

Prepared for:  
**Florida Hurricane Catastrophe Fund**



# 2019 Ratemaking Formula Report

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March 19, 2019

# 2019 Ratemaking Formula Report Agenda

- 1. What's New?**
- 2. Overall Indications**
- 3. Ratemaking Overview**
- 4. Premium, Rates and Coverage**
- 5. Other Topics of Interest**
- 6. Recap**
- 7. Questions**



# 1. What's New?

# 2019 Ratemaking Formula Report

## What's New?

- **Projected Average Coverage Selection Increase**
  - 73.483% in 2018, 81.629% in 2019
- **FHCF Layer Decrease**
  - \$23.1 B in 2018, \$20.8 B in 2019
- **Modeled Exposure Trend Increase**
  - 2.83% in 2018, 3.72% in 2019
- **Exposure Trend Methodology Change**
  - Increased allocation to new construction
- **Pre-Event Note Expense Decrease**
  - \$27.7 Million in 2018, \$26.1 Million in 2019
  - Reduction from \$2.20 B to \$1.65 B Outstanding

# 2019 Ratemaking Formula Report

## Detour: Avg. Rate vs. Overall Avg. Rate

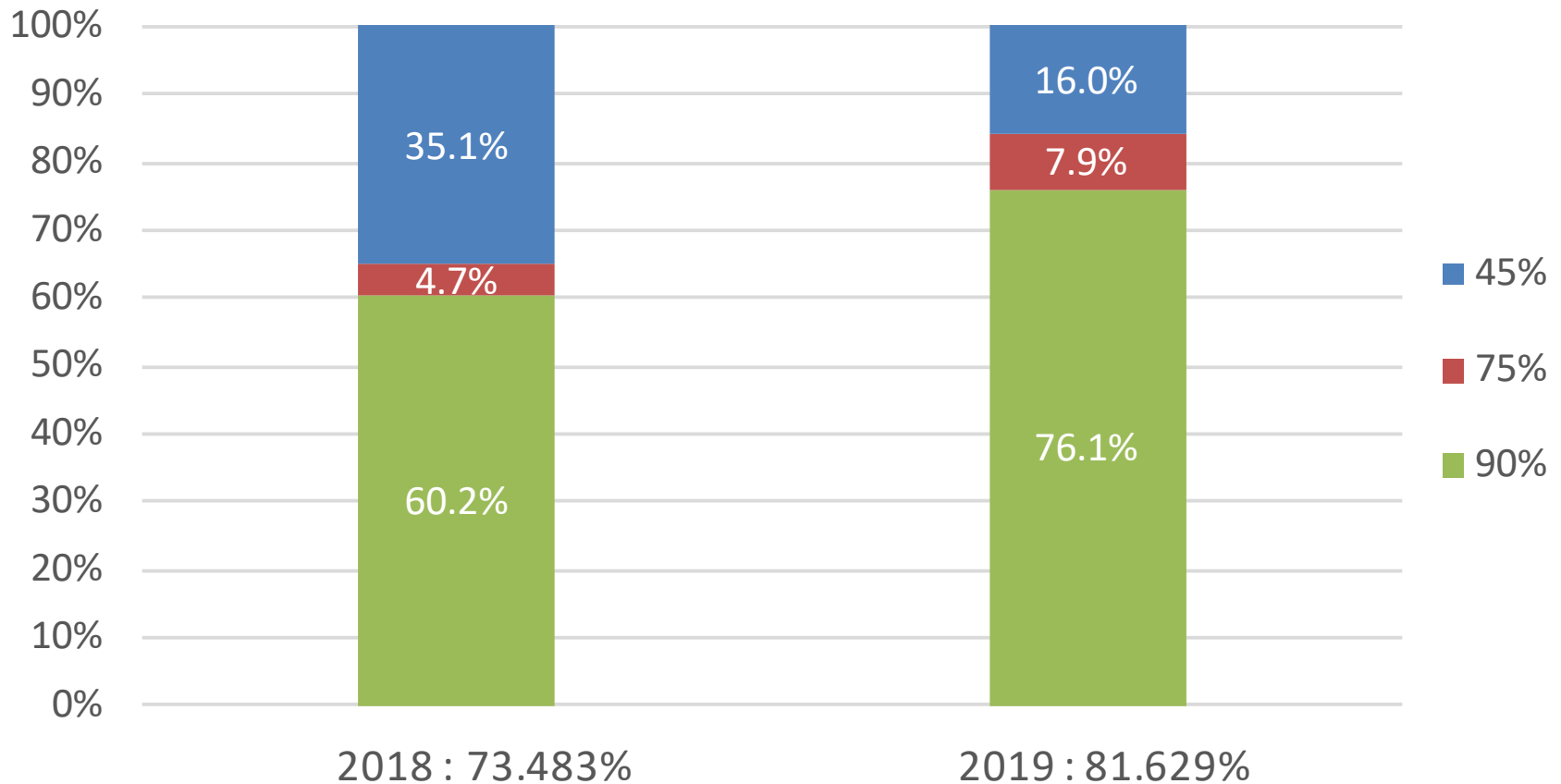


	Original Price and Distribution			Rate Change/Car (Avg. Change) -7.0%			Reduced Price, Original Distribution			Reduced Price, New Distribution		
	Ave Price/car	# of Cars	Total Cost	Ave Price/car	# of Cars	Total Cost	Ave Price/car	# of Cars	Total Cost	Ave Price/car	# of Cars	Total Cost
Corolla	\$18,700	4	\$74,800	\$17,391	4	\$69,564	\$17,391	2	\$34,782	\$17,391	2	\$34,782
Lexus nx	\$36,485	6	\$218,910	\$33,931	6	\$203,586	\$33,931	8	\$271,448	\$33,931	8	\$271,448
Fleet	\$29,371	10	\$293,710	\$27,315	10	\$273,150	\$30,623	10	\$306,230	\$30,623	10	\$306,230
Fleet Change (Overall Avg. Change)				-7.0%			-7.0%			4.3%		
Impact of Mix Change										12.1%		

# 2019 Ratemaking Formula Report

## What's New? : Shift to Higher Coverage Percentage

### Coverage Selection Distributions by Year



# 2019 Ratemaking Formula Report

## What's New? : Smaller Slices for Everyone





## 2. Overall Indications



# 2019 Ratemaking Formula Report

## Overall Indications

### FHCF Reimbursement Premium, Exposure, Coverage, and Rate

	Premium (\$ Billions)	Exposure (\$ Billions)	Overall Avg. Rate (per \$1,000)	Company Selected Coverage %	Avg. Rate 90% (per \$1,000)
2018 Actual	\$1.103	2,275.2	0.4848	73.483%	0.5937
2019 Projected	\$1.176	2,359.8	0.4985	81.629%	0.5496
% Change	6.66%	3.72%	2.83%	11.08%	-7.43%

# 2019 Ratemaking Formula Report

## Overall Indications

### Premium, Exposure, Coverage and Rate Changes by Type of Business

Type of Business	Premium	Exposure	Overall Avg. Rate	Company Selected Coverage %	Average Rate Unadjusted for Coverage Change
Residential	7.17%	4.00%	3.05%	9.02%	-5.47%
Tenants	-0.69%	4.00%	-4.50%	0.26%	-4.75%
Condos	4.27%	5.00%	-0.69%	3.90%	-4.42%
Mobile Home	-3.30%	0.00%	-3.30%	0.76%	-4.03%
Commercial	9.16%	0.00%	9.16%	44.16%	-24.28%
<b>Total</b>	<b>6.66%</b>	<b>3.72%</b>	<b>2.83%</b>	<b>11.08%</b>	<b>-7.43%</b>

# 2019 Ratemaking Formula Report

## Overall Indications

### Rate On Line Changes

LIMIT (FHCF)		2018	FHCF Layer		Change
			2018	2019	
\$17,000,000,000	Modeled	6.53%	6.92%	6.04%	
\$17,000,000,000	Actual 2018	6.49%	6.92%	6.66%	

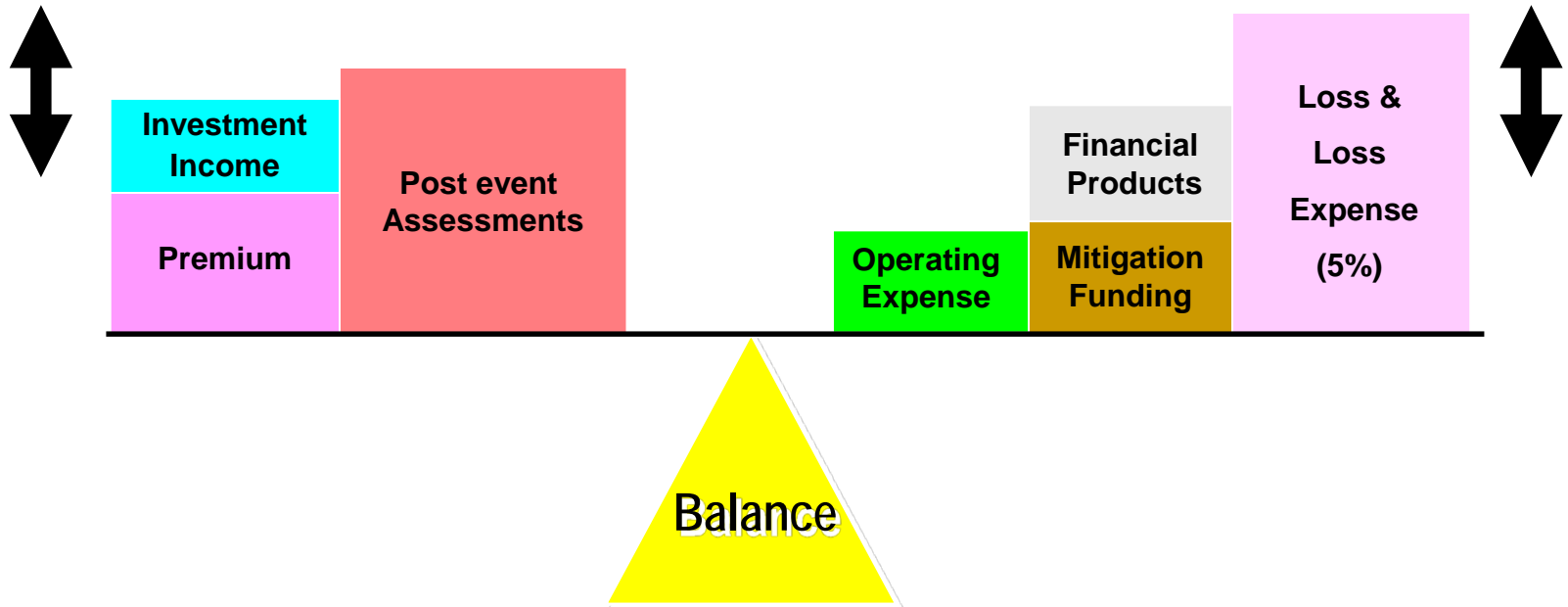


## 3. Ratemaking Overview

# 2019 Ratemaking Formula Report

## Ratemaking Overview

### Where Does the FHCF Get Its Funds? Where Do They Go?



**Premiums are derived from the Ratemaking Formula**

# 2019 Ratemaking Formula Report

## Ratemaking Overview

- 1. Trend 6/30 Prior Year Exposure Data & Send Modelers**
- 2. Combine Results for Industry Excess Loss Costs**
- 3. Add Allocated Loss Adjustment Expense allowance (5%)**
- 4. Misc. Technical Adjustments**
  - Retention & limit
  - Law & ordinance
  - Aggregate wind deductible adjustment

# 2019 Ratemaking Formula Report

## Ratemaking Overview

### 5. Fixed Loadings

- Operating expenses
- **Pre-event notes expenses**

### 6. Allocation to Classes

- Type of business, **territory**, construction, deductible
- Re-adjust coverage % for territory changes

