



**Initial Submission: November 1, 2014**  
**Revised: April 13, 2015**  
**Addendum: November 14, 2016**

## **HurLoss Version 7.0.b**

# **Florida Commission on Hurricane Loss Projection Methodology**

## **2013 Standards**

**Prepared for:**

**Florida Commission on Hurricane Loss Projection Methodology  
State Board of Administration  
1801 Hermitage Boulevard  
Tallahassee, Florida 32308**

**Prepared by:**

**Applied Research Associates, Inc.  
IntraRisk Division  
8537 Six Forks Road, Suite 600  
Raleigh, North Carolina 27615**





November 14, 2016

Dr. Lorilee Medders  
Chair, Florida Commission on Hurricane Loss Projection Methodology  
1801 Hermitage Boulevard, Suite 100  
Tallahassee, FL 32308

Re: Notification of ARA HurLoss Version 7.0.a Error

Dear Dr. Medders:

In accordance with the procedures specified in Section V.VI.F on page 59 of the November 1, 2015 Report of Activities (ROA), Applied Research Associates, Inc. (ARA) notified the Commission on October 31, 2016 of an error in HurLoss version 7.0.a, which was found acceptable by the Commission in June 2015 under the 2013 standards.

In the final stages of reviewing our new HurLoss version 8.0 for submission under the 2015 standards, ARA discovered three errors in the aerodynamic surface roughness lengths used in version 7.0.a. The errors were related to: (1) the GIS processing of water areas adjacent to coastal counties, (2) the assignment of surface roughness values for some land use categories, and (3) the vintage of the ZIP Code polygons used to compute our ZIP Code-averaged surface roughness values. The details of ARA's methodology for processing the National Land Cover Database (NLCD) into surface roughness values are a trade secret.

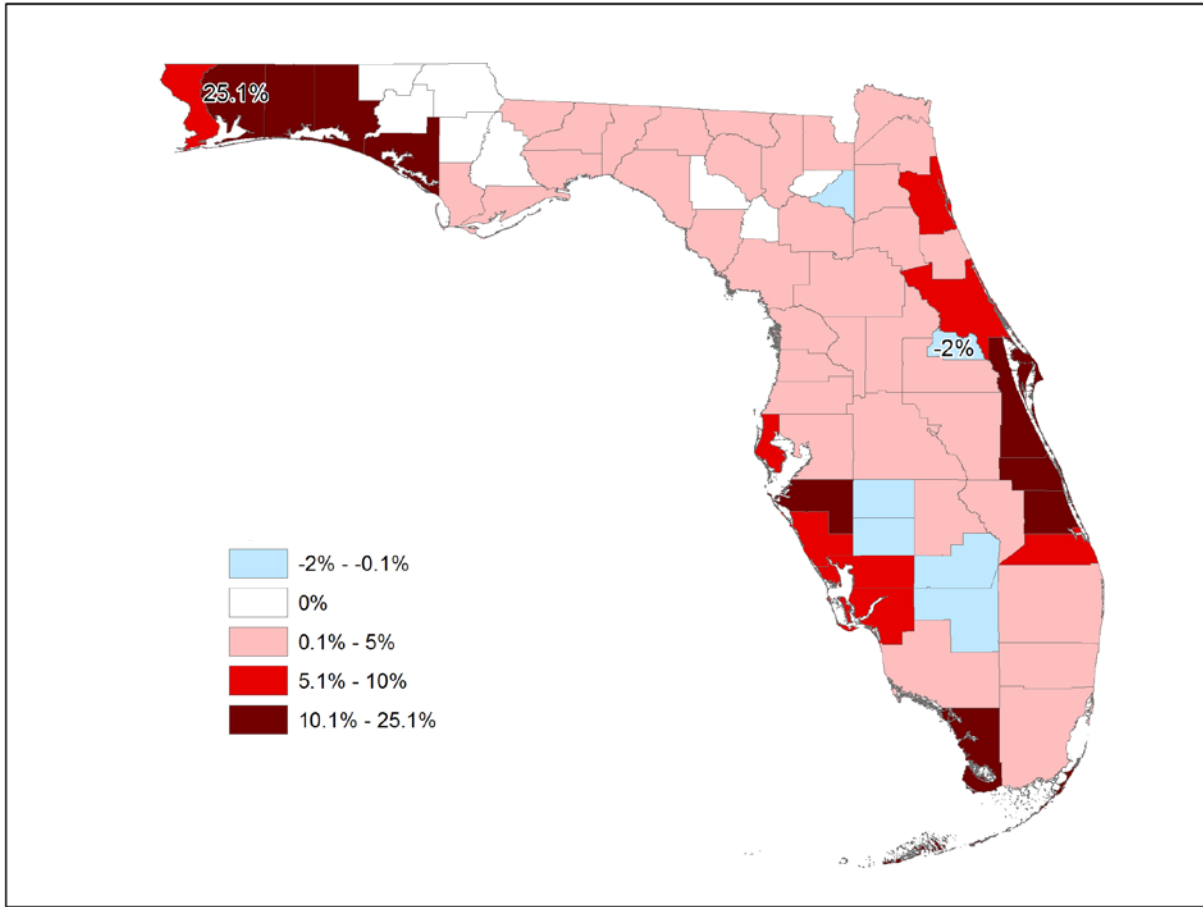
Correcting the surface roughness values has resulted in a Type III difference, as defined in Section V.VI.F of the 2015 ROA. On a statewide basis, the update from version 7.0.a to 7.0.b increases our modeled loss for the 2012 FHCF aggregate personal and commercial residential exposure by 4.6%. A map of the changes by county is shown in Figure 1.

As required, this addendum provides revised Forms A-1, A-4, and A-8 and S-5 for HurLoss version 7.0.b. We respectfully request that the attached revised forms be reviewed by the Commission and that the Commission accept HurLoss version 7.0.b as a replacement for version 7.0.a.

Sincerely,

A handwritten signature in black ink that reads "Francis M. Lavelle".

Francis M. Lavelle, Ph.D., P.E.  
Vice President and Principal Engineer



**Figure 1. Percentage Change in 2012 FHCF Zero Deductible Average Annual Losses by County from HurLoss version 7.0.a to 7.0.b due to Surface Roughness Update**

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## Form A-1: Zero Deductible Personal Residential Loss Costs by ZIP Code

