

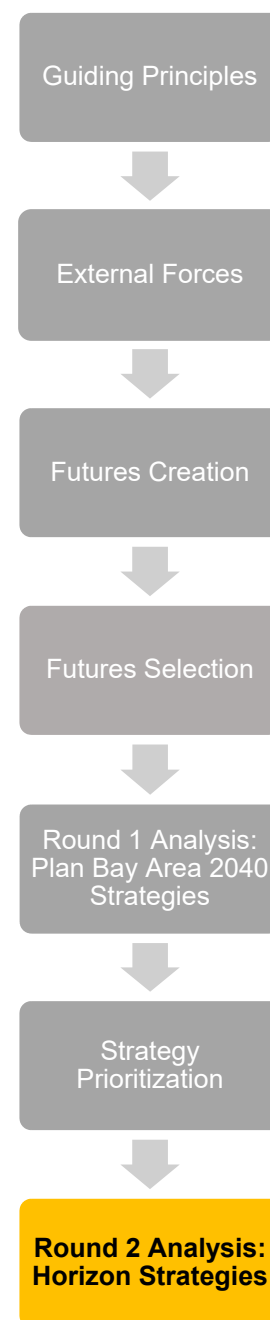
# Metropolitan Transportation Commission and the Association of Bay Area Governments Joint MTC Planning Committee with the ABAG Administrative Committee

October 11, 2019

Agenda Item 5a

## Horizon: Futures Final Report

<b>Subject:</b>	Presentation on findings from the second and final round of Futures Planning, including recommendations of Horizon strategies resilient to future uncertainty which should be advanced into Plan Bay Area 2050.
<b>Background:</b>	<p>In early 2018, MTC/ABAG launched the Horizon initiative, focused on preparing the Bay Area for an uncertain future. Through four main work elements – Public Engagement, Perspective Papers, Project Performance, and Futures Planning – Horizon sought to identify transformative solutions to make the Bay Area more resilient and equitable in the coming decades. Each element was crafted to help build a stronger foundation for the next-generation regional plan, Plan Bay Area 2050.</p> <p>Over the past 18 months, the Futures Planning process has advanced from identifying Futures to testing strategies to study in each of the them. Along the way, staff explored how Plan Bay Area 2040 strategies performed under a wide range of divergent external forces. In short, many of the prior Plan’s strategies struggled to perform when exposed to a greater variety of political, technological, economic and environmental challenges that could impact the lives of Bay Area residents. These were discussed in detail in the <a href="#">Futures Interim Report – Opportunities and Challenges</a> (published March 2019).</p> <p>Most recently, staff held public workshops and stakeholder meetings in spring 2019 to identify a set of roughly 30 strategies to study in the second round of Futures Planning. These strategies were designed to be both resilient and equitable, targeting the specific challenges laid out in the Futures Interim Report. Over summer 2019, staff have been conducting extensive quantitative and qualitative analysis of the strategies, simulating their impacts to provide an informed recommendation about which should be considered for inclusion in Plan Bay Area 2050.</p>
<b>Issues:</b>	<p>In advance of the Futures Final Report publication later this month, staff is providing a summary of preliminary findings from the Futures Round 2 analysis. These findings are high-level, focusing on the “top 10” key takeaways from our work so far; the report will delve into the specifics in greater detail, serving as an initial staff recommendation for the Draft Blueprint phase of Plan Bay Area 2050.</p>



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

As detailed in **Attachment A**, our work to date has generated ten high-level findings based on the strategies studied in Futures Round 2:

1. New growth areas enable more growth near transit and near opportunity.
2. A mix of strategies to retain and expand affordable housing made progress in addressing the current affordable housing gap.
3. Shifts in transportation mode choice were most pronounced for active transportation, driven in part by micromobility strategies.
4. While still present, transit overcrowding was partially alleviated, with new bus rapid transit (BRT) lines as well as a new Transbay Rail Crossing playing a key role.
5. Road pricing reduced roadway congestion, but equity concerns need to be addressed before advancing this strategy further.
6. Economic development strategies evaluated were insufficient to slow the decline of the middle class.
7. Adaptation and retrofit strategies boosted our region's resilience.
8. Urban growth boundaries led to minimal greenfield development in both Round 1 and Round 2.
9. A VMT-based fee on office development was effective in focusing office growth, but not in shifting jobs to the East and North Bay.
10. A large tax package focused on higher-income individuals and businesses, contemplated to underwrite the cost of strategy projects and subsidies, did not have significant adverse impacts on the economy.

In addition to high-level findings, the final report will provide a breakdown of findings for each individual strategy, focusing on its resilience to a range of uncertain future conditions as well as its implications for social equity.

The Futures Planning work – in particular, the Futures Final Report – will serve as a helpful foundation for staff, committees, and board members as key Plan Bay Area 2050 decisions must be made over the coming months. Through the Blueprint planning process, the subset of Horizon strategies that proved resilient and equitable under a wide range of future conditions can be refined, improved on, and when needed, supplemented.

Starting this month, staff will hold “pop-up” workshops across the region, highlighting the most effective strategies from the Futures Final Report; this will allow us to better understand which strategies resonate with the public. Staff will also host Plan Bay Area 2050 Blueprint half-day stakeholder workshops focused on the four topical areas of the plan: Transportation, Housing, the Environment, and the Economy. Feedback at these events will inform refinements to the strategies to study in the Blueprint phase.

**Recommendation:** None

**Attachments:** Attachment A: PowerPoint Presentation

  
Therese W. McMillan



H O R I Z O N



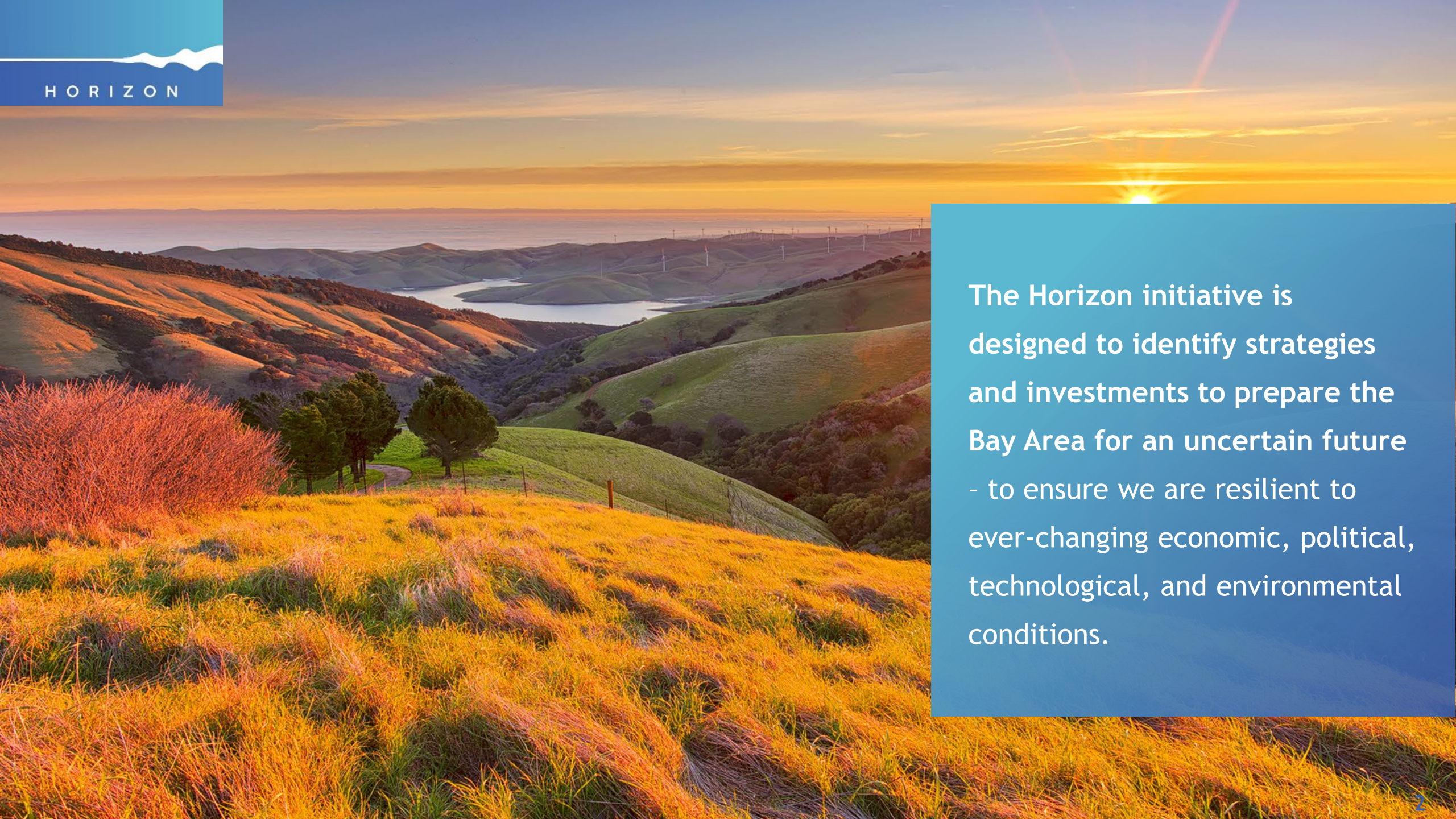
# Futures Final Report

**Preliminary Findings on Horizon Strategies  
in Advance of Plan Bay Area 2050**

MTC Planning Committee with the ABAG Administrative Committee

October 11, 2019 - Michael Germeraad



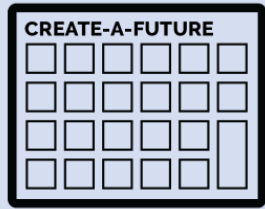
The background is a wide-angle landscape photograph taken during the "golden hour" of sunset or sunrise. The sky is a gradient of orange, yellow, and light blue, with the sun visible as a bright orb on the horizon. The foreground is a grassy hillside with tall, dry, golden-brown grass. In the middle ground, there are rolling green hills, a small body of water (a reservoir or lake) nestled in a valley, and several wind turbines visible on the distant hills. The overall mood is serene and expansive.

