
Regional Resilience Initiative



Action Plan

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Introduction

This paper consolidates the recommended actions identified through ABAG's Regional Resilience Initiative process and explored in detail in our Regional Decision-Making, Housing, Infrastructure, and Business and Economy Policy Papers into one Action Plan. Organized by those four topic areas, this paper categorizes actions, sets priorities and identifies initial implementation tasks.

In general, actions associated with the Governance Policy Paper serve as a platform to support and facilitate topic-specific actions. We recommend regional policy makers begin implementing many of the decision-making recommendations in the near-term, while simultaneously pursuing easily achievable strategies from the other categories. Many of the more complex recommendations will require coordinated regional policy before being enacted. Implementing the decision-making recommended actions will help with more even implementation across the region, increasing resilience as a whole.

Implementation Level

In this paper, each action has been identified by the level at which it can be initiated and implemented – regional, local, or both. Many actions will need to be developed and initiated through a regional effort, led by a regional body such as ABAG, MTC, or the JPC. For certain actions, this regional work will then spur community-specific actions at the local level with policy, assistance, or information-sharing. The focus of this work is on regional-level initiatives, therefore very few actions are recommended for local initiation prior to regional resolution. Planning and technical guidance for those local actions will be available from the region.

Action Categories

Recommended actions are also categorized by type based on thematic similarity. The categories of actions are as follows:

Facilitation: These types of actions create forums and frameworks to facilitate action, but do not

necessarily generate a concrete resilience action. They depend upon enabling participants to discover, communicate, and collaborate to implement concrete actions. These actions also help to build relationships, which is crucial to building resilience.

Education/Information: Education and Information actions actively seek to gather and communicate new information to assist stakeholders and encourage voluntary actions to plan for recovery or to increase resilience.

Evaluation: In many cases we may not have a clear picture on what the status or effectiveness of existing programs, policies, or resources. Evaluation tasks help to better understand our current level of resilience and set a baseline against which to track future work.

Policy Development: This category seeks to develop policy which supports resiliency capacity building and that can be adopted at the regional level or serve as a model for adoption at the local level. The goal is to provide tools that can be easily utilized by jurisdictions as well as establish consistent baseline policy for the entire Bay Area.

Further Study/Research: Many of the recommended actions require additional understanding or technical research on best practices or development of tools before specific actions should be implemented. Actions in this category warrant additional resources for study.

Program and Operation: These actions require a program with stakeholder support, resources, public involvement, and a defined outcome. Many of these types of actions will require local-level programs, with the region providing assistance and coordination.

Timeframe

Each recommended action is assigned a general timeframe for implementation. The reasoning behind the timeframes is below:

Short-Term: These are items that can be easily accomplished in the near-term with few additional resources or research. Many of these actions require organizational changes or slightly changed or expanded scopes of work rather than entirely new scopes of work. These changes could be completed within 1-5 years.

Medium-Term: Actions in this category require a bit more effort to implement. They may require some level of resources, additional research, or depend on another task or action to be accomplished before they are feasible. They may require setting up a new program or operation, or staff to plan for implementation. These actions could be completed within 5-10 years.

Long-Term: This category encompasses the most complex actions which may require substantial resources, research, or preparatory work. They may require broad coordination or change of political will that may take years to accomplish. These actions may be subdivided into phases to make them more achievable. Actions in this category may take up to 20 years to complete.

How to Use This Document

Each action is summarized in a quick overview table, enabling the reader to easily see the timeframe, categories, and level of implementation. This is followed by a text summary of the meaning of the action and initial implementation tasks. This document also contains two larger tables – a summary table at the beginning of the document showing all of the recommended actions at-a-glance (see below) and an initial implementation timeline following. This “timeline” helps to organize the actions to prepare for the development of a detailed implementation plan.

