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**FINANCE GUIDE**  
**FOR**  
**RESILIENT BY DESIGN**  
**BAY AREA CHALLENGE DESIGN TEAMS**  
**FINAL VERSION 1.0**



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# CHAPTER 1: INTRODUCTION

## BACKGROUND AND PURPOSE

The purpose of this guide is to assist design teams that are part of the Resilient by Design Bay Area Challenge (RbD) by providing a funding and financing reference guide for resilient infrastructure along the San Francisco Bay shoreline.<sup>1</sup> The specific scope and scale of each team's project design is not known at this time. Thus, the Guide provides a strategic perspective and descriptive overview of funding and financing options to help orient design ideas towards more feasible, fundable projects.

The Guide describes the broad range of traditional funding sources and financing mechanisms used for infrastructure development in California, with a focus on the State's unique constraints and approval requirements. The guide focuses on the need for support from local voters and landowners as a prerequisite for implementation of a Bay Area-wide resilient infrastructure program. Finally, the guide includes several alternative revenue sources that have not been used, or rarely used, to fund infrastructure in California.

During the design phase from December through May, the finance advisory team will provide specific project-level guidance as requested by each design team. We will also provide a review of each team's project finance plan.

The Guide focuses on funding sources more than financing mechanisms because the latter is irrelevant without the former. For resilient infrastructure, too much emphasis has been placed on developing innovative financing mechanisms without regard to how to create new revenue sources to pay back debt holders or equity investors. Thus, the guide does not focus on borrowing or investment mechanisms and vehicles, such as:

- Bond classifications (green, resilient, social impact)
- Subsidized lending pools (green banks, infrastructure banks, revolving loan funds)
- Private equity structures (public-private partnerships)
- Risk-based financing such as catastrophe bonds and resilience bonds.

Alternative financing mechanisms may play a role in project finance for RbD projects, but they can be a distraction at the predevelopment stage rather than a serious pathway to attracting resources. However, we will bring our expertise with alternative financing to the design phase should it be applicable to a particular team's design.

## PREDEVELOPMENT FUNDING

The Guide makes a crucial distinction between short term funding sources for predevelopment costs versus longer term sources for construction financing. Predevelopment costs typically are funded entirely from one-time funding sources, such as grants. Long term project finance requires the creation of new long-term revenue sources, as well as one-time sources such as grants.

The RbD focus on implementable project designs poses challenges for a project finance plan. The innovation likely to be exhibited by RbD teams and their projects should stimulate the San Francisco Bay region to continuing moving forward plans for adaptation and resilience. But to build on this enthusiasm after RbD ends in May 2018, projects will need additional predevelopment funding to continue the design process and move towards "shovel ready" projects. Financing is unlikely to be available for early-stage predevelopment costs because of the lack of a secure revenue stream for lenders or investors. Hence a key focus of the guide is on

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<sup>1</sup> Infrastructure to improve the resilience of the San Francisco Bay shoreline to sea level rise, severe storms, flooding, and earthquakes.

government grants and other public and philanthropic funding to continue the design process after RbD ends. Furthermore, design teams should make every effort to identify a local public agency sponsor for their project because eligible recipients for most government grants are other government agencies or tribes. In a few cases nonprofit organizations are eligible as well.

## FUNDING FOR PROJECT IMPLEMENTATION

Larger, more ambitious RbD projects will require significant funding to be implemented at scale along the Bay shoreline. Indeed, resilient infrastructure to meet the ongoing, long term challenge of sea levels rise is likely to require a significant level of investment regionwide with a planning horizon measured in decades. Thus, finance plans for larger RbD projects may have longer planning horizons based on an extended process of community engagement needed to support approval of new local, regional, and state funding sources. For these larger projects, we are prepared to advise teams on reasonably anticipated (to be approved) regionwide public revenue streams.

## HOW TO USE THIS GUIDE

The guide is not designed to be read from front to back, but rather as a tool kit with sections accessed based on a team's knowledge of infrastructure finance. See the table below for an overview of the Guide by chapter. Note that the applicability of individual funding sources for either predevelopment costs, project finance, or both, is discussed for each potential funding source.

### Key terms:

“Funding” = “revenue”  
“Financing” is the use of revenue to repay debt or equity.  
“Finance” or “Project Finance” refers to the entire process of funding and financing

Section	Content
Chapter 1: Introduction	Background, purpose, major themes
Chapter 2: Challenges & Strategies	Challenges and strategies related to funding resilient infrastructure
Chapter 3: Local & Regional Public Sources	Description of local and regional public revenue sources, related financing mechanisms, and a selection guide
Chapter 4: State & Local Grants	Description of state and local grant programs
Chapter 5: Federal Grants	Description of federal grant programs
Chapter 6: Alternative Sources	Description of several alternative funding sources

## CHAPTER 2: RESILIENT INFRASTRUCTURE FINANCE CHALLENGES AND STRATEGIES

This chapter provides a summary of the challenges faced by resilient infrastructure finance and strategies to address them.

### CHALLENGES

#### Resilient Infrastructure Finance

Finding the resources for any large infrastructure project is challenging, much less a resilient infrastructure system surrounding the entire Bay. Historically, major infrastructure projects, ranging from coastal protection projects to large economic redevelopment plans, were revenue producing or exclusively publicly funded. As public funds have grown scarcer, so have project implementation options. Securing funding for resilience projects is even more difficult. Below are some key characteristics that distinguish project finance for resilient infrastructure from traditional infrastructure.

- **Systems not projects:** Most resilience projects are large collections of interventions, such as green storm water infrastructure systems, rather than individual assets, like a water treatment plant. As a result, these projects can take longer to design, pose unique technical challenges, and have higher predevelopment costs.
- **Diffuse benefits:** A successful resilience solution will often generate benefits across broad areas and populations, such as improvements to ecosystem services and public health. However, diffuse benefits can be difficult to monetize relative to conventional single-function projects, such as a wastewater treatment plant or toll road. The key funding take-away here is that diffuse benefits mean potential access to multiple revenue sources.
- **Immediate success is something that doesn't happen:** Traditional infrastructure projects like roadways address immediate problems such as traffic congestion. In contrast, the benefits of most resilience projects are avoided costs or reduced losses that can be hard to capture and convert into revenues.

Resilient infrastructure systems have one major advantage over traditional projects: they can attract multiple “colors of money”.

Despite these challenges, well-designed resilient infrastructure systems have one major advantage over traditional projects: they can more easily attract multiple “colors of money”. Because resilience projects generally generate multiple cross-sector benefits, they also can access multiple funding sources, such as transportation and water grants.

Cobbling multiple funding streams together can take significant effort to strategically align different funding requirements and application cycles. However, it is well worth the effort. It can make the difference between large-scale investment that effectively mitigate risks to a vulnerable community, and incremental quick fixes that don't address long term challenges.

#### California Infrastructure Finance

Three challenges face the financing of infrastructure in California, and resilient infrastructure specifically.

First, federal funding for resilient infrastructure in California in advance of a disaster is unlikely in any significant amount. The federal budget faces much higher demands for adaption to sea level rise from communities outside the West coast. A 2017 peer-reviewed [scientific study](#) by the Union of Concerned Scientists projected levels of effective inundation along U.S. coasts up to the year 2100. Results of the study indicate that only one to two percent of all U.S. coastal communities projected to be effectively inundated by sea level rise are located along



the West coast. The remainder are along the Gulf, Florida, and East coasts due to greater levels of development and a shallower continental shelf.

Second, all RbD projects are likely to require new long-term public-sector revenue sources to secure project financing. The general funds of California's non-enterprise local government entities<sup>2</sup> are facing severe financial pressure because of unfunded pension liabilities. The California Public Employees Retirement System ("CalPERS") has put in place a financial plan to amortize much of this unfunded liability over the next several years through a dramatic increase in payroll contribution rates. Local public agencies will be under more fiscal stress and will need to avoid major new funding commitments. While small amounts of predevelopment project funding may be an option, long-term infrastructure project financing is not possible without the creation of new long-term revenue sources.

Communities outside the West coast will place far more demands on federal funds for coastal resiliency.

Third, with reliance on local and regional funding sources comes reliance on community engagement. Under California law most new funding sources require a vote of the electorate or property owners. Funding dedicated to specific uses, such as a resilient infrastructure program, nearly always requires approval by two thirds. Thus, community engagement is a requirement to create a new public-sector revenue source in California.

Most new funding sources require a 2/3 vote and therefore significant community engagement.

### Bay Area Infrastructure Finance

The Bay Area's most recent regional plan makes it clear that local and regional funding is critical for infrastructure development in the region. Local and regional sources comprise two-thirds of forecasted revenues over the plan's 24-year horizon for transportation infrastructure.<sup>3</sup> This proportion is probably higher for other (non-transportation) resilient infrastructure given steep declines in state and federal infrastructure funding since the 1970s.

"What distinguishes the Bay Area from many other regions is the significant share of local and regional funding..." (*Plan Bay Area 2040*)

Only very preliminary work on the cost of protecting the Bay from a 4 foot or more sea level rise has been done – and the cost may be as high as \$35 billion. However, it is helpful to remember that the Bay Area has tackled such challenges before.

The initial three-county, voter-approved Bay Area Rapid Transit System (BART) in 1962 was projected to cost \$996 million, or \$7.1 billion inflated to 2016.<sup>4</sup> Funding came from a combination of property taxes, bridge tolls, and fare revenues. This funding was used to support

general obligation and revenue bond financing for initial construction of the system. Since 1996, the Bay Area Toll Authority has been implementing a \$9.4 billion retrofit of the area's major bridges funded largely by bridge tolls.

**Consequently, the Bay Area's effort to fund resilient infrastructure needs to be a home-grown "bootstrap" effort.**

Locally funded multi-billion-dollar infrastructure investments are not new to the Bay Area.

<sup>2</sup> Non-enterprise local government entities are general purpose agencies such as cities, counties, and community services districts with authority to impose general taxes. Enterprise operations such as sewer and wastewater utilities, and seaports and airports, are largely supported by fees, rates, and charges generated by the services they provide.

<sup>3</sup> Metropolitan Trans. Commission/Association of Bay Area Governments, *Plan Bay Area 2040*, July 26, 2017, p. 37.

<sup>4</sup> For costs, see [this summary](#) of BART's history. For inflation index, see the [ABAG compilation](#) of the Consumer Price Index for the Bay Area. Inflation is from 1970 which adjusts for cost estimates that are assumed to have been in "year of expenditure" (nominal) dollars through the initial system construction period of the 1960s.

## FUNDING STRATEGIES FOR BAY AREA RESILIENT INFRASTRUCTURE

The strategies described below set the stage for the specific funding options and decision guides presented in the chapters that follow.

### Integrate System Design, Predevelopment Funding, and Project Finance

“The premise of RE.invest was that design and financing are fundamentally parallel and complementary activities.”

*RE.invest, A Roadmap for Resilience*, by re:focus partners provides an innovative strategy to link project design with project finance. Fundamental to the approach is a recognition that “resilience is about systems, not just projects.” As mentioned in *Resilient Infrastructure Finance*, above, resilient systems are often not made of a few large projects, but a number of smaller ones that fit together to reduce risks and expand benefits. From a funding perspective, a systems approach can create a wider range of funding options by monetizing benefits generated for multiple parties.

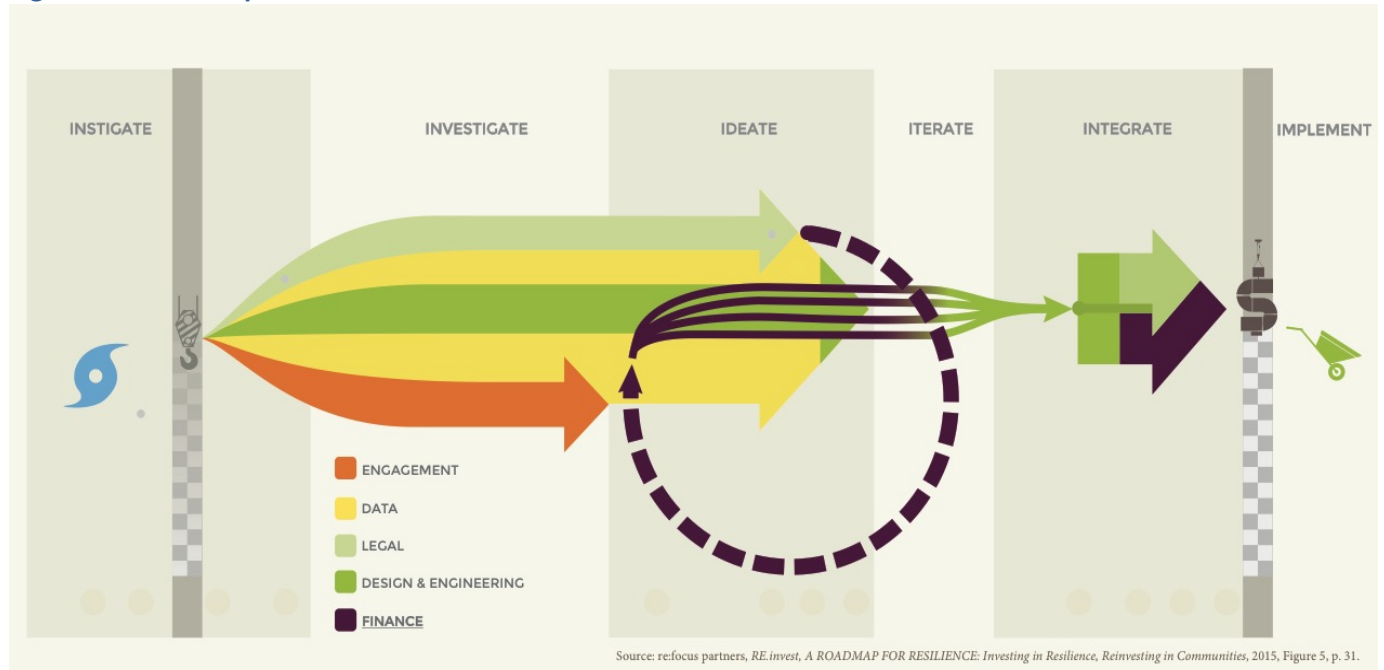
To this end, we recommend that design teams use every opportunity to integrate both predevelopment cost funding and project finance early in the design process. By predevelopment costs we mean the feasibility, design and entitlement work necessary to make a project “shovel ready.” Predevelopment costs in many respects are the highest risk investments in a potential project. The funding is needed before it is really known whether a project is feasible, or has entitlements.

Link cross-sector elements, such as transportation, energy, and/or water system solutions into project design.

As shown in figure below, RE.invest incorporates developing a finance plan as part of an expanded, integrated predevelopment process. This does not mean design teams need a detailed project finance plan identifying debt and/or equity financing mechanisms. Instead, teams should look for ways to link cross-sector elements, such as transportation, energy, and/or water system solutions into project design. This strategy will enable project sponsors to identify their project’s eligibility for a wide range of funding sources.

Examples of this approach include integrating broadband or fiber networks into water system upgrades, running utilities through new sea water berms, or finding ways to create new energy or water efficiencies. These approaches bring conventional revenue-generating infrastructure into a larger portfolio of resilience solutions to help fund project implementation.

Figure 1: Predevelopment Process



## Identify Communities of Benefit

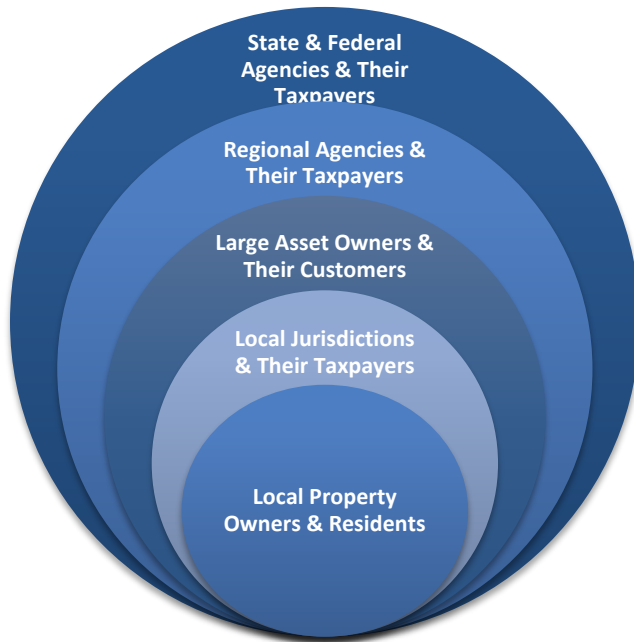
Most major infrastructure projects rely on multiple streams of funding, so identifying as many communities that benefit from the project as possible is critical. Starts with closer in communities most directly affected by the project. Identify opportunities for revenue-generating assets. Then move out and up to communities that may receive less direct but nonetheless identifiable benefits.

The following six categories summarize potential funding communities for design teams to investigate as they consider design alternatives:

**Community #1: Local property owners and residents** receive the most direct benefits from coastal resiliency projects by reducing losses from inundation caused by floods, tides, and storm surge. The challenge is that planning horizons for local property owners and residents can be short (less than 10 years) and therefore local property owners and residents have limited willingness to pay for long-term risk reduction.

**Community #2: Local jurisdictions** and their taxpayers receive direct benefits associated with the tax base protected and associated with community #1. If the project reduces risks across a large enough area of the jurisdiction, and/or protects major employment centers, benefits may extend jurisdiction-wide. All residents and businesses may collectively perceive the importance of protecting essential areas of the community. Also, local jurisdictions may play a role in addressing equity concerns if vulnerable communities are part of community #1.

