2023-2031 Regional Housing Needs Assessment (RHNA) Appeal Request

Submit appeal requests and supporting documentation via DocuSign by 5:00 pm PST on July 9, 2021.
Late submissions will not be accepted. *Send questions to* ***rhna@bayareametro.gov***

Jurisdiction Whose Allocation is Being Appealed: Town of Corte Madera

Filing Party: ○ HCD ⊗ Jurisdiction: Town of Corte Madera

Contact Name: Adam Wolff Title: Director, Planning and Building Department

Phone: 415-927-5059 Email: awolff@tcmmail.org

APPEAL AUTHORIZED BY:

Name: Eli Beckman

Signature: DocuSigned by: Eli Beckman D108802CAD144B5...

Date: 7/8/2021

PLEASE SELECT BELOW:

- ⊗ Mayor
- ○ Chair, County Board of Supervisors
- ○ City Manager
- ○ Chief Administrative Officer
- ○ Other: _____

IDENTIFY ONE OR MORE BASES FOR APPEAL [Government Code Section 65584.5(b)]

☒ ABAG failed to adequately consider information submitted in the Local Jurisdiction Survey regarding RHNA Factors (Government Code Section 65584.04(e)) and Affirmatively Furthering Fair Housing (See Government Code Section 65584.04(b)(2) and 65584(d)(5)):

- ☐ Existing and projected jobs and housing relationship.
- ☐ Sewer or water infrastructure constraints for additional development due to laws, regulatory actions, or decisions made by a provider other than the local jurisdiction.
- ☒ Availability of land suitable for urban development or for conversion to residential use.
- ☐ Lands protected from urban development under existing federal or state programs.
- ☐ County policies to preserve prime agricultural land.
- ☐ Distribution of household growth assumed for Plan Bay Area 2050.
- ☐ County-city agreements to direct growth toward incorporated areas of county.
- ☐ Loss of units contained in assisted housing developments.
- ☐ Households paying more than 30% or 50% of their income in rent.
- ☐ The rate of overcrowding.
- ☐ Housing needs of farmworkers.
- ☐ Housing needs generated by the presence of a university campus within a jurisdiction.
- ☐ Housing needs of individuals and families experiencing homelessness.
- ☐ Loss of units during a declared state of emergency from January 31, 2015 to February 5, 2020.
- ☐ The region's greenhouse gas emissions targets to be met by Plan Bay Area 2050.
- ☐ Affirmatively furthering fair housing.

☒ ABAG failed to determine the jurisdiction's Draft RHNA Allocation in accordance with the Final RHNA Methodology and in a manner that furthers, and does not undermine the RHNA Objectives (see Government Code Section 65584(d) for the RHNA Objectives).

☐ A significant and unforeseen change in circumstances has occurred in the local jurisdiction or jurisdictions that merits a revision of the information submitted in the Local Jurisdiction Survey (*appeals based on change of circumstance can only be made by the jurisdiction or jurisdictions where the change occurred*).

Pursuant to Government Code Section 65584.05, appeals shall be based upon comparable data available for all affected jurisdictions and accepted planning methodology, and supported by adequate documentation, and shall include a statement as to why the revision is necessary to further the intent of the objectives listed in Government Code Section 65584(d). An appeal shall be consistent with, and not to the detriment of, the development pattern in the sustainable communities strategy (Plan Bay Area 2050 Final Blueprint). (Click here)

Number of units requested to be reduced or added to jurisdiction's Draft RHNA Allocation:

⊗ Decrease Number of Units: 325 ○ Increase Number of Units: _____

Brief description of appeal request and statement on why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584(d) and how the revision is consistent with, and not to the detriment, of the development pattern in Plan Bay Area 2050. Please include supporting documentation for evidence as needed, and attach additional pages if you need more room.

On behalf of the Town of Corte Madera, the Town Council hereby submits its appeal of the Association of Bay Area Governments (ABAG) Final Draft Regional Housing Needs Allocation (RHNA) assigned to the Town of Corte Madera for its 6th Cycle (2023-2031) Housing Element update.

The Town of Corte Madera bases its appeal of the Draft RHNA pursuant to Government Code Section 65584.05 on the following:
- ABAG failed to adequately consider Local Planning Factors and Affirmatively Furthering Fair Housing from the Local Jurisdiction Survey relating to certain local factors outlined in Government Code Section 65584.04(e); and
- ABAG failed to determine the share of the regional housing need in a manner that furthers, and does not undermine, the intent of the objectives listed in subdivision (d) of Section 65584.

Based upon the information cited in this appeal request, including attachments and references, the Town of Corte Madera requests a reduction of the Draft RHNA allocation from 725 units to 400 units. As discussed in the supporting documentation and attachments, there is a lack of suitable land available in Corte Madera for new residential development at the scale required pursuant to the Draft RHNA and the manner in which ABAG determined the Draft RHNA for Corte Madera undermines the intent of key RHNA objectives related to fostering socioeconomic equity, promoting efficient development patterns, and improving intraregional relationships between jobs and housing.

The Town of Corte Madera understands the challenges of meeting critical regional planning objectives related to housing affordability, equity, and climate change and supports ABAG's efforts in this area. However, specific, unique, local constraints and factors must be given due consideration in regional planning efforts in order to avoid unintended consequences. We hope this appeal request is viewed as an opportunity for ABAG to do just that.

List of supporting documentation, by title and number of pages

1. _____
2. _____
3. _____

The maximum file size is 25MB. To submit larger files, please contact rhna@bayareametro.gov.

Click here to attach files

Town of Corte Madera
300 Tamalpais Drive
Corte Madera, CA 94925

July 9, 2021

Dear ABAG Administrative Committee:

On behalf of the Town of Corte Madera, the Town of Corte Madera Town Council hereby submits its appeal of the Association of Bay Area Governments (ABAG) Final Draft Regional Housing Needs Allocation (RHNA) assigned to the Town of Corte Madera for its 6th Cycle (2023-2031) Housing Element update.

The Town of Corte Madera bases its appeal of the Draft RHNA pursuant to Government Code Section 65584.05 on the following:

- ABAG failed to adequately consider Local Planning Factors and Affirmatively Furthering Fair Housing from the Local Jurisdiction Survey relating to certain local factors outlined in Government Code Section 65584.04(e); and
- ABAG failed to determine the share of the regional housing need in a manner that furthers, and does not undermine, the intent of the objectives listed in subdivision (d) of Section 65584.

This appeal: 1) is based on comparable data available for all affected jurisdictions and accepted planning methodology and is supported by the applicable documentation; 2) includes statements as to why a RHNA revision for Corte Madera is necessary to further the intent of the objectives listed in Government Code Section 65584(d), and 3) is consistent with, and not to the detriment of, the development pattern in the sustainable communities strategy (Plan Bay Area 2050 Final Blueprint).

Introduction

The Town of Corte Madera recognizes that the lack of affordable housing in the Bay Area is a significant problem that we must all work together to solve. As one of few Bay Area jurisdictions to meet and far exceed its 5th Cycle Housing Element RHNA for all income levels (see Table 1 below), the Town of Corte Madera has proven its commitment to thoughtfully plan for, facilitate, and integrate new housing development into our community, helping to address the region's affordability and equity issues and support local growth in a responsible manner.

Table 1. Corte Madera's Progress in Meeting 5th Cycle RHNA Targets (through 2021)

	RHNA	2015	2016	2017	2018	2019	2020	2021[1]	2022	Total	% Total
Very Low	22	5	2	1	5	3	2	18		36	164%
Low	13	12	1				2	4		19	146%
Moderate	13	2	1	2	2	1		12		20	154%
Above Moderate	24	164	13	2				16		195	813%
Total	72	183	17	5	7	4	4	50		270	375%

[1] Includes building permits that have been issued in 2021, and building permits anticipated to be issued in 2021, including 18 very low-income units developed through the Project Homekey program and six accessory dwelling units (ADUs).

The ten-fold increase in the Town of Corte Madera's 6th Cycle Draft RHNA (from 72 to 725 units), however, equates to an 18% household growth rate compared to 2020 households, the highest growth rate in the entire North Bay (Marin, Sonoma, and Solano counties) and higher than the City of Oakland[2].

Additionally, the Draft RHNA, assuming the Marin County average of 2.4 persons per household[3], requires that Corte Madera grow by approximately 1,740 residents between 2023 and 2031, approximately the same population growth seen in Corte Madera between 1980 and 2019, over a period of *39 years*[4]. This ignores critical facts:

- Corte Madera lacks a Major Transit Stop.
- Corte Madera is expected to lose approximately 3,000 jobs -- about 43% of its current jobs -- by 2050, according to the Plan Bay Area 2050 Draft Blueprint[5]. In other words, the Draft RHNA allocation would create a jobs/housing imbalance.
- Corte Madera is almost entirely located within the FEMA 100-year flood zone or a locally-recognized Very High Fire Severity Zone, and is extremely susceptible to sea level rise, as discussed in more detail below.

As a result, the Town of Corte Madera does not believe the Draft RHNA for Corte Madera, and the methodology on which it was based, furthers the statutorily mandated objectives of RHNA pursuant to Government Code Section 65584(d). The extremely high number of units that the Draft RHNA imposes on Corte Madera, combined with punitive recent State legislation that limits the Town of Corte Madera's ability to control local land use decisions if the Draft RHNA is not fulfilled, compels the Town of Corte Madera to request this appeal to ensure that local and regional growth occurs in a sustainable way, based on the efficient use of land, and the health and safety of all future residents of the Town of Corte Madera.

Basis for Appeal

1. ABAG failed to adequately consider information about Local Planning Factors and Affirmatively Furthering Fair Housing from the Local Jurisdiction Survey relating to certain local factors outlined in Government Code Section 65584.04(e).

In February of 2020, the Town of Corte Madera Planning Department responded to ABAG's Local Jurisdiction Survey and identified "Land suitability," "Impact of climate change and natural hazards," and "Availability of vacant land" as local planning factors that should be considered constraints to the development of additional housing by 2030[6]. The excerpts in Table 2 below are taken directly from the Town of Corte Madera's response to the ABAG Local Jurisdiction Survey.

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[2] See Attachment 1 ("Jurisdiction Growth Rate Compared to 2020 Households" from ABAG)
[3] US Census, American Community Survey 2015-2019 (https://www.census.gov/quickfacts/marincountycalifornia)
[4] Bay Area Census from MTC/ABAG (http://www.bayareacensus.ca.gov/cities/CorteMadera.htm) and US Census, American Community Survey (https://www.census.gov/quickfacts/marincountycalifornia)
[5] The Plan Bay Area 2050 Final Blueprint places Corte Madera in the Southern Marin "superdistrict", which is expected to lose 4,000 jobs by 2050. Corte Madera also borders the Central Marin "superdistrict", which is expected to lose 14,000 jobs by 2050 (See Attachment 2)
[6] See Attachment 3 for the complete Local Jurisdiction Survey response

Table 2. Excerpts from Corte Madera Response to ABAG Local Jurisdiction Survey

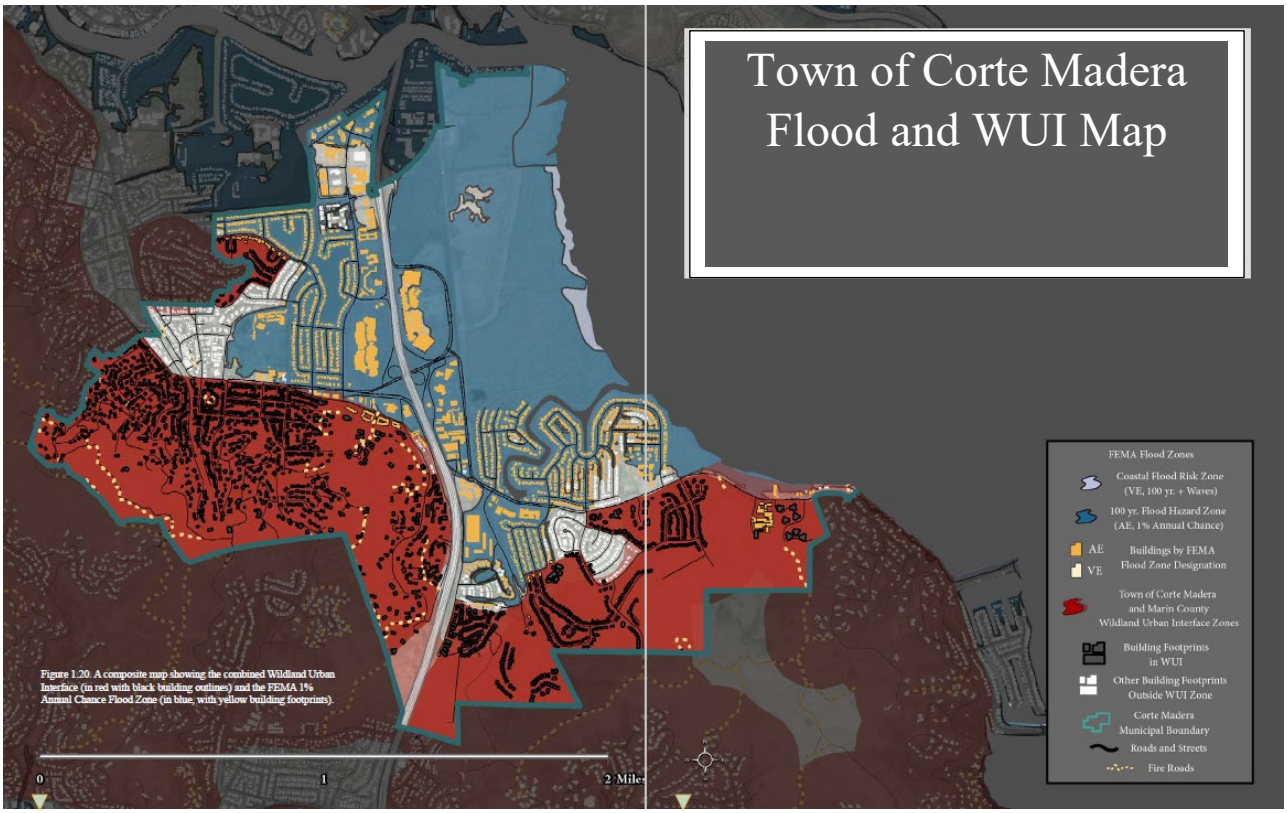
Topic	Opportunity/Constraint	Explanation
Land suitability	Constraint	The Town of Corte Madera encompasses approximately 4.5 sq. miles, however, approximately 1.25 sq. miles is submerged under bay waters and .67 [sq.] miles is protected marshland, leaving a net land area of 2.55 [sq.] miles, of which approximately half is within the FEMA 100-year flood zone, and the other half is in the Wildland-Urban Interface (WUI)…"
Impact of climate change and natural hazards	Constraint	The most up to date sea level rise maps show that sea level rise poses a significant risk to vast areas of land in Corte Madera, including the most-likely [sic] sites available for redevelopment for housing. Without knowing whether potential mitigation measures can be funded or are feasible, the redevelopment of these sites presents a constraint to the availability of land for housing development. Similarly, increasing wildfire risks constrain the amount of housing development that can be developed in the Town of Corte Madera's hillside areas due to the need to mitigate the public safety risks associated with narrow roads and impediments to evacuations during emergencies.
Availability of vacant land	Constraint	There are approximately 10 vacant parcels of land in Corte Madera, and with the exception of a[n] [approved] 3 lot single-family subdivision, all located on steep hillsides, within existing single family very low density zones.

ABAG failed to adequately consider these factors in considering the Draft RHNA for Corte Madera. The below information is being presented here for consideration as part of the Town of Corte Madera's appeal request.

a. FEMA Flood Zone and Wildland-Urban Interface (WUI)

The map in Figure 1 below provides a simple graphic that conveys the significant constraints to land development in Corte Madera due to risks associated with flooding (shown in blue as the FEMA 100-year AE flood zone) and fire hazards (show in red as the Wildland Urban Interface).

Figure 1. Town of Corte Madera Flood and WUI Map



Source: Corte Madera Climate Adaptation Assessment

These hazards are the result of the historical development of the Town within Bay marshlands and on the steeply sloping flanks that immediately abut Mt. Tamalpais, a dramatic condition unique to this area of the Bay Area[7]. ABAG did not adequately consider local development constraints posed by existing hazards, as required by Government Code Section 65584.04(e)(2)(B)[8].

To analyze the unique local development constraints within Corte Madera and the development risks posed by natural hazards, parcel level information was obtained through MarinMap, the Town's GIS service. Of the Town of Corte Madera's 3,417 parcels of property that are not located in the Bay or on protected marshlands, approximately 1,151 parcels or 33.68% of all parcels, representing 40% of gross lot area, are located in the FEMA 100-year flood zone on land that FEMA has determined is not adequately protected by flood management infrastructure to avoid the risk of flooding. These parcels are unsuitable for development under the express terms of Section 65584.04(e)(2)(B). Additionally, approximately 1,711 parcels or 50 % of all parcels, representing 55% of gross lot area, are located in the WUI. These

[7] See Attachment 4 for historical and current images of Corte Madera.