# 2019 Ratemaking Formula Report

## Ratemaking Overview

### **7. Rating Classifications for Mitigation**

- **Year built**
- **Structure opening protection**
- **Roof shape**

### **8. Apply Cash Build-up Factor**

### **9. Variable Loadings**

- **Reinsurance**





## 4. Premium, Rates and Coverage

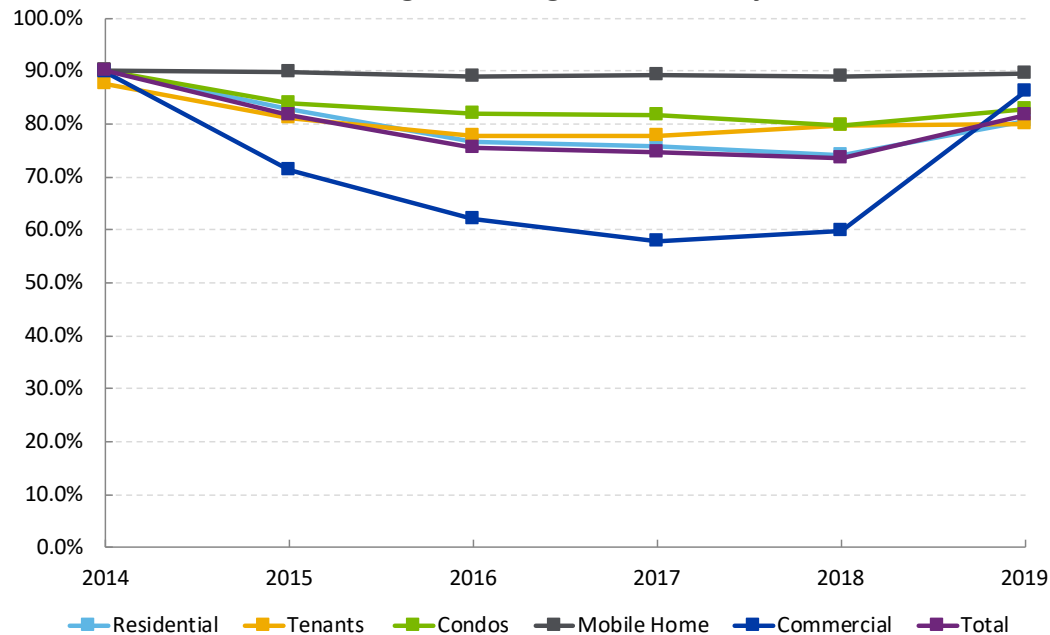
# 2019 Ratemaking Formula Report

## Coverage Selection Change by Type of Business

FHCF Coverage Selection Change by Type of Business

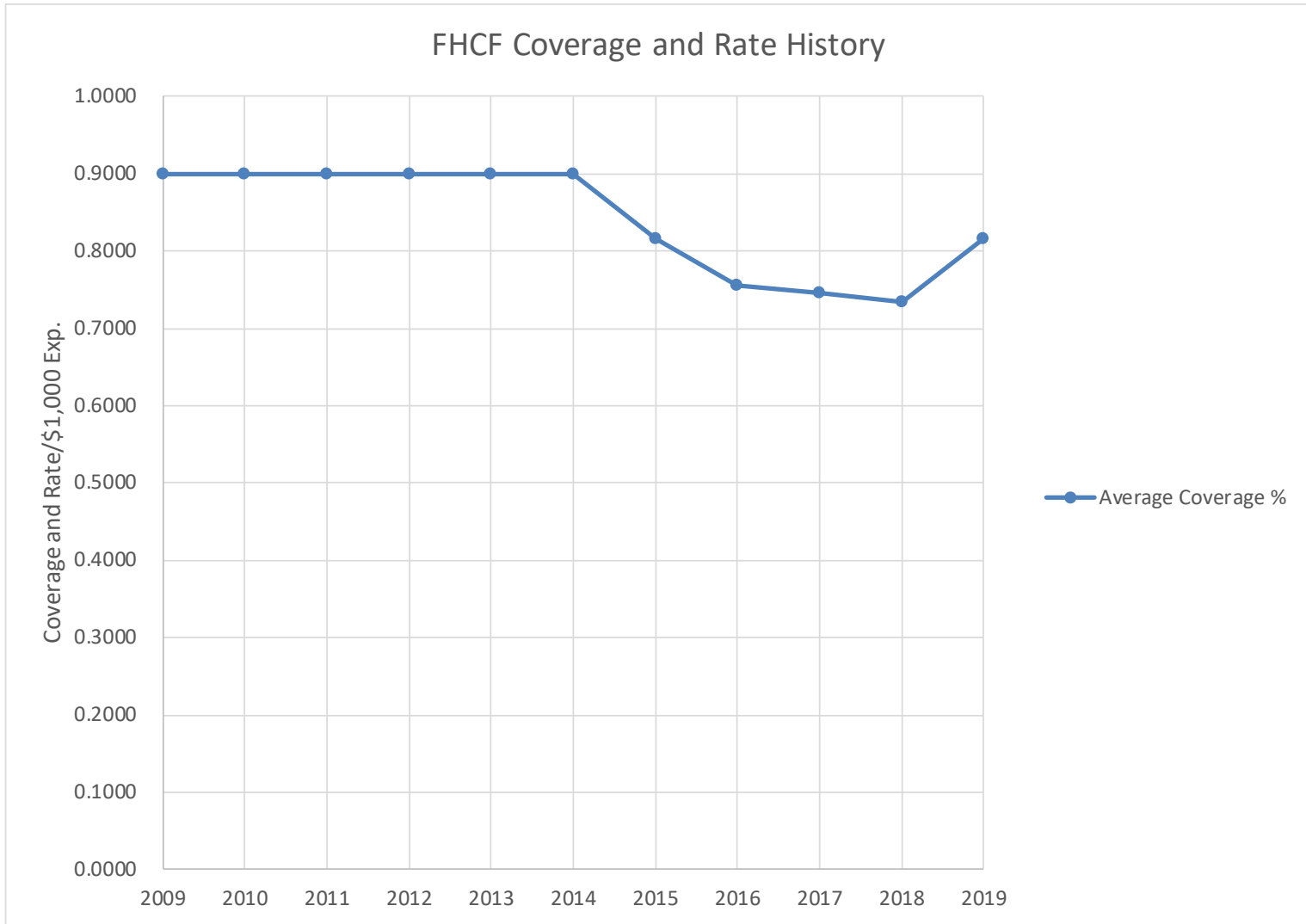
		Residential	Tenants	Condos	Mobile Home	Commercial	Total
Actual	2014	90.0%	87.5%	90.0%	90.0%	89.8%	89.9%
Actual	2015	82.7%	81.1%	84.0%	89.7%	71.4%	81.6%
Actual	2016	76.7%	77.7%	81.8%	88.9%	61.9%	75.5%
Actual	2017	75.6%	77.8%	81.6%	89.1%	57.8%	74.5%
Actual	2018	74.0%	79.6%	79.7%	88.9%	59.8%	73.5%
Projected	2019	80.7%	79.9%	82.8%	89.6%	86.2%	81.6%
Projected 2019/Actual 2018		9.02%	0.26%	3.90%	0.76%	44.16%	11.08%

