Sonoma Mendocino Economic Development District
Board of Directors Meeting - April 21, 2023, at 1:00 pm PST
https://us06web.zoom.us/j/82922778261

Meeting Location: the Public Meeting Room of the Windsor Regional Library.
Windsor Regional Library is a full service branch library located at the northeastern edge of the Windsor Town Green.
9291 Old Redwood Highway, Building 100, Windsor, CA 95492
Library (707) 838-1020

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Time	Agenda Item	Discuss	Action
1:00 pm	Call to Order by Mary Anne Petrillo, Chairperson		x
1:02 pm	Roll Call by Norma Alley ☐ Chairperson Mary Anne Petrillo ☐ Vice Chairperson Lisa Badenfort ☐ Boardmember Robin Bartholow ☐ Boardmember Jon Frech ☐ Boardmember Paul Garza Jr. ☐ Boardmember Jeff Kelly		
1:03pm	Approval of the Agenda by Mary Anne Petrillo, Chairperson		x
1:05pm	Public Comments - Open time for Public Expression		
1:10pm	**Consent Calendar:** *Matters listed under the Consent Calendar are considered to be routine and will be enacted by one motion and one vote. Unless otherwise requested by a Board Member, there will be no separate discussion of these items. If discussion is desired, that item will be removed from the Consent Calendar and will be considered separately.*		x
	Resolution to Approve Conflict of Interest Policy with California Fair Political Practices Commission, Bradley Johnson, Sonoma County Economic Development Board, Business Strategy Analyst		
	Authorize SMEDD to offer Letters of Support for Local Agencies to Granting Agencies for Grant Applications that are Aligned with SMEDD's Mission, Joshua Metz, RGS Senior Advisor (District Manager)		
1:11pm	**Action Items:**		
1:11pm	**Approve Contract with AG Innovations for Agricultural Technologies Innovation Center Workshop Facilitation,** Joshua Metz, RGS Senior Advisor (District Manager)	x	x
1:45 pm	**Approve Application to Fill a County of Mendocino Appointment to a Vacant SMEDD Board Seat and Letter of Endorsement,** Joshua Metz, RGS Senior Advisor (District Manager)	x	x
2:00pm	**Approve SMEDD to Request an Extension of the June 30, 2023, Supplemental Grant Deadline of U.S. Economic Development Administration,** Joshua Metz, RGS Senior Advisor (District Manager)	x	x
2:15pm	**District Manager's Report** 1. EDA Roundtable 2. Mendocino & Sonoma Counties Familiarization Tour 3. Timing of a periodic CEDS Review and a Reconvening of the CEDS Strategy Committee 4. RGS Work Plan Implementation Status Update	x	No

2:45pm	**Information Items:** **Attachment** - Recently-released Milliman and CoreLogic analysis of "the financial benefits of selected risk reduction actions through the lens of a probabilistic catastrophe model." Town of Paradise California Resilience Challenge Task 1 to Task 4 Risk Reduction, Climate Change, and Insurance Premiums The Press Release contains a short video. This item was shared with the Community Alert and Warning Program Manager (currently the acting Director) of Sonoma County's Emergency Management Department as a follow up to SMEDD's visit on April 6, 2023. **Upcoming Events That May Be Of Interest (not necessarily SMEDD connected)** **May 30, 2023, Tuesday** 10am-2pm Agricultural Technologies Innovation Center Workshop **July 11, 2023, Tuesday** Grand Opening of the Ukiah Visitor Center **July 18 & 19, 2023,** Innovative Agricultural Communication Workshop **September 21 & 22, 2023** The State of the Redwood Coast Region: Our Elemental Economy, the 3rd annual regional economic development summit, Ukiah, Mendocino County (registration required)		No
3:00 pm	Adjournment by Mary Anne Petrillo, Chairperson		x

For a copy of public board packet materials, please visit smedd.specialdistrict.org or email Abigail Scott (abigail@smedd.org).

DATE: April 21, 2023

TO: Board of Directors

FROM: Bradley Johnson, Sonoma County Economic Development Board, Business Strategy Analyst

SUBJECT: Resolution to Approve a Conflict-of-Interest Policy with the California Fair Political Practices Commission

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STATEMENT OF ISSUE: The purpose of this item is to achieve compliance with a California Fair Political Practices Commission (FPPC) requirement to have a Conflict-of-Interest Policy that reflects current State statutes, which SMEDD already has, and to comply with the requirement to review the policy periodically.

SUMMARY OF RECOMMENDED ACTION: (See Draft RECOMMENDATION for Alternative 1 on Page 2 for expanded draft language.)

Consider and approve the attached RESOLUTION adopting a SMEDD Conflict-of-Interest Policy.

FINANCIAL IMPACTS:

There are no financial impacts for having or adopting a policy. There is, however, a risk of fines associated with non-compliance.

BACKGROUND:

Attached please find a proposed SMEDD's Conflict of Interest policy. The previous policy was last reviewed and adopted in 2020 and is substantially the same as the proposed policy .

An important function of the policy is to stipulate clearly and transparently what positions or types of positions SMEDD requires conflict disclosures from. These disclosures include but are not limited to the filing of Form 700s with the Fair Political Practices Commission.

SMEDD retains copies of Form 700s because SMEDD must be able to produce any filing upon request.

DISCUSSION:

Currently, members of SMEDD's Board of Directors, some SMEDD employee positions, and some consultants are subject to disclosure requirements under the policy. SMEDD does not have any employees. Therefore, as a practical matter, the individuals that SMEDD will be requiring to submit Form 700s will include Board Members and consultants.

ALTERNATIVES:

1: Consider and adopt the attached RESOLUTION proposing a SMEDD Conflict-of-Interest Policy.

2: Consider, *modify,* and adopt the attached RESOLUTION proposing a SMEDD Conflict-of-Interest Policy.

3: Decline to act.

RECOMMENDATION for Alternative 1:

Move to:

- Approve the attached Resolution of the Sonoma Mendocino Economic Development District adopting a Conflict-of-Interest Policy.

ATTACHMENT

A. Sonoma Mendocino Economic Development Board Conflict-of-Interest Policy

RESOLUTION NO. 2023-0X
Date: April 21, 2023

RESOLUTION OF
THE SONOMA MENDOCINO ECONOMIC DEVELOPMENT DISTRICT
ADOPTING A CONFLICT OF INTEREST CODE

WHEREAS, the Political Reform Act, Government Code sections 81000 et seq., requires state and local government agencies to adopt conflict of interest codes, and

WHEREAS, the Fair Political Practices Commission has adopted a regulation, 2 Cal. Code of Regs. Section 18730, which contains the terms of a standard conflict of interest code and which can be incorporated by reference and may be amended by the Fair Political Practices Commission after public notice and hearings to conform to amendments to the Political Reform Act, and

WHEREAS, the District wishes to adopt this standard code and designate which officers and employees should disclose financial interests and describe which interests must be disclosed,

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The terms of 2 Cal. Code of Regs. Section 18730 and any amendments to it duly adopted by the Fair Political Practices Commission are hereby incorporated by reference and, along with the attached Appendix A and Appendix B, in which members and employees are designated and disclosure categories are set forth, constitute the Conflict of Interest Code of the Sonoma Mendocino Economic Development District, and

2. Pursuant to Section 4 of the standard code, Board Members shall file statements of economic interest with the District Administrator who shall retain a copy. Designated employees shall file statements with the District Administrator who shall retain them at the main place of business of the Sonoma Mendocino Economic Development District. Any District Board Member or other designated employee already required to submit a disclosure statement (Form 700) pursuant to Government Code section 87203 may submit a copy of that statement in lieu of any filing required by this code provided that no additional disclosure would be required by this code.

APPENDIX A

Designated Positions	Disclosure Categories
Member of the Board of Directors	1
(Any other employee with decision-making authority)	2
Consultants	*

*Consultants shall be included in the list of designated employees and shall disclose pursuant to the broadest disclosure category in the code subject to the following:

The Chairperson may determine in writing that a particular consultant, although in a "designated position" is contracted to perform a range of duties that is limited in scope and thus is not required to fully comply with the disclosure requirements described in this section. Such written determination shall include a description of the consultant's duties and, based upon that description, a statement of the extent of the disclosure requirements. The Chairperson's determination is a public record and shall be retained for public inspection in the same manner and location as this conflict of interest code.

APPENDIX B

Disclosure Categories[1]

Category 1: All investments, business positions and sources of income, including gifts, loans and travel payments; all interests in real property.

Category 2: All investments, business positions and income, including gifts, loans and travel payments, from sources that provide goods, equipment, vehicles, machinery or services, including training or consulting services, of the type utilized by the Sonoma Mendocino Economic Development District.

[1]Only investments in and sources of income from business entities and sources of income which do business in the geographic area of the Sonoma Mendocino Economic Development District, or real property interests located in the District, need to be reported.

An Overview of Conflicts of Interest Under the Political Reform Act

May 2022

Contents

I. The Basic Prohibition

Government Code Section 87100 of the Political Reform Act (the "Act")[1] prohibits a public official at any level of state or local government from making, participating in making, or attempting to use the official's position to influence a governmental decision in which the official knows or has reason to know the official has a financial interest. Government Code Section 87103 provides that an official has a "financial interest" within the meaning of Section 87100 if it is reasonably foreseeable that the decision will have a material financial effect on one or more of the official's interests as identified and distinguishable from the decision's effect on the public generally.

Taken together, these provisions of the Act prohibit an official from taking part in a decision if it is reasonably foreseeable that the decision would have a material financial effect on one or more of the official's financial interests identified in Section 87103 distinguishable from the decision's effect on the public generally.

II. Making, Participating in Making, or Attempting to Influence a Decision

Regulation 18704 defines "making a decision," "participating in a decision," and "using official position to attempt to influence a decision" for purposes of the Act's conflict of interest provisions. If an official has a disqualifying conflict of interest under Section 87100, the official is prohibited from making, participating in making, or attempting in any way to use the official's official position to influence the decision.

A. General Definitions

Making a Decision: An official makes a decision if the official authorizes or directs any action, votes, appoints a person, obligates or commits the official's agency to any course of action, or enters into any contractual agreement on behalf of the agency. (Regulation 18704(a).)

Participating in a Decision: An official participates in a decision if the official provides information, an opinion, or a recommendation for the purpose of affecting the decision without significant intervening substantive review. (Regulation 18704(b).)

Using Official Position to Attempt to Influence a Decision: An official uses an official position to influence a decision if the official contacts or appears before: (1) any official in the official's agency, or in an agency subject to the authority or budgetary control of the official's agency, for the purpose of affecting a decision; or (2) any official in any other government agency for the purpose of affecting a decision, and the official purports to act within the official's authority or on behalf of the official's agency in making the contact. (Regulation 18704(c).)

B. Exceptions

Regulation 18704(d) provides that "making, participating in, or using official position to influence a decision" do not include any of the following:

Ministerial: Actions that are solely ministerial, secretarial, or clerical. (Regulation 18704(d)(1).)

Appearances as a Member of the General Public: An appearance by an official as a member of the general public before an agency in the course of its prescribed governmental function if the official is appearing on matters related solely to the official's personal interests, including interests in:

- Real property owned entirely by the official, members of the official's immediate family, or the official and members of the official's immediate family;
- A business owned entirely by the official, members of the official's immediate family, or the official and members of the official's immediate family; or
- A business over which the official, members of the official's immediate family, or the official and members of the official's immediate family solely or jointly exercise full direction and control. (Regulation 18704(d)(2).)

Terms of Employment: Actions by an official relating to the official's compensation or the terms or conditions of the official's employment or consulting contract. However, an official may not make a decision to appoint, hire, fire, promote, demote, or suspend without pay or take disciplinary action with financial sanction against the official or the official's immediate family, or set a salary for the official or the official's immediate family different from salaries paid to other employees of the agency in the same job classification or position. (Regulation 18704(d)(3).)

Public Speaking: Communications by an official to the general public or media. (Regulation 18704(d)(4).)

Academic Decisions: Teaching decisions, including an instructor's selection of books or other educational materials at the official's own school or institution, or other similar decisions incidental to teaching; or decisions by an official who has teaching or research responsibilities at an institution of higher education relating to the official's professional responsibilities, including applying for funds, allocating resources, and all decisions relating to the manner or methodology with which the official's academic study or research will be conducted. (Regulation 18704(d)(5).) However, this exception does not apply to an official who has institution-wide administrative responsibilities as to the approval or review of academic study or research at the institution unrelated to the official's own work. (*Ibid*.)

Architectural and Engineering Documents: Drawings or submissions of an architectural, engineering, or similar nature prepared by an official for a client to submit in a proceeding before the official's agency if: (i) the work is performed pursuant to the official's profession; and (ii) the official does not make any contact with the agency other

than contact with agency staff concerning the process or evaluation of the documents prepared by the official. (Regulation 18704(d)(6)(A).)

Also, an official's appearance before a design or architectural review committee or similar body of which the official is a member to present drawings or submissions of an architectural, engineering, or similar nature prepared for a client if: (i) the committee's sole function is to review architectural designs or engineering plans and to make recommendations to a planning commission or other agency; (ii) the committee is required by law to include architects, engineers, or persons in related professions, and the official was appointed to the body to fulfill this requirement; and (iii) the official is a sole practitioner. (Regulation 18704(d)(6)(B).)

Additional Consulting Services: Recommendations by a consultant regarding additional services for which the consultant or consultant's employer would receive additional income if the agency has already contracted with the consultant, for an agreed upon price, to make recommendations concerning services of the type offered by the consultant or the consultant's employer, and the consultant does not have any other economic interest, other than in the firm, that would be foreseeably and materially affected by the decision. (Regulation 18704(d)(7).)

III. Financial Interests

The first step in determining whether an official has a disqualifying conflict of interest under the Act is identifying the official's financial interests with respect to the decision at issue. Section 87103 identifies the following financial interests which may give rise to an official's disqualifying conflict of interest under the Act:

- A business entity in which the official has a direct or indirect investment worth $2,000 or more (Section 87103(a)); or in which the official is a director, officer, partner, trustee, employee, or holds any position of management (Section 87103(d)).
- Real property in which the official has an interest worth $2,000 or more. (Section 87103(b).)
- A source of income totaling $500 or more in value provided or promised to, or received by, the official within the 12 months prior to the time when the decision is made. (Section 87103(c).)
- A giver of a gift or gifts totaling $500[2] or more in value provided or promised to, or received by, the official within the 12 months prior to the time when the decision is made. (Section 87103(e).)
- The official's personal finances and those of "immediate family," defined in Section 82029 as the spouse and dependent children. (Section 87103.)

IV. Foreseeability of Financial Effect

A. Explicitly Involved

A financial effect on a financial interest is presumed to be reasonably foreseeable if the financial interest is explicitly involved in the decision. (Regulation (18701(a).) An official's financial interest is "explicitly involved" in a decision if the interest is a "named party in, or the subject of," the decision, and an interest is the "subject of a proceeding" if the decision involves the issuance, renewal, denial, or revocation of any license, permit, other entitlement to, or contract with, the interest.[3] Additionally, an official's real property interest is explicitly involved in any decision affecting the real property as described in Regulation 18702.2(a)(1) through (6), discussed further below. (*Ibid*.)

B. Not Explicitly Involved

When an official's financial interest is not explicitly involved in a decision, the financial effect of the decision is reasonably foreseeable if the effect can be recognized as a realistic possibility and more than hypothetical or theoretical. The effect need not be likely to be reasonably foreseeable. (Regulation 18701(b).)

Factors to be considered when determining if a decision's effect on an official's not explicitly involved interest is reasonably foreseeable include, but are not limited to, the following:

- The extent to which the occurrence of the effect is contingent upon intervening events (other than future governmental decisions by the official's agency or an agency subject to the budgetary control of the official's agency). (Regulation 18701(b)(1).)
- Whether the official should anticipate a financial effect on the financial interests at issue as a potential outcome under normal circumstances when using appropriate due diligence and care. (Regulation 18701(b)(2).)
- Whether the official has an interest of the type that would typically be affected by the terms of the decision. (Regulation 18701(b)(3).)
- Whether the decision is of the type that would be expected to have a financial effect on businesses and individuals similarly situated to those businesses and individuals in which the official has a financial interest. (*Ibid*.)
- Whether a reasonable inference can be made that the financial effects of the decision on the official's financial interest might compromise an official's ability to fulfill their duty to act in the best interests of the public. (Regulation 18701(b)(4).)
- Whether the decision will provide or deny an opportunity, or create an advantage for one of the official's financial interests. (Regulation 18701(b)(5).)

- Whether the official has the type of financial interest that would cause a similarly situated person to weigh the advantages and disadvantages of the decision on the official's financial interest in formulating a position. (Regulation 18701(b)(6).)

V. Materiality Standards

Regulation 18702(a) provides that the next step in the analysis is to determine if the decision's reasonably foreseeable financial effect on the official's financial interest is material. If the official's interest is in:

- A business entity, then apply the materiality standards of Regulation 18702.1. (Regulation 18702(a)(1).)
- A real property, then apply the materiality standards of Regulation 18702.2. (Regulation 18702(a)(2).)
- A source of income, then apply the materiality standards of Regulation 18702.3. (Regulation 18702(a)(3).)
- A source of a gift or gifts, then apply the materiality standards of 18702.4. (Regulation 18702(a)(4).)
- Their personal finances or those of immediate family, then apply materiality standard of 18702.5. (Regulation 18702(a)(5).)

A. Business Entity Interests

Regulation 18702.1 sets forth the materiality standards applicable to a decision's reasonably foreseeable financial effect on a business in which an official has an interest, and provides that the effect is material if any of the following standards is met:

- The business is explicitly involved in the decision, meaning that the business is "a named party in, or the subject of, the decision, including any decision in which the business:
  - Initiates the proceeding by filing an application, claim, appeal, or other request for action concerning the business with the official's agency. (Regulation 18702.1(a)(1)(A).)
  - Offers to sell a product or service to the official's agency. (Regulation 18702.1(a)(1)(B).)
  - Bids on, or enters into, a contract with the official's agency, or is identified as a subcontractor on a bid or contract with the agency. (Regulation 18702.1(a)(1)(C).)
  - Is the named or intended manufacturer or vendor of any products to be purchased by the official's agency with an aggregate cost of $1,000 in any 12-month period. (Regulation 18702.1(a)(1)(D).)

- Applies for a permit, license, grant, tax credit, exception, variance, or other entitlement from the official's agency. (Regulation 18702.1(a)(1)(E).)
- Is the subject of any inspection, action, or proceeding under the regulatory authority of the official's agency. (Regulation 18702.1(a)(1)(F).)
- Is subject to an action taken by the official's agency that is directed at the entity. (Regulation 18702.1(a)(1)(G).)

- The decision may result in an increase or decrease of the business's annual gross revenues, or the value of its assets and liabilities, in an amount equal to or more than:
  - $1,000,000; or
  - Five percent of the business's annual gross revenues, and the increase or decrease is $10,000 or more. (Regulation 18702.1(a)(2).)
- The decision may cause the business to incur or avoid additional expenses or to reduce or eliminate expenses in amount equal to or more than:
  - $250,000; or
  - One percent of the business's annual gross revenues, and the increase or decrease is at least $2,500. (Regulation 18702.1(a)(3).)
- The official knows or has reason to know that business has an interest in real property and:
  - The property is a named party in, or the subject of, the decision under Regulations 18701(a) and 18702.2(a)(1) through (6); or
  - There is clear and convincing evidence the decision would have a substantial effect on the property. (Regulation 18702.1(a)(4).)

Thus, if the decision's reasonably foreseeable financial effect on an official's business interest meets any of the four standards above, that effect is material, and the official is disqualified from taking part in the decision.

Small Shareholder Exception: Regulation 18702.1(b) sets forth the "Small Shareholder Exception," which provides that a decision's reasonably foreseeable financial effect on an official's financial interest in a business is not material under Regulation 18702.1(a)(1) or (a)(4)(A) if both:

- The official's only financial interest in the business is an "investment interest" under Section 87103(a) valued at $25,000 or less; and
- The official's interest in the business is less than one percent of the business's shares.

If the Small Shareholder Exception applies, the official is not disqualified.

B. Real Property Interests

Regulation 18702.2 provides the materiality standards applicable to a decision's reasonably foreseeable financial effect on real property in which an official has an interest as either an owner or lessee.

Explicitly Involved Real Property Interest: It is reasonably foreseeable a decision will have a material financial effect on an official's interest in real property any time the interest is explicitly involved in the decision. Therefore, the decision's reasonably foreseeable effect is material in any of the types of decisions described in Regulation 18702.2(a)(1) to (6), including a decision that:

- Involves the adoption of or amendment to a development plan or criteria applying to the property. (Regulation 18702.2(a)(1).)
- Determines the property's zoning or rezoning, other than a zoning decision applicable to all properties designated in that category; annexation or de-annexation; inclusion in or exclusion from any city, county, district, or local government subdivision or other boundaries, other than elective district boundaries. (Regulation 18702.2(a)(2).)
- Would impose, repeal, or modify any taxes, fees, or assessments that apply to the property. (Regulation 18702.2(a)(3).)
- Authorizes the sale, purchase, or lease of the property. (Regulation 18702.2(a)(4).)
- Involves the issuance, denial or revocation of a license, permit or other land use entitlement authorizing a specific use of or improvement to the property or any variance that changes the permitted use of, or restrictions placed on, the property. (Regulation 18702.2(a)(5).)
- Involves construction of, or improvements to, streets, water, sewer, storm drainage or similar facilities, and the property will receive new or improved services that provide a benefit or detriment disproportionate to other properties receiving the services. (Regulation 18702.2(a)(6).)

Not Explicitly Involved Real Property Interest: A decision's reasonably foreseeable financial effect on an official's interest in real property is material if it is of a type described in Regulation 18702.2(a)(7) through (8), (b) or (c), including a decision that:

- Involves property located 500 feet or less from the official's property unless there is clear and convincing evidence that the decision will not have any measurable impact on the official's property. (Regulation 18702.2(a)(7).)
- Involves property located more than 500 feet but less than 1,000 feet from the official's property, and the decision would change the official's property's: development potential; income producing potential; highest and best use; character by substantially altering traffic levels, intensity of use, parking, view, privacy, noise levels, or air quality; or market value (Regulation 18702.2(a)(8)(A) through (E).)

- Involves property located 1,000 feet or more from the property line of the official's property if there is clear and convincing evidence the decision would have a substantial effect on the official's property. (Regulation 18702.2(b).)
- Involves property leased by the official and the decision will:
  - Change the termination date of the lease;
  - Increase or decrease the potential rental value of the property;
  - Change the official's actual or legally allowable use of the property; or
  - Change the official's use and enjoyment of the property. (Regulation 18702.2(c)(1) through (4).)

Real Property Interest 1,000 Feet or More from Property Involved in Decision: As mentioned above, Regulation 18702.2(b) sets forth a presumption that the financial effect of a decision involving property located 1,000 feet or more from the property line of the official's property is not material. That presumption, however, may be rebutted with clear and convincing evidence the decision would have a substantial effect on the official's real property interest.

Exceptions for Planning Objectives or Policy: A decision's reasonably foreseeable financial effect on an official's real property interest is not material, and therefore the official is not disqualified from the decision, if the decision solely concerns:

- Repairs, replacement or maintenance of existing streets, water, sewer, storm drainage or similar facilities. (Regulation 18702.2(d)(1).)
- Adoption or amendment of a general plan, as defined in Regulation 18702.2(e)(2), if certain specified conditions are met. (See Regulation 18702.2(d)(2).)

Common Area Exception to the Definition of Interest in Real Property: Regulation 18702.2(e)(4) provides that an "interest in real property," as defined in Section 82033, does not include "any common area as part of the official's ownership interest in a common interest development as defined in the Davis-Stirling Common Interest Development Act (Civil Code Sections 4000 et seq.)"

C. Source of Income Interests

Regulation 18702.3 sets forth the materiality standards applicable to a decision's reasonably foreseeable financial effect on a source of income to an official, and provides that the effect is material if any of the following criteria is met:

- The source is explicitly involved in the decision because it is "a named party in, or the subject of, the decision," including a claimant, applicant, respondent, or contracting party. (Regulation 18702.3(a)(1).)
- The source is an individual and any of the following applies:

- The decision may affect the individual's income, investments, or other assets or liabilities by $1,000 or more (excluding an interest in a business entity or real property). (Regulation 18702.3(a)(2)(A).)
- The official knows or has reason to know that the individual has an interest in a business entity that will be financially affected under the materiality standards applicable to a business set forth in Regulation 18702.1. (Regulation 18702.3(a)(2)(B).)
- The official knows or has reason to know that the individual: (i) has a real property interest and the property is explicitly involved in the decision; or (ii) there is clear and convincing evidence the decision would have a substantial effect on the property. (Regulation 18702.3(a)(2)(C).)