[8] Government Code Section 65584.04(e)(2)(B) reads: "The availability of land suitable for urban development or for conversion to residential use, the availability of underutilized land, and opportunities for infill development and increased residential densities. The council of governments may not limit its consideration of suitable housing sites or land suitable for urban development to existing zoning ordinances and land use restrictions of a locality, but shall consider the potential for increased residential development under alternative zoning ordinances and land use restrictions. *The determination of available land suitable for urban development may exclude land where the Federal Emergency Management Agency or the Department of Water Resources has determined that the flood management infrastructure designed to protect that land is not adequate to avoid the risk of flooding* [emphasis added]."

areas are locally-recognized as Very High Fire Hazard Severity Zones (VHFHSZ) by our local Fire Department, based on the adoption of local WUI maps in 2008. The Central Marin Fire Department is currently in the process of requesting that CalFire formally designate our WUI areas as VHFHSZs through the Fire and Resource Assessment Program (FRAP). In a state already plagued by wildfires, these 1,711 parcels are also unsuitable for additional urban development

Of the remaining 555 parcels outside of the FEMA 100-year flood zone and the WUI (see white areas on map in Figure 1 representing approximately 5% of total gross lot area in Corte Madera), all are occupied with existing developed uses, and approximately 97% are occupied with existing residential uses[9]. Even accounting for condominium units by removing all lots less than 5,000 gross square feet in area from the dataset, the average lot size of parcels outside of flood or fire risk zones is less than 8,000 square feet and the median lot size is approximately 6,900 square feet. The few larger parcels are located along Tamal Vista Blvd. and are occupied by a 180-unit apartment building completed in 2017, the Marin Municipal Water District headquarters, the State of California (DMV office), and two fully occupied office buildings. The small number of parcels outside of the FEMA flood zone and WUI, the lack of any vacant parcels in that subset, the lack of opportunities for residential conversions, and the small size of these lots, demonstrates the lack of suitable land available for new residential development in Corte Madera at the scale required pursuant to the Draft RHNA.

The small size of existing lots out of the hazard areas (and even within the WUI) represents a particular challenge for the development of affordable housing, given that several parcels, under different ownership, would have to be combined and assembled, including the demolition of existing residential uses, in order to create a lot of sufficient size presumed to realistically allow for the development of lower income units based on needed economies of scale for such projects. This fact is recognized by Government Code Section 65583.2(c)(2)(A), which in relation to the land inventory analysis required by Housing Element law states, "A site smaller than half an acre shall not be deemed adequate to accommodate lower income housing need unless the locality can demonstrate that sites of equivalent size were successfully developed during the prior planning period for an equivalent number of lower income units as projected for the site or unless the locality provides other evidence to the department that the site is adequate to accommodate lower income housing." At this time, the Town is unaware of evidence to support the development of affordable housing on sites smaller than .5 acres (except for the development of accessory dwelling units (ADUs)) or to assume the assemblage of single family home lots for such purpose.

As a result, the scale of Corte Madera's Draft RHNA, if not modified pursuant to this appeal request, will necessarily require locating the vast majority of housing development sites (estimated to be at least 600 units or 83% of the Draft RHNA) in the FEMA 100-year flood zone, where: 1) parcels are relatively larger and therefore can meet the RHNA site inventory rules of Government Code Section 65583.2(c)(2)(A) governing minimum lot sizes for accommodating lower income housing needs; 2) the vast majority of the Town of Corte Madera's commercial uses exist, allowing for potential residential redevelopment or conversion, and 3) the land is relatively flat (if prone to differential settlement and other factors that increase development costs).

Unfortunately, the areas in Corte Madera within the FEMA 100-year flood zone are the same areas most susceptible to the risks associated with Sea Level Rise (SLR).

[9] Even if we were to consider vacant land in the 100-year FEMA flood zone or the WUI, only 10 vacant parcels exist in Corte Madera, and with the exception of one 3 parcel small lot subdivision, are located in densely forested, steeply sloped portions of Corte Madera that cannot readily accommodate denser development.

b. Sea Level Rise (SLR)

In April 2021, following a two and a half year process, the Town of Corte Madera completed a Climate Adaptation Assessment to identify the Town of Corte Madera's vulnerabilities in the face of changing climatic conditions and to develop a roadmap for action based on a toolkit of potential options.[10] The Town of Corte Madera is well aware of the significant challenges that lie ahead to protect existing residents and businesses, let alone new community members that the Town of Corte Madera will welcome over the coming years and decades. While it is not known at this time the amount of SLR that will occur during the RHNA 2023-2031 planning period, State guidance is to plan for 1.1 to 1.9 feet of SLR by 2050 and Plan Bay Area 2050 assumed 2 feet of permanent inundation and 3 feet of temporary inundation during storm and king tide events by 2050[11]. Figure 2 shows the potential impact on Corte Madera property at different SLR estimates.

Figure 2. Potential Impact to Corte Madera Properties from Sea Level Rise

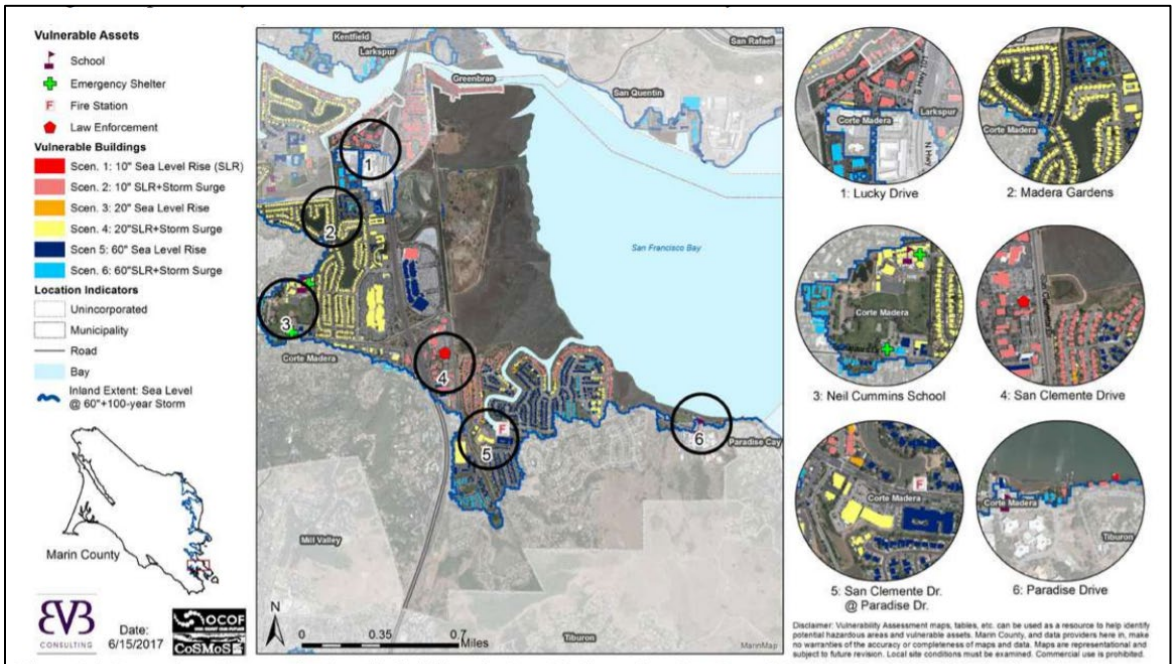


Figure 3.4. Screenshot of a map of vulnerable buildings in Corte Madera, taken from Page 226 of the BayWAVE Marin Shoreline Sea Level Rise Vulnerability Assessment.

As discussed above, due to the overall size of Corte Madera's Draft RHNA, a significant number of new housing units will be located in the FEMA 100-year flood zone and areas subject to increased risk of inundation as a result of projected SLR. While this raises serious questions in itself about meeting the statutory objectives of 65584(d), particularly with respect to furthering the objective of encouraging efficient development patterns, the Draft RHNA will have a disproportionate effect on very-low and low-income households given that Corte Madera's Draft RHNA skewed heavily toward very-low and low-income units (336 units or 46% of the total Draft RHNA) because of Corte Madera's designation as a High Resource Area and the weight provided to that criterion through the RHNA methodology process. As noted above, the likelihood that these units will be in the FEMA 100-year flood zone and SLR

[10] Information regarding the Town of Corte Madera's Climate Adaptation Assessment can be found at: www.cortemaderaadapts.org

[11] Plan Bay Area 2050 and Sea Level Rise Technical Memo: https://www.planbayarea.org/sites/default/files/pdfs_referenced/PBA2050_SLR_Brief_102120_Final_0.pdf

permanent inundation area is exacerbated by the RHNA site inventory rules of Government Code Section 65583.2(c)(2)(A) which effectively restricts designating sites for very-low and low income housing to only those greater than .5 acres in size. While undoubtedly intended to target the most feasible sites for affordable housing development, the unintended consequence in Corte Madera is to locate these units disproportionally in areas at risk of flooding, where larger lot sizes exist.

Unfortunately, the outcome described above already exists in Corte Madera, as all but a few of the Town of Corte Madera's existing deed restricted affordable housing units are located in areas susceptible to flooding and SLR. By one measure, Corte Madera ranks in the top 20 in the United States with respect to cities where the greatest number of affordable housing units are currently at risk and where the potential exposure of affordable housing to flooding is disproportionally high compared to its overall housing stock.[12]

Locating several hundred additional housing units, including a significant number of affordable housing units, in areas of Corte Madera that are increasingly at risk of flooding due to SLR, does not further the RHNA objective under 65584(d)(2) to encourage efficient development patterns. Worse, this outcome directly undermines the 65584(d)(2) objective of promoting socioeconomic equity. As stated by Buchanan, "the combination of physical vulnerability of affordable housing infrastructure, socioeconomic vulnerability, and more frequent flooding due to sea level rise (SLR) presents a triple threat to residents of the country's already scarce affordable housing (p. 2)."

While Corte Madera has begun the process of identifying potential actions that may be able to mitigate some of the risks associated with SLR as part of our Climate Adaptation Assessment process, our own experience working with our community tells us that the Plan Bay Area 2050 approach to protecting the Bay's cities from the impacts of SLR is overly optimistic both in terms of the $19 billion projected cost (which is as yet unfunded) and the timeline for constructing needed mitigation measures. Even if we as a region are successful in implementing adequate SLR protections in the coming decades for our communities, the 6th Cycle RHNA for Corte Madera effectively promotes a policy for the development of new housing units (disproportionally at lower income levels) in SLR inundation areas well before feasible protection measures have even been identified, let alone implemented, leaving hundreds of new residents at risk of flooding and displacement in the interim. The general statements in Plan Bay Area 2050 about our region's ability to protect our shorelines from the impacts of SLR should therefore not be used as a basis for supporting RHNA's required objectives to further socioeconomic equity or efficient development patterns in the Corte Madera context.

For the reasons stated above in both sections a) and b), a revision to Corte Madera's Draft RHNA is necessary to further the intent of the objectives listed in Government Code Section 65584(d)(2) related to encouraging efficient development patterns and promoting socioeconomic equity. A revision would be consistent with, and not to the detriment of, the development pattern in the sustainable communities strategy (Plan Bay Area 2050 Final Blueprint) since the relatively small number of units requested to be eliminated from Corte Madera's Draft RHNA could be reallocated within the Central or Southern Marin "superdistricts" or other High Resource Areas within the Bay Area, which have a lower proportion of developable land vulnerable to the impacts of existing flooding and SLR.

2. ABAG failed to determine Corte Madera's share of the regional housing needs in a manner that furthers, and does not undermine the objectives listed in Government Code Section 65584(d).

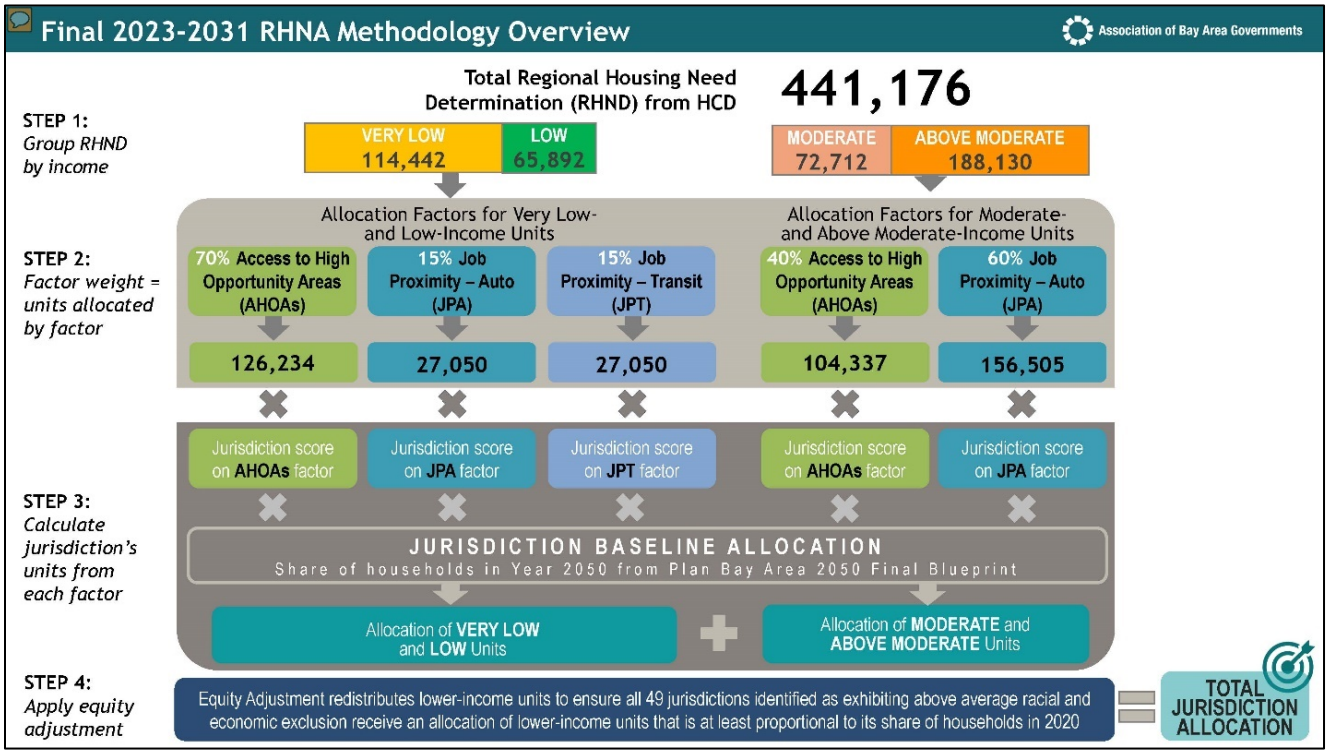
[12] Maya K. Buchanan, et al. 2020. "Sea level rise and coastal flooding threaten affordable housing." *Environmental Research Letters 15 124020.* See Attachment 5.

The Town of Corte Madera contends that ABAG failed to determine Corte Madera's share of the regional housing needs in a manner that furthers, and does not undermine the objectives listed in Government Code Section 65584(d)(2) and 65584(d)(3).

a. Government Code Section 655842(d)(2)

The methodology utilized to determine the Draft RHNA for Corte Madera undermines the objective in Government Code Section 655842(d)(2) to promote socioeconomic equity and the encouragement of efficient development patterns. As described in the below image (Figure 3) pulled from the ABAG template presentation materials for RHNA appeals, the methodology used to determine the Draft RHNA for High Opportunity Areas, like Corte Madera, significantly increased the number of housing units, primarily at the lower income levels, above Corte Madera's baseline allocation. As discussed above, based on the specific local factors in Corte Madera, and the RHNA regulations in Government Code Section 65583.2(c)(2)(A), this has the unintended consequence of facilitating development of higher concentrations of affordable housing in the FEMA 100-year flood zone and areas vulnerable to the risks of SLR. The RHNA methodology approved by ABAG, therefore, undermines the promotion of socioeconomic equity in Corte Madera, a key objective stated in Government Code Section 65584(d).

Figure 3. RHNA Methodology Overview



Furthermore, as described in the Town of Corte Madera's October 6, 2020 comment letter regarding the proposed RHNA methodology (see Attachment 6), and elaborated upon above, ABAG's approved methodology more generally undermines the required RHNA objective to encourage efficient development patterns. The methodology for the Draft RHNA allocates higher proportions of new housing units to areas, such as Corte Madera, that lack adequate transportation infrastructure, that are

away from existing and future job centers, and into areas at risk of sea level rise and wildfire in quantities inconsistent with more realistic growth projections more carefully considered in Plan Bay Area 2050.

b. Government Code Section 65584(d)(3)

The methodology utilized to determine the Draft RHNA for Corte Madera undermines the objective in Government Code Section 65584(d)(3) to promote improved intraregional relationships between jobs and housing. Plan Bay Area 2050 projects that the Central and Southern Marin "superdistricts" will lose a significant number of jobs (18,000) and gain a significant number of households (31,000) by 2050. This projected jobs to housing shift reduces the jobs/housing ratio of these "superdistricts" to approximately .7 and .8 respectively (see Attachment 2), well below the region's average and, depending upon the makeup of the specific jobs expected to be lost and type of housing gained, is inconsistent with accepted planning standards for creating healthy development patterns and goals to reduce Vehicle Miles Traveled (VMT).[13]

Based on the methodology used to determine the Draft RHNA, these same "superdistricts" are expected to add 12,315 households in just the eight-year period from 2023-2031. This portends an even greater reduction in the job/housing ratio than projected in Plan Bay Area by 2050, demonstrating that the methodology used to determine the Draft RHNA undermines the objective to promote an *improved* intraregional relationship between jobs and housing in Government Code Section 65884(d)(3). Further, it demonstrates that a reduction to the Draft RHNA for Corte Madera would be consistent with, and not to the detriment of, the development pattern in the sustainable communities strategy (Plan Bay Area 2050 Final Blueprint).

To further the intent of the objectives listed in Government Code Section 65584(d), related to promoting socioeconomic equity, encouraging efficient development patterns, and to promote the improved intraregional relationship between jobs and housing, ABAG must reduce the Town of Corte Madera's RHNA allocation. Such a reduction and reallocation would be consistent, and not to the detriment of, the development pattern in the sustainable communities strategy (Plan Bay Area 2050 Final Blueprint).

