



MEMORANDUM

Agenda Item 6a

DATE: July 6, 2018

TO: Planning Committee

FR: Executive Director

RE: Horizon: Proposed Futures for Analysis

Summary

Staff proposes to advance three futures for further analysis over the coming year, leveraging the suite of futures developed by stakeholder teams at the April *Horizon* Peer Exchange. These futures (i.e., "what if..." scenarios) are widely-divergent, designed to "stress test" strategies and investments to ensure policies are effective under a range of future conditions. This should help ensure that the decisions we make today are resilient to ever-changing circumstances. Rather than selecting a "preferred scenario" from this process as in past plans, the specific strategies and investments that perform best in multiple futures will be incorporated into *Plan Bay Area 2050*.

The Road to Three Futures

To help imagine potential futures the Bay Area might have to grapple with through 2050, staff started by identifying a set of regionally-significant external forces that Bay Area residents, businesses, and elected officials have little-to-no control over. These included:

- Political forces like immigration and trade policies
- Economic forces like changes in worker productivity
- Environmental forces like global sea level rise and natural disasters
- Technological forces like autonomous vehicle adoption and sharing preferences

Through an all-day peer exchange held in late April, multiple teams of experts imagined potential futures that present both challenges and opportunities for planners, policymakers, and the public to consider through the *Horizon* process.

Using stakeholder input in the weeks after the peer exchange, staff worked to narrow down the list of futures from eleven to three, considering the likelihood, regional impact, and regional ability to respond to each set of external forces. Each of the three futures is unique, with a number of potential challenges that will need to be addressed via strategy workshops this fall. The futures are not intended to be visionary or aspirational. Rather, they are meant to motivate a candid discussion about regional policies and investments that make sense regardless of what future forces affect the Bay Area.

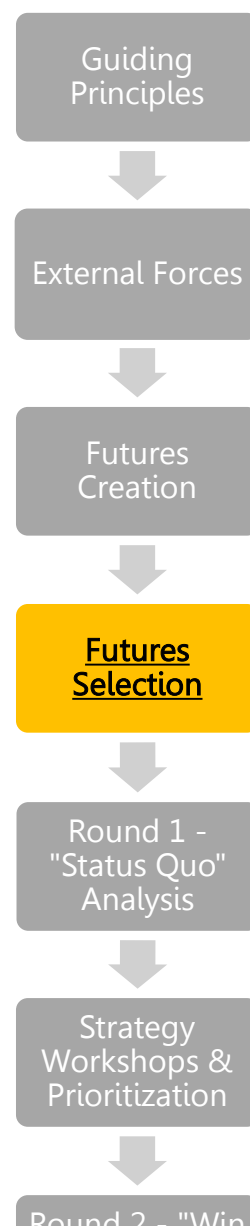


Figure 1: Primary steps of the Futures element of *Horizon*.

Proposed Futures for Analysis

Attachment A summarizes the three proposed futures and initial forecasts for the Bay Area, while **Attachment B** describes the 24 varying external forces that underpin them. Each future can be distilled to a central “what-if” question:

1. **Clean and Green:** what if... new technologies and a **national carbon tax** enabled greater telecommuting and **distributed job centers**?
2. **Rising Tides, Falling Fortunes:** what if... the federal government **cuts spending and reduces regulations**, leaving more policy decisions to states and regions?
3. **Back to the Future:** what if... an **economic boom** and new transportation options spur a **new wave of development**?

The three futures explore a diverse range of outcomes for key topics, including:

- **New Technologies:** Clean and Green and Back to the Future explore two very different potential outcomes of an automated future, while Rising Tides, Falling Fortunes considers what happens if new technologies fizzle.
- **Climate Change:** Each of the futures explores different global outcomes, with Clean and Green envisioning a world where the goals of the Paris Climate Accord are met and Rising Tides, Falling Fortunes explores a far grimmer scenario of climate impacts for 2050.
- **Federal Funding:** Clean and Green examines the economic and environmental impacts of an expanded and activist federal government, while Rising Tides, Falling Fortunes looks at what radical devolution of authority might mean for the Bay Area.
- **Immigration Policy:** Back to the Future imagines how the Bay Area might grow with a more open immigration policy than today, while Rising Tides, Falling Fortunes considers a more nationalist United States in the years ahead and the implications of an aging populace.
- **Megaregional Shifts:** Clean and Green imagines how a carbon tax and new technologies might slow growth outside of the nine Bay Area counties, while Back to the Future looks at the emergence of an interconnected region with significant residential growth in Stockton, Sacramento and beyond.