The Horizon initiative is designed to identify strategies and investments to prepare the Bay Area for an uncertain future - to ensure we are resilient to ever-changing economic, political, technological, and environmental conditions.



# Futures Process

## OUTREACH



## ROUND 1 ANALYSIS

*Current Strategies*



## REPORT



## OUTREACH



## ROUND 2 ANALYSIS

*New Strategies*



## REPORT



# Three Futures - “What If?” Scenarios

A



Rising Tides,  
Falling  
Fortunes

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

B



Clean  
and Green










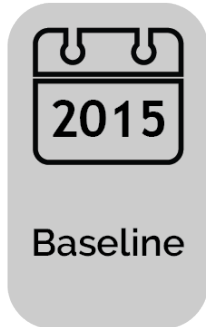





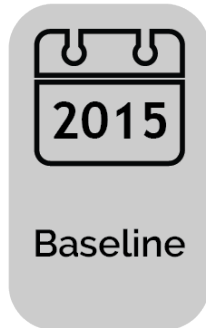


**What if...** new technologies and a national carbon tax enabled greater telecommuting and distributed job centers?

C






Back to  
the Future

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

	<b>Round 1 Analysis</b> <i>Comparing the three Futures, how does Plan Bay Area 2040 fare in an era of uncertainty?</i>	<b>Round 2 Analysis</b> <i>Comparing against Round 1 results, how do new strategies improve each Future?</i>
<b>Rising Tides, Falling Fortunes</b> <i>(RTFF)</i>	   Baseline + External Forces (RTFF) + Strategies (PBA 2040)	   Baseline + External Forces (RTFF) + Strategies (Horizon <sub>\$</sub> )
<b>Clean and Green</b> <i>(CAG)</i>	   Baseline + External Forces (CAG) + Strategies (PBA 2040)	   Baseline + External Forces (CAG) + Strategies (Horizon <sub>\$\$</sub> )
<b>Back to the Future</b> <i>(BTTF)</i>	   Baseline + External Forces (BTTF) + Strategies (PBA 2040)	   Baseline + External Forces (BTTF) + Strategies (Horizon <sub>\$\$</sub> )

# Refresher: External Forces for Each Future

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



# Refresher: How Did We Integrate the Megaregion?



Rising  
Tides,  
Falling  
Fortunes

*Status quo* Future - interregional travel **continues to grow at current rate**, including in-commuting



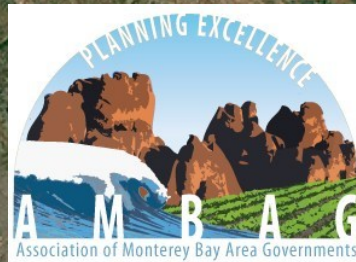
Clean  
and Green

Federal policy **minimizes further growth in interregional travel**, with new taxes making it much less affordable for mega-commuters



Back to  
the Future

Low cost of driving allows the megaregion to blossom - with **much more rapid interregional growth than today** overwhelming existing regional gateways



# Refresher: 35 Strategies Analyzed

*Strategies were designed to support these nine priority areas, based on the Futures Interim Report findings. While new revenues were assumed in all Futures, fiscal constraint did mean that some strategies were omitted from Rising Tides, Falling Fortunes.*



**Improve Economic Mobility**



**Shift the Location of Jobs**



**Spur Housing Production**



**Retain & Expand Affordable Housing**



**Improve Access, Speed, and Reliability of Transportation**



**Prioritize Active Modes**



**Price Transportation Services**



**Reduce the Environment's Impact on Us**



**Reduce Our Impact on the Environment**



H O R I Z O N

# Refresher: Five Challenges from Round 1 Analysis

In the Futures Interim Report (March 2019), a set of key challenges were identified. The challenges focused on how Plan Bay Area 2040 strategies might fare under previously-unstudied external forces like sea level rise, autonomous vehicles, and federal policy shifts.

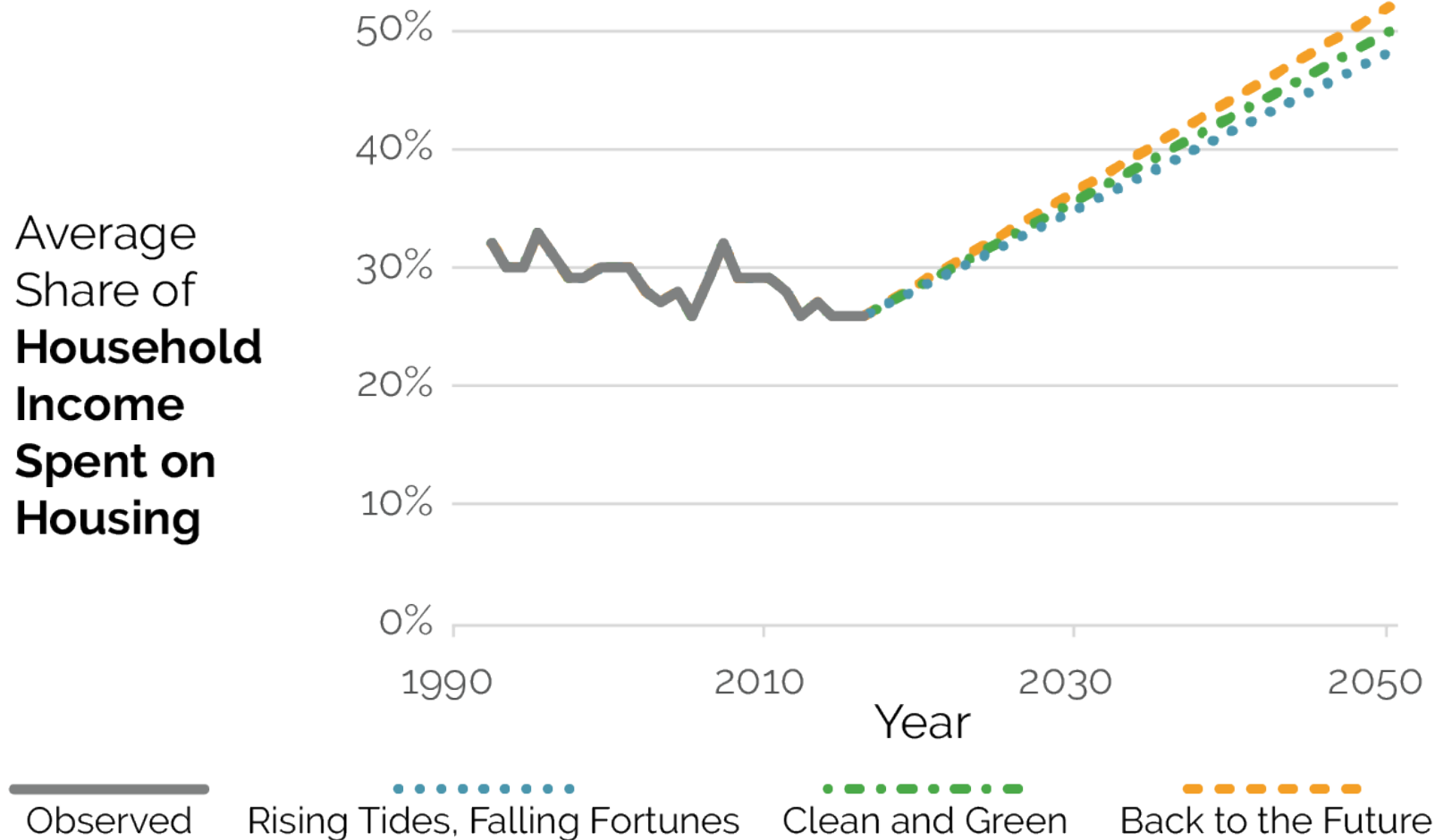


# Challenge



AFFORDABLE

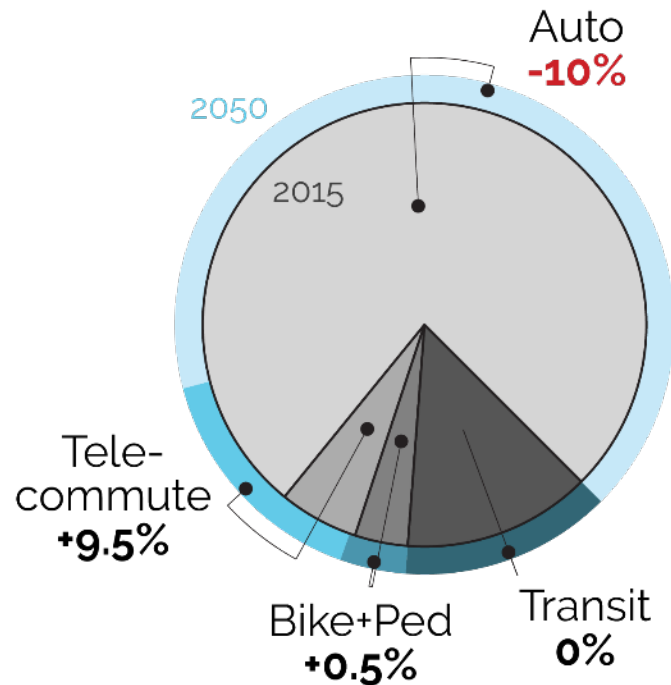
Without new strategies in place, Bay Area housing affordability continued to get worse.



