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.

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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

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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

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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.

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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

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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.

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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.

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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.

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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.

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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

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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).

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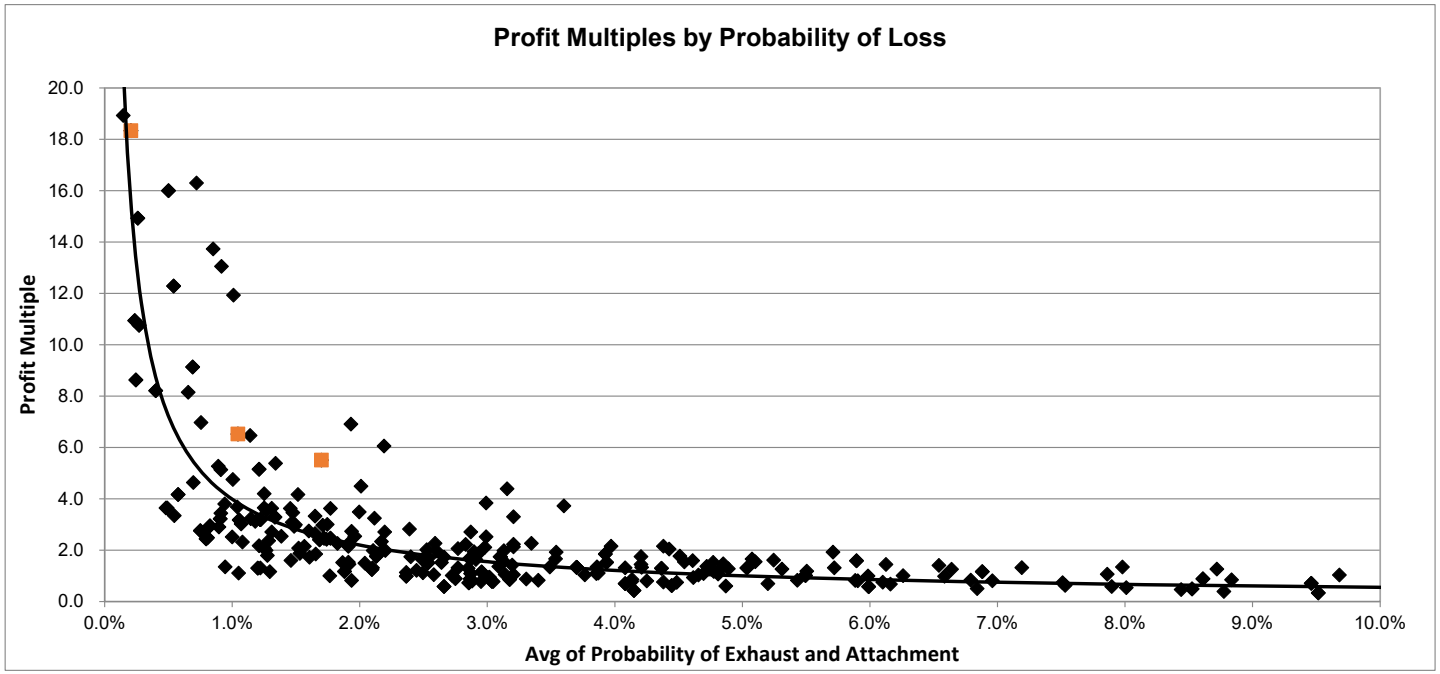
Catastrophe Bond Profit Multiples

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).