The ABAG/MTC adaptation of the REMI model (Regional Economic Models, Inc.) was used to translate broad assumptions for external forces at the national and regional levels into projections. These draft projections include population and employment growth forecasts, as well as income and demographic characteristics at the regional level. Ultimately, these external forces highlighted above result in a spectrum of outcomes for the Bay Area:

- **2050 population forecasts** range from 8.6 million in Rising Tides, Falling Fortunes to 13.6 million in Back to the Future with Clean and Green roughly midway between the two.
- **2050 job forecasts** range from 4.3 million in Rising Tides, Falling Fortunes to 6.7 million in Back to the Future with Clean and Green roughly midway between the two.
- The regional economy – and shifts in automation – lead to **significant variation in income distribution**, with households earning less than \$45,000¹ representing between 22% and 31% of the regional total.
- Immigration policies and lower birth rates lead to **a much older Bay Area** in Rising Tides, Falling Fortunes compared to the other two futures.

For reference purposes, 9.6 million residents and 4.7 million jobs were forecasted for the year 2040 in the prior regional plan, *Plan Bay Area 2040*, with 28% of households being low-income and regional median age rising to 41.

¹ In current year (2018) dollars.

- Immigration policies and lower birth rates lead to **a much older Bay Area** in Rising Tides, Falling Fortunes compared to the other two futures.

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Next Steps

After finalizing the futures for further exploration this month, staff will commence round 1 of travel & land use modeling by exploring what would happen to the Bay Area if "status quo" policies continue – despite the unique external forces incorporated in each. This will simulate what these external forces mean for key issues such as traffic congestion, public transit, housing, open space, displacement, greenhouse gas emissions, and more. This fall, staff will initiate a series of regional strategy workshops focused on the unique opportunities and challenges in each future. The public, stakeholders, elected officials, and staff will work to brainstorm solutions to better align future outcomes with the Final Guiding Principles (and ideally, "win the future"). We look forward to your input on how to best engage the diverse population of the Bay Area in this strategies discussion in the months ahead.



Steve Heminger

Attachments

- Presentation
- Attachment A: Proposed Futures: Descriptions & Summary Tables
- Attachment B: Proposed Futures: Preliminary Summary of External Forces