Public transit, walking, and bicycling saw limited gains in mode share compared to 2015 conditions.

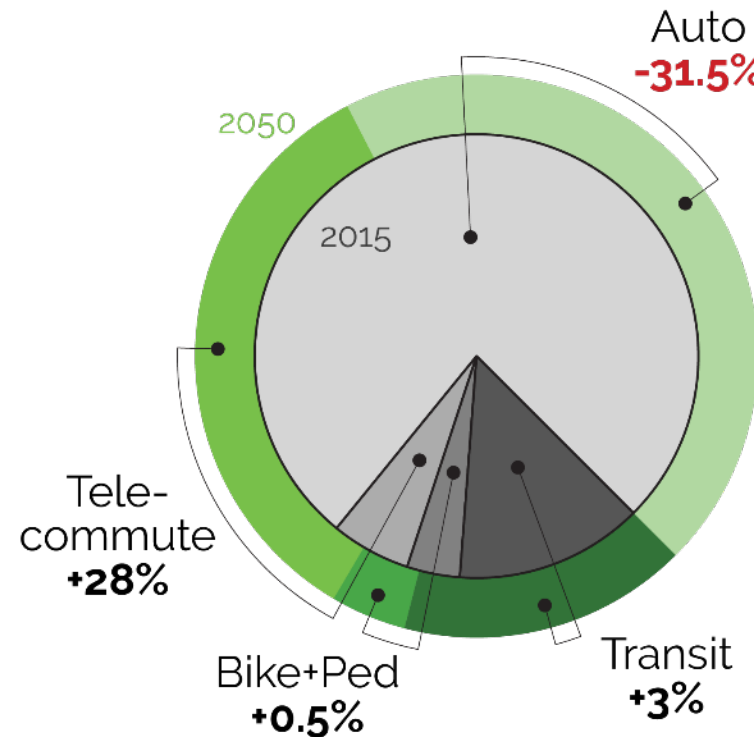
## Rising Tides, Falling Fortunes

In 2050, 67% of commuters use autos.



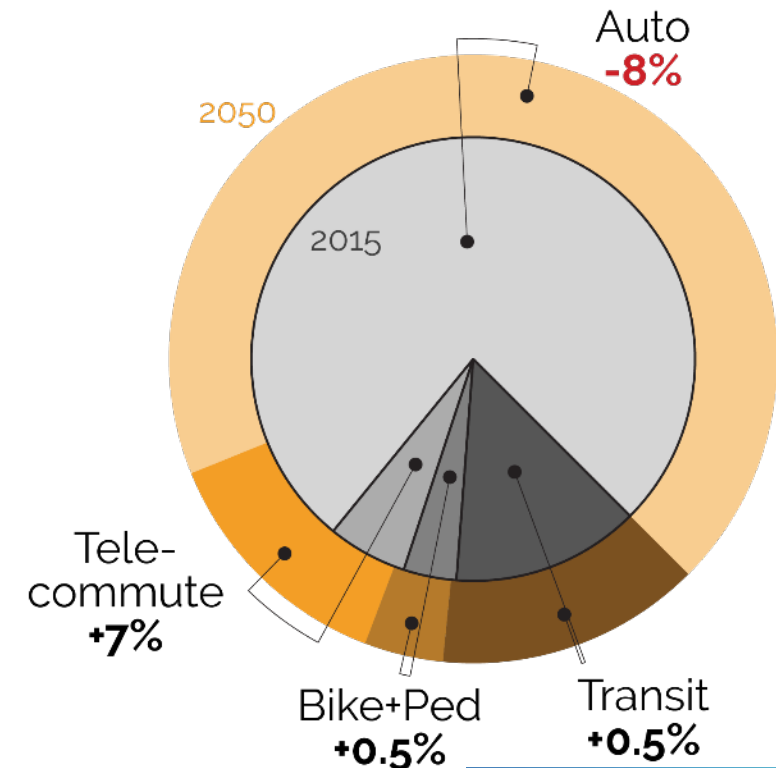
## Clean and Green

In 2050, 45% of commuters use autos.



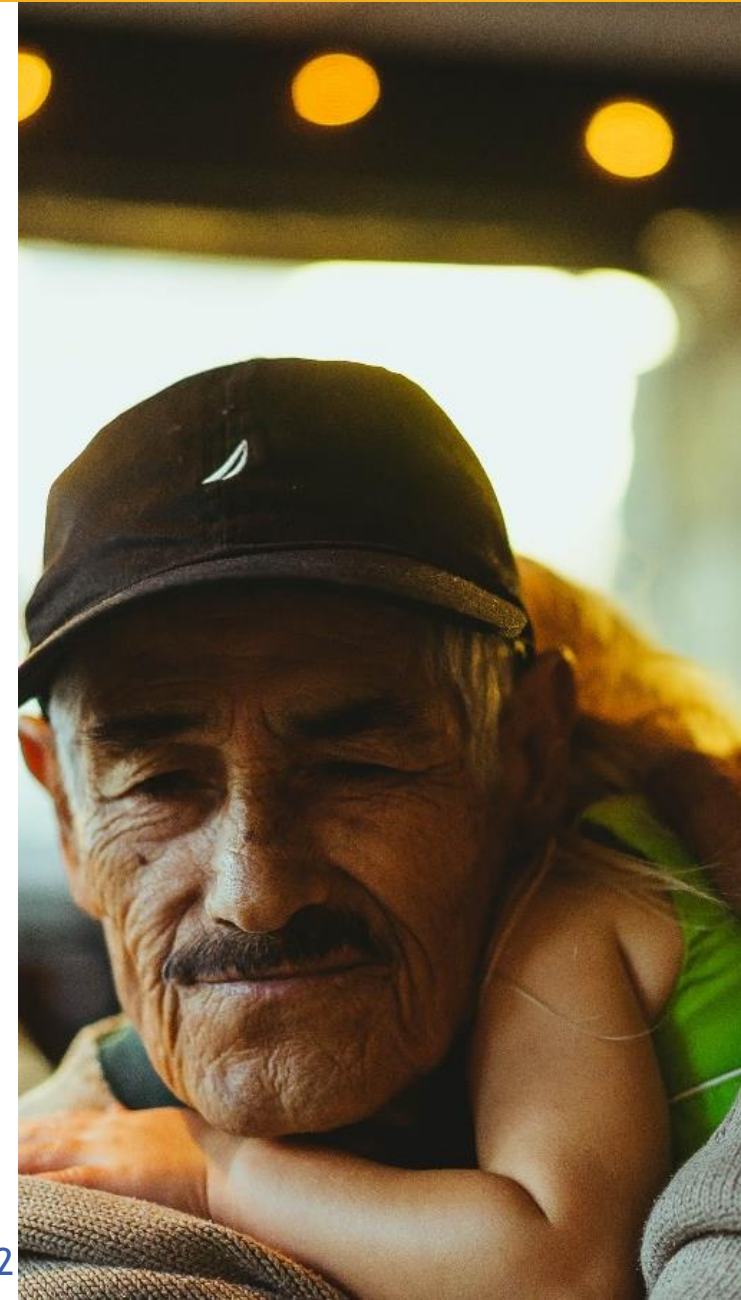
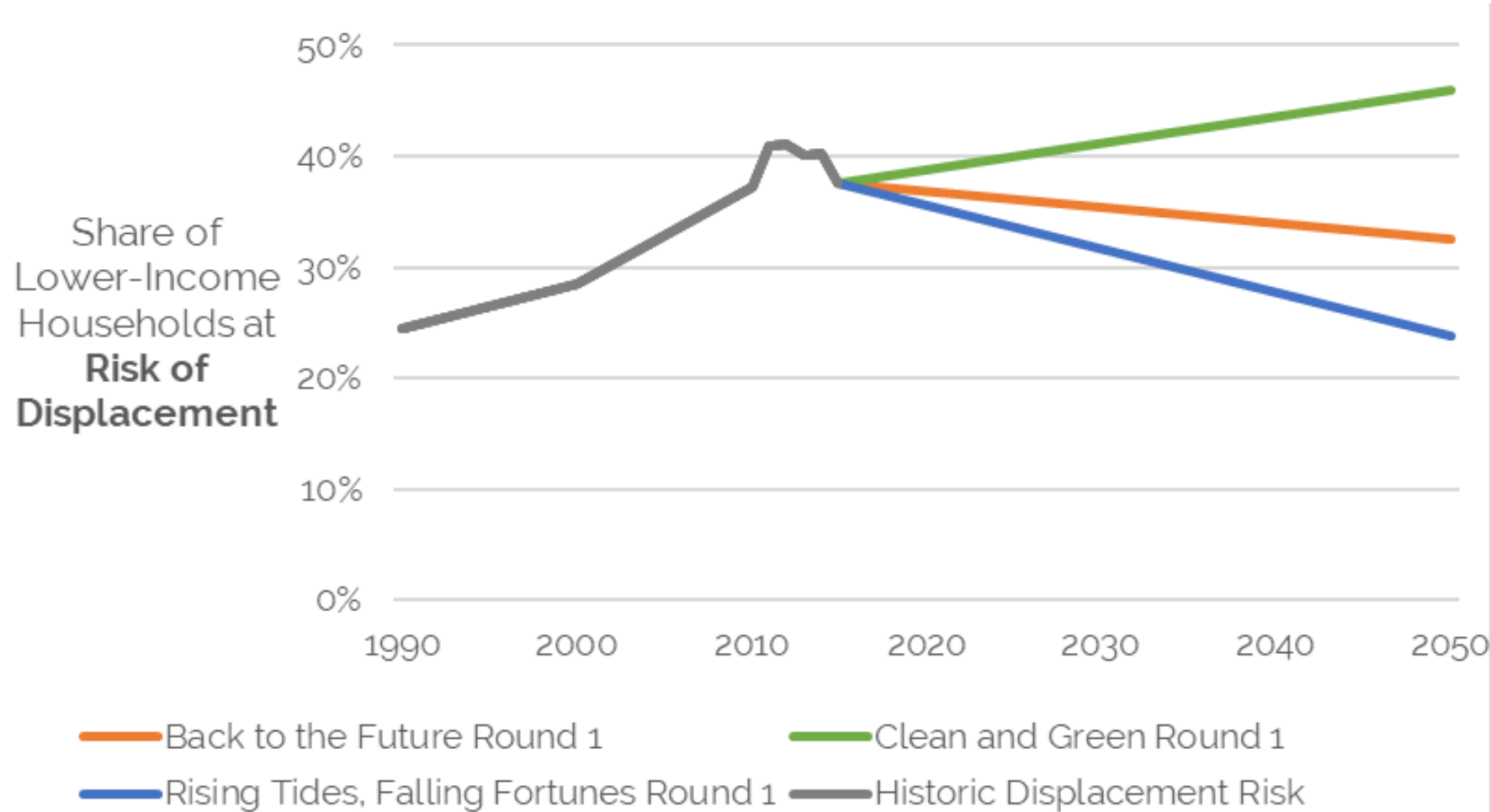
## Back to the Future