Recommended Actions Summary

Recommended Action	Level of Implementation	Short-term	Medium-term	Long-term
Decision-Making				
G-1: Use existing intergovernmental committees to convene jurisdictions and facilitate communication around disaster recovery collaboration	Regional	√		
G-2: Examine the feasibility of a regional disaster recovery framework	Regional		√	
G-3: Integrate resilience policy into current plans and practices	Regional, local			√
G-4: Lead reconnaissance missions for local leaders, staff, and community leaders to areas undergoing disaster recovery	Regional, local	√		
G-5: Establish and maintain a recovery clearinghouse to house resources for pre-disaster recovery planning and post-disaster recovery guidance	Regional, local	√		
Housing				
H-1: Identify areas where mitigation and recovery resources are particularly important	Regional, local	√		
H-2: Explore interim housing solutions that encourage residents to invest in the Bay Area's recovery	Regional, local			√
H-3: Use Plan Bay Area as a framework to directing resources for permanent replacement of housing	Regional, local			√
H-4: Address the problem of underinsured homes with more realistic hazard insurance availability	Regional, local		√	
H-5: Encourage accurate identification of soft-story buildings	Regional, local	√		
H-6: Establish affordable financing mechanisms to facilitate seismic mitigation of multi-family residential properties vulnerable to damage in earthquakes	Regional, local		√	
H-7: Reduce personal and community losses by increasing resilient building and retrofit practices	Local	√		
H-8: Improve the quality of non-engineered retrofits by developing a statewide retrofitting license for contractors, or providing contractor training	Regional		√	
H-9: Increase the number of retrofitted homes by providing financial incentives for homeowners to retrofit	Regional, local		√	
Infrastructure				
I-1: Establish regional baseline assessment and system performance standards to identify vulnerabilities and define interdependencies	Regional		√	
I-2: Conduct a regional assessment of system interdependencies and the consequences of cascading failures	Regional	√		
I-3: Evaluate the usefulness of creating performance targets to establish region-wide performance goals for all infrastructure systems	Regional			√
I-4: Identify strategies to reduce interdependencies and develop plans to assist with implementation	Regional			√
I-5: Establish a senior leadership forum on infrastructure resilience issues to convene providers and stakeholders	Regional	√		
Economy and Business				
EB-1: Encourage best practices that support business continuity and facilitate restoration of regional economies	Regional		√	
EB-2: Support pre-disaster economic development through existing regional best practices	Regional, local	√	√	√
EB-3: Implement the recommendations of the Resilience Initiative's Decision-Making, Housing, and Infrastructure Policy Papers	Regional, local	√	√	√
EB-4: Explore innovative financial incentives to support disaster resilience initiatives for small business	Regional, local		√	

