Resilient Housing Resources

Since 2013 ABAG has identified resilient housing as the most crucial element of resilient communities. Keeping residents housed and in the community allows cities to bounce back after fires, floods, and earthquakes. To support resilient housing, ABAG/MTC has created a suite of resources to integrate resilience into the Housing Element update. Follow the four steps below to consider the main ways you can integrate resilience into the Housing Element.

This document focuses narrowly on how climate and seismic hazards can be incorporated into a Housing Element update. The Housing Element must also meet critial housing goals to Affirmatively Furthing Fair Housing (AFFH) and identify sufficient housing sites pursuant to the Regional Housing Needs Allocation (RHNA). Other resources are available on the [ABAG Housing Technical Assistance website](https://abag.ca.gov/our-work/housing/housing-technical-assistance-program/abag-regional-housing-technical-assistance) to support communities in ensuring equity, community engagement, and other Housing Element Goals are met.

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| Step 1 | Consider how your city plans to advance resilience action. |
| Icon  Description automatically generated | Cities can advance resilient housing through several interrelated planning efforts. The Housing Element, Safety Element, Environmental Justice Element, and Local Hazard Mitigation Plan are key opportunities to strengthen your resilience planning. Checking the status of these plans and assessing existing resilience policies is an important first step. [**Briefer 01**](https://abag.ca.gov/sites/default/files/documents/2021-07/1_Briefer_IntegratedPlanning.pdf) (5 pages) introduces how recent state legislation requires greater integration of resilience in local long-range planning. |
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| Step 2 | Explore how exposed your existing housing is to hazards. |
| Icon  Description automatically generated | A community can bolster resilience by improving existing housing. [**Exposure data tables**](https://abag.ca.gov/sites/default/files/documents/2021-07/2_ExposureDataTables.xlsx)highlight the number of parcels in a jurisdiction exposed to wildfire, FEMA flood zones, and future sea level rise inundation. These tables, and other analysis, can be used to characterize the existing housing stock in the Housing Needs section of the Housing Element, and can inform responsive policies in Step 4. |
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| **Step 3** | **When possible, site future housing away from the most hazards sites.** |
|  | Future housing can be more resilient if placed outside the most hazardous locations. The [**Housing Element Site Selection (HESS)**](https://hess.mtcanalytics.org/) tool includes a set of natural hazard and climate impact layers to help inform decisions and balance safety with other housing requirements and goals. For housing that is sited in high hazard areas, consider responsive policies and programs in Step 4 to mitigate risk. |
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| **Step 4** | **Consider resilient policies to address existing or future housing risks.** |
| Icon  Description automatically generated | The [**Resilient Housing Policy Document**](https://abag.ca.gov/sites/default/files/documents/2021-07/4_ResilientHousingPolicies_Version1.docx) provides a menu of options that jurisdictions can use as a starting point to help reduce risk to existing and future housing. These can be integrated into the Housing Element’s Goals, Policies and Programs section as well as in parallel planning efforts like the Safety Element. |
| Step 2 | Explore how exposed your existing housing is to hazards.  The Bay Area is subject to many hazards. The excel file used in this step characterizes housing exposure to wildfire, flooding, and sea level rise. This step helps identify the degree to which existing housing is affected by some hazards. |
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| 2a. | Acknowledge other hazards have widespread impacts on housing. Earthquake shaking, drought, and extreme heat can impact residents in most Bay Area homes. Because the sensitivity to these hazards is mostly due to the age of the housing, rather than the location, a separate analysis may be necessary to identify homes less able to withstands earthquakes, droughts, or extreme heat events. If your community has an older building stock many homes may not be built to current codes and standards. |
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| 2b. | Explore housing exposure to wildfire, flooding, and sea level rise. Open the [Exposure Data Tables excel file](https://abag.ca.gov/sites/default/files/documents/2021-07/2_ExposureDataTables.xlsx) and click on the “Hazard Overview” sheet. Type your jurisdiction name in the green box to populate the tables with data for your community. |
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|  | Is this relevant to me? It depends. If all the tables have zero values, then this resource may be less relevant to your jurisdiction. In this case, you can move to Step 3 to ensure new housing is resilient. |
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| 2c. | Determine if housing in your community has significant exposure to a hazard. What is considered “significant” can be difficult to determine. Start with the hazard with the greatest number of units and ask the following questions:  * How does the number of exposed units compare to annual units permitted or constructed? * Would city cohesion remain if this many units were displaced? |
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| 2d. | Consider adding exposure data tables to your housing element. This data can be added to the Housing Needs section of your housing element. We recommend placing them after tables that describe housing stock characteristics. You can also provide narrative about the age of the housing stock and acknowledge that earthquake shaking, drought, and extreme heat are issues, particularly for older homes. A local hazard mitigation plan or other local resilience analysis may characterize housing for these impacts. |