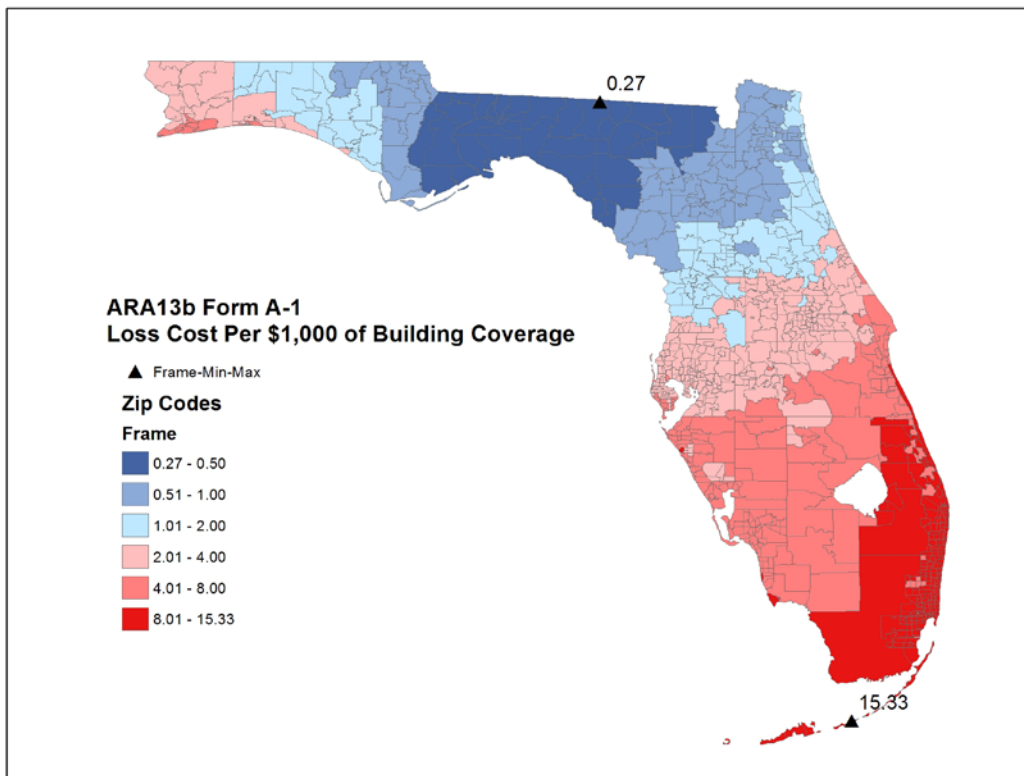
- A. Provide three maps, color-coded by ZIP Code (with a minimum of 6 value ranges,) displaying zero deductible personal residential loss costs per \$1,000 of exposure for frame, masonry, and mobile home.
- B. Create exposure sets for these exhibits by modeling all of the structures from Notional Set 3 described in the file “Notional Input13.xlsx” geocoded to each ZIP Code centroid in the state, as provided in the model. Refer to the Notional Policy Specification below for additional modeling information. Explain any assumptions, deviations, and differences from the prescribed exposure information.
- C. Provide, in the format given in the file named “2013FormA1.xlsx,” the underlying loss cost data rounded to 3 decimal places used for A. above in Excel and PDF format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name.

### Notional Policy Specifications

<u>Policy Type</u>	<u>Assumptions</u>
<b>Owners</b>	<p><b>Coverage A = Structure</b></p> <ul style="list-style-type: none"> <li>• Replacement Cost included subject to Coverage A limit</li> <li>• Ordinance or Law not included</li> </ul> <p><b>Coverage B = Appurtenant Structures</b></p> <ul style="list-style-type: none"> <li>• Replacement Cost included subject to Coverage B limit</li> <li>• Ordinance or Law not included</li> </ul> <p><b>Coverage C = Contents</b></p> <ul style="list-style-type: none"> <li>• Replacement Cost included subject to Coverage C limit</li> </ul> <p><b>Coverage D = Time Element</b></p> <ul style="list-style-type: none"> <li>• Time Element = 12 months</li> <li>• Per Diem = \$150.00/day per policy, if used</li> </ul> <p>◇ Loss costs per \$1,000 shall be related to the Coverage A limit.</p> <p>◇ Loss costs for the various specified deductibles shall be determined based on annual deductibles.</p> <p>◇ All-other perils deductible shall be \$500.</p>
<b>Mobile Home</b>	<p><b>Coverage A = Structure</b></p> <ul style="list-style-type: none"> <li>• Replacement Cost included subject to Coverage A limit</li> </ul> <p><b>Coverage B = Appurtenant Structures</b></p> <ul style="list-style-type: none"> <li>• Replacement Cost included subject to Coverage B limit</li> </ul> <p><b>Coverage C = Contents</b></p> <ul style="list-style-type: none"> <li>• Replacement Cost included subject to Coverage C limit</li> </ul> <p><b>Coverage D = Time Element</b></p> <ul style="list-style-type: none"> <li>• Time Element = 12 months</li> </ul>

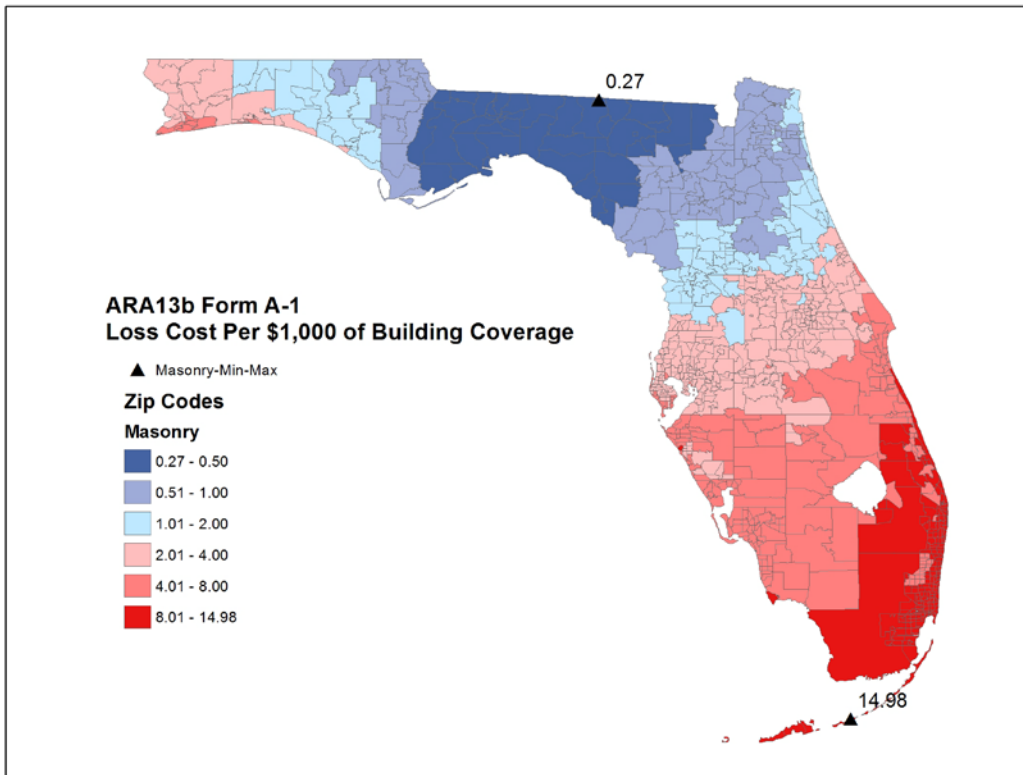
- Per Diem = \$150.00/day per policy, if used
- ✧ Loss costs per \$1,000 shall be related to the Coverage A limit.
- ✧ Loss costs for the various specified deductibles shall be determined based on annual deductibles.
- ✧ All-other perils deductible shall be \$500.

- A. The required maps are shown in Figure 2 through Figure 4.
- B. The loss costs plotted are the total average annual losses summed across the four coverages per \$1,000 of Coverage A. The risks are modeled using ZIP Code level location information.
- C. The underlying loss cost data, rounded to three decimal places, are provided in ARA13bFormA1\_revised\_2016-11-14.xlsx.