Conclusion

Based upon the information cited in this appeal request, including attachments and references, the Town of Corte Madera requests a reduction of the Draft RHNA allocation from 725 units to 400 units. As discussed above, there is a lack of suitable land available in Corte Madera for new residential development at the scale required pursuant to the Draft RHNA. It is infeasible for an additional 725 units to be developed in the next Housing Element cycle based on the reasons included in this appeal request. As part of this appeal request, Town staff has reviewed the land available for more intensive residential development, including developed parcels that could potentially redevelop within the next housing element cycle.

The Town of Corte Madera understands the challenges of meeting critical regional planning objectives related to housing affordability, equity, and climate change and supports ABAG's efforts in this area. However, specific, unique, local constraints and factors must be given due consideration in regional planning efforts in order to avoid unintended consequences. We hope this appeal request is viewed as an opportunity for ABAG to do just that.

[13] Weitz, Jerry. 2003. "Jobs-Housing Balance." *American Planning Association, Planning Advisory Service, Report No. 516.* https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/PAS-Report-516.pdf.

Respectfully Submitted,

Town of Corte Madera Town Council

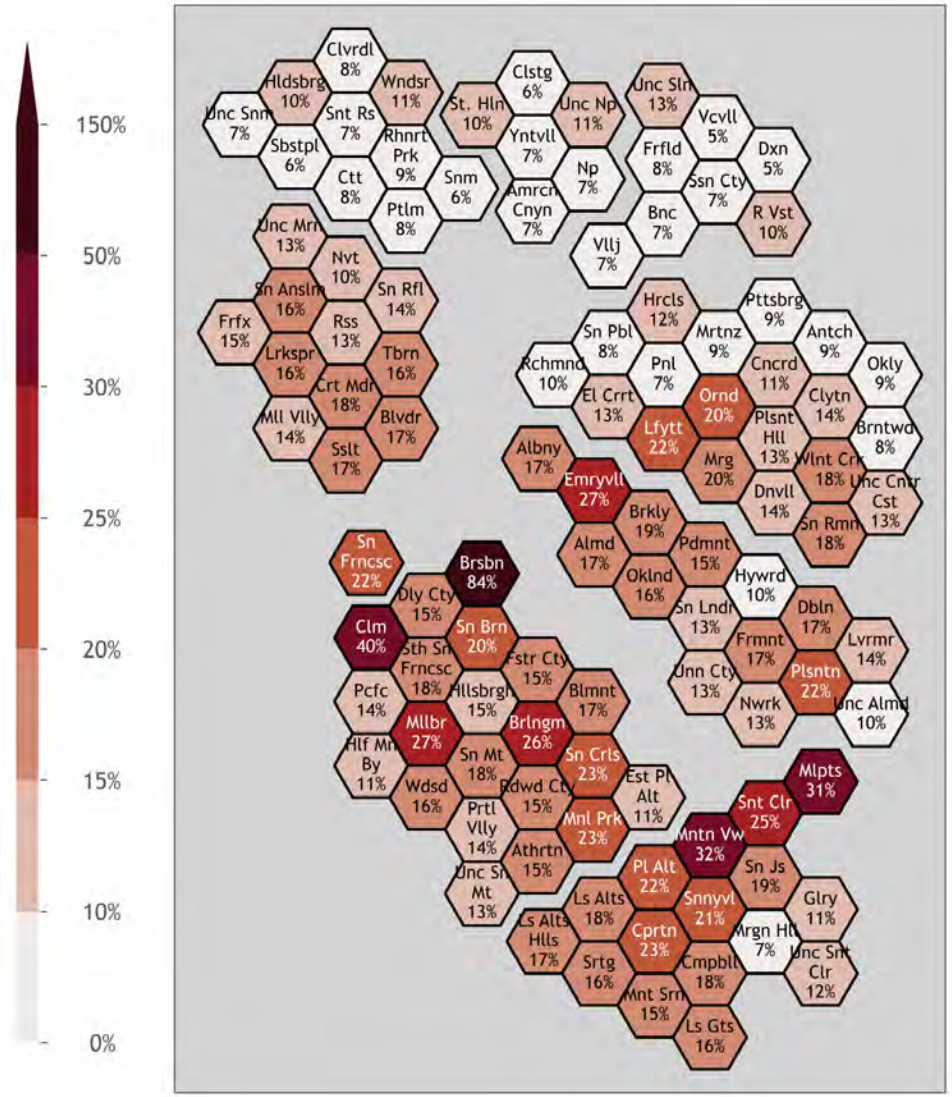
Attachments:

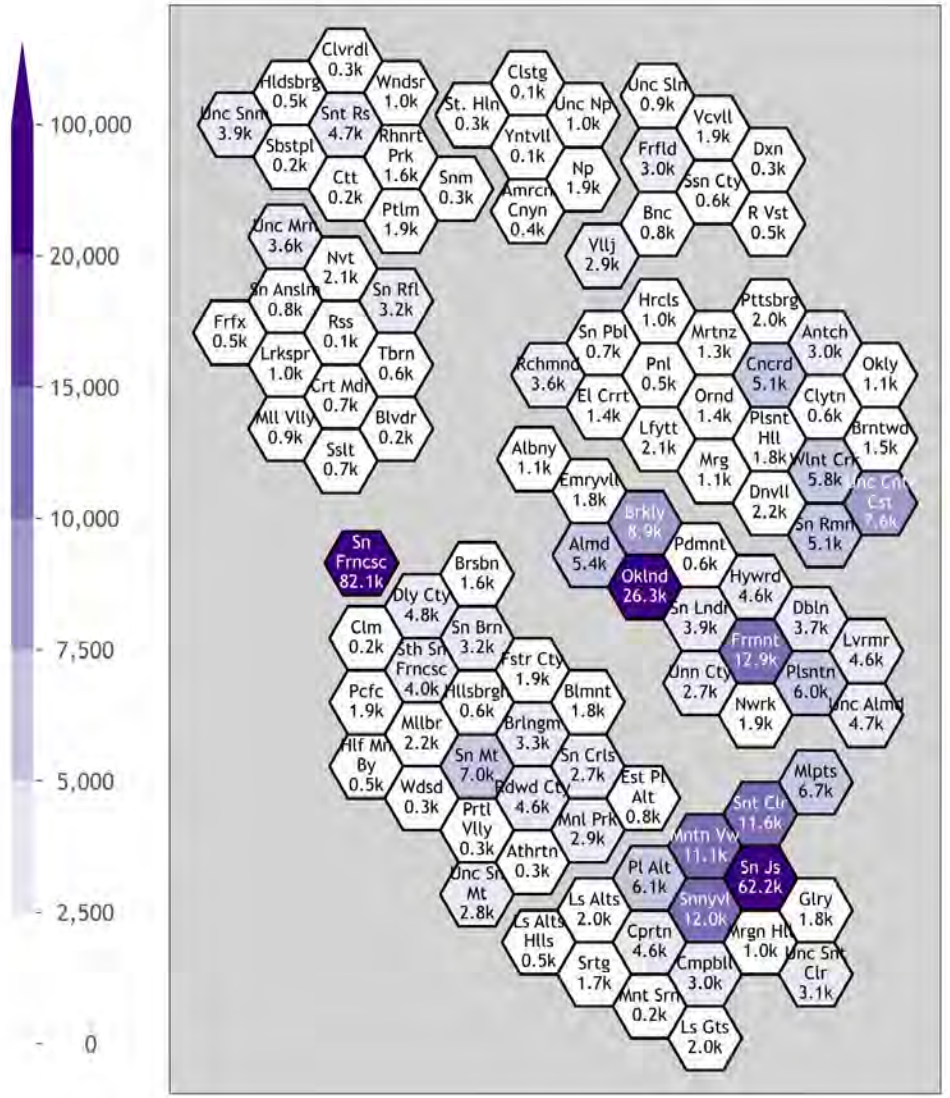
1. Jurisdiction Growth Rate Compared to 2020 Households (from ABAG)
2. Plan Bay Area 2050 Final Blueprint: Growth Pattern
3. Corte Madera's Local Jurisdiction Survey Response
4. Historical and Current Images of Corte Madera
5. Maya K. Buchanan et al 2020. "Sea level rise and coastal flooding threaten affordable housing"
6. Town of Corte Madera comment letter re: RHNA methodology

Corte Madera RHNA Appeal Attachment 1

Draft RHNA Allocations

Jurisdiction Growth Rate Compared to 2020 Households





Jurisdiction Growth in Units

PLAN BAY AREA 2050

BLUEPRINT

GROWTH PATTERN

Updated January 21, 2021

Data tables below summarize the regional, county, and sub-county growth pattern for households and jobs in the Plan Bay Area 2050 Final Blueprint. Jurisdiction-level growth projections are developed solely for the 2023-2031 Regional Housing Needs Allocation (RHNA) process – for more information on RHNA, go to abag.ca.gov.

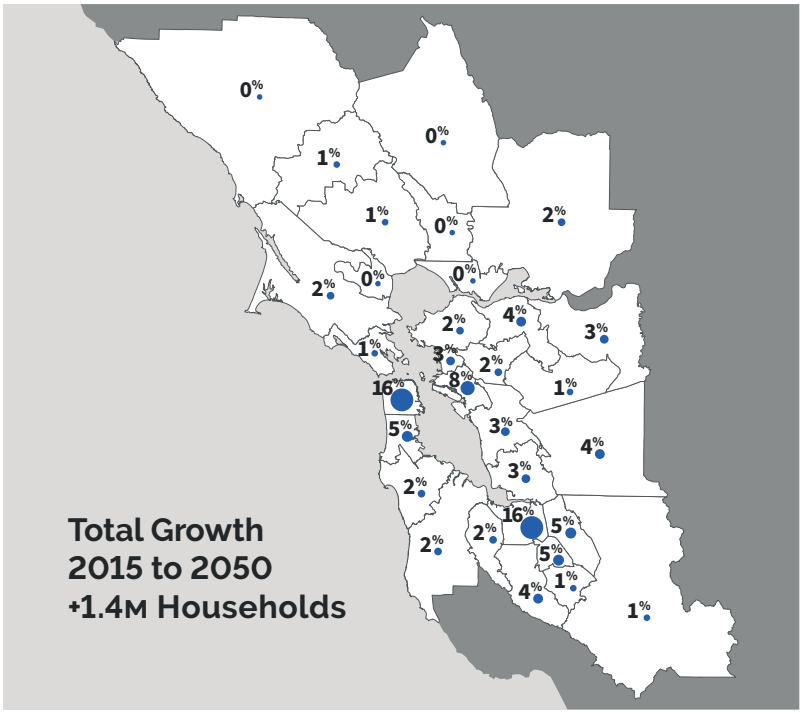
PROJECTED HOUSEHOLD AND JOB GROWTH, BY COUNTY

	HOUSEHOLDS					JOBS				
COUNTY	2015	2050	GROWTH	PERCENT GROWTH	SHARE OF REGIONAL GROWTH	2015	2050	GROWTH	PERCENT GROWTH	SHARE OF REGIONAL GROWTH
San Francisco	366,000	578,000	213,000	+58%	16%	682,000	918,000	236,000	+35%	17%
San Mateo	265,000	394,000	129,000	+48%	9%	393,000	507,000	114,000	+29%	8%
Santa Clara	623,000	1,075,000	453,000	+73%	33%	1,099,000	1,610,000	511,000	+46%	36%
Alameda	552,000	847,000	295,000	+54%	22%	867,000	1,182,000	315,000	+36%	22%
Contra Costa	383,000	551,000	169,000	+44%	12%	404,000	534,000	130,000	+32%	9%
Solano	142,000	177,000	35,000	+24%	3%	132,000	201,000	69,000	+53%	5%
Napa	50,000	56,000	5,000	+10%	0%	72,000	87,000	15,000	+21%	1%
Sonoma	188,000	220,000	32,000	+17%	2%	221,000	251,000	30,000	+14%	2%
Marin	109,000	146,000	37,000	+34%	3%	135,000	116,000	–19,000	–14%	–1%
REGION	**2,677,000**	**4,043,000**	**1,367,000**	**+51%**	**100%**	**4,005,000**	**5,408,000**	**1,403,000**	**+35%**	**100%**

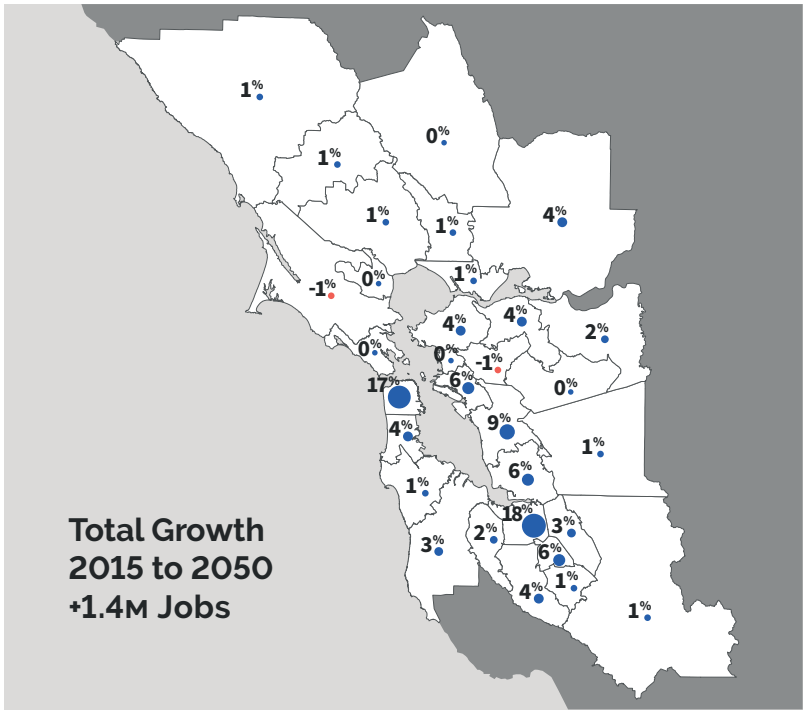
Numbers may not always sum to 100% due to rounding.

GROWTH PATTERN

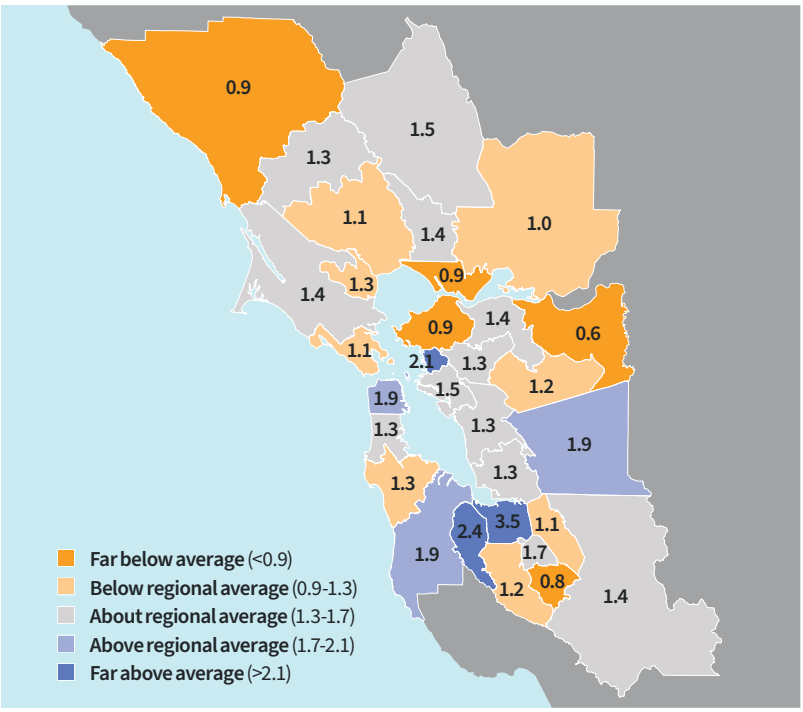
Housing Growth between 2015-2050
(as a Share of Region's Growth)



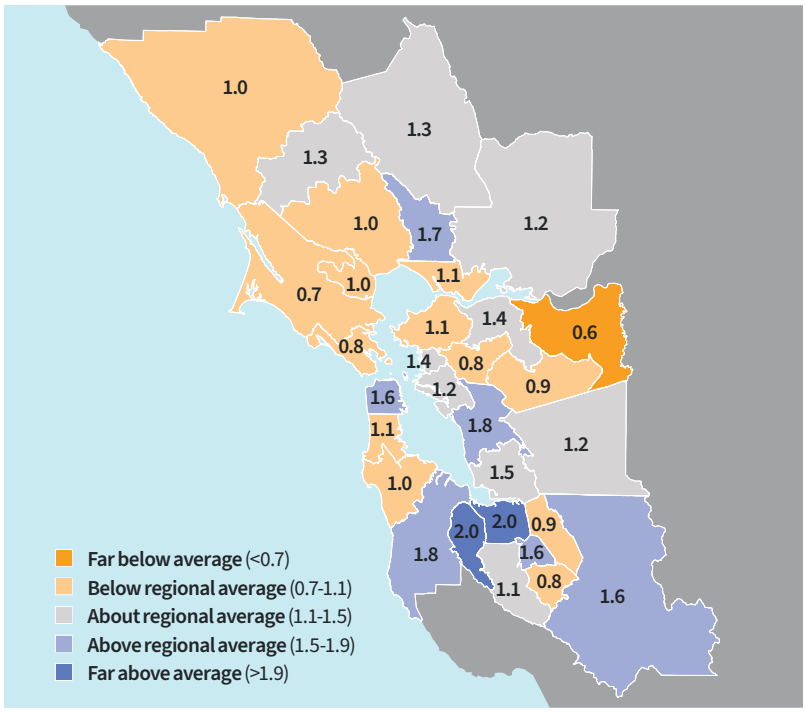
Job Growth between 2015-2050
(as a Share of Region's Growth)



Jobs/Housing Ratio 2015
(Region-Wide Average: 1.5)



Jobs/Housing Ratio 2050
(Region-Wide Average: 1.3)



The nine-county Bay Area is divided into 34 subcounty areas, called "superdistricts." Superdistricts are combinations of cities, towns and unincorporated areas that allow the public to see the more localized growth pattern in Plan Bay Area 2050. More information on the superdistricts can be found in the layer documentation.