Figure 2: Communities of Benefit



**Community #3: Large Asset Owners** and their customers, such as wastewater treatment utilities, transportation agencies, and investor-owned utilities, receive similar risk reduction benefits as local private property owners. However, these benefits extend to the entire service territory of the asset. Service territories are often large multi-city areas that would represent a larger funding potential relative to communities #1 and #2. Critical transportation arteries often provide economic benefits across the entire region.

**Community #4: Regional agencies** and their taxpayers receive less direct but nonetheless real benefits compared to the other communities. Benefits could overlap with community #3 if the critical asset plays a significant role in supporting the region's economy. Regional taxpayers may also play a role in funding the protection of vulnerable communities and the provision of ecosystem benefits.

**Community #5: State and federal agencies** and their taxpayers are an extension of regional agencies, receiving less direct benefits but still benefiting from reducing economic losses in one of the nation's most economically productive metropolitan areas. This community may overlap with community #3 if the state or federal government owns critical assets protected by the project. Like community #5, state and federal agencies may also play a role in funding the protection of vulnerable communities and the provision of ecosystem benefits.

The [Oro Loma Experimental \[Horizontal\] Levee](#) project is an example of a project with multiple communities of benefit. The project is designed to provide water quality, flood control, and habitat restoration. If successful and implemented on a large scale, this systemic approach to resilient infrastructure could provide benefits along the East Bay shoreline from San Leandro to Union City. See [this report](#) for more details on the challenges and multiple potential benefits associated with this effort.

## CHAPTER 3: LOCAL & REGIONAL PUBLIC REVENUE SOURCES

This section describes potential revenue sources from the public sector that are suitable for project financing for resilient infrastructure in the State of California.

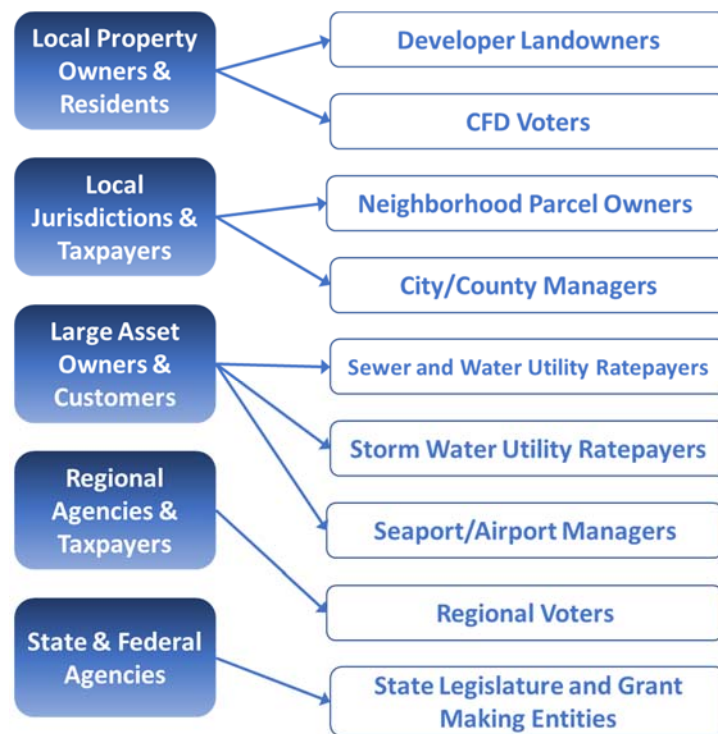
**Creating new revenues sources in California** - Put simply, no public entity in California can create a new revenue source solely by action of its elected board.<sup>5</sup> All new revenue sources require some level of consent from the entities paying the new revenue source. **Consequently, design teams need to keep in mind that some form of community engagement is likely to be legally required for long term project financing from the public sector.** The legal requirements for the consent required for a new revenue sources vary widely, depending on the type of revenue source, the type of project to be funded, and the type of public entity sponsoring the project.

In many cases new local revenue sources will not be needed to fund predevelopment costs, at least smaller amounts associated with initial predevelopment efforts prior to final permitting, design, and engineering.

### INTRODUCTION

The figure below breaks out the communities of benefit discussed in the last chapter into individual stakeholders that have the authority to approve revenue sources for funding or financing resilient infrastructure. Regardless of the type of financing, the creation of any new revenue source must follow the same legal process. Accordingly, this guide does not focus on types of financing as much as types of underlying revenue sources.

**Figure 3: Communities of Benefit – Revenue Approving Stakeholders**



With respect to resilient infrastructure, it is important to identify the different public entities and other interest groups that have the legal authority to authorize a new revenue source. To understand how revenue sources link to resilient infrastructure, it is best to start with establishing the links between the potential revenue entities and potential benefits, as opposed to the actual types of resilient infrastructure. Each public entity or revenue metric interest group is focused on particular types of benefits. The first table on the following page below shows the links between different stakeholders and the types of benefits that are most likely to compel them to create a new revenue stream.

Given this linking of potential benefits and revenue groups, the second table on the following page shows the potential connections between different types of projects and different public entities and other revenue stakeholders.

Note that these links are not legal, but rather the historic links based on actual experience in community engagement with each set of stakeholders.

<sup>5</sup> The key exception for infrastructure funding are impact fee programs and large asset owners not subject to Proposition 218, such as electric utilities.

The public entities and stakeholders listed along the horizontal axis of the matrix are all the entities that can legally raise revenue related to resilient infrastructure. It is important to note that these links are valid whether the public agency is a small city or a regional government. The State's Constitutional limitations on taxation and debt apply to all.

Figure 4: Linking Benefits to Project Sponsors

Linking Benefits to Project Sponsors									
Potential Benefits to Revenue Sponsoring Entity	Developer Landowners	Neighborhood Community Parcel Owners	Sewer and Water Rate Payers	Storm Drain Utility Ratepayers	Seaport & Airport Managers	City and/or County Managers	Registered Voters within a CFD	Registered voters within a Region	State Legislature
Directly benefit utility				✓	✓				
Avoid existing flooding	✓	✓		✓	✓	✓	✓	✓	✓
Avoid future flooding				✓	✓				✓
Enable new development	✓					✓			
Lowens existing operating costs			✓	✓	✓	✓			
Reduce traffic		✓				✓	✓	✓	✓
Produce more affordable housing	✓	✓				✓		✓	✓

Figure 5: Linking Projects to Revenue Approving Stakeholders

Linking Projects to Revenue Approving Stakeholders									
Project Type	Developer Landowners	Neighborhood Community Parcel Owners	Sewer and Water Rate Payers	Storm Drain Utility Ratepayers	Seaport & Airport Managers	City and/or County Managers	Registered Voters within a CFD	Registered Voters within a Region	State Legislature
Horizontal levy	✓	✓	✓	✓	✓	✓	✓	✓	
Seawall to protect specific area	✓	✓	✓*	✓	✓	✓	✓		
Upstream flood control		✓		✓		✓	✓	✓	
Highway flood control protection		✓		✓		✓	✓	✓	✓
Neighborhood flood control protection	✓	✓		✓		✓	✓		
Offsite habitat loss mitigation	✓				✓				

\* (e. g. wastewater treatment plant)

## DESCRIPTION AND EVALUATION OF POTENTIAL REVENUE SOURCES

This section provides a description of the range of traditional local and regional public revenue sources used to fund infrastructure in the Bay Area. Each source is evaluated based on its specific applicability to resilient infrastructure. Revenue sources are grouped under three broad categories:

- **Financing districts and impact fees:** funding sources that can be created by local jurisdictions within defined geographic subareas, are dependent on land values, and are often associated with new development or redevelopment



- **Public and private enterprises:** utility and transportation enterprises that deliver a specific service and are funded by rates, fees, and charges (as opposed to taxes)
- **Cities, counties, and special districts:** local jurisdictions with taxing authority that could have either broad (cities and counties) or narrow (special districts) public service mandates.

The table below summarizes each type of revenue source against four key characteristics: applicability to resilient infrastructure, ability to secure debt financing, revenue potential, and community engagement required for authorization. Following the table is a detailed description and evaluation of each revenue source.

**Figure 6: Local & Regional Public Revenue Sources**

Revenue Source	Applicability to Resilient Infrastructure Systems	Security for Debt Financing	Revenue Potential	Community Engagement Required for Authorization
	Financing Districts & Impact Fees			
Special Assessments	NARROW: Must provide direct benefit to assessed parcels	Yes	LIMITED: But critical to capture direct benefits of RI	MODERATE: Majority district landowner approval weighted by assessment
Special Tax (landowner)	MODEST: Wide range of facilities & services; but implicit benefit to assessed parcels			MODERATE: 2/3 district landowner or voter approval
Development Impact Fees	MODEST: Wide range of facilities; but must benefit new development	No		LIMITED: Majority board approval
Property Tax Increment	BROAD: Wide range of facilities & services, environmental mitigation, private redevelopment	Yes	NONE in the short run; MODERATE in the long run	LIMITED: Majority board approval MODERATE: 55% district voter approval to issue debt
	Public & Private Enterprises			
Water, Sewer & Storm Water Rates & Charges	NARROW: Must support enterprise operations	Yes	MODERATE: To extent RI provides direct benefit to enterprise	LIMITED: Notice & protest hearing for rate increase; majority board approval to issue debt
Seaport or Airport Revenues				LIMITED: Majority board approval
Other Utilities & Railroads				LIMITED: Majority board approval; could involve CA Public Utilities Commission
Highway & Bridge Tolls	NARROW: Transportation Facilities & Services		MODERATE: To extent RI includes transportation	EXTENSIVE: Bridges: majority voter approval; expenditure plan Highways: state legislation
	Cities, Counties & Special Districts			
Special Taxes (jurisdiction)	BROAD: Any use approved by tax measure	Yes	SIGNIFICANT: Depending on size of tax base	EXTENSIVE: 2/3 voter approval by jurisdiction; expenditure plan
Ad Valorem Property Tax	BROAD: But fixed public improvements only			
General Tax	BROAD: Any government purpose	No (1)		EXTENSIVE: Majority voter approval
Gas Tax	NARROW: Transportation Facilities & Services	Yes	MODERATE: Tax base constrained	EXTENSIVE: 2/3 voter approval by county; expenditure plan
Note: "RI" is "resilient infrastructure".				
(1) Can use installment sale or lease agreement to fund facilities over multiple years, similar to debt financing.				

## Financing Districts & Impact Fees

A key distinguishing characteristic of financing districts is that their boundaries can be adjusted to create a strong nexus between those providing the revenue and those receiving the benefits of funded facilities and services. Approval typically requires the consent of landowners or registered voters within the district.

Revenue potential and debt financing is associated with land values and typically constrained by bonding requirements. Revenue is typically limited to an amount such that the total combined level of property taxes and assessments does not exceed two percent of assessed value (AV) for any individual parcel. Given that existing property taxes and assessments often exceed one percent of AV, any new special assessment or tax is typically limited to one-half percent or less of AV. Total outstanding debt secured by special district funding is typically constrained to one-third of total AV for the district.

Financing districts are created by the city or county in which they are located. Financing districts work well for landowners seeking to fund the share of a resilient infrastructure project associated with direct benefits, such as protection from floods. City and county public revenues, discussed below, are more applicable to the share of projects that provide less clearly measured benefits, or benefits that are spread over the entire jurisdiction.

### *Special Assessments*

Local agencies can form assessment districts to fund the portion of public facilities and services costs that result in a “special” benefit to parcels paying the assessment. A classic example of a “special” benefit project is construction of a sidewalk in front of a single-family home. The assessment formula must specifically account for and exclude the cost of “general” benefits to properties inside and outside the district. Approval requires a majority consent of the assessed landowners weighted by the amount of the assessment. Again, note that projects with multiple benefits are, by definition, projects with “general” benefit.

Examples of the application of a special assessment district to resilient infrastructure in California is through a Geological Hazard Abatement District (GHAD). There are 35 GHADs in the state formed primarily to finance and maintain erosion control improvements, including improvements to protect beachfront properties. GHADs are applicable where benefits are clearly attributable to specific properties. As the scope and scale of the protected properties increases, the separation of special from general benefit becomes more difficult. Large GHADs may have difficulty arranging debt financing because bond counsel may be reluctant to opine on the general versus special benefit allocation lacking clear standards in statute and case law.

Special taxes imposed through community facilities districts (CFDs, see below) have advantages over GHADs because there is no need to distinguish special from general benefit. However, CFDs require two-thirds property owner or voter approval, whereas GHADs only require a simple majority property owner approval.

### *Special Taxes (Landowner)*

Special taxes in the context of a financing district are imposed through a Community Facilities District (CFD). A CFD special tax is levied on parcels within the district, similar to a special assessment; however, there is no need to distinguish special from general benefit. CFDs provide the most flexible tool for channeling benefits that accrue to private landowners and their tenants into funding resilient infrastructure. Consequently, we believe that special taxes are a good potential source of long term project finance.

If the CFD has less than 12 registered voters, then two-thirds of landowners must authorize the special tax, with each landowner’s vote weighted by the size of their parcel. If the CFD has 12 or more registered voters, then two-thirds of voters must authorize the special tax on a one-person, one-vote basis. An advantage of CFDs compared to special assessment districts is that parcels can annex into an existing CFD as long as the annexed parcels follow the same approval requirements.

CFDs provide the most flexible tool for channeling benefits that accrue to private landowners and their tenants into funding resilient infrastructure.



The jurisdiction forming the district has as wide discretion to create the special tax formula to maximize both revenue and landowner support, so long as the formula does not mimic an *ad valorem* approach (percent of assessed value). To fund resilient infrastructure, the CFD can levy special taxes on the basis of exposure to rising sea levels and amount of property protected (e.g. building square footage). Furthermore, the special tax formula can subsidize lower income households or senior citizens. This great flexibility makes CFDs an attractive compared to special assessment districts, in spite of the higher approval hurdle (two-thirds versus simple majority).

CFDs are typically formed by jurisdictions in cooperation with developers seeking to finance infrastructure to support development of undeveloped property. For resilient infrastructure this makes CFDs highly applicable to finance and maintain flood control projects for vacant lands undergoing development.

### ***Property Tax Increment***

Property tax increment is a common source of financing where the taxing jurisdiction segregates into a special account the increment generated by increased assessed valuation over and above a base year amount, within the boundaries of a “redevelopment area” designated by the jurisdiction. In California, this was historically done to finance specified public facilities and affordable housing, and occasionally public services, to support economic and social investment in the area. California abolished tax increment funding in 2011 that allowed local redevelopment agencies to capture the increment allocated to other taxing entities within the redevelopment area.

The State does allow limited use of tax increment funding and financing through Enhanced Infrastructure Financing Districts (EIFDs). An EIFD is governed by a Public Finance Authority (PFA) to finance public facilities specified in the Infrastructure Financing Plan (IFP) adopted by the PFA. The PFA may be a joint powers authority to enable participation by multiple agencies, and contribution of revenue sources in addition to the tax increment from participating agencies. Allocation of a participating agency’s increment or any other revenue source to the EIFD is based on the PFA agreement. The governing boards of participating agencies may form the PFA and EIFD and adopt the IFP, and the PFA may expend funds on a pay-as-you-go basis, without any approval of landowners or residents of the EIFD.

Tax increment funding for debt financing is limited to the current annual increment amount less a coverage ratio for security. Issuance of bonds by the EIFD requires a 55 percent approval by registered voters within the EIFD.

The revenue potential of an EIFD depends on (1) the share of increment that participating agencies allocate to the district, and (2) the subsequent growth in the assessed value of property within the district. It will take more years before an EIFD in a developed area with limited redevelopment potential can issue debt compared to an EIFD formed on vacant lands that quickly undergo new development.

For resilient infrastructure, EIFDs offer a useful tool particularly for areas undergoing redevelopment or new development. However, unlike special assessments and special taxes, tax increment funding is revenue that otherwise would be available for general purposes. The usefulness of EIFDs depends directly on a potential participating agency’s perceived need for future general-purpose revenue.

EIFDs are a long-term reimbursement mechanism; because of the long time it can take for property tax increment to grow, they are not suitable for either predevelopment funding or project finance.

### ***Development Impact Fees***

Development impact fees are one-time charges on a new development project typically paid at time of building permit issuance to fund public facilities required to accommodate the project. Fees must bear a reasonable relationship to the facilities required, be expended on the facilities for which they are collected, and be proportional to the impact of the development project. Revenue fluctuates with the amount of development.

Land use entitlement entities such as cities and counties control funds accumulated from development impact fees. Development impact fees can play a large role in funding infrastructure for “greenfield” development in suburban settings. In urban areas impact fees tend to be a more limited funding source because infrastructure needs are dominated by maintaining existing facilities and serving existing developed areas. Thus, for resilient infrastructure, the variable funding from impact fees may be most applicable for a portion of predevelopment costs, representing new development’s fair share of benefits received from the capital project once implemented.

## Public Enterprises

### *Water, Sewer, and Storm Water Rates and Charges*

Rate setting for water, sewer and storm water utilities in California is controlled by a process commonly referred to as “Prop. 218,” named after the 1996 statewide voter-approved proposition called the “Right to Vote on Taxes Act.” For these utilities, rate increases require the governing board to (1) notice all ratepayers of a proposed rate increase, and (2) hold a public hearing and consider written protests to the rate increase. Unless a majority of all ratepayers protest the increase, the governing board may proceed with the rate increase. Achieving a majority protest, particularly for larger utility districts, is relatively difficult unless the rate increase is highly controversial. Debt issuance may be done by a majority vote of the governing board.