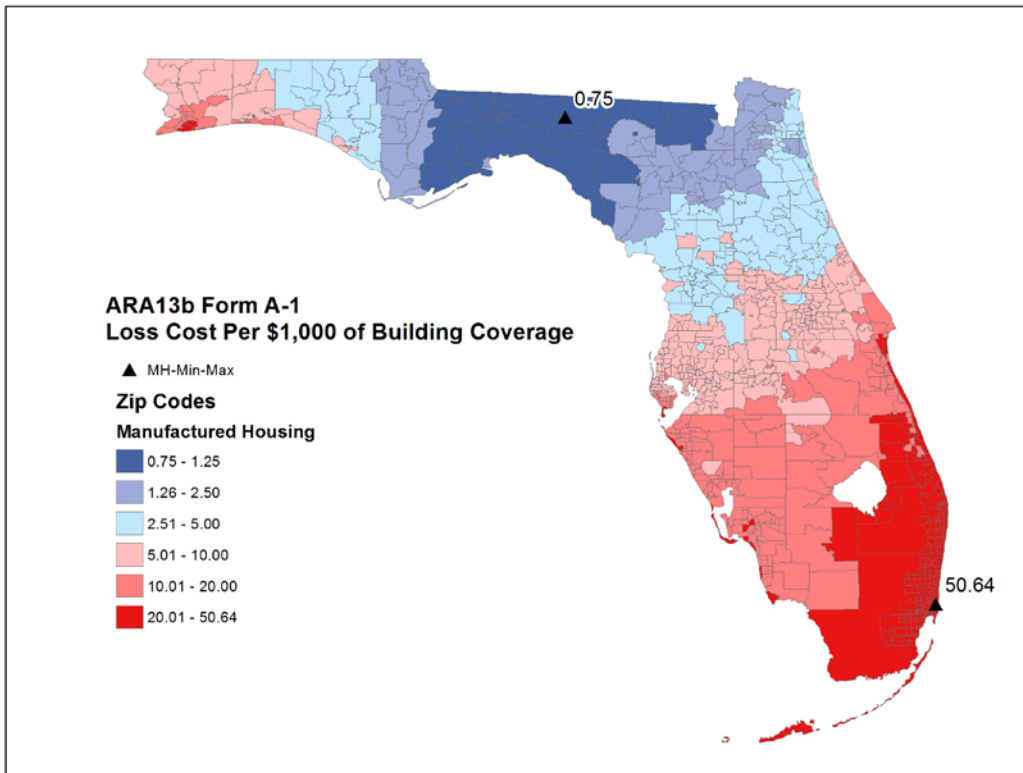


**Figure 2. Ground-Up Loss Cost Wood Frame Houses**





**Figure 3. Ground-Up Loss Cost for Masonry Wall Houses**



**Figure 4. Ground-Up Loss Cost for Mobile Homes**

## **Form A-4B: Output Ranges (2012 FHCF Exposure Data)**

- A. Provide personal and commercial residential output ranges in the format shown in the file named “2013FormA4B.xlsx” by using an automated program or script. A hard copy of Form A-4B shall be included in the submission appendix. Provide this form in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. Also include Form A-4B (Output Ranges, 2012 FHCF Exposure Data) in a submission appendix.**
- B. Provide loss costs rounded to three (3) decimal places by county. Within each county, loss costs shall be shown separately per \$1,000 of exposure for frame owners, masonry owners, frame renters, masonry renters, frame condo unit owners, masonry condo unit owners, mobile home, and commercial residential. For each of these categories using ZIP Code centroids, the output range shall show the highest loss cost, the lowest loss cost, and the weighted average loss cost. The aggregate residential exposure data for this form shall be developed from the information in the file named “hlpm2012c.exe,” except for insured value and deductibles information. Insured values shall be based on the output range specifications below. Deductible amounts of 0% and as specified in the output range specifications will be assumed to be uniformly applied to all risks. When calculating the weighted average loss costs, weight the loss costs by the total insured value calculated above. Include the statewide range of loss costs (i.e., low, high, and weighted average).**
- C. If a modeling organization has loss costs for a ZIP Code for which there is no exposure, give the loss costs zero weight (i.e., assume the exposure in that ZIP Code is zero). Provide a list in the submission document of those ZIP Codes where this occurs.**
- D. If a modeling organization does not have loss costs for a ZIP Code for which there is some exposure, do not assume such loss costs are zero, but use only the exposures for which there are loss costs in calculating the weighted average loss costs. Provide a list in the submission document of the ZIP Codes where this occurs.**
- E. All anomalies in loss costs that are not consistent with the requirements of Standard A-6 and have been explained in Disclosure A-6.14 shall be shaded.**

**Indicate if per diem is used in producing loss costs for Coverage D (ALE) in the personal residential output ranges. If a per diem rate is used in the submission, a rate of \$150.00 per day per policy shall be used.**

Loss costs are provided in the file named ARA13bFormA4B\_revised\_2016-11-14.xlsx. Per diem is not used in producing loss costs for Coverage D (ALE).

# Output Range Specifications

<u>Policy Type</u>	<u>Assumptions</u>
<b>Owners</b>	<p><b>Coverage A = Structure</b></p> <ul style="list-style-type: none"><li>• Coverage A limit = \$100,000</li><li>• Replacement Cost included subject to Coverage A limit</li><li>• Ordinance or Law not included</li></ul> <p><b>Coverage B = Appurtenant Structures</b></p> <ul style="list-style-type: none"><li>• Coverage B limit = 10% of Coverage A limit</li><li>• Replacement Cost included subject to Coverage B limit</li><li>• Ordinance or Law not included</li></ul> <p><b>Coverage C = Contents</b></p> <ul style="list-style-type: none"><li>• Coverage C limit = 50% of Coverage A limit</li><li>• Replacement Cost included subject to Coverage C limit</li></ul> <p><b>Coverage D = Time Element</b></p> <ul style="list-style-type: none"><li>• Coverage D limit = 20% of Coverage A limit</li><li>• Time Element = 12 months</li><li>• Per Diem = \$150.00/day per policy, if used</li></ul> <p>✧ Dominant Coverage = A.</p> <p>✧ Loss costs per \$1,000 shall be related to the Coverage A limit.</p> <p>✧ Loss costs for the various specified deductibles shall be determined based on annual deductibles.</p> <p>✧ 2% Deductible of Coverage A.</p> <p>✧ All-other perils deductible shall be \$500.</p>
<b>Renters</b>	<p><b>Coverage C = Contents</b></p> <ul style="list-style-type: none"><li>• Coverage C limit = \$25,000</li><li>• Replacement Cost included subject to Coverage C limit</li></ul> <p><b>Coverage D = Time Element</b></p> <ul style="list-style-type: none"><li>• Coverage D limit = 40% of Coverage C limit</li><li>• Time Element = 12 months</li><li>• Per Diem = \$150.00/day per policy, if used</li></ul> <p>✧ Dominant Coverage = C.</p> <p>✧ Loss costs per \$1,000 shall be related to the Coverage A limit.</p> <p>✧ Loss costs for the various specified deductibles shall be determined based on annual deductibles.</p> <p>✧ 2 % Deductible on Coverage C.</p> <p>✧ All-other perils deductible shall be \$500.</p>
<b>Condo Unit Owners</b>	<p><b>Coverage A = Structure</b></p> <ul style="list-style-type: none"><li>• Coverage A limit = 10% of Coverage C limit</li><li>• Replacement Cost included subject to Coverage A limit</li></ul> <p><b>Coverage C = Contents</b></p> <ul style="list-style-type: none"><li>• Coverage C limit = \$50,000</li><li>• Replacement Cost included subject to Coverage C limit</li></ul> <p><b>Coverage D = Time Element</b></p> <ul style="list-style-type: none"><li>• Coverage D limit = 40% of Coverage C limit</li><li>• Time Element = 12 months</li></ul>

- Per Diem = \$150.00/day per policy, if used

- ✧ Dominant Coverage = C.
- ✧ Loss costs per \$1,000 shall be related to the Coverage A limit.
- ✧ Loss costs for the various specified deductibles shall be determined based on annual deductibles.
- ✧ 2% Deductible of Coverage C.
- ✧ All-other perils deductible shall be \$500.