- The source is a nonprofit organization and any of the following applies:
  - The decision may result in an increase or decrease of the organization's annual gross receipts, or the value of the organization's assets or liabilities, in an amount equal to or more than: (i) $1,000,000; or (ii) five percent of the organization's annual gross receipts and the increase or decrease is equal to or greater than $10,000. (Regulation 18702.3(a)(3)(A).)
  - The decision may cause the organization to incur or avoid additional expenses or to reduce or eliminate expenses in an amount equal to or more than: (i) $250,000; or (ii) one percent of the organization's annual gross receipts and the change in expenses is equal to or greater than $2,500. (Regulation 18702.3(a)(3)(B).)
  - The official knows or has reason to know that the organization has a real property interest and: (i) the property is explicitly involved in the decision; (ii) there is clear and convincing evidence the decision would have a substantial effect on the property. (Regulation 18702.3(a)(3)(C).)
- The source is a business that will be financially affected under the materiality standards applicable to a business set forth in Regulation 18702.1 (Regulation 18702.3(a)(4).)
- If there is a nexus between the decision and income received by the official or official's spouse. Otherwise referred to as the nexus test, any reasonably foreseeable financial effect on an official's source of income interest is material if the decision "will achieve, defeat, aid, or hinder a purpose or goal of the source and the official or the official's spouse receive or is promised the income for achieving the purpose or goal. (Regulation 18702.3(b).)

Exception for Retail Sales: Section 87103.5(a) provides that a retail customer of a business engaged in retail sales of good or services to the public generally is not a source of income to an official who owns a 10-percent or greater interest in the business if: the retail customers of the business constitute a significant segment of the public generally, and the amount of income received from an individual customer is not distinguishable from the amount of income received from its other customers.

Section 87103.5(b) sets forth a similar retail sales exception for a jurisdiction with a population of 10,000 or less that is located within a county with 350 or fewer retail businesses.

For purposes of applying Section 87103.5, Regulation 18702.3(c) provides that the retail customers of a business entity constitute a significant segment of the public generally if the business is open to the public and provides goods or services to customers that comprise a broad base of persons representative of the jurisdiction. (Regulation 18702.3(c)(1).)

Income from an individual customer is not distinguishable from the amount of income received from other customers when the official is unable to recognize a significant monetary difference between the business provided by the individual customer and the other customers of the business. (Regulation 18702.3(c)(2).) An official is unable to recognize a significant monetary difference when the business:

- Is of the type that sales to any one customer will not have a significant impact on the business's annual net sales; or
- Has no records that distinguish customers by amount of sales, and the official has no other information that the customer provides significantly more income to the business than an average customer. (*Ibid*.)

Income from a Government Entity: The materiality standards of Regulation 18702.3 do not apply where a government entity qualifies as a source of income as defined in Section 82030, including where an official is paid by the entity as a consultant or contractor. (Regulation 18702.3(d).) Under Regulation 18703(e)(7), an official with an interest in such an entity is disqualified from taking part in a decision only if there is a unique effect on the official. (*Ibid*.)

D. Source of Gift Interests

Regulation 18702.4 provides the materiality standards applicable to a decision's reasonably foreseeable financial effect on the source of a gift to an official, and provides that the decision's effect is material if:

- The source is explicitly involved in the decision because the source "is named or otherwise identified as the subject of the proceeding," including a claimant, applicant, respondent, or contracting party. (Regulation 18702.4(a).)
- The source is an individual that will be financially affected under the materiality standard applicable to a decision's reasonably foreseeable financial effect on an official's personal finances set forth in Regulation 18702.5 or the official knows or has reason to know that the individual has an interest in a business or real property that will be financially affected under the materiality standards provided in Regulation 18702.1 or 18702.2, respectively. (Regulation 18702.4(b))

- The source is a nonprofit organization that will receive a measurable financial benefit or loss as a result of the decision or the official knows or has reason to know that the nonprofit has an interest in real property that will be financially affected under the materiality standards in Regulation 18702.2. (Regulation 18702.4(c).)
- The source is a business that will be financially affected under the materiality standards in Regulation 18702.1. (Regulation 18702.4(d).)

E. Interest in Personal Finances

Regulation 18702.5(a) provides the materiality standard applicable to a decision's reasonably foreseeable financial effect on an official's personal finances, including those of immediate family. Also known as the personal financial effect rule, a reasonably foreseeable effect on the official' personal finances is material if the decision may result in the official or the official's immediate family receiving a financial benefit or loss of $500 or more in any 12-month period due to the decision.

Exceptions: Under Regulation 18702.5(b), however, a decision's effect on an official's personal finances and those of immediate family is not material if the decision would:

- Affect only the salary, per diem, or reimbursement for expenses the official or their immediate family member receives from a federal, state, or local government agency, unless the decision is:
  - To appoint (except as specified), hire, fire, promote, demote, suspend without pay or otherwise take disciplinary action with financial sanction against the official or their immediate family; or
  - To set a salary for the official or a member of their immediate family which is different from salaries paid to other employees of the government agency in the same job classification or position, or when the mem of the official's immediate family is the only person in the job classification or position. (Regulation 18702.5(b)(1).)
- Appoint the official to be a member of any group or body created by law or formed by the official's agency for a special purpose. However, if the official will receive a stipend for attending meeting of the group or body aggregating $500 or more in any 12-month period, the effect is material unless the appointing body posts all of the following on its website:
  - A list of each appointed position and its term. (Regulation 18702.5(b)(2)(A).)
  - The amount of the stipend for each appointed position. (Regulation 18702.5(b)(2)(B).)
  - The name of the official who has been appointed to the position. (Regulation 18702.5(b)(2)(C).)

- The name of any official who has been appointed to be an alternate for the position. (Regulation 18702.5(b)(2)(D).)

- Appoint the official to be an officer of the governing body of which the official is already a member (such as a decision to appoint a city councilmember to be the city's mayor.) (Regulation 18702.5(b)(3).)
- Establish or change the benefits or retirement plan of the official or the official's immediate family member, and the decision applies equally to all employees or retirees in the same bargaining unit or other representative group. (Regulation 18702.5(b)(4).)
- Result in the payment of any travel expenses incurred by the official or their immediate family while attending a meeting as an authorized representative of an agency. (Regulation 18702.5(b)(5).)
- Permit the official's use of any government property, including automobiles or other modes of transportation, mobile communication devices, or other agency-provided equipment for carrying out the official's duties, including any nominal, incidental, negligible, or inconsequential personal use while on duty. (Regulation 18702.5(b)(6).)
- Result in the official's receipt of any personal reward from their use of a personal charge card or participation in any other membership rewards program, so long as the reward is associated with the official's approved travel expenses and is no different from the reward offered to the public. (Regulation 18702.5(b)(7).)

Effect on Personal Finances and a Business or Real Property Interest: If a decision would have a reasonably foreseeable financial effect on a business or real property interest of an official, any related effect on the official's personal finances is not considered separately, and the effect is only analyzed under the respective materiality standards for business and real property interests, i.e. Regulations 18702.1 and 18702.2. (Regulation 18702.5(c).)

VI. The Public Generally Exception

Under Section 87103, if a decision's financial effect on an official's financial interest is indistinguishable from the decision's effect on the public generally, the official is not disqualified from taking part in the decision. Regulation 18703 sets forth the "Public Generally Exception."

The General Rule: A decision's financial effect on an official's financial interest is indistinguishable from its effect on the public generally if the official establishes that a "significant segment" of the public is affected and the "effect on the official's interest is not unique" compared to the effect on the significant segment. (Regulation 18703(a).)

A "significant segment" of the public is defined as:

- At least 25 percent of:
  - All businesses or nonprofit entities within the official's jurisdiction;
  - All real property, commercial real property, or residential real property within the official's jurisdiction; or
  - All individuals within the official's jurisdiction. (Regulation 18703(b)(1).)
- At least 15 percent of residential real property within the official's jurisdiction if the only interest the official has in the decision is the official's primary residence. (Regulation 18703(b)(2).)

A unique effect on an official's financial interest includes a disproportionate effect on:

- The development potential or use of the official's real property, or the income producing potential of the official's real property or business;
- An official's business or real property resulting from the proximity of a project that is the subject of a decision;
- An official's interests in business entities or real properties resulting from the cumulative effect of the official's multiple interests in similar entities or properties that is substantially greater than the effect on a single interest;
- An official's interest in a business or real property resulting from the official's substantially greater business volume or larger real property size when a decision affects all interests by the same or similar rate or percentage;
- A person's income, investments, assets or liabilities, or real property if the person is a source of income or gifts to the official; and
- An official's personal finances or those of immediate family. (Regulation 18703(c)(1)-(6).)

"Jurisdiction" means:

- The jurisdiction of the state or local government agency as defined in Section 82035;
- The designated geographical area the official was elected to represent; or
- The area to which the official's authority and duties are limited if not elected. (Regulation 18703(d).)

Specific Rules for Special Circumstances: Regulation 18703(e) also provides seven Specific Rules for Special Circumstances which govern the Public Generally Exception's applicability in those special circumstances. Under these rules, a decision's financial effect is deemed indistinguishable from its effect on the public generally if there is no unique effect on the official's interest and the official establishes:

- **Public Services and Utilities:** The decision sets or adjusts the amount of an assessment, tax, fee, or rate for water, utility, or other similar public services that is applied equally, proportionally, or by the same percentage to the official's interest and other businesses, properties, or individuals subject to the assessment, tax, fee, or rate. However, an official is not permitted to take part in a decision that would impose the assessment, tax, or fee, or determine the boundaries of a property or who is subject to the assessment, tax, or fee. An official is only permitted to take part in setting or adjusting the assessment, tax, or fee amount, once other related decisions have already been made. (Regulation 18703(e)(1).)

- **General Use or Licensing Fees:** The decision affects the official's personal finances as a result of an increase or decrease to a general fee or charge, such as parking rates, permits, license fees, application fees, or any general fee that applies to the entire jurisdiction. (Regulation 18703(e)(2).)

- **Limited Neighborhood Effects:** The decision affects residential real property limited to a specific location, encompassing more than 50, or five percent, of the residential real properties in the official's jurisdiction, and the decision establishes, amends, or eliminates ordinances that restrict on-street parking, impose traffic controls, deter vagrancy, reduce nuisance or improve public safety, provided the body making the decision gathers sufficient evidence to support the need for the action at a specific location. (Regulation 18703(e)(3).)

- **Rental Properties:** The decision is limited to establishing, eliminating, amending, or otherwise affecting the respective rights or liabilities of tenants and owners of residential rental property, including a decision regarding a rent control ordinance or tenant protection measures, provided all of the following criteria are met:

  - The decision applies to all residential rental properties within the official's jurisdiction other than those excepted by the Costa-Hawkins Rental Housing Act (Civil Code Sections 1954.50, et seq.). (Regulation 18703(e)(4)(A).)

  - The official owns three or fewer residential rental units. (Regulation 18703(e)(4)(B).)

  - Only interests resulting from the official's leasehold interest as a lessor of residential real property and the lessee or owner of the official's primary residence are affected by the decision. (Regulation 18703(e)(4)(C).)

- **Required Representative Interest:** The decision is made by a board or commission and the law that establishes the board or commission requires certain appointees have a representative interest in a particular industry, trade, or profession or other identified interest, and the public official is an appointed member representing that interest. This provision applies only if the effect is on the industry, trade, or profession or other identified interest represented. (Regulation 18703(e)(5).)

- **State of Emergency:** The decision is made pursuant to an official proclamation of a state of emergency when required to mitigate against the effects directly arising out of the emergency. (Regulation 18703(e)(6).)
- **Governmental Entities:** The decision affects a federal, state, or local government entity in which the official has an interest. (Regulation 18703(e)(7).)

VII. Legally Required Participation

Section 87101 provides that the prohibition of Section 87100 does not prevent an official from making or participating in the making of a decision to the extent the official's participation is legally required for the action or decision to be made. However, the existence of a tied vote does not make the disqualified official's participation legally required.

No Alternative Source of Decision: Regulation 18705(a) provides that an official who is financially interested in a decision may establish that the official is legally required to make or to participate in the making of a decision within the meaning of Section 87101 only if there exists no alternative source of decision consistent with the purposes and terms of the statute authorizing the decision.

"Quorum" Defined: Regulation 18705(d) provides that a "quorum" is the minimum number of members required to conduct business. When the vote of a supermajority is required to adopt an item, a "quorum" is the minimum number of members needed to adopt the item.

Narrowly Construed: Regulation 18705(c) requires the regulation be narrowly construed, and specifically provides that the regulation shall not to be construed:

- To permit an official who is otherwise disqualified under Section 87100 to vote to break a tie. (Regulation 18705(c)(1).)
- To allow a member of any agency who is otherwise disqualified under Section 87100 to vote if a quorum can be convened of other members of the agency who are not disqualified, whether or not those other members are actually present at the time of the disqualification. (Regulation 18705(c)(2).)

Random Means of Selection: Regulation 18705(c)(3) requires participation by the smallest number of officials with a conflict that are "legally required" for the decision to be made under Section 87101 and permits a "random means of selection" (e.g. drawing straws) to be used to select only the number of officials necessary to make the decision. When an official is selected, that official is selected for the duration of the proceedings in all related matters until their participation is no longer legally required, or the need for invoking the exception no longer exists. (Regulation 18705(c)(3).)

Public Identification of an Otherwise Disqualified Official's Financial Interests in a Decision: Regulation 18705(b) provides that when an official who has a financial interest in a decision is legally required to make or participate in making that decision, the official must state the existence of the potential conflict as follows:

- The official must disclose the existence of the conflict of interest and describe with particularity the nature of the official's disqualifying financial interest or interests. This requirement is satisfied if the official discloses:
  - The type of financial interest or interests involved in the decision, and;
  - Other specified information identifying the interest depending on the type of interest at issue.
- The official or another officer or employee of the agency must summarize the circumstances under which the conflict may arise.
- The official or another officer or employee of the agency must disclose the legal basis for the determination that there is no alternative source of decision.

Manner of Disclosure: The disclosures required by Regulation 18705(b) must be disclosed as follows:

- If the decision is made during an open session of a public meeting, the disclosures must be made orally before the decision is made;
- If the decision is made during a closed session of a public meeting, the disclosures must be made orally during open session either before the body goes into closed session or immediately thereafter;
- If the decision takes place outside of a public meeting, the disclosures must be made in writing; and
- In all three circumstances immediately above, the disclosures must be made part of the public record, as specified. (Regulation 18705(b)(4).)

VIII. Segmentation

Under the Act's conflict of interest provisions, each governmental decision must be analyzed independently to determine if the decision will have a disqualifying effect on an official's financial interest. (*In re Owen* (1976) 2 FPPC Ops. 77.) Accordingly, an agency may segment a decision in which an official has a disqualifying conflict of interest to allow the official to participate in associated decisions which would not have a disqualifying effect on the official's interests under Regulation 18706.

Required Conditions for Segmentation: Regulation 18706(a) provides that an agency may segment a decision in which an official is financially interested, to allow the official

to participate in associated decisions in which the official is not financially interested, provided all the following conditions are met:

- The decision in which the official is financially interested can be broken down into separate decisions that are not inextricably interrelated to the decision in which the official has a disqualifying financial interest;
- The decision in which the official is financially interested is segmented from the other decisions;
- The decision in which the official is financially interested is considered first and a final decision is reached by the agency without the disqualified official's participation in any way; and
- Once the decision in which the official is financially interested has been made, the official's participation in associated decisions does not result in a reopening of, or otherwise financially affect, the decision from which the official was disqualified.

"Inextricably Interrelated": Regulation 18706(b) provides that decisions are "inextricably interrelated" when the result of one decision will effectively determine, affirm, nullify, or alter the result of another decision.

Budget and General Plan Decisions Affecting Entire Jurisdiction: Regulation 18706(c) provides that once all separate decisions related to a budget or general plan affecting the entire jurisdiction have been finalized, the official may participate in the final vote to adopt or reject the agency's budget or general plan.

IX. Disqualification Requirements

Section 87105 governs the recusal of a public official specified in Section 87200 from a decision from which the official has been disqualified. Subdivisions (a)(1)-(3) of that section require the disqualified official to: identify the potential conflict of interest to publicly identify the official's financial interest or interests at issue; recuse from voting, discussing or attempting to influence the matter; and leave the room until after the matter is concluded. Subdivision (a)(4) excludes members of the Legislature from these recusal requirements.

Regulation 18707 provides further direction and guidance on the recusal requirements applicable to a public official specified in Section 87200 who is disqualified from a decision relating to an agenda item noticed for consideration at a public meeting subject to open meeting laws (i.e. the Bagley-Keene Act (Section 11120 et seq.) or the Brown Act (Section 54950 et seq.)).

Form and Content of Public Identification: The disqualified official must publicly identify each type of financial interest, identified in Section 87103, held by the official

that gives rise to the disqualifying conflict of interest. (Regulation 18707(a)(1).) The identification must be oral and part of the public record (Regulation 18707(a)(1)(B)), and provide the following information, as applicable:

- For a business interest: the name of the business, a general description of its activities, and any position held by the official. (Regulation 18707(a)(1)(A)(i).)
- For a real property interest: the property's address, assessor's number, or identification that the property is the official's personal residence. (Regulation 18707(a)(1)(A)(ii).)
- For a source of income interest: the name of the source of income. (Regulation 18707(a)(1)(A)(iii).)
- For a source of gift interest: the name of the source of gift. (Regulation 18707(a)(1)(A)(iv).)
- For all interests: the nature of the expense, liability, asset, or income affected. (Regulation 18707(a)(1)(A)(v).)

Timing: The public identification required by Regulation 18707(a)(1) must be made immediately prior to consideration of the agenda item. (Regulation 18707(a)(2).)

- Partial absence from a meeting does not excuse the disqualified official's public identification requirement. (*Ibid*.)
- If the official leaves a meeting in advance of an agenda item from which the official is disqualified, the official must provide the public identification required by Regulation 18707(a)(1) prior to leaving the meeting. (Regulation 18707(a)(2).)
- If the official first joins a meeting after consideration of the agenda item, the official must provide the public identification immediately upon joining the meeting. (*Ibid*.)

Recusal and Leaving the Room: The disqualified official must recuse, leave the room after the public identification required by Regulation 18707(a)(1), and refrain from participation in the decision. (Regulation 18707(a)(3).) The disqualified official does not count toward achieving a quorum while the item is discussed. (*Ibid*.)

- For an agenda item on a consent calendar (uncontested items), the official may remain in the room during the consent calendar. (Regulation 18707(a)(3)(A).)
- If the official has a "personal interest" in the agenda item, as defined in Regulation 18704(d)(2) and wishes to speak or appear as a member of the general public, the official may leave the dais and speak or observe from the area reserved for members of the public after making the public identification required by Regulation 18707(a)(1) and recusing. (Regulation 18707(a)(3)(B).)

Special Rules for Closed Session: The public identification required by Regulation 18707(a)(1) must be made orally during the open session before the body goes into

closed session and may be limited to a declaration that the official's recusal is because of a conflict of interest under Section 87100. (Regulation 18707(a)(4).) The declaration must be made part of the official public record. (*Ibid*.) The official must not be present when the decision is considered in closed session or knowingly obtain or review a recording or any other non-public information regarding the decision. (*Ibid*.)

Other Decisions: For a decision other than an agenda item involving a public official specified in Section 87200 (governed by Regulation 18707(a)), Regulation 18707(b) provides the following:

- If the official determines not to act because of a financial interest, the official's determination may be accompanied by an oral or written disclosure of the interest.
- The official's presence will not be counted toward achieving a quorum.
- During a closed meeting of the agency, a disqualified official must not be present when the decision is considered, or knowingly obtain or review a recording or any other nonpublic information regarding the decision.
- An agency may adopt a local rule requiring the official to step down from the dais or leave the chambers.

Confidential Information: Regulation 18707(c) expressly provides that nothing in Regulation 18707 is intended to cause any disclosure that would reveal the confidences of a closed session or any other privileged information contemplated by law, including privileged information under Regulation 18740.

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[1] The Political Reform Act is contained in Government Code Sections 81000 through 91014. All statutory references are to the Government Code, unless otherwise indicated. The regulations of the Fair Political Practices Commission (the "Commission") are contained in Sections 18110 through 18997 of Title 2 of the California Code of Regulations. All regulatory references are to Title 2, Division 6 of the California Code of Regulations, unless otherwise indicated.

[2] We note that the annual gift limit is adjusted biennially. The current gift limit is prescribed in Regulation 18940.2. The adjusted annual gift limit amount in effect for the period January 1, 2021, to December 31, 2022, is $520.

[3] For an official's interest in a business entity or real property, Regulation 18702.1(a) and Regulation 18702.2(a)(1)-(6), provide additional guidance for determining if the interest is explicitly involved.

DATE: April 21, 2023

TO: Board of Directors

FROM: Joshua Metz, RGS Senior Advisor, District Manager

SUBJECT: Authorize SMEDD to offer Letters of Support for Local Agencies to Granting Agencies for Grant Applications that are Aligned with SMEDD's Mission

---

STATEMENT OF ISSUE: The purpose of this item is to authorize SMEDD to offer Letters of Support for Local Agencies to Granting Agencies for Grant Applications that are aligned with SMEDD's mission.

SUMMARY OF RECOMMENDED ACTION:

Authorize SMEDD to offer Letters of Support for Local Agencies to Granting Agencies for Grant Applications that are aligned with SMEDD's mission and authorize the District Manager or the Board Chairperson to sign such letters.

FINANCIAL IMPACTS:

There are no financial impacts associated with offering letters of support other than the manpower necessary to draft the letter(s).

BACKGROUND:

Agencies often seek grants and funds to support programs. Grant evaluation criteria often award applicants with points for programs that deliver regional benefits and/or having regional support. SMEDD is in a good position to offer evidence of regional support by providing a letter to be included in a grant submission packet by articulating why a program or facility provides benefits.

DISCUSSION:

Supporting local agencies with aligned missions in the pursuit of resources is part of SMEDD's charge and has the potential to benefit the region.

Because the timeline for providing a letter can be very short, putting the authority in place to allow the quick generation of a letter of support optimizes the likelihood that a letter can be completed timely and be of value. Therefore, staff recommends authorizing the Board Chairperson and the District Manager to sign letters of support (either signature being allowed.)

ALTERNATIVES:

1: Consider and authorize the Board Chairperson and the District Manager to sign letters of support for other agencies' grant and funding applications. Either signature shall be allowed as the only signature appearing on the letter of support.

2: Consider, *modify*, and authorize the Board Chairperson and the District Manager to sign letters of support for other agencies' grant and funding applications. Either signature shall be allowed as the only signature appearing on the letter of support.

3: Other approach(s) may be developed after public comments and Board deliberations.

4: Decline to act.

RECOMMENDATION for Alternative 1:

Move to:

- Authorize the Board Chairperson and/or the District Manager to sign letters of support for other agencies' grant and funding applications when the purpose of the grant is aligned with SMEDD's mission. Either official's signature shall be allowed as the only signature appearing on the letter of support.

DATE: April 21, 2023

TO: Board of Directors

FROM: Joshua Metz, RGS Senior Advisor (District Manager)

SUBJECT: Contract with AG Innovations for Agricultural Technologies Innovation Center Workshop Facilitation

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STATEMENT OF ISSUE: The purpose of this item is to review a proposal by AG Innovations to support the SMEDD team in designing and facilitating a half day convening to be held on May 30, 2023, and tentatively called the North Bay Agricultural Technologies (AgTech) Innovation Center Brainstorming Session. The results of the workshop shall support an application to the Economic Development Administration (EDA) 2023 Public Works and Economic Adjustment Assistance (PWEAA) program to fund a comprehensive feasibility study to evaluate the potential for a North Bay AgTech Innovation Center.

SUMMARY OF RECOMMENDED ACTION:

Authorize SMEDD to accept a proposal from AG Innovations to design and facilitate a Brainstorming Session to inform and support a feasibility study on a North Bay AgTech Innovation Center; and authorize the Chairperson to execute the proposal.

FINANCIAL IMPACTS:

Option 1 (in Task 1) is facilitation and support by a Senior Facilitator and the Executive Director/ Managing Facilitator. The cost is $10,000. The EDA approved budget included $25,000 for contractual services. The Ag Innovation scope of work would draw on these funds.

The Sonoma Mendocino Economic Development District (SMEDD) has committed to $237,778 in remaining unspent grant authority from its $400,000 Supplemental Grant. These funds must be expended on qualified programs or projects by June 30, 2023. A request to extend this deadline will be requested, but until approved, this deadline stands.

BACKGROUND:

Attached please find a proposal from AG Innovations to support the SMEDD team in designing, planning, and coordinating an Agricultural Technologies Innovation Center Brainstorming Session. The expectation is that the contractor will work closely with the SMEDD team to plan the event, facilitate at the event, and produce a follow up report that would be the foundational document of SMEDD's feasibility study grant application to the Economic Development Administration (EDA) 2023 Public Works and Economic Adjustment Assistance (PWEAA) program.

The current tentative date and time for the Workshop is 10am-2pm, May 30, 2023, and will be held at the Sonoma County Farm Bureau offices, located at 3589 Westwind Blvd., Santa Rosa, CA 95403.

Exploring the potential for a North Bay AgTech Innovation Center aligns closely with Goals 1, 3, and 4 of the 2022 SMEDD CEDS (Develop Innovative Value-Added Economic Sectors; Support People; and Resiliency Strategy - respectively); has the potential to increase regional economic resilience, thus aligning with the intended outcomes of the Cares Act Supplemental Grant funds; and would represent progress on the Board-approved EDA Supplemental Grant Work Plan - Task 1 (SMEDD Education, Awareness & Capacity) and Task 3 (Recovery and Resiliency Funding Technical Assistance).