Initial Implementation Guide

Recommended Action	Initial Implementation Tasks
Short-Term (Completed in 1-5 years)	
G-1: Use existing intergovernmental committees to convene jurisdictions and facilitate communication around disaster recovery collaboration	<ul style="list-style-type: none"> Convene the Joint Policy Committee (JPC) and/or Regional Planning Committee (RPC) to discuss potential formation of disaster recovery forum Identify potential roles and organizing structure for forum Identify goals and objectives for forum Recruit “champion” within RPC or JPC to help gather stakeholders Coordinate with other similar initiatives, such as the Joint Policy Committee’s Climate Action and Energy Resilience Project
G-4: Lead reconnaissance missions for local leaders, staff, and community stakeholders to areas undergoing disaster recovery	<ul style="list-style-type: none"> Identify potential funding sources Identify leaders to attend, such as ABAG’s RPC members or other groups Establish a MOU with the Earthquake Engineering Research Institute (EERI) to expand their program to include local stakeholders
G-5: Establish and maintain a recovery clearinghouse to house resources for pre-disaster recovery planning and post-disaster recovery guidance	<ul style="list-style-type: none"> Identify a staff lead, with funding, to begin research and resource collection Examine platforms for sharing, including websites, Base Camp, and file-sharing systems
H-1: Identify areas where mitigation and recovery resources are particularly important	<ul style="list-style-type: none"> Gather vulnerable population data to input into GIS Secure funding for ABAG staff time
H-5: Encourage accurate identification of soft-story buildings	<ul style="list-style-type: none"> Share regional best practices and lessons learned Begin drafting policy language based on existing ordinances that is easily adoptable by jurisdictions
H-7: Reduce personal and community losses by increasing resilient building and retrofit practices	<ul style="list-style-type: none"> Establish a technical team to research and develop standard guidelines for single-family retrofits Engage with the California Earthquake Authority and FEMA to coordinate efforts
I-2: Conduct a regional assessment of system interdependencies and the consequences of cascading failures	<ul style="list-style-type: none"> Utilize ABAG’s existing Lifelines Committee to oversee a system assessment Research best practices for interdependencies assessments Partner with San Francisco Lifelines Council to avoid duplicating efforts Develop scenario and work plan
I-5: Establish a senior leadership forum on infrastructure resilience issues to convene providers and stakeholders	<ul style="list-style-type: none"> Identify existing groups that may be able to expand to take on this responsibility Establish goals and objectives for forum
EB-2: Support pre-disaster economic development through existing regional best practices	<ul style="list-style-type: none"> Identify topics for further research Identify appropriate research teams or partnerships with research institutions to establish programs of study
EB-3: Implement the recommendations of the Resilience Initiative’s Decision-Making, Housing, and Infrastructure Policy Papers	<ul style="list-style-type: none"> Identify short-term tasks in previous recommendations that most effectively support the regional economy and begin implementation
Medium-Term (Completed in 5-10 years)	
G-2: Examine the feasibility of a regional disaster recovery framework	<ul style="list-style-type: none"> Look at existing recovery plans and frameworks to establish best practices and ensure integration Work with regional recovery forum to establish a working group tasked with development of a recovery framework Establish stakeholder input process to solicit feedback from local jurisdictions
H-4: Address the problem of underinsured homes with more realistic hazard insurance availability	<ul style="list-style-type: none"> Establish contact with the California Earthquake Authority and engage in discussions
H-6: Establish affordable financing mechanisms to facilitate seismic mitigation of multi-family residential properties vulnerable to damage in earthquakes	<ul style="list-style-type: none"> Engage lobbyists and prepare a policy platform around PACE funds and upholding AB184 Identify best practices and sources of funding for seismic retrofit funding Explore innovative public/private partnerships for funding sources
H-8: Improve the quality of non-engineered retrofits by developing a statewide retrofitting license for contractors, or providing contractor training	<ul style="list-style-type: none"> Organize best management practices to inform state licensing Establish a regional certification program for pre-disaster retrofit and post-disaster repair, building on ABAG’s previous efforts
H-9: Increase the number of retrofitted homes by providing financial incentives for homeowners to retrofit	<ul style="list-style-type: none"> Work with One Bay Area Grant managers to establish language for seismic improvements in grant qualifications Partner with the California Earthquake Authority to utilize their mitigation funding effectively Implement Recommended Action H-1 to identify high priority areas for mitigation funding
I-1: Establish regional baseline assessment and system performance standards to identify vulnerabilities and define interdependencies	<ul style="list-style-type: none"> Research best practices for assessing infrastructure vulnerabilities and baseline conditions Establish a working group to identify standard earthquake scenarios and educate infrastructure providers on how to use the scenarios for assessment purposes Provide a platform for providers to share their own research and best practices
EB-1: Encourage best practices that support business continuity and facilitate restoration of regional economies	<ul style="list-style-type: none"> Identify topics for further research Identify appropriate research teams or partnerships with research institutions to establish programs of study
EB-4: Explore innovative financial incentives to support disaster resilience initiatives for small business	<ul style="list-style-type: none"> Identify private sector partners to begin conversations about incentives Explore best practices and case studies around financing incentives
Long-Term (Completed in 10-20 years)	
G-3: Integrate resilience policy into existing current plans and practices	<ul style="list-style-type: none"> Incorporate resilience discussions into the second iteration of the SCS Identify best practices for jurisdictions and develop a guide to assist in implementation
H-2: Explore interim housing solutions that encourage residents to invest in the Bay Area’s recovery	<ul style="list-style-type: none"> Identify best practices shelter-in-place policies and the development of neighborhood support centers Develop pre-disaster temporary sheltering plans and policies
H-3: Use Plan Bay Area as a framework to directing resources for permanent replacement of housing	<ul style="list-style-type: none"> Consider the feasibility of adopting the SCS as the regional housing recovery plan
I-3: Evaluate the usefulness of creating performance targets to establish region-wide performance goals for all infrastructure systems	<ul style="list-style-type: none"> Develop a technical team to examine SPUR and other existing performance categories for feasibility Conduct necessary research on the Bay Area’s infrastructure systems to develop categories tailored to our specific Bay Area needs
I-4: Identify strategies to reduce interdependencies and develop plans to assist with implementation	<ul style="list-style-type: none"> Develop a technical research team composed of engineers and other mitigation experts Research existing policy and develop recommendations based on technical research

Governance



G-1: Use existing intergovernmental committees to convene jurisdictions and facilitate communication around disaster recovery collaboration

Recommended Action		Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>G-1: Use existing intergovernmental committees to convene jurisdictions and facilitate communication around disaster recovery collaboration</i>		Regional	√		
Action Category					
Facilitation	<i>Education/ Information</i>	<i>Evaluation</i>	Policy Development	<i>Further Study/ Research</i>	<i>Program and Operation</i>

Utilizing an existing body such as the Joint Policy Committee (JPC) or Association of Bay Area Government (ABAG)'s Regional Planning Committee (RPC), create a regional forum for conversation and sharing, letting jurisdictions drive the content. The desired outcome would be more involved and informed stakeholders, consensus around major recovery decisions, and a coordinated regional policy platform.