## Mobile Home

### Coverage A = Structure

- Coverage A limit = \$50,000
- Replacement Cost included subject to Coverage A limit

### Coverage B = Appurtenant Structures

- Coverage B limit = 10% of Coverage A limit
- Replacement Cost included subject to Coverage B limit

### Coverage C = Contents

- Coverage C limit = 50% of Coverage A limit
- Replacement Cost included subject to Coverage C limit

### Coverage D = Time Element

- Coverage D limit = 20% of Coverage A limit
- Time Element = 12 months
- Per Diem = \$150.00/day per policy, if used

- ✧ Dominant Coverage = A.
- ✧ Loss costs per \$1,000 shall be related to the Coverage A limit.
- ✧ Loss costs for the various specified deductibles shall be determined based on annual deductibles.
- ✧ 2% Deductible of Coverage A.
- ✧ All-other perils deductible shall be \$500.

## Commercial Residential

### Coverage A = Structure

- Coverage A limit = \$750,000
- Replacement Cost included subject to Coverage A limit

### Coverage C = Contents

- Coverage C limit = 5% of Coverage A limit
- Replacement Cost included subject to Coverage C limit

### Coverage D = Time Element

- Coverage D limit = 20% of Coverage A limit
- Time Element = 12 months
- Per Diem = \$150.00/day per policy, if used

- ✧ Dominant Coverage = A.
- ✧ Loss costs per \$1,000 shall be related to the Coverage A limit.
- ✧ Loss costs for the various specified deductibles shall be determined based on annual deductibles.
- ✧ 3% Deductible of Coverage A.
- ✧ All-other perils deductible shall be \$500.

**Form A-4B Output Ranges (2012 FHCF Exposure Data)**  
**LOSS COSTS PER \$1000 for 0% Deductible**

**Modeling Organization:** ARA  
**Model Name & Version Number:** HurLoss 7.0.b  
**Model Release Date:** 11/14/2016

County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Alachua	LOW	0.444	0.437	1.770	0.047	0.044	0.106	0.117	0.356
	AVERAGE	0.732	0.736	2.426	0.096	0.095	0.181	0.176	0.470
	HIGH	1.123	1.096	3.009	0.135	0.127	0.223	0.218	0.762
Baker	LOW	0.306	0.302	1.074	0.056	0.054	0.000	0.000	0.000
	AVERAGE	0.513	0.516	1.426	0.072	0.074	0.000	0.000	0.000
	HIGH	0.672	0.661	1.572	0.081	0.078	0.000	0.000	0.000
Bay	LOW	0.665	0.688	3.143	0.074	0.090	0.203	0.173	0.600
	AVERAGE	1.550	1.439	4.653	0.202	0.200	0.504	0.466	1.350
	HIGH	3.262	3.184	9.939	0.575	0.549	0.826	0.796	2.711
Bradford	LOW	0.431	0.425	1.664	0.064	0.063	0.000	0.000	0.000
	AVERAGE	0.695	0.708	1.994	0.094	0.088	0.000	0.000	0.000
	HIGH	0.873	0.857	2.123	0.102	0.093	0.000	0.000	0.000
Brevard	LOW	2.307	2.279	7.122	0.184	0.139	0.511	0.412	1.195
	AVERAGE	5.325	5.412	12.778	0.902	0.871	1.328	1.693	3.851
	HIGH	11.800	11.563	26.140	2.566	2.496	3.429	3.348	6.689
Broward	LOW	6.610	6.377	23.513	0.487	0.430	1.151	1.057	2.880
	AVERAGE	8.737	8.339	25.901	1.355	1.374	2.193	2.148	6.121
	HIGH	11.110	10.690	31.313	2.064	1.948	2.956	2.815	7.762
Calhoun	LOW	0.399	0.395	1.517	0.074	0.087	0.000	0.000	0.000
	AVERAGE	0.645	0.641	1.943	0.093	0.091	0.000	0.000	0.000
	HIGH	0.949	0.932	2.364	0.120	0.093	0.000	0.000	0.000
Charlotte	LOW	3.442	3.385	11.715	0.234	0.204	0.574	0.532	1.669
	AVERAGE	4.975	4.596	13.687	0.783	0.708	1.368	1.047	3.008
	HIGH	7.301	7.121	16.199	1.374	1.322	1.916	1.854	4.150
Citrus	LOW	0.814	0.791	3.378	0.110	0.099	0.220	0.201	0.880
	AVERAGE	1.456	1.311	4.413	0.225	0.202	0.402	0.406	1.254
	HIGH	2.156	2.099	6.121	0.374	0.355	0.545	0.523	1.583
Clay	LOW	0.464	0.460	1.964	0.056	0.052	0.107	0.104	0.416
	AVERAGE	0.776	0.778	2.167	0.106	0.107	0.173	0.170	0.505
	HIGH	1.166	1.142	3.017	0.134	0.127	0.230	0.221	0.588
Collier	LOW	3.580	3.527	12.524	0.336	0.300	0.672	0.638	2.016
	AVERAGE	6.326	6.060	16.888	1.302	1.207	1.956	1.829	4.614
	HIGH	13.711	10.811	31.590	2.876	2.796	3.666	3.573	8.452
Columbia	LOW	0.271	0.270	0.999	0.028	0.025	0.117	0.114	0.272
	AVERAGE	0.502	0.498	1.616	0.061	0.059	0.121	0.118	0.278
	HIGH	0.733	0.717	1.892	0.079	0.069	0.128	0.124	0.306
DeSoto	LOW	3.632	3.570	11.442	0.409	0.294	0.715	0.625	2.660
	AVERAGE	5.338	5.065	13.463	0.776	0.676	1.053	0.896	2.761
	HIGH	6.463	6.340	13.866	0.832	0.797	1.305	1.264	3.083
Dixie	LOW	0.309	0.323	1.246	0.058	0.067	0.099	0.102	0.253
	AVERAGE	0.532	0.500	1.569	0.079	0.074	0.109	0.111	0.270
	HIGH	0.670	0.657	1.612	0.093	0.090	0.119	0.155	0.379