FHCF Average Coverage Selection by Year



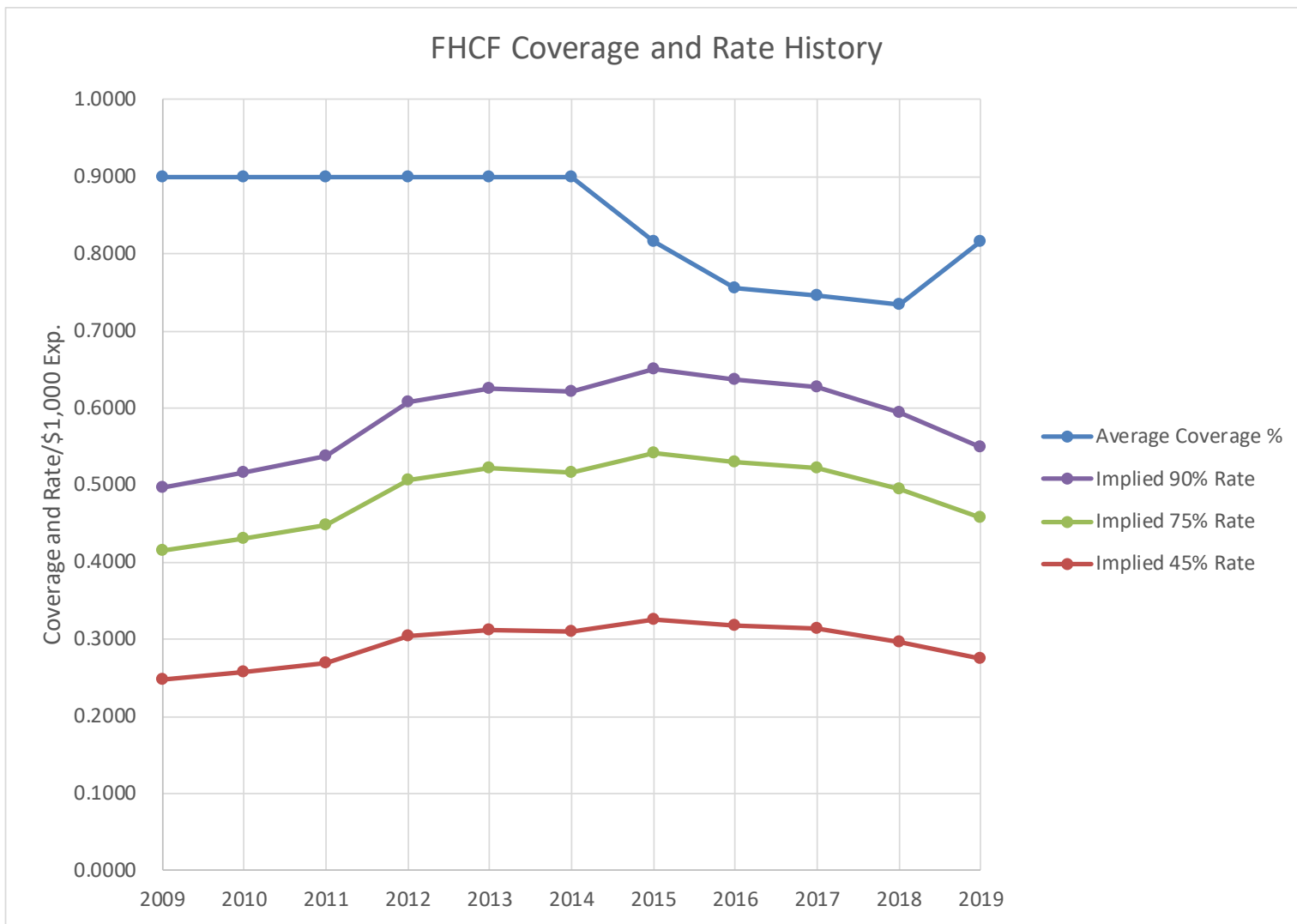
# 2019 Ratemaking Formula Report

## Coverage Change and Rates



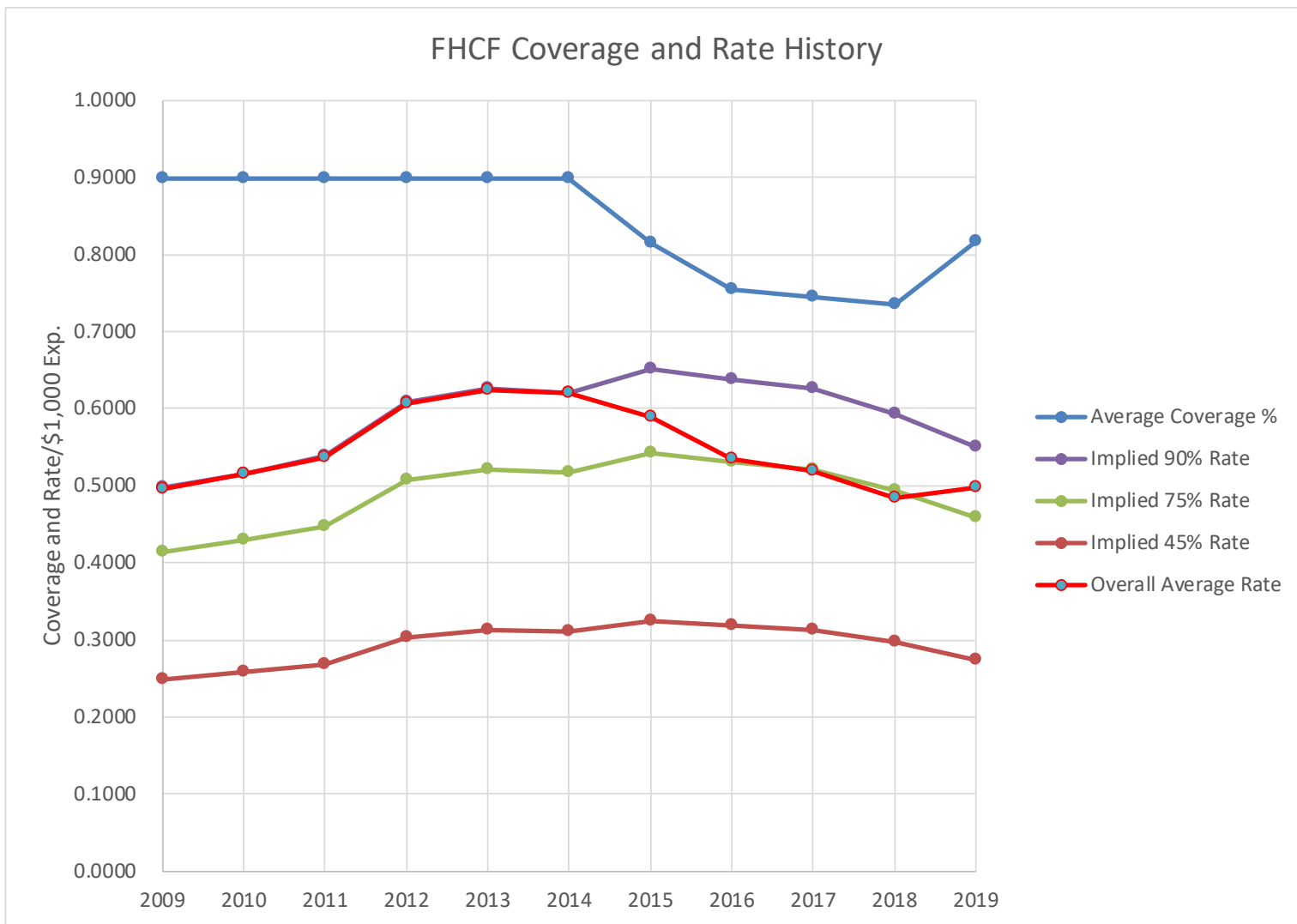
# 2019 Ratemaking Formula Report

## Coverage Change and Rates



# 2019 Ratemaking Formula Report

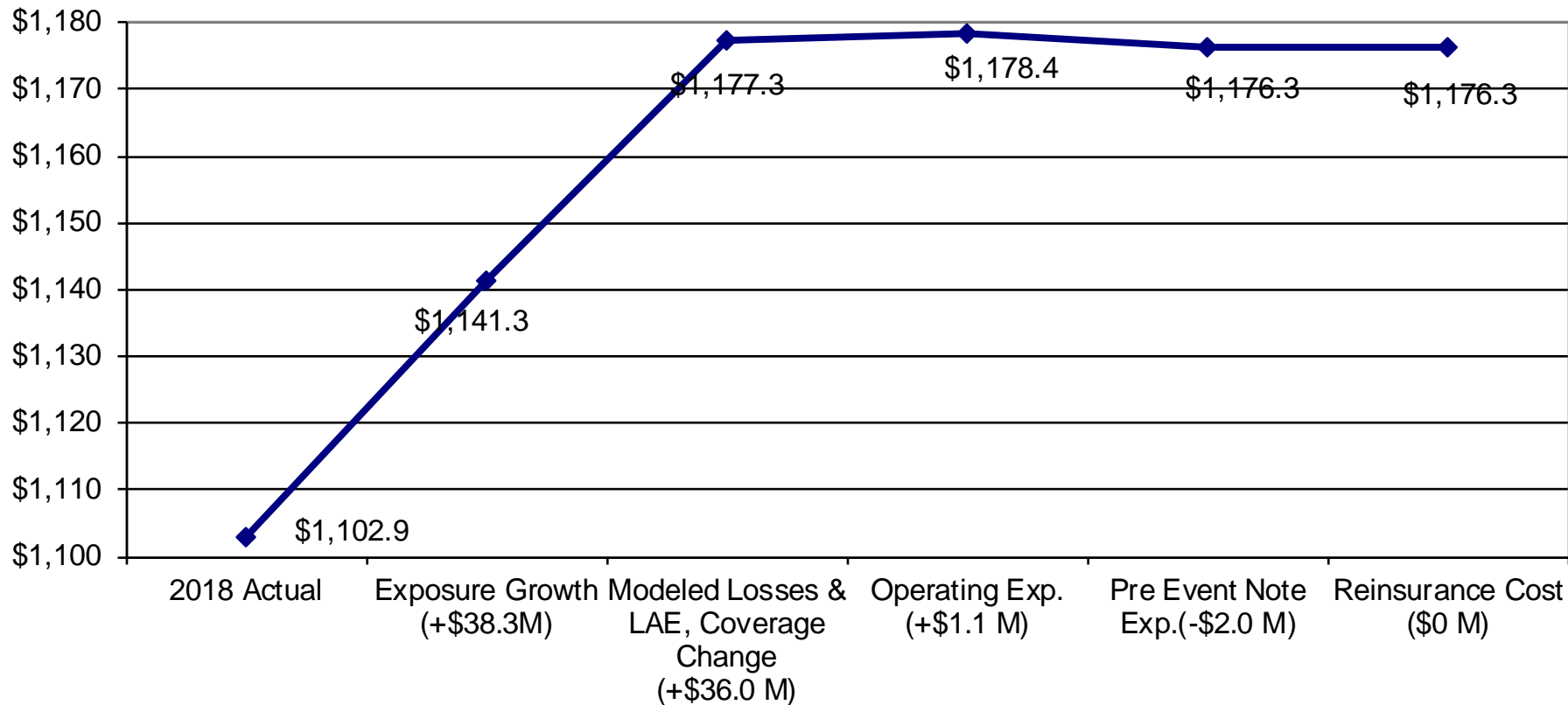
## Coverage Change and Rates



# 2019 Ratemaking Formula Report

## Premium, Rates and Coverage

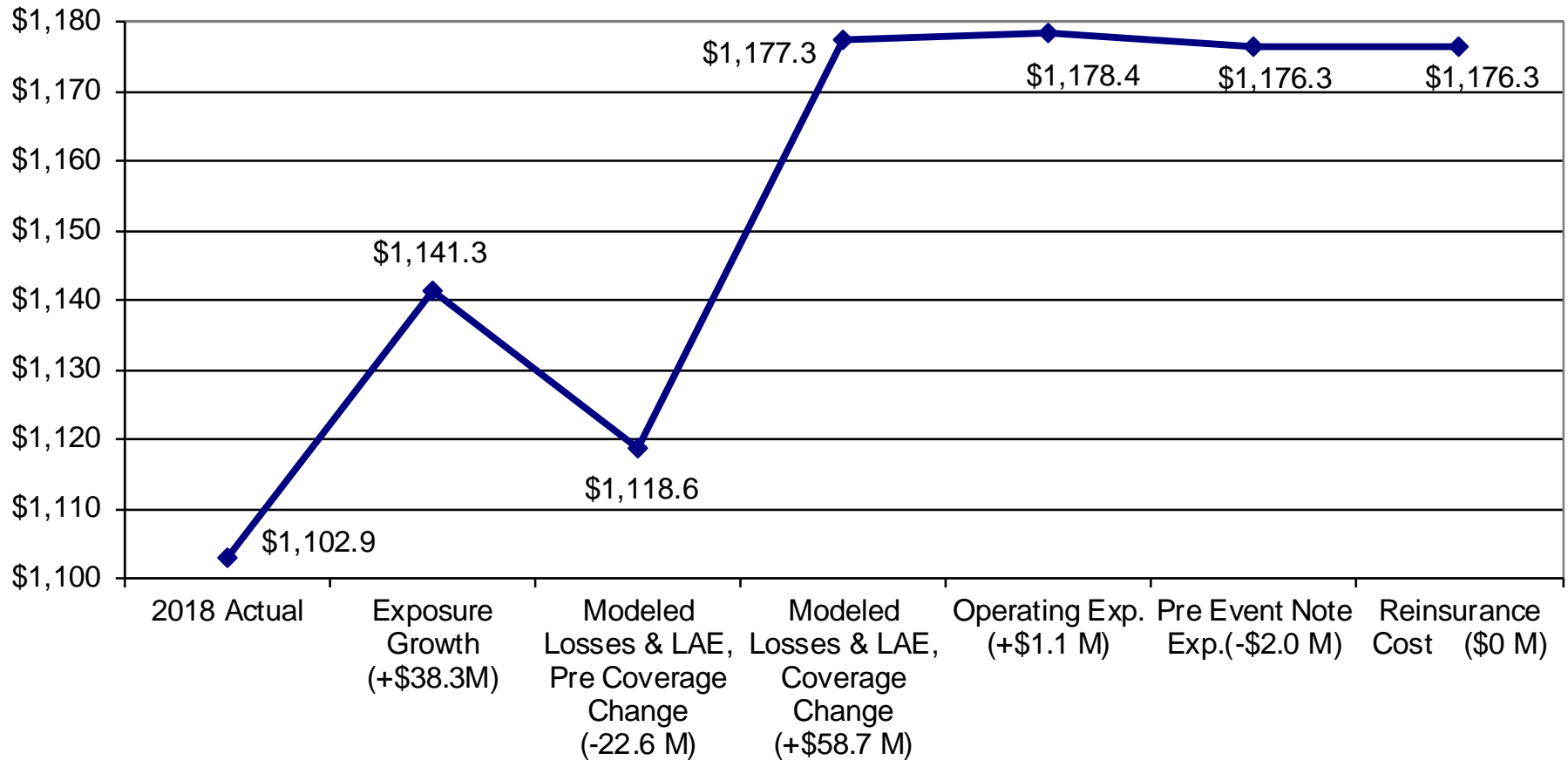
**Components of 2019 Premium Change +6.66%**



