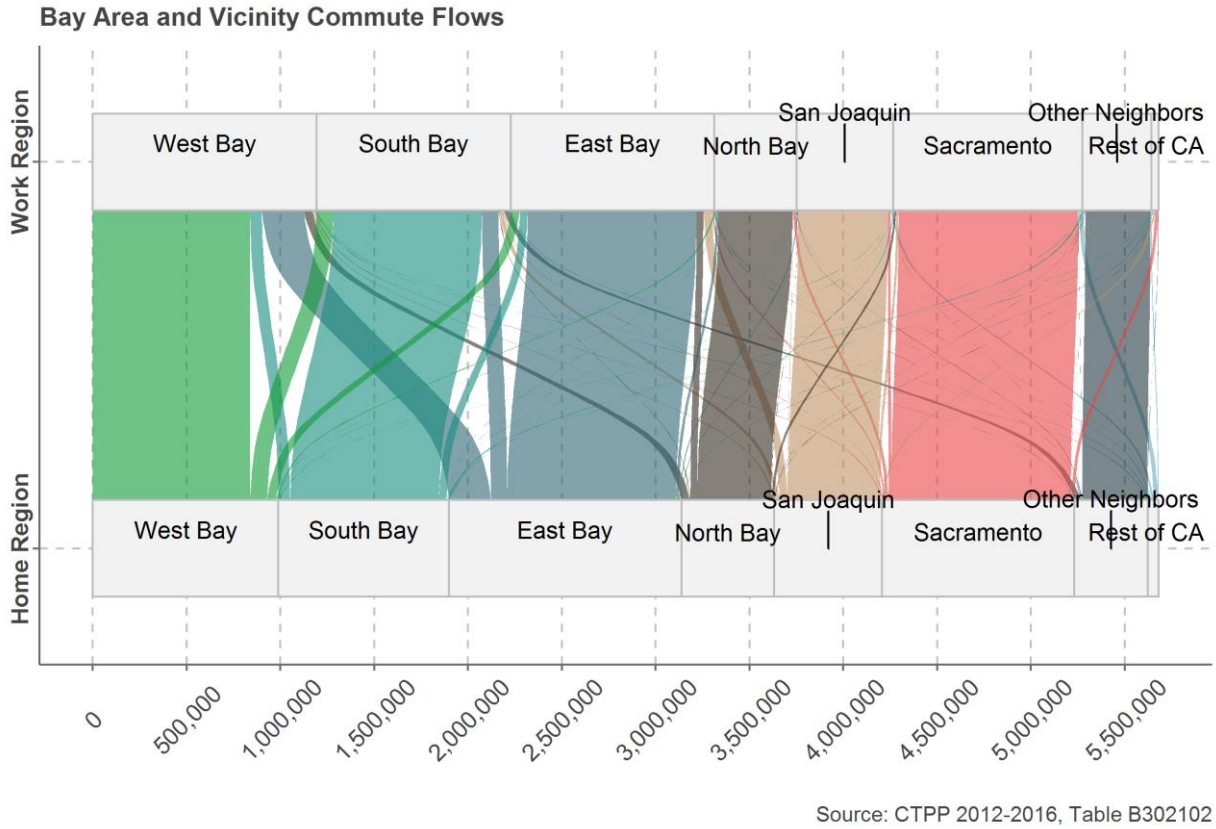
Source: ABAG Regional Forecast Approach, Presentation to the ABAG Executive Board, July 2015.

In reality, commute flows occur across MPOs for many reasons, going in two directions, a function of the size and pull of job centers, the resident labor force in the subregions, as well as the difference in housing costs and the relative ease of transportation. For a large region such as the Bay Area, it is expected that the concentration and diversity of specialized functions will attract workers from beyond the region's labor force. Further, a strong job node on the edge of the region, such as parts of the Tri-Valley, is much closer to the resident labor force of Tracy and Stockton than it is too many jurisdictions in the Bay Area counties. This draw will continue, even with more housing added west of the Altamont Pass. This is evident in Figure 9, where most commute flows into and outside the region are very small, but the largest inflows are to Santa Clara County from its southern neighbors and to Alameda County from the Central Valley, with significant impacts on those travel corridors. Using the multiregional REMI model – an enhancement since Plan Bay Area 2040 – will allow us to examine further how Bay Area strategies may affect the net in- or out- commute flows the different regions experience as well as possible changes in job mix that occur because of the different strategies.

A number of strategies may affect in-commuting:

- Construction of housing for low- and middle-income workers could reduce the numbers commuting in from outside the region.
- Improved rail networks and bus rapid transit could reduce this number of current in-commuters by auto, although the net effects on total in-commuting would be more complex.
- Higher tolls on freeways and subsidies for transit ridership would reduce the number of in-commuters in private vehicles, but not necessarily in-commuting overall.