County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Duval	LOW	0.409	0.427	1.702	0.049	0.038	0.121	0.107	0.314
	AVERAGE	0.895	0.898	2.344	0.135	0.131	0.213	0.213	0.615
	HIGH	1.544	1.620	4.523	0.279	0.268	0.352	0.339	1.070
Escambia	LOW	1.536	1.503	7.458	0.171	0.159	0.635	0.537	1.670
	AVERAGE	3.926	3.994	10.897	0.939	0.969	1.597	1.715	3.944
	HIGH	7.178	6.915	20.896	2.277	2.220	2.820	2.756	6.015
Flagler	LOW	0.809	0.799	3.583	0.110	0.096	0.211	0.208	0.541
	AVERAGE	1.274	1.153	4.393	0.182	0.164	0.349	0.288	0.862
	HIGH	2.016	1.972	5.073	0.296	0.283	0.464	0.448	1.332
Franklin	LOW	0.275	0.285	1.103	0.062	0.068	0.101	0.100	0.222
	AVERAGE	0.488	0.511	1.403	0.092	0.082	0.114	0.129	0.231
	HIGH	0.883	0.866	2.301	0.124	0.119	0.207	0.145	0.232
Gadsden	LOW	0.223	0.228	0.818	0.042	0.042	0.000	0.097	0.138
	AVERAGE	0.347	0.360	0.960	0.053	0.052	0.000	0.097	0.171
	HIGH	0.490	0.483	1.131	0.067	0.066	0.000	0.097	0.178
Gilchrist	LOW	0.446	0.406	1.904	0.049	0.055	0.000	0.145	0.000
	AVERAGE	0.692	0.688	2.175	0.099	0.093	0.000	0.145	0.000
	HIGH	0.882	0.862	2.313	0.107	0.101	0.000	0.145	0.000
Glades	LOW	5.471	4.712	13.278	1.044	0.512	0.000	0.000	0.000
	AVERAGE	7.661	7.484	19.662	1.044	0.913	0.000	0.000	0.000
	HIGH	9.209	9.049	19.912	1.044	0.995	0.000	0.000	0.000
Gulf	LOW	0.424	0.422	1.768	0.085	0.087	0.150	0.150	0.238
	AVERAGE	0.608	0.640	1.840	0.108	0.105	0.163	0.156	0.333
	HIGH	0.824	0.811	1.881	0.120	0.117	0.190	0.187	0.371
Hamilton	LOW	0.229	0.226	0.911	0.034	0.042	0.000	0.000	0.000
	AVERAGE	0.345	0.347	0.984	0.046	0.046	0.000	0.000	0.000
	HIGH	0.461	0.453	1.062	0.054	0.052	0.000	0.000	0.000
Hardee	LOW	2.880	2.762	10.102	0.272	0.191	0.000	0.984	1.786
	AVERAGE	4.550	4.374	11.094	0.580	0.542	0.000	0.984	1.972
	HIGH	4.905	4.830	11.902	0.652	0.624	0.000	0.984	2.158
Hendry	LOW	5.131	5.063	17.850	0.318	0.359	1.117	0.752	3.416
	AVERAGE	6.911	6.756	18.974	0.883	0.809	1.509	1.317	3.939
	HIGH	9.161	8.986	20.180	1.000	0.950	1.715	1.607	4.252
Hernando	LOW	1.387	1.285	4.715	0.159	0.116	0.458	0.327	1.096
	AVERAGE	2.428	2.415	5.214	0.308	0.303	0.583	0.573	1.325
	HIGH	3.017	2.962	6.580	0.450	0.430	0.714	0.690	1.704
Highlands	LOW	2.695	2.541	7.784	0.166	0.154	0.598	0.440	1.581
	AVERAGE	4.684	4.463	10.950	0.468	0.416	0.880	0.871	2.251
	HIGH	7.667	7.537	16.039	0.752	0.714	1.246	1.255	3.300
Hillsborough	LOW	1.426	1.413	5.126	0.135	0.115	0.317	0.323	1.227
	AVERAGE	3.113	2.969	7.256	0.401	0.386	0.691	0.686	1.827
	HIGH	4.687	4.598	9.236	0.820	0.785	1.222	1.180	3.173
Holmes	LOW	0.596	0.590	2.727	0.084	0.120	0.223	0.000	0.554
	AVERAGE	1.009	0.993	3.004	0.151	0.134	0.223	0.000	0.554
	HIGH	1.552	1.523	3.695	0.211	0.203	0.223	0.000	0.554
Indian River	LOW	4.916	4.825	15.732	0.328	0.316	1.018	0.761	3.105
	AVERAGE	7.372	6.981	18.942	1.417	1.354	2.111	2.247	5.676
	HIGH	12.219	11.943	26.215	2.751	2.672	3.648	3.556	7.103

County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Jackson	LOW	0.361	0.361	1.573	0.044	0.049	0.000	0.112	0.297
	AVERAGE	0.666	0.677	2.057	0.076	0.074	0.000	0.141	0.432
	HIGH	1.016	0.998	2.579	0.106	0.089	0.000	0.168	0.484
Jefferson	LOW	0.199	0.198	0.750	0.032	0.033	0.081	0.000	0.000
	AVERAGE	0.281	0.277	0.763	0.042	0.041	0.081	0.000	0.000
	HIGH	0.351	0.346	0.765	0.052	0.051	0.081	0.000	0.000
Lafayette	LOW	0.268	0.276	1.023	0.043	0.052	0.106	0.000	0.000
	AVERAGE	0.386	0.384	1.077	0.056	0.055	0.106	0.000	0.000
	HIGH	0.467	0.460	1.077	0.058	0.056	0.106	0.000	0.000
Lake	LOW	1.017	0.958	3.453	0.092	0.087	0.275	0.255	1.038
	AVERAGE	2.729	2.766	6.289	0.264	0.240	0.638	0.603	1.574
	HIGH	4.058	4.002	9.445	0.460	0.441	0.815	0.792	2.156
Lee	LOW	3.749	3.684	12.857	0.238	0.210	0.601	0.559	1.987
	AVERAGE	6.227	5.618	14.548	1.077	0.941	1.704	1.518	3.994
	HIGH	9.885	9.650	21.920	2.262	2.194	2.992	2.912	5.905
Leon	LOW	0.211	0.216	0.787	0.035	0.036	0.075	0.074	0.086
	AVERAGE	0.319	0.319	0.827	0.046	0.046	0.085	0.086	0.147
	HIGH	0.403	0.397	0.905	0.056	0.056	0.097	0.099	0.166
Levy	LOW	0.504	0.494	2.286	0.074	0.058	0.143	0.162	0.566
	AVERAGE	1.017	1.045	3.422	0.159	0.160	0.220	0.217	0.682
	HIGH	1.777	1.731	5.261	0.290	0.276	0.252	0.244	0.888
Liberty	LOW	0.310	0.307	1.100	0.072	0.088	0.000	0.000	0.000
	AVERAGE	0.480	0.485	1.242	0.087	0.088	0.000	0.000	0.000
	HIGH	0.630	0.620	1.324	0.090	0.088	0.000	0.000	0.000
Madison	LOW	0.204	0.203	0.746	0.022	0.028	0.000	0.000	0.000
	AVERAGE	0.305	0.303	0.869	0.038	0.038	0.000	0.000	0.000
	HIGH	0.434	0.426	1.086	0.042	0.041	0.000	0.000	0.000
Manatee	LOW	2.728	2.678	10.806	0.193	0.167	0.435	0.421	1.506
	AVERAGE	5.104	4.475	12.081	0.861	0.720	1.540	1.517	3.921
	HIGH	9.597	9.386	23.379	1.983	1.920	2.691	2.618	5.661
Marion	LOW	0.684	0.675	2.814	0.074	0.044	0.183	0.152	0.591
	AVERAGE	1.425	1.286	4.185	0.160	0.150	0.302	0.334	0.897
	HIGH	2.159	2.110	5.950	0.269	0.254	0.420	0.402	1.234
Martin	LOW	6.313	6.187	22.098	0.481	0.466	1.110	1.033	3.539
	AVERAGE	9.995	9.469	27.126	2.252	2.160	3.195	3.564	7.452
	HIGH	15.576	15.209	36.169	4.052	3.948	5.195	5.075	9.632
Miami-Dade	LOW	4.796	5.426	16.309	0.582	0.483	0.973	0.890	2.844
	AVERAGE	9.882	9.251	33.711	1.923	1.935	2.773	2.755	7.419
	HIGH	17.059	16.590	44.733	4.593	4.421	5.918	5.712	13.671
Monroe	LOW	7.718	7.522	29.395	2.058	0.800	1.440	1.543	3.629
	AVERAGE	11.755	11.114	32.350	4.495	4.076	4.282	4.359	8.696
	HIGH	18.352	18.056	39.225	7.192	7.060	5.530	8.388	12.461
Nassau	LOW	0.356	0.370	1.440	0.061	0.042	0.118	0.114	0.313
	AVERAGE	0.916	0.816	2.036	0.162	0.150	0.282	0.288	0.787
	HIGH	1.378	1.347	3.735	0.225	0.215	0.335	0.323	0.959
Okaloosa	LOW	0.982	0.967	4.170	0.168	0.180	0.347	0.379	1.068
	AVERAGE	2.661	2.778	6.267	0.530	0.582	1.036	1.156	2.947
	HIGH	5.071	4.949	15.531	1.210	1.168	1.597	1.549	4.563

