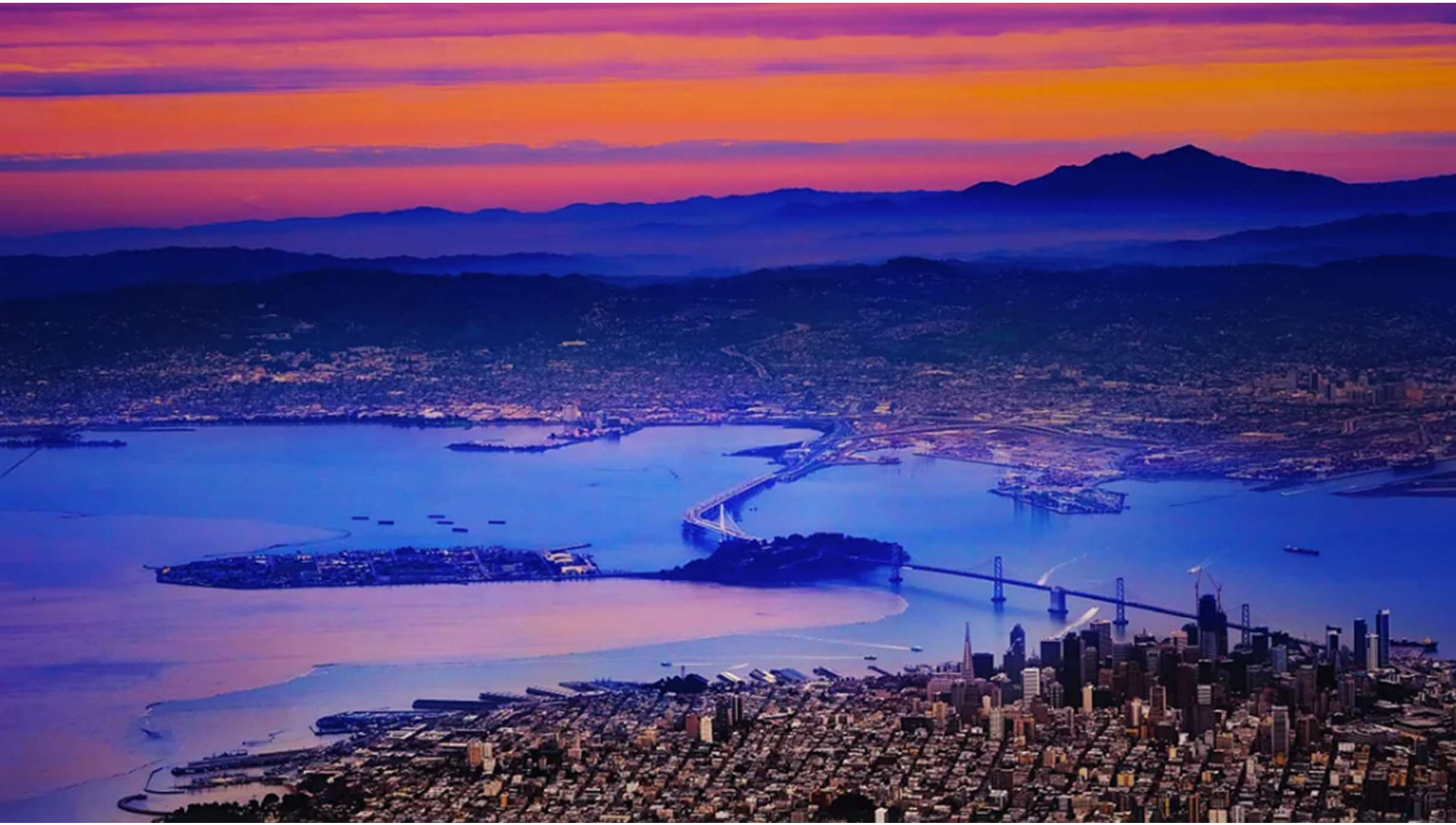
1750


YOLETAMAL
LICATIUT
PETALUMA
CHOCOIME
CAYMUS
NAPA
TOLENA
MALACA
SUISUN
CHUCUMNE
UNISUMNE
QUENEMSIA
GUAYPEM
ANIZUMNE
MUSUPUM
TAUQUIMNE
SEGLOQUE
OLOMPALI
ALAGUALI
OMIOMI
OLEMA
TAMAL
HABASTO
GUAULEN
HUMEN
San Pablo Bay
Suisun Bay
CARQUIN
OMPIN
HUCHIUN AGUASTO
CHUPCAN
JULPUN
JALALON
NOTOTOME
VOLVON
TAMEAN
SACLAN
HUCHIUN
TATCAN
COYBOS
CHOLVON
JALQUIN
SOUYEN
SSAOAM
SEUNEN
YELAMU
YRGIN
PELNEN
JOSMITE
UREBURE
CAUSEN
LUECHA
San Francisco Bay
PRURISTAC
SSALSON
TUIBUN
TAUNAN
CHIGUAN
LAMCHIN
ALSON
ASIRIN
JUNAS
Pacific Ocean
COTEGEN
PUICHON
SANTA YSABEL
OLPEN
TAMIEN
TAYSSEN
PALA
OLJON
PARTACSI
RITOCSI
AUXENTAC
TOMOI
SOMONTAC
MATALAN
QUIROSTE