GROWTH PATTERN

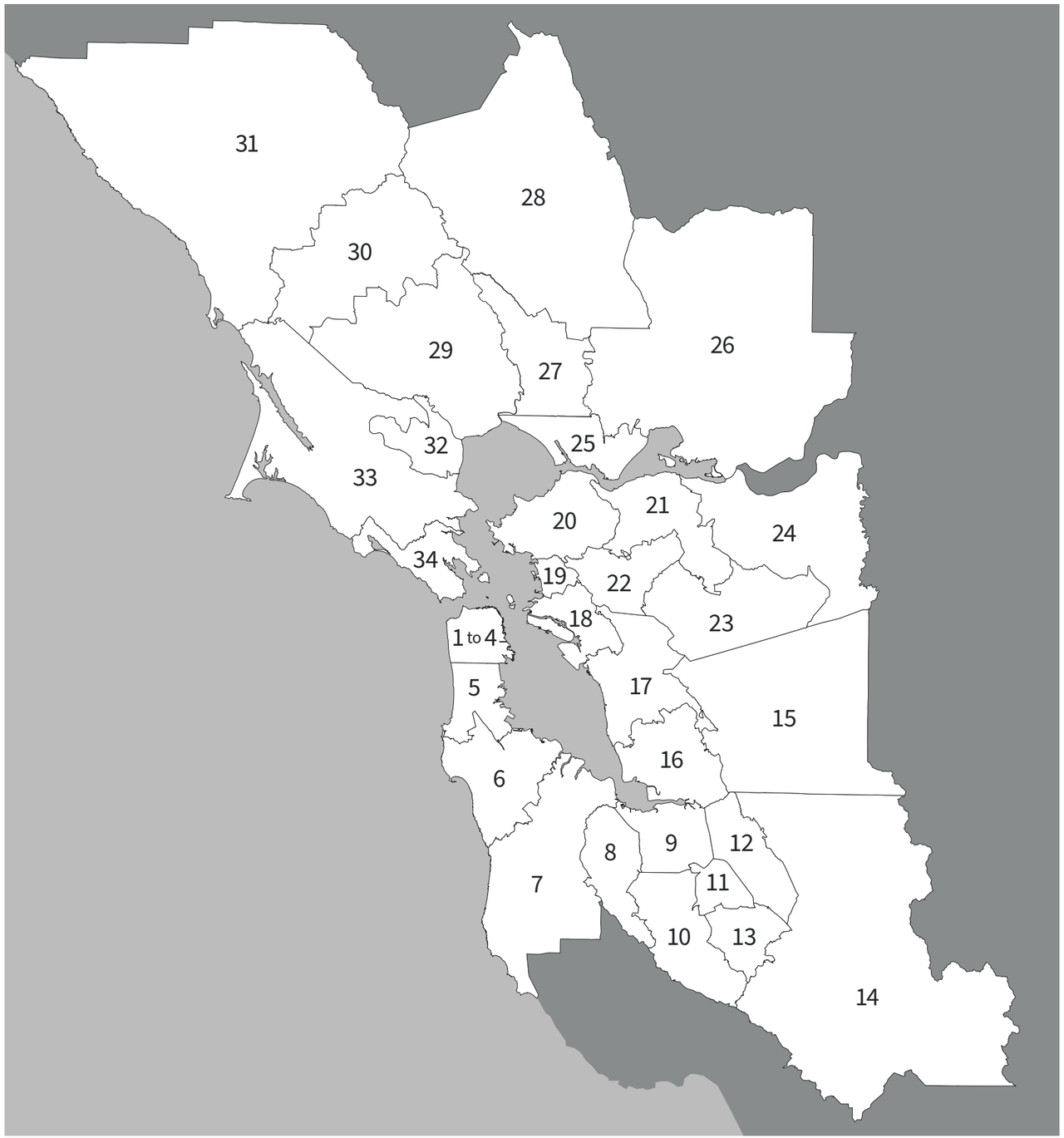
PROJECTED HOUSEHOLD AND JOB GROWTH, BY SUPERDISTRICT

			HOUSEHOLDS					JOBS				
COUNTY	SUPER-DISTRICT	SUPERDISTRICT NAME	2015	2050	GROWTH	PERCENT GROWTH	SHARE OF REGIONAL GROWTH	2015	2050	GROWTH	PERCENT GROWTH	SHARE OF REGIONAL GROWTH
San Francisco	1 to 4	San Francisco County (Combined)	366,000	578,000	213,000	+58%	16%	682,000	918,000	236,000	+35%	17%
San Mateo	5	North San Mateo County	98,000	166,000	69,000	+70%	5%	130,000	188,000	58,000	+44%	4%
	6	Central San Mateo County	87,000	121,000	34,000	+39%	2%	110,000	123,000	13,000	+12%	1%
	7	South San Mateo County	80,000	106,000	26,000	+32%	2%	152,000	196,000	44,000	+29%	3%
Santa Clara	8	Northwest Santa Clara County	74,000	102,000	28,000	+38%	2%	180,000	207,000	27,000	+15%	2%
	9	North Santa Clara County	107,000	320,000	212,000	+199%	16%	370,000	629,000	259,000	+70%	18%
	10	West Santa Clara County	121,000	172,000	51,000	+42%	4%	145,000	197,000	52,000	+36%	4%
	11	Central Santa Clara County	105,000	168,000	63,000	+60%	5%	178,000	263,000	86,000	+48%	6%
	12	East Santa Clara County	108,000	180,000	72,000	+67%	5%	121,000	170,000	49,000	+40%	3%
	13	Central South Santa Clara County	73,000	91,000	18,000	+25%	1%	57,000	77,000	21,000	+36%	1%
	14	South Santa Clara County	35,000	43,000	8,000	+24%	1%	49,000	68,000	18,000	+37%	1%
Alameda	15	East Alameda County	72,000	132,000	60,000	+82%	4%	138,000	156,000	18,000	+13%	1%
	16	South Alameda County	105,000	152,000	47,000	+45%	3%	142,000	221,000	79,000	+56%	6%
	17	Central Alameda County	120,000	160,000	40,000	+33%	3%	157,000	285,000	128,000	+82%	9%
	18	North Alameda County	181,000	287,000	107,000	+59%	8%	275,000	358,000	83,000	+30%	6%
	19	Northwest Alameda County	73,000	115,000	42,000	+57%	3%	155,000	162,000	7,000	+5%	0%
Contra Costa	20	West Contra Costa County	89,000	123,000	34,000	+38%	2%	79,000	132,000	52,000	+66%	4%
	21	North Contra Costa County	85,000	134,000	49,000	+58%	4%	121,000	184,000	63,000	+52%	4%
	22	Central Contra Costa County	60,000	89,000	28,000	+47%	2%	81,000	74,000	-7,000	–9%	-1%
	23	South Contra Costa County	55,000	70,000	15,000	+28%	1%	66,000	60,000	-6,000	–9%	0%
	24	East Contra Costa County	94,000	136,000	42,000	+45%	3%	56,000	84,000	28,000	+51%	2%
Solano	25	South Solano County	53,000	57,000	5,000	+9%	0%	45,000	62,000	17,000	+37%	1%
	26	North Solano County	89,000	119,000	30,000	+34%	2%	87,000	139,000	53,000	+61%	4%
Napa	27	South Napa County	34,000	40,000	5,000	+15%	0%	48,000	66,000	19,000	+39%	1%
	28	North Napa County	16,000	16,000	0	+1%	0%	24,000	20,000	-3,000	–14%	0%
Sonoma	29	South Sonoma County	64,000	83,000	19,000	+30%	1%	72,000	80,000	8,000	+11%	1%
	30	Central Sonoma County	88,000	98,000	10,000	+11%	1%	118,000	131,000	14,000	+12%	1%
	31	North Sonoma County	36,000	39,000	3,000	+9%	0%	31,000	40,000	9,000	+28%	1%
Marin	32	North Marin County	23,000	30,000	7,000	+28%	0%	29,000	29,000	0	+0%	0%
	33	Central Marin County	44,000	66,000	22,000	+50%	2%	63,000	49,000	–14,000	–23%	–1%
	34	South Marin County	41,000	50,000	9,000	+21%	1%	44,000	40,000	–4,000	–10%	0%
REGION			2,677,000	4,043,000	1,367,000	+51%	100%	4,005,000	5,408,000	1,403,000	+35%	100%

Numbers may not always sum to 100% due to rounding.

Corte Madera RHNA Appeal Attachment 2

REGIONAL MAP – SUPERDISTRICTS



SUPER-DISTRICT	COUNTY	SUPERDISTRICT NAME	PRIMARY JURISDICTIONS INCLUDED IN SUPERDISTRICT
1 to 4	San Francisco	San Francisco County (Combined)	San Francisco
5	San Mateo	North San Mateo County	Brisbane, Colma, Daly City, Pacifica, South San Francisco, Millbrae, San Bruno, Burlingame (partial)
6	San Mateo	Central San Mateo County	Half Moon Bay, Hillsborough, San Mateo, Foster City, Belmont, Burlingame (partial)
7	San Mateo	South San Mateo County	Atherton, Menlo Park, Redwood City, Woodside, East Palo Alto, Portola Valley, San Carlos
8	Santa Clara	Northwest Santa Clara County	Los Altos Hills, Los Altos, Palo Alto (partial), Mountain View (partial)
9	Santa Clara	North Santa Clara County	Sunnyvale, Santa Clara (partial), Mountain View (partial), Milpitas (partial), San Jose (partial), Palo Alto (partial)
10	Santa Clara	West Santa Clara County	Los Gatos, Monte Sereno, Saratoga, Cupertino, Campbell (partial), Santa Clara (partial)
11	Santa Clara	Central Santa Clara County	Campbell (partial), San Jose (partial)
12	Santa Clara	East Santa Clara County	Milpitas (partial), San Jose (partial)
13	Santa Clara	Central South Santa Clara County	San Jose (partial)
14	Santa Clara	South Santa Clara County	Gilroy, Morgan Hill, San Jose (partial)
15	Alameda	East Alameda County	Dublin, Livermore, Pleasanton
16	Alameda	South Alameda County	Newark, Fremont, Union City
17	Alameda	Central Alameda County	San Leandro, Hayward
18	Alameda	North Alameda County	Alameda, Piedmont, Oakland
19	Alameda	Northwest Alameda County	Albany, Berkeley, Emeryville
20	Contra Costa	West Contra Costa County	El Cerrito, Hercules, Pinole, Richmond, San Pablo
21	Contra Costa	North Contra Costa County	Clayton, Pleasant Hill, Concord, Martinez, Lafayette (partial), Pittsburg (partial)
22	Contra Costa	Central Contra Costa County	Moraga, Orinda, Walnut Creek (partial), Lafayette (partial)
23	Contra Costa	South Contra Costa County	Danville, San Ramon, Walnut Creek (partial)
24	Contra Costa	East Contra Costa County	Antioch, Brentwood, Oakley, Pittsburg (partial)
25	Solano	South Solano County	Benicia, Vallejo
26	Solano	North Solano County	Dixon, Fairfield, Rio Vista, Suisun City, Vacaville
27	Napa	South Napa County	American Canyon, Napa
28	Napa	North Napa County	Calistoga, St. Helena, Yountville
29	Sonoma	South Sonoma County	Cotati, Petaluma, Sonoma, Rohnert Park
30	Sonoma	Central Sonoma County	Santa Rosa, Sebastopol
31	Sonoma	North Sonoma County	Cloverdale, Healdsburg, Windsor
32	Marin	North Marin County	Novato
33	Marin	Central Marin County	Fairfax, San Anselmo, San Rafael, Ross
34	Marin	South Marin County	Belvedere, Corte Madera, Mill Valley, Sausalito, Tiburon, Larkspur

Unincorporated areas included in most superdistricts outside San Francisco. Small overlap zones, less than 10 percent of city size, are not shown for clarity.

Corte Madera RHNA Appeal Attachment 3

Submission #127

Previous submission Next submission

Resend e-mails

SURVEY RESPONDENT CONTACT INFORMATION

Jurisdiction
Corte Madera

Page Break

RELATIONSHIP BETWEEN JOBS AND HOUSING

1. If you believe the information from federal data sources shown in the link below is not accurate, please report your own data in the box. Note your estimate for jobs-housing fit for your jurisdiction and the data sources used to calculate this estimate.
It doesn't appear that the Federal data source includes any of the deed restricted housing units for low and very low income residents that exist in Corte Madera. For example, of the 79 units at San Clemente Place apartments, 60 are deed-restricted for extremely low income residents and 19 are deed-restricted for low income residents. If this is because those deed-restricted units charge more than $749 in rent/month, I would question the validity of this metric in determining low wage housing. Even very-low income deed restricted housing units (up to 50% AMI) can charge up to $1,275 per month in the San Francisco HUD Metro FMR Area in 2019. Further, a low-wage job that earns less than $1,250 per month would require that job to pay less than a minimum wage salary. It is highly unlikely that Corte Madera has 1,615 jobs that pay less than the minimum wage. According to the California Economic Development Department, Occupational Employment Statistics, in 2014, all service sector jobs pay more than $1,250 per month. In short, I do

believe the Federal data source is inaccurate, significantly so, and a new metric should be established based on local conditions to define jobs-housing fit.

2. How would you rate the balance between low-wage jobs and the number of homes affordable to low-wage workers in your jurisdiction?
Very imbalanced

3. Please briefly explain your reasoning for your response to the previous question
While I question the absolute number of "low wage" jobs that exist in Corte Madera, based on the definition of "low wage job" used above, there is no question that there is a great disparity between the number of housing units affordable to lower wage workers (based on paying 30-33% of income toward housing) in Corte Madera and the number of lower wage workers working in Corte Madera.

4. Which of the following impacts does the balance or imbalance of low-wage workers to homes affordable to low-wage workers have on your jurisdiction?
- Long commutes into the jurisdiction
- Difficulty for local employers to hire and/or retain workers

5. Does your jurisdiction use data on the local jobs-housing fit ratio to inform policy decisions?
Yes

This metric (not specifically the local jobs-housing fit ratio described above, but a general jobs-housing ratio) has been used in the past to provide justification for allowing housing development in certain areas of Town. Nonetheless, I do not agree that this metric, if it describes the ratio only for Corte Madera, should be used to inform Corte Madera policy. To effectively achieve any policy goals related to addressing the negative outcomes of local jobs-housing fit imbalance, a regional metric, that inlcudes multiple surrounding jurisdictions, should be utilized, and regional strategy should be developed.

6. If your jurisdiction experiences an imbalance in the jobs-housing fit for low-wage workers, which of the following policies, programs, or strategies would be most helpful for your jurisdiction to implement to help address this imbalance?
- Increased funding for affordable housing
- Inclusionary zoning
- Community land trusts

HOUSING OPPORTUNITIES AND CONSTRAINTS

7. Which of the following apply to your jurisdiction as either an opportunity or a constraint for development of additional housing by 2030?

	Opportunity	Constraint	Explanation
Sewer capacity			
Water capacity			
Land suitability		Constraint	The Town of Corte Madera encompasses approximately 4.5 sq. miles, however, approximately 1.25 sq. miles is submerged under bay waters and .67 miles is protected marshland, leaving a net land area of 2.55 miles, of which approximately half is within the FEMA 100 year flood zone, and the other half is in the Wildland-Urban Interface. The only remaining vacant parcels in Town are on steep hillsides

	Opportunity	Constraint	Explanation
Lands protected by federal or state programs			
County policies to preserve agricultural land		Constraint	
Availability of schools	Opportunity		
Availability of parks	Opportunity		
Availability of public or social services			
Impact of climate change and natural hazards		Constraint	The most up to date sea level rise maps show that sea level rise poses a significant risk to vast areas of land in Corte Madera, including the most-likely sites available for redevelopment for housing. Without knowing whether potential mitigation measures can be funded or are feasible, the redevelopment of these sites presents a constraint to the availability of land for housing development. Similarly, increasing wildfire risks constrain the amount of housing development that can be developed in the Town's hillside areas due to the need to mitigate the public safety risks associated with narrow roads and impediments to evacuations during emergencies.
Construction costs		Constraint	
Availability of construction workforce		Constraint	
Availability of surplus public land			
Availability of vacant land		Constraint	There are approximately 10 vacant parcels of land in Corte Madera, and with the exception of a 3 lot single-family subdivision, all located on steep hillsides, within existing single family very low density zones.
Financing/funding for affordable housing			
Weak market conditions	Opportunity		
Project Labor Agreements (i)			
Utility connection fees			
Other			

8. Of the issues above that you marked as opportunities, list up to three that you feel represent the greatest opportunities for developing additional housing in your jurisdiction by 2030 and explain the

reasoning for your selection: Corte Madera RHNA Appeal Attachment 3
Corte Madera has excellent schools, recreation, and geographic location that makes the demand for housing in the community high. As a result, market rate residential projects have recently been developed (or are in construction) in conjunction with either deed-restricted affordable housing or accessory dwelling units that have diversified the Town's housing stock. There may be opportunities to utilize the high market demand to develop higher ratios of affordable housing. Currently, the Town's inclusionary housing requirement is 25%. If feasible sea level rise mitigation measures are identified, there are relatively large sites that could be available for mixed-use or infill housing projects.