County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Okeechobee	LOW	5.378	5.306	16.998	0.426	0.314	0.857	0.802	3.072
	AVERAGE	6.875	6.578	17.009	0.836	0.752	1.093	1.338	3.455
	HIGH	8.337	8.178	17.058	0.934	0.889	1.472	1.515	3.772
Orange	LOW	1.371	1.359	4.863	0.081	0.077	0.277	0.263	0.763
	AVERAGE	2.770	2.788	6.670	0.271	0.254	0.514	0.500	1.361
	HIGH	3.746	3.689	8.280	0.422	0.409	0.699	0.679	1.691
Osceola	LOW	1.366	1.357	4.915	0.106	0.112	0.297	0.292	0.656
	AVERAGE	3.007	3.041	8.314	0.297	0.268	0.515	0.469	1.389
	HIGH	5.854	5.768	13.196	0.775	0.658	0.899	0.872	2.406
Palm Beach	LOW	6.373	6.183	22.940	0.499	0.451	1.185	1.106	3.052
	AVERAGE	9.214	8.737	28.025	1.623	1.520	2.513	2.341	6.603
	HIGH	15.188	14.670	35.828	3.710	3.552	4.896	4.706	11.637
Pasco	LOW	1.369	1.356	4.927	0.136	0.126	0.309	0.310	1.131
	AVERAGE	2.552	2.622	6.454	0.302	0.317	0.583	0.663	1.716
	HIGH	3.501	3.429	7.563	0.494	0.472	0.777	0.751	2.060
Pinellas	LOW	1.660	1.639	6.828	0.152	0.128	0.357	0.337	1.181
	AVERAGE	4.350	4.065	9.494	0.621	0.648	1.129	1.149	2.818
	HIGH	8.254	8.125	15.532	1.883	1.827	2.555	2.490	5.959
Polk	LOW	1.424	1.413	5.150	0.088	0.084	0.308	0.303	1.027
	AVERAGE	3.151	3.024	7.911	0.297	0.308	0.525	0.598	1.566
	HIGH	5.512	5.443	12.954	0.673	0.643	1.151	1.117	2.224
Putnam	LOW	0.569	0.561	2.293	0.074	0.067	0.191	0.154	0.595
	AVERAGE	0.995	0.995	3.004	0.136	0.130	0.259	0.218	0.655
	HIGH	1.610	1.577	4.118	0.159	0.152	0.286	0.272	0.728
St. Johns	LOW	0.578	0.572	2.426	0.053	0.050	0.137	0.133	0.441
	AVERAGE	1.089	1.258	3.564	0.171	0.179	0.340	0.407	1.027
	HIGH	2.402	2.352	6.981	0.412	0.397	0.598	0.580	1.783
St. Lucie	LOW	5.766	5.365	17.595	0.646	0.366	0.996	0.906	3.360
	AVERAGE	8.617	7.826	21.774	1.755	1.368	2.610	2.551	6.219
	HIGH	15.159	14.823	32.993	3.925	3.828	5.035	4.922	9.243
Santa Rosa	LOW	1.454	1.453	6.934	0.177	0.210	0.449	0.358	1.167
	AVERAGE	3.390	3.551	9.772	0.908	0.858	2.370	2.059	4.318
	HIGH	8.013	7.825	23.046	2.688	2.626	3.292	3.221	7.448
Sarasota	LOW	2.846	2.806	10.202	0.204	0.196	0.500	0.480	1.472
	AVERAGE	4.703	4.245	12.175	0.746	0.709	1.256	1.237	3.084
	HIGH	11.047	10.791	26.845	2.657	2.582	3.473	3.387	6.837
Seminole	LOW	1.268	1.258	5.405	0.137	0.117	0.282	0.281	0.728
	AVERAGE	2.471	2.497	5.844	0.264	0.253	0.494	0.488	1.194
	HIGH	3.333	3.275	7.002	0.377	0.362	0.631	0.602	1.706
Sumter	LOW	1.197	1.122	4.022	0.094	0.063	0.293	0.248	0.947
	AVERAGE	1.825	1.762	4.573	0.154	0.163	0.398	0.323	1.121
	HIGH	2.694	2.647	5.829	0.282	0.398	0.444	0.442	1.348
Suwannee	LOW	0.280	0.276	1.182	0.026	0.031	0.094	0.087	0.242
	AVERAGE	0.449	0.448	1.427	0.047	0.046	0.094	0.087	0.335
	HIGH	0.711	0.697	2.002	0.069	0.066	0.094	0.087	0.392
Taylor	LOW	0.210	0.229	0.746	0.038	0.045	0.074	0.089	0.204
	AVERAGE	0.342	0.340	0.966	0.049	0.048	0.094	0.098	0.204
	HIGH	0.461	0.454	1.041	0.063	0.063	0.114	0.109	0.204