Water, sewer, and storm water utilities with vulnerable assets are one of the most readily available funding source for resilient infrastructure in California.

Significant for resilient infrastructure funding, storm water only this fall received authority through Senate Bill 231 (SB 231) to impose new or increase existing rates under the procedures described above. Prior to this fall, the Prop. 218 processes for storm water utility rates required a simple majority approval from ratepayers through a mailed ballot proceeding.

In the near term there are likely to be state constitutional challenges to SB 231. This uncertainty will hinder debt issuance based on storm water utility rates adopted under these new procedures until these legal issues are settled. Until then, storm water utilities probably will need to continue to use a mailed ballot proceeding to increase rates, particularly if they wish to use the new revenue to secure debt.

A combination of factors makes water, sewer, and storm water utilities one of the most readily available source of funding for resilient infrastructure in California:

- Utilities with vulnerable shoreline assets, such as sewer treatment plants, and have a direct incentive to examine resilient infrastructure solutions.
- Utilities have long-range planning horizons and engineering capabilities to support the extended predevelopment design process often associated with resilience infrastructure projects, and consider systemic solutions that may involve other stakeholders but also reduce adaptation costs.
- Unlike most other new revenue sources discussed in this chapter, increasing utility rates does not require voter or landowner approval.

We believe that where direct benefit can be shown to a public utility, the Bay Area’s public utilities are an excellent source for long term project financing.

The Bay Area’s public utilities also collect development impact fees, making them a good potential source for predevelopment cost funding, as well as long term project finance. Also, Bay Area wastewater utilities are now being encouraged by the State to consider using horizontal levies for certain functions. This potential funding source is discussed in more depth in Chapter 2, under Regional Grant Programs.

### *Seaport and Airport Revenues*

Rates, fees, and charges for seaports and airports, as well as debt issuance, only require action by the governing board. As with other public enterprises, seaports and airports must focus on their enterprise operations and can only indirectly support broader public objectives. Furthermore, seaports and airports have limited revenue potential because unlike utility enterprises they are not monopolies. They must consider the impact of rate increases on the loss of business to competing facilities. The key factor in obtaining support for resilient infrastructure is finding systemic solutions that provide benefits to multiple stakeholders while reducing adaptation costs to the enterprise.

The key factor in obtaining support for resilient infrastructure from a public enterprise is finding systemic solutions that provide benefits to multiple stakeholders while reducing adaptation costs to the enterprise.

As with public utilities, we believe that seaports and airports are a good source of long term project financing. Depending on a seaport or airport's relative cash position, they may also be a source of funding for predevelopment costs. As noted above, there must be a direct benefit from the project to the seaport or the airport.

### *Other Utilities and Railroads*

Electric, gas, and telecommunication transmission lines and railways are also vulnerable infrastructure along the Bay shoreline. Similar to the other public enterprises discussed in this section, these enterprises could participate in funding systemic resilient solutions that benefit multiple stakeholders while reducing enterprise costs. In the case of regulated investor-owned utilities, approval of the California Public Utilities Commission (CPUC) may be required.

Many PG&E power and gas transmission lines are in areas that would be impacted by rising Bay levels. Accordingly, it is reasonable to expect PG&E to pay a portion of the cost for resilient infrastructure designed to mitigate those risks. No process has been established for securing PG&E participation in funding resilient infrastructure. We believe that this important source of funding be addressed by both a direct approach to PG&E and an approach to CPUC.

Privately owned railroad right of way is also located within areas that would be impacted by rising Bay levels. However, while the CPUC regulates safety issues for these railroads, they do not regulate rail rates or any financial matters related to these private railroads. These matters are regulated by the Federal Railroad Administration (FRA).

Because PG&E is fully regulated by the CPUC, we believe that PG&E can be a source of long term project finance for projects that directly benefit PG&E facilities. However, since the Bay Area's two major freight haulers, Union Pacific and BNSF, are financially regulated by the FRA, we do not believe that at present they should be considered a source for any funding for resilient infrastructure.

### *Highway and Bridge Tolls*

Tolls are user fees for transportation infrastructure and have been used to finance highway and bridge infrastructure throughout California. Historically in the Bay Area, tolls have been used only for bridge finance, though recently they are being used to add high occupancy (carpool) lanes to highways.

The Bay Area Toll Authority, operated by the Metropolitan Transportation Commission, manages, invests, and distributes the revenues from the region's seven state-owned toll bridges. A separate special district operates the Golden Gate Bridge. Bay Area voters approved Regional Measures 1 and 2 in 1988 and 2004, respectively, to increase bridge tolls for various highway and transit improvements, as well as bridge seismic retrofits. This fall the State approved a new Regional Measure 3 likely to go on the ballot in 2018 to raise tolls on all seven bridges by up to \$3 to fund [a variety of transportation projects](#) throughout the region. Regional toll measures require approval by a majority of voters across the nine-county Bay Area.

Regional transportation agencies may lead development of resilient infrastructure, with opportunities for cost-sharing through systemic solutions, simply because of the extent of their critical and vulnerable assets.

Future bridge toll measures could conceivably include resilient transportation infrastructure projects. Indeed, much of the Bay shoreline is bordered by vulnerable transportation corridors that may have prohibitive relocation costs. Thus, regional transportation agencies may lead development of resilient infrastructure, with opportunities for cost-sharing through systemic solutions, simply because of the extent of their critical and vulnerable assets.

Local agencies are considering a toll road financing mechanism for infrastructure to improve the resilience of Highway 37 in the North bay. Toll road financing requires state approval, but the legislature has granted it relatively easily. The use of tolls to finance highway corridors has

been more controversial in California than the use of tolls for bridges. Consequently, despite the need, toll road financing for resilient infrastructure in the Bay Area could still require significant community engagement.

In the long run, we view this as an excellent source of potential project financing.

### City, County, and Special Districts

As local government fiscal stress has increased, support from state and federal governments has decreased, and the state constitution has given voters a direct say in their taxation, Californians have become accustomed to evaluating the potential value of revenue ballot measures. For the November 2016 election, 430 local agencies sought voter approval of local tax increases, expansions, or extensions. Revenue ballot measures were split about 50/50 between K-12 schools and community colleges on the one hand and cities, counties, and special districts on the other. Of the non-school revenue ballot measures, 73 percent passed. Additional analysis of this and prior election cycle results are available on the [California Local Government Fiscal Almanac](#) website.

Californians have become accustomed to evaluating the potential value of revenue ballot measures.

### Special Taxes (Jurisdiction)

Cities, counties, and certain special districts in California have authority to levy a variety of taxes. Taxes that generate the greatest revenue and are most commonly considered as a funding source for new facilities and services are listed below:

- Sales and use tax on retail sales
- Parcel tax on property (flat rate, percent of assessed value).
- Transient occupancy tax on visitor lodging
- Business license tax on businesses
- Utility users tax on utility charges

Special taxes are one of the most powerful tools to fund resilient infrastructure.

If a California city, county, or special district wants to raise a tax and directly pledge the increased revenues to specific uses, that tax increase is a “special tax” and requires two-thirds voter approval. General tax increases that require a simple majority voter approval and do not have a specified use are discussed below. The key advantage of a special over a general tax increase is the ability to secure debt (special tax revenue bonds). The key disadvantage is the higher voter approval margin. This balance is reflected in the November 2016 election cycle described above where 40 percent of local revenue ballot measures were special tax increases and 60 percent were general tax increases

Special taxes are probably one of the most powerful tools as a jurisdiction-wide funding source for resilient infrastructure. The dedicated use of funds suggests this approach over a general tax. And because special

districts can span multiple city and county jurisdictions, a special tax can more effectively address larger systemic solutions typically associated with resilient infrastructure. Indeed, countywide special sales taxes have been a dominant source of regional transportation infrastructure funding. Another sign of this approach for the Bay Area is the passage of the Measure AA in June 2016, a \$12 regionwide parcel tax for the San Francisco Bay Area Restoration Authority (SFBRA). The SFBRA is dedicated to wetland and habitat restoration around the Bay, and can incorporate flood management infrastructure as part of their projects.

This form of special taxes is an excellent way of creating a long-term revenue source for project finance.

### *Ad Valorem Property Tax*

The *ad valorem* property tax is a property tax based on a percent of assessed value and can be used only to finance general obligation (GO) bonds in California. GO bonds are historically the most common source of local infrastructure finance and still provide a majority of funds for school facilities in California. A general obligation bond backed by the *ad valorem* tax requires the two-thirds approval of voters in the jurisdiction.

*Ad valorem* property taxes and GO bonds are only an option for agencies that can impose a property tax, typically only cities, counties, school districts, and a limited number of special districts. Thus, the geographic scale of GO bond financing for resilient infrastructure stops at the county level. This is not the case with special taxes for multi-county special districts, such as the SFBRA discussed above.

The relationship between actual parcel market value and its assessed value for taxation purposes can be weak in California due to Proposition 13, a voter-approved reform of property taxes enacted in 1978. Consequently, the actual allocation of tax burden under an *ad valorem* property tax may differ significantly from the perceived actual benefit from a project.

*Ad valorem* general obligations are a very traditional source of long term project finance for major facilities in the Bay Area.

### *General Taxes*

General tax increases require a majority vote and can be used for any governmental purpose. General taxes cannot be pledged to any specific capital project or public service. The agency can only account for revenues in the general fund that provides funding for all the agency's basic services.

Although general taxes cannot be used for debt financing, through installment sales and lease-purchase agreements (often called "Certificates of Participation"), local agencies have been able to use general revenues to finance certain public facilities.

Some agencies have used a two-ballot measure strategy that takes advantage of the lower voter approval requirements for general taxes compared to special taxes (see section, below), while providing the voters with some assurance regarding how new revenues will be spent. In this "Measure A+B" approach, Measure A provides authority for the general tax increase. Measure B is an advisory measure for an expenditure plan scaled to the magnitude of the tax increase that, if approved, would provide non-binding guidance to the agency.

General taxes have limited use for resilient infrastructure finance because the use of revenues cannot be specified, with a caveat regarding the use of the Measure A+B approach, described above.

Consequently, while general taxes are easier to approve than special taxes, they are not a reliable long-term revenue source for project finance.

### Gas Tax

The Metropolitan Transportation Commission (MTC) considered proposing a regionwide gas tax increase of five to ten cents a gallon as recently as 2016. Approval would have required support from two-thirds of voters. MTC decided against moving forward with the gas tax proposal, possibly in lieu of (1) an alternative MTC proposal to increase in bridge tolls (Regional Measure 3 described above), and (2) the legislature's passage of Senate Bill 1 (SB 1) this fall that includes a 12-cent gas tax increase statewide. SB 1 is estimated to increase gas tax revenues statewide by at least \$5 billion per year.

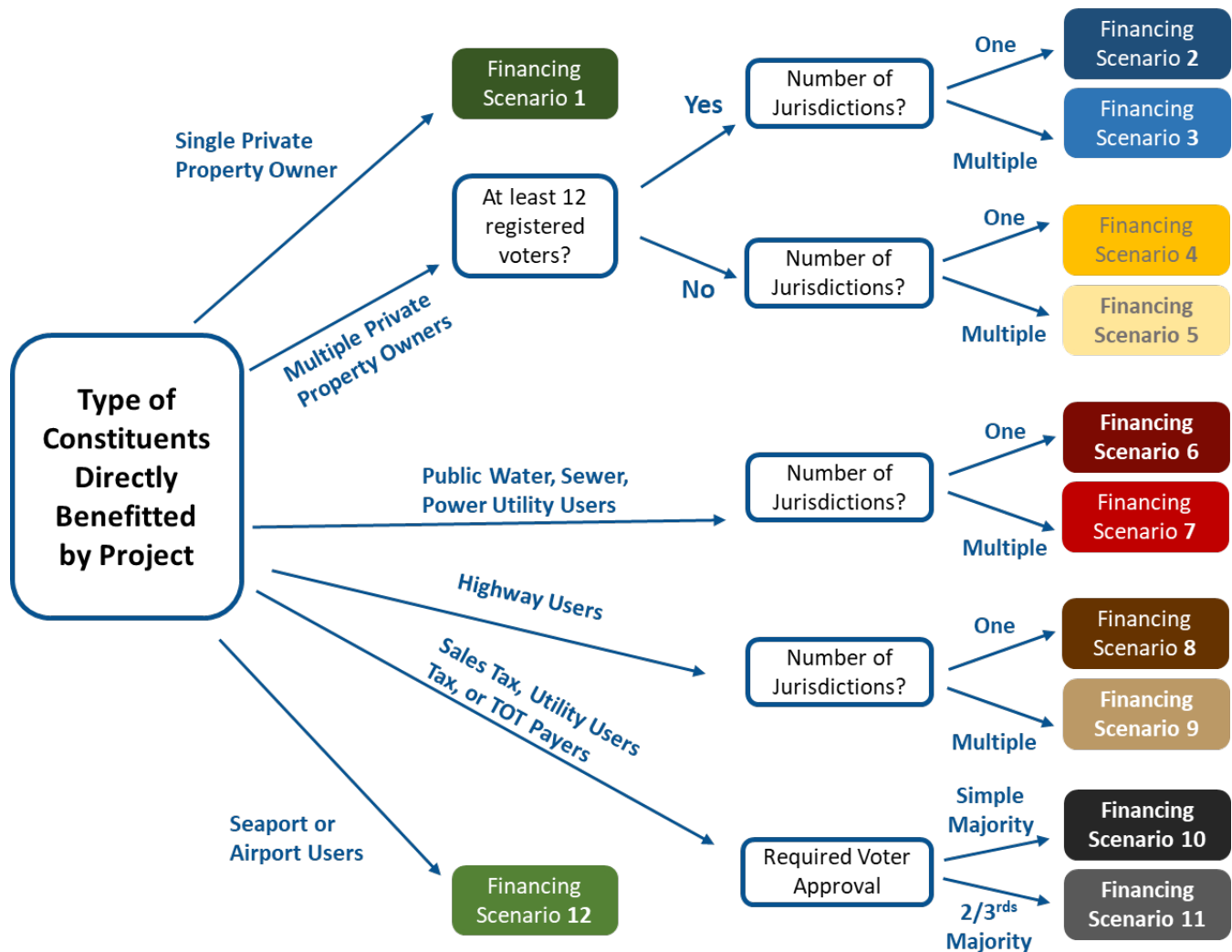
Funding from both the MTC regionwide proposal and SB 1 would be focused on maintenance of existing transportation infrastructure and services, not expansion. These priorities highlight the competition for infrastructure funding between maintenance of existing infrastructure and the need to invest in new solutions. Resilient infrastructure programs will attract more taxpayer support to the extent that it includes maintenance of existing facilities as part of the adaptation strategy. We believe that grants through SB 1 are a realistic potential source for both predevelopment costs and project finance. This is discussed in more detail in Chapter 2.

Resilient infrastructure will attract taxpayer support to the extent that it can include maintenance of existing facilities as part of the adaptation strategy.

## THE DECISION TREE FOR PUBLIC FUNDING

The next page has a decision tree for the public finance component of our three main sources of resilient infrastructure funding (public finance, grants, and alternative finance). The purpose of this decision tree is to (1) identify and consolidate the most likely scenarios for project finance for resilient infrastructure in the Bay Area and (2) outline the project financing scenario that is most likely to be successful for each scenario. Note that the decision tree does not address funding for predevelopment costs, but solely addresses public finance options for long term project finance.





The decision tree turns on three main factors:

1. Type of revenue source (e. g. taxes on land, utility rates, etc.)
2. Number of registered voters (e. g. whether authorization is through land owner consent or voter consent)
3. Number of jurisdictions involved (e. g. single jurisdiction or a legal aggregation of multiple jurisdictions).

The following summaries outline the recommended long-term project financing approach for each scenario identified in the decision tree.

#### Financing Scenario 1

**Single private property owner** – This scenario is perhaps the easiest financing plan to implement. The key assumption is that a single property needs a resilient infrastructure project to develop their property. California’s Mello-Roos law was adopted in 1986 to address these kinds of needs. Consequently, in Scenario 1, the landowner would work with their local land use entitlement authority to form a community facilities district to fund the resilient infrastructure. The actual special tax mechanism would be custom designed to (1) meet the business plan needs of the developer and (2) provide sufficient security for bond investors. As noted earlier, with special tax authorizations, the actual project

can benefit other parcels besides the original landowners. These other parcels can be required to annex into the community facilities district in the future, should they seek entitlements for new or expanded development.

Financing  
Scenario 2

**Multiple private property owners within a single jurisdiction with 12 or more registered voters within the proposed district**

– Where the proposed taxes for resilient infrastructure would be levied only within one infrastructure, there is a clearer choice between using a special tax measure or an *ad valorem* tax. In this case, the choice should be determined by the relative likelihood of a “customized” special tax passing compared with an *ad valorem* tax. Community engagement is crucial to this decision. Based on our own experience, we believe that for projects like resilient infrastructure, a carefully designed special tax is more likely to pass than an *ad valorem* tax.

Financing  
Scenario 3

**Multiple private property owners within multiple jurisdictions with 12 or more registered voters within the proposed district**

– This scenario is essentially what was done with Measure AA for the San Francisco Bay Restoration Authority. There was a vote of all nine counties in the Bay Area on whether to levy a \$12 per parcel tax to pay for “greening” the Bay. Although the board of supervisors for each of the nine counties had to authorize the vote, the 2/3rds vote requirement was for all nine counties as a whole, and was not a county by county basis. Consequently, if the measure gained a 2/3rds vote in all nine counties as a whole, the measure would be levied in all nine counties, regardless of how each county voted.