Initial Implementation Tasks:

- Convene the Joint Policy Committee (JPC) and/or Regional Planning Committee (RPC) to discuss potential formation of disaster recovery forum
- Identify potential roles and organizing structure for forum
- Identify goals and objectives for forum
- Recruit “champion” within RPC or JPC to help gather stakeholders
- Coordinate with other similar initiatives, such as the JPC Climate Action and Energy Resilience Project



G-2: Examine the feasibility of a regional disaster recovery framework

Recommended Action		Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>G-2: Examine the feasibility of a regional disaster recovery framework</i>		Regional		√	
Action Category					
Facilitation	<i>Education/ Information</i>	<i>Evaluation</i>	Policy Development	Further Study/ Research	Program and Operation

Within a regional forum, a regional disaster recovery framework could allow jurisdictions to develop procedures for making decisions surrounding operations or processes as well as financial management issues that cross jurisdictional boundaries or are too cumbersome for one jurisdiction to manage alone. This framework may take the form of a writ-

ten recovery plan, outlining procedures, roles, and tasks for all stakeholders involved, similar to FEMA’s recently released National Disaster Recovery Framework.

Initial Implementation Tasks:

- Look at existing recovery plans and frameworks to establish best practices and ensure integration
- Work with regional recovery forum to establish a working group tasked with development of a recovery framework
- Establish stakeholder input process to solicit feedback from local jurisdictions

G-3: Integrate resilience policy into existing current plans and practices

Recommended Action		Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>G-3: Integrate resilience policy into existing current plans and practices</i>		Regional, local			√
Action Category					
Facilitation	Education/ Information	<i>Evaluation</i>	Policy Development	<i>Further Study/ Research</i>	<i>Program and Operation</i>

Many elements that support resilience and recovery can be integrated into existing work, at the regional level and within jurisdictions. At a regional level, disaster resilience policy should be incorporated into ABAG’s Sustainable Communities Strategy (SCS), the Joint Policy Committee (JPC)’s work on Climate Change, and other regional initiatives towards sustainability, economy, land use planning, and quality of life. Language and policy on recovery also can be integrated into existing county and city-level documents including General Plans and Emergency Operations Plans to formalize policy and procedures rather than requiring new initiatives.

Initial Implementation Tasks:

- Incorporate resilience discussions into the second iteration of the SCS
- Identify best practices for jurisdictions and develop a guide to assist in implementation

G-4: Lead reconnaissance missions for local leaders, staff, and community stakeholders to areas undergoing disaster recovery

Recommended Action		Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>G-4: Lead reconnaissance missions for local leaders, staff, and community stakeholders to areas undergoing disaster recovery</i>		Regional, local	√		
Action Category					
Facilitation	Education/ Information	Evaluation	<i>Policy Development</i>	<i>Further Study/ Research</i>	Program and Operation

Experiencing the aftermath of a disaster can be a strong motivator for elected officials and other leaders to assume new responsibilities and guide action in their jurisdictions, as well as learn new tools and skills for their own recovery process. The region could consider working with EERI to expand its reconnaissance teams to include local and community leaders and appropriate staff.

Initial Implementation Tasks:

- Identify potential funding sources
- Identify leaders to attend, such as ABAG’s RPC members or other groups
- Establish a MOU with EERI to expand their program to include local stakeholders

 **G-5: Establish and maintain a recovery clearinghouse to house resources for pre-disaster recovery planning and post-disaster recovery guidance**

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>G-5: Establish and maintain a recovery clearinghouse function to house resources for pre-disaster recovery planning and post-disaster recovery guidance</i>	Regional, local	√		

Action Category					
Facilitation	Education/Information	Evaluation	Policy Development	Further Study/Research	Program and Operation

The region needs an informational clearinghouse to house and share case studies, best practices, model ordinances, checklists, and other forms of guidance to help stakeholders better understand the recovery process and to have easily accessible tools to enact relevant policy, before and after a disaster. Another role for the clearinghouse could be compiling an inventory of existing and newly created recovery-related Bay Area plans and assessing pre-and post-event mitigation and recovery investments to help leverage community improvements as well as managing regional hazards data and data tracking recovery after the disaster does occur.