# 2019 Ratemaking Formula Report

## Premium, Rates and Coverage

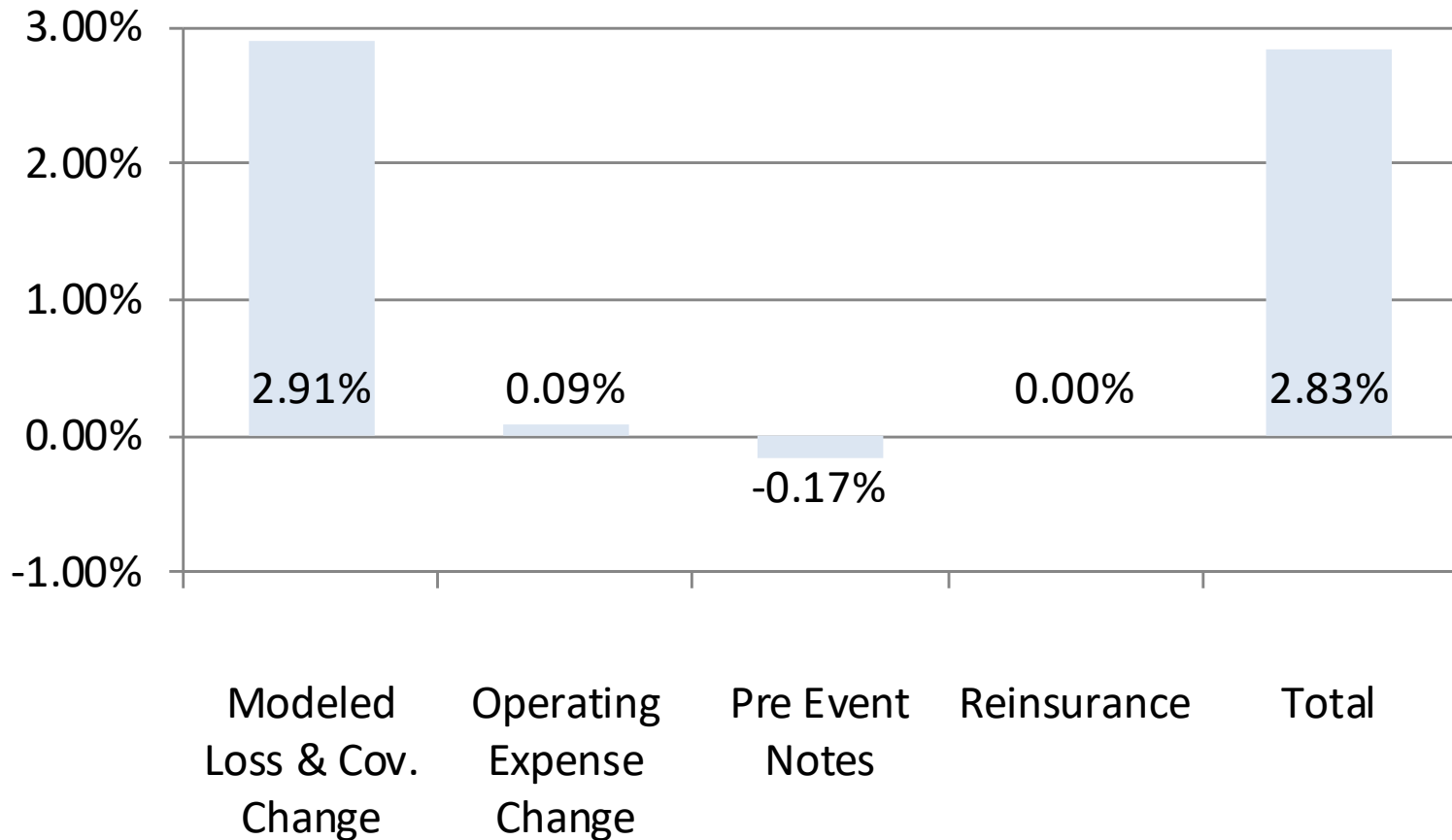
**Components of 2019 Premium Change +6.66%**



# 2019 Ratemaking Formula Report

## Premium, Rates and Coverage

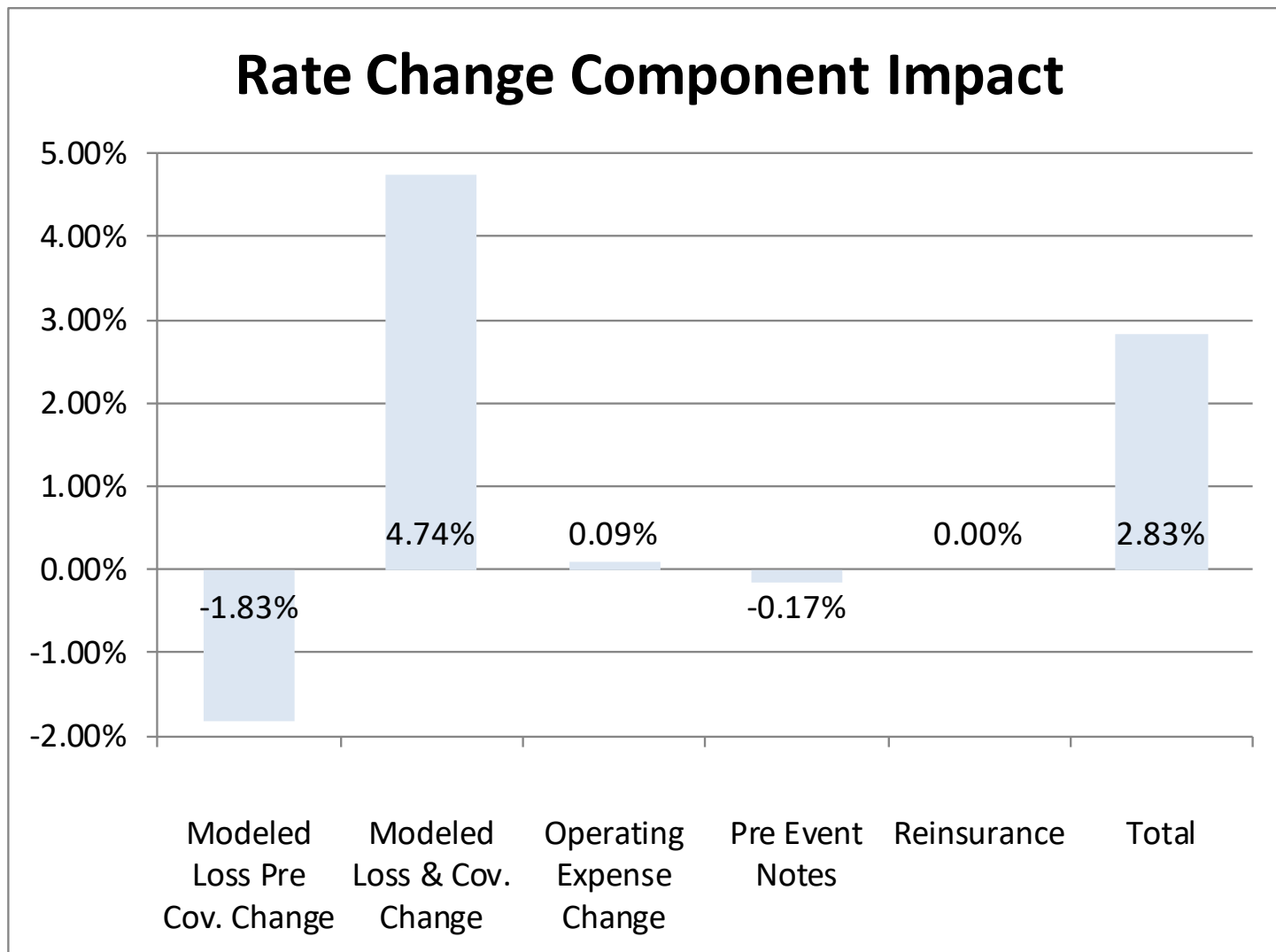
### Rate Change Component Impact





# 2019 Ratemaking Formula Report

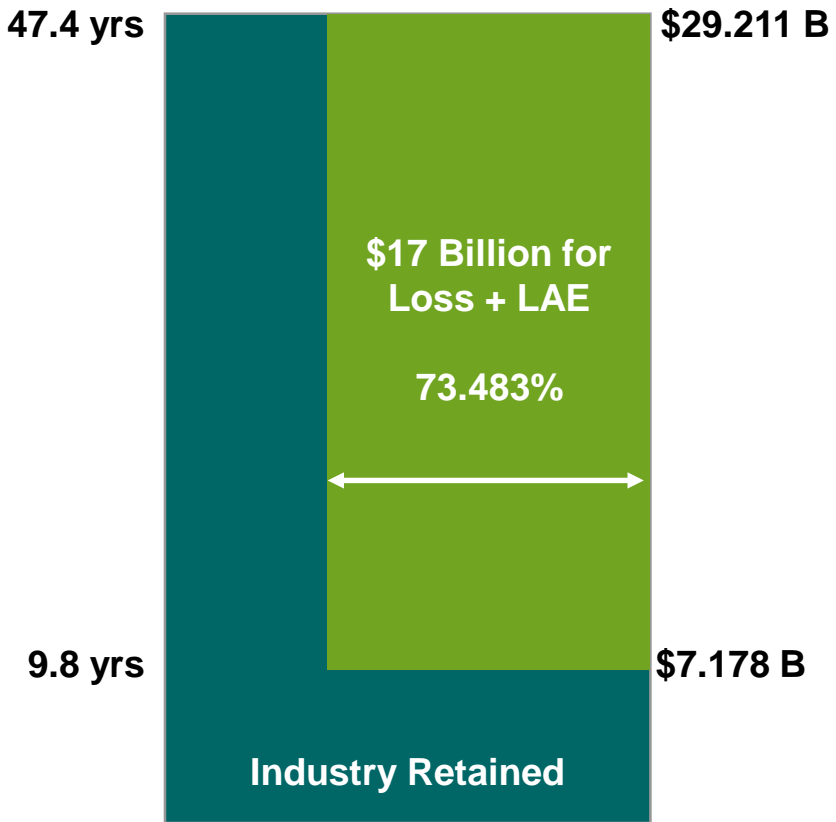
## Premium, Rates and Coverage



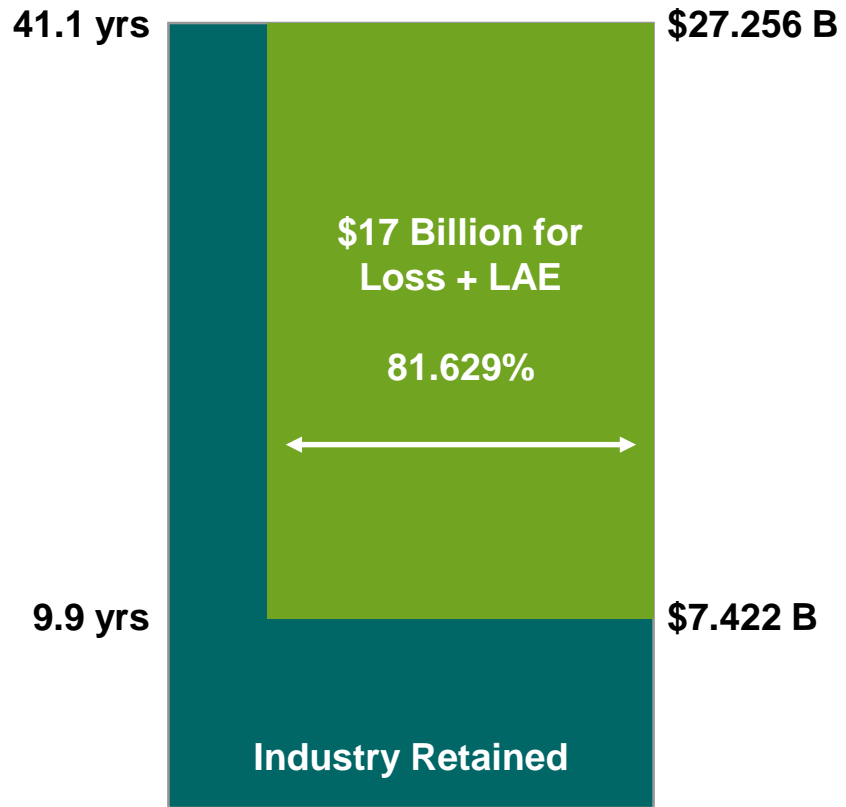
# 2019 Ratemaking Formula Report

## The Covered Layer

**2018 Actual**



**2019 Projected**



# 2019 Ratemaking Formula Report

## Coverage

	2018 Actual	2019 Proposed
<b>FHCF Retention</b>	\$7.178 B	\$7.422 B
<b>FHCF Limit</b>	\$ 17.000 B	\$ 17.000 B
<b>FHCF Premium</b>	\$1.103 B	\$1.176 B
<b>Coverage</b>	73.483%	81.629%
<b>Payout Multiple</b>	15.4136 *	14.4518