SH:DV

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HORIZON

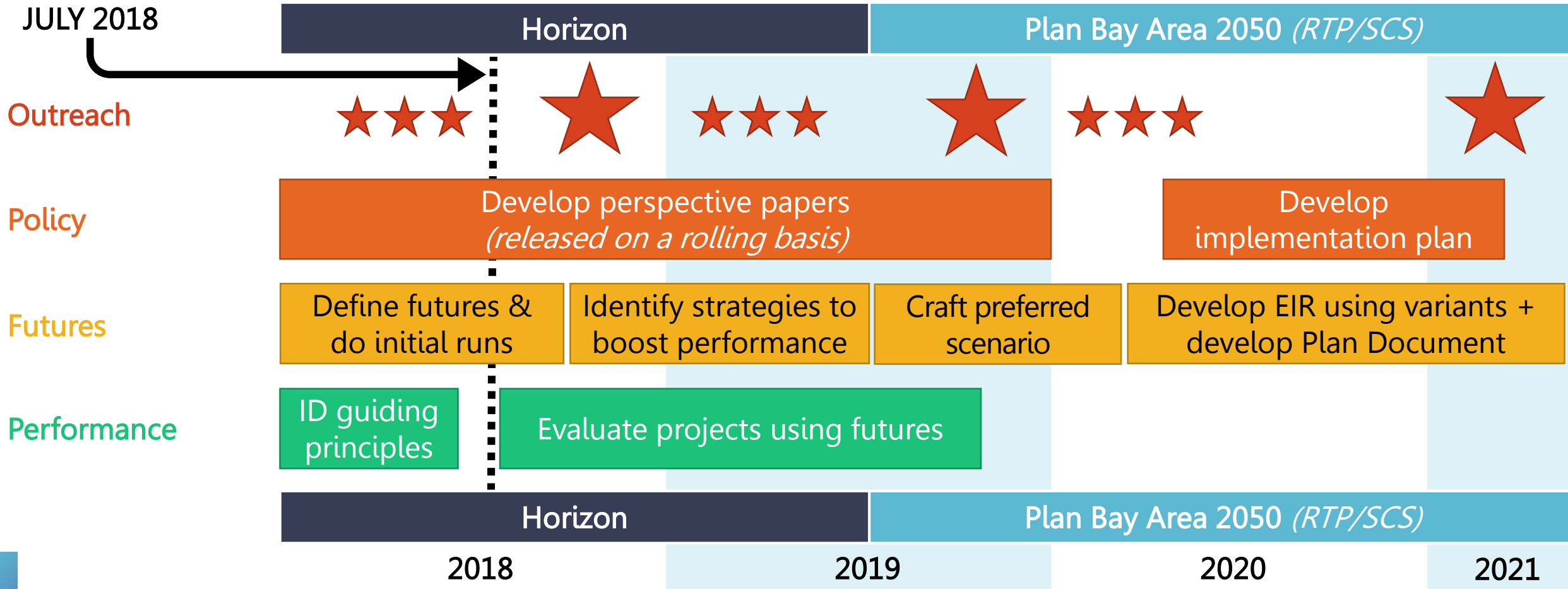
Proposed Futures

Dave Vautin and Cynthia Kroll, MTC/ABAG

Planning Committee

July 13, 2018

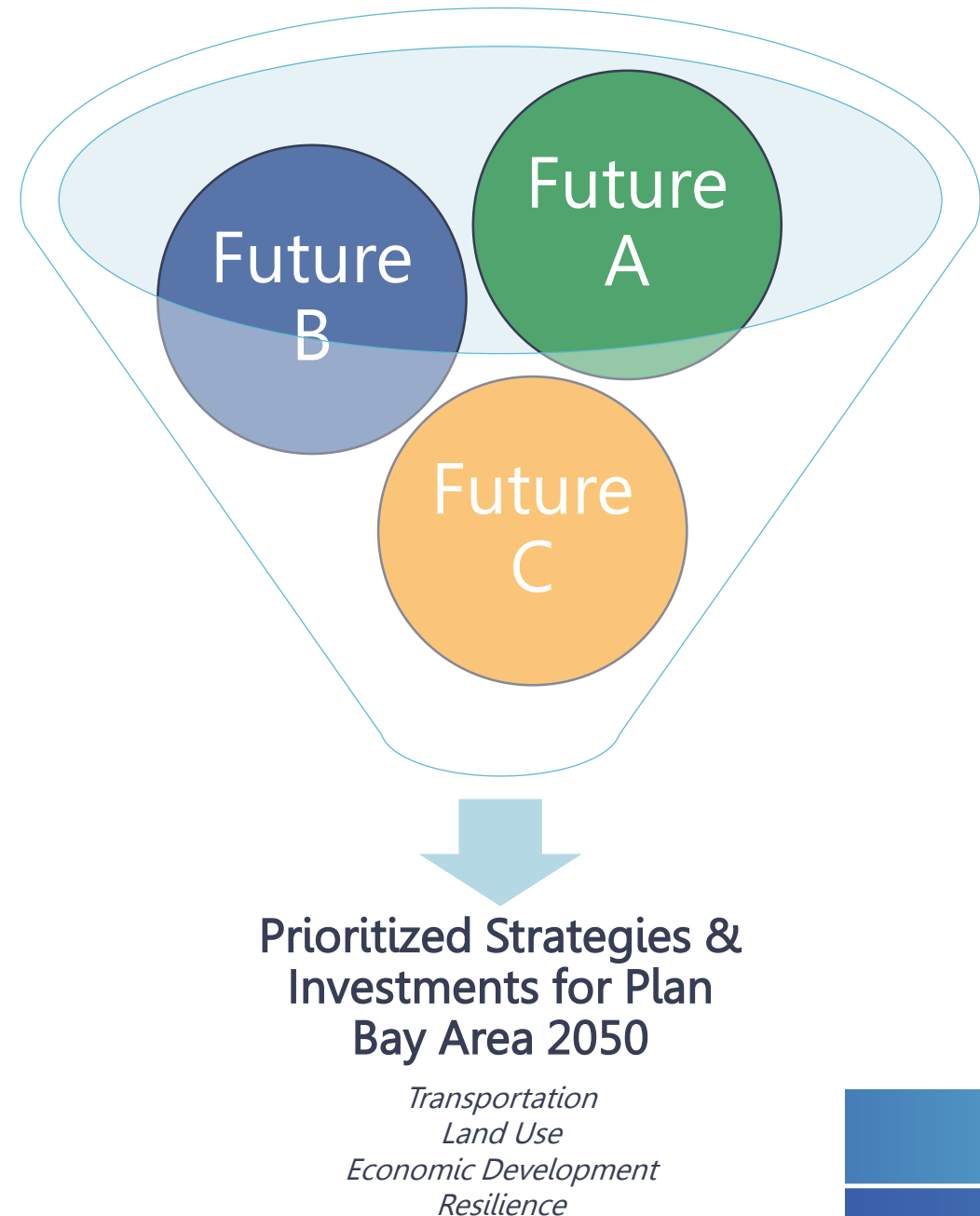
Horizon + Plan Bay Area 2050 Overview



Why Are We Creating Futures?

Creating a range of divergent futures will allow us to envision how the San Francisco Bay Area would respond to a wide range of external forces. The futures enable us to “stress test” policies and investments to ensure they are effective under a range of future conditions.

However, this is not a traditional scenario planning process – none of the futures is likely to be selected as a “preferred”. Rather than selecting a “preferred scenario” from this process as in past plans, the strategies that perform best in multiple futures will be incorporated into Plan Bay Area 2050.



Overview Video: Proposed Futures

<https://www.youtube.com/watch?v=XBgkHCGxzgs>



Three Futures – “What If?” Scenarios

A



**Clean
and Green**

What if.. new technologies and a national carbon tax enabled greater telecommuting and distributed job centers?

B



**Rising Tides,
Falling
Fortunes**

What if.. the federal government cuts spending and reduces regulations, leaving more policy decisions to states and regions?

C



**Back to
the Future**

What if.. an economic boom and new transportation options spur a new wave of development?



NEW TECHNOLOGIES

Clean and Green and Back to the Future explore two very different potential outcomes of an automated future, while Rising Tides, Falling Fortunes considers what happens if new technologies fizzle.

10%

AV Market Share (2050)

EV Market Share (2050)

95%

CLIMATE CHANGE

Each of the futures explores different global outcomes, with **Clean and Green** envisioning a world where the goals of the Paris Climate Accord are met and **Rising Tides, Falling Fortunes** explores a worst-case scenario of climate impacts for 2050.