If Measure AA had been done as an *ad valorem* tax, as opposed to a “special tax” on each parcel, the measure would have had to get a 2/3rds vote in each county. So, while both *ad valorem* and special tax measures can be done for multi-jurisdiction tax measures where there are 12 or more registered voters, we recommend using the special tax approach where multiple jurisdictions must approve the vote.

Financing  
Scenario 4

**Multiple private property owners within a single jurisdiction with less than 12 registered voters**

– This is a possible scenario for undeveloped property with multiple parcel owners. Again, as with Scenario 5, formation of a community facilities district for the multiple owners is the best option.

Financing  
Scenario 5

**Multiple private property owners within multiple jurisdictions with less than 12 registered voters**

– This is not a likely scenario. This scenario envisions a tax measure for many undeveloped parcels spread across multiple jurisdictions. In this case, a land owner approved community facilities district would be the best alternative. Each of the overlapping jurisdictions would need to approve the district, but one of them would need to take the official role as sponsor for the community facilities district.

Financing  
Scenario 6

**Public water, sewer, or storm water utility customers within multiple jurisdictions**

– This scenario is most likely for sewer utilities, or for new storm water utilities formed under SB 231. The revenue stream would be utility rates, approved under Prop 218. As noted earlier, the Bay Area’s sewer utilities may have the rate capacity already to do some resilient infrastructure financing. In California, multiple jurisdictions can jointly finance infrastructure through what is called joint powers authority (“JPA”). This is a special purpose governmental entity formed by each of the participating government entities. For debt financing, the member entities can legally pledge their revenue, such as sewer or storm water service charges to the JPA. The JPA can then in turn pledge this revenue as security for a bond issue. This would be a realistic option for funding regional resilient infrastructure that directly benefits water, sewer, or storm water utilities.

Financing  
Scenario 7

**Public water, sewer, or storm water utility customers within a single jurisdiction**

– As with Scenario 6, the key revenue source here is utility service charges. Utility service charges are a very strong revenue source, and the easiest new revenue source to authorize. The



challenge is establishing a direct benefit between the resilient infrastructure project and the utility pledging the service charges to debt used to fund the resilient infrastructure.

**Financing  
Scenario 8**

**Highway users within a single jurisdiction** - Scenario 8 is much simpler than Scenario 9. If a resilient infrastructure project can be designed to benefit a roadway solely within one jurisdiction, the community engagement process is more feasible. Only one jurisdiction, with a presumably smaller number of stakeholders, needs to be brought into consensus on the project.

**Financing  
Scenario 9**

**Highway users within multiple jurisdictions** - Scenario 9 is essentially what the Highway 37 collaboration is trying to do—using multiple counties and the State of California (since Highway 37 is a state highway), to set up a toll road authority to fund a \$1 billion+ resilient infrastructure project. The challenge here is community engagement: developing political consensus amongst multiple stakeholders to establish a toll on a highway that has never had a toll on it before.

**Financing  
Scenario 10**

**Sales Tax, utility users tax or TOT payers with a majority vote** - Scenario 10 reflects a single jurisdiction that approves a sales tax increase with majority vote. As noted before, this increase in sales tax cannot be formally pledged to debt, and the annual allocation of revenues to pay debt service on a resilient infrastructure lease financing must compete with all other public services funded by the General Fund of the taxing entity. Scenario 11's scalability is also limited by the need of the taxing entity to pledge real estate equal in value to the amount of lease financing to be done. The resilient infrastructure itself may not be suitable for use as collateral in a credit-worthy lease obligation.

**Financing  
Scenario 11**

**Sales Tax, utility users tax or TOT payers with a 2/3 vote** - Scenario 11 reflects a single jurisdiction that approves a sales tax increase by a 2/3 vote. Consequently, the increase in sales tax revenues can be directly pledged to debt to fund resilient infrastructure without the need for a lease financing. Most importantly, the sales tax revenues from the rate increase can only be used for the purpose designated in the ballot measure, meaning that other public service funding needs cannot compete for these funds.

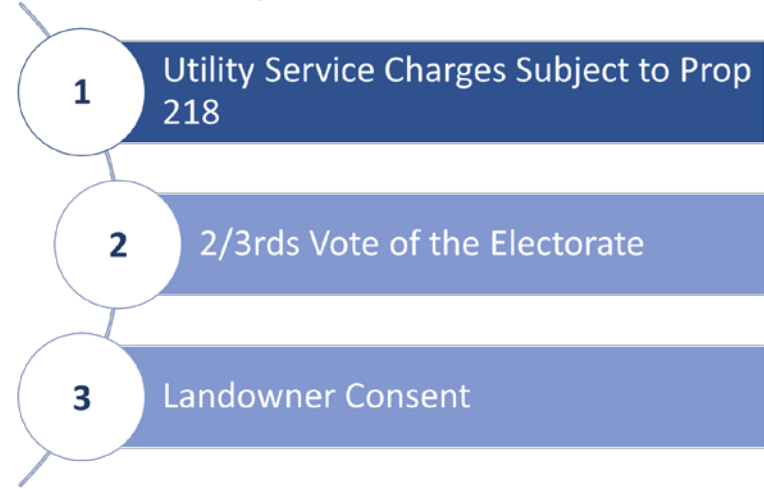
**Financing  
Scenario 12**

**Seaport or airport users** - This scenario is similar to Scenario 8. The ports and airports within the Bay Area are generally considered strong credits and have some bonding capacity. As noted earlier, the community engagement process for a seaport or an airport comprises the management for the facility, but not the users. Again, the challenge is establishing a direct benefit between the resilient infrastructure project and the seaport or airport.

## CONCLUSIONS

Of these three basic approaches to creating new revenue sources to fund resilient infrastructure in California, utility service charges under Prop 218 is the easiest. As noted earlier, many public utilities in the Bay Area already have rate/debt capacity under their existing rates. More importantly, Prop 218 essentially just requires an “inverse” majority vote, meaning that a majority of the ratepayers did not formally protest the proposed rate increase. Landowner consent may appear easy, but it de facto means finding a land developer who is willing to fund a resilient infrastructure project to gain development entitlements. This is the challenging part of landowner consent. While securing a 2/3rds vote of the electorate in a given jurisdiction appears daunting, it is done. Success with 2/3rds vote requirements is possible, but requires careful and sustained community engagement.

### Three Basic Ways To Create New Revenue Sources



While securing a 2/3rds vote of the electorate in a given jurisdiction appears daunting, it is done. Success with 2/3rds vote requirements is possible, but requires careful and sustained community engagement.

## CHAPTER 4: STATE AND LOCAL GRANTS

### OVERVIEW

Many California State and Bay Area agencies offer grants or loan support for projects addressing climate change, climate resilience and climate adaptation. We recommend that the design teams focus on five major state and local grant programs, summarized in the table below (six if SB5 is adopted by the voters). These major programs have the most money and typically allocate funds through several agencies. Following the table, is a description of the five programs and reference specific allocations under the applicable agency in the sections that follow. See Appendix A for successful strategies to win competitive government grant programs. Note that this table also evaluates these major grant funding sources for their applicability to both predevelopment cost funding and project finance funding.

Figure 7: Major State and Local Grant Programs

	Approximate Annual Funding Volume	One Time Funding Amount	Availability	Key Project Eligibility Criteria	Regions and Communities of Competition	Funding Pre-Development Costs	Project finance funding
<b>SB 1</b>	\$5 billion per year	N/A	Starts in 2018	Must be part of repair, improvements of roadways	Statewide. Cities, counties, public transit agencies and CalTRANS	Yes	Yes, but one time grant
<b>Cap and Trade</b>	\$2 billion per year	N/A	Now	Climate change mitigation or adaptation	Statewide	Yes	Yes, but one time grant
<b>MTC</b>	\$1.5 billion per year	N/A	Now	Public transit and transportation	Nine county Bay Area	Yes	Yes, but one time grant
<b>Proposition 1</b>	N/A	\$7.545 billion, of which \$2.7 billion may be applicable to RbD projects	Now	Watershed protection and restoration, integrated water management, flood management	Statewide	Yes	Yes, but one time grant
<b>SB 5</b>	N/A	\$3.5 billion, of which at least \$440 million is applicable to RbD projects	If adopted by voters, funds available in 2019	Climate preparedness, habitat restoration and innovation	Statewide	Yes, if adopted	Yes, if adopted
<b>SFBRA</b>	\$25 million per year	N/A	Now	Bay restoration, including flood protection	Nine county Bay Area	Yes	Yes, but one time grant

**SB 1 – Gas Tax Increase** – The State adopted legislation this calendar year that increases statewide gas taxes by over \$5 billion per year. While this money is primarily intended to address the accumulated deferred maintenance on the State’s roadways, we believe that some of it can be directed to resilient infrastructure where that infrastructure directly benefits an existing State roadway. A more detailed discussion of specific grant programs under SB 1 that might be applicable.

**Cap and Trade Revenues** – California climate expenditures are among the most significant in the world and this is reflected in the availability of grant dollars, including those from Cap and Trade auction revenues. Consequently, before getting into the details of all the various State grant programs that may apply to resilient infrastructure, it is worth a deeper consideration of cap and trade revenues.

There is an increasing recognition that climate adaptation and resilience projects need funding and much of this funding is coming from the cap and trade program. The recently enacted [AB 398](#) extended the Cap and Trade

program to 2030. The legislation identifies climate adaptation and resiliency as one of the seven priorities for investment of cap and trade revenues.<sup>6</sup> Passage of AB 398 helped stabilize the cap and trade marketplace and most observers expect available revenues to continue to be significant. Allocations approved in September 2017 of cap and trade auction revenues accumulated in the Greenhouse Gas Revenue Fund topped \$1.5 billion. The Governor's budget for FY 2017-18 assumes \$2 billion per year in Cap and Trade revenues.

Most of the cap and trade spending is fixed per statutory formulas, but much is left to negotiation in the annual budget cycle. There is some discretion as the budget gets negotiated, but cap and trade spending generally adheres to spending priorities outlined in the State [Cap and Trade Investment Plan](#). Given the sums involved, the negotiations can be quite robust. Some agencies, such as the Strategic Growth Council, are now receiving reasonably predictable funding from Cap and Trade revenues.

Besides the [Investment Plan](#), there are other documents applicants could consider reviewing as they familiarize themselves with grants and the grant application process. The current draft of the [Funding Guidelines](#) document serves as a detailed primer on the inter-relationship between various climate spending priorities, including assuring co-benefits for residents of disadvantaged communities, low-income communities, and low-income households. Updated information on cap and trade expenditure programs and plans can be found on the ARB [California Climate Investments](#) website.

Cap and trade is not the only source of funds. State adaptation and resilience programs have received funds from voter-approved resource-related bond measures as well as the normal state budget process.

**Metropolitan Transportation Commission (MTC) Grants** – MTC allocates approximately \$1.5 billion per year in both operating and capital related grants for transportation in the nine county Bay Area. While both the need and competition for this money is very strong, resilient infrastructure projects that have a direct benefit to key Bay Area transportation corridors have a good chance of getting some grant support through MTC. This funding source is discussed in more detail in the section in this chapter on Regional Grant Programs.

**Proposition 1 Funding** – California Proposition 1, the Water Bond (Assembly Bill 1471), was approved by the voters on the November 4, 2014 ballot in California as a legislatively-referred bond act. The measure enacted the Water Quality, Supply, and Infrastructure Improvement Act of 2014. Proposition 1 was designed to:

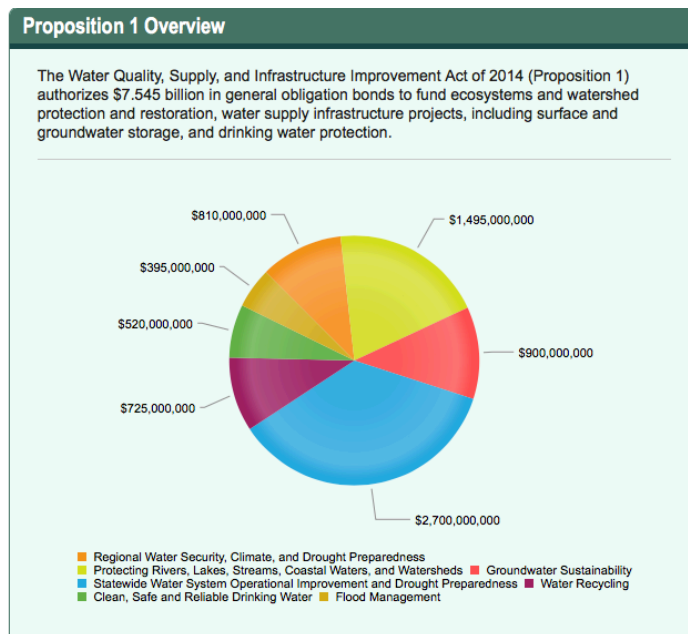
- Authorize \$7.12 billion in general obligation bonds for state water supply infrastructure projects, such as public water system improvements, surface and groundwater storage, drinking water protection, water recycling and advanced water treatment technology, water supply management and conveyance, wastewater treatment, drought relief, emergency water supplies, and ecosystem and watershed protection and restoration.
- Appropriate money from the General Fund to pay off bonds.
- Require certain projects to provide matching funds from non-state sources to receive bond funds.

Specific spending proposals in the proposition included:

- \$520 million to improve water quality for beneficial use, for reducing and preventing drinking water contaminants, disadvantaged communities, and the State Water Pollution Control Revolving Fund Small Community Grant Fund.

<sup>6</sup> The full list of priorities in AB398 includes: (1) air toxic and criteria air pollutants from stationary and mobile sources, (2) low- and zero-carbon transportation alternatives, (3) sustainable agricultural practices that promote the transitions to clean technology, water efficiency, and improved air quality, (4) healthy forests and urban greening, (5) short-lived climate pollutants, (6) climate adaptation and resiliency, and (7) climate and clean energy research.

- \$1.495 billion for competitive grants for multi-benefit ecosystem and watershed protection and restoration projects.
- \$810 million for expenditures on, and competitive grants and loans to, integrated regional water management plan projects.
- \$2.7 billion for water storage projects, dams, and reservoirs.
- \$725 million for water recycling and advanced water treatment technology projects.
- \$900 million for competitive grants and loans for projects to prevent or clean up the contamination of groundwater that serves as a source of drinking water.
- \$395 million for statewide flood management projects and activities.



These funds are administered through the Bay Area Integrated Regional Management Planning process and are distributed through a competitive grant process to projects listed in the IRWMP. Each round of grant funding has different objectives and requirements. Project teams should review the IRWMP to identify previously identified projects with in their area of interest and should work with the identified IRWMP project sponsor. Although much of the funding has been spent or targeted for areas outside of the Bay Area, some funding remains, especially funding for flood control.

**Potential SB 5 Funding** – The legislature and governor recently approved SB5, a \$7.5 billion resources and climate bond measure to be placed on the June 2018 ballot. If approved by the voters, the measure would allocate over \$440 million to

climate adaptation and resiliency. The measure says eligible projects shall improve a community's ability to adapt to the unavoidable impacts of climate change, improve and protect coastal and rural economies, agricultural viability, wildlife corridors, or habitat, develop future recreational opportunities, or enhance drought tolerance, landscape resilience, and water retention.

#### Measure AA Grants from San Francisco Bay Restoration Authority –

The [San Francisco Bay Restoration Authority](#) ("SFBRA") is a regional agency created to fund shoreline projects that will protect, restore, and enhance San Francisco Bay through the allocation of funds raised by the Measure AA parcel tax. The Restoration Authority Board will make funding decisions at public meetings based on its enabling legislation and the requirements of Measure AA. The Board may fund projects to protect, restore and enhance the San Francisco Bay, including habitat restoration projects, flood protection projects that are part of a habitat restoration project, and shoreline access and recreational amenity projects that are part of a habitat restoration project. It is comprised of a Governing Board of local elected officials, an Advisory Committee to represent the community and public agencies, and staff from state and regional agencies. The San Francisco Bay Restoration Authority has annual revenues of about \$25 million, the great majority of which will be allocated to grants for eligible projects.



## STATE GRANT PROGRAMS

Below is a table summarizing major State grant programs that may apply to resilient infrastructure. The left column shows the granting State agency with hyperlinks to the specific agency website describing the grant program. The central column shows the ultimate source of funds for the grant program, and the right column contains a summary of the types of projects eligible for the grant. More detailed discussions of each grant program by agency are after the table. Note that we believe on a preliminary basis that nearly all State grant programs identified below can be applicable to both predevelopment cost funding and project finance.