Initial Implementation Tasks:

- Identify a staff lead, with funding, to begin research, resource and hazards data collection
- Develop an initial ordinance package to assist local governments with recovery policies
- Examine platforms for sharing, including websites, Base Camp, and file-sharing systems

Housing



H-1: Identify areas where mitigation and recovery resources are particularly important

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>H-1: Identify areas where mitigation and recovery resources are particularly important</i>	Regional, local	√		

Action Category					
<i>Facilitation</i>	Education/ Information	<i>Evaluation</i>	<i>Policy Development</i>	Further Study/ Research	Program and Operation

By overlaying information on vulnerable housing type and vulnerable populations with hazard and Priority Development Areas policy makers can direct policies and allocate resources to strengthen housing, reduce individual losses, shorten housing reconstruction timelines, minimize economic disruption and promote long-term regional growth and economic goals.

Initial Implementation Tasks:

- Gather vulnerable population data to input into GIS
- Secure funding for ABAG staff time



H-2: Explore interim housing solutions that encourage residents to invest in the Bay Area's recovery

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>H-2: Explore interim housing solutions that encourage residents to invest in the Bay Area's recovery</i>	Regional, local			√

Action Category					
<i>Facilitation</i>	Education/ Information	<i>Evaluation</i>	Policy Development	<i>Further Study/ Research</i>	Program and Operation

If possible, while homes are being repaired, residents should be enabled to remain in their home or neighborhood through shelter-in-place policies. When residents remain, local businesses are more likely to stay in business, and families are more likely to quickly return to the routine of school and work. Regional plans to provide neighborhood support centers can enable families to remain in place by providing centralized food and water distribution, access to generators and medicine, and other needed services and supplies. Neighborhood support centers facilitate maintenance of existing neighborhood support networks.

Initial Implementation Tasks:

- Identify best practices shelter-in-place policies and the development of neighborhood support centers
- Develop pre-disaster temporary sheltering plans and policies



H-3: Use *Plan Bay Area* as a framework to directing resources for permanent replacement of housing

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>H-3: Use Plan Bay Area as a framework to directing resources for permanent replacement of housing</i>	Regional, local			√

Action Category					
<i>Facilitation</i>	Education/Information	<i>Evaluation</i>	Policy Development	<i>Further Study/Research</i>	Program and Operation

When housing needs to be reconstructed on a large scale, regional leaders can use *Plan Bay Area* and the SCS framework and the identified areas for growth (PDAs) to guide post-earthquake planning and development. PDAs have plans for building that in some cases are ready to be executed and an earthquake can be an opportunity to implement these plans. This will have the dual benefit of stimulating recovery while achieving our regional vision.

Initial Implementation Tasks:

- Examine the feasibility of adopting the SCS as the regional housing recovery plan



H-4: Address the problem of underinsured homeowners with more realistic hazard insurance availability

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>H-4: Address the problem of underinsured homeowners with more realistic hazard insurance availability.</i>	Regional, local		√	

Action Category					
<i>Facilitation</i>	Education/Information	<i>Evaluation</i>	Policy Development	<i>Further Study/Research</i>	Program and Operation

Policymakers can ensure that damaged homes are repaired and rebuilt more quickly by ensuring that more homeowners are covered by adequate hazard insurance coverage. Policymakers should work with the California Earthquake Authority to reduce both its annual premium and deductibles. Earthquake insurance policies for renters, however, are a good deal and their use should be more widely encouraged.

Initial Implementation Tasks:

- Establish contact with the California Earthquake Authority (CEA) and engage in discussions



H-5: Encourage accurate identification of soft-story buildings

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
H-5: Encourage accurate identification of soft-story buildings	Regional, local	√		

Action Category					
Facilitation	Education/Information	Evaluation	Policy Development	Further Study/Research	Program and Operation

Owner notification programs such as those taking place in Berkeley, Oakland, and Alameda are part of a broader societal trend recognizing the seismic vulnerabilities of soft-story buildings and placing liability on building owners. This exposure is something that owners will have to take into account when deciding how they will operate their buildings.¹ San Francisco, in 2012, embarked upon a ten-year mandatory evaluation and retrofit program for soft-story multi-family buildings.² While politically difficult, this mandatory program will likely serve the City's, the building owner's, and the residents' best interests in the long run.