9. Of the issues above that you marked as constraints, list up to three that you feel represent the greatest constraints for developing additional housing in your jurisdiction by 2030 and explain the reasoning for your selection:
The lack of Town owned land, the lack of vacant land, high construction costs, including availability of labor, and questions surrounding the impacts of sea level rise provide the greatest constraints to developing additional housing. The last sizable vacant residential vacant property has been approved for 24 units of housing and will be under construction shortly. There is some potential for the Town to develop a modest amount of housing on land it owns, but the vast majority of land is privately held and currently occupied with existing uses. The most likely sites available for redevelopment for housing are in the FEMA flood zone and despite the ability to meet FEMA requirements, long-term projections regarding sea level rise raise significant questions regarding the ability to mitigate potential impacts. It is unclear how the private real estate market will be affected during the 2020s.

10. Does your jurisdiction face opportunities or constraints in encouraging more jobs and housing near public transportation and existing transportation infrastructure?
No

11. Does your jurisdiction face opportunities or constraints in encouraging housing near job centers (including jobs that are not served by transit)?
No

12. What agreements, if any, are in place between your county and the cities in your county that direct growth toward either the incorporated or unincorporated areas of the county?
Not aware of any specific agreements, but historic land use policies have directed transportation infrastructure and population growth to incorporated areas along Hwy. 101.

13. The location and type of housing can play a key role in meeting state and regional targets to reduce greenhouse gas emissions. What land use policies or strategies has your jurisdiction implemented to minimize greenhouse gas emissions?
- Energy efficiency standards in new construction or retrofits
- Investment in pedestrian, bicycle, and active transportation infrastructure
- Land use changes that encourage a diversity of housing types and/or mixed-use development
- Land use changes to allow greater density near transit
- Incentives or policies to encourage housing development on vacant or underutilized land near transit
- Implementing a Climate Action Plan

HOUSING AFFORDABILITY AND OVERCROWDING

14. Has your jurisdiction considered what impacts high housing costs and the proportion of rent-burdened households have on residents in your jurisdiction?
Yes

Incorporated into inclusionary housing, ~~ADU, and source of income policies~~. Considering as part of short term rental ordinance.

15. Has your jurisdiction considered what impacts overcrowding has on residents in your jurisdiction?
No

16. What data sources does your jurisdiction use to examine local trends in housing costs?
- American Community Survey or other Census Bureau data
- Online real estate databases (Zillow, Redfin, etc)
- Locally collected data (please describe below)

Locally collected data
News sources, broker reports, etc...

17. What are the current housing cost trends in your jurisdiction?
They have moderated slightly after several years of significant growth both for owners and renters.

18. Does your jurisdiction collect data on homelessness within the jurisdiction and demand for transitional housing for those experiencing homelessness?
No

19. What are the primary barriers or gaps your jurisdiction faces in meeting its RHNA goals for producing housing affordable to very low- and low-income households?
- Land use and zoning laws, such as minimum lot sizes, limits on multi-unit properties, height limits, or minimum parking requirements
- Local affordable housing development capacity
- Availability of land
- Community opposition
- Other (please explain below)

Corte Madera has met its RHNA goals for the 5th cycle housing element and expects to continue meeting its goals through the 8 year cycle. For the next cycle, assuming significantly higher numbers, the availability of land, in conjunction with zoning limitations (height) likely limit the ability to construct a substantial numbers of housing units. If zoning limitations have to be modified I would expect community opposition to be relatively strong.

20. If local gap financing is a barrier to constructing more affordable housing in your jurisdiction, what do you estimate is the number of affordable housing units that could be built in your jurisdiction if this financing was available?

Please provide an estimate for the amount of gap financing necessary to fund those projects:

21. What types of support would your jurisdiction like to see the Bay Area Housing Finance Authority (BAHFA) provide to help your jurisdiction meet its RHNA goals and comply with the requirement to affirmatively further fair housing?
- Financing for new construction of affordable housing
- Financing for the preservation of existing subsidized affordable housing
- Financing for the preservation of housing that is currently on the private market to make it permanently affordable
- Technical assistance to determine locations to site housing (e.g. feasibility studies)
- Technical assistance on land assembly
- Technical assistance to pursue compliance with California HCD's new pro-housing designation or other state regulation

Corte Madera RHNA Appeal Attachment 3

HOUSING DEMAND

22. Over the course of a typical year, is there a need in your jurisdiction for housing for farmworkers?
No

23. What is the source for the data used for the previous response?

24. If your jurisdiction is not currently meeting the demand for farmworker housing, what are the main reasons for this unmet demand?

25. Please indicate the amount of housing need in your jurisdiction created by the presence of any of the postsecondary educational institutions in the table below.

	Housing Units Needed to Meet Demand
Private university	
Campus of the California State University or the University of California	
Community college	

26. What is the source for the data used to respond to the previous question?

27. Is your jurisdiction currently meeting the housing demand created by post-secondary educational institutions? Why or why not? If not, what is the total amount of unmet need?

28. Do any of the following dynamics in your jurisdiction impact the local demand for housing?
Population of senior residents

29. Has your jurisdiction experienced a loss of units in assisted housing developments in the past 10 years due to expiring affordability contracts or other issues facing at-risk affordable housing units?
No

30. If yes, how many units? What is the source of this data?

31. Does your jurisdiction anticipate a loss of units in assisted housing developments in the next 10 years?
Yes

32. If yes, why? How many units will be lost? What is the source of this data?
We expect approximately 8-10 units to be lost due to expiration of deed restrictions. This is based on Marin Housing Authority records

33. Has your jurisdiction lost housing units due to a state-declared emergency (fire, natural disasters, etc.) that have yet to be rebuilt or replaced as of January 1, 2020?
No

34. If yes, please provide the date of the emergency. How many units were lost? What is the source of this data?

35. Does your jurisdiction anticipate that some housing units lost during a state-declared emergency won't be replaced? If yes, why?

36. If possible, please describe the housing tenure (rental vs. ownership) and affordability levels of units that have been lost during a state-declared emergency:

FAIR HOUSING PLANNING AND DATA SOURCES

37. Does your jurisdiction receive funding from the U.S. Department of Housing and Urban Development (HUD) that requires submitting a Consolidated Plan?
No

38. If you answered yes to the previous question, which of the following reports has your jurisdiction undertaken or completed for HUD?

Please upload your most recently completed report:

Or provide a Web link/URL to the report

39. Which of the following data sources does your jurisdiction maintain or use to assess fair housing issues in the community?

40. Which of the following outreach activities has your jurisdiction used to encourage community participation in planning processes related to fair housing?

41. Did you collect data about the demographics of those who participated in planning processes related to fair housing? If so, please describe the demographics of the participants.

42. Please describe your goals for the process to elicit community participation for fair housing planning.

43. How successful were you in achieving the goals described in the previous question?

44. Describe reasons for the success or lack of success of these community engagement efforts:

DIVERSITY AND SEGREGATION, ACCESS TO OPPORTUNITY, AND DISPROPORTIONATE HOUSING NEEDS

45. Which of the following factors contribute to fair housing issues in your jurisdiction?

	Limited access to housing in your jurisdiction	Segregated housing patterns or concentrated areas of poverty	Disparities in access to opportunity areas	Disparities in housing cost burdens and overcrowding	Describe how this factor contributes to fair housing issues in your jurisdiction
Community opposition to proposed or existing developments	Yes				
Displacement of residents due to increased rents or other economic pressures					

Corte Madera RHNA Appeal Attachment 3

	Limited access to housing in your jurisdiction	Segregated housing patterns or concentrated areas of poverty	Disparities in access to opportunity areas	Disparities in housing cost burdens and overcrowding	Describe how this factor contributes to fair housing issues in your jurisdiction
Displacement of low-income residents and/or residents of color					
Displacement of residents due to natural hazards, such as wildfires					
Land use and zoning laws, such as minimum lot sizes, limits on multi-unit properties, height limits, or minimum parking requirements					
Occupancy standards that limit the number of people in a unit					
Location of affordable housing					
The availability of affordable units in a range of sizes (especially larger units)					
Foreclosure patterns					
Deteriorated or abandoned properties					
Lack of community revitalization strategies					
Lack of private investments in low-income neighborhoods and/or communities of color, including services or amenities					
Lack of public investments in low-income neighborhoods and/or communities of color, including services or amenities					
Lack of regional cooperation					
Access to financial services					
Lending discrimination					

Corte Madera RHNA Appeal Attachment 3

	Limited access to housing in your jurisdiction	Segregated housing patterns or concentrated areas of poverty	Disparities in access to opportunity areas	Disparities in housing cost burdens and overcrowding	Describe how this factor contributes to fair housing issues in your jurisdiction
Location of employers					
Location of environmental health hazards, such as factories or agricultural production					
Availability, frequency, and reliability of public transit					
Access to healthcare facilities and medical services					
Access to grocery stores and healthy food options					
Location of proficient schools and school assignment policies					
Creation and retention of high-quality jobs					
Range of job opportunities available					
The impacts of natural hazards, such as wildfires					
CEQA and the land use entitlement process					
Private discrimination, such as residential real estate “steering" (i)					
Other (please describe)					

46. List up to three of the factors you selected in the previous question that you feel are the biggest contributors to fair housing issues in your jurisdiction. Why did you select these factors?

FAIR HOUSING GOALS AND ACTIONS

47. What actions has your jurisdiction taken to overcome historical patterns of segregation or remove barriers to equal housing opportunity?

48. Briefly describe your jurisdiction’s goals for past actions to overcome historical patterns of segregation or remove barriers to equal housing opportunity:

49. How successful were these past actions in achieving these goals?

Describe reasons for success or lack thereof:

50. Which of the following policies, programs, or actions does your jurisdiction use to prevent or mitigate the displacement of low-income households?

	In Use	Under Council/Board Consideration	Potential Council/Board Interest
Rent stabilization/rent control			
Rent review board and/or mediation			
Mobile home rent control			
Single-room occupancy (SRO) preservation			
Condominium conversion regulations			
Foreclosure assistance			
Affordable housing impact/linkage fee on new residential development			
Affordable housing impact/linkage fee on new commercial development			
Inclusionary zoning			
Community land trusts			
First source hiring ordinances			
Living wage employment ordinances			
Promoting streamlined processing of ADUs			
Fair housing legal services			
Housing counseling			
Acquisition of affordable units with expiring subsidies			
Acquisition of unsubsidized properties with affordable rents			
Dedicating surplus land for affordable housing			
Other (please describe below)			

Other

ANY ADDITIONAL FACTORS/COMMENTS

51. Are there any other factors that you think ABAG should consider in the RHNA methodology?

52. What criteria or factors do you think are most important to consider in the RHNA methodology?

53. Any further comments about anything in this survey?

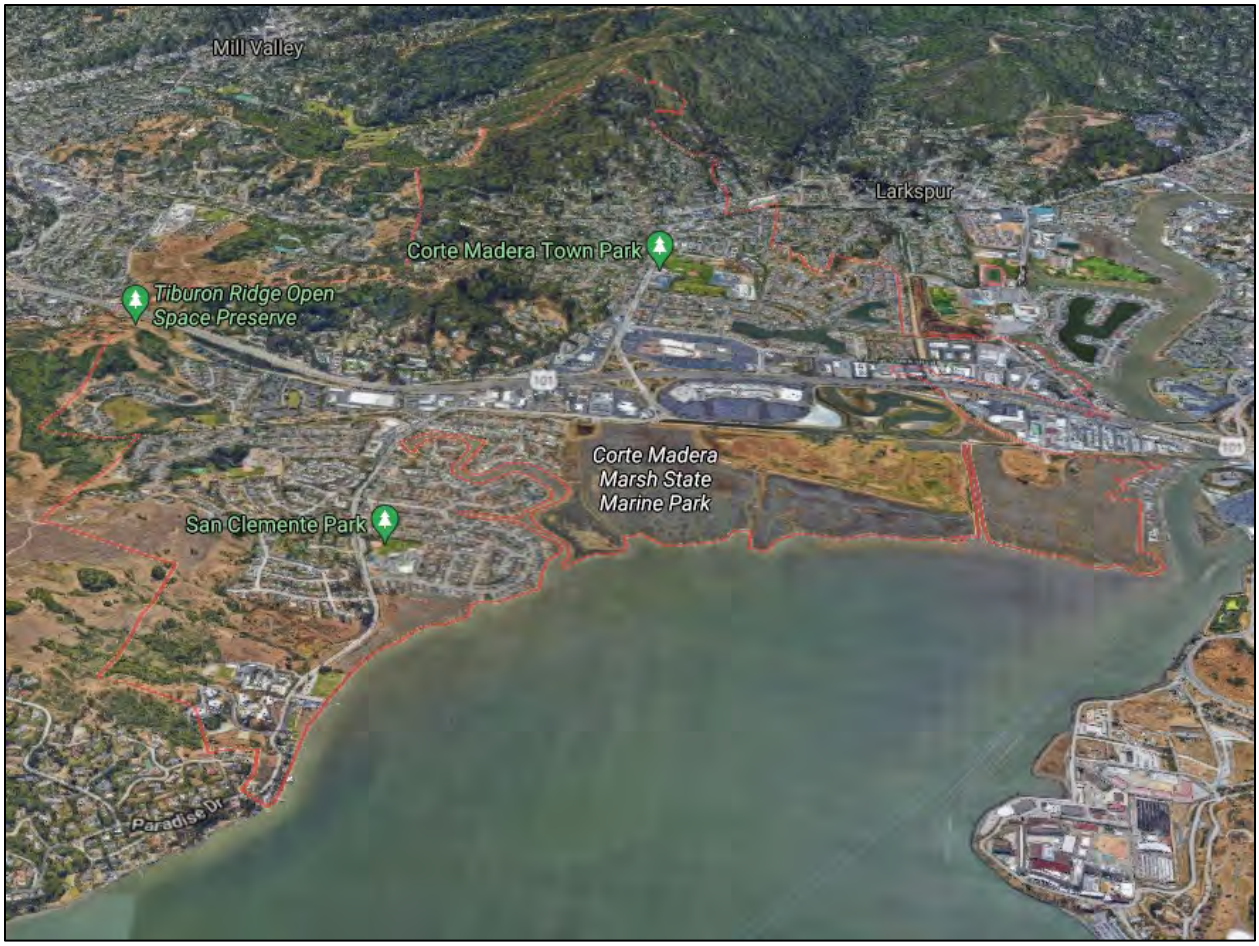
Previous submission Next submission

Corte Madera RHNA Appeal Attachment 4

Corte Madera (1926)

Courtesy: Corte Madera Memories

Corte Madera RHNA Appeal Attachment 4



Corte Madera (2021) Courtesy: Google Maps

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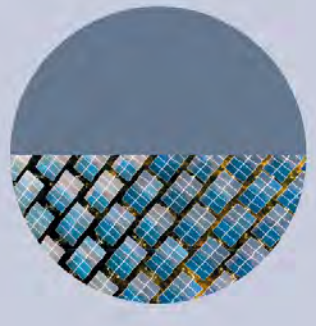

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Sea level rise and coastal flooding threaten affordable housing

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Supplementary material for this article is available online

Abstract

The frequency of coastal floods around the United States has risen sharply over the last few decades, and rising seas point to further future acceleration. Residents of low-lying affordable housing, who tend to be low-income persons living in old and poor quality structures, are especially vulnerable. To elucidate the equity implications of sea level rise (SLR), we provide the first nationwide assessment of recent and future risks to affordable housing from SLR and coastal flooding in the United States. By using high-resolution building footprints and probability distributions for both local flood heights and SLR, we identify the coastal states and cities where affordable housing—both subsidized and market-driven—is most at risk of flooding. We provide estimates of both the expected number of affordable housing units exposed to extreme coastal water levels and of how often those units may be at risk of flooding. The number of affordable units exposed in the United States is projected to more than triple by 2050. New Jersey, New York, and Massachusetts have the largest number of units exposed to extreme water levels both in absolute terms and as a share of their affordable housing stock. Some top-ranked cities could experience numerous coastal floods reaching higher than affordable housing sites each year. As the top 20 cities account for 75% of overall exposure, limited, strategic and city-level efforts may be able to address most of the challenge of preserving coastal-area affordable housing stock.

1. Introduction

The frequency of coastal floods around the United States has risen sharply in recent decades, and rising seas point to further acceleration in both tidal (or 'nuisance') and extreme floods in the years ahead (Sweet *et al* 2017a, Sweet *et al* 2017b, Buchanan *et al* 2017, Vitousek *et al* 2017). For example, by 2050, with continued high carbon emissions, the flood level currently expected to occur approximately every 100 years (with an annual 1% chance of occurrence) could occur ~ 40 times more often on average at tide gauges along the contiguous United States (Buchanan *et al* 2017). By the same time, the frequency of tidal flooding, which generally occurs at least once a year, may occur on a weekly basis in some places (Sweet and Park 2014, Sweet *et al* 2018). Together, these results indicate that more frequent flooding events will become a major concern for many U.S. coastal communities in the coming decades.