Figure 8: Summary of State Grant Programs

Granting Entity	Source of Funds	Type of Projects
<a href="#">California Air Resources Board</a>	Cap and trade	Climate related projects
<a href="#">California Coastal Conservancy - Climate Ready Program</a>	Cap and trade	Adaptation planning and natural infrastructure
<a href="#">California Coastal Conservancy - Proposition 1</a>	Proposition 1	Watershed protection and restoration
<a href="#">California Coastal Conservancy - Marin County Program</a>	Buck Fund	Nature based adaptation projects in Marin County
<a href="#">Department of Fish and Wildlife</a>	State appropriation	Wetland restoration
<a href="#">Department of Housing and Community Development - Affordable Housing and Sustainable Communities Program</a>	State appropriation	Infill and compact development that reduce greenhouse gases
<a href="#">Department of Housing and Community Development - Housing Related Parks Program</a>	State appropriation	Parks and recreation facilities for affordable housing
<a href="#">California Ocean Protection Council</a>	Proposition 1	Storm water recapture, wetland, and coastal watershed restoration
<a href="#">Department of Parks and Recreation</a>	State appropriation	Wetlands creation, acquisition, or restoration
<a href="#">California Transportation Commission</a>	SB 1 Transportation Improvement Fee	Transit and rail improvement projects, including improving reliability and habitat protection
<a href="#">Department of Transportation</a>	State appropriation	Adaptation planning
<a href="#">Natural Resources Agency</a>	Highway Users Tax Account	Mitigation of environmental effects of transportation facilities
<a href="#">Department of Water Resources</a>	Primarily Prop 1	Flood control and environmental restoration related to drinking water
<a href="#">Strategic Growth Council - Transformative Climate Communities Program</a>	Cap and trade	Neighborhood level greenhouse gas reduction programs
<a href="#">Strategic Growth Council Affordable Housing and Sustainable Communities</a>	Cap and trade	Transit oriented development that reduces greenhouse gases
<a href="#">Water Resources Control Board Division of Financial Assistance</a>	Primarily Prop 1	Watershed protection and non-point source pollution control
<a href="#">Wildlife Conservation Board</a>	Cap and trade, some State appropriation	Climate adaptation related to the protection and restoration of wildlife habitat



While there isn't a single repository of grant information for all state agencies, several state agencies maintain websites listing funding opportunities for a variety of programs, including those addressing the impacts of climate change. A particularly useful website is the "[Funding Wizard](#)", a searchable database of grants, rebates, and incentives. The wizard's team combs the internet for funding opportunities in categories such as energy, air quality and climate change, transportation, urban development, waste management, and water.

### California Air Resources Board



The main source of ongoing funds for climate related projects comes from the California Cap and Trade Program administered by the [California Air Resources Board](#). The Board regularly prepares an "Investment Plan" for cap and trade funds. The [Investment Plan](#) provides much background on spending and future plans. Other sources include environmental and resource bonds passed by the voters or annual budget appropriations. The California Air Resources Board [maintains a list](#) of Cap and Trade funds available for grants.

### California Coastal Conservancy



Coastal  
Conservancy

The [California Coastal Conservancy](#) has list of [current grant opportunities](#) that include:

1. [Climate Ready Program](#) The Coastal Conservancy's Climate Ready Program is helping natural resources and human communities along California's coast and San Francisco Bay adapt to the impacts of climate change, such as rising sea levels, beach and bluff erosion, extreme weather events, flooding, increasing temperatures, changing rainfall patterns, decreasing water supplies, and increasing fire risk. The Conservancy is also working to capture greenhouse gases from the atmosphere through the conservation of natural and working lands. The program recently received \$4 million in cap and trade funds for future funding cycles. Past cycles have included fund for adaptation planning and natural infrastructure.
2. [California Coastal Conservancy Proposition 1 Grants](#) Proposition 1 grants fund multi-benefit ecosystem and watershed protection and restoration projects. Priority project types include: water sustainability improvements, anadromous fish habitat enhancement, wetland restoration and urban greening. There are several upcoming funding cycles for the grants.
3. [Nature Based Solutions in Marin County](#) – The Coastal Conservancy has received funds from the Buck Foundation for The Advancing Nature-Based Adaptation Solutions grant program. The program seeks to support planning, design, permitting, implementation, education, and/or community-based restoration activities to address the risks and impacts of climate change and sea level rise; and to further advance nature-based adaptation solutions to protect and enhance the Marin County bay shoreline and outer coast. Check the website for funding cycles.

### Department of Fish and Wildlife



The [Department of Fish and Wildlife](#) just received a \$15 million appropriation to be used for wetland restoration projects that will be managed to maintain benefits for at least 50 years, underpinned by conservation easements or equivalently enforceable conservation agreements that endure at least for at least 50 years. The Department of Fish and Wildlife prioritizes projects with longer environmental benefits.

## Department of Housing and Community Development



The [Department of Housing and Community Development](#) has grant programs that potentially intersect with resilience/adaptation projects, especially if there is housing involved. The current grant opportunities [are listed on the Department's website](#) and regularly updated and regularly updated as new funding becomes available. Among the grants that might be of interest are:

1. The [Affordable Housing and Sustainable Communities Program](#) funds land use, housing, transportation, and land preservation projects that support infill and compact development and reduce greenhouse gas (GHG) emissions. Funds are available in the form of loans and/or grants in two kinds of project areas: Transit Oriented Development (TOD) Project Areas and Integrated Connectivity (ICP) Project Areas. There is an annual competitive funding cycle
2. The [Housing-Related Parks Program](#) funds the creation of new park and recreation facilities or improvement of existing park and recreation facilities that are associated with rental and ownership projects that are affordable to very low- and low-income households. Grant funds are made available to local jurisdictions.

## California Ocean Protection Council

The [California Ocean Protection Council](#) oversees a portion of funding from The Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Prop 1). Funding from Prop 1 is intended to fund projects that meet the goals of the Water Action Plan provide more reliable water supplies, restore important species and habitat, and develop a more resilient and sustainably managed water system (water supply, water quality, flood protection, and environment) that can better withstand inevitable and unforeseen pressures in the coming decades.



According to their website another round of funding will occur in 2018: OPC had originally planned to solicit projects for Round 2 of the Proposition 1 funding process in May 2017. Staffing capacity issues have resulted in a revised timeline; **OPC now anticipates updating its Proposition 1 grant guidelines in Fall 2017 and announcing a solicitation for projects in early 2018.** Additional information on Round 2 and OPC's Proposition 1 Grant Program will be posted to OPC's website as the updated process gets underway. To give a sense of what qualified during past funding cycles, here is information from the OPC prior guidelines: Eligible planning grants are those that will lead to the successful design of implementation projects. These efforts may include project development, implementation strategy development, watershed assessments, and project-specific activities such as design, baseline data collection, permitting, and environmental review.

Planning grants are intended to support the development of projects that are likely to qualify for future implementation funding. Other examples of eligible projects are those that fund construction of restoration and enhancement projects and new or enhanced facilities. Projects that have qualified for funding in the past include: storm water capture systems, wetland restoration, water pollution prevention and protection/restoration of coastal watersheds.

## Department of Parks and Recreation

Among the grant funds available through the [Department of Parks and Recreation](#) are [Land and Water Conservation Fund grants](#) that can be used for a variety of purposes, including wetlands creation, expansion or acquisition.



California  
Department of  
Parks and Recreation



## California Transportation Commission



SB1, which was passed by the legislature and signed into law in April 2017, created several new revenue streams for transportation-related projects under the California Transportation Commission. One of them, the Transportation Improvement Fee, will begin generating an estimated \$1.5 billion annually beginning January 1, 2018. If SB1 survives a repeal initiative planned for the November 2018 statewide ballot, substantial additional funding from SB1 sources will be available to climate change-related projects under two programs, the Transit and Intercity Rail Capital Program and the Solutions for Congested Corridors Program. Both funding streams are competitive programs that receive project funding applications biannually. TIRCP applicants must be entities that run passenger rail or bus programs; and applicants to the Congested Corridors Program must be county or regional transportation agencies or Caltrans. Project elements may include restoration or preservation work that protects critical habitat or open space and projects that improve reliability of transit systems and service. The first program of projects under the Congested Corridors program and the third round of TIRCP projects are scheduled to be adopted by the California Transportation Commission in May 2018.

## Department of Transportation

The [Department of Transportation](#) (Caltrans) has [new funding](#) intended to support regional sustainable communities strategies and ultimately achieve the State's greenhouse gas reductions targets of 40 and 80 percent below 1990 levels by 2030 and 2050, respectively. Available funds include:



1. \$25 million annually for Sustainable Communities Grants to encourage local and regional planning that further state goals, including, but not limited to, the goals and best practices cited in the regional transportation plan guidelines adopted by the California Transportation Commission.
2. \$20 million over three years for Adaptation Planning Grants to local and regional agencies for climate change adaptation planning.

## Natural Resources Agency



The [California Natural Resources Agency](#) oversees several grant programs, including the [Environmental Enhancement and Mitigation \(EEM\) Program](#). This program, authorizes the legislature to allocate up to \$7 million each fiscal year from the Highway Users Tax Account (Motor Vehicle Revenues, Section 2100). EEM projects must contribute to mitigation of the environmental effects of transportation facilities. The Agency prescribes procedures and criteria to evaluate grant applications and submits a list of projects recommended for funding to the California Transportation Commission (CTC). The CTC awards grants to projects from the Agency's list.

## Department of Water Resources

The [Department of Water Resources](#) has had [grant programs](#) for flood control, drinking water, environmental restoration, and other related projects. Consult their website to see if there is current funding applicable to Bay Area mitigation or adaptation.



## Strategic Growth Council

The [Strategic Growth Council](#) (SGC) has become one of the key grant makers for local climate actions. SGC coordinates interagency efforts and partners with local and regional government stakeholders to promote sustainable development, improving air and water quality, protecting natural resources and agricultural lands, and reducing greenhouse gas emissions. The Council administers the Transformative Climate Communities Program, the Affordable Housing and Sustainable Communities Program and the Sustainable Agricultural Lands Conservation Program, developing guidelines, reviewing applications, and providing funding as part of greenhouse gas reduction efforts associated with cap and trade funds. The Council also administers a technical assistance program to support all Greenhouse Gas Reduction Fund programs to assist in the development of



CALIFORNIA  
STRATEGIC  
GROWTH  
COUNCIL

projects that maximize greenhouse gas reductions. The Council is charged with review of the California 5-Year Infrastructure plan and with making grants and loans to institutions for planning and implementing land uses that achieve the goals of the State's Planning Priorities. The Council also oversees the Administration's Health in All Policies program, and sponsors research on infill development, conservation, and other planning issues.

[Transformative Climate Communities Program](#) - The Transformative Climate Communities Program funds projects that reduce greenhouse gas (GHG) emissions through the development and implementation of neighborhood-level transformative climate community plans that include multiple, coordinated GHG emissions reduction projects that provide local economic, environmental, and health benefits to disadvantaged communities. The Program will fund two types of grants: Implementation Grants and Planning Grants.

[The Strategic Growth Council's Affordable Housing and Sustainable Communities](#) (AHSC) Program provides grants and affordable housing loans for compact transit-oriented development and related infrastructure and programs that reduce greenhouse gas ("GHG") emissions. These projects increase the accessibility of housing, employment centers, and key destinations via low-carbon transportation options (walking, biking, transit) resulting in fewer vehicle miles traveled (VMT) and mode shift.

## California State Water Resources Control Board

The Division of Financial Assistance (DFA) of the California State [Water Resources Control Board](#) administers the implementation a [financial assistance programs](#), that include loan and grant funding for construction of municipal sewage and water recycling facilities, remediation for underground storage tank releases, watershed protection projects, nonpoint source pollution control projects, etc. DFA also administers the Operator Certification Program.



## Wildlife Conservation Board



The primary responsibilities of [Wildlife Conservation Board](#) (WCB) are to select, authorize and allocate funds for the purchase of land and waters suitable for recreation purposes and the preservation, protection, and restoration of wildlife habitat. WCB approves and funds [programs](#) that set aside lands within the State for such purposes, through acquisition or other means, to meet these objectives. WCB can also authorize the construction of facilities for recreational purposes on property in which it has a proprietary interest.

WCB accepts proposals on a continuous basis, and will notify applicants about whether the proposal is acceptable or complete. All proposals will be evaluated with assistance from the California Department of Fish and Wildlife. If a proposed project is accepted, and funding is available, a grant agreement or contract will be prepared for the applicant, and the proposal will be scheduled for consideration at a future WCB meeting.

Among their funding sources, WCB was recently allocated \$20 million in Cap and Trade funds for climate adaption projects that will result in enduring benefits. Eligible applicants include local governments, park and open-space districts, resource conservation districts, private landowners, and nonprofit organizations. At least 60 percent of the funds appropriated in this item shall be made available for grants for conservation easements and long-term conservation agreements that conserve natural and working lands for at least 50 years for the benefit of climate adaptation and resilience. The funds appropriated in this item may also be used to develop and implement natural and working lands adaptation and resiliency planning that prioritizes the conservation and management of natural and working lands, technical assistance for natural and working land managers, and efforts that improve rural-urban coordination on climate change adaptation.

## REGIONAL GRANT PROGRAMS

### Metropolitan Transportation Commission (MTC) Grants

MTC is the transportation planning, financing, and coordinating agency for the nine-county San Francisco Bay Area. Funding for transportation projects are identified in the Regional Transportation Plan (RTP). The Transportation Improvement Program (TIP) lists the near-term transportation projects, programs, and investment priorities of the region's surface transportation system that have a federal interest along with locally and state-funded projects that are regionally significant. To receive transportation funding, projects must be listed in the TIP.

In addition to the TIP which lists all the near-term transportation projects, MTC's One Bay Area Grant program – or OBAG—is a funding approach that targets project investments in Priority Development Areas (PDAs) and rewards cities and counties that approve new housing construction. Cities and Counties may use OBAG funds to invest in: Local street and road maintenance, street scape enhancements, bicycle and pedestrian improvements, transportation planning, Safe Routes to School projects and PDAs.

OBAG2 is the second round of OBAG funding and is projected to total roughly \$916 million to fund projects from 2017-18 through 2021-22. The OBAG2 program is divided into a Regional Program, managed by MTC, and the County Program, managed by the nine Bay Area Congestion Management Agencies(CMAs).

Through the regional OBAG program, MTC has allocated \$10 million to pilot a fund to support affordable housing where it currently exists, referred to as the Naturally-Occurring Affordable Housing (NOAH). Additional funding includes a “80K by 2020” \$30 million challenge grant program to incentivize local jurisdictions to produce affordable housing in PDAs and Transit Priority Areas (TPAs).

### Bay Area Wastewater Utilities

The State of California Water Quality Control Board is working with Bay Area wastewater utilities that discharge to the Bay to develop multi-benefit “green” projects as alternatives to traditional wastewater treatment. The multi-benefit concept includes protection against rising Bay levels. At present, the Bay Area Clean Water Agencies joint powers authority (BACWA) is funding baseline science and feasibility work on this concept. This may be a source of predevelopment funding for resilient infrastructure projects.

### San Francisco Bay Restoration Authority

Measure AA grants from the Authority were described in the overview section at the start of this chapter.

## CHAPTER 5: FEDERAL GRANTS

The table below summarizes each of the applicable Federal grant programs to consider as funding sources for resilient infrastructure. The table is followed by a summary of the grant programs offered by each of these Federal Agencies. See Appendix A for successful strategies to win competitive government grant programs.

**Figure 9: Federal Grant and other Funding Programs**

Federal Grant Program	Sponsoring Agency*	Requires Declared Disaster	Eligible Projects
<a href="#">Hazard Mitigation Grant Program</a>	FEMA	Yes	Reduction of flood risk
<a href="#">Pre-Disaster Mitigation Program</a>	FEMA	No	Reduction of flood risk
<a href="#">Flood Mitigation Assistance Program</a>	FEMA	No	Reduction of flood risk
<a href="#">National Disaster Resilience Competition</a>	HUD	No	Reduction of disaster risks
<a href="#">Community Development Block Grants</a>	HUD	No	Resilient community improvements
<a href="#">Regional Resiliency Assessment Program</a>	Homeland Security	No	Planning for resilient infrastructure
<a href="#">Coastal Resilience Grants</a>	NOAA	No	Resilient coastal infrastructure
<a href="#">Office of Coastal Management Grants and Cooperative Agreements</a>	NOAA	No	Coastal resilience planning
<a href="#">National Sea Grant College Program</a>	NOAA	No	Coastal resilience planning
Standard Projects; <a href="#">Continuing Authority Program</a>	ACE	No	Reduction of storm & flood risk, beneficial use of sediment, aquatic ecosystem restoration
Planning Studies	ACE	No	Areawide studies not focused on a specific project
<a href="#">San Francisco Bay Water Quality Improvement Fund</a>	EPA	No	Restore wetlands and watersheds, and reduce polluted runoff
<a href="#">Water Infrastructure and Resiliency Finance Center</a>	EPA	No	Information center for drinking water, wastewater, and storm water infrastructure finance

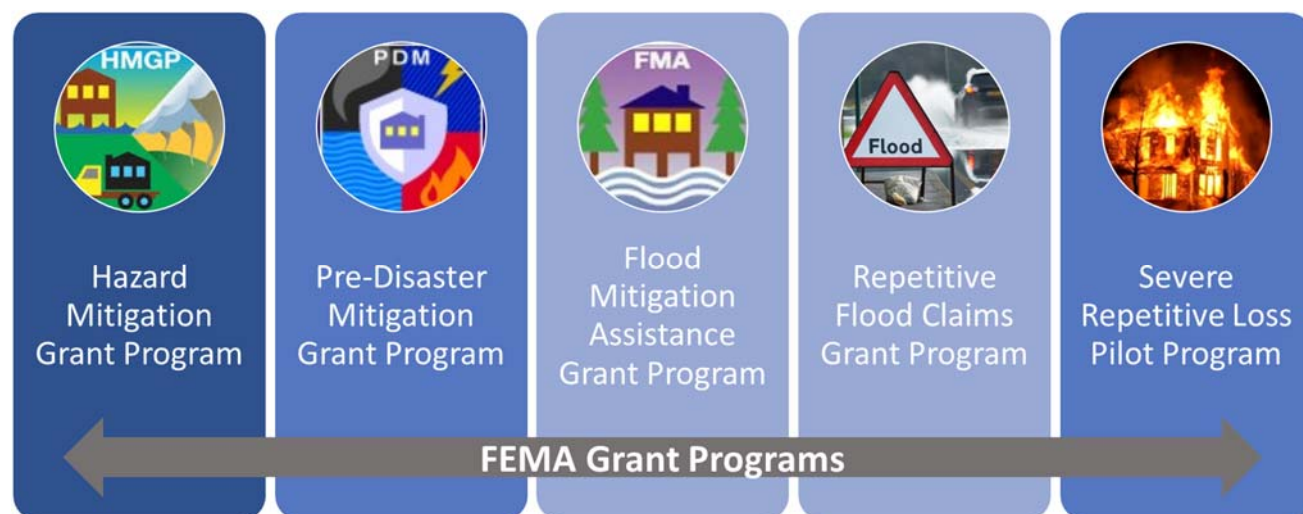
\*Acronym Key: FEMA refers to the Federal Emergency Management Agency; HUD refers to the Department of Housing and Urban Development; NOAA refers to the National Oceanographic and Atmospheric Agency; ACE refers to the Army Corps of Engineers; and EPA refers to the Environmental Protection Agency.