In 2050, 69% of commuters use autos.



# Challenge

A significant share of lower-income households remained at risk of displacement in each Future.





Unmitigated impacts from sea level rise and natural disasters resulted in significant damage across the region.

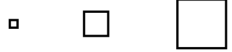
**Rising Tides, Falling Fortunes**  
3 feet of sea level rise

**Clean and Green**  
1 foot of sea level rise

**Back to the Future**  
2 feet of sea level rise

## Homes Affected by Hazards

1k 10k 40k



## Sea Level Rise



Permanent Inundation

## Earthquake Damage & Recovery



Recovered before 2040



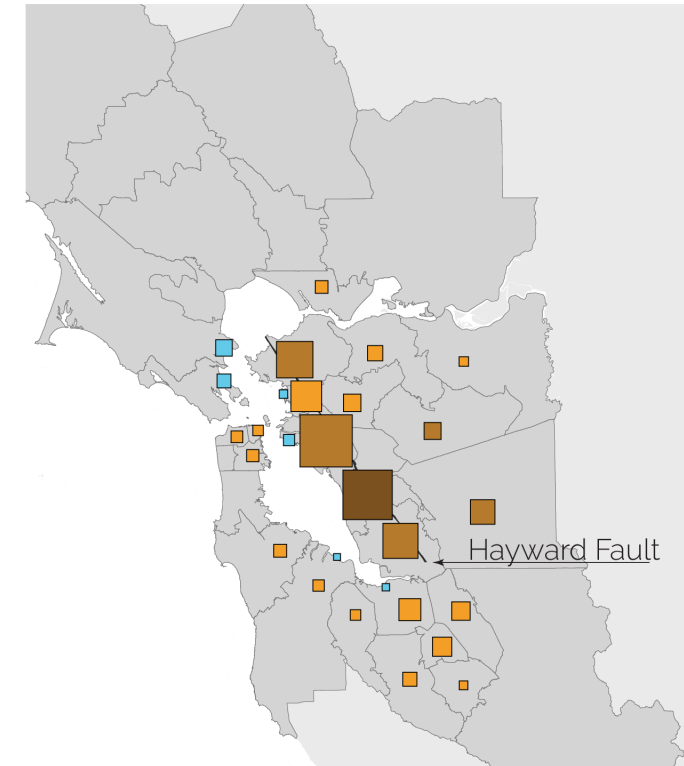
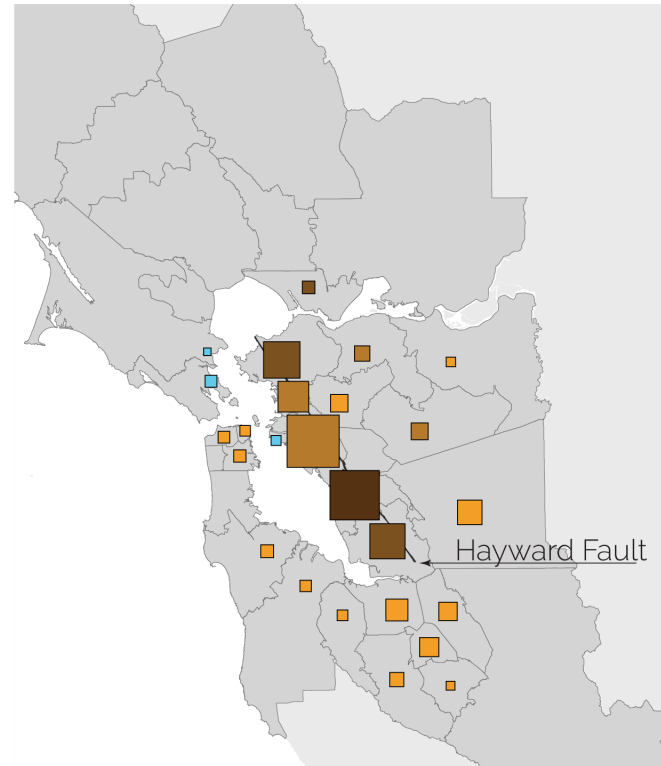
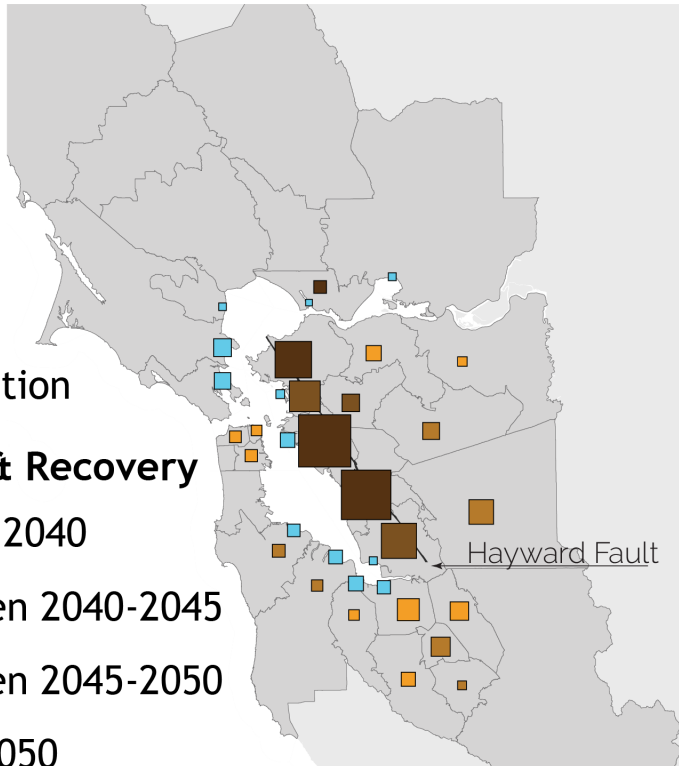
Recovered between 2040-2045



Recovered between 2045-2050



Recovered after 2050



Land use strategies included in *Plan Bay Area 2040* were insufficient to address the region's longstanding jobs-housing imbalance.

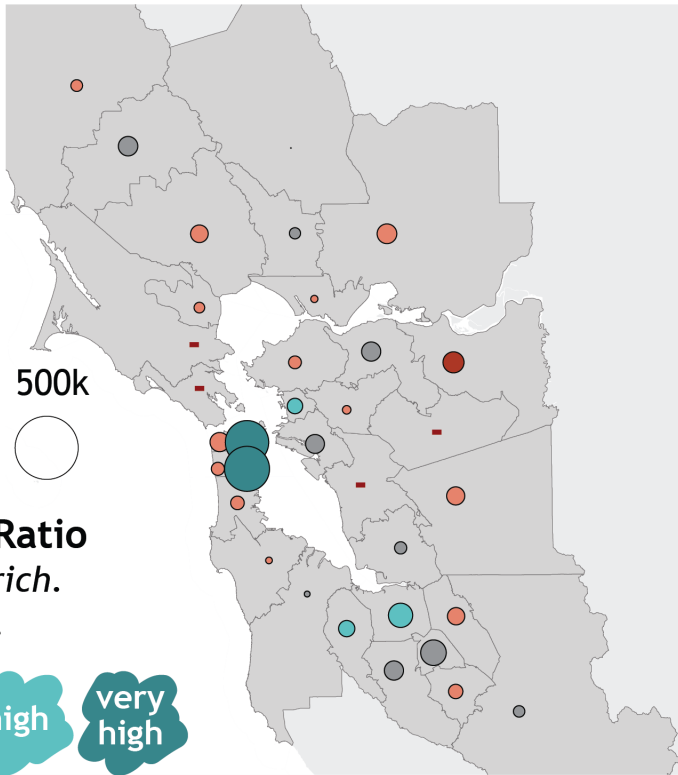
**Rising Tides, Falling Fortunes**  
+0.5M Homes, +0.5M Jobs