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|  | Getting to this point is a great start. If you have time, explore further in Steps 2e-2g. Otherwise, skip to Step 2h. before moving to steps 3 and 4. |
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| 2e. | Compare this data with your own data sources and/or existing plans. MTC/ABAG used ParcelAtlas data (built of County Assessors data) to run exposure analyses. We have varying confidence in the accuracy of the quality of data for all the 109 jurisdictions. See the disclaimer in the excel file for the level of confidence for data in your jurisdiction. Contact MTC/ABAG [rhartofelis@bayareametro.gov](mailto:rhartofelis@bayareametro.gov?subject=ABAG%20Housing%20Exposure%20Data%20Tables) for questions and concerns.  * Do the numbers appear accurate for your community? * Do you have more accurate parcel or building data you can complete your own analysis with? * Does your Local Hazard Mitigation Plan or other resilience planning effort have similar analysis that uses better local data? |
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| 2f. | Explore which neighborhoods in your jurisdiction are vulnerable using local hazard maps. The exposure tables only describe the number of residential parcels exposed to a hazard. Consider using map viewers to get a quick sense of where the hazards are in your jurisdiction. For additional hazard mapping at the parcel scale, see the HESS Tool in Step 3.  * Where does wildfire intersect your community? ([MTC/ABAG Hazard Viewer](https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8)) * Where does flood intersect your community? ([MTC/ABAG Hazard Viewer](https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8)) * Where does sea level rise interest your community? ([BCDC Explorer](https://explorer.adaptingtorisingtides.org/explorer) for bayside jurisdictions, or [NOAA](https://coast.noaa.gov/slr/) for coastal communities) * Where does extreme heat affect your community? ([CHAT tool](https://www.cal-heat.org/explore)) * Are there other climate variables of local concern? ([Cal Adapt Climate Tools](https://cal-adapt.org/tools/)) * Which hazards also intersect with Equity Priority Communities? |
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| 2g. | Determine how your jurisdiction’s risk compares to others. In the excel file the individual hazard sheets show the risk for all jurisdictions in the Bay Area, including a rank compared to the other 109 Bay Area cities and counties by total parcel count and by share of housing. Explore to see which communities might be facing similar challenges.  * Who else has this hazard risk? Do you already collaborate with any of these communities? Can you collaborate with communities facing similar risks? |
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| 2h. | Identify which hazards you may want to mitigate with policies or programs for existing housing. Using the data on wildfire, flooding, and sea level rise, weigh which impacts you might want to address in step 4 with policy action. The three hazards included in the excel file represent hazards with constrained geographic extents. In addition, consider if earthquake shaking, drought and extreme heat, impacts that apply to some degree in all locations in the nine-county Bay Area, should be addressed.  * Do you already have policies and programs in place? * Ask staff responsible for existing policies or programs if the housing element update is an opportunity to raise challenges with the existing efforts? * Do you need new ideas to address risks? See **Step 4**. |
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|  | Great job with Step 2. Move to Step 3 where you will explore future housing sites using the HESS tool. |
| STEP 3 | When possible, site future housing away from the most hazards sites.  Environmental impacts can be considered when siting future housing. Constraints highlighted in this resource include wildfire, flooding, sea level rise, liquefaction, earthquake/seismic zones, landslide risk, riparian areas, critical habitat and California protected areas. For additional mapping on local exposure, we recommend [CalAdapt](https://cal-adapt.org/tools/), [MTC/ABAG’s Hazard Viewer](https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8), and [BCDC’s Flood Explorer](https://explorer.adaptingtorisingtides.org/explorer). |
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| 3a. | Explore environmental site constraints in HESS. Log into [HESS](https://hess.mtcanalytics.org/), select the “Map” tab, then select the “Layers” tab, and choose a constraint of interest from the list. Explore layers one by one to learn what is leading to constrained sites.  * What are the risks in your community? * Are there site constraints in areas planned for development? |
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|  | Is this relevant to me? Yes. Every community in the Bay Area has environmental site constraints. |
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| 3b. | Take note of environmental site constraints that affect your jurisdiction and discuss your approach to hazards. Have a conversation about the constraints in your community, and consider next steps.  * Have you considered these constraints before? * Is your jurisdiction able to find housing sites that avoid constraints? * Which constraints does your jurisdiction feel best prepared to mitigate? * Are there policies or programs that could mitigate this concern? Not all constraints are barriers to new housing if appropriately mitigated. See **Step 4.** |