1 ft



Sea Level Rise

3 ft

FEDERAL FUNDING

Clean and Green examines the economic and environmental impacts of an expanded and activist federal government, while *Rising Tides, Falling Fortunes* looks at what devolution might mean for the Bay Area.

\$0.5B ← Bay Area Annual Federal Transportation Funding → **\$2.5B**



IMMIGRATION POLICY

Back to the Future imagines how the Bay Area might grow with a more open immigration policy than today, while **Rising Tides, Falling Fortunes** considers a more nationalist United States in the years ahead and the implications of an aging populace.



Working with
SJCOG &
SACOG to
estimate
megaregional
conditions

MEGAREGIONAL SHIFTS

Clean and Green imagines how a carbon tax and new technologies might slow growth outside of the nine Bay Area counties, while **Back to the Future** looks at the emergence of an interconnected region with significant residential growth in Stockton, Sacramento and beyond.




Stable



Booming

Interregional Flows

Summary: External Forces

#	FUTURE NAME	IMMIGRATION AND TRADE	NATIONAL TAXES AND FUNDING	NATIONAL GROWTH	LAND USE PREFERENCES	NATIONAL ENVIRONMENTAL POLICY	NEW TECHNOLOGIES	NATURAL DISASTERS
A	 Clean and Green	Similar to today	Higher funding via carbon tax	Similar to today	Housing: more urban	Stricter regulations (1' SLR)	Widespread	Magnitude 7.0 Hayward Fault earthquake
					Jobs: more dispersed			
B	 Rising Tides, Falling Fortunes	Reduced	Lower funding due to tax cuts	Limited	Housing: more urban	Relaxed regulations (3' SLR)	More limited	Magnitude 7.0 Hayward Fault earthquake
					Similar to today			
C	 Back to the Future	Increased	Similar to today	Rapid	Housing: more dispersed	Similar to today (2' SLR)	Widespread	Magnitude 7.0 Hayward Fault earthquake
					Jobs: more urban			