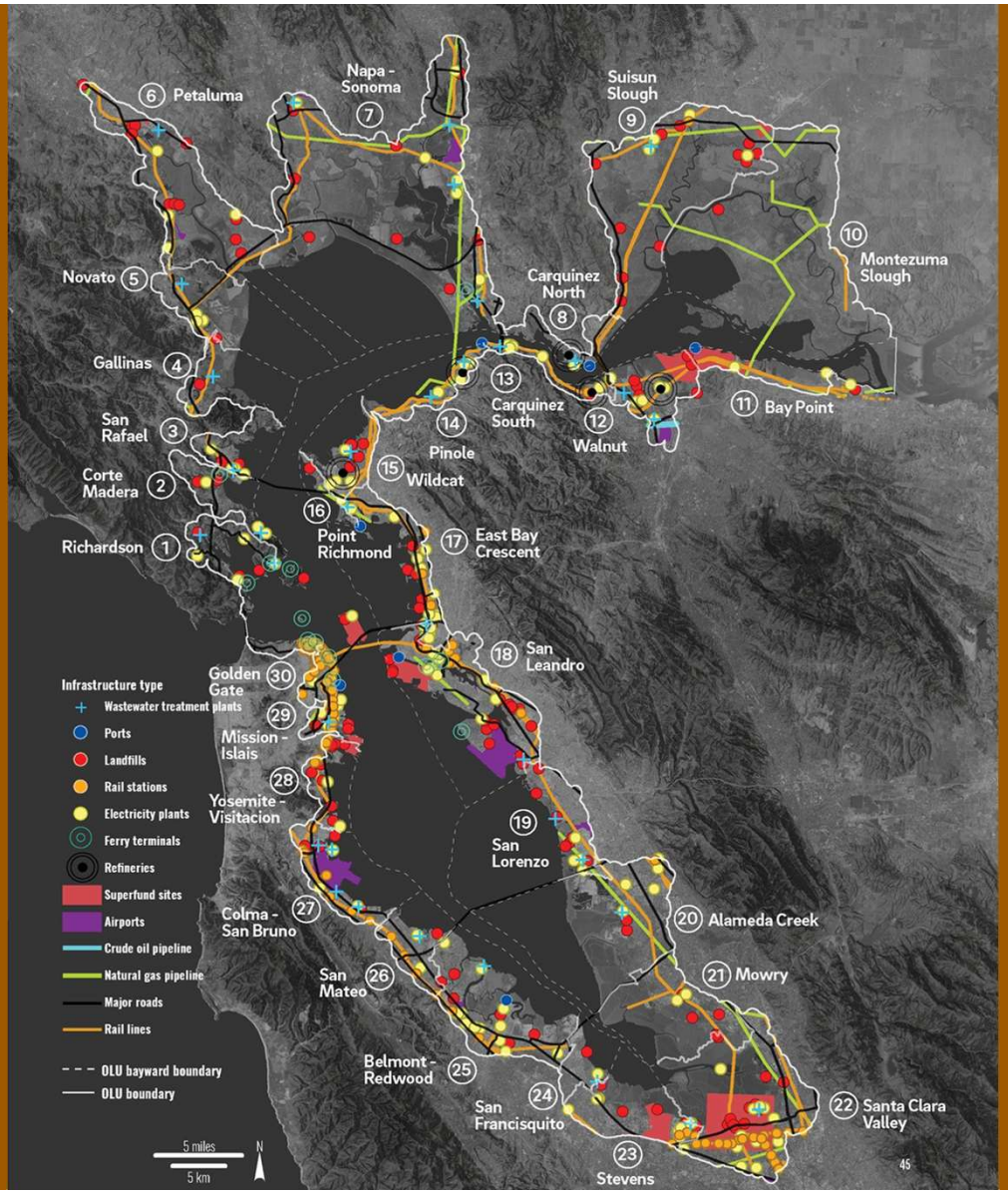

Sea Level Rise


Groundwater


Flooding

Key Infrastructure

- Ports
- Landfills
- Airports
- Pipelines
- Wastewater plants




Novato
Vallejo
Benicia
Rio Vista
Pittsburg
Antioch
Oakley
Pinole
Hercules
Martinez
Concord
San Rafael
Richmond
Clayton
Brentwood
Mill Valley
Walnut Creek
Berkeley
Central Canal
Alameda
Oakland
San Francisco
San Ramon
San Leandro
Daly City
South San Francisco
Hayward
Dublin
Livermore
Pleasanton
Pacifica
Millbrae
San Mateo
Fremont
El Granada
Redwood City
Half Moon Bay
Palo Alto
Milpitas

Finance

Governance

SFEI San Francisco Estuary Institute 4911 Central Ave, Richmond CA 94804, p: (510) 746-7334, f: (510) 746-7300 www.sfei.org

The SF Bay Area's Climate Adaptation & Fiscal Tidal Wave

Context, Assumptions, Goals and Questions – for discussion 5-10-24

Summary

Many coastal cities worldwide must adapt to the enormous physical and fiscal climate impacts of rising seas and lowland flooding from more frequent and intense storms. The San Francisco Bay region is "ground zero" and a perfect case study for this challenge as it faces several fundamental & interconnected problems.

Every San Francisco Bay Area county and most shoreline cities are now adapting to a triple-threat of rising bay waters (aka Sea level rise), rising groundwater table (being pushed up by SLR), and lowland flooding from more frequent and intense storms. These are fundamental & interconnected issues.

Climate change has radically accelerated both the **scale and speed** at which large scale shoreline infrastructure projects must be designed, financed and built. In the summer of 2023 **a joint MTC-BCDC report** estimated the cost of needed infrastructure to prevent massive shoreline flooding by 2050 was $110 Billion. The cost of inaction was estimated at $230 Billion in damages.

- The solutions to this complex challenge will need to encompasses at least three concentric circles:
  - **a)** The finance options (both municipal and public/private),
  - **b)** The needed policies to support or incentivize the appropriate financial tools, and
  - **c)** The collaborative, multi-agency governance measures and/or institutions necessary to efficiently and effectively implement the measures over a two or three decade period.
- The SF Bay Area may have 5,000 (or more) engineers, scientists, technical and policy experts in the public, private NGO and academic sectors—all working on some aspects of climate change and adaptation. This includes producing vulnerability assessments, adaptation strategies etc. However, we have a relatively small number of highly qualified experts in the financial and governance fields who are proposing the templates to equitably and efficiently implement those plans across the region.
- The two issues of **finance** and **governance** may well be the most important "frontier areas" that will require the greatest level of innovation over the next few decades, if the Bay Area stands any chance to advance the essential solutions to avoid major (even catastrophic) flooding.
- The Bay's shoreline is the "Beirut-Baghdad-Benghazi" of land use policy and politics. We must efficiently address a regional challenge with a coherent strategy to be consistently, and equitably applied across all shoreline counties. This must be accomplished at scale and speed.