## FEDERAL EMERGENCY MANAGEMENT AGENCY

FEMA manages five programs designed to reduce the risk to individuals and property from natural hazards while simultaneously reducing reliance on



FEMA



Federal disaster funds (FEMA, 2015). The **Hazard Mitigation Grant Program (HMGP)** provides funds to States, Territories, Indian Tribal governments, local governments, and eligible private non-profits (PNPs) following a Presidential major disaster declaration. The **Pre-Disaster Mitigation (PDM)**, **Flood Mitigation Assistance (FMA)**, **Repetitive Flood Claims (RFC)**, and **Severe Repetitive Loss Pilot (SRL)** programs may provide funds annually to States, Territories, Indian Tribal governments, and local governments. The following discussion focuses on the HMGP, PDM and FMA programs, since it is not likely that the RFC and SRL programs are applicable to funding resilient infrastructure in the nine county Bay Area.

The table below demonstrates a historical 2006-2010 distribution of the substantial funding available through these five FEMA programs.

Figure 10: HMA Funding 2006-2010

FY	HMGP*	PDM	FMA	RFC	SRL
FY10	\$23,361,517	\$100,000,000	\$40,000,000	\$10,000,000	\$70,000,000
FY09	\$359,034,202	\$90,000,000	\$35,700,000	\$10,000,000	\$80,000,000
FY08	\$1,246,236,812	\$114,000,000	\$34,000,000	\$10,000,000	\$80,000,000
FY07	\$315,730,830	\$100,000,000	\$31,000,000	\$10,000,000	\$40,000,000
FY06	\$232,227,932	\$50,000,000	\$28,000,000	\$10,000,000	\$40,000,000

\* HMGP funding amounts as of May 3, 2010. Funding amounts fluctuate based on the number and severity of declared disasters, as well as the applicable percentage of other assistance that is the basis for HMGP amounts (the current percentage has been in effect since October 2006).



## Hazard Mitigation Grant Program



**Hazard Mitigation Grant Program (HMGP)** is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (the Stafford Act), Title 42, United States Code (U.S.C.) 5170c. The key purpose of HMGP is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. HMGP is available, when authorized under a Presidential major disaster declaration, in the areas of the State requested by the Governor. The amount of HMGP funding available to the Applicant is based upon the estimated total Federal assistance to be provided by FEMA for disaster recovery under the Presidential major disaster declaration.

### Eligible Applicants and Projects

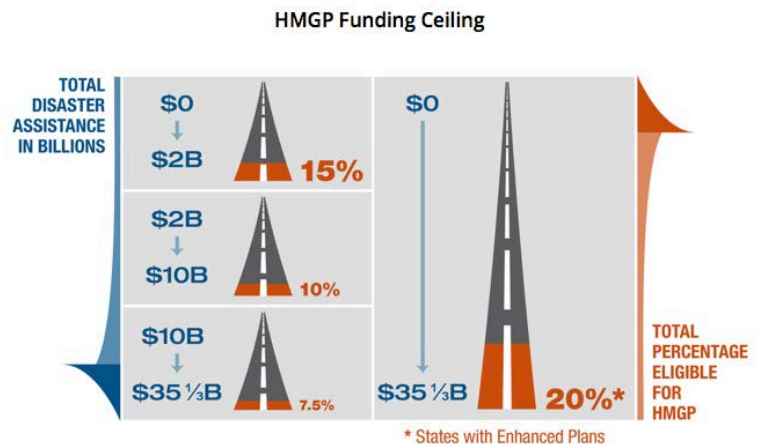
Eligible applicants are state and local governments, Indian tribes or tribal organizations, and certain nonprofit organizations. Individual homeowners and businesses may not apply directly to the program; however, a community may apply on their behalf.

HMGP funds may be used to fund projects that will reduce or eliminate the losses from future disasters. Projects must provide a long-term solution to a problem, for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood. In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. Examples of projects include, but are not limited to:

- Acquisition of real property for willing sellers and demolition or relocation of buildings to convert the property to open space use
- Retrofitting structures and facilities to minimize damages from high winds, earthquake, flood, wildfire, or other natural hazards
- Elevation of flood prone structures
- Development and initial implementation of vegetative management programs
- Minor flood control projects that do not duplicate the flood prevention activities of other Federal agencies
- Localized flood control projects, such as certain ring levees and floodwall systems, that are designed specifically to protect critical facilities
- Post-disaster building code related activities that support building code officials during the reconstruction process

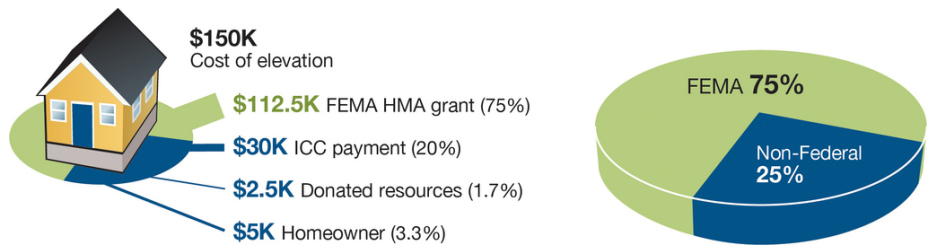
### Availability of Funding and Process

HMGP funding is allocated using a “sliding scale” formula based on a percentage of the estimated total Federal assistance under the Stafford Act, excluding administrative costs for each Presidential major disaster declaration. Depending on the size of the disaster HMGP can provide up to \$35.333 billion in assistance. HMGP funding is generally 15% of the total amount of Federal assistance provided to a State, Territory, or federally-recognized tribe following a major disaster declaration.



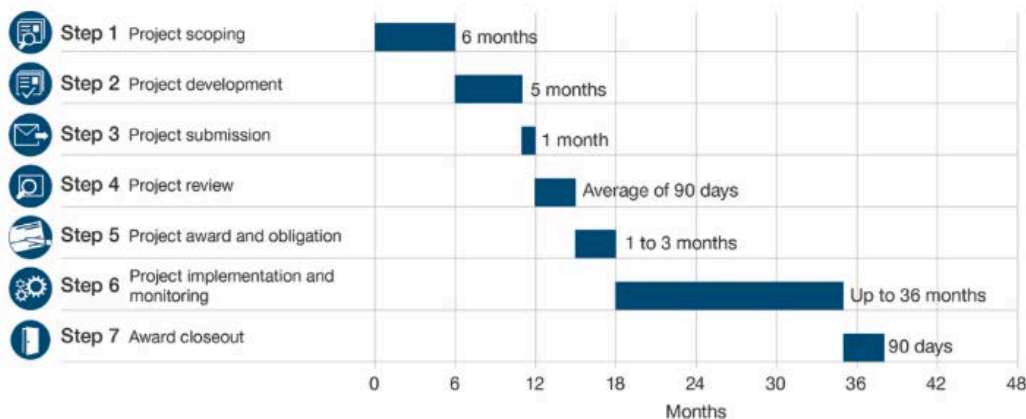
### HMGP Cost-Share Example

While FEMA provides up to 75 percent of the funds for mitigation projects, the remaining 25 percent can come from a variety of sources. A cash payment from the state, local government or in some cases directly from the individual is the most direct option. Other sources may include donated resources, such as construction labor; [Increased Cost of Compliance](#) (ICC) funds from a flood insurance policy; or loans from other government agencies, such as the Small Business Administration.



Following a disaster declaration, the State will advertise that HMGP funding is available to fund mitigation projects in the State. Those interested in applying to the HMGP should contact their local government to begin the application process. The HMGP application deadline is associated with each specific Presidential major disaster declaration date and is not part of the annual application period. After a disaster occurs the State will set a deadline for application submittal. For specific application dates please see the [HMGP page](#).

The following graphic shows the seven major HMGP steps with estimated timeline from project scoping to grant award closeout. HMGP grant recipients will have 36 months from the close of the application period to complete the projects.



### RbD Bay Area Challenge Project Considerations

Recognizing that the risk of disaster is increasing as a result of multiple factors, including the growth of population in and near high-- risk areas, aging infrastructure, and climate change, FEMA promotes climate change adaptation by incorporating sea level rise in the calculation of Benefit - Cost Analysis (BCA), encouraging floodplain and wetland conservation associated with the acquisition of properties in green open space and riparian areas, encouraging the use of building codes and standards wherever possible.

### Further Sources of Information

[FEMA Climate Change Home Page](#)

[Incorporating Sea Level Rise Hazard Mitigation Assistance \(HMA\) Benefit Cost-Analysis Frequently Asked Questions \(FAQs\)](#)

[HMGP Cost Share Guide](#)

[FY 2017 Mitigation Grant Application Cycle – Lessons learned and Best Practices for Application Development](#)

[Catalog of Federal Funding Sources for Watershed Protection](#)

## Pre-Disaster Mitigation

The **Pre-Disaster Mitigation (PDM)** program is authorized by Section 203 of the Stafford Act, 42 U.S.C. 5133. The PDM program is designed to assist in implementing a sustained pre-disaster natural hazard mitigation program to reduce overall risk from future hazard events, while also reducing reliance on Federal funding from future disasters.

### *Eligible Applicants and Projects*

Eligible applicants are state and local governments, Indian tribes or tribal organizations, and certain nonprofit organizations. Individual homeowners and businesses may not apply directly to the program; however, a community may apply on their behalf. Sub-applicants must have a FEMA approved mitigation plan as of the application deadline to apply for mitigation projects. More information on eligible applicants and projects can be found on the [FY 2017 PDM Fact Sheet](#).



The following types of projects are eligible for PDM funding:

- Non-flood hazard mitigation projects
- Flood mitigation activities except acquisition, elevation, or mitigation reconstruction
- Acquisition, elevation, and mitigation reconstruction projects
- Generators for critical facilities

### *Availability of Funding and Process*

The total amount of funds that will be distributed under the [FY 2017 PDM Grant Program will be \\$90,000,000](#). All 50 States, the District of Columbia, American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands are eligible to receive an allocation equal to the lesser of 1% of the appropriation or \$575,000, in accordance with Section 203(f)(2) of the [Stafford Act](#). Ten percent of the appropriated PDM funding, or \$10 million, will be set aside for Federally - recognized Native American Tribal applicants to receive an allocation of \$5575,000 per tribe. The balance of PDM Grant Program funds will be distributed on a competitive basis to all eligible applicants. No applicant may receive more than 15 percent, or \$15 million.

Like the HMGP program, the period of performance for the PDM Grant Program begins with the opening of the application period and ends no later than 36 months from the date that FEMA announces the status of the FY 2017 sub-applications.

Applications and sub-applications for the PDM Grant Program must be submitted via the Mitigation eGrants system on the [FEMA Grants Portal](#). The PDM application period opened on August 14, 2017. FEMA will review all grant applications that are submitted through the Electronic Grants (eGrants) system by November 14, 2017, at 3:00:00 p.m. Eastern Time.

### *RbD Bay Area Challenge Project Considerations*

FEMA prioritizes applicants that have received less than \$4million in HMGP funds over those that have received more than \$4 million. Depending on the disaster year, projects submitted by California may be assigned a low priority.



## Flood Mitigation Assistance Program

The **Flood Mitigation Assistance (FMA)** program is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended (NFIA), 42 U.S.C. 4104c, with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).



### Eligible Applicants and Projects

Eligible applicants are state and local governments, federally-recognized Indian tribes or tribal organizations, and certain nonprofit organizations. Individual homeowners and businesses may not apply directly to the program; however, a community may apply on their behalf. Generally, local communities will sponsor applications on behalf of homeowners and then submit the applications to their State. Eligible community flood mitigation project activities include the following: Infrastructure protective measures, floodwater storage and diversion, utility protective measures, storm water management, wetland restoration and creation, aquifer storage and recovery, localized flood control to protect critical facility, floodplain and stream restoration, and water and sanitary sewer system protective measures. FEMA will select eligible community flood mitigation project sub-applications based on final priority scoring criteria (see table below).

**Figure 11: FEMA Flood Mitigation Assistance Program Evaluation Criteria**

Priority	Description	Total Points
Private Partnership Cost Share	Cost share taken on by private organizations/businesses emphasizing community participation, collaboration, and investment. Points will be assigned based on percentage of private cost share invested.	150
Building Code Effectiveness Grading Schedule (BCEGS) rating	Assesses effectiveness of enforcement and adequacy of building codes with emphasis on mitigation. Classes weighted based on national class grouping ratings. Highest weight will be assigned to class 1 and descending through lower classes.	100
Community Rating System (CRS) Participation	The Community Rating System (CRS) recognizes and encourages community floodplain management activities that exceed the minimum NFIP standards. Depending upon the level of participation, flood insurance premium rates for policyholders can be reduced up to 45%. Highest weight will be assigned to class 1 and descending through lower classes.	100
Cooperating Technical Partners Program (CTP) Participation	Qualified partnership program where communities commit to collaborate in maintaining up-to-date flood hazard maps and other flood hazard information. Points are provided to CTP participating communities.	100
International Building Codes (IBC) Adopted	IBC adoption epitomizes community commitment to responsible building regulations. Points are provided to IBC participating communities.	50
<b>Total Points Available</b>		<b>500*</b>

Projects submitted for consideration for FMA funding must be consistent with the goals and objectives identified in the current, FEMA-approved State or Tribal (Standard or Enhanced) hazard mitigation plan along with the local or tribal hazard mitigation plan for the jurisdiction in which the activity is located. The FMA program is a competitive grant program and FEMA chooses the applications to be funded based on the Applicant's ranking of the project and the eligibility and cost-effectiveness of the project.

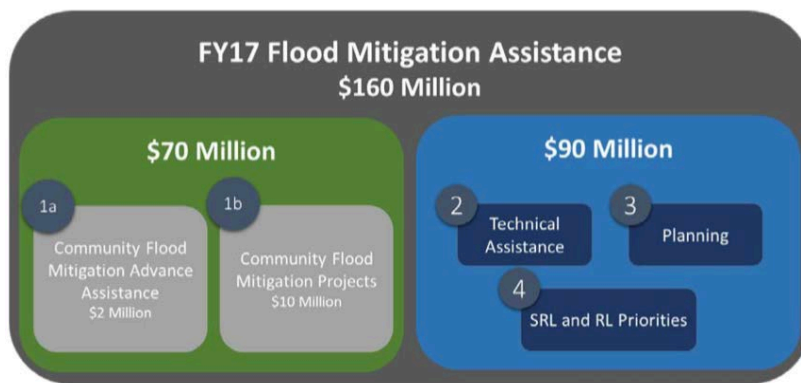
### Availability of Funding and Process

Funds are only available to support communities participating in the National Flood Insurance Program (NFIP). The FY17 FMA application cycle will be implemented as it has been in recent application cycles, but will prioritize \$70 million of the \$160 million available under FMA for community flood mitigation projects as Priority 1. This set aside will fund projects for proven techniques that integrate cost effective natural floodplain restoration

solutions and improvements to NFIP-insured properties that benefit communities with high participation and favorable standing in the NFIP. Up to \$100,000 per applicant in Advance Assistance funding will be provided to develop mitigation strategies and obtain data to prioritize, select, and develop viable community flood mitigation projects. This design work will facilitate viable projects for future grant applications.

For Community Flood Mitigation Projects, FEMA will select the highest ranked eligible community flood mitigation sub-application from each Applicant up to \$10,000,000 federal share based on final priority scoring criteria (see table above) and that benefit communities with high participation and favorable standing in the NFIP. FMA funding requires cost sharing and federal funding is available for up to 75 percent of the eligible activity costs.

FEMA announced through a [Notice of Funding Opportunity \(NOFO\)](#) that the Fiscal Year (FY) 2017 application cycle on July 11, 2017. The application period is August 14 through November 14, 2017. The [FY 2017 FMA Fact Sheet](#) provides an overview of the agency's priorities for this year.



Sub-applicants submit mitigation planning and project sub-applications to their State during the open application cycle. After reviewing project and planning applications to determine if they meet the program's requirements, the States, territories, or federally-recognized tribal governments prioritize and forward the applications to their FEMA Regional Office. Planning sub-applications submitted for consideration for FMA funding must only be used to support the

flood hazard portion of State, tribal, or local mitigation plans to meet the requirements outlined in 44 CFR Part 201 Mitigation Planning. FEMA awards FMA funds to State, U.S. Territory, and Federally-recognized tribal Applicants, who in-turn provide sub-awards to local government sub-applicants.

## DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

### National Disaster Resilience Competition

The Department of Housing and Urban development oversees the [National Disaster Resilience](#) competition that awards funds for disaster recovery and long-term community resilience. This program allocates Community Development Block Grant National Resilient Disaster Recovery (CDBG-NDR) grant funds through a two-phase competition process. The goals of the program are to apply science-based and forward-looking risk analysis to address recovery, resilience, and revitalization needs.