**Overall Growth**  
Circle area represents combined job & housing growth from 2015 to 2050.

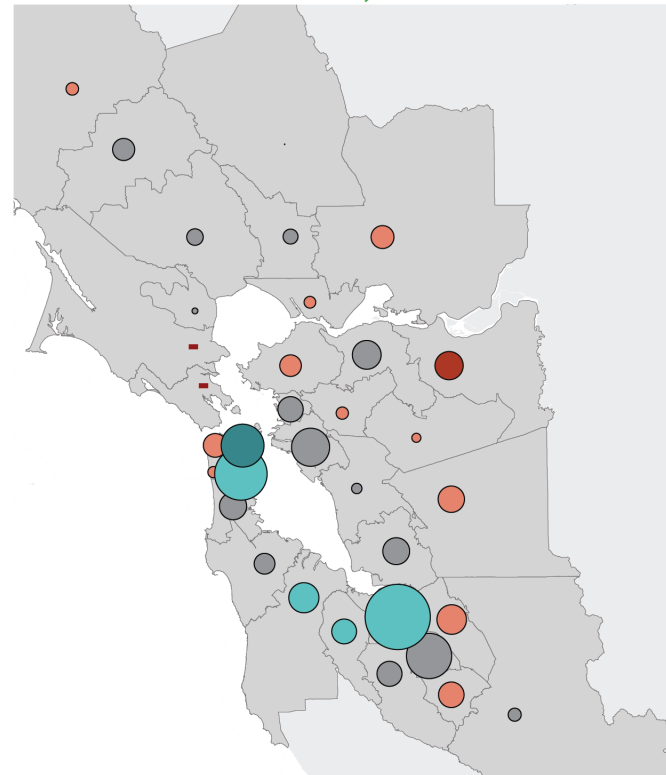
negative growth   10k   100k   500k

**2050 Jobs/Housing Ratio**  
Red areas are housing rich.  
Blue areas are job rich.

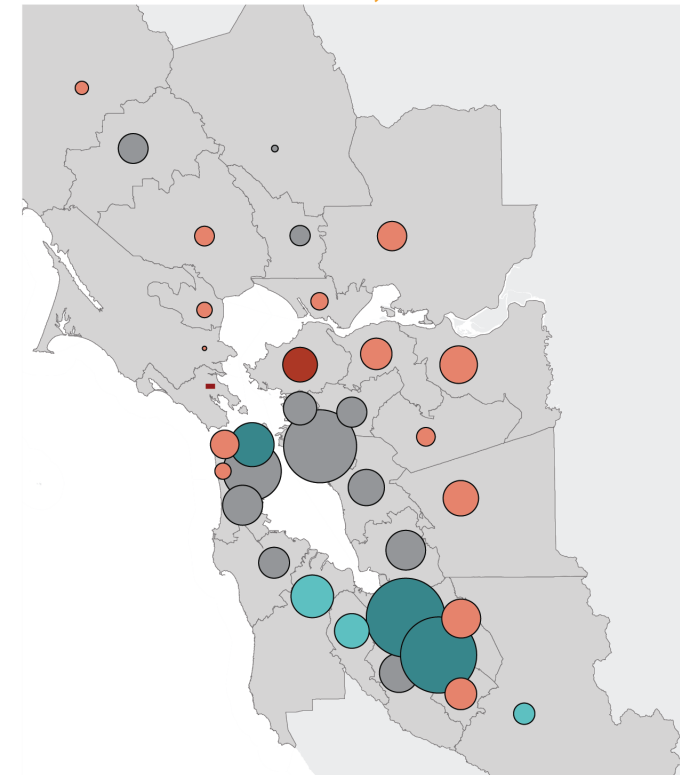
very low   low   avg.   high   very high



**Clean and Green**  
+1.3M Homes, +1.1M Jobs



**Back to the Future**  
+2.1M Homes, +2.7M Jobs





H O R I Z O N

# Top 10: Horizon Strategy Findings

We have explored the effectiveness of over 30 strategies to improve the region's economic, housing, transportation, and environmental challenges.



# New growth areas enable more growth near transit and near opportunity.



## Allow Diverse Housing Around Transit



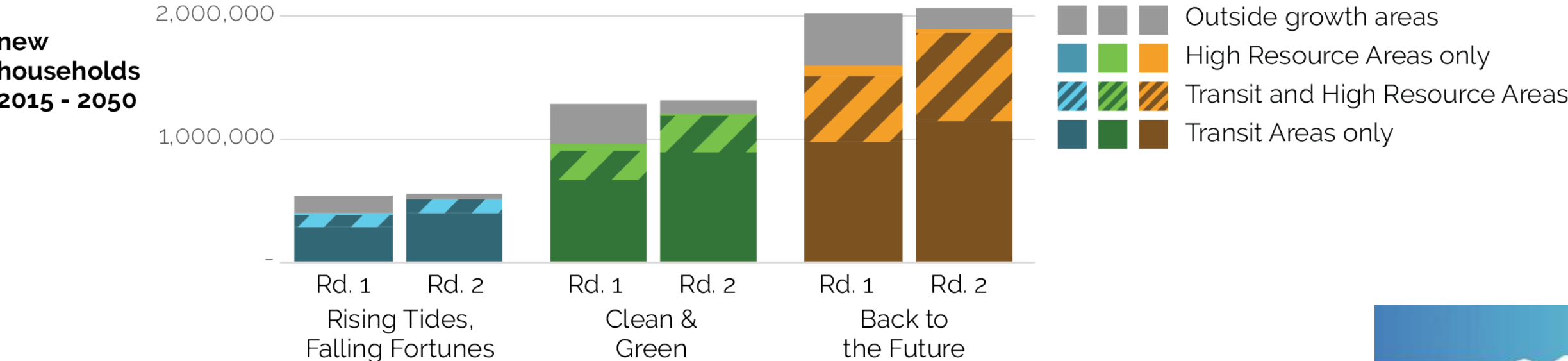
Allow more diverse housing growth around areas with high frequency transit. Expand the growth footprint beyond the current list of PDAs.

## Allow Diverse Housing in High-Resource Areas



Allow more diverse housing growth in areas of high opportunity that also have moderate transit service. Expand the growth footprint beyond the current list of PDAs.

Location of households added between 2015-2050 relative to growth geography



# A mix of strategies to retain and expand affordable housing made progress in addressing the current affordable housing gap.



## Pass Inclusionary Zoning Policies



Strategies  
(Horizon<sub>\$</sub>)

Require 10% to 20% of all new development to be deed-restricted affordable, expanding off the Plan Bay Area 2040 inclusionary strategy.

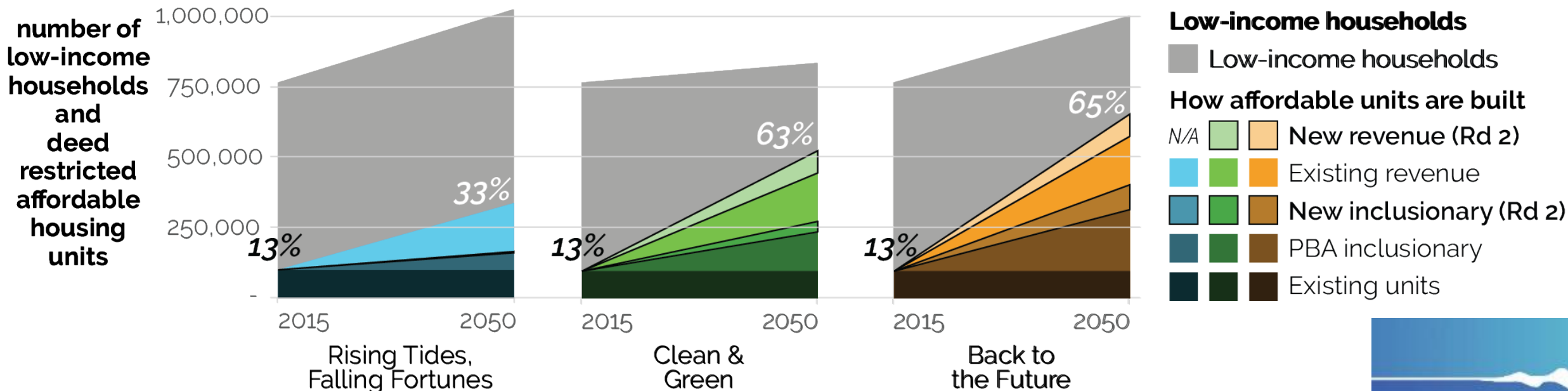
## Fund Affordable Housing



Strategies  
(Horizon<sub>\$\$</sub>)

Raise \$1.5 billion in new annual revenue to build and preserve affordable housing, complementing existing federal, state, and local affordable housing funds.

## Number of deed restricted affordable housing units and the number of low-income households



# Shifts in transportation mode choice were most pronounced for active transportation, driven in part by micromobility strategies.



## Strategies that prioritized active modes.



### Implement Vision Zero Speed Reductions

Reduce speed limits to 25 mph on local roads within three miles of transit, in addition to reducing speeds on highways.



### Build a Micromobility Network

Build nearly 10,000 miles of micromobility infrastructure, including protected lanes and trails.



### Invest in Free Short-Trip Service

Fund shared personal mobility, including scooters and electric bikes, within 3 miles of transit.

## Other strategies that contributed to modal shift.



### Suite of Growth Pattern Strategies

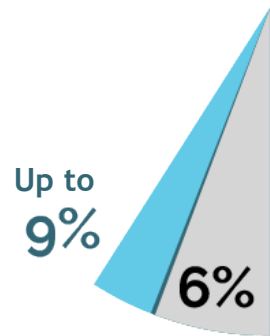
By changing the growth pattern in Round 2 analysis, more households and jobs are in areas where the active transportation investments were focused.