### Retention Multiples for FHCF Coverage Selections

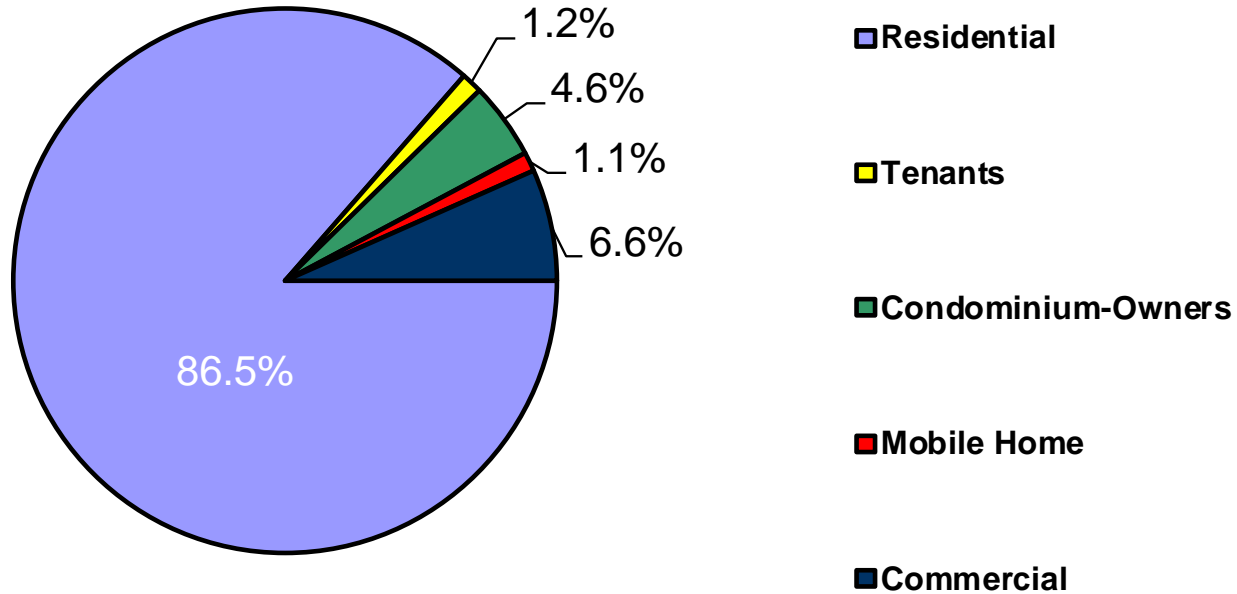
<b>90%</b>	5.3135	5.7226
<b>75%</b>	6.3762	6.8671
<b>45%</b>	10.6270	11.4452