Eligible applicants are state and local governments, Indian tribes or tribal organizations, and certain nonprofit organizations. Individual homeowners and businesses may not apply directly to the program; however, a community may apply on their behalf. The most recent cycle awarded \$1 billion in funding to various states; the State of California was awarded over \$70 million in funds.

### Community Development Block Grants

The objective of the [Community Development Block Grant](#) program is to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities,

principally for persons of low and moderate income. This program provides relatively flexible funding for community improvement that has a recent history of focus on resilience.

Eligible applicants are state and local governments, Indian tribes or tribal organizations, and certain nonprofit organizations. Individual homeowners and businesses may not apply directly to the program; however, a community may apply on their behalf. The funding level for 2017 is \$3 billion and this program does not require a local government match. Although these funds are federal funds, they can be used as the local match for other federal programs requiring a local match.

## DEPARTMENT OF HOMELAND SECURITY: REGIONAL RESILIENCY ASSESSMENT PROGRAM

The Department of Homeland Security's [Regional Resiliency Assessment Program](#) provides a cooperative assessment of specific critical infrastructure within a designated geographic area and a regional analysis of the surrounding infrastructure to addresses a range of infrastructure resilience issues that could have regionally and nationally significant consequences. The goal of the program is to generate a greater understanding and action among public and private sector agencies to improve resilience of critical infrastructure. More information is available on the [RRAP Fact Sheet](#).

## NATIONAL OCEANOGRAPHIC AND ATMOSPHERIC AGENCY COASTAL RESILIENCE GRANTS

The [Coastal Resilience Grants](#) is a competitive program to help coastal communities protect themselves from coastal storms. Toward that end, this program funds projects that build resilience, including activities that protect life and property, safeguard people and infrastructure, strengthen the economy, or conserve and restore coastal and marine resources. Recipients include State and local governments and non-profits. In 2017, NOAA awarded \$13.8 million in funding, which was matched by \$8.3 million from local agencies. This program is a combination of two existing grant programs: the Coastal Ecosystem Resiliency Grants Program administered by NOAA Fisheries and the Regional Coastal Resilience Grants Program.

### Office for Coastal Management Grants and Cooperative Agreements

The mission of the Office for Coastal Management is to support the environmental, social, and economic well-being of the coast by linking people, information, and technology. The Office's vision is coastal communities becoming more resilient through informed decision-making. This program has a funding level of approximately \$8 million in 2017. Funds received through this program do not generally require a match. Additional details about this grant program [can be found here](#).

### National Sea Grant College Program

The [National Sea Grant College Program](#) mission is to enhance the practical use and conservation of coastal, marine and Great Lakes resources in order to create a sustainable economy and environment. Sea Grant accomplishes this mission through research, education, outreach, and technology transfer and works as a partnership between the nation's universities and the National Oceanic and Atmospheric Administration. There are 33 Sea Grant Programs in every coastal and Great Lakes state, Puerto Rico, Lake Champlain, and Guam. Sea Grant serves as a bridge between government, academia, industry, scientists, and private citizens to promote the sustainable use of Great Lakes and ocean waters for long-term economic growth. Funding opportunities are available through national- and state-level competitions.

## ARMY CORPS OF ENGINEERS

Congressional authorities for the Army Corps of Engineers (“ACE” or “Corps”) come through periodic approval of omnibus Water Resources and Development Acts, most recently the Water Resources Reform and Development Act of 2014. Authority to support civil resilient infrastructure projects falls under three general types of assistance to state and local agencies and tribes:

- Standard ACE projects
- Continuing Authorities Program
- Planning studies

### Standard ACE Projects

Most ACE projects require project-specific authorization and appropriation of funds by Congress. Projects are initiated with a General Investigation Study. Beyond a small initial expenditure of Corps resources, all phases have cost-sharing requirements with a non-federal sponsor (typically a city, county, or tribe). Competition for funding is high and approval depends in part on the benefit-cost ratio of the project.

A candidate for the best example of a resilient infrastructure project for rising bay levels in San Francisco Bay is the [Hamilton Wetlands Restoration](#) project in Novato. The project was a combination of a horizontal levy and wetlands restoration that cost about \$350 million. Of this total, approximately 50% was funded by the Federal government through the ACE. There were two prime categories for this funding through the Corps: Base Reuse and Closing (BRAC) and navigational related programs of the Corps. The key to the navigation side was the use of sediment for the Hamilton Field project from dredging required by the Port of Oakland.

At present, between the fact that BRAC is not likely to be applicable to new resilient infrastructure projects and the current negative attitude of Congress towards climate change infrastructure, we do not believe that the funding package through the Corps for Hamilton Field is replicable. Nevertheless, to the extent that design teams come up with resilient infrastructure projects that benefit navigation issues for a Bay Area seaport, we believe that large scale Corps funding remains a possibility, depending on Congressional support.

### Continuing Authorities Program

The purpose of the [Continuing Authorities Program \(CAP\)](#) is to plan, design, and construct water resources projects of limited scope and complexity, and not to address situations requiring large or complex solutions. However, a discrete phase that is part of a larger potential design solution could be a candidate for funding. An example is a current CAP study for the San Francisco shoreline focused on immediate flood risks at several specific points, while the Port is considering a more complex and extensive sea wall replacement solution.

The major advantage of CAP is that it is not dependent on project- specific Congressional appropriations and can be authorized solely by Corps staff. CAP has nine authorities. The most applicable authorities for resilient infrastructure projects include:

- Storm damage reduction (Sec. 103, River and Harbor Act of 1962, as amended)
- Beneficial use of dredge material (Sec. 204, Water Resources Development Act of 1992, as amended)
- Flood damage reduction (Sec. 205, Flood Control Act of 1948, as amended)
- Aquatic ecosystem restoration (Sec. 206, Water Resources Development Act of 1996, as amended)

CAP program grants for the above authorities are capped at \$10 million. With approval of a relatively simple and straightforward request from an eligible non-federal project sponsor, ACE will fully fund an initial feasibility

phase of up to \$100,000. Remaining feasibility costs are shared 50/50 with the project sponsor. Implementation phase costs including final design and construction are typically shared 65/35 (ACE/sponsor).

## **Planning Studies**

The Corps also conducts planning studies using in-house staff. Two programs are 1) Flood Plain Management Services Program and 2) Planning Assistance to States.

Studies typically cost up to \$100,000. Studies are designed to address areawide water resource issues and are not meant to support delivery of specific projects. Nonetheless, an ACE planning study could support RbD projects if additional upfront analysis is required of the general area in which the project may be located. For more information, contact Craig Conner, PAS – FRM Program Manager, US Army Corps of Engineers, San Francisco District, at 415-503-6903 or [craig.s.conner@usace.army.mil](mailto:craig.s.conner@usace.army.mil).

## **ENVIRONMENTAL PROTECTION AGENCY**

The Environmental Protection Agency (EPA) has a range of funding resources that could support development of resilient infrastructure around the Bay. A specific resource, the San Francisco Bay Water Quality Improvement Fund is described below, followed by a general EPA resource for identifying other funding sources.

### **San Francisco Bay Water Quality Improvement Fund**

The EPA manages a competitive grant program to support projects to protect and restore San Francisco Bay. This grant program, known as the [San Francisco Bay Water Quality Improvement Fund](#) (SFBWQIF) began in 2008. Since then the SFBWQIF has invested over \$49 million in 40 grant awards. These projects include over 80 partners who are contributing an additional \$157 million. Emphasis is on technically sound projects to restore wetlands and watersheds, and to reduce polluted runoff. Funding criteria include matching funds at a 1:1 ratio (50 percent of total funding). The SFBWQIF budget is determined by congressional appropriation each year. Available funding has been about \$5 million per year. Awards are highly competitive with over \$35 million in grant applications in FY14.

### **Water Infrastructure and Resiliency Finance Center**

The [Water Finance Center](#) provides financing information to help local decision makers make informed decisions for drinking water, wastewater, and storm water infrastructure to protect human health and the environment. An important focus of the Water Infrastructure and Resiliency Finance Center is encouraging effective use of federal, state, and local funds. The Center 1) builds on the successful Clean Water State Revolving Fund and Drinking Water State Revolving Fund and funding from federal partners and 2) supports innovative financing and coordinated funding of projects to leverage these federal dollars.

The Center provides links to EPA, U.S. Department of Agriculture (USDA), and U.S. Department of Housing and Urban Development (HUD) that are the main sources of federal funding for drinking water, wastewater, and storm water infrastructure.

### **Other Potential EPA Funding Programs**

EPA also can provide grant funding through [Water Pollution Control \(Section 106\) Grants](#), [California Nonpoint Source \(Section 319\) Grants](#), State Wetlands Planning grants and Urban Water grants. These programs have a variety of restrictions but can help fund predevelopment costs for RbD projects. We do not include the EPA's state revolving fund (SRF) program for water and wastewater utilities because this program is (1) for capital projects and (2) is a below market rate loan program that requires a separate repayment source.



## CHAPTER 6: ALTERNATIVE REVENUE SOURCES FOR PROJECT FINANCE

This chapter describes the three alternative funding sources for resilient infrastructure in the Bay Area. These sources are “alternative” because they have not been used, or in the case of privately philanthropy, infrequently used, to fund infrastructure in California. Their potential as a funding source is directly related to the unique solutions likely to be associated with a resilient Bay shoreline. The table below summarizes the evaluation each source based on the same criteria used in Chapter 3 for traditional local and regional public funding sources.

**Figure 12: Alternative Revenue Sources**

Revenue Source	Applicability to Resilient Infrastructure Systems	Security for Debt Financing	Revenue Potential	Community Engagement Required for Authorization
Land Sale or Lease on Reclaimed Lands	NARROW: Few reclaimed land opportunities	No	MODERATE: Depends on location and scale of development	EXTENSIVE: Shoreline development attracts significant public opposition
Avoided Cost Flood Insurance Premiums	MODEEST: RI that reduces risk to limited class of policyholders	Probably; if sufficient number of policyholders participate	LIMITED: But captures value from direct benefits of RI	EXTENSIVE: Requires engagement of existing policyholders and formation of new insurance enterprise
Property and Casualty Insurance Surcharge	BROAD: RI that reduces risks to broad class of policyholders		SIGNIFICANT: Depending on number of policyholders	EXTENSIVE: Requires 2/3 approval of state legislature
Private Philanthropy	NARROW: Funding must "add value" in areas that public funding does not address	No; though small loans on favorable terms are available from impact investors	LIMITED	LIMITED

Note: "RI" is "resilient infrastructure".

### LAND SALES OR LEASES ON RECLAIMED LANDS

The impetus to create the Bay Conservation and Development Commission (BCDC) in 1965 came from citizen activists appalled at the extensive, ongoing filling of San Francisco Bay and other environmental impacts. For over fifty years BCDC has regulated development along the shoreline, vastly reduced the amount of fill occurring, supported the restoration of natural habitats, and greatly improved public access to the Bay. Given this history, the alternative funding source described here may be considered improbable. However, at this point in the advance planning process for adaption to sea level rise in the Bay, it makes sense to evaluate all possible options.

Potentially a solution for urbanized locations along the Bay shoreline, a multi-purpose levee (MPL) could provide not only flood control benefits but also a range of public amenities and private development opportunities.<sup>7</sup> The purpose of including private development is to create land value that can be captured through land sales or leases. This value capture technique provides funding for the underlying infrastructure that makes the development possible. This technique is often used by transit agencies on publicly-owned land around transit stations, and has been used for flood control in cities around the world.

This value capture technique provides funding for the underlying infrastructure that makes the development possible.

MPLs generate challenges for project finance. The actual sale or lease of property would not likely take place until the infrastructure project is complete and private development could begin construction. The long lead

<sup>7</sup> New York City Economic Development Corporation and Arcadis, *Southern Manhattan Coastal Protection Study: Evaluating the Possibility of a Multi-Purpose Levee*, May 2014, p. 6.



time for the resilient infrastructure projects would make private construction financing infeasible and require public support. Private funding would provide “take out” financing as opposed to construction financing. Under one option, private funding would be occurring as a lump sum at time of development, enabling reimbursement of a portion of construction costs or partial retirement of construction debt. Alternatively, developable property could be leased to developers or long-term tenants, and lease revenues used to refinance construction debt and issue long-term debt.

An MPL could be the type of multi-benefit strategy associated with resilient infrastructure system:

- Accommodate a range of housing needs to address the acute shortage of housing in the Bay Area.
- Assist in reducing risks for existing developed lands on the inland side that otherwise may have difficulty funding the project.
- Incorporate public amenities that otherwise would not be available.
- Provide natural habitat on the Bay side for additional benefits.

Nonetheless, regulatory requirements and environmental opposition could make this type of resilient infrastructure solution difficult to achieve. The question at this stage is whether there are sites along the Bay where this type of solution would at least be economically feasible and provide significant benefits.

## COMMUNITY CHOICE FLOOD RISK FINANCING

Over the last decade, California participants in the National Flood Insurance Program (NFIP) have paid about four dollars in premium for every dollar in benefit they have received. As a result, some policy makers are now discussing replacing NFIP in California with a state controlled program. The model being considered is similar to the Community Choice Aggregation (CCA) power authorities used by communities to bundle customers and negotiate the purchase of a higher share of renewable power than otherwise provided through the local utility.

### Description

To receive a federally-regulated or insured mortgage, building owners in high risk flood areas are required to purchase flood insurance. The NFIP, administered by the Federal Emergency Management Agency (FEMA) provides flood insurance to many properties because of the lack of affordable private alternatives. Community Choice Flood Risk Financing (CCFRF) would provide residents and businesses with an alternative to NFIP flood insurance.

The source of potential funding for resilient infrastructure is related to NFIP rates that are set by Congress and do not follow generally accepted actuarial procedures. In some areas property owners may pay less than the true actuarial rate while in others that may pay more. The Bay Area falls into the latter category, where flood risks are lower and flood depths are relatively shallow.

CCFRF would seek to attract existing NFIP policy holders with potentially slightly lower premiums, but still high enough to adequately insure risks. The difference between the premium and the actuarial cost of the risk would be invested in resilient infrastructure to further mitigate the flood risk.

A Community Services District (or CFD, see Chapter 3), possibly with minor amendments to the enabling statute, could be used to fund the entire program including flood insurance premiums. The CFD would levy special taxes on all property within the CFD subject to flooding. The entire effort could be governed by the local jurisdiction, or by a new Community Resilience Authority to broaden the capabilities of the risk reduction program (see Appendix A).

The source of potential funding for resilient infrastructure is related to NFIP rates that do not follow generally accepted actuarial procedures

The proceeds of the taxes would be used for the following purposes:

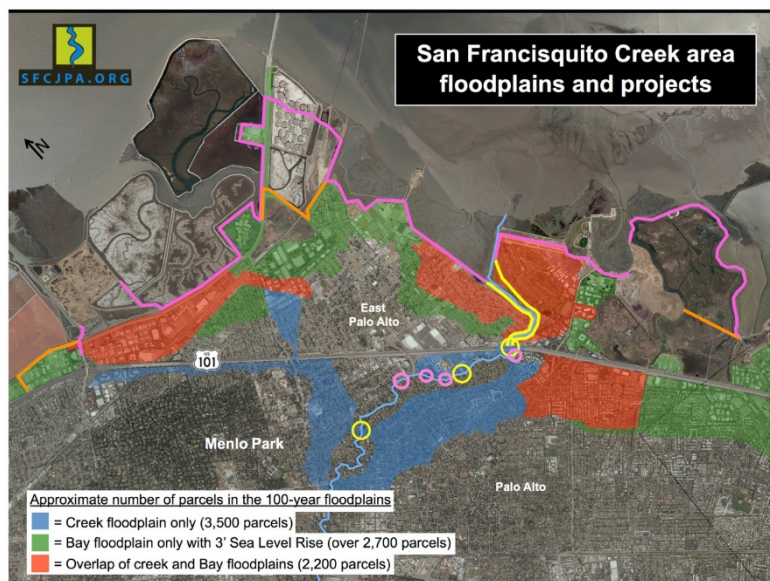
1. Purchase aggregate flood insurance for all properties within the CFD.
2. Pay for maintenance and ongoing improvements to all existing flood control infrastructure within the CFD, or benefitting property within the CFD.
3. Fund on either a pay as you go or debt basis new infrastructure projects that reduce the flood hazard for properties within the CFD.

Formation of the CFD would require a two-thirds approval of registered voters with the district. Alternatively, if there are fewer than 12 registered voters in a potential district, it can be done solely through a landowner consent process. Existing NFIP policy holders would likely support formation to the extent that their insurance costs would decline, and their risks would be reduced. The CFD could be formed across multiple jurisdictions. The challenge would be to draw the CFD boundaries to attract as many other supporters as possible while still achieving the two-thirds vote required to levy a special tax. Property not within the CFD initially could be mandated to annex into the CFD when a parcel owner seeks development entitlements from the jurisdiction. The entire effort could be governed by the local jurisdiction, a joint powers authority possibly through a Geological Hazard Abatement District, or by a separate entity such as a Community Infrastructure Resilience Authority (see Appendix B).

## Case Study

The San Francisquito Creek JPA (SFJPA) is a Joint Powers Authority between the cities of Palo Alto, East Palo Alto, Menlo Park, and the counties of San Mateo and Santa Clara. The SFJPA is currently working to upgrade the flood control infrastructure along the San Francisquito Creek (see map, below). When the activities are completed the system will reduce the flood risk for residents in flood prone areas within the JPA.