Initial Implementation Tasks:

- Share regional best practices and lessons learned
- Begin drafting policy language based on existing ordinances that is easily adoptable by jurisdictions



H-6: Establish affordable financing mechanisms to facilitate seismic mitigation of multi-family residential properties vulnerable to damage in earthquakes

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
H-6: Establish affordable financing mechanisms to facilitate seismic mitigation of multi-family residential properties vulnerable to damage in earthquakes	Regional, local		√	

Action Category					
Facilitation	Education/Information	Evaluation	Policy Development	Further Study/Research	Program and Operation

¹ Personal communication, Ken Moy, ABAG legal counsel

² Applies to three or more story, 5 or more unit soft-story wood frame residential buildings, phased in four categories based on geological hazard and use.

We recommend that policymakers work together to find ways to utilize the PACE program for seismic retrofits and to lobby the federal government to provide the initial pot of money. In addition to PACE, a suite of policies and incentives can be adopted by cities wishing to encourage seismic retrofit. In addition, local governments working together with lending institutions, insurance companies, and other government agencies before future earthquakes could design new coordinated lending processes.

Initial Implementation Tasks:

- Engage lobbyists and prepare a policy platform around PACE funds and upholding AB184
- Identify best practices and sources of funding for seismic retrofit funding
- Explore innovative public/private partnerships for funding sources



H-7: Reduce personal and community losses by increasing resilient building and retrofit practices

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>H-7: Reduce personal and community losses by increasing resilient building and retrofit practices</i>	Local	√		

Action Category					
<i>Facilitation</i>	Education/ Information	<i>Evaluation</i>	Policy Development	<i>Further Study/ Research</i>	Program and Operation

Clear and comprehensive guidelines for the retrofit of all remaining single-family dwellings are needed. This lack of standard means that permits will be issued for voluntary seismic retrofits that may not be adequate. The California Earthquake Authority and FEMA are working to develop recommendations for future evaluation and retrofit codes and standards and local policy makers should encourage their effort.

Initial Implementation Tasks:

- Establish a technical team to research and develop standard guidelines for single-family retrofits
- Engage with the California Earthquake Authority and FEMA to coordinate efforts



H-8: Improve the quality of non-engineered retrofits by developing a statewide retrofitting license for contractors, or providing contractor training

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>H-8: Improve the quality of non-engineered retrofits by developing a statewide retrofitting license for contractors, or providing contractor training</i>	Regional		√	

Action Category					
Facilitation	Education/ Information	Evaluation	Policy Development	Further Study/ Research	Program and Operation

Similar to a plumbing or electrical license or the Home Improvement Certification category, a retrofitting license or certification would help ensure that contractors performing seismic retrofits are properly trained. Implementation would require action by the California State License Board to develop some new regulations. Bay Area local governments may not be able to wait for state action to implement this policy. An interim step might be to establish a regional certification program for pre-disaster retrofit and post-disaster repair that would address the most vulnerable Bay Area building types.

Initial Implementation Tasks:

- Organize best management practices to inform state licensing
- Establish a regional certification program for pre-disaster retrofit and post-disaster repair, building on ABAG's previous efforts



H-9: Increase the number of retrofitted homes by providing financial incentives for homeowners to retrofit

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
H-9: Increase the number of retrofitted homes by providing financial incentives for homeowners to retrofit	Regional, local		√	

Action Category					
Facilitation	Education/ Information	Evaluation	Policy Development	Further Study/ Research	Program and Operation

Financial incentives not only make retrofitting more affordable, they can also improve the quality of retrofits by setting a minimum standard that retrofits must achieve in order to receive assistance, and create opportunities to educate communities about the prudence of seismic retrofitting. Regional agencies could consider including seismic improvements to the One Bay Area Grant Program which provides funding to support implementation of the Sustainable Communities Strategy (SCS). We recommend that policy makers also endorse the involvement of insurance industry in developing owner incentives for retrofitting structures.