While people and assets in virtually all coastal areas face some degree of risk from coastal flooding, the exposure of low-lying affordable housing is of particular concern. Housing is conventionally considered affordable to low-income households if it costs no more than 30% of their gross household income (U.S. Census 2018b). Nationwide, affordable housing is an increasingly scarce resource. Median rents in the U.S. have increased by over 25% over the last decade while wages have remained largely stagnant (US Census

2007, Stone *et al* 2011). Unlike previous periods of price inflation, this rise in rents is not the result of increased incomes or improvements in housing quality (Desmond and Bell 2015). Nationwide, there are only an estimated 35 affordable rental units available for every 100 extremely low-income renters (those living in households with incomes $\leq$ 30% of the median income of their metropolitan area)—a national shortfall of over 7 million units that impacts all 50 largest metropolitan areas (NLIHC 2019). The result is that the majority of poor renting families today devote over half of their income to housing, and almost a quarter dedicate more than 70%, leaving little left over for basic needs such as food and health care and resulting in housing insecurity, including homelessness, multiple moves, or 'doubling up' with others (Desmond 2015). Moreover, affordable housing (the vast majority of which is in privately-owned buildings, even among subsidized units) tends to be older and of poorer quality than other housing (Vale *et al* 2014). Often built to older housing codes and prone to deferred maintenance, affordable housing tends to be far less structurally sound than general housing (Keenan *et al* 2018). Because of this, affordable housing structures are more physically vulnerable than the general housing stock to damage from flooding.

Residents of affordable housing also face high socioeconomic vulnerability due to the fact that they are predominately low-income and more likely to be disabled, single parents, seniors, minorities, and/or lacking stable employment than the general population (e.g. Brennan *et al* 2011, Desmond and Gershenson 2016, NLIHC 2019). Socially disadvantaged communities are more likely to be adversely impacted by natural hazards such as flooding because they have fewer financial resources, less political influence, and receive less information about financial aid to support recovery (Cutter *et al* 2009, Fussell *et al* 2010).

The combination of physical vulnerability of affordable housing infrastructure, socioeconomic vulnerability, and more frequent flooding due to sea level rise (SLR) presents a triple threat to residents of the country's already scarce affordable housing. To help quantify these intersecting challenges and elucidate the equity implications of SLR, we provide the first nationwide assessment of the coastal flood risks facing affordable housing. To the best of our knowledge, this research advances upon previous methods for characterizing the impacts of coastal flooding and SLR in four important ways.

First, while past studies have used low-resolution data on the locations and numbers of people and structures, we base our analysis on a comprehensive geolocated inventory of individual building footprints across the United States. Prior studies have typically relied on density data at the relatively coarse scale of census tracts (e.g. Kirshen *et al* 2008, Clark *et al* 1998, Rygel *et al* 2006, Martinich *et al* 2013). Averaging ~ 4 000 inhabitants (1 200−8 000; US Census 2010), tract sizes vary widely depending on the density of settlement, and are often large enough to include substantial variation in both flood risk and socioeconomic conditions. Neumann *et al* (2015) used comparatively finer spatial data (150 m by 150 m, about the area of a New York City block); however, this scale still exceeds that of individual buildings. Others have used address-based points, which approximate the location of a house or building, but could misplace a structure in a nearby stream or on land with a different elevation (e.g. Torgersen *et al* 2017). Using building footprint data offers the advantage of being able to precisely locate the lowest ground elevation across a building's footprint—a critical attribute for calculating flood risk. We combine this data with a comprehensive inventory of U.S. affordable housing buildings and units therein (both subsidized and market-driven).

Second, flood risk assessments have traditionally focused on a few particular storm surge water levels (e.g. Cooper *et al* 2008, San Francisco Bay Conservation and Development Commission 2011, Neumann *et al* 2015, Hallegatte *et al* 2013, Hinkel *et al* 2014, Diaz 2016). For example, San Francisco Bay Conservation and Development Commission (2011) and Houser *et al* (2015) showed the number of buildings and amount of land exposed to SLR plus the 100 yr flood. Here, we follow the approach of Kulp and Strauss (2017) using the full annual probability distribution of water levels above high tide, from minor to extreme flooding. This probability-weighted approach provides a more complete picture of flood hazard and could have a strong quantitative effect in calculating the threat posed by SLR.

Third, previous studies have estimated future flood risk by using a few particular projected amounts of SLR, either reflecting a scenario-based estimate of SLR (typically by 2100; e.g. Cooper *et al* 2008, Hallegatte *et al* 2013, Neumann *et al* 2015) or slices of a SLR probability distribution for a future year (e.g. the 50th or 95th percentiles; Diaz 2016, Houser *et al* 2015, Kulp and Strauss 2017). These approaches only provide a snapshot of potential future flood hazard, given the wide range of possible SLR values. Here, we integrate over the entire SLR distribution conditional on a selected greenhouse gas emissions scenario, extending the approach of Buchanan *et al* (2016) to incorporate the uncertainty in the SLR distribution into the calculation of future flood risk.

Finally, past studies have tended to focus on either the number of people and/or structures exposed or on average annual economic losses. Although a useful metric, calculation of average annual losses can be computationally intensive and thus is often done at relatively coarse scales (Hallegatte *et al* 2013, Neumann *et al* 2015) or with proprietary (Houser *et al* 2015) and limited information about the relationship between flood height and damage (Merz *et al* 2004).

We focus on exposure to projected extreme coastal water levels (driven by tides, storm surges, and SLR; Gregory *et al* 2019), or 'flood-risk events'. Using a 'bathtub' model, a building is considered exposed if its ground elevation lies below projected water levels, accounting for hydrological connectivity. Accordingly, the probability of a structure being exposed in a given year is dependent on three factors: its elevation (adjusted to account for coastal defenses), local SLR projections by the year of interest, and local flood height exceedance probabilities. We note that bathtub models are generally known to overestimate coastal vulnerability to extreme flood levels, as they cannot capture water height attenuation over land with distance from the ocean (Vafeidis *et al* 2019). Hydrodynamic models do incorporate these physical interactions, but are computationally infeasible for the wide spatial scale we consider here.

We estimate *expected annual flood-risk events*, the number of times that a particular building may be exposed in a given year, as well as *expected annual exposure*, the average number of affordable housing buildings and units exposed in a typical year, which can be aggregated for an administrative region of interest (e.g. for a particular municipality, county, or state). Together, this information can provide an indication of not only *how many* buildings or units are at risk, but also of *how often* they are at risk. This provides counts of the number of times a place could potentially flood based on water and land elevations, not predictions of how many times a place will actually flood, dependent on floodplain features and on the nature of storms (Vafeidis *et al* 2019). This approach works best for milder (and thus more frequent) events and serves as an indicator of risk (Orton *et al* 2015, Seenath *et al* 2016).

By using high-resolution building footprints and integrating across both local flood and SLR distributions to calculate exposure, as described above, we aim to identify the coastal states and cities where affordable housing—both subsidized and market-driven—is most at risk. We also evaluate exposure of the general housing stock and identify the coastal states and cities where affordable housing is disproportionately exposed in comparison. This information may be particularly relevant for preserving the affordable housing stock, especially in places with strained public finance and dwindling affordable housing inventory.

2. Methods

To assess the exposure of affordable housing (and of general housing for comparison), we use the core methodology of Kulp and Strauss (2017), who defined *expected annual exposure*—the quantity of some variable (such as housing stock) expected to be exposed to at least one coastal flood-risk event in a given year.

In this paper, we assess vulnerability of individual buildings and their contained housing units by computing their expected annual exposure. We introduce a new metric, *expected annual flood-risk events*, the *total* expected number of flood-risk events each building/unit could experience. Both of these quantities can be made unconditional to SLR sensitivity to emissions by integrating across the distribution of potential SLR, given an emissions scenario.

This analysis is performed by refining a digital elevation model (DEM) to reference local high tide and enforce hydrological connectivity given any water height threshold; integrating SLR projections and flood height exceedance probabilities to generate a function estimating the annual and daily probabilities of at least one coastal flood above a height threshold in a given year; and applying this function to each building and year of interest, from which expected annual exposure and flood-risk events can be computed and aggregated within any administrative area. The inputs, models, and outputs of the analysis are illustrated in figure 1 and described in detail below.

2.1. Digital Elevation Models

To assess topography, we employ lidar-derived DEMs compiled and distributed by NOAA (NOAA 2015), supplemented with the USGS Northern Gulf of Mexico Topobathymetric DEM (USGS 2014) in Louisiana, and the USGS National Elevation Dataset (Gesch *et al* 2002) in the small fraction of land not covered by the preceding DEMs. These data have a continuous vertical resolution, and a horizontal resolution of about 5 m, except in parts of LA (3 m) and Norfolk, VA (1 m). We then recompute elevations relative to local mean higher high water (MHHW) levels at nearest neighbors in NOAA's VDatum grid (version 2.3.5; Parker *et al* 2003), measured in the National Tidal Datum Epoch (1983−2001).

Topography or levees isolate some low-lying areas from the ocean. To account for known protective features and to facilitate downstream computations, the DEM is further refined by raising individual grid cell heights in identified isolated regions. Designated pixel elevations are raised until they match the lowest water level connecting each cell to the ocean despite protective features. We use the following procedure.

We consider flood heights between 0–10 m above MHHW at quarter-meter intervals, denoting the i'th such height in this sequence by h_i. For each i, we generate a binary inundation surface $S_i(lat, lon)$, equal to one where the DEM's elevation is less than h_i, and zero otherwise. For each grid cell below 10 m, we note the minimum value of i for which $S_i(lat, lon) = 1$, denoting this index by $I(lat, lon)$.

We then incorporate levee data and use connected components analysis to remove isolated areas within each inundation surface, which produces new, connected binary surfaces denoted by $\widetilde{S}_i(lat, lon)$. Data from the Mid-term Levee Inventory (FEMA/USACE,

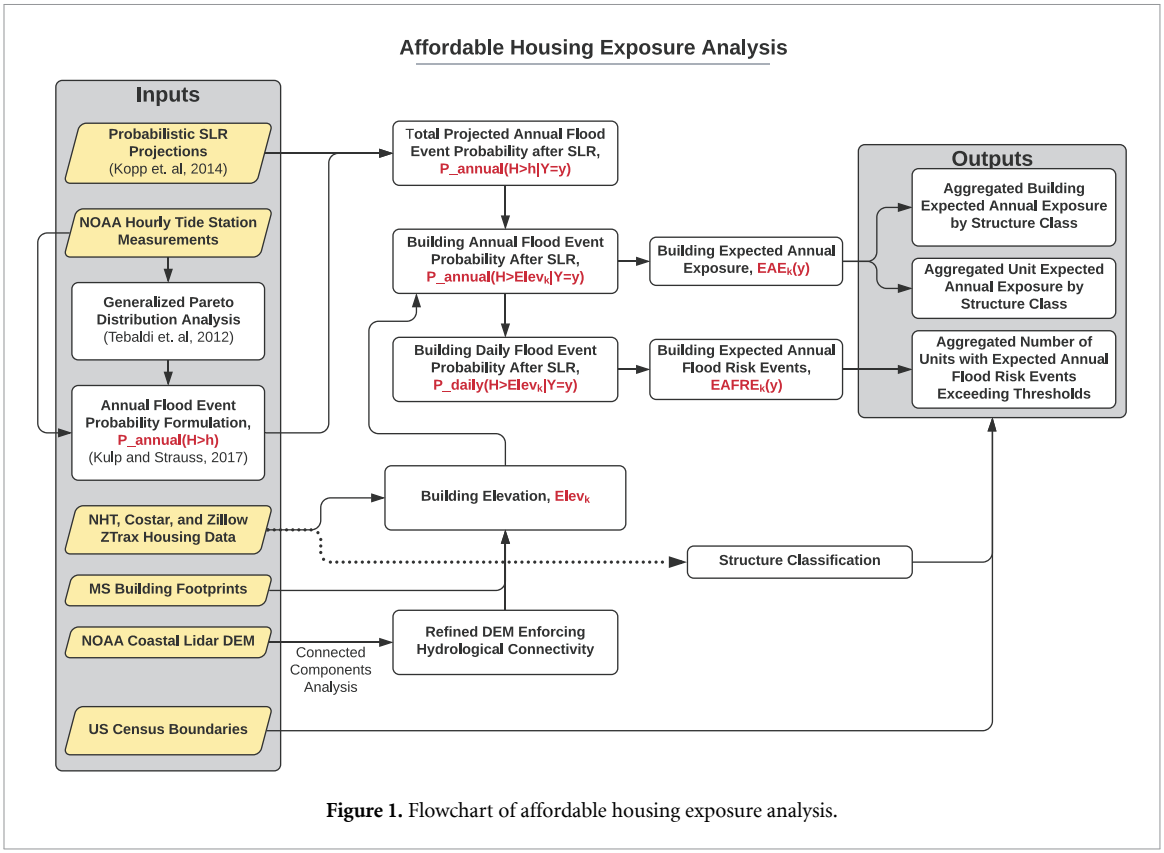

Figure 1. Flowchart of affordable housing exposure analysis.

acquired September 2013) is used to identify levees and other flood control structures. In Louisiana, we supplement this with data from Louisiana's Coastal Protection and Restoration Authority (Flood Protection GIS Database as of June 2015), and in Massachusetts, by Chris Watson at University of Massachusetts Boston, April 2014, based on MassGIS's Digital Orthophoto Topographic Breaklines, April 2003. We treat levees as impassible barriers, as these data lack information regarding levee strength or height. This could cause certain areas protected by weak levees to appear less vulnerable than they truly may be.

As before, for each grid cell below ~ 10 m, we compute $\widetilde{I}(lat, lon)$, the smallest value of i in which $\widetilde{S}_i(lat, lon) = 1$. Where no such value of i exists (meaning the cell is isolated from the ocean up to a water height of more than 10 m), we reassign its elevation to 10 m—higher than any plausible combination of SLR and one year return level this century in the United States, thereby effectively removing it from further consideration. If $I(lat, lon) = \widetilde{I}(lat, lon)$, we assume this grid cell is not hydrologically isolated and do not modify its elevation. Otherwise, where $I(lat, lon) < \widetilde{I}(lat, lon)$, meaning a cell is hydrologically isolated up to a water height of at most $\sim h_{\widetilde{I}(lat,lon)}$, we reassign its elevation to $h_{\widetilde{I}(lat,lon)}$.

2.2. Sea level rise

SLR is not geographically uniform. Because SLR is driven by global, regional, and local factors, the rise of local relative sea levels differs from the global mean. These factors include changes to temperature and salinity (i.e. steric processes), land-ice melt, changes in the Earth's rotation and gravitational field associated with water-mass redistribution (e.g. from land-ice melt; Mitrovica *et al* 2011), dynamic ocean processes (Levermann *et al* 2005), as well as glacial isostatic adjustment (GIA; Farrell and Clark 1976) and other drivers of vertical land motion. To localize SLR, we use probabilistic SLR projections from Kopp *et al* (2014)—hereafter denoted by K14—which account for these time- and geographically-varying components. The K14 projections are conditional on global carbon emissions scenarios, including Representative Concentration Pathways (RCPs) 2.6, 4.5, and 8.5 (Van Vuuren *et al* 2011).

2.3. Annual Flood Event Probabilities

We use the formulation derived in Kulp and Strauss (2017) to construct $P_{annual}(H \geq h)$, the probability of the highest water height of the year exceeding h. This function is defined at each of 71 U.S. tide gauge stations with at least 30 years of hourly records, based on Tebaldi *et al* (2012), Supplementary Information (SI) table 1 (stacks.iop.org/ERL/15/124020/mmedia). The one year return levels for these stations are shown in figure 2. The station-distance sensitivity analysis presented in Kulp and Strauss (2017) suggests that the spatial density of these locations is sufficient for expected annual exposure analysis across the U.S. coastline.

Given the (adjusted) elevation of a building's geolocation (see section 2.6), $Elev(lat, lon)$, $P_{annual}(H \geq Elev(lat, lon))$ reflects the annual probability of at least one flood risk event, in the

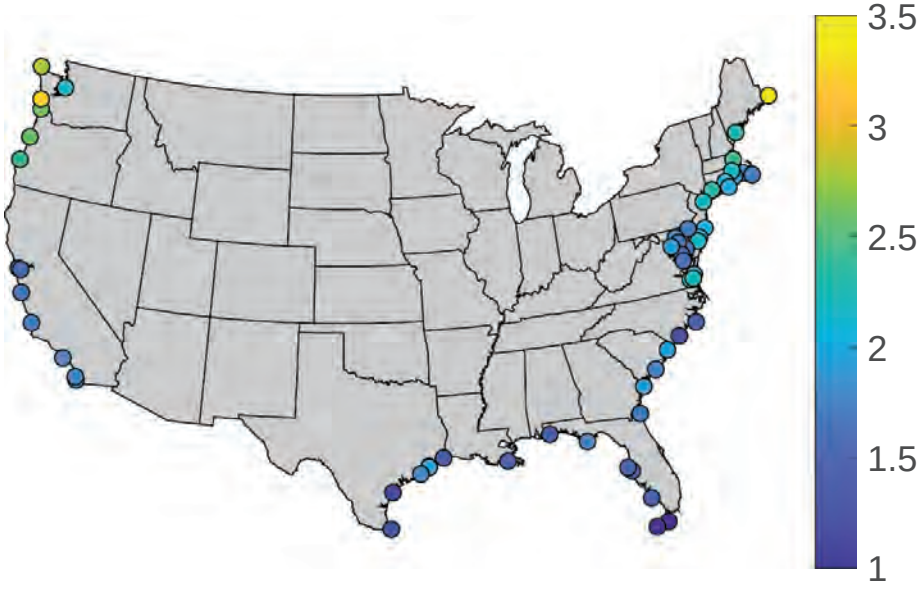

Figure 2. One year return level water heights at U.S. tide stations (meters).

absence of SLR. Making the assumption that the return level curves stay constant relative to sea level, and treating the year 2000 as the baseline case where $SLR(2000) = 0$, we incorporate a specific SLR projection to predict the flood event probability for any given year, y, $P_{annual}(H \geq Elev(lat, lon)|SLR(y) = x) = P_{annual}(H \geq Elev(lat, lon) - x)$.