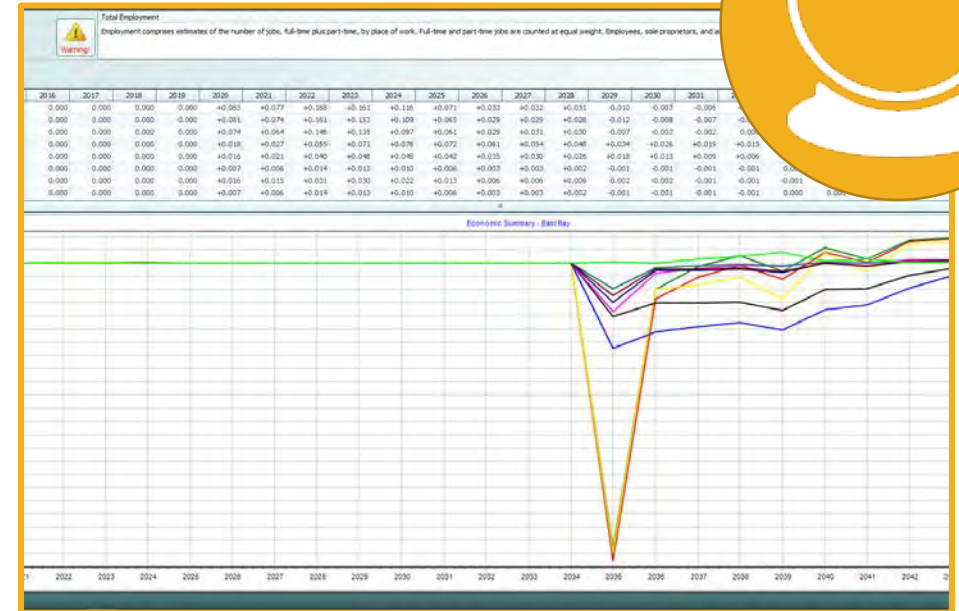
COLOR LEGEND

Lower value  Higher value 




Tools: From Ideas to Model Results

Economic forecasters assume everything except responsibility

- REMI gives a stylized view of the future
- A change in assumptions changes the future
 - National jobs, population, output
 - Regional jobs, population, output, total income
- Results sometimes need adjustment
- Side-model analysis for other factors
 - Households
 - Income distribution levels
- Further review & refinement through the end of July



Summary: Population & Jobs *(Draft)*

#	FUTURE NAME	2050 POPULATION	2050 JOBS	2050 INCOME DISTRIBUTION	2050 RACIAL DISTRIBUTION	2050 AGE DISTRIBUTION
A	 Clean and Green	10.7 million	5.5 million	24% low-income	73% minority	38 median age
B	 Rising Tides, Falling Fortunes	8.6 million	4.3 million	31% low-income	71% minority	43 median age
C	 Back to the Future	13.6 million	6.7 million	22% low-income	77% minority	38 median age

Why do economists provide detailed forecasts out 30 years? To prove they have a sense of humor...

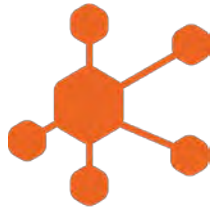
One final reminder: it is important to have a range of divergent futures with unique challenges – rather than reflecting “the world as we would like it to be”. None of the futures is likely to be selected in its entirety as the “preferred” for Plan Bay Area 2050.

The San Francisco Bay Area Aspires To Be:



AFFORDABLE

All Bay Area residents and workers have sufficient housing options they can afford – households are economically secure.



CONNECTED

An expanded, well-functioning transportation system connects the Bay Area – fast, frequent and efficient intercity trips are complemented by a suite of local transportation options, connecting communities and creating a cohesive region.



DIVERSE

The Bay Area is an inclusive region where people from all backgrounds, abilities, and ages can remain in place – with access to the region's assets and resources.