Initial Implementation Tasks:

- Work with One Bay Area Grant managers to establish language for seismic improvements in grant qualifications
- Partner with the California Earthquake Authority to utilize their mitigation funding effectively
- Implement Recommended Action H-1 to identify high priority areas for mitigation funding

Infrastructure



I-1: Establish regional baseline assessment and system performance standards to identify vulnerabilities and define interdependencies

Recommended Action		Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>I-1: Establish regional baseline assessment and system performance standards to identify vulnerabilities and define interdependencies</i>		Regional		√	
Action Category					
Facilitation	<i>Education/Information</i>	Evaluation	<i>Policy Development</i>	Further Study/Research	<i>Program and Operation</i>

The region needs to establish common tools for evaluation and assessment, and build consensus around the type of analysis and how to present findings. One way to begin this is to establish common earthquake scenarios for evaluating systems so consequences can be compared and interdependencies are defined across the region. We need to, as a region, assess the existing state of infrastructure systems, much of which is aging, deteriorating, and functioning at capacities beyond their original design, which all increase vulnerability. Regional infrastructure stakeholders could conduct and share research on evaluations, best practices, and recommendations for effective and uniform analysis of vulnerabilities.

Initial Implementation Tasks:

- Research best practices for assessing infrastructure vulnerabilities and baseline conditions
- Establish a working group to identify standard earthquake scenarios and educate infrastructure providers on how to use the scenarios for assessment purposes
- Provide a platform for providers to share their own research and best practices



I-2: Conduct a regional assessment of system interdependencies and the consequences of cascading failures

Recommended Action		Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>I-2: Conduct a regional assessment of system interdependencies and the consequences of cascading failures</i>		Regional	√		
Action Category					
<i>Facilitation</i>	<i>Education/Information</i>	Evaluation	<i>Policy Development</i>	Further Study/Research	<i>Program and Operation</i>

Similar to San Francisco Lifelines Council's current lifeline qualitative review, the region should conduct a high-level assessment of Bay Area infrastructure systems to identify and assess critical interdependencies. The study could be based

on a standardized earthquake scenario or scenarios (see above) and identify and assess lifeline systems by performance (similar to SPUR’s performance categories) along with peer-reviewed approaches. Then communities can prioritize system improvements based on defined performance targets that suggest key mitigation actions.

Initial Implementation Tasks:

- Utilize ABAG’s existing Lifelines Committee to oversee a system assessment
- Research best practices for interdependencies assessments
- Partner with San Francisco Lifelines Council to avoid duplicating efforts
- Develop scenario and work plan



I-3: Evaluate the usefulness of creating performance targets to establish region-wide performance goals for all infrastructure systems

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>I-3: Evaluate the usefulness of creating performance targets to establish region-wide performance goals for all infrastructure systems</i>	Regional			√

Action Category					
<i>Facilitation</i>	<i>Education/Information</i>	Evaluation	Policy Development	Further Study/Research	<i>Program and Operation</i>

San Francisco Planning and Urban Research (SPUR) has created categories of expected performance for lifelines within San Francisco, as well as goals and targets for recovery of infrastructure systems within four hours, three days, 30 days, and four months and beyond after a disaster. We could consider developing similar performance categories at a regional level using peer-reviewed evaluation methodology to provide clear expectations and goals for all utility providers, as well as provide a useful tool for evaluating the current state of systems and communicating this information with other providers.

Initial Implementation Tasks:

- Develop a technical team to examine SPUR and other existing performance categories for feasibility
- Conduct necessary research on the Bay Area’s infrastructure systems to develop categories tailored to our specific Bay Area needs



I-4: Identify strategies to reduce interdependencies and develop plans to assist with implementation

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>I-4: Identify strategies to reduce interdependencies and develop plans to assist with implementation</i>	Regional			√

Action Category					
<i>Facilitation</i>	Education/ Information	<i>Evaluation</i>	Policy Development	Further Study/ Research	<i>Program and Operation</i>

Concurrent with examining vulnerabilities and impacts, research could be conducted to identify cost-effective, feasible strategies to mitigate interdependencies, including system redundancy or backup, “islanding” vulnerable systems to limit their impacts and impacts to them, or creating smaller, self-contained “districts” of systems rather than one large, vulnerable system. This study should include identifying existing policies and regulations that impede or assist recovery as well as identifying what policies and regulations are need to propel infrastructure recovery.

Initial Implementation Tasks:

- Develop a technical research team composed of engineers and other mitigation experts
- Research existing policy and develop recommendations based on technical research



I-5: Establish a senior leadership forum on infrastructure resilience issues to convene providers and stakeholders

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>I-5: Establish a senior leadership forum on infrastructure resilience issues to convene providers and stakeholders</i>	Regional	√		

Action Category					
Facilitation	Education/ Information	<i>Evaluation</i>	<i>Policy Development</i>	<i>Further Study/ Research</i>	<i>Program and Operation</i>

Infrastructure providers and regional communities need a forum in which to share and gain situational awareness, spark mitigation programs and create new or utilize existing decision-making and prioritization tools. Tapping a third-party, neutral convener can offer impartial perspectives in prioritizing policy and strategic actions as well as providing a central information hub. A committee team can engage other stakeholders for decision-making and program prioritization, including the broader community.