DISCUSSION:

AgTech is a rapidly expanding segment of the broader agriculture and land natural resources management sectors, leveraging advanced technologies to address critical quality, efficiency, and environmental impacts aspects of these endeavors. Sonoma and Mendocino counties both already house numerous AgTech-oriented firms and disparate educational, workforce development, and private ventures. A North Bay AgTech Innovation Center could provide facilities and a focused capacity to support increased productivity and collaborations across existing programs and ventures, and contribute to new ones forming. A North Bay center could be regionally focused on the most relevant agricultural sectors such as winegrape farming, specialty crops, and dairy products, and on the issues impacting those sectors, including water & watersheds, and forestry & wildfire.

AgTech innovation centers are being developed at different locations throughout the State of California, with UC Agriculture and Natural Resources (UCANR) spearheading the establishment of a statewide network of such centers The UCANR efforts are aimed at increasing the impact of their UC Cooperative Extension (UCCE) Advisor networks; strengthening applied, industry-aligned research programs; making progress on climate resilience and carbon-neutrality; and supporting regional economic resilience. In places where they are already functioning, these centers are leading to increased venture formation, job growth, and economic vitality.

The proposed scope of services would leverage AG Innovations' existing regional agricultural, natural resources, and community based organization stakeholder networks, and specialized domain knowledge, skills and abilities, and professional facilitation services. AG Innovations would work closely with the SMEDD team, who bring their own expertise and experience working on similar efforts in other parts of the State, to design, facilitate, and implement a compelling workshop, and deliver post-action products leading directly to SMEDD's grant application to the EDA's Public Works and Economic Adjustment Assistance program.

ALTERNATIVES:

1: Consider and approve the attached Proposal for Professional Services submitted by AG Innovation for an amount not to exceed $10,000 to design and facilitate a North Bay Agricultural Technologies (AgTech) Innovation Center Brainstorming Session.

2: Consider, *modify,* and approve the attached Proposal for Professional Services submitted by AG Innovation for an amount not to exceed $10,000 to design and facilitate a North Bay Agricultural Technologies (AgTech) Innovation Center Brainstorming Session.

3: Other approach(s) as may be developed after public comments and Board deliberations.

4: Decline to act.

RECOMMENDATION for Alternative 1:

Move to:

- Approve the attached Proposal for Professional Services submitted by AG Innovation for an amount not to exceed $10,000 to design and facilitate a North Bay Agricultural Technologies (AgTech) Innovation Center Brainstorming Session and authorize the SMEDD Chairperson to accept and execute the proposal by signing the proposal.

ATTACHMENTS

A. Proposal for Professional Services submitted by AG Innovation for an amount not to exceed $10,000

April 17, 2023

To: Josh Metz
District Manager
Sonoma Mendocino Economic Development District
141 Stony Circle
Santa Rosa, CA 95401
josh@smedd.org

From: Genevieve Taylor
Executive Director | Managing Facilitator
Ag Innovations Network (dba Ag Innovations)
101 Morris St. Ste 212
Sebastopol, CA 95472
genevieve@aginnovations.org

RE: Ag Tech Innovation Center Brainstorming Session

Dear Josh:

Thank you for taking the time to talk about the Ag Tech Innovation Center May 30, 2023, meeting intended to brainstorm with partners on the concept of an Ag Tech Innovation Center in Sonoma and Mendocino Counties, sponsored by the Sonoma Mendocino Economic Development District (SMEDD). Ag Innovations (AIN) would be excited to work with you to support the information sharing, peer networking, and scoping for a feasibility study that you envision for this meeting. This letter lays out our understanding of the project and provides a budget for costs.

Project Objectives

Design and facilitate a ½ day, in-person brainstorming session to develop stakeholder understanding and buy-in towards an application for a feasibility study.

Ag Innovations' Work Plan

Our goal is to help you create a successful outcome for the Ag Tech Innovation Center Brainstorming Session. Based on our conversations, we will:

1. Clarify retreat objectives with you and your design team.
2. Support SMEDD in developing an approach and related materials for participants to prepare for the retreat.
3. Support the development of an invitation to be used for the event.
4. Review appropriate topic material in preparation for the retreat.
5. Prepare for the in-person event, and participate in all planning team calls and emails in preparation for the event. This includes:
    a. Develop an agenda to advance meeting objectives, the resources of SMEDD and the talent and insight of the participants. We will create an agenda with detailed facilitation/program directions that can be used as the basis for other necessary agendas including the participant agenda. We will work with you and your team to revise this agenda up to 2 times to reflect necessary changes.
6. Work with you to help design and edit any meeting materials as needed.
7. Provide facilitation materials as specified in the facilitation agenda we create.

8. Work with you to help design and edit any desired meeting record either visual or recorded.
9. Travel to the site, and set up, facilitate and take down meeting setup.
10. Debrief the meeting with you and clarify next steps

Aimee Ryan, Senior Facilitator, will provide these services on behalf of Ag Innovations, with support from Genevieve Taylor, Executive Director/Managing Facilitator.

Your Responsibilities

You are responsible for:

1. Providing us all relevant information for preparing the agenda including attendee lists, background documents, and meeting logistics.
2. Coordinating meeting logistics, including locating and securing the meeting site and providing for any desired meal/refreshment service.
3. Recruiting and coordination of participants including communication of meeting information and transmitting follow-up information.
4. Creation of all participant materials for the event including agendas, handouts, reports or other background materials, unless otherwise agreed in scope above.
5. Coordinating audio-visual services and providing any projection or recording equipment as may be specified in the agenda, or as needed for observation-only attendance through Zoom for select board members.
6. Recruiting of and coordination with speakers including management of logistics, collection of speaker presentation, and addressing specific speaker needs, except as noted above where we agree to contribute to this effort.
7. Handling on-site registration and hospitality.
8. Providing meeting specific materials such as nametags or handouts
9. Creating any desired visual or written record of the meeting, unless otherwise agreed to above.

Additional Provisions

Contracting Agent

Sonoma Mendocino Economic Development District (SMEDD), with Josh Metz as the point of contact for the project and for billing.

Termination

Either party may end this agreement with 30 days of written notice. In the event such notice is given, SMEDD shall not be bound to pay any fees or expenses for any work performed after the termination date and Ag Innovations shall stop work and take all reasonable steps to preserve and protect all work products produced to date.

Independent Organizations

SMEDD and Ag Innovations are independent entities and are not engaged in an employee-employer or agency relationship of any kind for any purpose whatsoever. Neither party shall not have any power or authority to create any obligations, express or implied for the other party.

Indemnification

SMEDD agrees to indemnify and hold harmless Ag Innovations, and Ag Innovations agrees to indemnify and hold harmless SMEDD. and their respective employees from any and all liabilities,

costs, and expenses (including, without limitation, attorney's fees and expenses) incurred or suffered by reason of, or in any way relating to this project, other than as judicially determined to be caused by SMEDD or Ag Innovations, respectively, own bad faith or willful misconduct.

Confidentiality

Ag Innovations agrees that it shall hold all confidential information received from SMEDD in strictest confidence and shall use the same solely for the purpose in this Agreement, and further agrees that it shall not make disclosure of any such confidential information to anyone without the written approval of SMEDD.

SMEDD recognizes that a significant aspect of Ag Innovations performance under this Agreement is gaining and keeping the trust and confidence of all stakeholders, and that a significant aspect of Ag Innovations performance under this agreement is working in partnership with SMEDD and sharing relevant information.

Accordingly, Ag Innovations shall make all reasonable efforts to persuade the participants in this process to give permission to Ag Innovations to share all information with SMEDD, but Ag Innovations shall not be required to disclose to SMEDD or third parties any information, oral or written, provided to Ag Innovations in confidence during or relating to performance of this agreement, unless authorized by the party providing the confidential information. All of Ag Innovations notes, memoranda, documents, and recollections about performance of this Agreement and documents given to Ag Innovations by a stakeholder shall be the sole property of Ag Innovations.

Disclosure and Conflicts of Interest

Ag Innovations staff adheres to a clear conflict of interest policy. Under this policy, Ag Innovations staff must show any actual or potential conflicts of interest about any contract, subcontractor consulting agreement. Ag Innovations has reviewed the available information about the project with respect to potential conflicts of interest. We have found no actual or potential conflicts of interest. We reserve the right to resign from this engagement at any time if conflicts of interest arise or become known to us that, in our judgment, would impair our ability to perform objectively.

Impartiality

Ag Innovations staff has no position on the issues under consideration and will not take a position on the issues or options under consideration. Ag Innovations staff will remain impartial – not favoring any particular outcome or one member or interest.

Fees and Payment (please see detailed budget at the end of this document. Ag Innovations agrees to provide the services described here for a fee of $10,000, not to exceed that budget limit. We will provide an invoice for services on a monthly basis, with a 30 day term. No travel fees apply.

We are pleased to work with you and SMEDD, and look forward to this engagement. Warm regards,

Genevieve Taylor

Executive Director | Managing Facilitator

Sonoma Mendocino Economic Development District

NAME	
TITLE	
SIGNATURE	
DATE	

Ag Innovations Network

NAME	Genevieve Taylor
TITLE	Executive Director
SIGNATURE	
DATE	April 17, 2023

Project: Ag Tech Innovation Hub Meeting May 2023	Managing Facilitator		Senior Facilitator		TOTAL	
	2023 Rate	$252.00	2023 Rate	$195.00		
Activities	**Hours**	**Cost**	**Hours**	**Cost**	**Hours**	**Cost**
TASK 1 - Facilitate 1/2 Day Meeting						
Review relevant background materials	1.5	$378.00	4	$780.00	**5.5**	**$1,158.00**
Prep, including design, meeting materials, design meetings, prep speakers, etc.	3	$756.00	16	$3,120.00	**19.0**	**$3,876.00**
Facilitate meeting (4 hours, + 1 hour set up and 1 hour takedown) (discounted rate for Managing Facilitator)	6	$1,512.00	6	$1,170.00	**12.0**	**$2,682.00**
Edit meeting record	0.5	$126.00	4	$780.00	**4.5**	**$906.00**
Develop notes (if desired)	0	$0.00	2	$390.00	**2.0**	**$390.00**
Debrief meeting	1.5	$378.00	2.5	$487.50		**$865.50**
Subtotal TASK 1	**12.5**	**$3,150.00**	**34.5**	**$6,727.50**	**37.5**	**$9,877.50**
TOTAL LABOR	**12.5**	**$3,150.00**	**34.5**	**$6,727.50**	**43.0**	**$9,877.50**
Other Direct Costs (ODC)	**Qty**	**UOM**	**Unit Rate**	**Total Cost**		
Photocopying b/w	100	lot	0.1	$10.00		
Photocopying color	100	lot	$1.00	$100.00		
Facilitation Supplies/materials (flipcharts, postits, markers, et	1	lot	30	$30.00		
Subtotal Other Direct Costs				$140.00		
TOTAL						**$10,017.50**
Total Project Budget - NOT TO EXCEED						**$10,000.00**

SONOMA MENDOCINO
Economic Development District

DATE: April 21, 2023

TO: Board of Directors

FROM: Joshua Metz, RGS Senior Advisor, District Manager

SUBJECT: Approve Application to Fill a County of Mendocino Appointment to a Vacant SMEDD Board Seat and Letter of Endorsement

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STATEMENT OF ISSUE: The purpose of this item is to authorize SMEDD to offer to the County of Mendocino Board of Supervisors a Letter of Endorsement encouraging the appointment of Robert Gernert to the Board of Directors of the Sonoma Mendocino Economic Development District.

SUMMARY OF RECOMMENDED ACTION:

Authorize the SMEDD Chairperson to sign the attached letter and to direct SMEDD to forward the signed letter of support to the County of Mendocino Clerk of the Board for submission to the Mendocino Board of Supervisors.

FINANCIAL IMPACTS:

There are no financial impacts associated with offering the letter of support other than the now-expended manpower necessary to draft the letter.

BACKGROUND:

SMEDD was designed to have nine Board seats and is currently operating with three vacant seats: one vacancy attached to each County and an at-large seat. This vacancy is appointed by the Board of Supervisors of Mendocino County.

DISCUSSION:

Mr. Robert Gernert has expressed interest in filling the SMEDD Board seat. Please read SMEDD's letter of support for comments on his qualifications.

ALTERNATIVES:

1: Consider and authorize the Board Chairperson to sign a letter of support for Mr. Robert Gernert.

2: Consider, *modify*, and authorize the Board Chairperson to sign a letter of support for Mr. Robert Gernert.

3: Other approach(s) may be developed after public comments and Board deliberations.

4: Decline to act.

RECOMMENDATION for Alternative 1:

Move to:

- Authorize the SMEDD Chairperson to sign the attached letter and to direct SMEDD to forward the signed letter of support to the County of Mendocino Clerk of the Board for submission to the Mendocino Board of Supervisors.

ATTACHMENTS

A. Draft Letter of Support

Dear Members of the Mendocino County Board of Supervisors,

I am writing on behalf of the Sonoma Mendocino Economic Development District (SMEDD) to endorse Robert Gernert for appointment to the open SMEDD Board of Directors seat representing the County of Mendocino. As the Board Chairperson of SMEDD, I have had the pleasure of working with Mr. Gernert in his capacity as Lending Manager of the Economic Development & Financing Corporation in Mendocino County. We believe that he would make an exceptional addition to our Board.

Mr. Gernert has a history of effective leadership and collaboration with our Board. He has been an active and valuable member of the economic development community in Mendocino County. We have no doubt that he would bring this same level of commitment and expertise to the SMEDD Board.

In addition to his professional accomplishments, Mr. Gernert has a reputation as a person of integrity and good character. He is deeply committed to the economic well-being of Mendocino County and to fostering positive relationships with our neighbors in Sonoma County. He is a tireless advocate for the interests of our community, and we know that he would represent us with the utmost dedication and professionalism on the SMEDD Board.

Sincerely,

Mary Anne Petrillo, Chairperson
Sonoma Mendocino Economic Development District

SONOMA MENDOCINO
Economic Development District

DATE: February 24, 2023

TO: Board of Directors

FROM: Joshua Metz, RGS Senior Advisor (District Manager)

SUBJECT: Approve SMEDD to Request an Extension of the June 30, 2023, Supplemental Grant Deadline of U.S. Economic Development Administration

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STATEMENT OF ISSUE: The U.S. Economic Development Administration (EDA) has authorized the expenditure of grant funds which expire on June 30, 2023. On February 24, 2023, the SMEDD Board authorized a workplan for these funds that reflected an aggressive and compressed timeline for execution of the work plan. The purpose of this item is to solicit SMEDD Board approval to request an extension of the time permitted by the EDA to spend the grant funds.

SUMMARY OF RECOMMENDED ACTION: (See Draft RECOMMENDATION for Alternative 1 on Page 2.)

Approve SMEDD to request an extension of the June 30, 2023, Supplemental Grant Deadline of U.S. Economic Development Administration.

FINANCIAL IMPACTS:

No financial impacts other than increasing the probability that all grant funds will be expended.

BACKGROUND:

Currently, all unspent Supplemental Grant funds, which totaled $237,778 as of February 2023, are authorized by the U.S. EDA for uses in the following categories:

Professional Services	$180,000
Travel	$9,000
Contractual Services	$25,000
Indirect Services (10%)	$23,778
TOTAL	**$237,778**

At its February 24, 2023, meeting, the SMEDD Board approved a $180,000 professional services agreement for a Work Plan to “increase our economic recovery and resiliency from COVID”.

SMEDD approached EDA leadership at its recent March 2023 EDA Regional Roundtable to discuss the Work Plan, its timeline, and whether or not there would be any opportunity to extend the June 30th deadline. EDA management stated that they would consider it and encouraged SMEDD to submit a request for the extension and supporting rationale for the extension. This is being developed.

DISCUSSION:

The SMEDD team has been analyzing the Work Plan with an eye towards identifying opportunities for a better outcome if more time becomes available to spend the $237,778 in remaining unspent grant authority from its $400,000 Supplemental Grant which must be expended by June 30, 2023. This deadline looms and it is not in the region's interest return to the U.S. EDA any awarded grant funds.

It would be prudent to submit the extension request as soon as possible. The SMEDD Board is being asked to approve the preparation and submission of a request for an extension.

ALTERNATIVES:

1: Consider and approve SMEDD to request an extension of the June 30, 2023, Supplemental Grant Deadline of U.S. Economic Development Administration.

2: Consider, *modify,* and approve SMEDD to request an extension of the June 30, 2023, Supplemental Grant Deadline of U.S. Economic Development Administration.

3: Decline to act.

RECOMMENDATION for Alternative 1:

Move to:

- Approve SMEDD to request an extension of the June 30, 2023, Supplemental Grant Deadline of U.S. Economic Development Administration.

IMMEDIATE RELEASE
April 17, 2023

Contact: Rufus Jeffris
O: 415-946-8725
C: 415-606-2337
rjeffris@bayareacouncil.org

New study shows how communities in the Wildland Urban Interface can drastically reduce fire risk and reduce insurance premiums.

Huge implications for insurance coverage and housing construction in communities in high wildfire-risk areas

San Francisco— Today the Bay Area Council announced results from a study conducted by Milliman and CoreLogic on behalf of the Town of Paradise that estimates mitigation measures such as home hardening, zoning reforms, and external buffers could reduce losses due to wildfires up to 75 percent, which could reduce insurance premiums up to 55 percent. The findings are among the first and most expansive to date to quantify the aggregate risk and cost reduction benefits of different measures communities and individual property owners in the wildland-urban interface (WUI) can take to reduce wildfire risk. Today, more than 11 million Californians live in the WUI. Because wildfire risk may contribute up to 70% of average insurance premiums in Paradise, these findings demonstrate what steps Paradise and other communities in the WUI can take to reduce wildfire risk, promote access to affordable insurance, and remain prosperous into the 21st century.

Read the full report here >>

Watch the video >>

“Communities in the WUI can be made much safer and more resilient than they are today” said Nancy Watkins, Principal and Consulting Actuary at Milliman, and one of the report’s co-authors. “Advanced modeling shows how communities can adopt building codes and land use measures that significantly reduce wildfire risk, which is an essential step to sustainable insurance in the WUI.”

“California cannot afford to turn its back on communities at high-risk of wildfires” said Jim Wunderman, President and CEO of the Bay Area Council. “This report provides a blueprint for how these communities, which make up roughly a quarter of the state’s population, can safely and affordably build housing and thrive into the 21st century.”

“This cutting-edge work shows that Paradise can fully recover” said Kevin Phillips, Town Manager for the Town of Paradise. “Recovery includes sustainable and affordable insurance for our residents. The Town and its partners in recovery have developed and are implementing a comprehensive long term wildfire risk mitigation plan. This study shows that we are doing will make a huge difference for insurers in the long run.”

The report, which was supported by a grant from the Bay Area Council Foundation’s California Resilience Challenge, highlighted several steps communities in the WUI can take to reduce risk and become safer places to live, work, and play:

1. Mitigation actions by individual homeowners, such as keeping vegetation at least five feet away from structures (estimated to reduce losses up to 52.9%).
2. Wildfire Informed Development Patterns, such as focusing on rebuilding in areas with lower wildfire risk (e.g. a downtown core) and being intentional with land use planning (e.g. using well-maintained internal buffers such as parks) within urban areas (estimated to reduce losses up to 14.5% per property).
3. External buffers, such as well-maintained areas with low fire spread potential (estimated to reduce losses by up to 34.5%).
4. When combined and implemented to maximum potential, the above three strategies were found to reduce projected losses in the Town of Paradise by an average 75% per structure, which translates to an average 55% reduction in reduction.

The Town of Paradise was severely damaged by the 2018 Camp Fire, which killed 85 individuals, destroyed more than 18,000 structures, and ranks as the deadliest and the most destructive wildfire in state history. Eight of the ten largest wildfires in California history have occurred since 2017, destroying nearly 50,000 structures and burning of more than 11 million acres—an area approximately equal to the combined size of New Jersey, Connecticut, Delaware, and Rhode Island.[1,2]

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[1] CalFire https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/images---misc/acres-burned-vs-structures-destroyed2022.jpg?rev=e841414df90c47a186f5b36f0f6809ea&hash=6D4D971C49563C816B36749BE8F65FC2

[2] CalFire https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/featured-items/top20_acres.pdf?rev=be2a6ff85932475e99d70fa9458dca79&hash=A355A978818640DFACE7993C432ABF81

About the Bay Area Council

The Bay Area Council is a business-sponsored, public-policy advocacy organization for the nine-county Bay Area. The Council proactively advocates for a strong economy, a vital business environment, and a better quality of life for everyone who lives here. Founded in 1945, the Bay Area Council is widely respected by elected officials, policy makers and other civic leaders as the voice of Bay Area business. Today, approximately 275 of the largest employers in the region support the Bay Area Council and offer their CEO or top executive as a member. Our members employ more than 4.43 million workers and have revenues of $1.94 trillion, worldwide. Learn more at www.bayareacouncil.org.

About the California Resilience Challenge

The California Resilience Challenge is an initiative of the Bay Area Council Foundation, a nonprofit corporation, qualified as a tax-exempt organization under section 501(c)(3) of the Internal Revenue Code. The California Resilience Challenge is a statewide effort, led by businesses and a diverse array of environmental and community leaders to develop a pipeline of climate adaptation projects across the state to strengthen local and regional resilience to heat, drought, floods, and wildfire. Learn more about the California Resilience Challenge at ResilientCal.org.

A MILLIMAN AND CORELOGIC REPORT

Prepared with funding from the California Resilience Challenge Grant

Town of Paradise California Resilience Challenge Task 1 to Task 4

Risk Reduction, Climate Change, and Insurance Premiums

April 2023

MILLIMAN
Matt Chamberlain FCAS, MAAA
Robert Lee, FCAS, MAAA
Taylor Deacon
Nancy Watkins, FCAS, MAAA

CORELOGIC
Kent David
Fan Lei
Ilyes Meftah

Milliman CoreLogic®

Table of Contents

Executive Summary

Wildfire mitigation is an emerging subject of great importance in the insurance industry and in society as a whole. Changes in the environment and housing stock in recent years have contributed to steady increases in wildfire risk—in fact, 15 of the 20 most destructive wildfires in California history occurred in the period between 2015 and now.[1]

With funding from the California Resilience Challenge Grant, the Town of Paradise formed a team of experts including Milliman, Inc. (Milliman) and CoreLogic to study the impact of mitigation strategies on wildfires. Using the Town of Paradise as a case study, the team performed a scientifically supported review of how various approaches to wildfire mitigation could impact wildfire risk and Homeowners insurance premiums in California's wildland urban interface ("WUI").

This report, prepared by Milliman and CoreLogic on behalf of the Town of Paradise, estimates the financial benefits of selected risk reduction actions through the lens of a probabilistic catastrophe model. We consider scenarios representing possible actions individual homeowners and the community could take and estimate the reduction in risk attributable to each of the actions. We were requested to assess the comparative efficacy of alternative strategies by modeling a "best case" scenario of individual mitigation actions in combination with other community actions; this assumption allows an illustration of the extent of potential benefits, but should not be interpreted as a projection of expected future scenarios.

The key findings of our analysis are:

1. Mitigation actions by individual homeowners can meaningfully reduce risk. If all homeowners carry out the actions recommended under the Insurance Institute for Business & Home Safety ("IBHS")'s Wildfire Prepared Home Program™, the aggregate wildfire expected loss for the Town of Paradise is estimated to decrease by 53% relative to pre-Camp Fire conditions.
2. Wildfire Informed Development Patterns ("WIDP") is the strategic planning of development patterns informed by wildfire risk, and can reduce the average expected losses of individual properties. By selectively decreasing the number of structures within town boundaries, focusing on rebuilding in areas with lower wildfire risk and being intentional with land use planning, WIDP can reduce average losses by up to 15% per property.
3. External buffers (implementation of well-maintained areas with low fire spread potential on the border of the town) are effective in lowering aggregate risk. Implementing all five buffers recommended by the Conservation Biology Institute[2] could reduce aggregate expected losses by 35%, even when no additional individual or community mitigation is performed.
4. Individual mitigation actions, WIDP, and external buffers each has lower but meaningful marginal risk reduction benefits when modeled in combination with each other. We estimate that performing all three actions would yield an average reduction in expected loss per property of up to 75%% in high-risk areas like the Town of Paradise, which corresponds to a 55% reduction in average total premium when the net cost of reinsurance is not considered.
5. Climate change is expected to adversely impact wildfire risk for the Town of Paradise. Under the Representative Concentration Pathway ("RCP") 4.5 trajectory adopted by the Intergovernmental Panel on Climate Change ("IPCC"), expected losses due to wildfire are expected to increase by 17% in the year 2040 compared to the 2018 baseline (before the Camp Fire), all else being equal.

[1] CAL FIRE (2022). Top 20 Most Destructive California Wildfires. Retrieved November 14, 2022. https://www.fire.ca.gov/media/t1rdhizr/top20_destruction.pdf.