HEALTHY

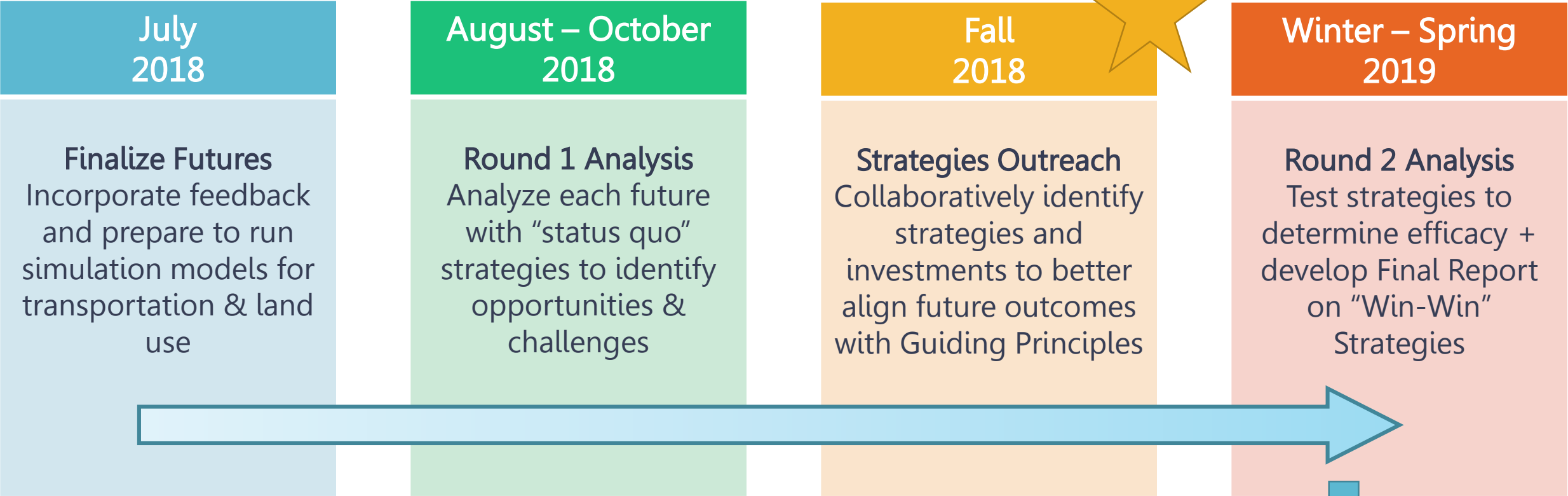
The region's natural resources, open space, clean water and clean air are conserved – the region actively reduces its environmental footprint and protects residents from environmental impacts.



VIBRANT

The Bay Area region is an innovation leader, creating quality job opportunities for all and ample fiscal resources for communities.




What's Next for the Futures in Horizon






Integrate the most effective and resilient strategies into **Plan Bay Area 2050**

Question for Committee Members:




What's the best way to engage the public on selecting strategies for each future this fall?

#	FUTURE NAME	FUTURE DESCRIPTION
A	 Clean and Green	<p>Recognizing the growing impacts of climate change, the federal government significantly tightens environmental regulations and implements an ambitious, nationwide carbon tax. New technologies thrive, with virtual reality enabling telecommuting and smaller-scale workplaces distributed across town centers. While high-tech manufacturing thrives in the United States, economic growth slows for other more energy-intensive sectors.</p>
B	 Rising Tides, Falling Fortunes	<p>Nationwide tax cuts and spending caps result in a significant reduction in federal infrastructure funding. Combined with autonomous vehicles failing to live up to the hype, cities, regions, and states are forced to pay for much-needed traditional infrastructure projects themselves. Lack of regulatory action on climate change worldwide results in sea levels rising by three feet by 2050 – creating a new set of infrastructure needs in an era of slow growth.</p>
C	 Back to the Future	<p>The U.S. experiences continued prosperity and finds itself widely respected on the world stage, thanks to smart and strategic policy decisions on the national level. Rapid job growth means more people want to move to the U.S., and increased public investment in infrastructure makes the nation more attractive for businesses. Silicon Valley technologies are dominant worldwide in everything from cars to e-commerce. Wealthy Americans seek larger suburban homes and many depend on new technologies such as autonomous vehicles and hyperloop lines to access urban job centers.</p>