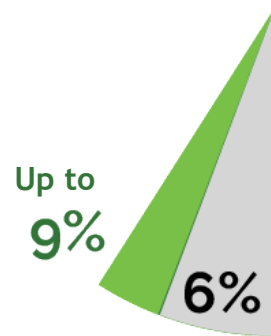
### Apply Time-of-Day Tolls on All Freeways

Toll vehicles on highways based on the time of day and the number of occupants in the vehicle.

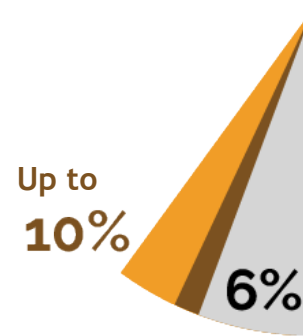
## Active (walk & bike) mode share in 2015, and Futures round 1 and round 2 analysis



Rising Tides,  
Falling Fortunes

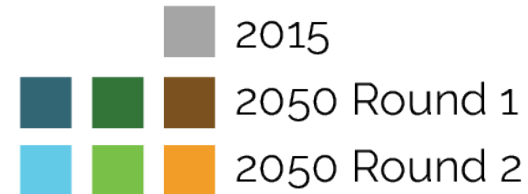


Clean &  
Green



Back to  
the Future

### active (walk+bike) mode share



Note that mode share is reflective of commute mode; the share is higher when accounting for all trips.



While still present, transit overcrowding was partially alleviated, with new Bus Rapid Transit (BRT) lines as well as a new Transbay Rail Crossing playing a key role.



### Make Strategic Transit Investments



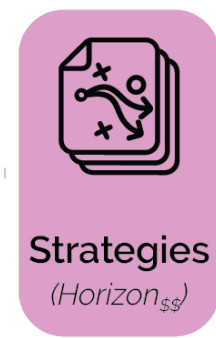
Build major PBA2050 transit investments, such as BART to Silicon Valley Phase 2 and Caltrain DTX.

### Build a Next-Generation BRT Network



Create a fast and frequent regional bus network, providing redundancy for rail lines and connecting underserved areas.

### Build a New Transbay Rail Crossing



Build a new rail crossing from the East Bay to the West Bay to provide greater transit capacity across the Bay.

*Final analysis of transit overcrowding still under development.*

# Road pricing reduced roadway congestion, but equity concerns need to be addressed before advancing this strategy further. (part 1)



**We were able to explore how congestion was affected by external forces & strategies.**

*The next slide will show the difference in Round 2.*

## Rising Tides Falling Fortunes

2050: 10% autonomous vehicle market share  
2050: \$0.20 per mile vehicle operating cost

### Round 1 Highway Congestion corridors near max capacity

- major highways
- 2050, congestion
- 2050, closure from hazards

## Clean and Green

2050: 95% autonomous vehicle market share  
2050: \$0.40 per mile vehicle operating cost

### Round 1 Highway Congestion corridors near max capacity

- major highways
- 2050, congestion
- 2050, closure from hazards

## Back to the Future

2050: 75% autonomous vehicle market share  
2050: \$0.10 per mile vehicle operating cost

### Round 1 Highway Congestion corridors near max capacity

- major highways
- 2050, congestion
- 2050, closure from hazards

# Road pricing reduced roadway congestion, but equity concerns need to be addressed before advancing this strategy further. (part 2)

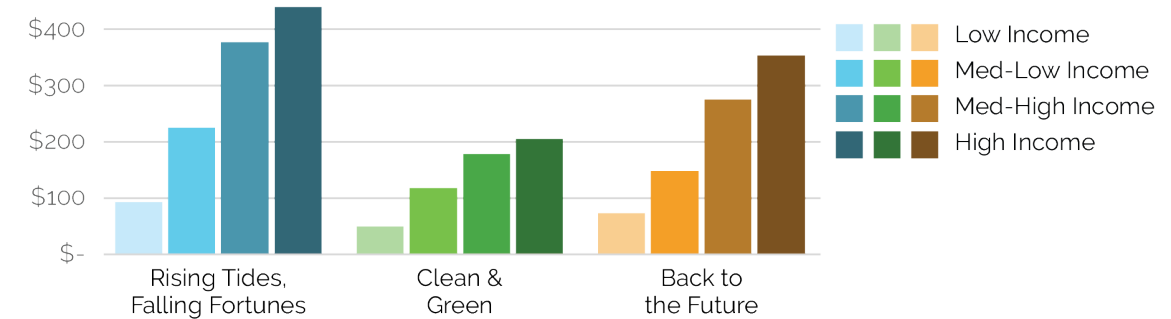


## Apply Time-of-Day Tolls on All Freeways



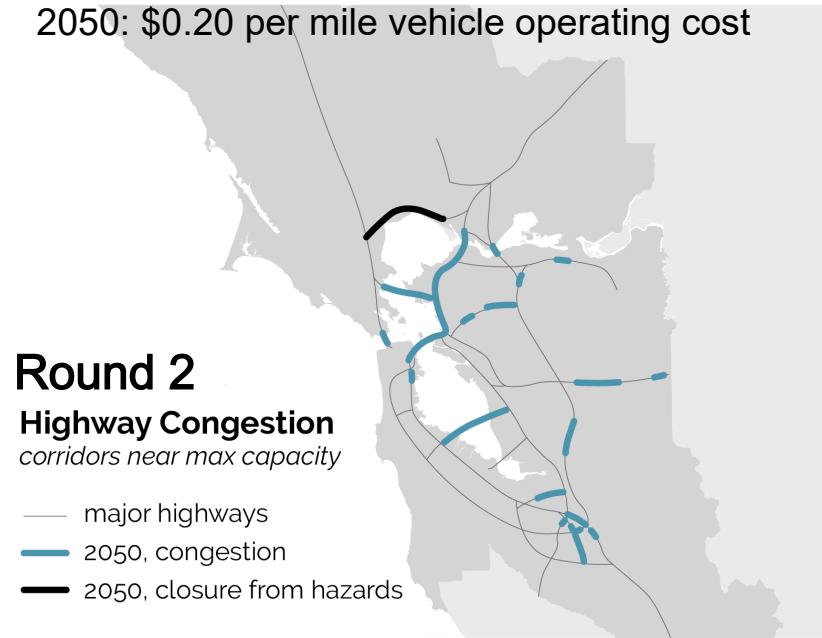
Apply a \$0.05 - \$0.15 per mile toll on all freeways depending on vehicle occupancy and time of day.

Average Annual Time-of-Day Toll Revenue per Household by Income in 2050 (2019 dollars)



### Rising Tides Falling Fortunes

2050: 10% autonomous vehicle market share  
2050: \$0.20 per mile vehicle operating cost



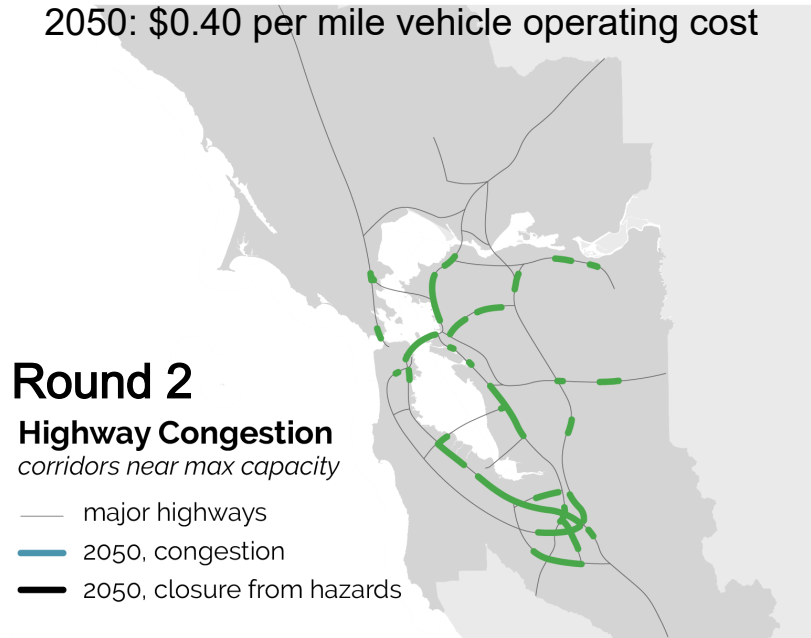
### Round 2

Highway Congestion  
corridors near max capacity

- major highways
- 2050, congestion
- 2050, closure from hazards

### Clean and Green

2050: 95% autonomous vehicle market share  
2050: \$0.40 per mile vehicle operating cost



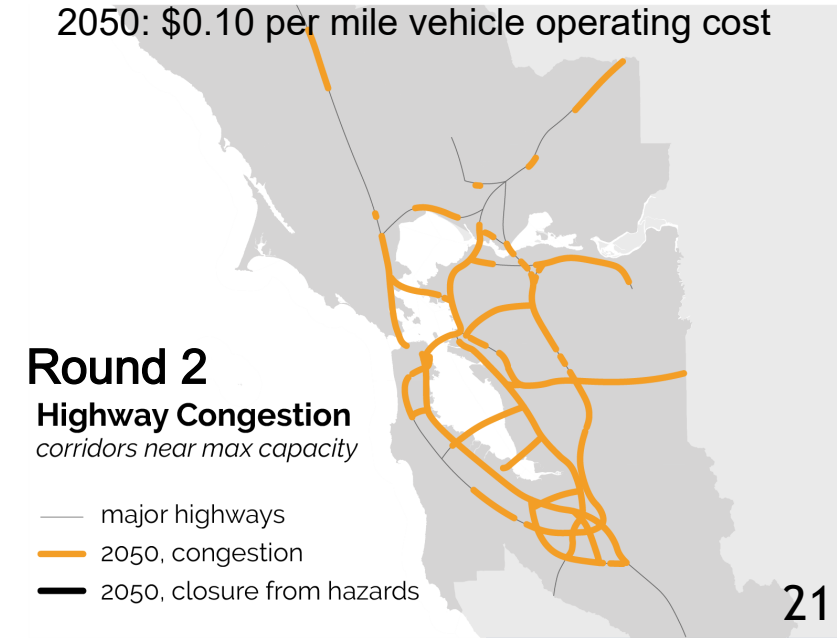
### Round 2

Highway Congestion  
corridors near max capacity

- major highways
- 2050, congestion
- 2050, closure from hazards

### Back to the Future

2050: 75% autonomous vehicle market share  
2050: \$0.10 per mile vehicle operating cost



### Round 2

Highway Congestion  
corridors near max capacity

- major highways
- 2050, congestion
- 2050, closure from hazards



# Economic development strategies evaluated were insufficient to slow the decline of the middle class.



## Create Incubator Programs



Strategies  
(Horizon<sub>\$</sub>)

Expand and create new job incubator programs in economically-challenged communities.