[2] Conservation Biology Institute (2020). Paradise Nature-Based Fire Resilience Project. Retrieved November 30, 2022. https://www.paradiseprpd.com/files/fcda41b0a/1.Paradise.Final.Report.2020.0715.pdf

6. Wildfire risk may contribute up to 70% of average insurance premium in Paradise. If no risk reduction actions are implemented, we estimate that the total Homeowners insurance premium would be on average over $4,000 per year, of which about $3,000 would be attributable to the wildfire peril.

7. The California Department of Insurance ("CDI") currently does not allow the cost of reinsurance to be reflected in Homeowners insurance premiums—this is expected to drive an expected deficit, and is a key reason why insurers are reluctant to write in high wildfire risk areas like the Town of Paradise. As wildfire risk is reduced through risk reduction techniques, the estimated deficit shrinks both in dollars and as a percentage of the total premium.

In evaluating these findings, several caveats and limitations should be considered:

- These findings are specific to the Town of Paradise and may not apply to other geographies. Other communities may have material differences in home density and environmental variables, which may impact the benefit of the risk reduction techniques discussed in this paper.
- These estimates are based on available data, including a portfolio of the housing stock in the Town of Paradise prior to the 2018 Camp Fire and a notional portfolio of possible new construction. Different reasonable assumptions may yield materially different results.
- As noted above, the mitigation scenarios assume a 100% compliance rate with IBHS Wildfire Prepared Home mitigation standards within the Town of Paradise. This is not intended to be reflective of reality because of possible reluctance to comply, as well as surviving / existing structures not meeting these standards. It is intended to serve as a starting point for understanding the comparative efficacy of alternative home- and community-level strategies.
- The estimates for insurance premiums assume pricing consistent with the CoreLogic wildfire model and industry non-catastrophe losses. We derived a permissible loss ratio using industry data. Individual insurance companies will likely make different assumptions regarding losses and expenses, which would result in different premiums. A different catastrophe model would likely have produced different expected loss estimates.
- The estimated cost of reinsurance uses profit multiples derived from Insurance Linked Securities, as well as an assumed reinsurance structure for the Town of Paradise. Reinsurance contracts are highly customized and may be materially different from the one presented.
- Although we incorporated the above-mentioned assumptions for purposes of the analysis, at present neither the use of catastrophe models to set total wildfire premium nor the inclusion of the net cost of reinsurance is currently allowed for admitted homeowners policies under California regulations. As noted in the text, these restrictions on risk-based pricing represent significant disincentives for insurers to write business in the WUI. To the extent that actual premiums allowed under California regulations differ from the risk-based premiums assumed in this analysis, results are likely to differ as well.
- In addition to the above, insurers do not make underwriting decisions solely based on approved rates and rate levels, particularly due to the financial perils of being too concentrated in any particular geographic location. It is important to understand that a single carrier or a few carriers would not be able to insure every risk in Paradise, even at adequate premium, due to concentration risk.
- It is uncertain whether climate change will follow the RCP 4.5 trajectory. If the climate changes in a way that differs from that assumed by the RCP 4.5 trajectory the expected losses for the Town of Paradise may differ.
- The science of wildfire risk modeling is continuously evolving, and estimates such as the ones presented in this study are expected to change as new data becomes available and models are enhanced.

Opportunities for Future Studies

Today, the behavior of fire spread within the built environment is not well understood. In particular, the fire science of how structures ignite, collapse, and affect neighboring structures is not as evolved as that of other fuel types. As scientists gain a better understanding of how fires propagate and transition within the built environment, it will be beneficial to revisit these modeling exercises to refine the approach. For example, with a better grasp of the probable pathways fires can take within a community, policymakers can more strategically allocate resources to mitigate homes

and parcels on those pathways to disrupt fire spread. In addition, local fire protection agencies will also be able to more efficiently direct and leverage their resources by focusing on key areas of the community.

Background

The Camp Fire ravaged the Town of Paradise in 2018, causing widespread destruction and loss of life. Started by downed powerlines, the catastrophic fire destroyed over 18,000 structures—over 90% of the town's structures—and claimed 85 lives.[3,4]

The fire's impact extended beyond the town and it is necessary to understand the historical context in order to understand this impact. Following the 2017 and 2018 wildfire seasons, California insurers recognized a clear reality that significant changes were necessary to preserve the viability of their California business. These two years' wildfire season losses wiped out twice the combined underwriting profits for the past 26 years, leaving the insurance industry with an aggregate underwriting loss of over $10 billion for the California Homeowners line of business since 1991.[5] Figure 1, below, shows that despite subsequent premium increases and overall profitable years in 2019, 2020, and 2021, the California Homeowners insurance industry still has not recovered from the $20 billion loss during 2017 and 2018.

FIGURE 1: CALIFORNIA HOMEOWNERS MULTIPLE PERIL ESTIMATED PROFITS

Notes:
1996 - 2021 data from P&C Combined Industry Annual Statement data from SNL.com.
1991-1995 Earned Premium and Loss Ratio data from the California Department of Insurance. Expense ratios for 1991-1995 are estimated as the average of 1996-1998.
Profit is based on direct industry earned premium, losses, and expenses.
Excludes impact of reinsurance and investment income.

Moreover, the existing regulatory and legislative framework for California Homeowners insurance is not readily adaptable to delivering quantifiable benefits to insurance providers from wildfire risk mitigation measures. While the California Department of Insurance has recently passed a regulation requiring consideration of wildfire mitigation actions in rates, the inability for insurers to use catastrophe models to set catastrophe loads, or to reflect the net cost of reinsurance in premiums, are still large disincentives to write business in the WUI. Many insurers responded by either increasing premiums or increasing non-renewals in high-risk areas, leading to an insurance affordability and availability crisis in many communities, beyond those directly affected by wildfires.

[3] CAL FIRE (2022). Top 20 Most Destructive California Wildfires. Retrieved November 14, 2022. https://www.fire.ca.gov/media/t1rdhizr/top20_destruction.pdf.

[4] Town of Paradise, CA (2022). Housing Element 2022. Retrieved November 30, 2022. https://www.townofparadise.com/planning/page/housing-element-2022.

[5] Xu, E., Webb, C., Evans, D. (2019). Wildfire catastrophe models could spark the changes California needs. Retrieved November 30, 2022. https://assets.milliman.com/ektron/Wildfire_catastrophe_models_could_spark_the_changes_California_needs.pdf

Unlike other forms of property loss risk, such as hurricane and earthquake, significant wildfire risk mitigation in the WUI depends on mitigation at a community scale, or even a regional scale. However, there is currently no direct connection between the implementation of community scale wildfire risk mitigation and the delivery of affordable and available insurance to homeowners on a long-term basis. While there is a consensus that the unprecedented scale of wildfire risk to homes in the WUI demands a level of wildfire risk mitigation heretofore unseen in the State of California, the key question that remains unanswered is how to prioritize various mitigation action options.

Since the Camp Fire destroyed most of Paradise, the town now has the opportunity to rebuild in a way that reduces risk and addresses the affordability and availability challenges. The Town of Paradise is the ideal test case of how to deliver a comprehensive and scientifically supported structure for community-based planning and mitigation actions to reduce wildfire risk and maximize the opportunity for sustainable Homeowners insurance.

This project is divided into seven tasks:

- **Task 1:** Establish a baseline and measure current wildfire risk if Paradise is built back the same as before
- **Task 2:** Overlay mitigation, adaptation, and buffers
- **Task 3:** Stress test for future climate scenarios
- **Task 4:** Model insurance market behavior, estimate Homeowners wildfire premiums, and develop metrics for affordability
- **Task 5:** Model community-based insurance options
- **Task 6:** Link funding options with recommended risk mitigation measures
- **Task 7:** Conduct whole community planning process leading to implementation of mitigation and resilience project identified

This rest of this report discusses the methodologies and findings for Tasks 1 to 4. Exhibits supporting our analysis are provided in the Appendix.

Methodology

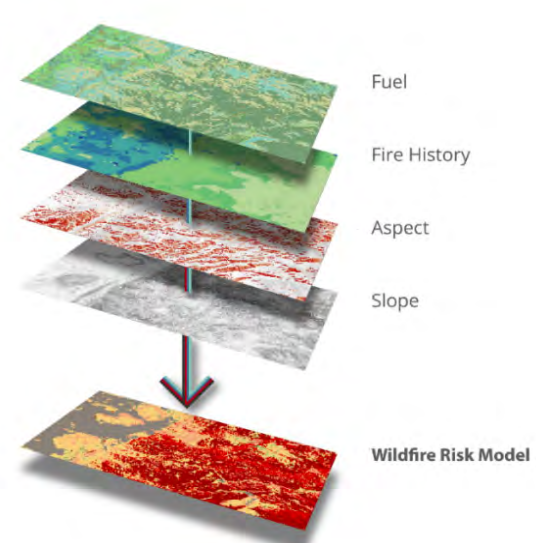
WILDFIRE CATASTROPHE MODELS

Extreme wildfire events are sufficiently uncommon that historical data cannot simply be averaged to estimate the risk of future losses. Further, changes in climate conditions and the built environment renders historical data inapplicable to make forecasts without adjustment. A way to address these problems is to use catastrophe models. Catastrophe models are probabilistic models that incorporate the scientific understanding of the wildfire hazard, as well as detailed information about the exposures, and use modern computing power to simulate thousands or even millions of stochastic events. The simulated outcomes are summarized to provide a view into low-frequency, high-severity risks. For a more in-depth discussion of catastrophe models, see Dietzen and Chamberlain (2022)[6].

This analysis uses CoreLogic's 30-meter resolution high definition U.S. Wildfire Model, released in August 2022, included in the Risk Quantification and Engineering (RQE™), version 22.1 ("CoreLogic Wildfire Model"). The model was initially developed in 1998 and has been regularly updated and enhanced since that initial release.

The CoreLogic Wildfire Model covers the states of Arizona, California, Colorado, Florida, Idaho, Montana, New Mexico, Nevada, Oklahoma, Oregon, Texas, Utah, Washington and Wyoming. The current model characterizes the fuel load in California, Oregon, and Washington using LANDFIRE 2016 Remap fuel data. This characterization of wildfire fuel represents a significant improvement in the fuel characterization compared to prior versions of the dataset.

FIGURE 2: BASELINE STRUCTURE DISTRIBUTION



Source: https://www.corelogic.com/wp-content/uploads/sites/4/downloadable-docs/wildfire-report_0919-01-screen.pdf

The model considers the science behind fire ignition and spread, the local conditions of a property such as vegetation cover, topography, and other factors that drive wildfire risk. The fire vulnerability or building damage are based on primary property characteristics like the structure type, occupancy type, age, and number of stories, and secondary structural modifiers such as vegetation clearance, roofing fire class, and the presence of fire resistive windows or siding. Figure 2 illustrates some of the pieces that comprise a wildfire risk model.

For this project, CoreLogic made custom modifications to the model to consider the effects of WIDP, buffers, and climate change. Along with the model, CoreLogic also made available its proprietary parcel level property dataset with detailed exposure information representing the built environment subject to wildfire damage.

TASK 1: ESTABLISH A BASELINE AND MEASURE CURRENT WILDFIRE RISK IF PARADISE BUILT BACK THE SAME AS BEFORE

To establish a baseline against which possible future mitigation actions can be compared, we applied the CoreLogic Wildfire Model to its proprietary structure level data representing single family residential homes, multi-family housing, and small commercial buildings of less than 10,000 square feet in the Town of Paradise prior to the Camp Fire. This Baseline scenario is intended to reflect the conditions—both in terms of actual building locations, structural characteristics, and mitigation status — of the Town prior to the Camp Fire. However, it is important to note that this portfolio of structures is not intended to encompass all of the Town of Paradise, so while figures are comparable

[6] Dietzen, G., Chamberlain, M. Taking Catastrophe Models Out of The Black Box (2022). https://www.milliman.com/en/insight/taking-catastrophe-models-out-of-the-black-box

between different scenarios within this report, the aggregate dollar amounts are not the total loss including, for example, large commercial structures and infrastructure. In this analysis, the Total Insured Values (TIVs) include the standard Homeowners insurance coverages of building (including the detached structures), contents, and time element (living expenses) which were based on the replacement cost value of each property contained in the CoreLogic proprietary property database. Table 1, below, shows the distribution of the structures and the TIVs:

TABLE 1: BASELINE STRUCTURE DISTRIBUTION

STRUCTURE TYPE	COUNT	TOTAL INSURED VALUE
Single Family Residential	11,539	$5,408 M
Multi-family Housing	74	$60 M
Small Commercial	552	$619 M

Many of the variables needed to understand the vulnerability of a structure, such as location, are known. For those variables that are not known, CoreLogic either imputed a value or treated the value as unknown. When unknown the vulnerability is assumed to be the average case of the possible values of the variables or to represent the most prevailing feature for each particular exposure group.[7] The resulting Average Annual Loss ("AAL") by location and in aggregate, as well as the Exceedance Probability ("EP") curve, are the metrics used to estimate wildfire risk if Paradise built back the same as it was before the Camp Fire.

The analysis considers both perils of fire and smoke. Demand surge, the increase in labor and construction materials that follows many natural catastrophes due to collective demand significantly exceeding local available supply, was also included.

TASK 2: OVERLAY MITIGATION, ADAPTATION, AND BUFFERS

Several risk-limiting measures are available that may reduce expected losses to the level that makes Paradise a more attractive location for insurers. This task evaluates the use of property mitigation (home hardening to lower risk and magnitude of potential wildfire damage), adaptation (thoughtful planning of land use within the Town's boundaries by considering wildfire risk), and external buffers (implementation of well-maintained areas with low fire spread on the border of the town).

Structure Level Mitigation

The CoreLogic Wildfire Model has vulnerability settings that enable it to reflect structure level mitigation. This allows for a quantification of expected loss reduction and, consequently, the potential decrease in insurance premiums if Paradise required structures to comply with specific home-hardening standards. As each home-hardening measure comes at a different cost, it is important for the Town to assess which mitigation efforts provide sufficient benefit to justify their implementation. On the other hand, it is also imperative to understand whether mitigation alone provides sufficient expected loss reduction.

The Insurance Institute for Building & Home Safety ("IBHS"), an advisor for this project, is the leading national source of science regarding what causes homes to burn and how to reduce the chance that homes will ignite. IBHS recently launched its Wildfire Prepared Home™ program, which allows homeowners to achieve a designation showing that they have taken science-based actions to meaningfully reduce their home's wildfire risk.[8] The IBHS Wildfire Prepared Home™ and Wildfire Prepared Home Plus™ designation standards are used to inform the setting of CoreLogic's structural secondary modifiers to reflect the Base Mitigation scenario and the Plus Mitigation scenario. These two mitigation scenarios represent possible sets of mitigation actions requiring varying degrees of effort. The Base

[7] See Exhibit 1.4 for detailed treatment of unknown variables.

[8] IBHS (2022). Wildfire Prepared Home – A Program of IBHS. Retrieved November 14, 2022. https://wildfireprepared.org/

Mitigation scenario is similar to the Town's newly implemented home-hardening standards, while the Plus Mitigation scenario adds well-maintained defensible space and fire-resistive building materials requirements. In the Base Mitigation scenario, appurtenant structures such as garages and wooden decks are assumed to be untreated for fire resistance, and consequently the 0-5 feet noncombustible zone is not considered cleared. The Plus Mitigation scenario assumes the absence of untreated combustible attachments as well as fire resistive siding and windows. This is intended to represent a plausible, but optimistic, view of the Town's potential mitigation efforts.

Table 2, below, shows the secondary modifier settings in the CoreLogic model for each of the scenarios.

TABLE 2: SECONDARY MODIFIER SETTINGS FOR MITIGATION SCENARIOS

	MITIGATION SCENARIO	
SECONDARY MODIFIER	BASE MITIGATION	PLUS MITIGATION
Class A Roof	Yes	Yes
Clearance – Noncombustible Zone (0-5 feet)	No	Yes
Clearance - Lean, Clean and Green (5-30 feet)	Yes	Yes
Clearance – Reduced Fuel Zone 3 (30-100 feet)	Yes	Yes
Fire Resistive Siding	Default*	Yes
Combustible Attachments	Yes	No
Fire Resistive Windows	No	Yes

* See Exhibit 1.4 for details about the default treatment of secondary modifiers.

Adaptation

Since most buildings in Paradise were destroyed in the Camp Fire, adaptation is feasible in ways that are impossible in most urban areas. Adaptation in this context consists of the modification of land use practices to reduce risk—for example, by clearing land and creating more green space and parks throughout the Town to serve as internal firebreaks. Similarly, strategically rebuilding homes in a manner that provides greater defensible space will result in a reduction in risk from embers and radiant heat from the ignition of nearby structures should a fire occur. We refer to this strategic planning of land use and zoning as Wildfire Informed Development Patterns ("WIDP").

To assess the potential benefits of WIDP, the Town selected a scenario in which 25% of parcels are converted to low-flammability land like parks or parking lots. Modifying the underlying fuel load in the CoreLogic model to reflect the added open space then provides a view of risk reduction by strategically placing firebreaks within town boundaries.

In order to select parcels to be converted to internal firebreaks for this analysis, we used damage assessment reports compiled by the California Department of Forestry and Fire Protection ("CAL FIRE") Damage Inspection Specialists ("DINS") to analyze damage to structures from the Camp Fire. We created a model using variables that 1) are most highly correlated with damage ratios, and 2) are relevant to the rebuilding process[9]. The resulting model calculates a risk score for each pre-Camp Fire structure, which was then used to prioritize parcels to be selected to be an internal firebreak.

Parcels that are designated as internal firebreaks are to be cleared of structures—they are assumed to be well-maintained and have minimal fire spread. As discussed earlier, these could be areas designated for green land uses such as parkland, open areas, or other low ignition-risk land uses.

Unlike risks due to other natural disasters like earthquake and flood, wildfire risk to a property is highly influenced by the vulnerability of neighboring structures that can serve as fuels, greatly increasing the hazard to a property. As a result, the process of assessing the effect of clearing parcels needs to be an interactive one: since the clearing of a

[9] For example, distance to the nearest structure is pertinent to land use planning, whereas structural variables like year built, while predictive of losses, do not aid the assessment of whether a structure should be (re)erected at a location.

nearby parcel can lower the wildfire risk to a structure, the risk score needs to be recalculated every time a parcel is cleared.

For this exercise, the prioritization process starts with assuming 100% of the pre-Camp Fire residential structures are rebuilt, and follows the following steps until 75% of the original residential housing stock remains:

1. Calculate a risk score for each structure in the dataset
2. Select the destroyed structure[10] with the highest risk score
3. Designate the parcel of the selected structure as an internal firebreak, "clearing" the structures from the parcel
4. Refresh variables such as distance to the nearest location, and recalculate the score

The goal of WIDP is achieved by electing not to rebuild on the selected parcels.

CoreLogic's Wildfire Model was then applied to this new set of locations to assess the reduction in aggregate risk. It should be noted that the Town is in the process of rebuilding and the housing stock is constantly changing, so the exact set of parcels designated as internal firebreaks in this exercise should not be taken as a recommendation, but instead as an illustration of the benefit of WIDP and strategically placing internal firebreaks.

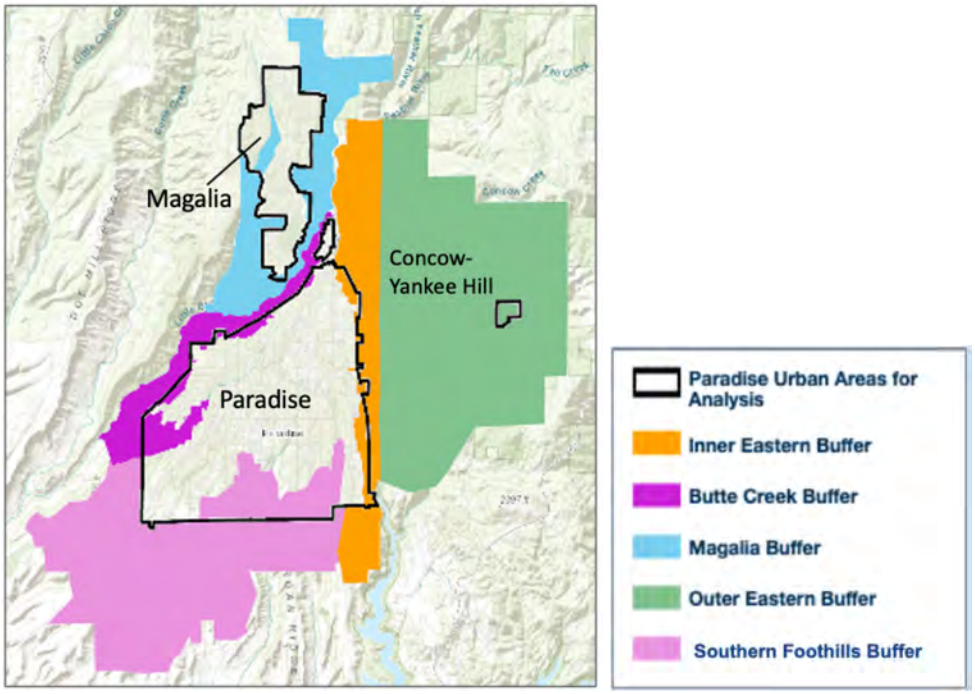
Buffers

Internal firebreaks lie between structures within the town boundaries, while buffers are firebreaks established at the edge of Paradise. The Conservation Biology Institute ("CBI"), The Nature Conservancy, and the Paradise Recreation and Park District ("PRPD"), have defined Wildfire Risk Reduction Buffers ("WRRBs") around Paradise between the urban area and the wildland.[11] Similar to internal firebreaks, WRRB zones comprise green land uses or "greenbelts" or parkland, and other low ignition-risk land uses. Using a combination of available data, local knowledge, and feedback from the PRPD staff, CBI prioritized parcels to make up buffers around the Paradise and Magalia urban areas. Figure 3, below, shows the five resulting buffers that CBI recommended:

[10] It is undesirable to remove a surviving structure for the purpose of WIDP / internal firebreaks.

[11] Conservation Biology Institute (June 2020). Paradise Nature-Based Fire Resilience Project. Retrieved November 14, 2022. https://consbio.org/reports/paradise-nature-based-fire-resilience-project/

FIGURE 3: THE FIVE WILDLAND RISK-REDUCTION BUFFERS FROM CBI REPORT



The buffers recommended by CBI were incorporated into the CoreLogic model, in which vegetation and underlying fuel layers within the buffers were modified to reflect the result of proactive land use management. CoreLogic then calculated the AALs and EP curves for the modified environment.

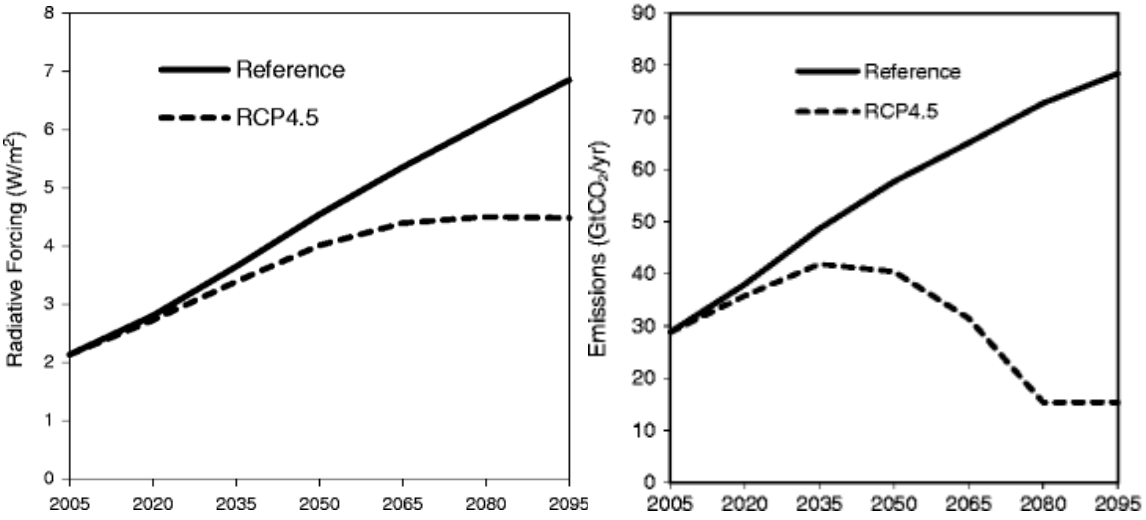
TASK 3: STRESS TEST FOR FUTURE CLIMATE SCENARIOS

Changing climate conditions and human development factors have modified the risk of large wildfires for different geographic regions and dominant vegetation types in the contiguous United States. Warmer temperatures and altered wind patterns may lead to more frequent fire weather conditions. Changes in precipitation and runoff modify fuel conditions. Meteorological projections alone are a poor metric for this changing risk, as increased air temperatures are insufficient to explain the spatial changes in wildfire frequencies over the historical period or under future climate change, not accounting for crucial factors like population growth and land cover change.

To quantify future climate conditions of Paradise, we leveraged the Representative Concentration Pathways (“RCPs”) trajectories published by the IPCC. These RCPs describe different climate futures, all of which are considered possible depending on the volume of future greenhouse gas emissions. The RCP scenarios are generated by dynamic-recursive models called Global Change Assessment Models (“GCAMs”), which are integrated assessment tools with representations of the economy, energy sector, land use, and water linked to climate models and can be used to explore climate change mitigation policies.