\*Payout multiple based on 12/31/2018 premium of \$1.103 B

# 2019 Ratemaking Formula Report

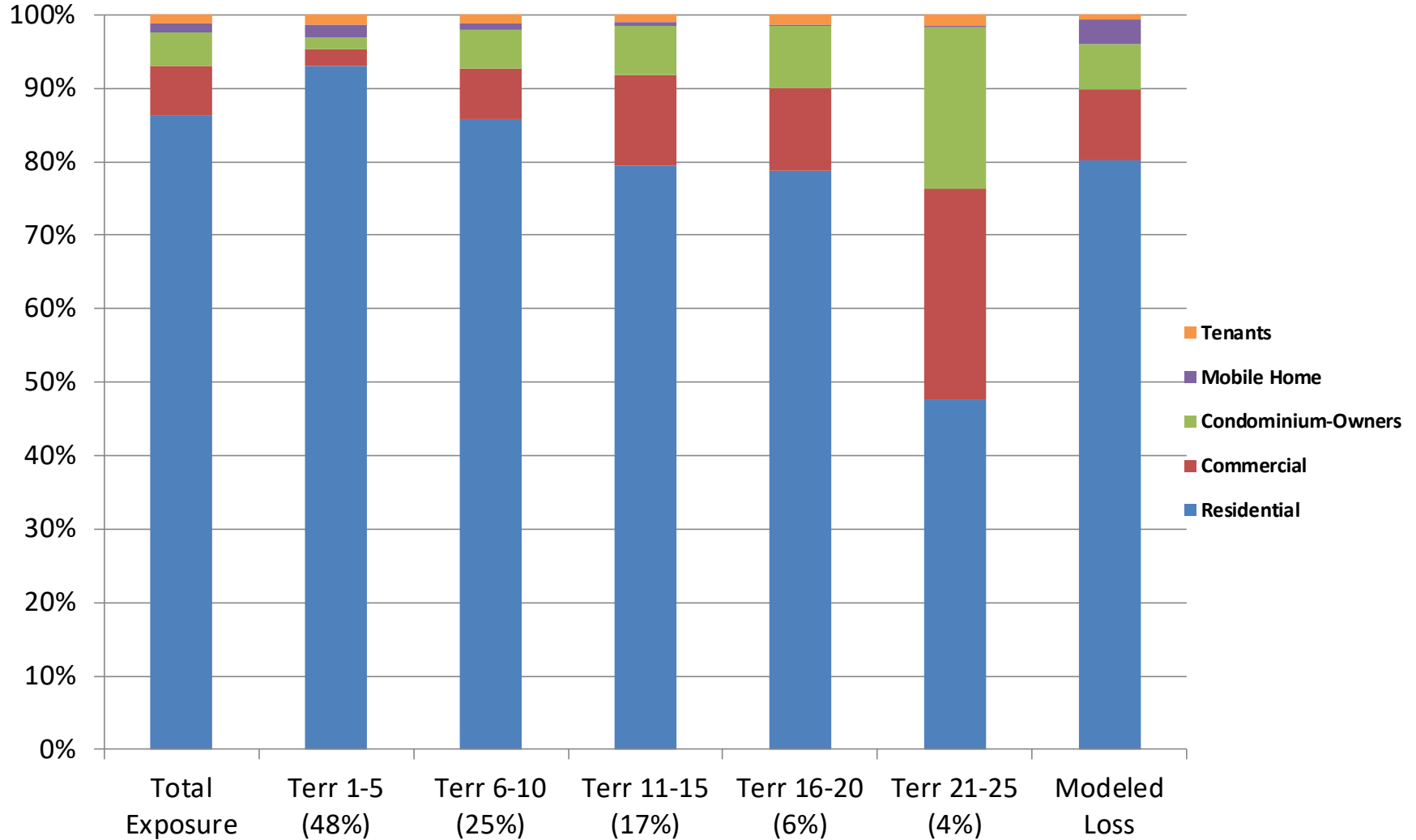
## Exposure by Type of Business

### 2019 Exposure Distribution



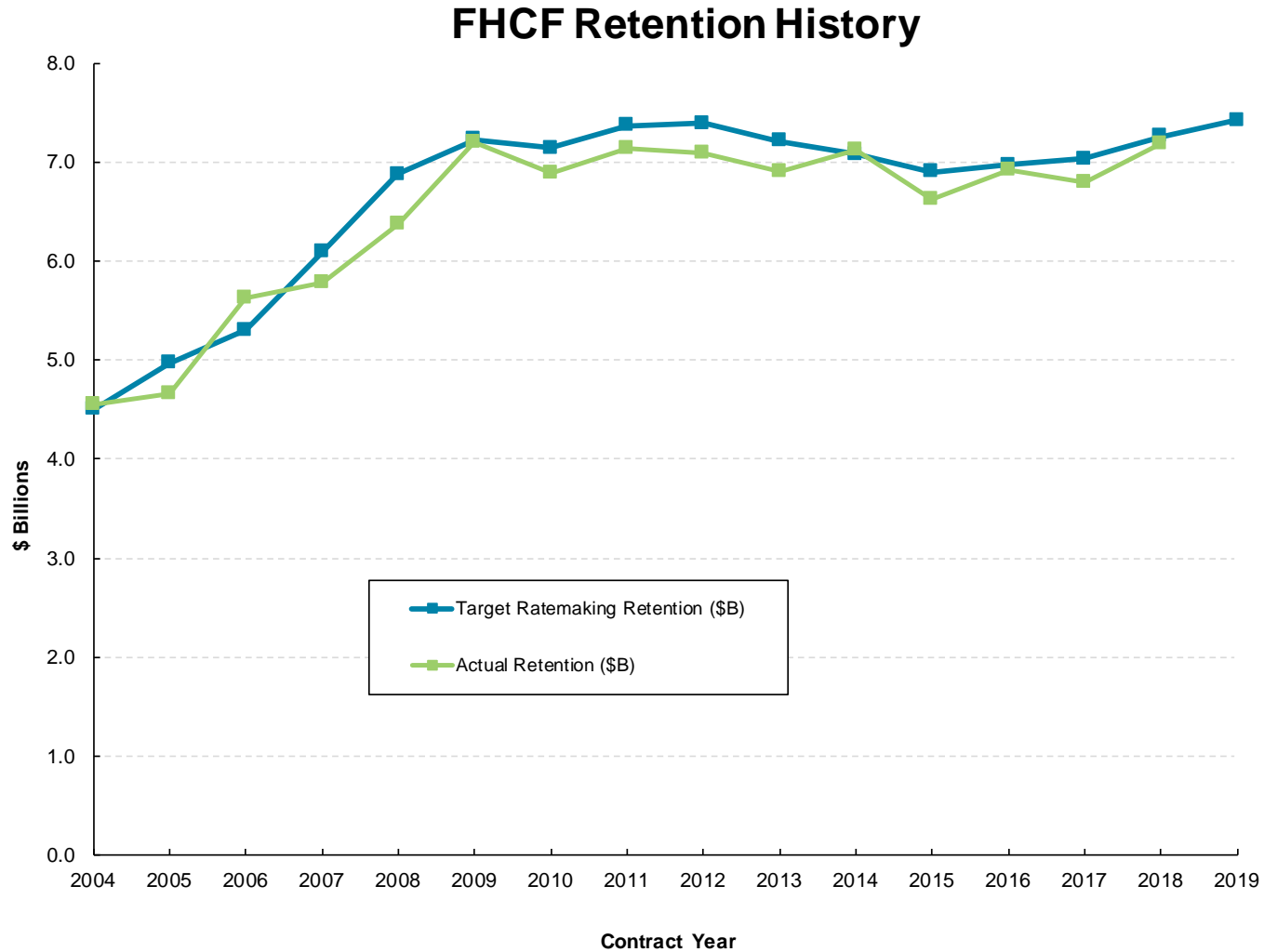
# 2019 Ratemaking Formula Report

## Exposure and Loss by Type of Business



# 2019 Ratemaking Formula Report

## Retention History





## 5. Other Topics of Interest

# 2019 Ratemaking Formula Report

## Modeled Losses (\$ Billions)

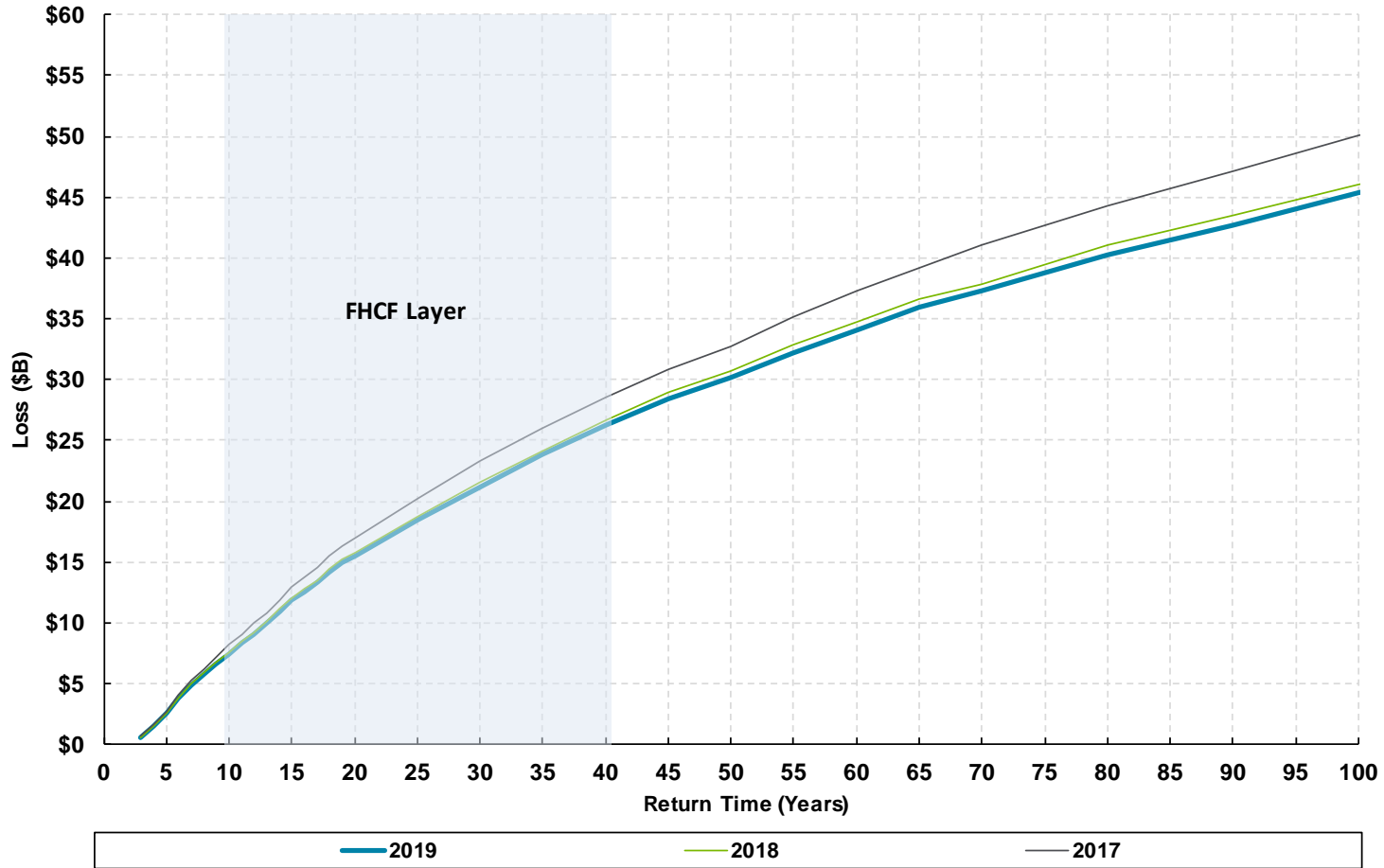
	<u>2018</u>	<u>2019</u>	<u>% Change</u>
Modeled Exposure	\$2,238	\$2,360	5.5%
Gross Losses	\$3.174	\$3.240	2.1%
FHCF Layer Losses	\$0.788	\$0.843	7.0%
Loss Cost per \$1,000	0.3520	0.3573	1.5%



# 2019 Ratemaking Formula Report

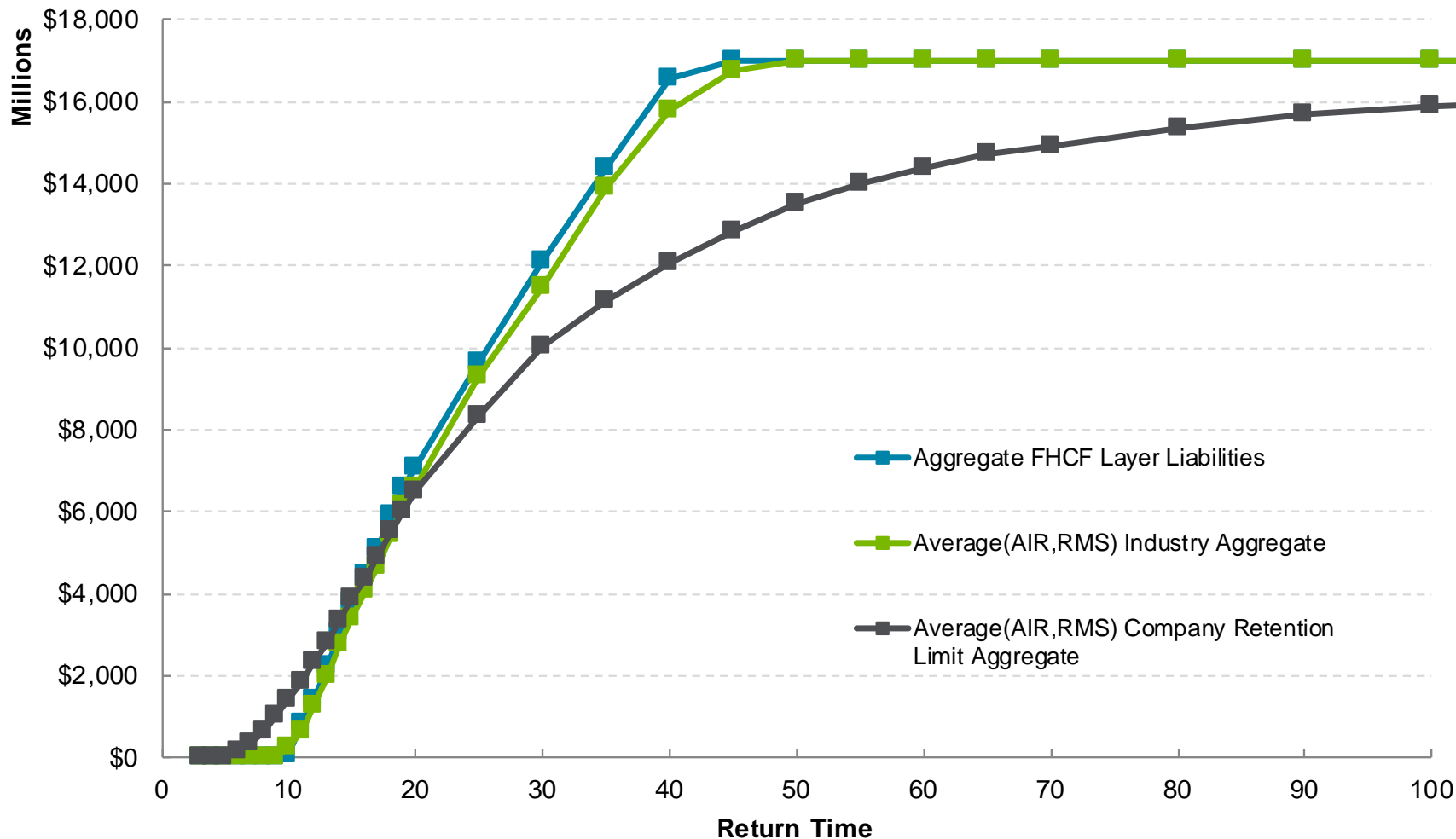
## Modeled Losses

Gross Single Event Severity Distribution  
Adjusted to 2019 Exposure Level



# 2019 Ratemaking Formula Report

## Retention Limit Adjustment 03/01/2018 Update



# 2019 Ratemaking Formula Report

## Expense for Pre-Event Notes

Florida Hurricane Catastrophe Fund  
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 Pre-Event Note Expense Loading  
 Contract Term : 6/01/2019 to 5/31/2020

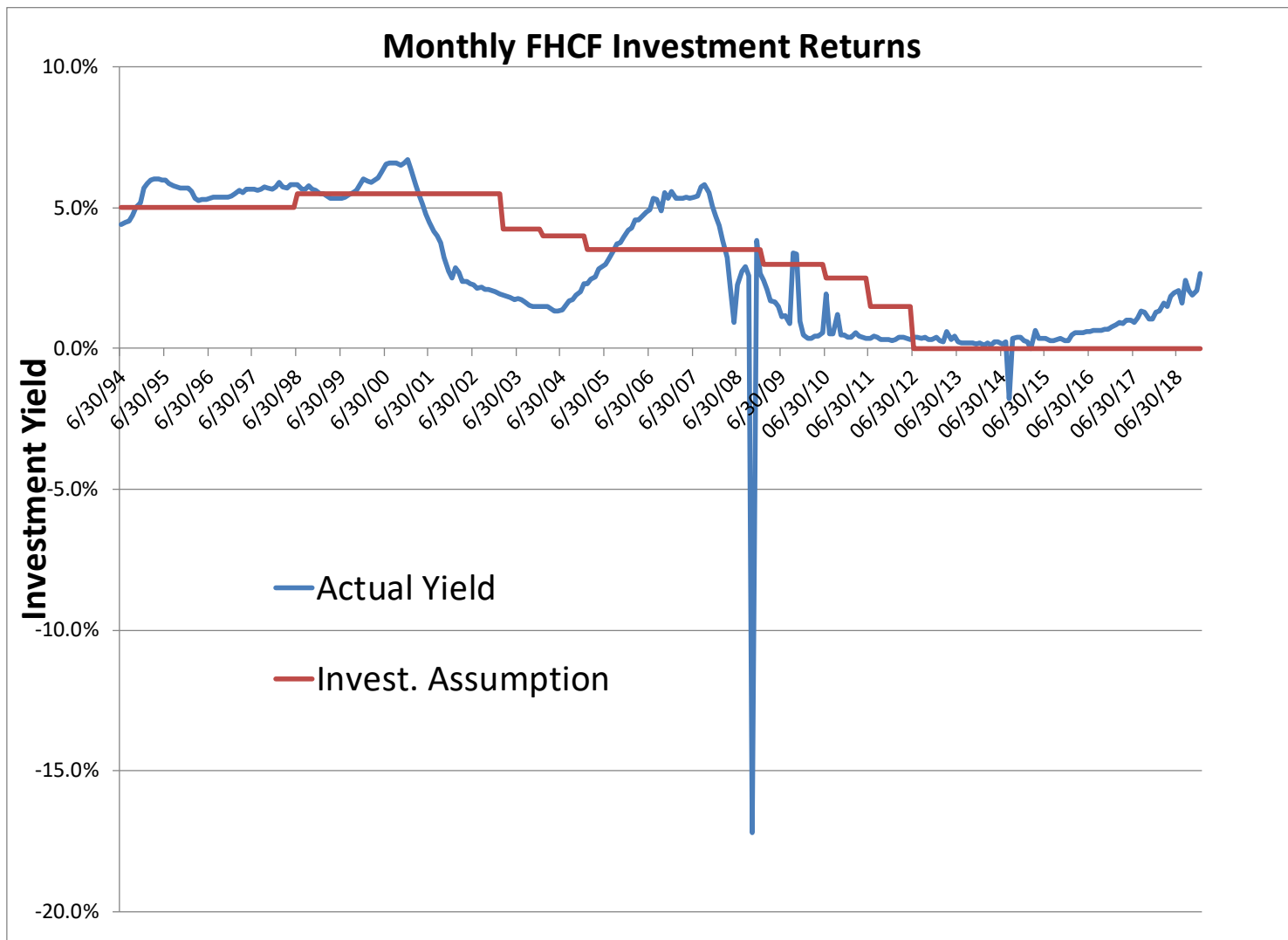
	2013A Projected Debt Service	2016A Projected Debt Service	Total Debt Service Net Cost
Reimbursement Deposit			
1 Premium	14,000,000	7,000,000	21,000,000
2 Average Market Value	1,000,000,000	695,081,967	1,695,081,967
3 Exp. Default Loading %	0.3%	0.3%	
4 Exp. Default Cost (2)*(3)	3,000,000	2,085,246	5,085,246
Total Projected Liquidity			
5 Facility Cost (1)+(4)	17,000,000	9,085,246	26,085,246

### Notes

- This method uses values projected by the FHCF's Financial Advisor, Raymond James (01/18/2019 for 2013A); (1/18/2019 for 2016A); plus a judgmental loading for potential asset loss.
- \$550 million of \$1.2 billion 2016A Bonds come due on 7/1/2019.