County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Union	LOW	0.398	0.394	1.515	0.057	0.048	0.117	0.115	0.360
	AVERAGE	0.583	0.583	1.692	0.081	0.077	0.117	0.115	0.360
	HIGH	0.716	0.703	1.716	0.084	0.082	0.117	0.115	0.360
Volusia	LOW	0.973	0.963	3.303	0.116	0.097	0.270	0.265	0.545
	AVERAGE	2.589	2.470	5.592	0.292	0.294	0.747	0.828	1.699
	HIGH	5.292	5.222	12.158	0.928	0.898	1.375	1.340	3.254
Wakulla	LOW	0.229	0.228	0.862	0.039	0.043	0.085	0.087	0.151
	AVERAGE	0.324	0.336	0.892	0.051	0.049	0.103	0.115	0.246
	HIGH	0.579	0.568	1.480	0.064	0.066	0.124	0.121	0.280
Walton	LOW	0.892	0.885	3.948	0.092	0.084	0.242	0.231	0.874
	AVERAGE	2.283	2.088	5.879	0.370	0.358	0.940	0.799	2.789
	HIGH	4.537	4.427	14.109	0.978	0.939	1.325	1.281	4.050
Washington	LOW	0.691	0.681	2.891	0.087	0.084	0.263	0.000	0.608
	AVERAGE	1.074	1.090	3.334	0.145	0.136	0.263	0.000	0.660
	HIGH	1.548	1.464	3.636	0.226	0.219	0.263	0.000	0.761
Statewide	LOW	0.199	0.198	0.746	0.022	0.025	0.074	0.074	0.086
	AVERAGE	2.933	4.981	8.855	0.461	0.773	0.946	1.734	4.548
	HIGH	18.352	18.056	44.733	7.192	7.060	5.918	8.388	13.671

**Form A-4B Output Ranges (2012 FHCF Exposure Data)**  
**LOSS COSTS PER \$1000 with Specified Deductibles**

**Modeling Organization:** ARA  
**Model Name & Version Number:** HurLoss 7.0.b  
**Model Release Date:** 11/14/2016

County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Alachua	LOW	0.150	0.161	1.221	0.003	0.002	0.008	0.008	0.245
	AVERAGE	0.376	0.373	1.778	0.027	0.025	0.042	0.039	0.344
	HIGH	0.688	0.663	2.320	0.082	0.077	0.109	0.102	0.624
Baker	LOW	0.080	0.078	0.668	0.001	0.002	0.000	0.000	0.000
	AVERAGE	0.221	0.222	0.941	0.012	0.015	0.000	0.000	0.000
	HIGH	0.329	0.319	1.052	0.019	0.017	0.000	0.000	0.000
Bay	LOW	0.255	0.248	2.241	0.004	0.006	0.011	0.009	0.357
	AVERAGE	0.901	0.813	3.569	0.089	0.088	0.222	0.201	1.033
	HIGH	2.251	2.177	8.325	0.403	0.384	0.505	0.480	2.286
Bradford	LOW	0.142	0.138	1.106	0.006	0.005	0.000	0.000	0.000
	AVERAGE	0.333	0.340	1.373	0.025	0.022	0.000	0.000	0.000
	HIGH	0.455	0.441	1.476	0.028	0.026	0.000	0.000	0.000
Brevard	LOW	1.366	1.339	5.635	0.055	0.045	0.139	0.072	0.783
	AVERAGE	3.936	3.989	10.850	0.629	0.608	0.793	1.092	3.192
	HIGH	9.637	9.405	23.474	2.115	2.058	2.616	2.541	5.775
Broward	LOW	4.945	4.708	21.063	0.160	0.133	0.400	0.312	2.010
	AVERAGE	6.882	6.486	23.400	0.906	0.918	1.361	1.314	5.188
	HIGH	8.966	8.560	28.657	1.576	1.468	2.094	1.952	6.481
Calhoun	LOW	0.099	0.097	0.930	0.002	0.005	0.000	0.000	0.000
	AVERAGE	0.269	0.264	1.272	0.011	0.009	0.000	0.000	0.000
	HIGH	0.481	0.466	1.615	0.022	0.020	0.000	0.000	0.000
Charlotte	LOW	2.361	2.304	10.094	0.060	0.048	0.160	0.134	1.172
	AVERAGE	3.755	3.401	11.943	0.521	0.461	0.850	0.565	2.476
	HIGH	5.829	5.652	14.407	1.041	0.997	1.337	1.280	3.535
Citrus	LOW	0.377	0.323	2.539	0.016	0.003	0.043	0.037	0.670
	AVERAGE	0.907	0.781	3.511	0.101	0.082	0.181	0.185	1.010
	HIGH	1.505	1.450	5.101	0.267	0.253	0.341	0.322	1.309
Clay	LOW	0.153	0.149	1.340	0.003	0.004	0.008	0.012	0.291
	AVERAGE	0.390	0.390	1.504	0.038	0.037	0.046	0.040	0.364
	HIGH	0.680	0.657	2.227	0.073	0.068	0.096	0.090	0.458
Collier	LOW	2.355	2.304	10.753	0.091	0.046	0.155	0.136	1.400
	AVERAGE	4.916	4.663	15.034	0.940	0.860	1.320	1.192	3.901
	HIGH	11.614	8.904	29.127	2.407	2.338	2.918	2.831	7.399
Columbia	LOW	0.066	0.064	0.626	0.001	0.001	0.012	0.009	0.185
	AVERAGE	0.242	0.237	1.138	0.014	0.015	0.024	0.018	0.192
	HIGH	0.408	0.394	1.371	0.036	0.030	0.043	0.030	0.221
DeSoto	LOW	2.501	2.440	9.736	0.236	0.148	0.284	0.232	2.124
	AVERAGE	3.961	3.723	11.518	0.536	0.453	0.563	0.440	2.251
	HIGH	4.905	4.785	11.874	0.583	0.555	0.792	0.754	2.541
Dixie	LOW	0.100	0.112	0.859	0.006	0.014	0.006	0.009	0.173
	AVERAGE	0.265	0.241	1.127	0.022	0.019	0.013	0.014	0.188
	HIGH	0.362	0.350	1.162	0.031	0.029	0.018	0.040	0.284