The RCP 4.5 scenario is described by the IPCC as an “intermediate scenario.” The emissions in RCP 4.5 peak around 2040, then decline. Figures 4A and 4B show the emissions from energy and industrial sources and the resulting total radiative forcing projected by the scenario. The reference scenario of the GCAM used to generate RCP 4.5 is included for comparison—the reference scenario includes no explicit policies to limit carbon emissions, and therefore fossil fuels continue to dominate global energy consumption. The RCP 4.5 scenario was chosen by the project team as the future climate scenario for this study.

FIGURE 4A (LEFT): TOTAL RADIATIVE FORCING (W/M^{-2}) OF THE GCAM REFERENCE AND RCP4.5 SCENARIOS
FIGURE 4B (RIGHT): CO_2 EMISSIONS FROM ENERGY AND INDUSTRIAL SOURCES IN THE GCAM REFERENCE AND RCP 4.5 SCENARIOS



Source: Thomson, A.M., Calvin, K.V., Smith, S.J. *et al.* RCP4.5: a pathway for stabilization of radiative forcing by 2100. *Climatic Change* **109**, 77 (2011). https://doi.org/10.1007/s10584-011-0151-4

The climate change versions of the CoreLogic wildfire model consider statistical data derived from California's Fourth Climate Change Assessment (Westerling, 2018)[12], as well as climate-shifted data from Missoula Fire Sciences Laboratory's FSim burn probability model (Thompson et al., 2011)[13]. This data was used to determine changes in annual burn probability (ABP) for different fire intensity levels (FIL) and frequencies of large wildfires of varying size classes.

The California Fourth Assessment data were derived from a downscaling of meteorological and hydrological data using the Localized Constructed Analogs (LOCA) statistical technique (Pierce et al., 2014)[14] for four CMIP5 climate models (CanESM2, CNRM-CM5, HadGEM2-ES, and MIROC5). These meteorological drivers were then combined with changes in vegetation and human population to derive a stochastic dataset of wildfire perimeters for the entire state.

The U.S. Forest Service FSim model simulates hundreds of thousands of large wildfire events over the course of many synthetic seasons. These seasons combine historical weather, terrain, and fuel conditions. Fire suppression is also accounted for in the model. Aggregating the fire perimeters from these synthetic seasons allows for an estimate of the annual burn APB of every grid cell in the model domain, which covers the Continental U.S. at 270m resolution. The pattern of ABP reflects the general likelihood of a fire occurrence across the landscape and can be combined with probabilities of various FIL. These intensity levels are based on categories of flame lengths calculated from the FSim model and give an estimate of the likelihood of a certain intensity of burn, assuming there is already an active fire.

Given that the FSim model produces estimates of ABP based on historical wildfire occurrence and upon calibration against observed fire distributions, the differences in ABP from one grid cell to the next can be explained by variations in regional climate and human activities, as well as by terrain and land cover. In this methodology, climate and human drivers of present-day fire occurrence are isolated and used to construct a surrogate model of APB for three separate classes of FIL. The surrogated approach developed here by CoreLogic leverages statistical models trained on present conditions to produce shifted FSim burn probability fields using future meteorological and human development variables.

[12] Westerling, A. L. (2018). Wildfire Simulations for California's Fourth Climate Change Assessment: Projecting Changes in Extreme Wildfire Events with a Warming Climate: a Report for California's Fourth Climate Change Assessment (p. 57). Sacramento, CA: California Energy Commission. http://ibecproject.com/PREDEIR_0002479.pdf

[13] Thompson, M. P., Calkin, D. E., Finney, M. A., Ager, A. A., & Gilbertson-Day, J. W. (2011). Integrated national-scale assessment of wildfire risk to human and ecological values. Stochastic Environmental Research and Risk Assessment, 25(6), 761-780. doi: 10.1007/s00477-011-0461-0

[14] Pierce, D.W., D.R. Cayan and B.L. Thrasher, (2014). Statistical Downscaling Using Localized Constructed Analogs (LOCA). Journal of Hydrometeorology, 15,2558-2585. doi:10.1175/JHM-D-14-0082.1

CoreLogic used the resultant RCP 4.5 climate change model, forecast to the 2040 timeframe on the baseline exposure set to first understand what the pre-Camp Fire wildfire risk would be under these future climate change conditions. This climate change model was then run with Base mitigation, WIDP, and buffers applied, outputting the calculated AALs and EP curves. Given that the projection of wildfire risk to 2040 only spans 18 years of climate change, the impacts may not be very sensitive to the selection of RCP scenario. In contrast, we expect that the results would differ more for projections farther into the future.

In tasks 1-3, we considered the following eight scenarios:

1. Baseline
2. Base Mitigation
3. Plus Mitigation
4. Baseline with WIDP
5. Baseline with WIDP and all buffers
6. Base Mitigation with WIDP and buffers
7. Baseline at 2040 climate expectations
8. Base Mitigation with WIDP and all buffers at 2040 climate expectations

In addition, we produced model results for each of the five individual buffers recommended by the CBI report.

TASK 4: MODEL INSURANCE MARKET BEHAVIOR, ESTIMATE HOMEOWNERS WILDFIRE PREMIUMS, AND DEVELOP METRICS FOR AFFORDABILITY

A major concern of current and future residents of the Town of Paradise is the availability and affordability of insurance. While the reduction in wildfire risk arising from mitigation or adaptation plans is desirable in itself, it is also important because of the potential for reduction in insurance rates. Using AALs from the CoreLogic model and industry data, we estimated the premium that would reflect an average insurer's full costs under each scenario.

Loss and Expense Components

A premium consists of a loss component and an expense component. The loss component (also called "pure premium") is an estimate of the average amount that insurers must pay to indemnify the policyholder. The expense component is an estimate of the expenses incurred when paying and processing claims, as well as those associated with acquiring, underwriting, and servicing policies. We included the profit provision, which provides for the required return on capital, with the expense component.

We used the CoreLogic Wildfire Model AALs as an estimate of the wildfire expected losses under each scenario. Since the AALs are ground-up losses, the resulting premium reflects the cost to insure properties, and does not take into account policy characteristics like limits and deductibles which shift the financial burden between the insurer and the insured. To the extent that deductibles and limits exist on a policy, the premium that an insured pays would be decreased accordingly.

The non-catastrophe all other perils (AOP) portion of losses was estimated based on the pure premiums in the ISO Fast Track Plus Report, which aggregates Homeowners insurance loss data and trends by state and form. We then loaded the pure premiums for expenses to produce an estimated average premium. The details are shown in Exhibit 2.

The expense component of the premium was taken from California (and countrywide where not state-specific) industry aggregations[15]. This includes commissions, acquisition costs, allocated and unallocated loss adjustment expenses, premium taxes, licenses and fees, and other general expenses. We included a 5% profit and contingency provision

[15] Commission and premium tax are from industry aggregate California Exhibit of Premiums and Losses (Statutory Page 14), while other quantities are from industry aggregate countrywide Insurance Expense Exhibit (IEE).

with expenses, which historically has been a typical profit and contingency provision[16] for most lines of property and casualty insurance. All expenses are assumed to be variable, so the indicated premium equals the pure premium divided by one minus the variable expense and profit provision.

Net Cost of Reinsurance

Typically, in states other than California, the expense provision includes the net cost of reinsurance. Currently, the California Department of Insurance does not permit reinsurance costs to be included in approved rates, which is a key impediment to insurers writing business in areas of high wildfire risk within California. We calculated the estimated premium with and without reinsurance cost and show the expected deficit to insurers due to rates not being permitted to reflect reinsurance costs.

The net cost of reinsurance is estimated using Insurance Linked Securities (ILS). ILS are “financial securitizations of insurance risks”[17]. One common type of insurance-linked securities are catastrophe bonds, or “cat bonds”. Through catastrophe bonds, insurers or reinsurers (the “sponsors") are able to transfer insurance / reinsurance risk to investors. Like traditional fixed-income securities, catastrophe bonds require a collateral (“principal”) and provide interest payments in return. Unlike traditional fixed-income securities, catastrophe bonds specify a natural disaster—if this prespecified event does not occur, the bonds are no different from their traditional counterparts in that the principal is returned. However, if the prespecified event occurs, the sponsor’s right to the principal is “triggered”, meaning that investors will lose some or all of their principal and unpaid interest payments. Because of this, the expected excess return investors receive on catastrophe bonds is analogous to the profit load that reinsurance companies charge the ceding insurance company. Catastrophe bonds can be used to estimate the profit load a reinsurer may demand. We reviewed catastrophe bonds issued from April 1, 2018 to March 31, 2021 from Lane Financial LLC’s annual securitization reviews. A curve was fit to the profit multiples versus average probability of attachment and exhaustion of the bonds.

The net cost of reinsurance must be calculated in layers because the profit load increases as the probability of attachment decreases. For each layer, the net cost of reinsurance is equal to the expected loss in the layer multiplied by the average profit multiple in the layer. The expected loss in the layer is equal to the occurrence exceedance probability curve loss multiplied by the percent of total reinsurance amount that the layer encompasses. For each layer, the area under the curve is calculated to estimate the average profit multiple by layer.

For this analysis, it is assumed that insurers of the Town purchase reinsurance that has a 5% probability of attachment and a 0.5% probability of exhaustion. In other words, there will be a 1 in 20 year chance of a loss that is large enough to trigger the reinsurance and a 1 in 200 year chance of a loss so large that it exceeds the available reinsurance. In practice, reinsurance coverage is expressed in dollars (e.g. an attachment point of $5 million and a limit of $1 billion). However, the representation of reinsurance structure in terms of attachment and ruin probabilities allows for a consistent view of risk appetite, so that reinsurance costs under different scenarios can be compared.

It is important to note that the analysis assumes an insurer operating solely in the Town of Paradise. Without the benefit of diversification, which is discussed in a later section, this hypothetical insurer would experience a high cost of reinsurance. For insurers that operate in multiple geographically diverse regions, the tail risk will decrease and cost of reinsurance will reduce correspondingly.

WIDP MODEL

Using the DINS data from the Camp Fire, we created a logistic regression to determine a risk score for each location in the Town. The target variable was whether a structure was destroyed. The DINS data reports the damage ratio of each structure, and all structures with damage ratios greater than 50% were classified as destroyed. Predictor variables were selected based on a literature review of variables likely to be predictive of fire risk and included both variables

[16] Actuarial Standards Board (2011). Actuarial Standard of Practice No. 30, Appendix 1. Retrieved November 30, 2022. https://www.actuarialstandardsboard.org/wp-content/uploads/2014/02/asop030_148.pdf

[17] Captive.com (2015). Insurance-Linked Securities (ILS) Market Explained. Retrieved November 30, 2022. https://www.captive.com/articles/insurance-linked-securities-(ils)-market-explained

related to individual building characteristics (such as year built) and not specific to individual buildings (such as distance between houses or density of houses within a housing cluster).

All variables were standardized prior to the model being fitted, where each variable is transformed to have a mean of 0 and standard deviation of 1. *Aspect* is a geographical variable that describes the compass direction that a topographic slope faces[18].

The final model includes the following variables:

- Structure type (Single Family vs Multiple Family)
- Number of stories
- Mobile home size (if a mobile home)
- Year built (before / after 1997[19])
- Distance to nearest structure
- Parcel area
- Aspect

The goal of the model is not to assess the effectiveness of individual mitigation actions, but to inform the rebuilding process. As such, focus was given to variables such as the type and size of structure, as well as environmental variables such as distance to nearest structure and aspect. Some variables were tested but were not included in the final model either for the parsimony of the model or because the variables were statistically insignificant. Examples of these variables include slope, elevation, housing dispersion, cluster housing density, and distance to nearest fire station.

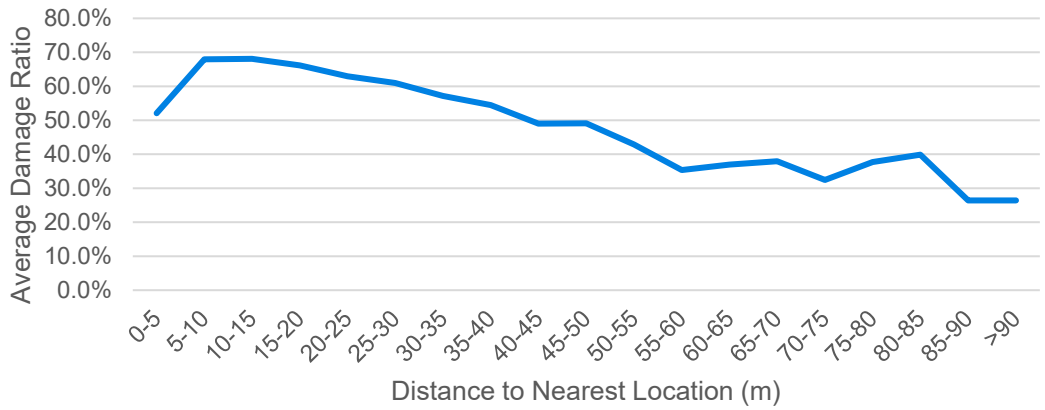
In general, mobile homes were found to have a higher risk of being destroyed in a wildfire event. For non-mobile home residences, multi-family and multi-story structures tend to have lower wildfire risk. Intuitively, older homes tend to be less resistant to fire since they are less likely to meet current building codes. We assume any new structures are built to current building codes.

We found that *Distance to Nearest Structure* had a different effect on the damage ratio for structures that are within 10 meters versus those that are more than 10 meters apart. Figure 5 below shows this relationship:

[18] A cosine transformation was performed on the variable to represent the southwest slope direction.

[19] The threshold of 1997 is informed by Knapp, E.E., Valachovic, Y.S., Quarles, S.L. *et al* (2021). Housing arrangement and vegetation factors associated with single-family home survival in the 2018 Camp Fire, California. *fire ecol* **17**, 25. Retrieved November 14, 2022. https://doi.org/10.1186/s42408-021-00117-0

FIGURE 5: DAMAGE RATIO BY DISTANCE TO NEAREST LOCATION (METERS)



A possible explanation is that structures that are very close together indicate a lack of vegetation and other combustible materials (other than neighboring structures); and to the extent that neighboring structures are not ignited, there is little fuel surrounding the structure to catch fire. An interaction was added to the model to account for this observation.

The variable *Parcel Size* showed statistical significance after accounting for *Distance to Nearest Structure*: areas where houses are on larger parcels had a lower risk of being destroyed. *Aspect* had a small but statistically significant coefficient—this may be because of the particular wind and fire conditions of the Camp Fire.

The regression output of the final model is displayed in Table 3, below.

TABLE 3: REGRESSION OUTPUT OF WIDP MODEL

VARIABLE	Coefficient	Standard Error	z	P>|z|	95% Confidence Interval - Lower	95% Confidence Interval - Upper
Mobile Home	0.147	0.006	23.218	0.000	0.135	0.160
Multiple Residence	-0.084	0.012	-6.798	0.000	-0.108	-0.060
Single Story Structure	-0.048	0.007	-7.173	0.000	-0.061	-0.035
Multi Story Structure	-0.116	0.009	-12.522	0.000	-0.134	-0.098
Single Wide Mobile Home	0.102	0.013	8.114	0.000	0.077	0.127
Double Wide Mobile Home	0.079	0.009	8.857	0.000	0.062	0.097
Triple Wide Mobile Home	0.075	0.015	5.031	0.000	0.046	0.104
Built After 1997	-0.353	0.013	-27.944	0.000	-0.378	-0.328
Neighboring Structure within 10 meters	-0.634	0.044	-14.394	0.000	-0.721	-0.548
Distance to Nearest Structure	-0.825	0.031	-26.889	0.000	-0.885	-0.765
Interaction[Neighboring Structure within 10 meters : Distance to Nearest Structure]	0.673	0.048	13.989	0.000	0.578	0.767
Parcel Area (sqm)	-0.724	0.032	-22.584	0.000	-0.787	-0.661
Aspect	-0.050	0.013	-3.924	0.000	-0.075	-0.025

Figure 6, below, shows the parcels selected for WIDP by the above model. Table 4 shows the distribution of the exposures after WIDP, which may be compared to Table 1.

FIGURE 6: PARCELS SELECTED TO REMAIN CLEAR BY THE WIDP PROCEDURE

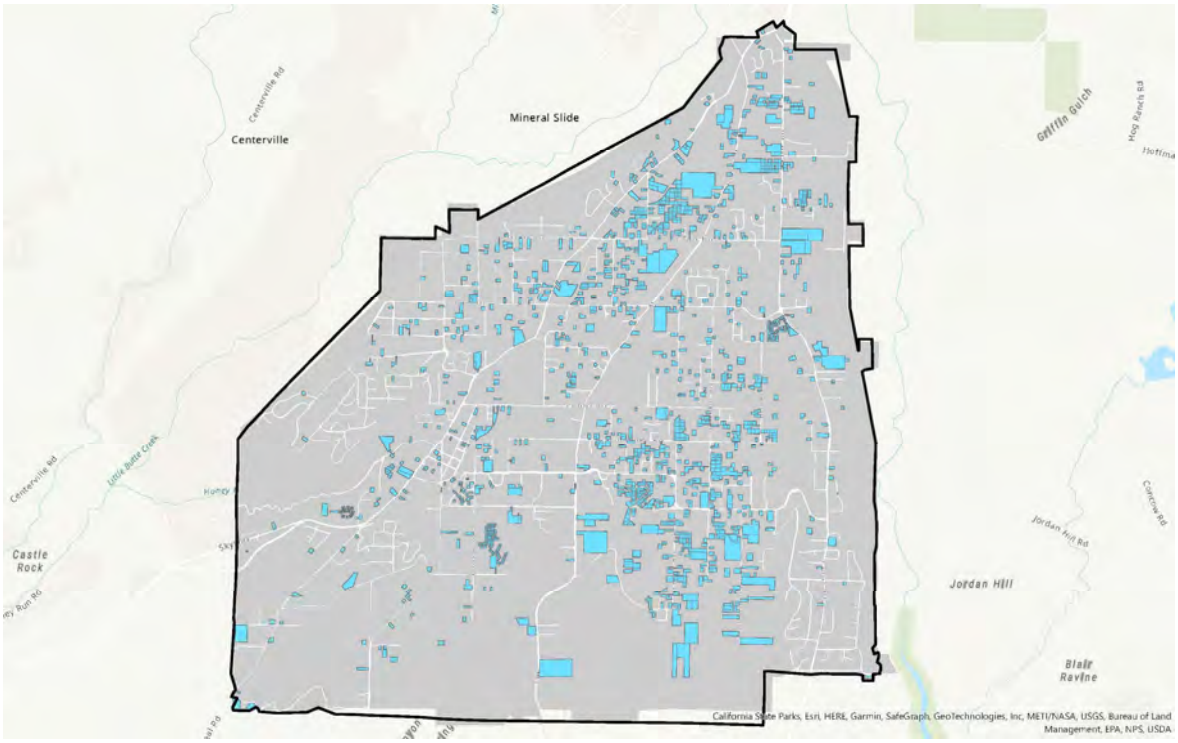


TABLE 4: WIDP SCENARIO STRUCTURE DISTRIBUTION

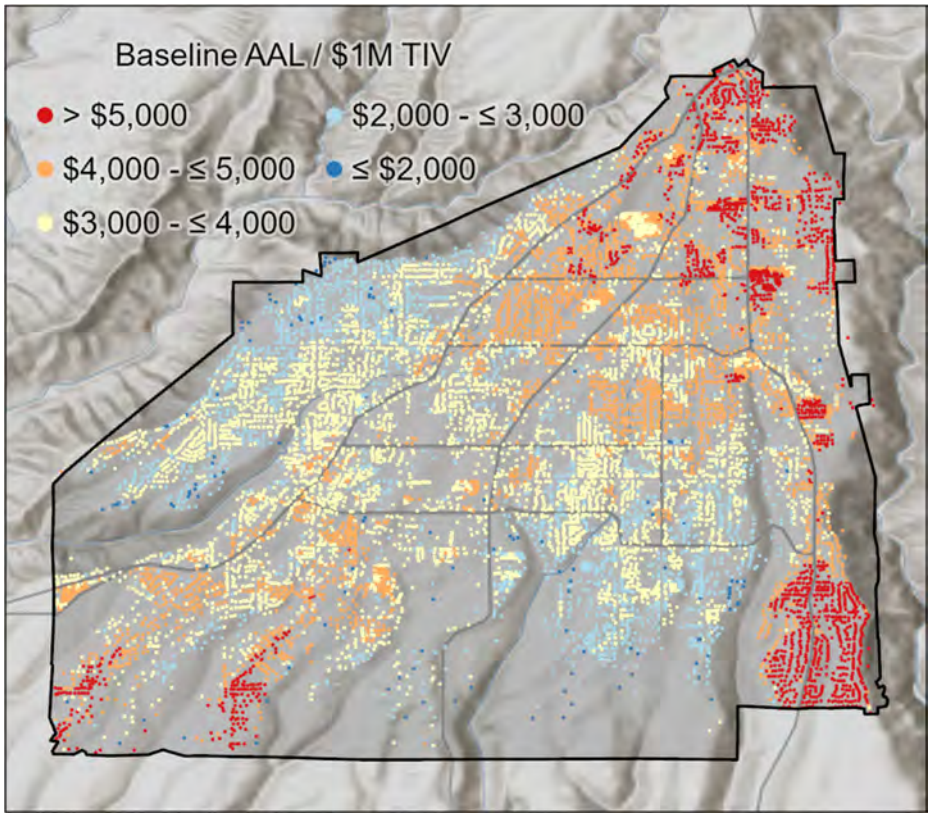
STRUCTURE TYPE	STRUCTURE COUNT	TOTAL INSURED VALUE (MILLION)
Single Family Residential	8,675	$4,264
Multi-family Housing	70	$56.6
Small Commercial	535	$604

Findings

AVERAGE ANNUAL LOSS

The CoreLogic Wildfire Model results show that prior to the Camp Fire, residential and small commercial locations in the Town of Paradise could have expected *average* annual losses ranging from $152 to over $77,000. This translates to about $24 million, in aggregate, for the whole town. Since property values differ by location, it is helpful to divide AALs by the total property TIVs, so that the resulting metric is comparable across different regions of the town. Figure 7 below shows a map of the AAL per million dollars of TIV in this baseline scenario in a diverging color scale, where the spectrum from blue to red represent structures with the lowest to highest AAL to TIV ratios.

FIGURE 7: CORELOGIC WILDFIRE MODEL AAL / $1M TIV BY LOCATION



In general, structures on the border of the Town in the northeast, southeast, and southwest have higher expected losses as a fraction of their TIV.

The various mitigation and adaptation scenarios provide a range of reduction in AALs, corresponding to reductions to overall risk. Table 5 below shows for each scenario the estimated total AAL and the percent reduction compared to the baseline scenario. This does not include the WIDP scenarios, which have different numbers of exposures for each scenario.

TABLE 5: SUMMARY OF AGGREGATE AVERAGE ANNUAL LOSS BY SCENARIO

SCENARIO	ESTIMATED TOTAL AAL	DIFFERENCE FROM BASELINE
Baseline	$23.900 M	0%
Base Mitigation	$11.259 M	-52.9%
Plus Mitigation	$7.867 M	-67.1%
All External Buffers	$ 15.663 M	-34.5%
Baseline under 2040 Climate	$ 27.835 M	+16.5%

* Base Mitigation with WIDP & External Buffers under 2040 Climate is compared against Baseline under 2040 Climate

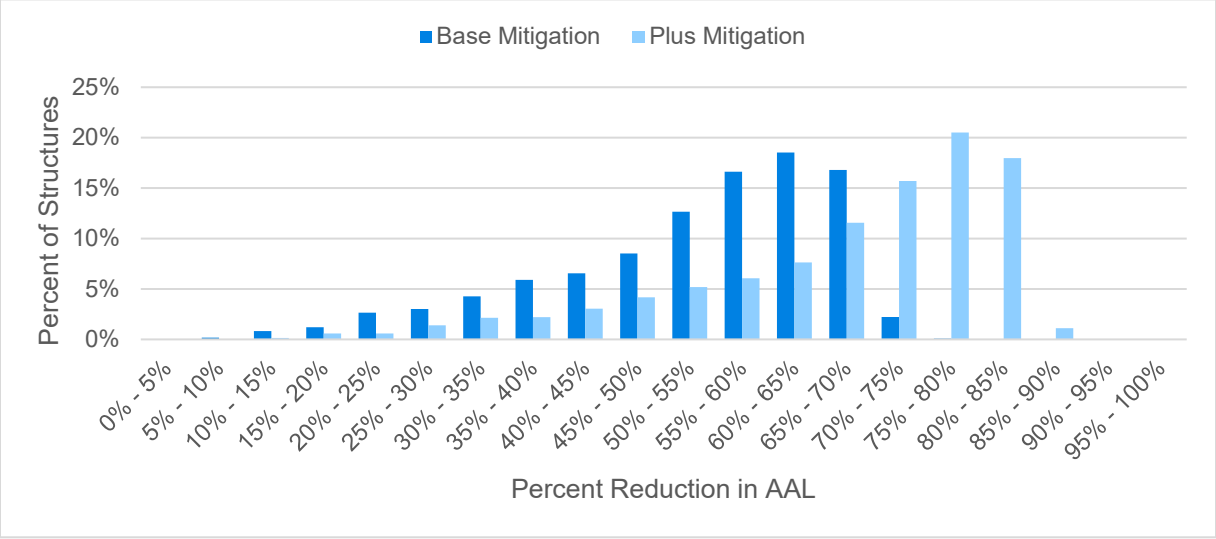
Mitigation

As shown in Table 5, Base Mitigation can reduce average losses by 52.9%. Base Mitigation includes the installation of roofs with a class A fire rating and the clearance of space around properties. This reduction is for the Town of Paradise in aggregate—in general, homes in higher risk territories would see a bigger benefit for upgrading a roof and implementing defensible space.[20]

In the Plus Mitigation scenario, properties are also fitted with fire resistive windows and sidings and have all combustible attachments removed, in addition to the requirements of the Base Mitigation scenario. We estimate that these additional mitigation actions would further decrease the AALs by 14.2%, resulting in a 67.1% total reduction in AAL compared to the pre-Camp Fire baseline scenario.