Since for each emissions scenario considered, K14 provides a set of probabilistic distributions with 10,000 Monte Carlo samples of relative sea-level change for each tide gauge, we denote each sample as the function $SLR_{(j)}(y)$ for $j \in [1, ..., 10000]$. We can estimate the probability, unconditional on model sensitivity, as:

$$P_{annual}(H \geq Elev(lat, lon)|Y = y) \approx \frac{1}{10000} \times \sum_{j=1}^{10000} \times P_{annual}(H \geq (Elev(lat, lon) - SLR_{(j)}(y)). \quad (1)$$

Making the simplifying assumption that the probability of a flood event on one day is independent of any other day, we can also estimate the *daily* probability of a flood event as:

$$P_{daily}(H \geq Elev(lat, lon)|Y = y) \approx 1 - (1 - P_{annual} \times (H \geq Elev(lat, lon)|Y = y))^{1/365}. \quad (2)$$

2.4. Expected Annual Exposure and Flood-Risk Events

The probability of annual flooding, $P_{annual}(H \geq Elev_k|Y = y)$, where $Elev_k$ is the land elevation of building k, reflects the annual probability of *at least one flood* higher than the ground elevation of that individual building. Multiplying this probability with the number of housing units within the building ($Units_k$) represents the expected annual number of units exposed. Summing the values of this metric across all buildings within some administrative area (i.e. a particular city, state, etc) results in that area's total expected annual exposure of units. Although some units in an exposed building may not be directly flooded, access points (e.g. entrances, stairs) and amenities (e.g. electricity, water supply and sewage systems) may be affected.

Similarly, the product of the structure's *daily* flood event probability with $Units_k$ results in the expected *daily* exposure of units. With the assumption of daily independence, we can estimate the total number of expected annual flood-risk events by multiplying expected daily exposure by 365.

2.5. Housing data

2.5.1. Affordable housing stock: Subsidized

We utilize a comprehensive dataset of federally subsidized affordable housing buildings as of November 2018. This dataset was collected through the National Housing Preservation Database (https://preservationdatabase.org/), managed by the Public and Affordable Housing Research Corporation and the National Low Income Housing Coalition, and analyzed by the National Housing Trust (NHT). Information collected for this analysis included each building's address, latitude/longitude coordinates, number of units, number of subsidized units, government program, and funding source (i.e. government agency, shown in table 1). In this analysis, housing supported by any federal program is considered

subsidized. An affordable housing building can be subsidized by more than one program.

While some cities and states have additional programs to subsidize housing, many do not report comprehensive and publicly available data on the locations of housing supported by these programs. It is also common for state programs to provide gap financing to properties that are already subsidized through federal programs. We include housing subsidized directly by federal programs, which captures the vast majority of government-subsidized affordable housing. We include housing subsidized directly by known state-funded subsidies, which make up 2% of all subsidized housing in the database.

2.5.2. Affordable housing stock: Market-driven

Although there is no universally accepted definition of unsubsidized affordable housing, the term is generally applied to housing that is rented below market rates or ~ 30% of median income levels, without rental assistance (such as government subsidies or tax credits; NLIHC 2019, HUD 2019). Below-market-rate housing also tends to be low quality (e.g. Hood 2005, Nordby *et al* 2017). To identify and locate below-market-rate housing, we use the CoStar Building Rating System, a national rating for commercial and multifamily buildings on a universally recognized 5-Star quality scale, following the approach of the Urban Land Institute (Nordby *et al* 2017).

CoStar's rating distinguishes properties based on their age, physical condition, and amenities. We classify properties that are rated one- or two-stars as market-driven affordable housing because these buildings tend to rent at levels that are below market rate due to their age and need of significant repairs (Nordby *et al* 2017). For example, one-star buildings are characterized as being practically non-competitive with respect to typical multi-family investments and possibly functionally obsolete. Two-star units are characterized as having simply functional structures, below average finishes, inefficient use of space, and minimal or no shared amenities. Commercial real estate information (including each building's address, latitude/longitude coordinates, quality rating, and number of units) was collected in December 2018.

2.5.3. General housing stock

In the context of this study, a methodologically commensurate comparison of the exposure of affordable housing to that of the general housing stock requires a source of general housing information with address-level data. Although the 2010 U.S. Census (US Census 2011) includes data on all types of housing units, such as single-family homes, condos, and apartments, it is only available as totals at census block scale. As a result, we use housing data from Zillow's ZTRAX database, which includes latitude/longitude coordinates, to characterize the general housing stock. The ZTRAX data serves as a broad indicator of general housing because it includes only housing units that are zoned for non-commercial use, meaning apartments are not included in the dataset. These data were collected in June 2018.

2.6. Building Footprints

We further refine the geographic representation of our affordable housing stock (subsidized and market-driven) and general housing stock datasets using Microsoft's U.S. Building Footprints database (https://github.com/Microsoft/USBuildingFootprints). Since points are poor representations of the areal extent of a building, building latitude and longitude locations are linked with the Building Footprints database and each point is assigned to the building footprint that contained it, or its nearest building footprint. If any part of a building is on land at a lower elevation than a given water height (according to the DEMs described in section 2.1), we considered the entire structure exposed, as well as all units within it, if applicable. This is a conservative measure, as not all buildings will necessarily suffer damage if water reaches the corner of a house, though those with basements or split levels still may.

3. Results and discussion

In the following results, we assess the threat of coastal flooding to individual affordable housing units nationwide, tabulating results to the national, state, and city levels. This analysis enables the identification of locations where affordable housing is the most at risk and where the potential exposure of affordable housing may be disproportionately high compared to housing overall.

As the size of affordable housing buildings varies from single-family homes to apartment complexes, we present results on the units within buildings to reflect the threat facing affordable housing residents. Focusing on units is also helpful because flood damage to a part of a building could impact all of the units in the building (e.g. by way of flooded access points, such as entrances or stairs, or service interruptions, including electricity, water supply, and sewage systems).

3.1. Recent threat

Using mean sea levels for the year 2000 as a baseline for comparison with future threat (section 3.2), we found that 7,668 affordable housing units were recently at risk of flooding per year in the United States. Figure 3 illustrates the recent vulnerability among states. New Jersey has the highest number and percentage of its affordable housing stock exposed (1,640, ~ 1%; figure 3.a,c; SI table 2). New York and Massachusetts are also within the top three states at risk in terms of the number of units exposed

Table 1. Federal programs and corresponding funding agencies subsidizing affordable housing.

Program	Funding source
Project-based (Section 8)	U.S. Department of Housing and Urban Development (HUD)
Supportive housing for the elderly (Section 202)	HUD
HOME Investment Partnerships Program	HUD
Public Housing	HUD
Subsidized mortgage properties (Section 236)	HUD and Federal Housing Administration (FHA)
FHA-Insured Mortgages	FHA
Low-Income Housing Tax Credit Program	Internal Revenue Service
Rural Rental Housing program (Section 515)	U.S. Department of Agriculture (USDA)
Multi-Family Housing Loan Guarantees (Section 538)	USDA
State funded rental subsidy	State level

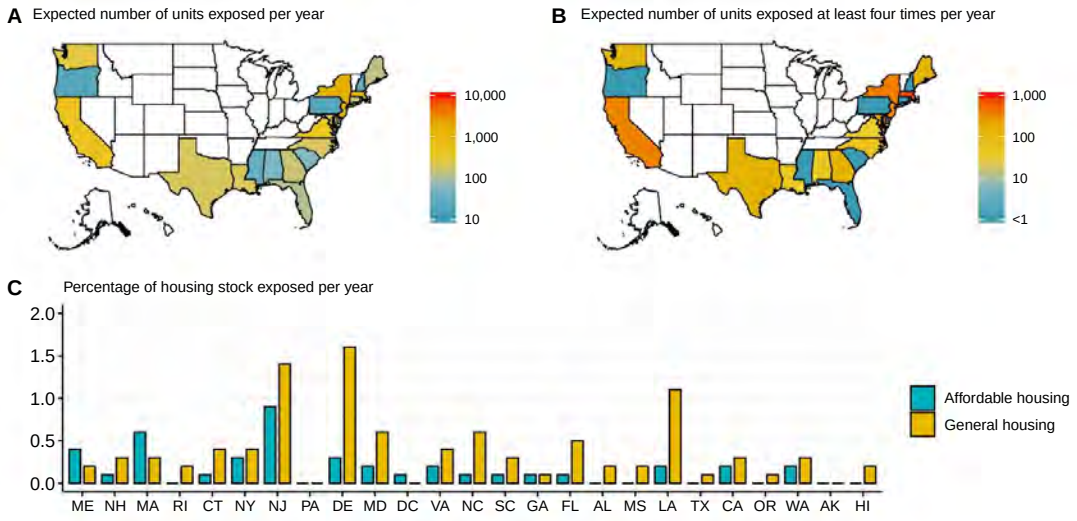

Figure 3. Recent threat of coastal flooding to states, based on mean sea levels for the year 2000 and integrating across local distributions of flooding. Panel A shows the total expected annual exposure of units (integrated across all units with nonzero exposure probability), while Panel B shows the expected number of units exposed at least four times per year. Panels A and B show values for the affordable (subsidized plus market-driven) housing stock. Panel C shows expected annual exposures as percentages of total affordable and general housing stocks. In Panel C, states are ordered geographically following coastlines from east to west.

(1,574, and 1,530, respectively)—an order of magnitude more than the other coastal states (figure 3.a). Massachusetts, Maine, and the District of Columbia are noteworthy in that the percentage of the affordable housing stock exposed markedly exceeds that of the general housing stock.

Looking at the number of flood-risk events per unit exposed shows another threat dimension (figure 3.b). Although California, for example, has about a third as many exposed units as New Jersey, it has roughly the same number of units exposed to flooding at least four times per year (358) as New Jersey (313; SI table 2). We chose at least four times per year because this corresponds to an average of at least once per quarter, although actual flood-risk events may be seasonally clustered. Along with New Jersey, Massachusetts, New York, and California, affordable housing units in Maryland are the most at risk of repetitive flooding, with an over 200 units exposed to at least four flood-risk events per year in each of these states. By contrast, units in Rhode Island, New Hampshire, and Oregon are some of the states least at risk to more than one flood event per year.

Cities as well as states vary dramatically in the vulnerability of their affordable housing to flood risk. Figure 4 shows the top 20 cities recently at risk of coastal flooding, in terms of the absolute number of units exposed (see SI table 3 for all cities). Threats are primarily clustered in smaller cities in California and in the northeastern United States. New York City has the largest number of units exposed per year (1,373), even though these units make up less than 1% of the city's supply of subsidized affordable housing (figure 4.a,c). The second most at-risk city in absolute terms is Atlantic City. Its significant number of units exposed per year (618) consists of more than 10% of the city's affordable housing stock. With a similar number of units exposed (609), Boston ranks third; more than half of its at-risk units face at least four flood-risk events per year.

Five of the top-ranked cities have more than 200 units that face flood-risk at least four times per year,

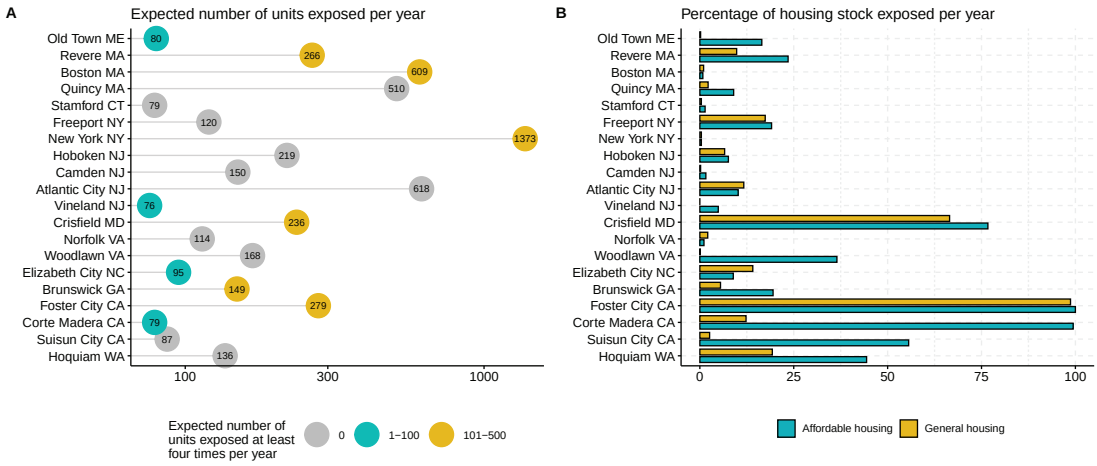

Figure 4. Recent threat of coastal flooding to the top 20 cities exposed (in absolute terms), based on mean sea levels for the year 2000 and integrating across local distributions of flooding. Panel A shows the total expected annual exposure of affordable housing units and the number of units expected to be exposed at least four times per year. Panel B shows expected annual exposures as percentages of total affordable and general housing stocks. Cities are ordered geographically following coastlines from east to west.

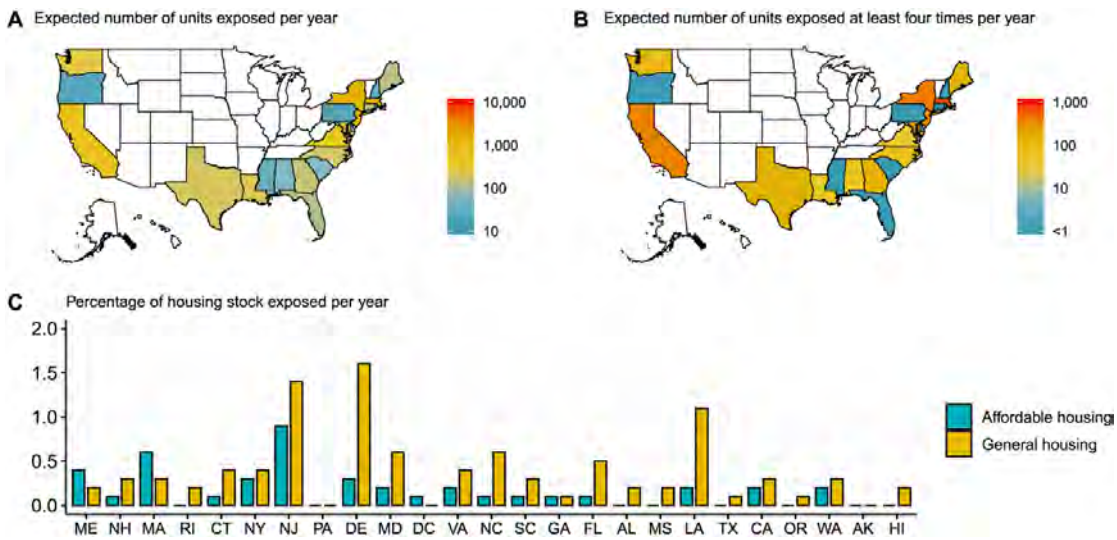

Figure 5. Future threat of coastal flooding to states, based on projected sea levels for the year 2050 and integrating across local distributions of flooding and SLR, under high carbon emissions (RCP 8.5). Panel A shows the total expected annual exposure of affordable housing units and the number of units expected to be exposed at least four times per year. Panel B shows expected annual exposures as percentages of total affordable and general housing stocks. In Panel C, states are ordered geographically following coastlines from east to west.

on average, including those in New York City; Boston; Foster City, CA; Revere, MA; and Crisfield, MD. Exposure may be overestimated in Foster City, CA, where new levees may not have been included in the Mid-term Levee Inventory. The percentage of the affordable housing stock exposed exceeded that of the general housing stock in nearly all of the top-ranked cities, with the greatest disparities in relative terms in Corte Madera and Suisun City, CA, and in Woodlawn, VA (figure 4.c).

3.2. Future threat

To estimate future threat of coastal flooding to affordable housing, we focused on risks posed by 2050. This 30 year outlook reflects threats that could affect current residents. The projected threats could also affect private developers and government entities, as this time period spans the typical duration of loans and other financial instruments. Results presented here assume continued high carbon emissions (represented by RCP8.5); however, there is little difference in projected SLR across carbon emission scenarios by the mid-21st century (Kopp *et al* 2014). Results for 2100 and for other RCPs are listed in SI tables 2–4.