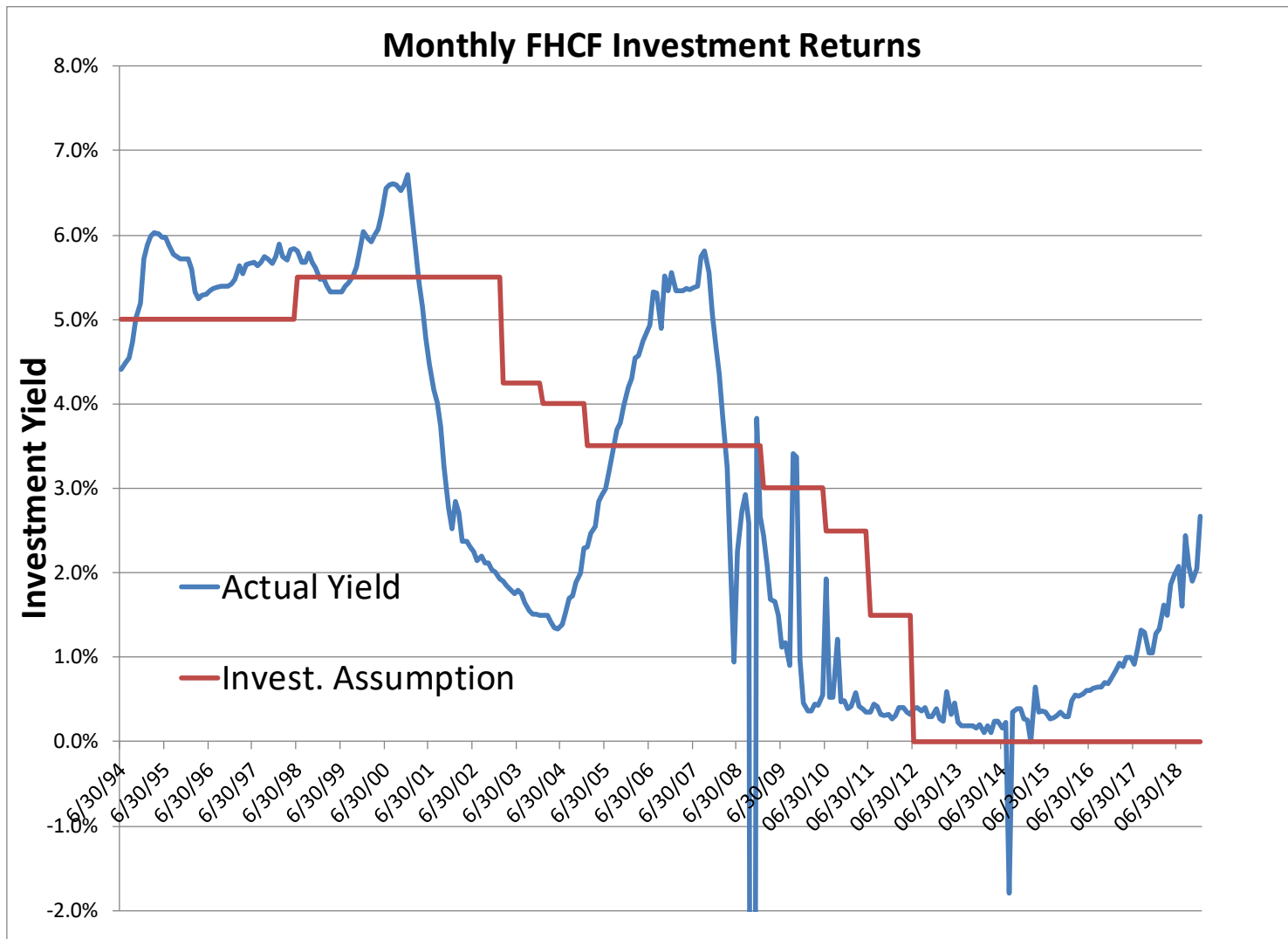
# 2019 Ratemaking Formula Report

## Interest Rate Assumption 0.0%



# 2019 Ratemaking Formula Report

## Interest Rate Assumption 0.0%



# 2019 Ratemaking Formula Report

## Allocation of Trend by Year Built

	Residential Exposure (\$ Billions)		
	Year Built	Year Built	Year Built
Contract Year	2012 or Later	Pre 2012	All Years
2016	119	1,704	1,823
2017	162	1,711	1,874
2018	211	1,750	1,961
% of Total Exposure	2012 or Later	Pre 2012	All Years
2016	6.6%	93.4%	100.0%
2017	8.7%	91.3%	100.0%
2018	10.8%	89.2%	100.0%
Year to Year Change	2012 or Later	Pre 2012	All Years
2016-2017	35.9%	0.5%	2.8%
2017-2018	30.0%	2.3%	4.7%
Selected Trend	20.90%	2.00%	4.00%

# 2019 Ratemaking Formula Report

## Mitigation Rating Factors

Rating Factor	Description	Type of Business				
		Commercial	Residential	Mobile Home	Tenants	Condos
Year Built	2012 or later	0.3916	0.4407	1.0000	0.4648	0.4430
	2002 - 2011	0.4153	0.4731	1.0000	0.4949	0.4685
	1995-2001	0.6373	0.7467	1.0000	0.7682	0.7356
	1994 or Earlier	1.2883	1.4456	1.0000	1.4525	1.3714
	Unknown or Mobile Home	1.0635	1.0513	1.0000	1.0833	1.0430
Roof Shape	Hip, Mansard, or Pyramid	0.8622	0.8446	1.0000	0.7909	0.8035
	Gable, Other or Unknown	1.0440	1.1206	1.0000	1.0211	1.0378
Opening Protection	Structure Opening Protection**	0.8110	0.8501	1.0000	0.7479	0.7997
	No Structure Opening Protection	1.0576	1.0975	1.0000	1.0115	1.1168
On Balance Factor		0.9779	0.9647	1.0000	0.9954	0.9800

\*\*Structure Opening Protection Credit requires that primary policy has structure opening protection credit.

# 2019 Ratemaking Formula Report

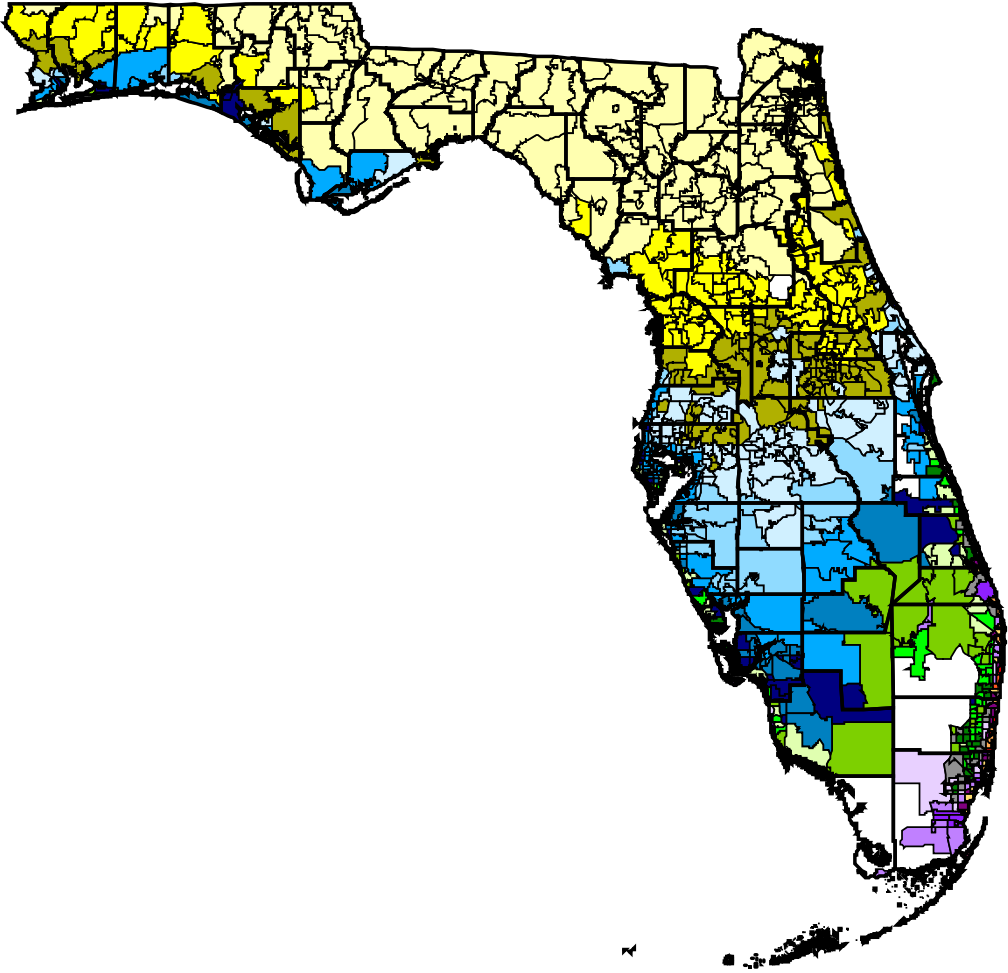
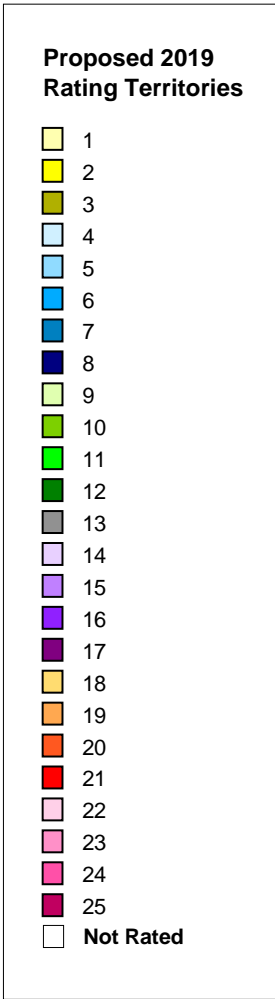
## Loadings and Factors

<b>Adjustment</b>	<b>2018</b>	<b>2019</b>
Adj. to Gross Losses	4.28%	4.29%
Post-model	5.0%	5.0%
Retention + Limit	0.299%	-0.161%
Investment Income	0.0%	0.0%
Operating Expense	\$7,932,277	\$8,796,525
Pre Event Note Expense	\$27,723,288	\$26,085,246
Reinsurance (Premium net of ceded loss)	\$27,725,644	\$27,725,644