It is also helpful to consider the distribution of the risk reduction. Figure 8, below, shows a histogram of the percentage reduction in AAL resulting from individual property level mitigation. The bars show the distribution of percentage reduction in AAL for each pre-Camp Fire structure due to the two mitigation scenarios. As expected, the more stringent Plus Mitigation results in higher reduction in general.

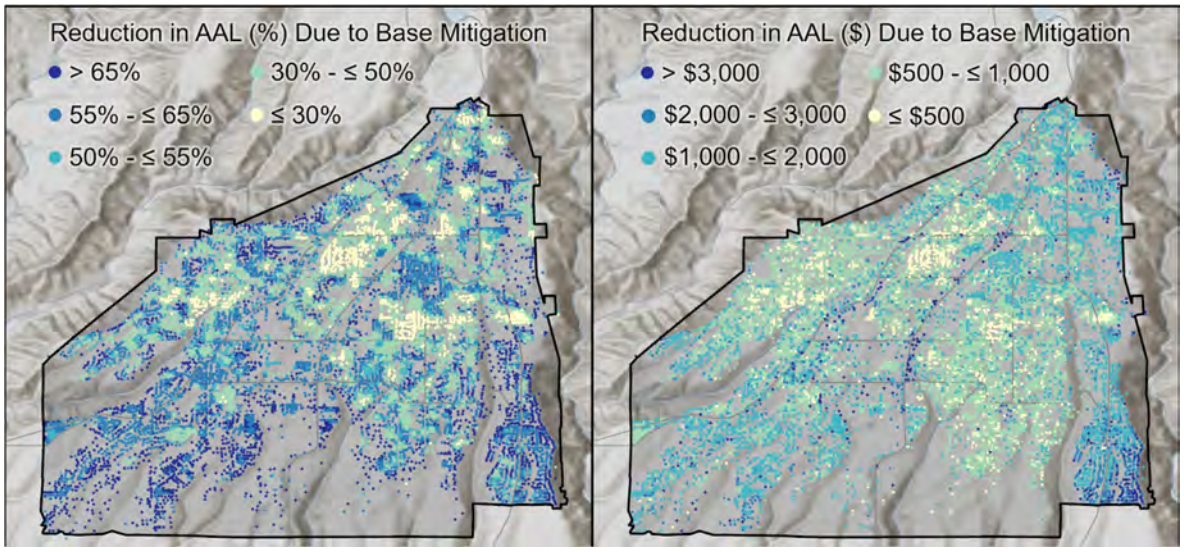
FIGURE 8: HISTOGRAM OF PERCENT REDUCTION IN AAL



[20] Brinkmann et al (2022). Catastrophe Models for Wildfire Mitigation: Quantifying Credits and Benefits to Homeowners and Communities, p. 38-39. Retrieved November 30, 2022. https://www.milliman.com/en/insight/catastrophe-models-for-wildfire-mitigation

Figure 9 below shows the change in AAL from the Baseline scenario to the Base Mitigation scenario.

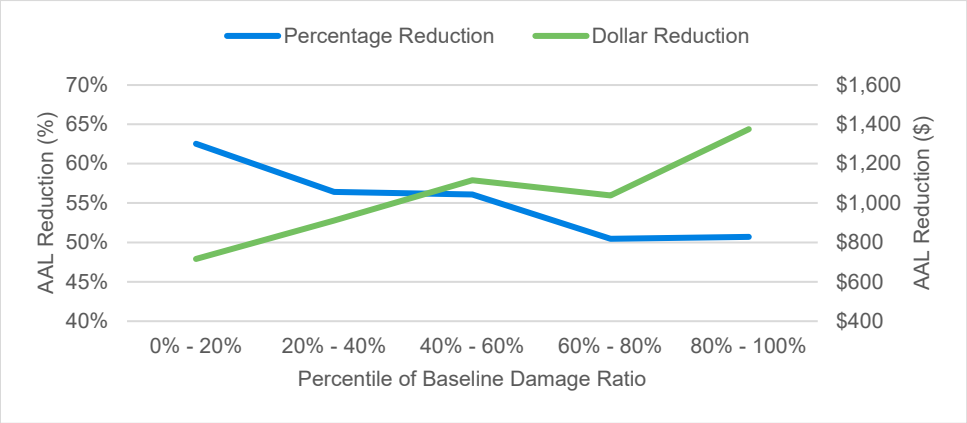
FIGURE 9A (LEFT): CHANGE IN AAL DUE TO BASE MITIGATION, IN PERCENTAGE OF BASELINE AAL
FIGURE 9B (RIGHT): CHANGE IN AAL DUE TO BASE MITIGATION, IN DOLLARS



Comparing Figures 9A and 9B, we can see that the percentage and dollar reduction in AAL do not always align. For example, many properties along the northwestern border of the town receive a sizable percentage reduction in AAL, but not a large dollar reduction. The converse is also true: properties with smaller percentage reduction in AAL tend to have larger dollar reduction in AAL. This phenomenon is discussed in the recent whitepaper written by Milliman[21] and published by the Casualty Actuarial Society, which shows that low risk territories may see a larger reduction in risk, while higher risk territories may see a larger reduction in dollars. This is because in higher risk areas, extreme events tend to be more severe so the risk reduction power of individual property mitigation is limited. However, in high risk territories, expected losses are significant to begin with, so any reduction translates to a larger dollar amount.

Figure 10 illustrates this relationship with the percentage reduction (blue) plotted on the left axis and dollar reduction (green) plotted on the right axis, for structures with different baseline damage ratio relativities (x-axis).

FIGURE 10: AAL REDUCTION DUE TO BASE MITIGATION, IN PERCENT AND IN DOLLARS



[21] Brinkmann et al (2022). Catastrophe Models for Wildfire Mitigation: Quantifying Credits and Benefits to Homeowners and Communities, p. 35-36. Retrieved November 30, 2022. https://www.milliman.com/en/insight/catastrophe-models-for-wildfire-mitigation

WIDP

Because the WIDP scenario assumes a decreased number of structures in the town, it is necessary to compare the average AAL by location instead of the aggregate AAL. Table 6, below, shows the average AAL by location within the Paradise town boundaries as well as the estimated average total premium excluding the net cost of reinsurance:

TABLE 6: SUMMARY OF AVERAGE AAL AND TOTAL PREMIUM BY LOCATION BY SCENARIO

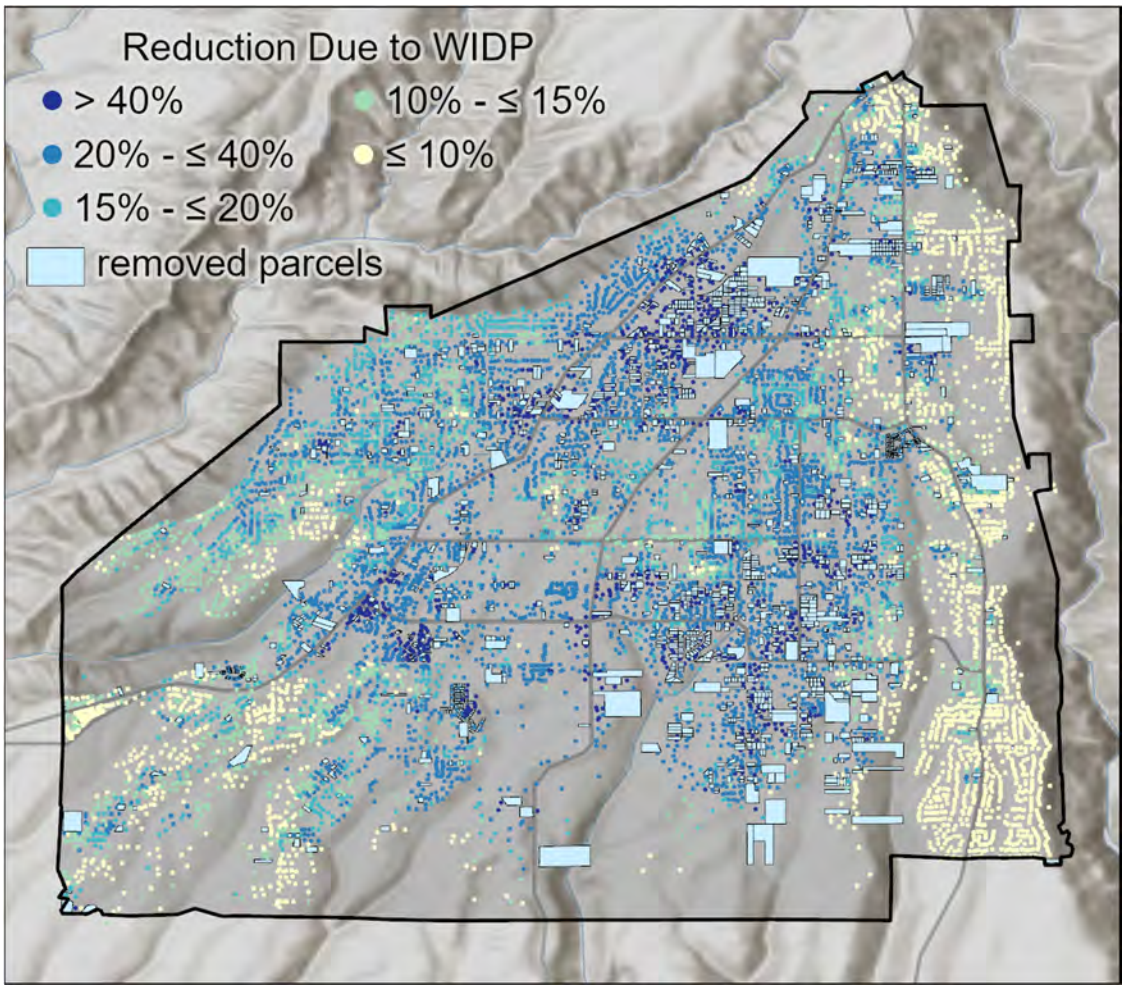
SCENARIO	ESTIMATED AVERAGE LOCATION AAL	AAL DIFFERENCE FROM BASELINE	ESTIMATED AVERAGE TOTAL PREMIUM	PREMIUM DIFFERENCE FROM BASELINE
Baseline	$ 1,965	0%	$ 4,654	0%
Base Mitigation	$ 926	-52.9%	$ 2,839	-39.0%
Plus Mitigation	$ 647	-67.1%	$ 2,352	-49.5%
WIDP	$ 1,680	-14.5%	$ 4,156	-10.7%
WIDP with External Buffers	$ 1,089	-44.6%	$ 3,124	-32.9%
Base Mitigation with WIDP & External Buffers	$ 502	-74.5%	$ 2,099	-54.9%
Baseline under 2040 Climate	$ 2,288	+16.5%	$ 5,219	+12.1%
Base Mitigation with WIDP & External Buffers under 2040 Climate*	$ 574	-74.9%*	$ 2,226	-57.3%

* Base Mitigation with WIDP & External Buffers under 2040 Climate is compared against Baseline under 2040 Climate

As expected, the estimated reduction in AAL for scenarios not involving WIDP are identical to those in Table 5. This is because they assume no change in the number of structures. On the other hand, the selected WIDP scenario results in 23.7% of parcels being cleared. The reduction in AAL relative to the reduction in structures highlights the effectiveness of the action: by dedicating 23.7% of parcels to green spacing, the town is able to reduce total AAL by 34.8%, which corresponds to a 14.5% reduction in average AAL by location.

As discussed in the methodology section, wildfire risk to a property is highly influenced by neighboring structures. The presence of a nearby vulnerable structure can increase the likelihood of ignition for a property, while the absence of nearby structures could serve as a fuel break. Figure 11, below, shows the percentage reduction in AAL in the Town due to WIDP. Parcels that are designated as internal firebreaks, or “cleared”, are highlighted in light blue. The reduction in AAL of the remaining structures are shown on the map in a color scale.

FIGURE 11: REDUCTION IN AAL (%) DUE TO WIDP



This map shows two important observations: 1) clearing parcels reduces AAL for other structures, and 2) the reduction in AAL is highest for structures closest to cleared parcels, then the reduction decreases as distance from the cleared parcel increases. In general, the WIDP process resulted in the most AAL reduction in the center of the town, whereas properties along the edges of the town saw less benefit due to WIDP.

Buffers

When combined with WIDP, external buffers are found to further reduce risk by an additional 30.1% on a per-location basis, bringing the total average AAL reduction per location to 44.6%, if all five buffers from Figure 3 are implemented. We estimate the stand-alone risk reduction of implementing just the external buffers without WIDP to be 34.5%. The benefits of WIDP and external buffers are approximately multiplicative—the effect of the combined mitigation is slightly larger than the combination of the individual effects[22]. In other words, there is synergy between WIDP and external buffers to product a combined effect greater than the aggregation of their separate effects.

The implementation of external buffers requires significant financial resources; in addition, the acquisition and easement of parcels may not be feasible in certain situations—for example, if there is historical value in preserving the parcel in its current state. Table 7, below, summarizes the reduction in total AAL for the Town if buffers recommended

[22] 44.6% (combined reduction) is slightly larger than 44.0% (the product of reductions) = 1 - [1 - 34.5% (buffer standalone reduction)] * [1 - 14.5% (WIDP standalone reduction)]

by the CBI are implemented individually. In its report recommending external buffers, the CBI presented a summary of the change in number of acres categorized as “highest ignition risk” due to the implementation of individual buffers; these numbers are included for reference.

Like the combination of WIDP and buffers, we note that the result of multiplying all the reduction in AAL of the individual stand-alone buffers, assuming independence, results in a 30.8% reduction. This is slightly less than the actual combined reduction of 34.5%. This shows that there is an added benefit of completing multiple actions, beyond just the “sum” of the individual actions.

TABLE 7: SUMMARY OF AVERAGE AAL BY LOCATION BY SCENARIO

SCENARIO	CHANGE IN AAL	CBI CHANGE IN ACRES WITH HIGHEST IGNITION CATEGORY
Inner Eastern	-11.9%	-64%
Magalia	-3.4%	-47%
Outer Eastern	-8.8%	N/A*
Butte Creek	-2.9%	-1%
Southern Foothills	-8.2%	-5%

Not tested as a stand-alone buffer in the CBI paper.

Climate Stress Testing

Two scenarios were created to evaluate the effects of future climate expectations on the results of this study. In Table 8, below, the AALs in the conditions of the selected climate scenario at 2040 are compared to the corresponding scenario with the current climate.

TABLE 8: SUMMARY OF AGGREGATE AAL BY CLIMATE SCENARIO

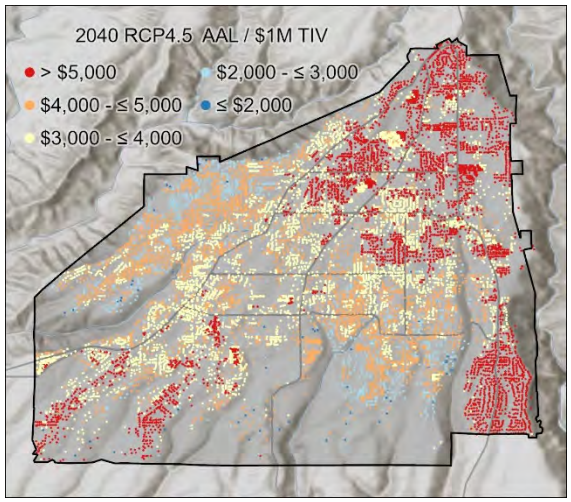
SCENARIO	ESTIMATED TOTAL AAL		CHANGE DUE TO CLIMATE
	CURRENT CLIMATE CONDITIONS	RCP4.5 2040 CLIMATE CONDITIONS	
Baseline under 2040 Climate	$23.900 M	$27.835 M	16.5%
Base Mitigation with WIDP & External Buffers under 2040 Climate	$ 4.656 M	$5.330 M	14.5%
Risk Reduction	80.5%	80.9%	

In both scenarios we see that the wildfire risk will be higher with future climate expectations (a 16.5% and a 14.5% increase in wildfire risk). The combination of base mitigation, WIDP, and external buffers is expected to yield a reduction in AAL of 80.5% in current climate conditions and 80.9% under 2040 conditions.

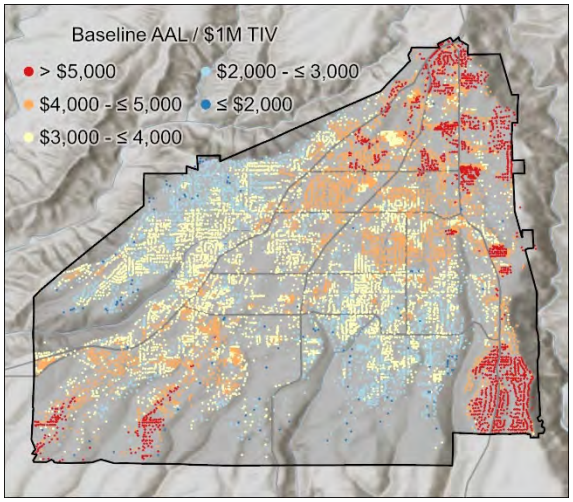
Summary of Selected Scenarios

Figure 12, on the next page, shows a panel of maps of the AAL / $1M TIV ratio of each location for selected scenarios side by side:

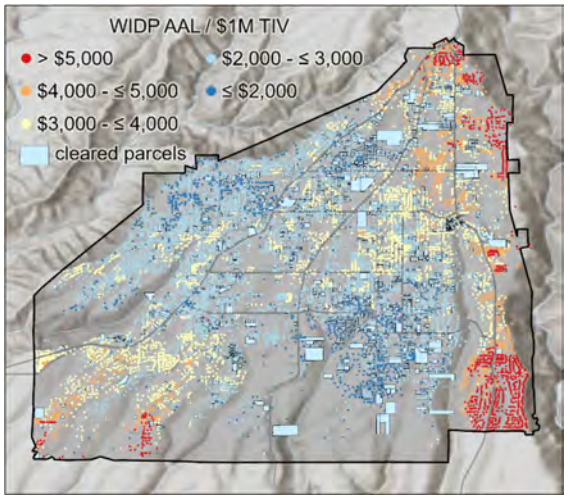
FIGURE 12: CORELOGIC V22.1 AAL / $1M TIV FOR SELECTED SCENARIOS



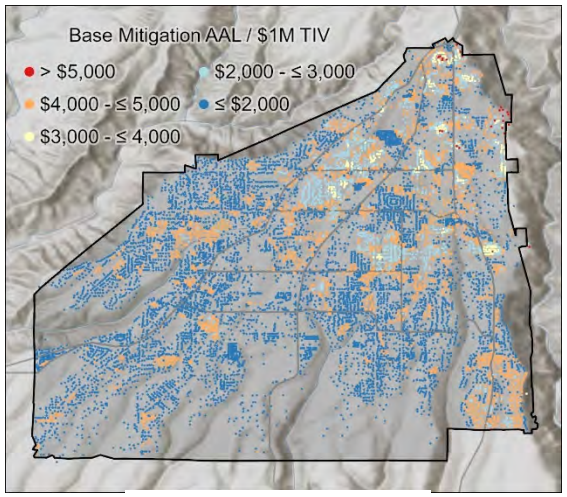
2040 RCP4.5 Scenario



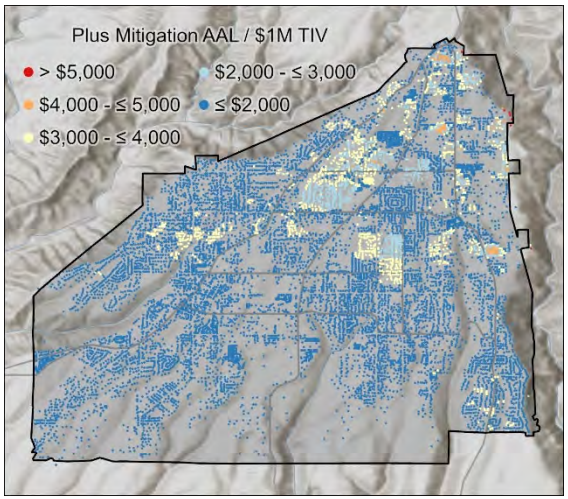
Baseline Scenario



WIDP Scenario



Base Mitigation Scenario



Plus Mitigation Scenario

EXCEEDANCE PROBABILITY (EP) CURVES

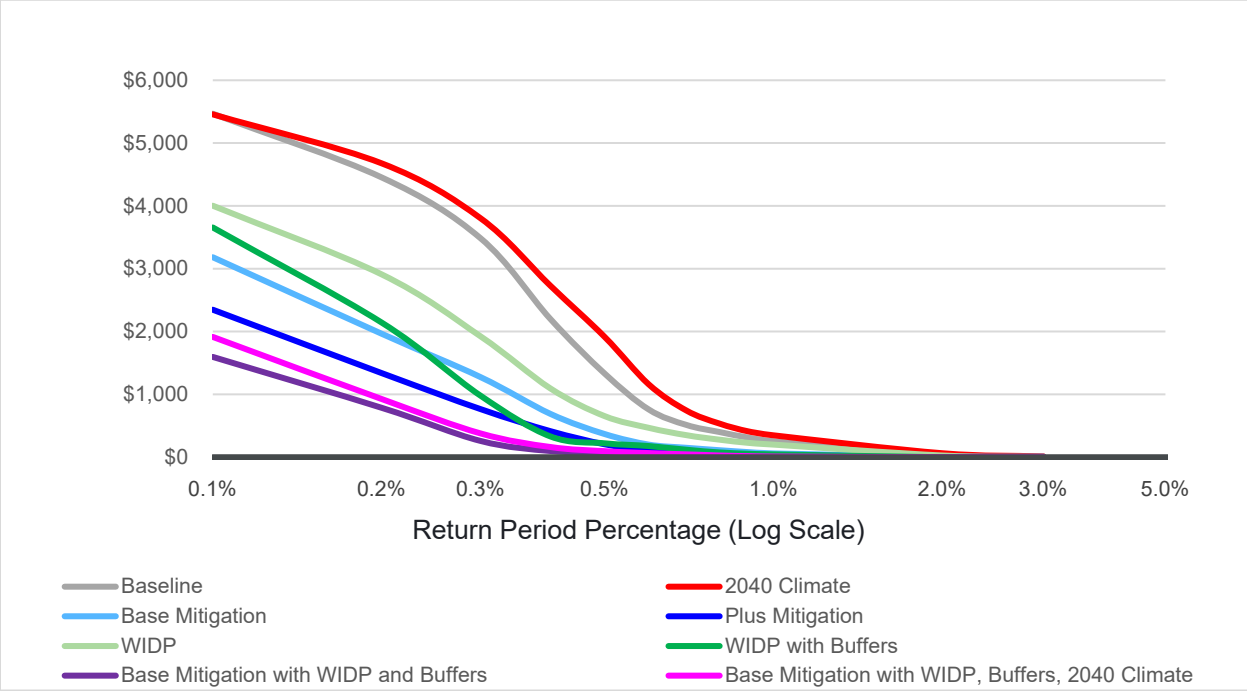
The expected loss is just one aspect of risk. To understand what losses *could* be, instead of what losses *are expected to be on average*, one needs to consider EP Curves. EP Curves are another key metric produced by probabilistic catastrophe models. They provide the likelihood that a loss of a given size or greater will occur in any year—the annual exceedance probability. This is often summarized by key return period loss levels. For example, a 1% annual probability of exceedance corresponds to a 100 year return period loss (i.e. 1/100 = 1%).

We reviewed the EP curves on an Aggregate Exceedance Probability ("AEP") and Occurrence Exceedance Probability ("OEP") basis. AEP curves are based on the total aggregate losses for a given year, while OEP curves are based on the largest single loss for a given year. While recent history has demonstrated that it is common for there to be multiple impactful regional wildfires in a given year, the probability of multiple such fires to directly impact a region with the size of the study area is relatively small compared to the probability of a single fire impacting that area. As a result, the AEP curves and OEP curves are very similar. The discussion focuses on the AEP curves but the conclusions based on the OEP curves would be identical.

Figure 13, below, shows the AEP curve for each of the eight scenarios.