**Figure 13: San Francisquito Creek Flood Plains and Flood Control Projects**



There are over 5,500 NFIP policies insuring \$1.4 billion in assets within the SFJPA. Each year these property owners pay \$6.3 million in NFIP premiums (see table, below). Through the NFIP, the rate paid is more than \$4.43 per thousand of total insured value (TIV).

If the JPA instead offered property owners a premium of \$4.00 per TIV, property owners would save an average of \$110 per year. Assuming the JPA could market this risk to commercial carriers for \$3.30 per thousand TIV, based on the true actuarial rate, the JPA could generate about \$1.0 million a year in revenue which could be used to improve the levees.

Figure 14: San Francisco Creek NFIP Policies In Force

	NFIP Policies (number)	Total Insured Value	Annual NFIP Premiums	Average Policy Cost	Average Policy Cost per \$1,000 Insured Value
East Palo Alto City	948	\$225,605,800	\$1,139,020	\$1,201	\$5.05
Menlo Park City	890	\$242,122,200	\$1,071,228	\$1,204	\$4.42
Palo Alto City	3,697	\$964,141,200	\$4,126,198	\$1,116	\$4.28
Total	5,535	\$1,431,869,200	\$6,336,446	\$1,145	\$4.43

## STATE-MANDATED INSURANCE SURCHARGE

The Regional Policy Association, an independent, not-for-profit civic organization serving the New York metropolitan area, recently published [a report](#) about a model for governing and funding coastal adaptation. The model includes an Adaption Trust Fund funded by a state-mandated insurance surcharge on all property and casualty policy holders within Connecticut, New York, and New Jersey. In New York the surcharge would generate between \$900 million and \$2.7 billion in proceeds, assuming a rate of 0.5 percent to 1.5 percent of premiums collected over a 10-year horizon. Background analysis for the report evaluated portfolio allocation strategies with a mix of grants and loan products to determine how the fund could become self-sustaining after the surcharge sunsets in 10 years.

Further investigation would be needed, possibly with assistance from the California Department of Insurance, to estimate the revenue potential of a similar surcharge on Bay Area policyholders. The surcharge could be expanded beyond property and casualty lines. Given the passage of Proposition 26 in 2010 (the “Supermajority Vote to Pass New Taxes and Fees Act”), it is likely that imposition of a surcharge would require a two-thirds vote of the state legislature. A governance structure would be required to manage surcharge revenues and determine how to allocate funding for resilient infrastructure projects. See the appendix for one approach, a Community Infrastructure Resilience Authority.

## PRIVATE PHILANTHROPY

Private Philanthropy includes funding from a wide range of potential funders, from large national foundations to local community and family foundations and even individuals. Philanthropy often sees a role funding projects where there is significant government funding. However, philanthropy wants to “add value” to public funds to accomplish something that would not otherwise have been possible, rather than simply replacing or augmenting public funding.

In the predevelopment stage, there may be opportunities to secure grant funds that would support innovative designs and approaches if the project makes the case that design support from philanthropy will make it possible to accomplish something that would not be possible without the nongovernment funding. To secure this kind of philanthropic support, predevelopment work will also have to make the case that the project will be able to attract significant public funding based on the design work accomplished.

Impact investors may be willing to fund predevelopment costs if they are secured by a pledge from a local government entity to reimburse the impact investor with interest when and if a long-term revenue source is authorized to fund a resilient infrastructure project.

In the context of these resilient infrastructure projects, the following are examples of the types of elements that might be appealing in grant applications to private philanthropy:

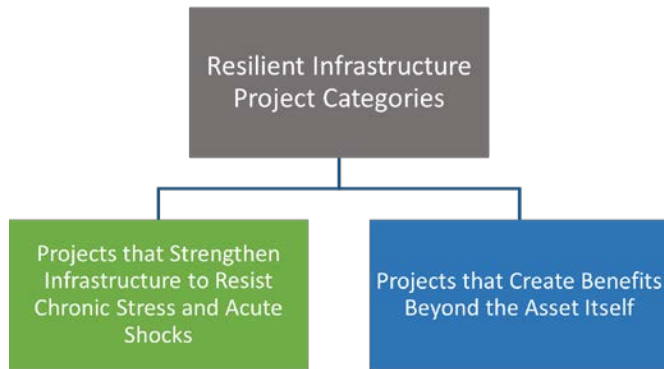
- **Community Engagement** – Philanthropy may provide grants to ensure that marginalized communities have a voice in the planning stage.
- **Multiple Benefit Projects** – Philanthropy has been interested in the past several years in the concept of developing prototypes of multi-benefit projects where both human communities and natural communities benefit from the infrastructure. For example, using wetlands to mitigate storm surges. Multiple benefit could also mean an infrastructure project that provides a community park or opportunities for recreation. Philanthropy is interested in supporting park-poor communities.
- **Community Equity** – Philanthropy frequently has a focus on addressing needs that government programs have not served effectively, including marginalized communities. Projects that will reduce the vulnerability and increase resilience of low income or marginalized communities in the face of sea level rise will be appealing to philanthropy. Conceivably there might be ways to engage communities in implementation: for example, a job training program connected to the infrastructure project.
- **Pilots That Can Be Replicated** – Philanthropy often tries to position grants to seed new innovations and demonstrate new approaches. Projects that can credibly demonstrate this potential are appealing. Government funds often cannot take risks, and this is where philanthropy can play a role. Philanthropy does have a focus on helping communities adapt to climate change and there are likely to be opportunities for grants to design and implement innovative projects and approaches that can be demonstrations for other communities.

## APPENDIX A: STATE AND FEDERAL FUNDING STRATEGIES

When it comes to large-scale state and federal resources, resilient infrastructure project proposals generally fall into one of two categories.

**Category 1:** Projects that strengthen infrastructure to resist chronic stresses and acute shocks. Examples include fortified roads or electric power grids that are made of more robust materials or built in ways that better

withstand a hazard, like an earthquake or storm surge. These types of projects are generally eligible for the same types of funds as conventional infrastructure in the same sector. A resilient road and a regular road both can be designed, planned, and built using Department of Transportation (DOT) dollars. Often the biggest challenge for these projects is funding the additional costs associated with greater resiliency.



**Category 2:** A broader category that includes infrastructure projects that create benefits beyond an asset itself, such as a road that also acts as a

berm to protect a larger area and population behind it. In this case, it is more likely that coastal protection funding sources will cover a greater proportion of the project than transportation agencies, whose rules would make it difficult to justify additional costs.

Knowing which of these two approaches you want to take in seeking state and federal funds is essential to writing successful funding applications. These two different kinds of resilience projects involve very different planning and predevelopment processes, and as a result are suited to different funding sources.

State and federal grants can be excellent early-stage sources of support for large-scale resilient infrastructure projects, but they are not well suited to smaller or incremental solutions. Applying for these kinds of funds is hard. Applications can take an extraordinary amount of time and they often require the dedicated expertise of a government grant writer. The process is generally not worth the effort below a certain grant size. For predevelopment grants that cover planning activities, feasibility studies, and other highly technical prerequisite work for the next stage of design, we recommend that RbD design teams and their project sponsors consider applying for funds in the \$250,000 to \$600,000 range. For project implementation, federal funds are generally best suited for larger-scale multi-year activities in the \$1 million+ range.

There are resources available for dedicated activities (e.g. water monitoring) within a large project. The funds available in these narrow programs vary significantly from under \$50,000 for environmental justice grants up to \$300,000 for brownfields remediation or site clean-up. These grants can be important to a project's success, but they are generally not the best first stop for implementation resources.

There is no obvious single source of funds for RbD projects. Design teams should consider multiple funding sources and ensure that designs provide a strong and clear rationale for pursuing specific types of funds (e.g. water, energy, transportation). Emphasizing multiple communities of benefit and the resilience components of a project can be a major strategic advantage in these applications. However, design teams must be able to quantify and generate relevant data on basic project cost, performance, and benefits to match most applications requirements.



### *Do's & Don'ts for Seeking State & Federal Funding*

- Don't pay attention to new federal funding announcements or proposals in the news. These are not a good indicator of what funds will be available or when. Focus on existing programs with dedicated resources and clear application requirements already in place.
- Look carefully at any federal program for resources available in the relevant fiscal year (FY18 and FY19 are most appropriate for funding applications immediately after the Bay Area RbD process concludes).
- Find and work with a local grant writing expert with grants management experience. Recognize that expertise in writing grants for one type of agency might not be the same as for others, like DOT. Pick the expertise that best matches your anticipated resource needs. Know that you will have to spend money to get (more) money.
- To monitor announcements and calls for applications, sign-up at [grants.gov](https://www.grants.gov), for the federal government, and the "[Funding Wizard](#)" for the State of California.
- Consider how your project can be divided into components that maximize your likelihood of attracting funding. For example, if a site includes a new road/berm and recreational space, consider if/how these pieces could be separated and sequenced so that separate grant applications could be submitted for each. Alternatively, consider how a project could be phased to attract different types of funds along the way.
- Pay attention to sequencing. Consider what activities and project components are essential or prerequisite to others. Prioritize funding applications for the earliest components of the project first. You do not want to receive money for a project component that requires unfunded prerequisite activity.
- Do not confuse a benefit with a revenue.
- A resilience service is not necessarily an infrastructure project. Look carefully at eligibility requirements for every funding source.
- Don't forget about resources for long-term O&M.
- Aim at the right scale. It is hard to get small money from big sources.
- Do not assume that smaller funding amounts mean less paperwork. Most federal and state grant applications are onerous. Timelines for receiving funds can also be highly uncertain. Having a larger funding strategy that recognizes this can be the difference between successfully securing resources instead of ending up with "swiss cheese" and big funding gaps. It can be helpful to partner with a local agency or NGO that utilizes federally required generally accepted accounting standards.
- Good data are essential for successful funding applications at any scale. Wherever possible, consider tapping local technical and academic institutions to support data collection, feasibility studies, detailed scenario analyses, etc. Even if these partnerships are on a pro-bono basis that can be a great source of leverage in funding applications to show local support and serve as sources of matching funds/resources.
- Many of the grant and loan programs are dependent on a budget appropriation that may not be predictable from year to year, so check with the agency involved to determine if funding will be available. Even if the deadline has passed for a grant cycle, future funding cycles are possible.
- Elected officials and nongovernmental organizations affiliated with your agency (e.g. League of Cities), can help identify funding sources, assist with introductions to agencies, and provide important support for your project.



## APPENDIX B: COMMUNITY INFRASTRUCTURE RESILIENCE AUTHORITY

The concept of a Community Infrastructure Resilience Authority is a combined premium and fee based approach that coordinates implementation of actions to make essential Bay Area infrastructure networks more resilient. Revenue producing elements of an IRA would include flood insurance premiums and fees for accrual of essential infrastructure asset retirement obligations (ARO).

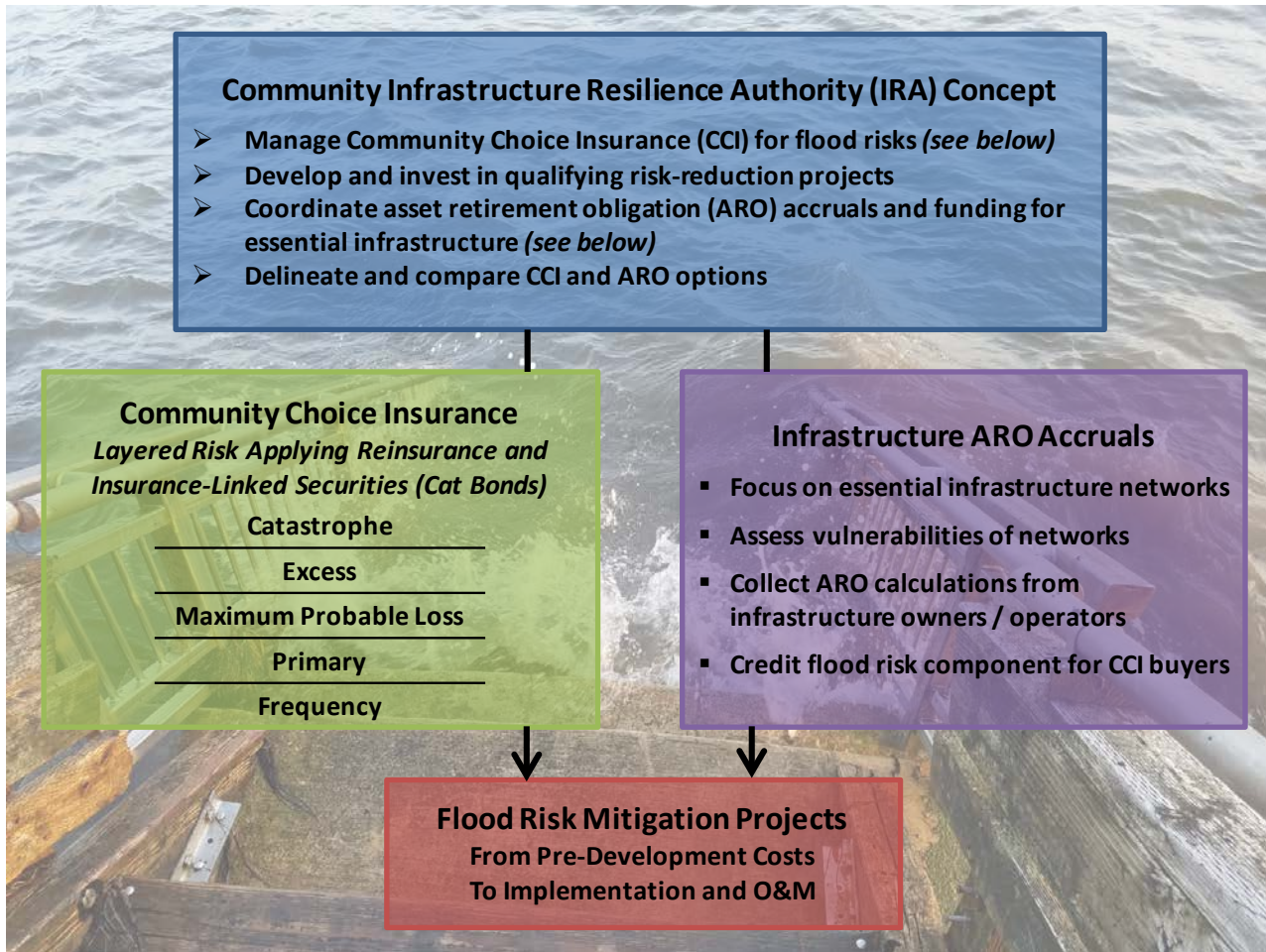
Community Choice Insurance (CCI), as part of a Community IRA, offers the potential to apply flood insurance premiums to a tiered risk transfer program that can satisfy requirements for insurance and invest in flood risk reduction projects. New accounting requirements for public AROs create the opportunity to introduce fiscally responsible ARO fees, while coordinating similar fees related to essential private, regulated infrastructure that is commingled with or connected to essential public infrastructure.

In effect, an IRA offers the potential to delineate an array of choices for flood insurance buyers and users of essential infrastructure, such as water, wastewater, energy, transportation, and communications. Subject to comparisons of specific CCI and ARO choices, credits might be offered to CCI buyers for the flood risk components of applicable AROs, coordinated by the IRA. The fees and premiums derived from the choices would be used to identify and implement the most effective investments in resilient infrastructure networks and flood risk reduction.

Implementation of a Community IRA and CCI in collaboration with a regional governance structure could be supported by experts in risk financing, asset retirement obligations, flood insurance, reinsurance, and catastrophe bonds.

A schematic diagram of a Community IRA is on the following page.

Figure 15: Community Infrastructure Resilience Authority



#### Why Consider a Community IRA?

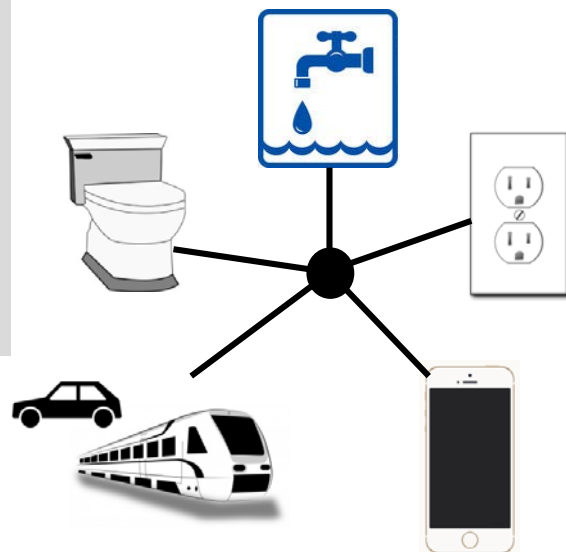
- ✓ Regional: Bay Area **control & coordination**
- ✓ Relatable: CCI funding **based on risk**
- ✓ Scalable: potentially **significant funds** for risk-mitigation investments and long-term solutions
- ✓ Attractive: potentially **enhanced solutions** for property owners needing flood insurance
- ✓ Defensible: fiscally **responsible** fees for AROs
- ✓ Flexible: **choices** among CCI and ARO **options**

#### Phase-In with Incentives

CCI offers potential to commence funding based on savings for current buyers and enhancements to attract new buyers. As essential infrastructure networks are evaluated and ARO calculations made, a range of economic choices can be developed for comparison, which may further drive CCI adoption.

*Environmental Risk & Financial Solutions (ER&FS) advises clients regarding risk-financing alternatives for environmental liabilities and AROs.*

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