The mid-term change in risk is significant, with the aggregate number of affordable units exposed in the United States more than tripling by 2050 to 24,519

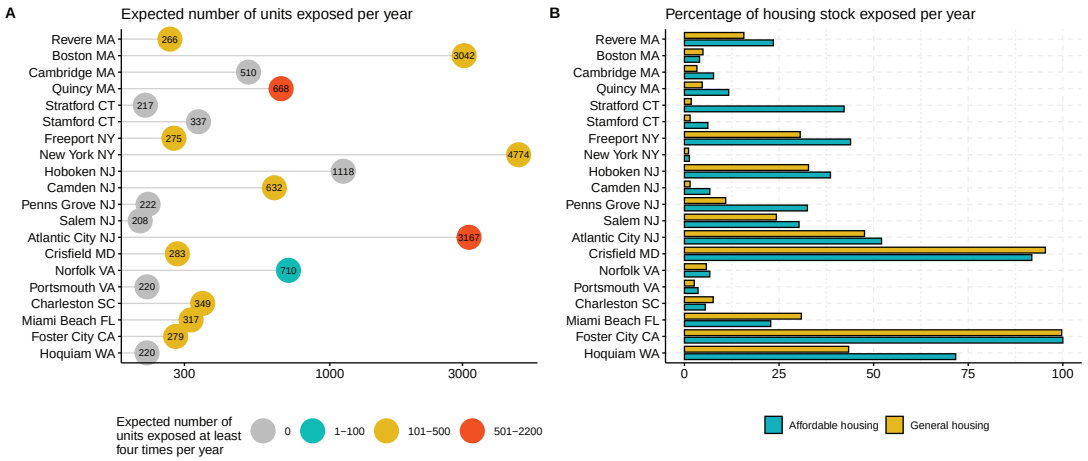

Figure 6. Future threat of coastal flooding to the top 20 cities exposed (in absolute terms), based on projected sea levels for the year 2050 and integrating across local distributions of flooding and SLR, under high carbon emissions (RCP 8.5). Panel A shows the total expected annual exposure of affordable housing units and the number of units expected to be exposed at least four times per year. Panel B shows expected annual exposures as percentages of total affordable and general housing stocks.

units. Table 2 shows the ranking of states in terms of units exposed per year in 2050. New Jersey remains the most vulnerable state, as measured by both the absolute and relative number of units exposed. In New Jersey, the number of units exposed approaches seven thousand per year, a four-fold increase from the year 2000, and equal to the aggregate number of units recently exposed across the country.

New York and Massachusetts remain within the top three states at risk in terms of the absolute and relative number of units exposed (figure 5.a,c). Pennsylvania, Florida, and South Carolina face the greatest percentage increase in the expected annual exposure from 2000 to 2050 (792%, 774%, and 669%, respectively; table 2). Across coastal states, a large majority of exposed affordable housing units are subsidized (72%; see SI table 4 for exposure by program). In 2050, the affordable housing stock is estimated to be markedly more exposed relative to the general housing stock in Massachusetts, New York, New Hampshire, Pennsylvania and the District of Columbia (figure 5.c).

By 2050, most coastal states are estimated to have at least some affordable housing units exposed to flood risk events at least four times per year (table 2, figure 5.b). Nearly half of New Jersey's large stock of exposed affordable housing units could flood at least four times per year. Delaware, Washington, and South Carolina had zero affording housing units exposed to flooding at least four times per year in the year 2000, but approximately one hundred units exposed to such frequent flooding by 2050 (76, 103, and 119 units, respectively).

Table 3 shows the ranking of the top 20 cities in terms of annual number of units exposed by 2050. The top 20 cities account for 75% of the United State's aggregate expected annual exposure. These most vulnerable cities are highly concentrated along the northeastern corridor and in California. In some of these cities, with relatively smaller affordable housing stocks, over 90% of the stock is exposed (Crisfield, MD and Revere, MA).

New York City remains the most vulnerable city in absolute terms, with the number of units exposed exceeding 4,000 per year by 2050. However, these units represent less than 2% of the city's affordable housing stock and rich cities like New York generally have more resources to bolster protection than poorer ones. For example, New York City not only plans to increase its supply of affordable housing by 50% in 10 years, but has also revised its building design guidelines to address the projected impacts of climate change (NYC 2014, NYC 2019).

The rankings of cities include many smaller and less wealthy cities, where risk management efforts may be lower. Aside from New York City and Boston, all of the top-ranked cities have populations of ~ 200 000 or less ($m = 71\,106$, $sd = 60\,922$; U.S. Census 2019). Four cities in New Jersey are of particular concern: Atlantic City, Camden, Penns Grove, and Salem. These top-ranked cities are some of the poorest in the country, with average median household income ($28,618) half of the national median, and a correspondingly high demand for affordable housing (U.S. Census 2018a). In addition, their proportion of people of color (81.2%) is double the national average (U.S. Census 2018a). In most of these New Jersey cities, about a third of the affordable housing stock is projected to be exposed, a 321% to 957% percentage increase in exposure from the year 2000 (table 3). This extensive exposure in multiple cities could put a major strain on the state and is particularly concerning since many affordable housing units in New Jersey are still being rehabilitated even seven years after Hurricane Sandy (e.g. Ortiz *et al* 2019).

Table 2. Future threat of coastal flooding to states, based on projected sea levels for the year 2050, under high carbon emissions (RCP 8.5). States are ranked by the expected number of units exposed per year (expected annual exposure). The best estimate of the number of units exposed is shown, integrating across the full SLR probability distribution, as well as estimates under the 5th and 95th percentiles of the SLR distribution. The percentage of affordable housing exposed, percentage of the exposed affordable housing stock that is subsidized, percentage increase in exposure from the year 2000, and the number of units with at least two or four annual expected flood risk events are also shown.

Rank		Units exposed per year				Units with X or more flood-risk events per year	
		# (5th-95th)	*% of affordable housing*	*% subsidized*	*% increase from 2000*	*two*	*four*
1	New Jersey	6,825 (3 877–10 155)	3.7	80	316	3 855	3 066
2	New York	5,293 (2 676–9 019)	1.1	47	236	867	867
3	Massachusetts	4 818 (2,172–9 463)	2.0	82	215	1 858	1 272
4	Virginia	1 473 (841–2 340)	0.8	76	273	368	248
5	Florida	963 (408–1 599)	0.8	32	774	606	443
6	California	738 (655–831)	0.2	40	40	650	650
7	Connecticut	695 (321–1,098)	0.7	85	344	0	0
8	Louisiana	685 (494–937)	0.6	96	220	176	176
9	South Carolina	474 (262–702)	0.5	63	669	403	119
10	North Carolina	435 (388–583)	0.2	100	136	290	286
11	Washington	385 (316–453)	0.2	91	50	350	103
12	Maryland	365 (311–436)	0.2	100	43	288	288
13	Texas	332 (271–412)	0.1	96	66	146	146
14	New Hampshire	215 (94–288)	0.8	100	652	263	0
15	Pennsylvania	175 (80–223)	0.1	100	792	222	0
16	Georgia	151 (150–152)	0.1	100	1.0	150	150
17	Maine	150 (128–200)	0.4	39	19	125	125
18	District of Columbia	90 (79–106)	0.1	81	31	0	0
19	Delaware	78 (77–81)	0.4	99	29	76	76
20	Alabama	64 (61–67)	0.1	90	9	43	43
21	Mississippi	56 (48–66)	0.1	94	76	0	0
22	Oregon	52 (34–76)	0.1	100	163	0	0
23	Rhode Island	4 (2–7)	0	87	148	0	0
24	Hawaii	2 (0–7)	0	98	*	0	0
	Total	24,518 (13,745–39,300)	0.7	72	219	10,737	8,058

Notes: *indicates division by zero.

Table 3. Future threat of coastal flooding to the top 20 cities exposed (in absolute terms), based on projected sea levels for the year 2050, under high carbon emissions (RCP 8.5). Cities are ranked by the expected number of units exposed per year (expected annual exposure). The best estimate of the number of units exposed is shown, integrating across the full SLR probability distribution, as well as estimates under the 5th and 95th percentiles of the SLR distribution. The percentage of affordable housing exposed, percentage of the exposed affordable housing stock that is subsidized, percentage increase in exposure from the year 2000, and the number of units with at least two or four annual expected flood risk events per unit exposed are also shown.

Rank		Units exposed per year				Units with X or more flood-risk events per year	
		# (5th-95th)	*% of affordable housing*	*% subsidized*	*% increase from 2000*	*two*	*four*
1	New York NY	4 774 (2 290–8 371)	1.3	49	248	10,183	457
2	Atlantic City NJ	3 167 (1 996–4 191)	52.1	87	412	2 842	2 183
3	Boston MA	3 042 (1 088–6 445)	4.0	89	400	994	407
4	Hoboken NJ	1 118 (476–1 889)	38.6	88	411	0	0
5	Norfolk VA	710 (360–1 165)	6.7	72	523	134	14
6	Quincy MA	668 (554–837)	11.7	64	31	511	511
7	Camden NJ	632 (345–1 008)	6.7	54	321	235	225
8	Cambridge MA	510 (117–1 241)	7.7	67	1278	0	0
9	Charleston SC	349 (198–528)	5.5	50	546	275	119
10	Stamford CT	337 (165–479)	6.2	69	327	0	0
11	Miami Beach FL	317 (139–481)	22.8	28	1074	322	169
12	Crisfield MD	283 (262–307)	91.8	100	20	258	258
13	Foster City CA*	279 (279–279)	100	78	0	279	279
14	Freeport NY	275 (230–288)	43.9	35	129	280	280
15	Revere MA	266 (266–266)	23.5	100	0	266	266
16	Penns Grove NJ	222 (77–413)	32.5	39	957	120	0
17	Portsmouth VA	220 (98–402)	3.6	51	610	0	0
18	Hoquiam WA	220 (181–244)	71.7	91	62	247	0
19	Stratford CT	217 (101–334)	42.2	100	352	0	0
20	Salem NJ	208 (64–388)	30.3	98	1056	0	0

Notes: *Exposure may be overstated in Foster City, CA, where new levees may not have been included in the Mid-term Levee Inventory.

The majority of the top-ranked cities face exposure to flooding at least four times per year, which could pose maintenance and public safety challenges. This risk highlights the importance of flood resilience measures to help residents and city managers cope with increasingly frequent flooding, which may be particularly challenging in the less wealthy top-ranked cities, such as Camden, New Jersey.

3.3. Implications for the preservation of affordable housing

Flooding can wreak havoc on buildings and the residents who live in them. Even low levels of flooding can damage belongings, disrupt electrical equipment, contaminate water sources and septic systems, generate mold, and block roads (Moftakhari *et al* 2017, Sweet *et al* 2018). These impacts may increase maintenance costs, threaten public health, and cause profound disruptions to families already struggling to make ends meet. Because affordable housing units are frequently in poor repair to begin with, additional damage from flooding may be particularly challenging—and expensive—to remedy.

This study's findings demonstrate that if communities aim to preserve affordable housing stock in coastal areas, significant resiliency planning and investment is likely to be needed. Inaction could result in high risk for residents who may lack access to sufficient resources to prepare and recover from flooding impacts. As coastal flood risks to affordable housing units tend to be highly concentrated, flood protection measures in key cities and neighborhoods could help protect a large number of affordable housing residents. The number of expected annual flood-risk events for individual buildings (or aggregated within administrative areas) could be used to help identify hot spots of repetitive flooding, and where to invest in coastal protection or other adaptation measures for the greatest impact relative to cost. Over time, investment in these areas may pay off in terms of not only damage avoided, but also harm avoided to individuals and families in need.

As community resilience investments are made, complementary policies may be needed to protect against the displacement (and potential homelessness) of residents. Infrastructure improvements such as flood defenses can result in new amenities that can attract wealthier households and drive up property values and rents (e.g. Keenan *et al* 2018). The issue of improving the resilience of affordable housing, without compromising its affordability, is complex and increasingly being recognized in both public and private spheres. For example, it has become a focus of public-private partnership programs such as Energy Efficiency for All (EEFA 2019), which upgrades energy efficiency in multi-family affordable housing complexes, and the Urban Land Institute's Urban Resilience Program (Urban Land Institute 2018), which shares resilience information and strategies.

Such efforts are critically important to help avoid systemic effects which may deepen cycles of poverty. A reduction in affordable housing could have multiple downstream consequences for individuals and families (e.g. affecting equitable access to public transportation, healthcare, and other services) as well as for regional and local economies, which may lose part of their labor forces. The loss of affordable housing in coastal communities may also drive up housing costs in adjacent communities as competition for a dwindling supply of low-cost housing intensifies (e.g. Keenan *et al* 2018). Ultimately, increasing the overall supply of resilient affordable housing is critically needed to help ensure that communities can absorb the impacts of increased flooding among other climate-related hazards.

4. Conclusion

Climate-change-driven sea level rise will continue to amplify coastal flooding in the coming decades. To better understand the potential impact on vulnerable U.S. populations and to aid resiliency planning, we assess the growing exposure of affordable housing with unprecedented geographic resolution and national comprehensiveness. Knowledge of the estimated number of affordable housing units exposed to at least one flood-risk event per year as well as the total number of flood-risk events facing an area's affordable housing stock could help inform strategic resilience planning. Because coastal flood risks are highly concentrated, flood-threat reduction measures (physical, financial, or regulatory) in key cities and states could help protect a large number of affordable housing residents. Localities where frequent exposure to extreme coastal water levels is projected for affordable housing may require near-term measures to successfully reduce flood threats.

Acknowledgments

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October 6, 2020

Mayor Jesse Arreguín, President
Association of Bay Area Governments, Executive Board
375 Beale Street, Suite 700
San Francisco, CA 94105-2066

Dear Board President Arreguín:

On behalf of the Town Council of the Town of Corte Madera, please accept our comments related to the proposed Regional Housing Needs Allocation (RHNA) methodology recommended by the RHNA Housing Methodology Committee (HMC). Please consider these comments in advance of the October 15, 2020 ABAG Executive Board meeting where the recommended methodology will be discussed.

The Town of Corte Madera appreciates the efforts and dedication of the diverse stakeholder group of HMC members over the last year in attempting to make a collective recommendation regarding the appropriate distribution of 441,000 new housing units within the region and understands the urgency and challenge of addressing regional policy goals related to housing affordability, climate change and equity in this RHNA cycle. Unfortunately, however, the methodology recommended by the HMC allocates new housing units to areas that lack adequate transportation infrastructure, away from existing and future job centers, and into areas at risk of sea level rise and wildfire in quantities inconsistent with the growth patterns and policy objectives more carefully considered in Plan Bay Area 2050. As a result, the recommended methodology and resulting RHNA, if indeed intended to set realistic quotas for housing growth regionally, will not only fail to meet the Bay Area's total regional housing need, but will threaten our region's ability to grow sustainably into the future.

Our conclusions may be best illustrated by the fact that, pursuant to the proposed HMC methodology, the Town of Corte Madera is expected to experience an 18% household growth rate from 2019 as a result of the 2023-2031 RHNA. This is a greater growth rate than Berkeley and Oakland in the East Bay (16% and 17% respectively), San Mateo and Redwood City on the Peninsula (17% each), and significantly greater than San Rafael and Santa Rosa in the North Bay (12% and 10% respectively), yet Corte Madera lacks a Major Transit Stop and is expected to lose approximately 3,000 jobs (or approximately 43% of its current jobs) by 2050 according to the Plan Bay Area 2050 Draft Blueprint.

Other similarly situated cities in Marin and the region are expected to grow at similarly high relative growth rates between 2019 and 2031, despite Plan Bay Area 2050 projections to the contrary. The result is to push a greater proportion of new development into areas that will promote auto dependency and longer commute times, exacerbate GHG impacts, and run counter to the goals and objectives well-formulated and strongly articulated in the recently released Plan Bay Area Blueprint. Additionally, for Corte Madera, it means pushing housing

growth into areas that are either increasingly at risk due to projected sea level rise or wildfire since the vast majority of Corte Madera's geographic area is in either FEMA's 100-year flood plain or the Wildland Urban Interface (WUI).

To reduce the negative effect of the proposed HMC RHNA methodology, we recommend consideration of both of the following changes to the recommended methodology:

- *Utilize Plan Bay Area 2050 household (HH) growth rates between 2019 and 2050 as the baseline for the RHNA allocation rather than Plan Bay Area HHs in 2050.*

  Utilizing the PBA 2050 household growth rate as the baseline will align RHNA more closely with Plan Bay Area Blueprint objectives related to reducing GHG emissions by focusing a greater proportion of growth to areas where transportation investments, job growth, and beneficial market conditions are expected to exist. This proposed change to the HMC methodology is supported by many other Bay Area jurisdictions who have also provided public comments and was supported by ABAG staff in its July 2020 report to the HMC.

- *Reduce the 40% allocation factor to High Resource Areas for moderate and market rate units utilized in Recommended Option 8A*

  While not clear from the presentation materials provided to the HMC, it appears that the 70% allocation factor for very low and low-income units, and the 40% allocation factor for moderate and market rate units, are driving a significant number of additional units to High Resource Areas, such as Corte Madera, beyond that anticipated in Plan Bay Area 2050. It is not clear how the 40% allocation factor for moderate and market rate units helps further the equity purpose the HMC intends, as it would appear to drive relatively more higher income households to High Resource Areas. Reducing or eliminating this allocation factor would presumably reduce the overall housing allocation to jurisdictions like Corte Madera without affecting the strategy the HMC proposes to introduce greater equity into the RHNA process.

While we again recognize the challenge that the HMC faced in developing an appropriate allocation methodology, and appreciate many of the thoughtful contributions they have introduced into the process, we believe the outcomes of the recommended methodology, without modifications, *do not further the statutorily mandated objectives of RHNA and are inconsistent with Plan Bay Area 2050 objectives* that aim to grow the Bay Area sustainably and allocate scarce resources efficiently.

As one of the few Bay Area jurisdictions to meet and exceed its current 5th Cycle RHNA allocation with respect to all income categories, Corte Madera believes that there is room in our community to thoughtfully develop new housing that both helps to address the region's affordability and equity issues and improves the quality of our Town. Without modification however, the recommended HMC methodology presents wholly unrealistic housing quotas over the 2023-2031 RHNA cycle which appear to simply be a punitive attempt to set higher resource communities up for failure and state-imposed land use controls and penalties.

We thank you for your time and consideration.

Sincerely,

Mayor Eli Beckman
Town of Corte Madera