The grey line shows the baseline scenario: If the town was built back exactly the same as pre-Camp Fire standards, the town should expect a 1 in 100 year loss of $254 million. The Camp Fire, which destroyed over 90% of structures in the Town of Paradise, is analogous to the magnitude of a 1 in 1000 year loss in the model results, where close to 90% of the Total Insured Value (TIV) is destroyed.

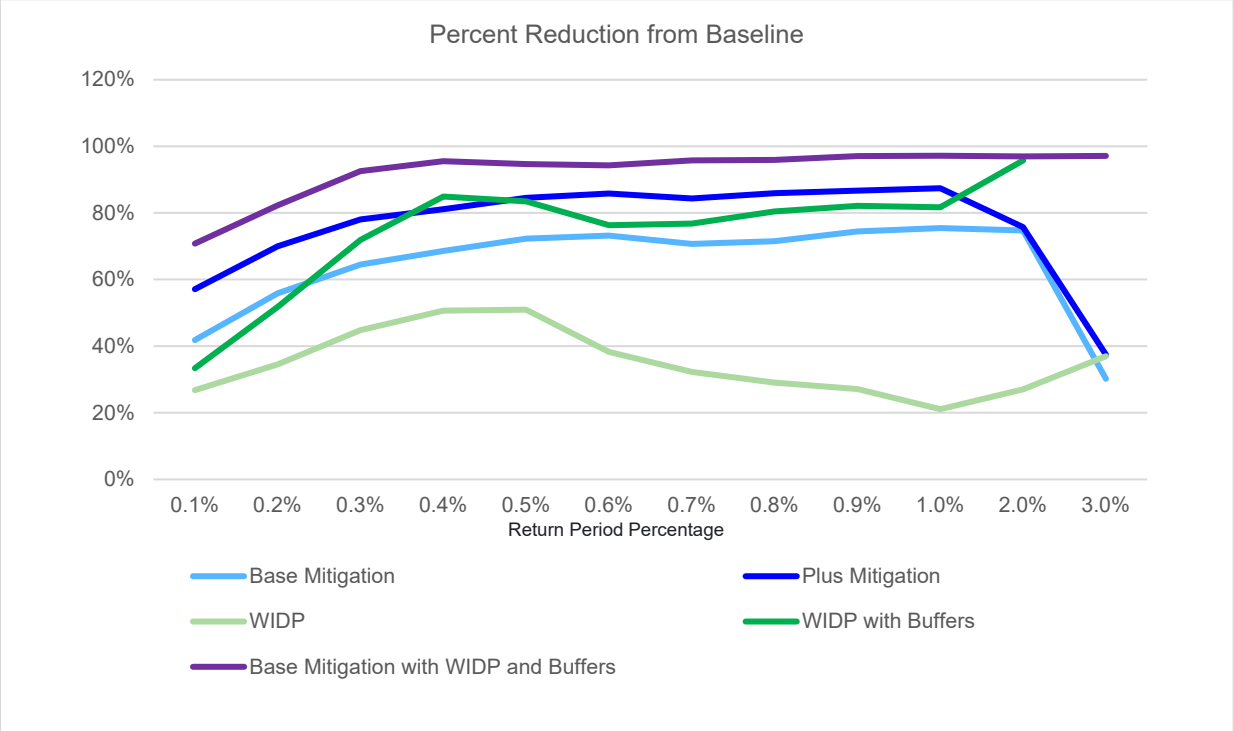
FIGURE 13: AGGREGATE EXCEEDANCE PROBABILITY CURVE, ALL SCENARIOS



The mitigation and adaptation actions are expected to not only decrease the average annual losses, but also reduce some of the worst-case outcomes by as much as half. For example, in the baseline scenario, a 1-in-1000 year loss is expected to be $5.5 billion in aggregate. If mitigation is performed as in the Base Mitigation scenario, this figure decreases by 42% to $3.2 billion. If WIDP and buffers are implemented on top of individual property mitigation, the 1-in-1000 year loss is expected to decrease by 71%, compared to the baseline scenario, to $1.6 billion.

The effectiveness of risk reduction techniques generally decreases for the most extreme events. Figure 14, below, shows the reduction in OEP curve loss amounts by return period for the Base Mitigation, Plus Mitigation, WIDP, and WIDP with External Buffers, and Base Mitigation with WIDP and Buffers scenarios. In general, the maximum reduction is achieved in mid-to-lower return periods (less extreme events). The risk reduction in all five scenarios started to decrease around the 250-year return period through the 1000-year return period. This is intuitive: in events like the Camp Fire, the extreme level of convection, radiation, and ember cast will likely overpower much of risk mitigation techniques. Home hardening features like class A fire roofs and fire resistive sidings are generally not designed to be fireproof, but rather to delay ignition so that firefighters have more time to react and residents have time to remove themselves from the structure. Moreover, with large fires and high wind conditions, ember spotting becomes the main source of fire transmission, so defensible space and buffers will become less effective.

FIGURE 14: PERCENT REDUCTION FROM BASELINE IN OEP CURVE LOSS AMOUNTS BY RETURN PERIOD



Note: Both WIDP scenarios in this graph do not include property-level mitigation.

INSURANCE PREMIUM

Estimated Insurance Premium and Net Cost of Reinsurance

The indicated total premium was calculated for each of the eight scenarios using the AAL output of CoreLogic's Wildfire Model and industry data.

As discussed above, the CDI does not allow the Net Cost of Reinsurance to be reflected in Homeowners premiums. For this analysis, indicated total premium is shown alongside the Net Cost of Reinsurance to illustrate the deficit an insurer would expect from excluding this cost. The details of the calculation and its components are shown in Exhibit 2. Both versions of indicated total premiums (including and excluding Net Cost of Reinsurance) and the premium deficit of excluding Net Cost of Reinsurance are shown in Table 9, below. As discussed in the methodology section, this analysis assumes no benefit of diversification, so the resulting estimated cost of reinsurance and premium deficit should be treated as the high ends of the range of possible values.

TABLE 9: SUMMARY OF ESTIMATED AVERAGE PREMIUM

SCENARIO	ESTIMATED AVERAGE PREMIUM BY EXPOSURE		PREMIUM DEFICIT
	INCLUDING NET COST OF REINSURANCE	EXCLUDING NET COST OF REINSURANCE	
Baseline	$5,850	$4,159	28.9%
Base Mitigation	$3,002	$2,537	15.5%
Plus Mitigation	$2,362	$2,102	11.0%
Baseline with WIDP	$5,162	$3,714	28.1%
Baseline with WIDP and buffers	$3,215	$2,792	13.2%
Base Mitigation with WIDP and buffers	$1,934	$1,876	3.0%
Baseline at 2040 climate expectations	$7,210	$4,663	35.3%
Base Mitigation with WIDP, buffers, at 2040 climate	$2,144	$1,989	7.3%

The difference between the eight scenarios is driven by the wildfire AALs and the Net Cost of Reinsurance. Scenarios with higher AALs per location have a higher wildfire premium and a higher Net Cost of Reinsurance based on the calculation discussed in the Methodology section. On the other hand, the scenarios with more risk reduction measures applied have lower indicated premiums as well as lower Net Cost of Reinsurance. The lower cost of reinsurance is due to the reduction in losses in the tail of the distribution, as discussed in the EP Curves section. Because extreme events in these scenarios have much lower losses than extreme events in the baseline scenario, the expected ceded portion of losses is much lower, even if the Town maintains the same reinsurance structure (5% probability of attachment and 0.5% probability of ruin). As a result, the expected premium deficit due to Net Cost of Reinsurance not being included is also lower in the risk reduction scenarios. In other words, insurance premiums will tend to be more in line with the indicated total cost of risk transfer if risk reduction measures are put into effect, and companies can be more confident that their rates are closer to adequate for the risk.

However, in all the scenarios modeled for the Town of Paradise, there is still a premium deficit when the cost of reinsurance is excluded from the premium. The deficit caused by not being able to include these costs in the premium is a key reason why insurers are reluctant to write in high wildfire risk areas, such as Paradise.

Benefit of Diversification

As noted in earlier sections, this case study assumes a hypothetical insurance company that operates solely in the Town of Paradise. In reality, insurance companies write policies in geographically diverse areas, so that their portfolios are diversified. The danger of having a concentrated portfolio is that one large event like the 2018 Camp Fire can wipe out the whole book. On the other hand, a portfolio that has, say, 10% of its policies in the Town of Paradise, would only have 10% of its portfolio experience losses in an event like the 2018 Camp Fire.

The value of diversification lies in the statistical independence of insured properties. In the case where a company's portfolio is geographically diverse, it is unlikely that one catastrophic wildfire event will affect multiple geographies. While the expected loss to TIV ratio will stay the same despite diversification[23], EP curves are sub-additive. In other words, a geographically diverse insurer would charge the same premium (not including the Net Cost of Reinsurance) as one that is not geographically diverse, but the former should expect less severe extreme events. An estimation of the benefit of diversification is highly dependent on the specific correlation assumptions of the losses and is beyond the scope of this discussion, but it is important to know that diversification is a key aspect to successful risk management for any insurer.

[23] The expected value of a sum of random variables is the sum of the expected values of the random variables, regardless of correlation.

Limitations

USE OF REPORT

The data and exhibits in this report are provided to support the conclusions contained herein, are limited to the scope of work specified by the Town of Paradise associated with the California Resilience Challenge Grant, and may not be suitable for other purposes. Milliman and CoreLogic are available to answer any questions regarding this report or any other aspect of our review.

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DATA RELIANCES

In performing this analysis Milliman and CoreLogic relied upon information obtained from the Town of Paradise, CDI, IBHS, and other sources. Milliman and CoreLogic have not audited or verified this data and information. If the underlying data or information is inaccurate or incomplete, the results of the analysis may likewise be inaccurate or incomplete. In that event, the results of the analysis may not be suitable for the intended purpose.

Milliman and CoreLogic performed a limited review of the data used directly in the analysis for reasonableness and consistency. Milliman and CoreLogic did not find material defects in the data. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or relationships that are materially inconsistent. Such a detailed review was beyond the scope of this assignment.

MODEL RELIANCES

This analysis is based on the CoreLogic Risk Quantification and Engineering U.S. Wildfire Model, version 22.1. To the extent that the model used is biased, the resulting analysis may be biased.

UNCERTAINTY

Differences between the projections and actual amounts in this report depend on the extent to which future experience conforms to the assumptions made for the analyses. It is certain that actual experience will not conform exactly to the assumptions to be used in these analyses. Actual amounts will differ from projected amounts to the extent that actual experience is better or worse than expected.

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milliman.com

CONTACT

Matt Chamberlain
Matt.Chamberlain@milliman.com

Robert Lee
Robert.Lee@milliman.com

Taylor Deacon
Taylor.Deacon@milliman.com

Nancy Watkins
Nancy.Watkins@milliman.com

CoreLogic

CoreLogic, Inc. is an Irvine, CA-based corporation providing financial, property, and consumer information, analytics, and business intelligence. The company analyzes information assets and data to provide clients with analytics and customized data services.

corelogic.com

CONTACT

Kent David
kdavid@corelogic.com

Fan Lei
flei@corelogic.com

Ilyes Meftah
imeftah@corelogic.com

Appendix

See attached exhibits.

Town of Paradise
California Resilience Challenge Grant

Average Annual Loss by Scenario

	Item	Notes	(1) Baseline	(2) Base Mitigation	(3) Plus Mitigation	(4) WIDP	(5) WIDP with External Buffers	(6) Base Mitigation with WIDP & External Buffers	(7) Baseline 2040 Climate	(8) Base Mitigation with WIDP & External Buffers under 2040 Climate
A.	Total Average Annual Loss	(Notes 1, 2)	$23.90	$11.26	$7.87	$15.59	$10.10	$4.66	$27.84	$5.33
B.	Total TIV	(Note 1)	$6,087.36	$6,087.36	$6,087.36	$4,924.33	$4,924.33	$4,924.33	$6,087.36	$6,087.36
C.	Exposures		12,165	12,165	12,165	9,280	9,280	9,280	12,165	9,280
D.	Average Annual Loss / Exposure ($)	(A) / (C)	$1,964.63	$925.52	$646.69	$1,679.53	$1,088.62	$501.72	$2,288.12	$574.38
E.	Difference in Average Annual Loss / Exposure	(Note 3)		-52.9%	-67.1%	-14.5%	-44.6%	-74.5%	+16.5%	-74.9%

Notes:
1. Dollar amounts are in millions ($000,000). Row D is in dollars.
2. Average annual losses reflect total ground up coverages.
3. Column (2) = Column (2), line (D) / Column (1), line (D) - 1.0. Columns (3) to (7) calculated similarly.
   Column (8) = Column (8), line (D) / Column (7), line (D) - 1.0 to show the difference under 2040 climate scenario.

Town of Paradise
California Resilience Challenge Grant

Occurrence Exceedance Probability (OEP) Curves by Scenario

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Occurrence Exceedance Probability Curve Loss							
Return Period (Years)	Exceedance Probability	Baseline	Base Mitigation	Plus Mitigation	WIDP	WIDP with External Buffers	Base Mitigation with WIDP & External Buffers	Baseline 2040 Climate	Base Mitigation with WIDP & External Buffers under 2040 Climate
1,000	0.10%	$5,469	$3,182	$2,347	$4,004	$3,644	$1,598	$5,529	$1,915
500	0.20%	4,446	1,965	1,336	2,912	2,145	788	4,844	908
333	0.30%	3,487	1,238	767	1,926	980	261	3,957	379
250	0.40%	2,202	692	416	1,087	332	99	2,849	163
200	0.50%	1,332	370	206	654	221	71	2,006	96
167	0.60%	756	203	107	467	179	43	1,224	66
143	0.70%	511	150	80	346	119	22	765	47
125	0.80%	396	113	56	281	78	16	565	28
111	0.90%	314	80	42	229	56	9	431	18
100	1.00%	254	62	32	200	47	7	362	11
50	2.00%	38	10	9	28	2	1	65	2
33	3.03%	10	7	6	6	0	0	13	0
25	4.00%	7	5	5	2	0	0	9	0
20	5.00%	5	4	4	0	0	0	6	0
17	5.88%	5	3	3	0	0	0	5	0
14	7.14%	3	3	2	0	0	0	4	0
13	7.69%	3	2	1	0	0	0	4	0
11	9.09%	1	1	1	0	0	0	3	0
10	10.00%	0	0	0	0	0	0	2	0
7	14.29%	0	0	0	0	0	0	0	0
5	20.00%	0	0	0	0	0	0	0	0
3	33.33%	0	0	0	0	0	0	0	0
2	50.00%	0	0	0	0	0	0	0	0

Town of Paradise
California Resilience Challenge Grant

Aggregate Exceedance Probability (AEP) Curves by Scenario

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Aggregate Exceedance Probability Curve Loss							
Return Period (Years)	Exceedance Probability	Baseline	Base Mitigation	Plus Mitigation	WIDP	WIDP with External Buffers	Base Mitigation with WIDP & External Buffers	Baseline 2040 Climate	Base Mitigation with WIDP & External Buffers under 2040 Climate
1,000	0.10%	$5,469	$3,184	$2,350	$4,004	$3,657	$1,598	$5,458	$1,915
500	0.20%	4,456	1,967	1,341	2,912	2,145	788	4,680	927
333	0.30%	3,487	1,277	767	1,926	980	261	3,806	379
250	0.40%	2,202	692	416	1,097	332	100	2,731	163
200	0.50%	1,332	370	206	655	221	71	1,916	96
167	0.60%	762	203	107	469	179	43	1,162	66
143	0.70%	514	151	81	351	119	22	745	47
125	0.80%	402	113	56	282	78	16	537	28
111	0.90%	314	82	43	229	56	9	413	18
100	1.00%	254	63	32	202	47	7	349	12
50	2.00%	38	10	10	29	2	1	63	2
33	3.03%	10	7	6	6	0	0	14	0
25	4.00%	7	5	5	2	0	0	9	0
20	5.00%	5	4	4	0	0	0	6	0
17	5.88%	5	3	3	0	0	0	5	0
14	7.14%	3	3	2	0	0	0	4	0
13	7.69%	3	2	1	0	0	0	4	0
11	9.09%	1	1	1	0	0	0	3	0
10	10.00%	0	0	0	0	0	0	2	0
7	14.29%	0	0	0	0	0	0	0	0
5	20.00%	0	0	0	0	0	0	0	0
3	33.33%	0	0	0	0	0	0	0	0
2	50.00%	0	0	0	0	0	0	0	0

Town of Paradise
California Resilience Challenge Grant

Secondary Modifier Settings for Mitigation Scenarios

Secondary Modifier	Notes	Mitigation Scenario		
		Baseline	Base Mitigation	Plus Mitigation
Class A Roof	(Note 1)	Default	Yes	Yes
Clearance – Noncombustible Zone				
0-5 feet		No	No	Yes
Clearance – Lean, Clean and Green				
5-30 feet	(Note 2)	Default	Yes	Yes
Clearance – Reduced Fuel Zone 3				
30-100 feet	(Note 2)	Default	Yes	Yes
Fire Resistive Siding	(Note 3)	Default	Default	Yes
Combustible Attachments		Yes	Yes	No
Fire Resistive Windows		No	No	Yes

Notes:
1. Default vulnerability functions for roof classes are based on reviews on the most dominant roof class for certain construction year bands.
2. Default vulnerability functions for clearance zones are based on available datasets and additional base vulnerability functions developed for the default clearance zones. Default values of clearance zones are based on the CoreLogic claims databases.
3. Default values for siding are based on CoreLogic claims databases.

Town of Paradise
California Resilience Challenge Grant

Scenario Definitions

Item	(1) Baseline	(2) Base Mitigation	(3) Plus Mitigation	(4) WIDP	(5) WIDP with External Buffers	(6) Base Mitigation with WIDP & External Buffers	(7) Baseline 2040 Climate	(8) Base Mitigation with WIDP & External Buffers under 2040 Climate
A. Mitigation	None	Base	Plus	None	None	Base	None	Base
B. Exposure	Entire Town	Entire Town	Entire Town	~75% of Town	~75% of Town	~75% of Town	Entire Town	~75% of Town
C. External Buffers	No	No	No	No	Yes	Yes	No	Yes
D. Climate	Current	Current	Current	Current	Current	Current	2040	2040

Town of Paradise
California Resilience Challenge Grant
California

Development of Indicated Premium by Scenario

	Item	Notes	(1) Baseline	(2) Base Mitigation	(3) Plus Mitigation	(4) WIDP	(5) WIDP with External Buffers	(6) Base Mitigation with WIDP & External Buffers	(7) Baseline 2040 Climate	(8) Base Mitigation with WIDP & External Buffers under 2040 Climate
A.	Wildfire Pure Premium	(Note 1)	$1,965	$926	$647	$1,680	$1,089	$502	$2,288	$574
B.	Permissible Loss Ratio	(Page 3)	57.3%	57.3%	57.3%	57.3%	57.3%	57.3%	57.3%	57.3%
C.	Indicated Wildfire Premium	(A) / (B)	3,431	1,616	1,129	2,933	1,901	876	3,996	1,003
D.	AOP Premium	(Page 2)	1,223	1,223	1,223	1,223	1,223	1,223	1,223	1,223
E.	Indicated Total Premium Excluding Cost of Reinsurance	(C) + (D)	4,654	2,839	2,352	4,156	3,124	2,099	5,219	2,226
F.	Difference in Total Premium Excluding Cost of Reinsurance	(Note 2)		-39.0%	-49.5%	-10.7%	-32.9%	-54.9%	+12.1%	-57.3%
G.	Net Cost of Reinsurance	(Page 5)	1,692	465	260	1,448	423	96	2,546	155
H.	Indicated Total Premium Including Cost of Reinsurance	(E) + (G)	6,346	3,304	2,613	5,604	3,547	2,195	7,766	2,381
I.	Premium Deficit from Excluding Cost of Reinsurance	[(H) - (E)] / (H)	26.7%	14.1%	10.0%	25.8%	11.9%	4.4%	32.8%	6.5%
J.	Difference in Total Premium Including Cost of Reinsurance	(Note 3)		-47.9%	-58.8%	-11.7%	-44.1%	-65.4%	+22.4%	-62.5%

Notes:
1. Row A is calculated by dividing the average annual loss by the exposure, which are both provided in Exhibit 1, Page 1.
2. Column (2) = Column (2), line (E) / Column (1), line (E) - 1.0. Columns (3) to (7) calculated similarly.
   Column (8) = Column (8), line (E) / Column (7), line (E) - 1.0 to show the difference under 2040 climate scenario.
3. Column (2) = Column (2), line (H) / Column (1), line (H) - 1.0. Columns (3) to (7) calculated similarly.
   Column (8) = Column (8), line (H) / Column (7), line (H) - 1.0 to show the difference under 2040 climate scenario.

Town of Paradise
California Resilience Challenge Grant
California

Development of Indicated AOP Premium

Item	Notes	Amount
A. Fast Track NonCAT Pure Premium	(Note 1)	$700
B. Permissible Loss Ratio	(Note 2)	57.3%
C. Indicated AOP Premium	= (A) / (B)	$1,223

Notes:
1. Pure premium of year ending 2022 Q2, from from Fast Track Plus, Homeowners Loss Data and Trends, California, policy forms 1-3 and 5 combined.
2. Row B is from Page 3.

Town of Paradise
California Resilience Challenge Grant
California

Expense Summary - Development of Permissible Loss and Reinsurance Ratio

Item		Notes	(1) Industry	(2) California	(3) Selected
A.	Commissions	(Note 2)	12.6%	12.4%	12.4%
B.	Unallocated Loss Adjustment Expense	(Note 2)	7.2%		7.2%
C.	Other Acquisition	(Note 2)	6.9%		6.9%
D.	General	(Note 2)	5.1%		5.1%
E.	Premium Taxes, Licenses, and Fees	(Note 2)	2.3%	2.4%	2.4%
F.	Profit & Contingency	(Note 2)	5.0%	5.0%	5.0%
G.	Total Expense and Profit, excluding Reinsurance Expense	= Sum of (A) to (F)			39.1%
H.	ALAE (as a % of Loss)	(Note 3)			6.4%
I.	Permissible Loss and Reinsurance Ratio	= (1-(G)) / (1+(H))			57.3%

Notes:
1. Quantities are for the Homeowner Multiple Peril line of business, stated as percentages relative to the line of business premium.
2. Items A - E for column (1) come from P&C Industry IEE for 2021 and for column (2) come from California State Page 14 for 2021. Item F is selected by Milliman.
3. ALAE Ratio from Page 4.

Town of Paradise
California Resilience Challenge Grant
California

Development of ALAE Ratio

Peril	Item	Notes	(1) 2019	(2) 2020	(3) 2021	(4) Selected
Homeowners - Multiple Peril						
	Direct Losses Incurred	(Note 1)	$2,716,228,162	$3,665,435,697	$4,532,835,068	
	Direct DCCE Incurred	(Note 1)	195,075,667	224,975,442	270,887,358	
	DCCE Ratio	(Note 2)	7.2%	6.1%	6.0%	6.4%
	ALAE Ratio	(Note 3)				6.4%

Notes:
1. Direct Losses Incurred and Direct DCCE Incurred from California Annual Statement.
2. DCCE ratio calculated as Direct DCCE Incurred / Direct Losses Incurred.
   Selected DCCE Ratio equals average DCCE Ratio of 2019, 2020, and 2021.
3. ALAE ratio is assumed to be comparable to DCCE ratio.