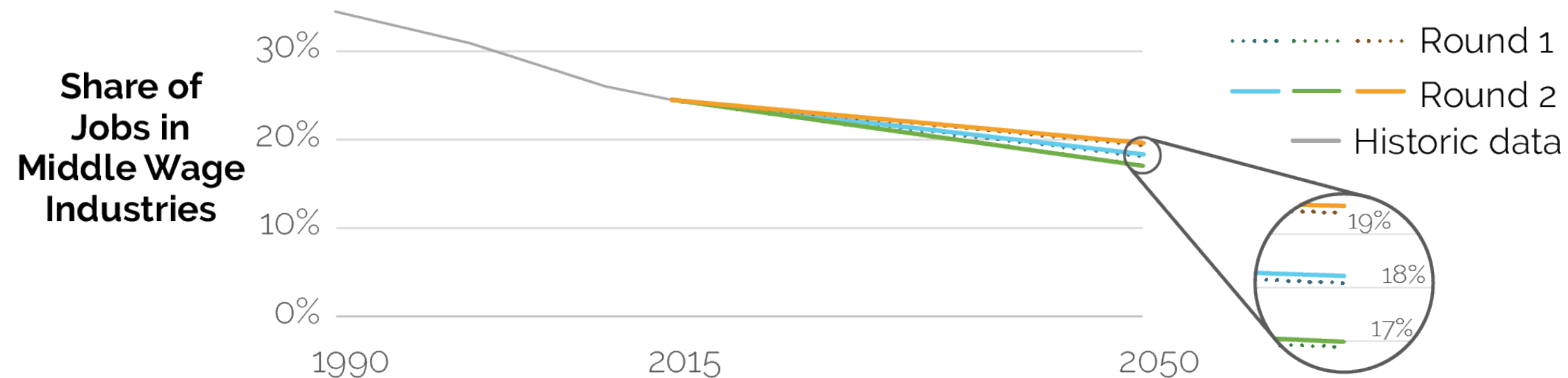
## Expand Construction Workforce Programs



Strategies  
(Horizon<sub>\$</sub>)

Expand construction workforce development and training programs. Support early construction professionals in early apprenticeship years.

## Share of regional jobs in middle wage industries - historic and projected



# Adaptation and retrofit strategies boosted our region's resilience.



## Adapt to Sea Level Rise



Strategies  
(Horizon<sub>\$\$</sub>)

Leverages existing and new revenues to fund a hybrid set of gray and green infrastructure systems to adapt the region.

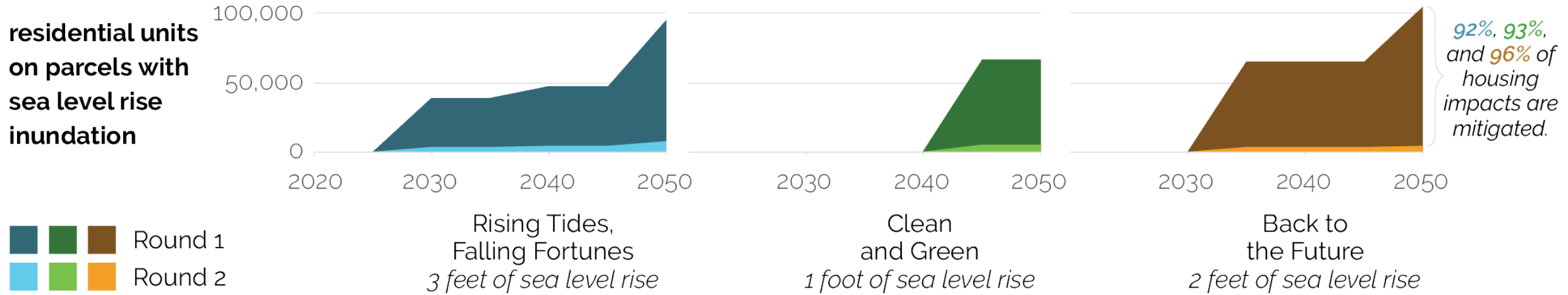
## Retrofit Older Existing Buildings



Strategies  
(Horizon<sub>\$\$</sub>)

Provides 50% subsidies for older buildings built before current codes to support common earthquake, wildfire, energy, and water retrofit strategies.

## Residential sea level rise impacts in Futures round 1 (without adaptation) and round 2 (with adaptation)



# Urban growth boundaries led to minimal greenfield development in both Round 1 and Round 2.



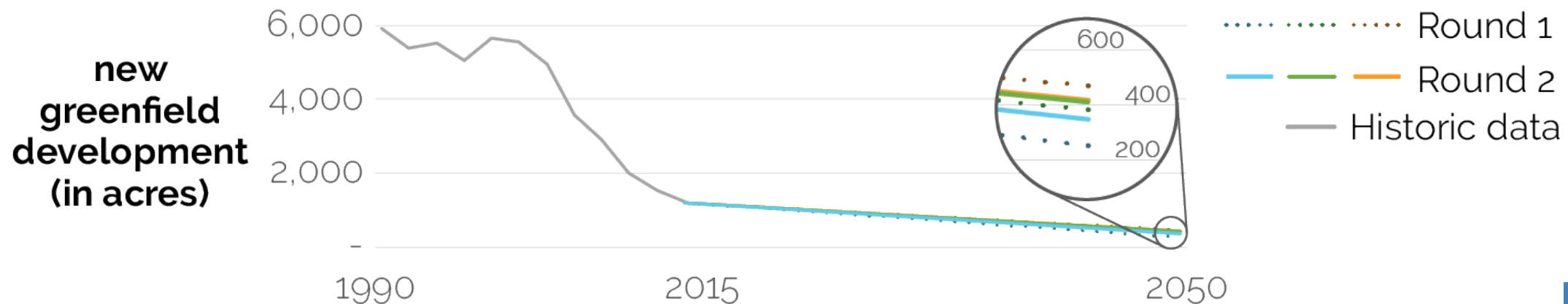
## Maintain Urban Growth Boundaries



Strategies  
(PBA 2040)

Restrict urban development on greenfield lands, continuing the region's recent commitment to reducing sprawl outward.

## Acres of greenfield development annually - historic and projected





# A VMT-based fee on office development was effective in focusing office growth, but not in shifting jobs to the East and North Bay.



## Apply a VMT-Based Fee on Office Development



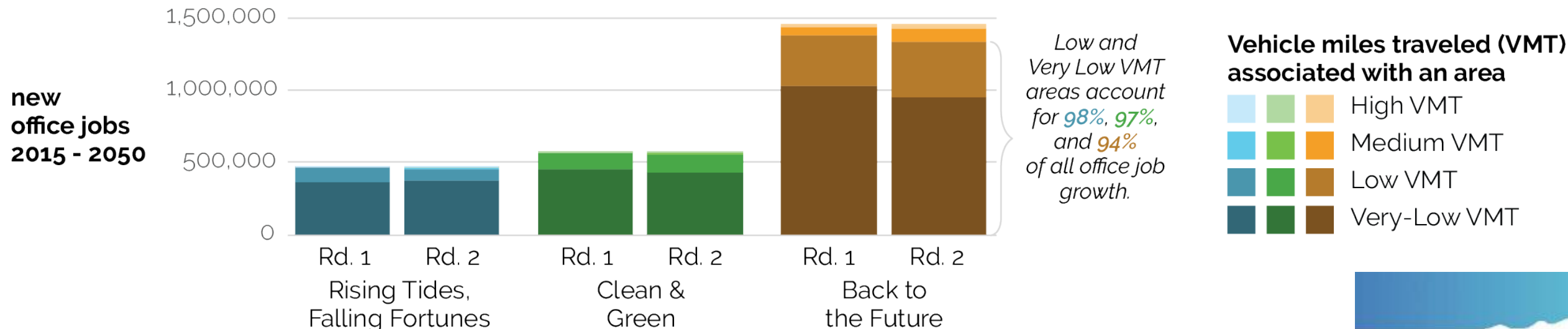
Strategies  
(PBA 2040)

Apply a fee on new office development in areas that have high employment-related vehicle miles traveled (VMT), expanding upon a Plan Bay Area 2040 strategy.