# 2019 Ratemaking Formula Report

## Proposed 2019 Rating Territories



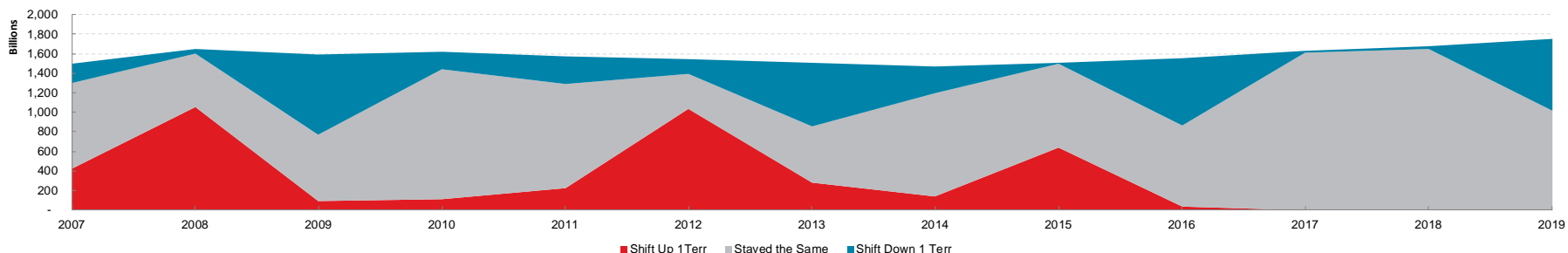
# 2019 Ratemaking Formula Report

## Indicated Zip Code Shifts by Year

	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count	Zip Count
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Shift Up 1Terr	415	848	117	136	244	884	286	153	615	58	5	0	8	
Stayed the Same	913	579	641	1182	935	394	610	1042	796	660	1429	1438	866	
Shift Down 1 Terr	143	47	707	146	286	187	569	271	54	743	29	23	583	
Grand Total	1471	1474	1465	1464	1465	1465	1466	1466	1465	1461	1463	1461	1457	

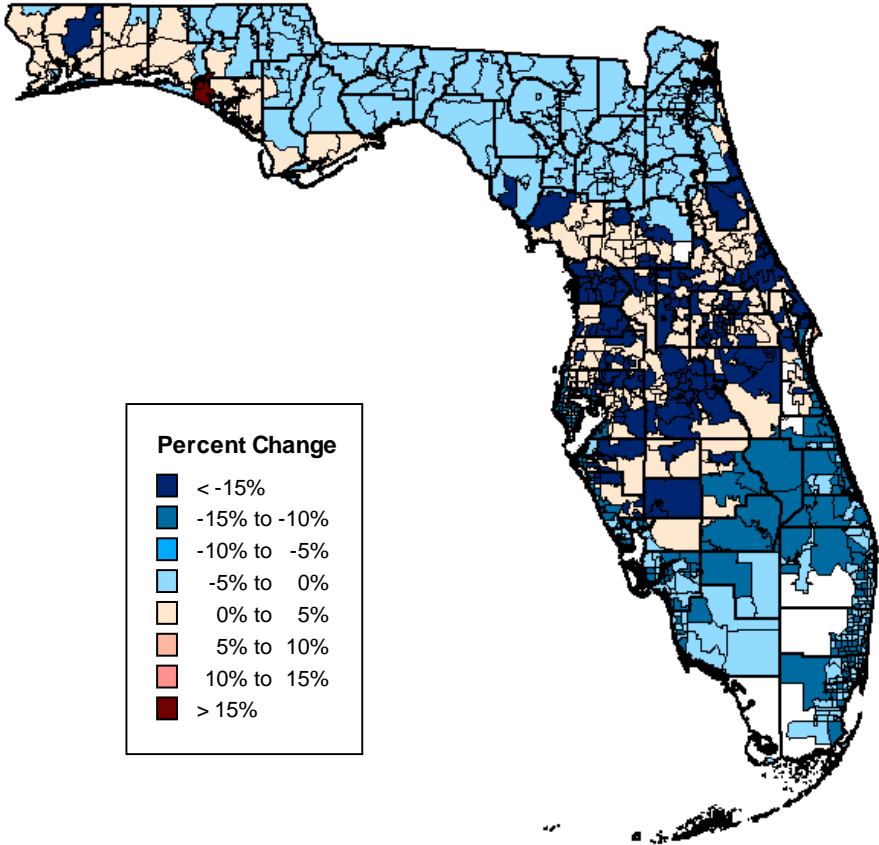
The table below outlined how the Modeled Residential exposure, after tempering, has moved relative to last year's territory allocations. 2017 and 2018 indicated shifts were not implemented, except if the indication was for a change of two or more territories.

	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure	Residential Exposure
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Shift Up 1Terr	424,239,189,098	1,052,071,843,315	95,153,867,703	110,793,850,670	225,354,576,503	1,034,102,124,911	279,982,310,693	133,372,324,850	638,038,689,041	30,355,393,045	120,301,968	-	3,863,182,393	
Stayed the Same	876,709,520,929	552,189,825,165	675,246,787,074	1,329,194,622,054	1,068,072,705,322	357,624,555,304	578,054,403,377	1,064,750,757,567	857,963,061,092	830,059,146,159	1,609,421,358,880	1,643,489,426,318	1,007,348,125,861	
Shift Down 1 Terr	194,377,582,850	39,769,466,565	821,485,686,346	183,788,837,645	275,251,133,171	149,042,393,925	646,657,288,762	271,116,842,049	9,470,255,881	691,630,004,707	18,497,846,898	30,552,736,945	744,805,357,599	
Grand Total	1,495,326,292,877	1,644,031,135,044	1,591,886,341,123	1,623,777,310,369	1,568,678,414,996	1,540,769,074,140	1,504,694,002,832	1,469,239,924,466	1,505,472,006,014	1,552,044,543,911	1,628,039,507,746	1,674,042,163,263	1,756,016,665,853	



# 2019 Ratemaking Formula Report

## Proposed 2019 % Rate Change by Zip Code



# 2019 Ratemaking Formula Report

## % Rate Changes for 2019

### % Change in Rates

Maximum Decrease            -46.83%  
 Minimum Decrease            20.93%

Threshold		Count of ZIP Codes	Percentage of Zip Codes in Group	Residential Exposure (in 000's)	Percentage of Res Exposure in Group	Residential Exposure Risk Counts (Houses)	Percentage of Risk Counts in Group
From	To						
Less Than	-15%	280	19.22%	365,453,409	20.81%	835,041	21.40%
	-15% -10%	303	20.80%	379,351,948	21.60%	863,713	22.13%
	-10% -5%	0	0.00%	-	0.00%	-	0.00%
	-5% 0%	553	37.95%	589,670,288	33.58%	1,230,342	31.52%
	0% 5%	313	21.48%	417,677,838	23.79%	966,753	24.77%
	5% 10%	4	0.27%	1,435	0.00%	6	0.00%
	10% 15%	1	0.07%	804,529	0.05%	659	0.02%
Greater Than	15%	3	0.21%	3,057,218	0.17%	6,399	0.16%
<b>New ZIP Codes in 2019</b>		<b>1457</b>	<b>100.00%</b>	<b>1,756,016,666</b>	<b>100.00%</b>	<b>3,902,913</b>	<b>100.00%</b>
		0	0.00%	-	0.00%	-	0.00%
		<b>1457</b>	<b>100.00%</b>	<b>1,756,016,666</b>	<b>100.00%</b>	<b>3,902,913</b>	<b>100.00%</b>



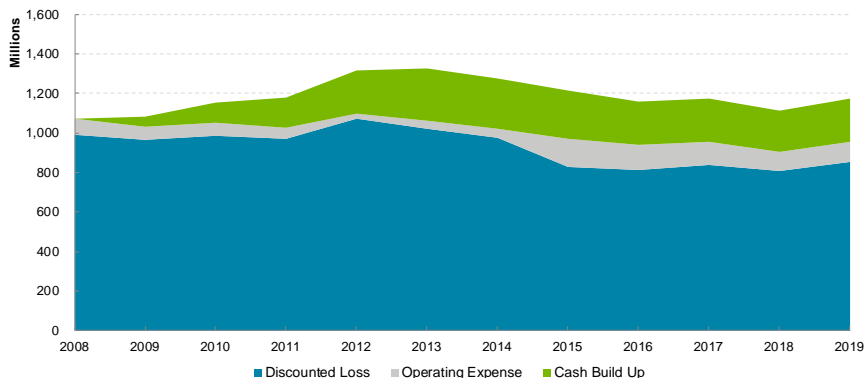
## 6. Recap

# 2019 Ratemaking Formula Report

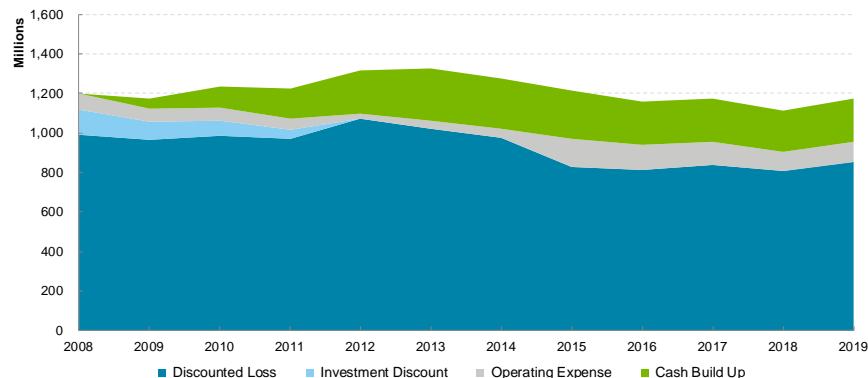
## History of Components (Supplemental Versions)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Discounted Loss	990,619,049	967,000,146	986,038,487	971,475,818	1,073,304,022	1,023,717,879	977,570,704	826,610,529	813,345,583	837,274,138	805,237,227	855,780,342
Operating Expense	82,136,065	65,463,190	64,889,850	55,642,505	21,910,834	39,000,556	43,140,000	145,128,824	125,323,288	115,848,000	96,655,565	97,881,771
Cash Build Up	0	51,623,167	105,092,834	154,067,748	219,042,971	265,679,609	255,177,676	242,934,838	218,792,218	222,405,535	210,223,198	222,665,528
Modeled Premiums	1,072,755,114	1,084,086,503	1,156,021,171	1,181,186,071	1,314,257,827	1,328,398,044	1,275,888,380	1,214,674,191	1,157,461,089	1,175,527,673	1,112,115,989	1,176,327,641
Investment Discount	127,479,463	88,670,499	78,563,624	45,594,759	0	0	0	0	0	0	0	0
Modeled Undiscounted Premiums	1,200,234,577	1,172,757,002	1,234,584,795	1,226,780,830	1,314,257,827	1,328,398,044	1,275,888,380	1,214,674,191	1,157,461,089	1,175,527,673	1,112,115,989	1,176,327,641

Modeled Premiums



Modeled Undiscounted Premiums



# 2019 Ratemaking Formula Report

## Overall Indications

### FHCF Reimbursement Premium, Exposure, Coverage, and Rate

	Premium (\$ Billions)	Exposure (\$ Billions)	Overall Avg. Rate (per \$1,000)	Company Selected Coverage %	Avg. Rate 90% (per \$1,000)
2018 Actual	\$1.103	2,275.2	0.4848	73.483%	0.5937
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% Change	6.66%	3.72%	2.83%	11.08%	-7.43%

# 2019 Ratemaking Formula Report

## Overall Indications

### Premium, Exposure, Coverage and Rate Changes by Type of Business

Type of Business	Premium	Exposure	Overall Avg. Rate	Company Selected Coverage %	Average Rate Unadjusted for Coverage Change
Residential	7.17%	4.00%	3.05%	9.02%	-5.47%
Tenants	-0.69%	4.00%	-4.50%	0.26%	-4.75%
Condos	4.27%	5.00%	-0.69%	3.90%	-4.42%
Mobile Home	-3.30%	0.00%	-3.30%	0.76%	-4.03%
Commercial	9.16%	0.00%	9.16%	44.16%	-24.28%
<b>Total</b>	<b>6.66%</b>	<b>3.72%</b>	<b>2.83%</b>	<b>11.08%</b>	<b>-7.43%</b>



# 2019 Ratemaking Formula Report

## Overall Indications

### Rate On Line Changes

LIMIT (FHCF)		2018	FHCF Layer		Change
			2018	2019	
\$17,000,000,000	Modeled	6.53%	6.92%	6.04%	
\$17,000,000,000	Actual 2018	6.49%	6.92%	6.66%	



## 7. Questions

# 2019 Ratemaking Formula Report Questions