Initial Implementation Tasks:

- Identify existing groups that may be able to expand to take on this responsibility
- Establish goals and objectives for forum

Economy and Business



EB-1: Encourage best practices that support business continuity and facilitate restoration of regional economies

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>EB-1: Encourage best practices that support business continuity and facilitate restoration of regional economies</i>	Regional		√	

Action Category					
<i>Facilitation</i>	<i>Education/ Information</i>	<i>Evaluation</i>	<i>Policy Development</i>	Further Study/ Research	<i>Program and Operation</i>

Concrete knowledge on economic recovery is limited, particularly within the context of the Bay Area. We recommend partnering with research bodies such as the Bay Area Council (BAC), the California Seismic Safety Commission (CSSC) and research institutions such as UC Berkeley and Stanford to continue to conduct Bay Area-specific research and studies on specific actions that local governments or regional groups can take to expedite economic recovery. We recommend implementing findings from the CSSC and conducting a more thorough survey on existing best practices, both specific to the Bay Area and from other disasters within the US. We recommend research focused around our first two issues in particular - getting large businesses to stay in the region and keeping small businesses open.

Initial Implementation Tasks:

- Identify topics for further research
- Identify appropriate research teams or partnerships with research institutions to establish programs of study



EB-2: Support pre-disaster economic development through existing regional best practices

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>EB-2: Support pre-disaster economic development through existing regional best practices</i>	Regional, local	√		

Action Category					
<i>Facilitation</i>	Education/ Information	<i>Evaluation</i>	Policy Development	Further Study/ Research	<i>Program and Operation</i>

Several regionally-focused groups have conducted extensive research on how to best maintain and grow the Bay Area's economy. ABAG has conducted extensive economic research through its Plan Bay Area, Jobs-Housing Connection Strategy, and is currently developing a Regional Prosperity Plan. ABAG is also developing a Regional Policy Background Paper

on Economic Development which will include recommended actions for continued economic growth. The Bay Area Council (BAC)'s Economic Assessment report also outlines actions designed to strengthen today's economy, and a strong and nimble economy today will provide a basis for a strong regional economic recovery after an earthquake.

Initial Implementation Tasks:

- Prepare an implementation plan for current best practice recommendations, identifying appropriate stakeholders, fora, and funding sources for implementation projects

EB-3: Implement the recommendations of the Resilience Initiative's Decision-Making, Housing, and Infrastructure Policy Papers

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>EB-3: Implement the recommendations of the Resilience Initiative's Housing, Infrastructure and Regional Decision-Making Issue Papers</i>	Regional, local	√		

Action Category					
Facilitation	Education/Information	Evaluation	Policy Development	Further Study/Research	Program and Operation

Many of the key factors in economic recovery are closely linked to the issues laid out in the Initiative's issue papers on housing, infrastructure and regional decision-making. Strengthening these areas will bolster our overall economy and ability to recover quickly. These recommended actions also support issues identified in BAC report as necessary for a strong regional economy.

Initial Implementation Tasks:

- Identify short-term tasks in previous recommendations that most effectively support the regional economy and begin implementation

EB-4: Explore innovative financial incentives to support disaster resilience initiatives for small business

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>EB-4: Explore innovative financial incentives to support disaster resilience initiatives for small business</i>	Regional, local		√	

Action Category					
Facilitation	Education/Information	Evaluation	Policy Development	Further Study/Research	Program and Operation

Pre-disaster funding directed toward hazard mitigation for small business is currently limited to conventional lending practices which generally are either not available or not cost-effective for small business owners. Additionally, earthquake or business interruption insurance can be prohibitively expensive for small businesses operating with a small profit margin. There is a need to engage Chambers of Commerce, Economic Development Departments, lending institutions, the insurance industry and federal agencies, such as the Economic Development Administration, and the Historic Trust Main Street Program, in a discussion of potential strategies to support pre-disaster hazard mitigation incentives for small businesses. At the local level, Business Improvement Districts, revolving loan programs, or pool financing should be explored.

Initial Implementation Tasks:

- Identify private sector partners to begin conversations about incentives
- Explore best practices and case studies around financing incentives •