Town of Paradise
California Resilience Challenge Grant
California

Net Cost of Reinsurance

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Occurrence Exceedance Probability Curve Loss (Page 6, Note 1)										
Return Period (Years)	Baseline	Base Mitigation	Plus Mitigation	WIDP	WIDP with External Buffers	Base Mitigation with WIDP & External Buffers	Baseline 2040 Climate	Base Mitigation with WIDP & External Buffers under 2040 Climate	P(attach) = 1 / (1)	P(exhaust) = Prior (10)	Average Profit Multiple in Layer (Page 6, Note 2)
1000	$5,469	$3,182	$2,347	$4,004	$3,644	$1,598	$5,529	$1,915	0.10%		
500	$4,446	$1,965	$1,336	$2,912	$2,145	$788	$4,844	$908	0.20%	0.10%	20.98
333	$3,487	$1,238	$767	$1,926	$980	$261	$3,957	$379	0.30%	0.20%	13.25
250	$2,202	$692	$416	$1,087	$332	$99	$2,849	$163	0.40%	0.30%	9.87
200	$1,332	$370	$206	$654	$221	$71	$2,006	$96	0.50%	0.40%	7.94
167	$756	$203	$107	$467	$179	$43	$1,224	$66	0.60%	0.50%	6.68
143	$511	$150	$80	$346	$119	$22	$765	$47	0.70%	0.60%	5.79
125	$396	$113	$56	$281	$78	$16	$565	$28	0.80%	0.70%	5.11
111	$314	$80	$42	$229	$56	$9	$431	$18	0.90%	0.80%	4.59
100	$254	$62	$32	$200	$47	$7	$362	$11	1.00%	0.90%	4.17
50	$38	$10	$9	$28	$2	$1	$65	$2	2.00%	1.00%	2.90
33	$10	$7	$6	$6	$0	$0	$13	$0	3.03%	2.00%	1.83
25	$7	$5	$5	$2	$0	$0	$9	$0	4.00%	3.03%	1.36
20	$5	$4	$4	$0	$0	$0	$6	$0	5.00%	4.00%	1.10
17	$5	$3	$3	$0	$0	$0	$5	$0	5.88%	5.00%	0.93
14	$3	$3	$2	$0	$0	$0	$4	$0	7.14%	5.88%	0.80
13	$3	$2	$1	$0	$0	$0	$4	$0	7.69%	7.14%	0.71
11	$1	$1	$1	$0	$0	$0	$3	$0	9.09%	7.69%	0.64
10	$0	$0	$0	$0	$0	$0	$2	$0	10.00%	9.09%	0.57
7	$0	$0	$0	$0	$0	$0	$0	$0	14.29%	10.00%	0.47
5	$0	$0	$0	$0	$0	$0	$0	$0	20.00%	14.29%	0.35
3	$0	$0	$0	$0	$0	$0	$0	$0	33.33%	20.00%	0.24
2	$0	$0	$0	$0	$0	$0	$0	$0	50.00%	33.33%	0.16

Town of Paradise
California Resilience Challenge Grant
California

Net Cost of Reinsurance

Return Period (Years)	(13) Baseline	(14) Base Mitigation	(15) Plus Mitigation	(16) WIDP	(17) WIDP with External Buffers	(18) Base Mitigation with WIDP & External Buffers	(19) Baseline 2040 Climate	(20) Base Mitigation with WIDP & External Buffers under 2040 Climate
	Expected Loss in Layer (Note 3)							
500	$4.96	$2.57	$1.84	$3.46	$2.89	$1.19	$5.19	$1.41
333	3.98	1.61	1.05	2.43	1.57	0.53	4.41	0.65
250	2.84	0.96	0.59	1.50	0.65	0.18	3.39	0.27
200	1.77	0.53	0.31	0.87	0.28	0.09	2.43	0.13
167	1.03	0.28	0.15	0.55	0.20	0.06	1.60	0.08
143	0.64	0.18	0.09	0.41	0.15	0.03	1.00	0.06
125	0.46	0.13	0.07	0.32	0.10	0.02	0.67	0.04
111	0.36	0.10	0.05	0.26	0.07	0.01	0.50	0.02
100	0.28	0.07	0.04	0.21	0.05	0.01	0.39	0.01
50	1.46	0.36	0.21	1.14	0.24	0.04	2.14	0.07
33	0.25	0.08	0.08	0.17	0.01	0.01	0.40	0.01
25	0.08	0.06	0.05	0.04	0.00	0.00	0.11	0.00
20	0.06	0.05	0.05	0.01	0.00	0.00	0.08	0.00
17	0.04	0.03	0.03	0.00	0.00	0.00	0.05	0.00
14	0.05	0.04	0.03	0.00	0.00	0.00	0.06	0.00
(21) Net Cost of Reinsurance ($M) (Note 4)	$20.58	$5.65	$3.17	$13.44	$3.93	$0.89	$30.98	$1.44
(22) Average Net Cost of Reinsurance-to-AAL Multiplier (Note 5)	3.2284	3.0783	2.8892	3.3712	3.5942	3.3685	3.3270	3.4017
(23) Number of Exposures (Exh 1, pg. 1)	12,165	12,165	12,165	9,280	9,280	9,280	12,165	9,280
(24) Average Net Cost of Reinsurance per exposure ($) (Note 6)	$1,691.83	$464.79	$260.36	$1,448.30	$423.33	$96.24	$2,546.47	$155.46

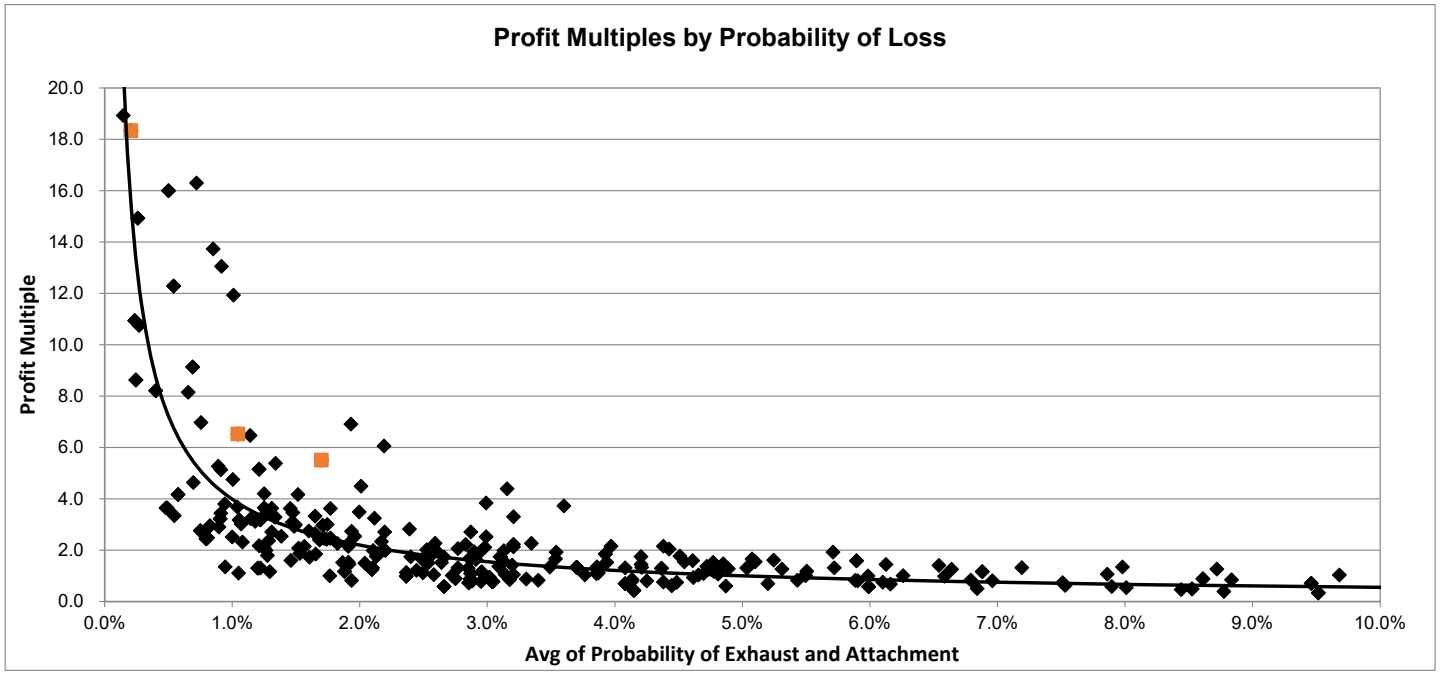
(a) Coefficient (Page 7)	0.07630
(b) Exponent (Page 7)	-0.85900
A. Integral exponent, (Page 7)	0.1410
B. Integral coefficient, (Page 7)	0.5411

Notes:
1. Data is from Exhibit 1, Page 2.
2. Column (12) = {[B x (10) ^ A] - [B x (11) ^ A.]} / [(10) - (11)].
3. Column (13) = [(10) - (11)] x Avg of [(2) and Prior (2)]. Columns (14) through (20) calculated similarly.
4. Row (21) Baseline = summation of (12) x (13) for each row from selected return periods of 20 - 200. This selection assumes insurers of Town of Paradise purchase reinsurance from a 5.00% P(attach) to a 0.5% P(exhaust). Each scenario is calculated similarly.
5. Row (22) Baseline = (21) / Total of (13) of selected return periods 20 - 200. Each scenario calculated similarly.
6. Row (24) = (21) x 1,000,000 / (23).

Town of Paradise
California Resilience Challenge Grant
California

Catastrophe Bond Profit Multiples

Based on Data from Catastrophe Bonds Issued on U.S. Exposures from 2018 to 2021



Notes:

1. Data based on cat bonds issued from April 1, 2018 to March 31, 2021, from Lane Financial LLC, Annual Securitization Reviews.
2. Includes all bonds covering U.S. exposures with a probability of loss between 0.02% and 24.0%; excludes bonds with no stated profit multiples
   Orange points represent wildfire cat bonds SD Re Ltd. (Series 2020-1), SD Re Ltd. (Series 2018-1), and Cal Phoenix Re Ltd. (series 2018-1).
3. The equation of the fitted curve is $y = 0.0763\ x^{-0.859}$.
4. The equation to determine average Profit Multiple over specific interval: Avg PM = ${}^{a}\int_{b}\ 0.0763\ x^{-0.859} dx$ / (b-a).
   Evaluated from a to b, the integral equals $0.541135\ b^{0.141} - 0.541135\ a^{0.141}$ / (b-a).

Integrated Climate Adaptation & Resiliency Program
(ICARP)

Regional Resilience Grant Program

Round 1 Draft Guidelines

General Overview Workshop | January 24, 2023

Workshop Goals & Overview

- Program Background
- Timeline
- Engagement Summary
- Draft Guideline Review
- Q & A

Guideline Workshops & Public Comment Period

- 1/24 - General (Workshop Series Start)
- 1/27 - Technical Advisory Council Meeting
- 1/30 - Bay Area & Central Coast
- 2/7 - Los Angeles, San Diego, Inland Desert
- 2/16 - Inland North, North Coast & Sierra Regions
- 2/22 - Sacramento & San Joaquin Valley
- 2/22 - Tribal Governments and Communities

Completed In Progress To Be Completed

How to Submit Public Comment

Public comment period ends **March 3rd at 5 pm, PST**

- Attend a public workshop
- Email icarp.grants@opr.ca.gov

Background & Goals

- ✓ Support **local, regional, and tribal** entities' regional-scale climate resilience solutions.
- ✓ Invest in three major activities: **capacity-building**, **planning**, and **project implementation**.
- ✓ **Round 1:** $21.3 M total, at least $12.5M for planning activities

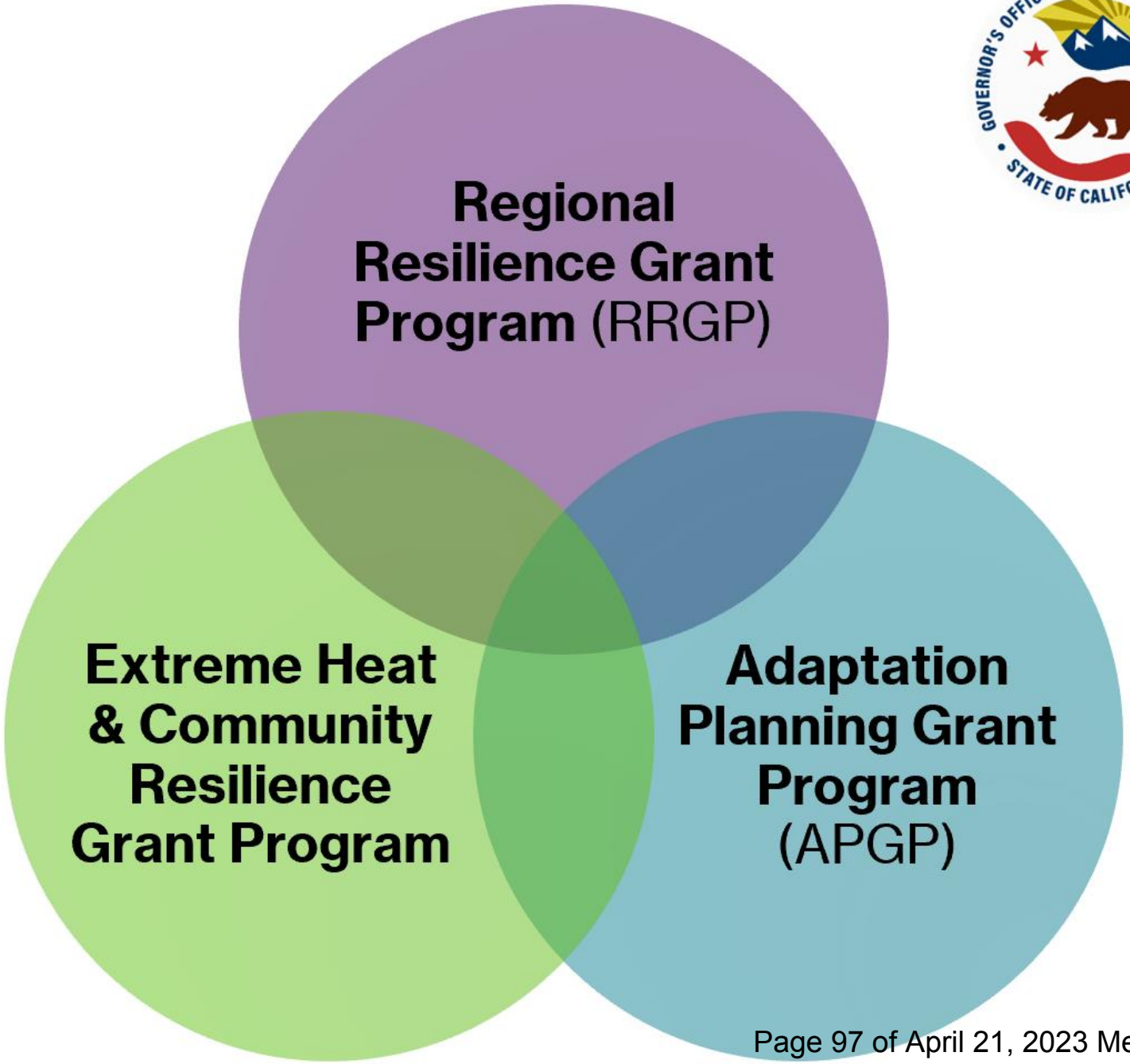
Resilience vs. Adaptation

Climate Resilience: the capacity of any entity to prepare for disruptions, recover from shocks and stresses, and adapt and grow from a disruption.

Climate Adaptation: when natural or human systems adjust to a new or changing environment

Context:

New ICARP Grant Programs



Key Program Priorities

- Fund **regional projects**
- Align projects with **ICARP priorities** to reduce climate risks
- Address the **greatest climate risks** in each region
- Support **vulnerable communities**

Anticipated Impacts of the RRGP

- Achieve a vision of collaborative resilience projects that reduce climate impacts in the near and long term
  - New and existing collaboration
  - Integrating local and traditional or tribal ecological knowledge
- Support the full life cycle of regional resilience projects through planning and implementation phases
  - Projects build capacity, focus on vulnerable communities, and support equitable outcomes

Tentative Timeline

Listening Sessions
Summer 2022

Draft Guidelines Public Comment & Guidelines Workshops
January – March 2023

Solicitation Release & TA Workshops
May – July 2023

Awards
Fall 2023

Completed In Progress To Be Completed

Feedback to Date

140 Organizations Engaged

Summer 2022 Engagement Included:

- ✓ Public listening sessions
- ✓ Interviews
- ✓ Online survey

RRGP Feedback Summary

1. **Provide flexibility in defining regions.**

   Allow self-identified regions.

2. **Fund sustainable staffing and strategic partnerships to build capacity.**

   Support staffing capacity to ensure multi-scale collaboration and prioritize vulnerable communities.

3. **Streamline and simplify the grant application and reporting processes.**

   Provide technical assistance and align with existing grant programs.

Regional Focus

1. **Regional Definition**
   - Regions may be self-defined.
   - Regions should share natural and built environment systems and climate risks.
2. **Regional Partnership**
   - Regional partnerships required
   - Multi-stakeholder partnerships with two or more parties involved.
3. **Regional Diversity**
   - Fund at least one project from each of the California Climate Adaptation Strategy geographic regions.

Applicants

Eligible Applicants

- Public Entities
- California Native American Tribes
- Community-Based Organizations (CBOs)

Co-Applicants and Partnership

- At least one lead applicant with one co-applicant
- At least one applicant should be a public entity or a California Native American Tribe
- Public entities with projects targeting vulnerable communities should partner with at least one CBO.

Priority Communities & Set Asides

- At least **25%** to projects that serve disadvantaged communities
- At least **10%** to projects that serve California Native American Tribes
- At least **one project** from each of the **nine geographic regions** defined by the California Climate Adaptation Strategy
- Fund at least **2 projects** to establish **tribal** and **rural** regional partnerships

Application Technical Assistance

RRGP Staff will provide technical assistance through:

- Online **application workshops**
- Online **office hours**
- **Information sharing** to foster potential collaboration
- Posting **frequently asked questions**

Online Application Workshops:

- **2** general workshops
- **3** targeted workshops:
  1. Tribal Governments
  2. Inland Desert & San Joaquin Valley
  3. North Coast, Inland North & The Sierra

Activities

Eligible

- Activities should have a regional focus and align with one of the RRGP Goals
- Stronger projects will also be consistent with at least one climate-related state plan

Ineligible

- Legislative lobbying and lawsuits
- Environmental studies, plans, or documents normally required for project development under the California Environmental Quality Act (CEQA) or National Environmental Policy Act (NEPA)

Examples of Eligible Activities

Planning

- Regional-scale vulnerability assessment
- Collaborate with a CBO to form a regional climate collaborative
- Align plans within a region for one or more hazards
- Collaborate with a CBO on a regional community education initiative

Implementation

- Implement planning documents in partnership with a CBO or California Native American Tribe
- Implement hazard-specific projects
- Implement a multi-hazard project with a CBO or California Native American Tribe

Note: This list is not exhaustive. More examples available in program guidelines.

Application Process

1. Intent to Apply Survey

- **Purpose**:
  - Evaluate applicant eligibility and potential for regional collaboration
  - Direct resources for technical support or other funding opportunities
- Will be available **online** prior to the release of application and solicitation
- Prospective applicants should fill out, to the best of their ability, details about the project and applicants

Application Process

2. Application Submission

- **Competitive** process
- **Virtual** application submission through SharePoint Grants Portal
- **Application question**s align with topical areas in the Scoring Criteria
- **Additional documentation**:
  - Budget
  - Work Plan
  - Community Engagement Plan
  - Letters of support from vulnerable communities the project supports

Scoring Criteria (100 points possible)

1. **Program Goals & Description** 10 points
2. **Consistency with the RRGP, State Priorities, & Local Plans** 15 points
3. **Community Need & Priorities** 20 points
4. **Climate Risks & Co-Benefits** 15 points
5. **Regional Partnership** 15 points
6. **Organizational Capacity** 10 points
7. **Budget** 15 points

Program Expectations

Action Plan

- Developed at the beginning of the grant term
- Identifies key activities, member roles and responsibilities, and timelines
- Builds on Work Plan and community partnership plan
- Guides implementation and holds partners accountable

Evaluation

- Progress reports
- Regular check-ins

Eligible Costs

Ensure that costs proposed in the project budget are eligible for funding (vary for planning and implementation projects).

Examples Include:

- Staff Costs
- Program Meetings/Workshop Attendance
- Travel Costs
- Language Access
- Evaluation Activities
- Administrative Costs
- Engagement, Outreach, Education and Training

Next Steps

- Review the Draft Guidelines
- Attend a regional session or email icarp.grants@opr.ca.gov to submit public comments before **March 3rd at 5:00 pm**

Final Guidelines and Application/Solicitation Release	April 26, 2023
Application Help/Technical Assistance (TA) Webinars	April 26, 2023 – July 19, 2023
Deadline to Submit Applications	July 19, 2023, 5pm

Other Relevant Grant Opportunities

OPR & SGC Programs:

- Adaptation Planning Grant Program (OPR)
- Tribal Research Grant Program (OPR/CEC)
- Community Resilience Centers Grant Program (SGC)
- Regional Climate Collaboratives (SGC)
- Transforming Climate Communities (SGC)

Other State Programs:

- Regional Forest and Fire Capacity Program (DOC)
- Forest Health Grants (CALFIRE)
- Local Coastal Program Grants (CCC)
- Sustainable Groundwater Management Grant Program (DWR)
- California Department of Fish and Wildlife Grant Programs (CDFW)

Related ICARP Initiatives

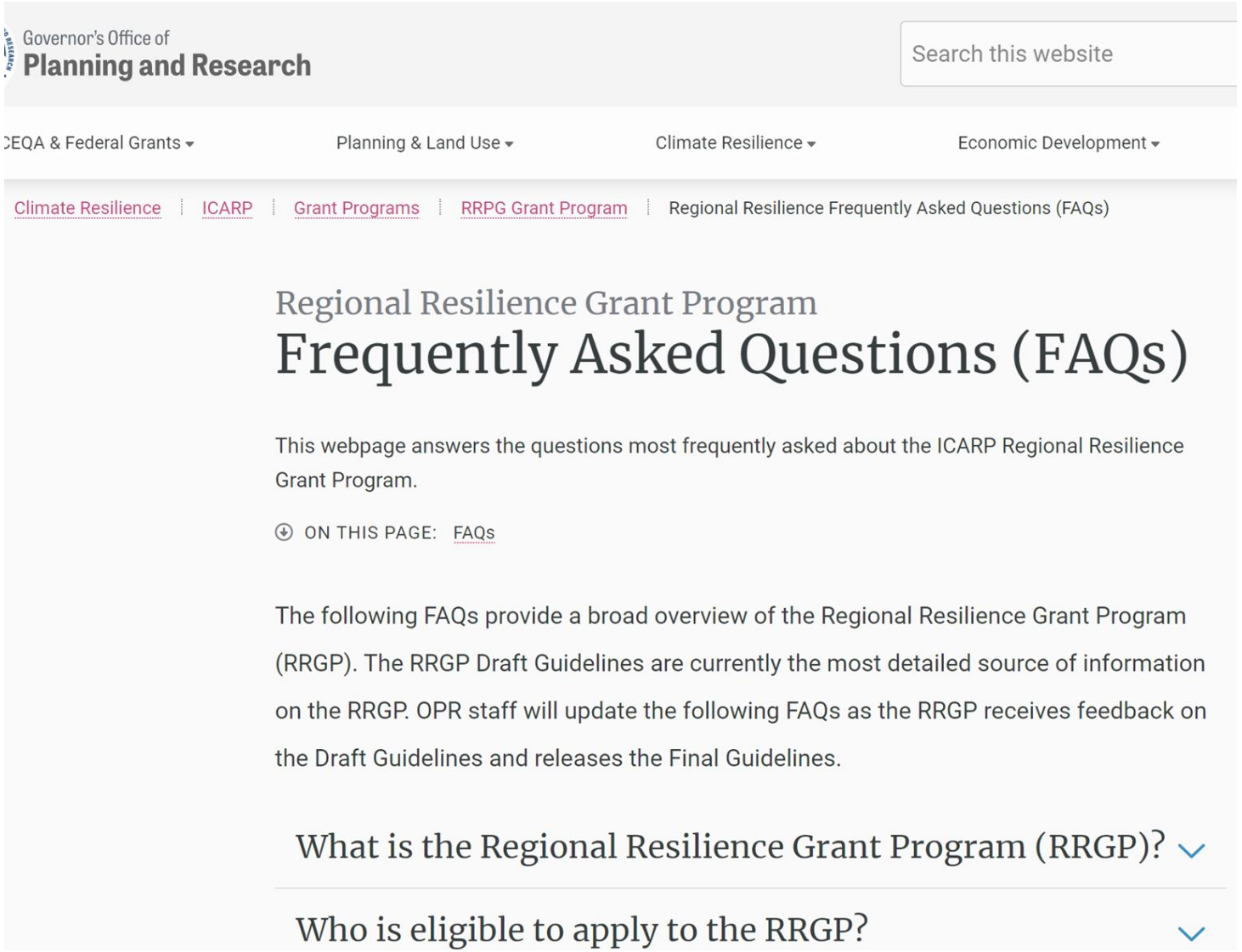
Grant Programs:

- ICARP Adaptation Planning Grant Program
- Tribal Research Grant Program

Resources

- Adaptation Clearinghouse
- CalAdapt

→ *Sign up for the monthly ICARP Newsletter for updates*



RRGP FAQs

Answers to Frequently Asked Questions are available on our website.

Thank You!

Sign up for the Regional Resilience Grant Program Listserv for updates.

Dolores Barajas
Program Manager

Kristyn Vega-Payne
Associate Planner

Lauren Marsiglia
Senior Planner

Kate Lyons
Assistant Planner

WORKSHOP OPPORUNITY
Innovative Agricultural Communication

Calling all agricultural voices who want to communicate more effectively about farming and food!

Join us for a 1.5-day workshop, conducted by FrameWorks Institute and The Farming and Food Narrative Project, to **learn and practice** using exciting **new communication tools** for more productive conversations about farming practices.

For more information on the project and its resources, see our website:

https://www.farmingandfoodnarrative.org/western-sare

Workshop 1—Oregon

When: Tuesday, July 11, 1 p.m. - Wednesday, July 12, 4 p.m.

Where: Best Western Agate Beach, Newport, OR

Workshop 2—California

When: Tuesday, July 18, 1 p.m. - Wednesday, July 19, 4 p.m.

Where: Asilomar Conference Center, Pacific Grove, CA

Cost of registration: $100.00
Includes 1-night lodging and meals

For financial assistance please contact: kgosch@redtomato.org

Application: Workshop space is limited, please apply by May 15.
Scan below or click here.

Oregon State University

UC IPM

UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

WESTERN SARE
Sustainable Agriculture Research & Education

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