*Given that this strategy was included in Plan Bay Area 2040, it was studied in both Futures Round 1 and Futures Round 2 - and was very effective in focusing growth in low-VMT places in both analyses.*

*Further refinements could focus on better tailoring this strategy to reflect county-level conditions - rather than “one size fits all”.*

## Location of new office-related job growth relative to an area's associated VMT level



A large tax package (to fund subsidies / projects) focused on higher-income individuals and businesses did not have significant adverse impacts on the economy.



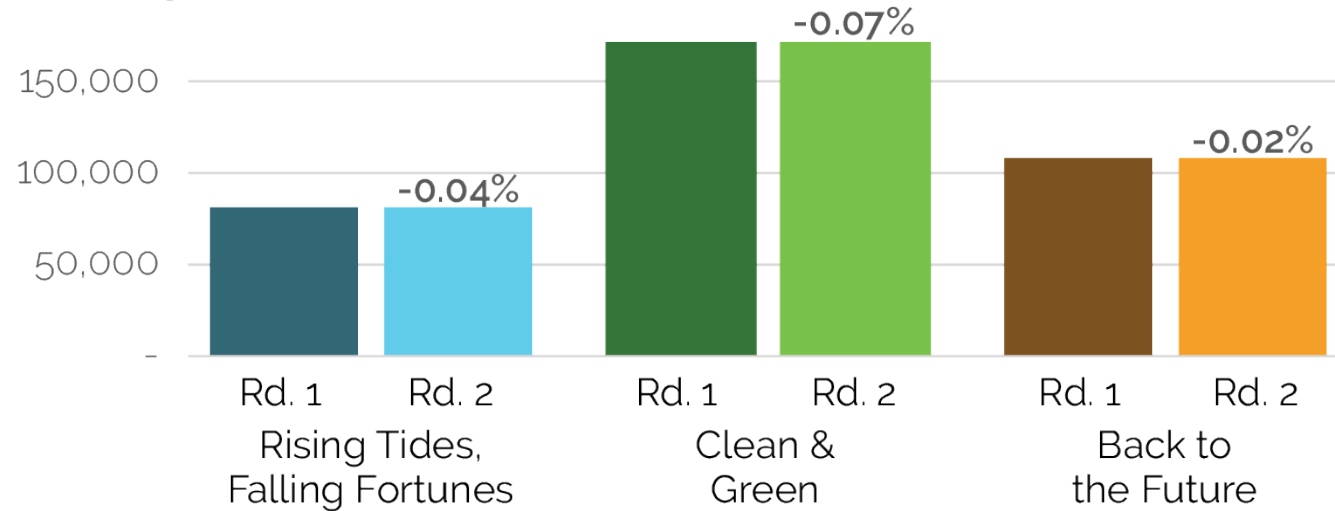
## Raise New Revenues



Place a balanced tax increase on businesses, parcels (building and home owners), and high-income earners.

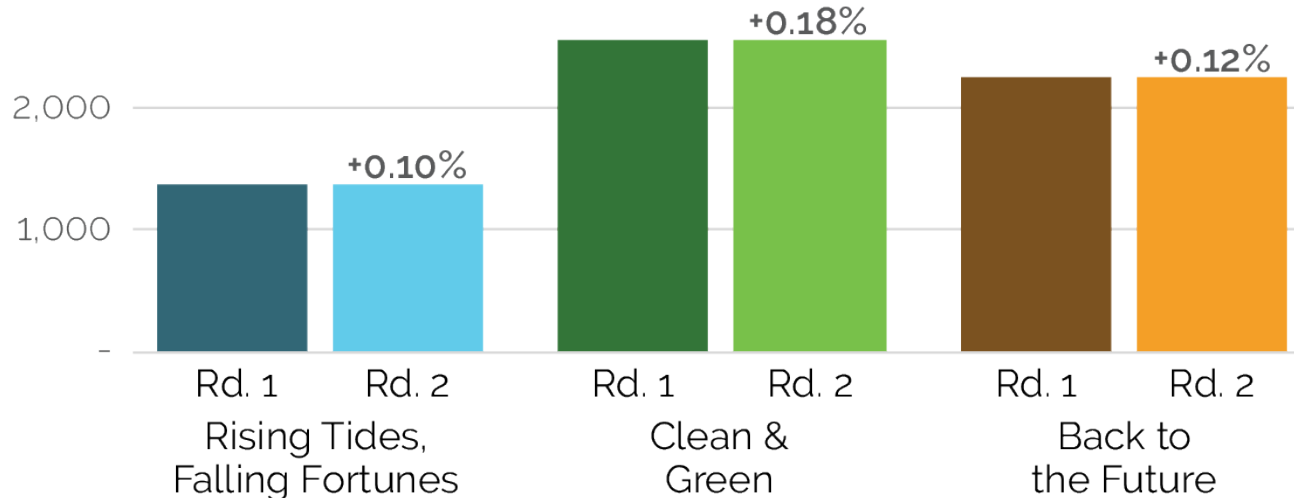
## Projected Average Household Income in 2050

**2050  
Average  
Household  
Income**  
(in 2018  
dollars)



## Projected Annual Gross Regional Product in 2050

**2050  
Gross  
Regional  
Product**  
(in billions of  
2018 dollars)



*Initial economic analysis indicates that impacts would be relatively limited; however, further refinements could potentially better reflect the broader suite of benefits from infrastructure investments.*



H O R I Z O N

# Rating Strategies




Staff have selected one of three ratings for each strategy, based on its resilience and efficacy in the Futures analysis as well as its support for equitable outcomes.





# Futures Round 2: Strategy Recommendations

## Economy

 Recommended to move forward into Plan Bay Area 2050 Blueprint.	<i>No economic strategies received this rating.</i>
 Recommended to move forward <i>with minor revisions.</i>	<div>Assess a VMT-Based Fee on Office Development</div> <div>Create Incubator Programs in Economically-Challenged Areas</div> <div>Expand Childcare Support for Low-Income Families</div>
 Not recommended to move forward <i>unless major revisions are made.</i>	<div>Expand Construction Workforce Programs</div> <div>Place Office Caps in Job-Rich Cities</div>
Already advancing into implementation due to state legislative action in 2019.	<div>Provide Portable Benefits for Part-Time/Freelance Workers</div>
Not explored as part of Futures Round 2 analysis, but will be explored as part of Plan Bay Area 2050 Blueprint.	<div>Establish Priority Production Areas to Protect Industrial Lands</div>



# Futures Round 2: Strategy Recommendations

## *Housing*



Recommended to move forward into Plan Bay Area 2050 Blueprint.

Allow Diverse Housing in Priority Development Areas (PDAs)

Streamline Development in All Growth Areas



Recommended to move forward *with minor revisions*.

Allow Diverse Housing around Major Transit Stops (TPAs)

Allow Diverse Housing in High-Resource Areas (HRAs)

Transform Aging Malls and Office Parks into Neighborhoods

Fund Affordable Housing Preservation & Production

Require 10 to 20 Percent of All New Housing to be Affordable



Not recommended to move forward *unless major revisions are made*.

*No housing strategies received this rating.*

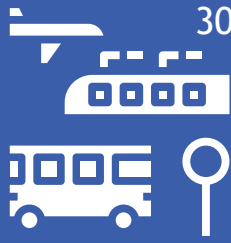
Already advancing into implementation due to state legislative action in 2019.




Repurpose Public Land to Build Housing

Increase Renter Protections

# Futures Round 2: Strategy Recommendations

## Transportation



 Recommended to move forward into Plan Bay Area 2050 Blueprint.	Operate and Maintain the Existing System
	Advance a Complete Micromobility Network
	Develop a Single Platform to Access and Pay for All Mobility
 Recommended to move forward <i>with minor revisions.</i>	Advance a New Transbay Rail Crossing
	Invest in Free Short-Trip Service
	Implement Vision Zero Speed Reduction Measures
 Not recommended to move forward <i>unless major revisions are made.</i>	Apply Time-of-Day Tolls on All Freeways
Ratings pending release of Draft Project Performance results.	Provide Free Transit to Lower-Income Riders
	Make Strategic Transit Modernization/Expansion Investments
	Build a Next-Generation Bus Rapid Transit Network
	Build Carpool Lanes & Address Interchange Bottlenecks
	Advance Next-Generation Rail Modernization
	Extend the Regional Rail Network

# Futures Round 2: Strategy Recommendations

## *Environment*



Recommended to move forward into Plan Bay Area 2050 Blueprint.

Keep Current Urban Growth Boundaries in Place

Partially Adapt to Sea Level Rise



Recommended to move forward *with minor revisions.*

Retrofit Older Existing Buildings (Energy, Water, Seismic, Fire, etc.)

Fully Adapt to Sea Level Rise



Not recommended to move forward *unless major revisions are made.*

Purchase Disaster Recovery Financing

Rating pending release of Draft Project Performance results.

Adapt SR-37 to Sea Level Rise



## Futures Final Report:

Resilient and Equitable Strategies  
for the Bay Area's Future

*The full report will highlight the full suite of strategies studied and describes to what extent the region performs better with these strategies.*

The report is expected to be posted on the MTC website later this month.

### FUTURES FINAL REPORT

RESILIENT AND EQUITABLE  
STRATEGIES FOR  
THE BAY AREA'S FUTURE

OCTOBER 2019



H O R I Z O N

# What's Next?

Horizon provided an opportunity to “stress test” key strategies in advance of Plan Bay Area 2050. Input from elected officials, stakeholders, and the general public will help inform further refinements to make the shortlist of strategies included in the Plan Bay Area 2050 Draft Blueprint as resilient and equitable as possible.

The final decision on what strategies to include will occur in early 2020 and will be made by the MTC Commission and ABAG Executive Board.

# Plan Bay Area 2050 Schedule