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| 3c. | Cross reference selected parcels with environmental site constraints. To see details on each site’s risks, click the desired parcel, then “More Details” to open up a new window of options. Constraint detail can be found on the tab “Site Constraints.”If you have selected many sites, or want to see patterns in your site selections, from the map tool, click the “Explore” link at the top of the page, then “Tables”. To see which sites are subject to constraints, click “Filters” on the left side of the screen. Select which constraint you want to view and update the data. Click “My Sites List” again to narrow the list to your selected sites.  * For constrained selected sites, are there alternative housing sites away from “red” constraints? If not, follow recommendations in the “More Details, Site Action” for ways that could mitigate the site concern. See **Step 4**. |
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| 3d. | Cross reference your findings from Step 3 with Step 2. Open the Excel file from Step 2 and compare with the list of constraints in Step 3.  * Do the same site constraints affect both existing and future housing? * Proceed to **Step 4** to identify potential policies to mitigate impacts identified. |
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|  | Great job with Step 3. Move to Step 4 where you will explore a universe of resilient housing policies. |
| STEP 4 | Establish resilient policies to address existing and future housing risks.  This resource is a starting point to explore ways to reduce risk to new and existing housing. Based on the information from Steps 2 and 3 above, explore the policies and programs that may best address the identified housing risks. The policies in the document are starting points and should be modified based on the community's unique housing vulnerabilities and climate hazards. |
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|  | Is this relevant to me? Yes. All jurisdictions can use this resource to consider policies to reduce risk to existing (step 2) and future housing (step 3) to known hazards and improve safety for residents. |
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| 4a. | Familiarize yourself with the [Resilient Housing Policy Document](https://abag.ca.gov/sites/default/files/documents/2021-07/4_ResilientHousingPolicies_Version1.docx) organization. Read the first three pages of introductory information. The briefer is organized by the components of risk: exposure, sensitivity, consequences, adaptive capacity.Do you have existing equity strategies or initiatives that you can pair to address equity considerations? |
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| 4b. | Determine if exposure and sensitivity policies can limit the likelihood of damage. Review the introduction text for the exposure and sensitivity sections. Use the questions below to help guide you through relevant exposure and sensitivity policies. As you identify policies identify key equity considerations to address.  * Are you able to site new housing outside of a hazardous area? (see **Step 3**)   + If **yes**, consider policies in Avoid-1, 2, 3.   + If **no**, consider policies in Accommodate-1, 2 and Protect-1, 2. * Do you have existing housing located in hazardous areas? (see **Step 2**)   + If **yes**, consider policies in Accommodate-1, 2 and Protect-1, 2.   + Don’t forget to consider seismic and climate impacts like earthquake shaking, drought, and extreme heat that are likely an issue for every Bay Area jurisdiction. Might any Accommodate or Protect strategies improve housing resilience to these impacts? * Do the strategies you identified have equity considerations? What policy adjustments will ensure equitable outcomes? |
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| 4c. | Explore policies that enable a community to bounce back faster and better. Review the introduction text for the “reduce consequences” and “adaptive capacity” sections. These actions, if adjusted to local context, can be considered in any jurisdiction.  * Are there significant risks that are not well addressed by Step 4b? Do any of these strategies address remaining risks well? * Does your community already have strategies in place to reduce consequences or increase adaptive capacity? * Do the strategies you identified have equity considerations? What policy adjustments will ensure equitable outcomes? |
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| 4d. | Customize desired policies to address your communities’ unique situation. Policies within the briefer are general and can be applicable to any hazard. Adjust the policy language to be more specific to your community’s context.  * Can you rewrite the policy to add local context and specificity? * Are there ways you can further integrate equity into the policy? |
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|  | Getting to this point is a great start. If you have more time, explore further in Steps 4e-f for additional policy considerations. |
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| 4e. | Explore the Excel Policy Universe to see additional variations of the broader policy language found in the briefer. If you want help rewording policies, you can use the Excel Universe to explore possible variations of the policy. Search the excel file using the policy code (i.e. Avoid-1.a), in Column D to explore if there are specific examples of the policy.  * Does another version of a policy include language more appropriate for your jurisdiction? |
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| 4f. | Explore the Annotated Bibliography for additional policy context.   * Do the resources have additional information that help add specificity to the policies you have chosen? * Do the resources include steps to support policy implementation? * Are there ways you can further integrate equity into the policy? |
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|  | Great job with Step 4. You have now developed resilient housing policies to include in your housing element update. |