External Forces Summary

#	FUTURE NAME	IMMIGRATION AND TRADE	NATIONAL TAXES AND FUNDING	NATIONAL GROWTH	LAND USE PREFERENCES	NATIONAL ENVIRONMENTAL POLICY	NEW TECHNOLOGIES	NATURAL DISASTERS
A	 Clean and Green	Similar to today	Higher funding via carbon tax	Similar to today	Housing: more urban	Stricter regulations (1' SLR)	Widespread	Magnitude 7.0 Hayward Fault earthquake
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					Similar to today			
C	 Back to the Future	Increased	Similar to today	Rapid	Housing: more dispersed	Similar to today (2' SLR)	Widespread	Magnitude 7.0 Hayward Fault earthquake
					Jobs: more urban			

Draft Outcomes — Bay Area

#	FUTURE NAME	2050 POPULATION	2050 JOBS	2050 INCOME DISTRIBUTION	2050 RACIAL DISTRIBUTION	2050 AGE DISTRIBUTION	2050 INTERREGIONAL TRAVEL	2050 TRANSPORTATION REVENUES
A	 Clean and Green	10.7 million	5.5 million	24% low-income	73% minority	38 median age	↔	\$\$\$
B	 Rising Tides, Falling Fortunes	8.6 million	4.3 million	31% low-income	71% minority	43 median age	↑	\$\$
C	 Back to the Future	13.6 million	6.7 million	22% low-income	77% minority	38 median age	↑↑↑	\$\$\$\$

External Forces			A	B	C
External Forces			Clean and Green	Rising Tides, Falling Fortunes	Back to the Future
Environmental	1	Sea Level Rise	1 Foot	3 Feet	2 Feet
	2	Natural Disasters	2035 Hayward Fault Earthquake (magnitude 7.0)	2035 Hayward Fault Earthquake (magnitude 7.0)	2035 Hayward Fault Earthquake (magnitude 7.0)
Political	3	U.S. Political System	Healthy Democracy	Flawed Democracy	Healthy Democracy
	4	U.S. Standing in the World	Multiple Superpowers	Declining Power	Preeminent Global Power
	5a	U.S. Tax Rates	Higher Tax Rates	Lower Tax Rates	Similar to Today
	5b	U.S. Tax Structure	Carbon Tax	Income Tax (Similar to Today)	Income Tax (Similar to Today)
	6a	U.S. Spending Levels	Higher Expenditures	Lower Expenditures	Similar to Today
	6b	U.S. Spending Distribution	Similar Share to Today	Reduced Share for Metro Areas	Larger Share for Metro Areas
	7	Immigration Policy	80,000 Annual Immigrants (to Bay Area)	20,000 Annual Immigrants (to Bay Area)	240,000 Annual Immigrants (to Bay Area)
	8	Trade Policy	3% Average Tariff Rate	10% Average Tariff Rate	0% Average Tariff Rate
	9	Environmental Policy	Increased Regulations	Reduced Regulations	Similar to Today
Economic	10	U.S. Population Annual Growth Rate	+1.1%	+0.4%	+1.1%
	11	U.S. Jobs Annual Growth Rate	+0.2%	+0.4%	+1.1%
	12	U.S. Jobs Distribution	currently being refined	currently being refined	currently being refined
	13	U.S. Productivity	+2.7%	+1.6%	+1.6%
Land Use	14	Housing Preferences	Greater Preference for Urban Housing	Greater Preference for Urban Housing	Greater Preference for Dispersed Housing
	15	Workplace Preferences	Greater Preference for Dispersed Employment Centers	Similar Preference to Today	Greater Preference for Urban Employment Centers
	16	Telecommute Share	30%	15%	6%
	17	E-Commerce Market Share	50%	20%	50%
	18	Interregional Volumes	Limited Growth Rates	Current Growth Rates	Faster Growth Rates
Transportation	19	Transportation Technologies	High Speed Rail, Autonomous Rail and Buses, Freight Aerial Drones	Autonomous Buses	Hyperloop, Autonomous Rail and Buses, Freight Aerial Drones, Lower-Cost Helicopter Transport
	20	Autonomous Vehicle Market Share	95%	10%	75%
	21	Electric Vehicle Market Share	95%	10%	75%
	22	Sharing Preferences	Greater Preference	Similar Preference to Today	Reduced Preference
	23	Per-Mile Vehicle Operating Cost	\$0.50 per Mile	\$0.30 per Mile	\$0.15 per Mile
	24	Annual Federal Transportation Funding (Bay Area)	\$2.5 Billion	\$0.5 Billion	\$2.5 Billion