Figure 9: Commute Flows to and from the Bay Area, 2015



Note: Subregion definitions by county—West Bay-Marin, San Francisco, San Mateo; South Bay-Santa Clara; East Bay-Alameda, Contra Costa; North Bay-Napa, Solano, Sonoma

Beyond the Regional Growth Forecast: Crafting the Growth Pattern

The Regional Growth Forecast focuses on the nine-county total level of growth for jobs, population, and households, acting as a key input into the modeling process. To develop the Plan's growth pattern on a localized level, MTC/ABAG will use Bay Area UrbanSim 2.0, a spatially explicit economic model that forecasts future business and household locations. MTC/ABAG used a version of the Bay Area UrbanSim 1.0 model to inform the environmental assessment for the region's first RTP/SCS (Plan Bay Area) and both the Plan process and the environmental assessment for the region's second RTP/SCS (Plan Bay Area 2040). An updated version of Bay Area UrbanSim (Version 1.5) is also currently being used for the Horizon long-range planning process.

Bay Area UrbanSim 2.0 forecasts future land use change (e.g., development or redevelopment) starting from an integrated (across different source data) base year database containing information on the buildings, households, businesses and land use policies within the region. Running in five-year steps, the model predicts that some households will relocate and a number of new households will be formed or enter the region (as determined by the adopted regional growth forecasts). The model system micro-simulates the behavior of both these types of currently unplaced households and assigns each of them to a currently empty housing unit. A similar process is undertaken for businesses and jobs. The various submodels are "trained" on existing data in order to represent how households or businesses "respond" to different features of locations considered; from accessibility to jobs and open space to the relative cost of real estate. During the simulation, Bay Area UrbanSim 2.0 micro-simulates the choices real estate developers make on how much of, what, and where to build. This adds additional housing units and commercial space in profitable locations (i.e., land use policies at the site allow the construction of a building that is profitable under forecast demand).

In this way, the preferences of households, businesses and real estate developers are combined with the existing landscape of building and policies to generate a forecast of the overall land use pattern in future years. As the model is explicit in how the urban environment changes, the model system is ideally suited to a range of systematic *what-if* tests: Given behavioral information on how households and businesses tend to locate based on observed data, and given land use policy assumptions, what might happen to overall patterns over time as regulations change, constraints are variably eased and increased in different parts of the region? For example, the land use policies in place in the base year can be changed (e.g., allowable zoned residential density could be increased) and Bay Area UrbanSim 2.0 responds by forecasting a different land use pattern consistent with the constraints or opportunities resulting from the change. After each five-year step, the model produces a zonal output file for the transportation model that contains household counts by type and employee counts by sector. This provides the travel model with information on land use intensity in different locations and the spatial distribution of potential origins and destinations within the region. Documentation for Bay Area UrbanSim 2.0 is available online[3].

To build the forecasted land use development pattern, Bay Area UrbanSim 2.0 will be used to iteratively build the Blueprint in a manner that is vetted and assessed for policy realism by regional planners and using feedback from local jurisdictions. Through this iterative process including both human planners and computer simulation tools, we aim for a forecasted development pattern that provides a balance of community and regional goals. This process will also include robust public engagement with "pop-up" and traditional workshops, among other means; it is important to understand local and regional preferences to tackle jobs-housing imbalances, for example. This feedback, as well as the draft and final growth patterns, will be presented to the MTC Commission and the ABAG Executive Board for their consideration.

Comments Received during Public Comment Period

Comments received on the Regional Growth Forecast Methodology fell into four categories: (1) concern about using jobs as a key factor in the forecast, (2) concern about the concentration of growth in PDAs, (3) concern about regional strategies to address the "housing crisis", and (4) the need for opportunities for input on the forecast and Plan. Staff responses are provided in Attachment B.

Next Steps

Final approval of the proposed Regional Growth Forecast methodology will be requested at the September ABAG Executive Board meeting. Staff will work to develop a Draft Regional Growth Forecast by fall 2019, followed by further iterative testing of strategies through REMI, UrbanSim 2.0, and Travel Model 1.5 in winter 2020. The final Regional Growth Forecast is slated for adoption in spring 2020. Table 2 shows the timing for the Regional Growth Forecast and its place in the development of the Blueprint.

[3] Bay Area UrbanSim documentation is available at: http://bayareametro.github.io/bayarea_urbansim/

Table 2: Regional Growth Forecast Schedule for *Plan Bay Area 2050* *(subject to change)*

Year	2019								2020			
Month	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**
Public Input												
Methodology		◊	◊	◊	◊							
Public Workshops						◊						◊
Methodology												
Presentations and Review		◊	◊									
Modifications as Needed												
Public Comment Period												
Public Hearing/Approval					◊							
Preliminary Baseline												
Employment												
Population												
Households												
Income Distribution												
Iterations												
Testing												
Strategy Integration												
Forecast												
Draft Forecast							◊					
Comments and Revisions												
Final Forecast												
Final Forecast Approval												◊

Technical Advisory Committee for the Regional Growth Forecast

Organization	Title	Name
City of San Francisco	Chief Economist	Ted Egan
Center for Business and Policy Research, University of the Pacific	Director	Jeffrey Michael
Trulia	Chief Economist	Issi Romen
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