Context

- **Scale and Speed -** Climate change has radically accelerated both the **scale and speed** at which large scale shoreline infrastructure projects must be designed, financed and built – (e.g. $110 Billion in completed SF Bay Area shoreline infrastructure projects needed by 2050).
- **Documenting the Bay Area's Fiscal Time Bomb –** In the summer of 2023, **a joint BCDC-MTC report** estimated the cost of needed infrastructure to prevent massive shoreline flooding by 2050 was $110 Billion. The cost of inaction was estimated at $230 Billion in damages.
- **Mind Numbing Costs** - The $110 Billion number equals about $40k for every Bay Area household or about $15k for every man, woman and child in the region. This cost is so astronomical, that most SF Bay Area political leaders have not even begun to grasp or publicly discuss the problem.
- **No Reaction or Public Debate** - That may be why there was a blip in the news coverage last summer (2023), when BCDC/MTC released their report. Since then……..crickets.
- **Adaptation/resilience (vs. mitigation) gets a very small share** of the (woefully inadequate) public spending directed at addressing climate change. In the case of the Bay Area, we should expect no more than $5B of the $110B needed thru 2050.
- **Bay Area's Unique Governance Challenge** - The Bay Area has the added Governance, policy and political challenge of multi-agency collaboration needed to address a "REGIONAL" challenge (across nine counties and 100+ local jurisdictions (many with Bay shorelines subject to major flooding).
    - America's "mega-cities" like L.A. & N.Y. must also design and fund "mega" adaptation-infrastructure projects. They're advantage having all of their agencies and political leaders under one single government.
    - **The SF Bay Area has "mountains" of plans with limited coordination among jurisdictions** - Most Bay Area local jurisdictions are producing "Vulnerability Assessments" and "Climate Adaptation Strategies." Many have expensive infrastructure solutions. Very few are even beginning to contemplate a regional, collaborative challenge of how to "Finance" these projects.

Key Assumptions

- The scope and scale of the challenge **requires major innovation in financing strategies** across all interested parties and sectors.
- **Private capital is essential -** There is not enough $$ at the (local to federal) government level to fund the Bay Area's necessary adaptation measures. While government finance programs will be needed (e.g. climate bonds etc.), they will not be sufficient
- Attracting sufficient private capital **will require innovative strategies and public/private partnerships**, both with known partners and new/latent "allies," to make adaptation more "investable" by a wider range of players.
- **There are national and global examples to tap for inspiration,** from blended finance vehicles in the international development world to more focused regional resilience initiatives in the EU and elsewhere.
- This may be the Bay Area's biggest policy challenge over the next few decades.

A Suggested Bay Area Goal

The S.F. Bay Area should develop a **PROCESS** to:

1) **Educate and "enlist" political leadership** - The Bay Area has about 500 locally elected leaders (Mayors, city council members and Co. Supervisors). We must help a critical mass of these leaders **understand** the magnitude of the fiscal/governance challenge, and **believe** that they can do something about it.

2) **Develop and evaluate the best finance and governance options to address** the challenge
3) **Build a "Coalition of the Willing"** that also includes key business, finance, community and elected leaders to implement the adaptation infrastructure strategies at pace and scale

Three Steps to Define the Municipal Finance Challenge

1) **DEFINE THE PROBLEM** – Secure from the finance experts how to adequately frame (define) the problem. How to present the problem/opportunity to policy leaders (Locally elected officials & agency leaders), investors/finance players, and potential allies
2) **FRAME THE OPTIONS** - Construct some basic format (matrix?) to consider the range of options (without getting into the weeds on each one).
3) **IDENTIFY RELEVANT EXAMPLES AND POTENTIAL ALLIES –** What other regions (US or elsewhere), that are doing bold, creative work in this and adjacent areas?

Some Questions to Answer

1) **CHANGING WORLD** - How has climate change altered the strategies and options for financing of large regional/municipal infrastructure projects?
2) **FINANCE EXAMPLES** - Are there good examples of recent innovations or experiments in municipal or public-private finance that are being used or considered?
3) **SPECIFIC EXAMPLES COMPARABLE TO SF BAY** - Are there any regions (e.g. Eastern or Southern Seaboard, Chesapeake Bay, etc.), that have examples that might offer lessons to the SF Bay Area?
4) **POTENTIAL ALLIES** – Which are the relevant/adjacent issues and players we might consider to help overcome the specific challenges of finance for adaptation (e.g., climate mitigation, public health and social well-being, etc.)?