County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Duval	LOW	0.129	0.146	1.145	0.004	0.004	0.007	0.008	0.190
	AVERAGE	0.495	0.497	1.690	0.062	0.063	0.068	0.076	0.462
	HIGH	0.981	1.046	3.582	0.201	0.193	0.196	0.186	0.878
Escambia	LOW	0.858	0.826	6.062	0.054	0.045	0.291	0.210	1.117
	AVERAGE	2.873	2.930	9.287	0.680	0.716	1.134	1.256	3.303
	HIGH	5.720	5.606	18.733	1.938	1.895	2.274	2.217	5.208
Flagler	LOW	0.324	0.315	2.608	0.006	0.004	0.016	0.014	0.342
	AVERAGE	0.683	0.587	3.291	0.062	0.048	0.112	0.073	0.637
	HIGH	1.237	1.196	3.886	0.156	0.147	0.203	0.191	1.085
Franklin	LOW	0.064	0.068	0.693	0.005	0.009	0.003	0.003	0.141
	AVERAGE	0.204	0.221	0.927	0.026	0.020	0.010	0.015	0.153
	HIGH	0.468	0.453	1.645	0.052	0.049	0.067	0.028	0.154
Gadsden	LOW	0.040	0.045	0.467	0.000	0.001	0.000	0.006	0.084
	AVERAGE	0.115	0.122	0.559	0.004	0.004	0.000	0.006	0.102
	HIGH	0.204	0.198	0.680	0.005	0.004	0.000	0.006	0.110
Gilchrist	LOW	0.206	0.171	1.395	0.016	0.020	0.000	0.050	0.000
	AVERAGE	0.389	0.383	1.626	0.052	0.048	0.000	0.050	0.000
	HIGH	0.523	0.505	1.743	0.058	0.054	0.000	0.050	0.000
Glades	LOW	3.916	3.216	11.060	0.680	0.284	0.000	0.000	0.000
	AVERAGE	5.755	5.573	17.024	0.680	0.578	0.000	0.000	0.000
	HIGH	7.094	6.936	17.258	0.680	0.645	0.000	0.000	0.000
Gulf	LOW	0.110	0.108	1.151	0.003	0.004	0.003	0.005	0.131
	AVERAGE	0.241	0.262	1.197	0.015	0.013	0.013	0.009	0.219
	HIGH	0.379	0.368	1.223	0.018	0.017	0.025	0.024	0.269
Hamilton	LOW	0.070	0.067	0.580	0.004	0.008	0.000	0.000	0.000
	AVERAGE	0.142	0.142	0.632	0.010	0.009	0.000	0.000	0.000
	HIGH	0.212	0.205	0.687	0.011	0.010	0.000	0.000	0.000
Hardee	LOW	1.815	1.717	8.368	0.142	0.081	0.000	0.509	1.264
	AVERAGE	3.237	3.079	9.198	0.365	0.337	0.000	0.509	1.460
	HIGH	3.543	3.475	9.999	0.424	0.404	0.000	0.509	1.656
Hendry	LOW	3.570	3.502	15.488	0.139	0.156	0.474	0.182	2.622
	AVERAGE	5.164	4.990	16.486	0.568	0.505	0.809	0.647	3.143
	HIGH	7.055	6.883	17.555	0.660	0.627	0.919	0.866	3.456
Hernando	LOW	0.784	0.690	3.709	0.038	0.014	0.167	0.095	0.828
	AVERAGE	1.668	1.663	4.193	0.151	0.159	0.271	0.266	1.056
	HIGH	2.191	2.138	5.463	0.286	0.270	0.397	0.376	1.398
Highlands	LOW	1.580	1.439	6.032	0.036	0.012	0.181	0.069	1.183
	AVERAGE	3.241	3.043	8.915	0.253	0.211	0.384	0.370	1.754
	HIGH	5.735	5.608	13.585	0.456	0.429	0.651	0.616	2.640
Hillsborough	LOW	0.745	0.733	3.992	0.019	0.017	0.029	0.039	0.887
	AVERAGE	2.179	2.043	5.907	0.206	0.197	0.316	0.305	1.456
	HIGH	3.566	3.480	7.745	0.557	0.530	0.751	0.715	2.733
Holmes	LOW	0.205	0.200	1.890	0.010	0.026	0.043	0.000	0.387
	AVERAGE	0.495	0.483	2.115	0.034	0.029	0.043	0.000	0.387
	HIGH	0.856	0.830	2.685	0.052	0.048	0.043	0.000	0.387
Indian River	LOW	3.475	3.385	13.639	0.098	0.090	0.435	0.216	2.258
	AVERAGE	5.723	5.326	16.673	1.046	1.004	1.405	1.512	4.827
	HIGH	10.070	9.799	23.619	2.283	2.217	2.820	2.733	6.156

County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Jackson	LOW	0.107	0.107	0.997	0.004	0.008	0.000	0.017	0.186
	AVERAGE	0.296	0.301	1.372	0.015	0.014	0.000	0.025	0.292
	HIGH	0.527	0.511	1.783	0.026	0.024	0.000	0.035	0.336
Jefferson	LOW	0.045	0.044	0.457	0.002	0.001	0.008	0.000	0.000
	AVERAGE	0.103	0.099	0.463	0.006	0.006	0.008	0.000	0.000
	HIGH	0.147	0.143	0.463	0.008	0.007	0.008	0.000	0.000
Lafayette	LOW	0.091	0.089	0.673	0.005	0.009	0.018	0.000	0.000
	AVERAGE	0.168	0.166	0.716	0.012	0.011	0.018	0.000	0.000
	HIGH	0.224	0.217	0.716	0.013	0.012	0.018	0.000	0.000
Lake	LOW	0.436	0.386	2.423	0.008	0.015	0.034	0.031	0.776
	AVERAGE	1.792	1.804	4.926	0.132	0.116	0.284	0.257	1.221
	HIGH	2.845	2.797	7.714	0.273	0.260	0.400	0.380	1.790
Lee	LOW	2.585	2.521	11.121	0.067	0.050	0.164	0.137	1.419
	AVERAGE	4.845	4.269	12.757	0.773	0.659	1.125	0.946	3.347
	HIGH	8.191	7.960	19.739	1.880	1.822	2.327	2.253	5.140
Leon	LOW	0.045	0.044	0.448	0.000	0.001	0.001	0.001	0.039
	AVERAGE	0.116	0.115	0.488	0.005	0.005	0.006	0.006	0.091
	HIGH	0.171	0.165	0.551	0.008	0.008	0.011	0.010	0.116
Levy	LOW	0.231	0.222	1.731	0.026	0.022	0.031	0.047	0.422
	AVERAGE	0.622	0.639	2.698	0.094	0.096	0.086	0.083	0.530
	HIGH	1.211	1.167	4.309	0.204	0.195	0.112	0.105	0.708
Liberty	LOW	0.064	0.062	0.639	0.002	0.006	0.000	0.000	0.000
	AVERAGE	0.167	0.169	0.735	0.006	0.006	0.000	0.000	0.000
	HIGH	0.262	0.255	0.790	0.006	0.006	0.000	0.000	0.000
Madison	LOW	0.051	0.050	0.453	0.001	0.002	0.000	0.000	0.000
	AVERAGE	0.121	0.119	0.550	0.006	0.006	0.000	0.000	0.000
	HIGH	0.211	0.204	0.722	0.014	0.012	0.000	0.000	0.000
Manatee	LOW	1.811	1.763	9.273	0.051	0.049	0.123	0.110	1.050
	AVERAGE	3.911	3.346	10.478	0.610	0.491	1.026	1.000	3.322
	HIGH	7.889	7.681	21.281	1.608	1.556	2.029	1.960	4.972
Marion	LOW	0.248	0.219	1.952	0.008	0.002	0.028	0.023	0.409
	AVERAGE	0.856	0.746	3.206	0.068	0.062	0.094	0.152	0.682
	HIGH	1.374	1.329	4.687	0.176	0.166	0.231	0.217	0.967
Martin	LOW	4.643	4.518	19.761	0.150	0.141	0.375	0.327	2.543
	AVERAGE	8.098	7.570	24.612	1.751	1.679	2.312	2.673	6.448
	HIGH	13.211	12.851	33.379	3.464	3.375	4.214	4.100	8.480
Miami-Dade	LOW	3.316	3.894	14.179	0.276	0.180	0.343	0.272	1.969
	AVERAGE	8.012	7.394	31.170	1.456	1.461	1.912	1.891	6.367
	HIGH	14.619	14.161	41.824	3.943	3.788	4.860	4.661	11.954
Monroe	LOW	6.195	5.999	27.261	1.508	0.353	0.818	0.676	2.794
	AVERAGE	10.041	9.370	30.100	3.960	3.531	3.486	3.446	7.652
	HIGH	16.447	16.144	36.795	6.531	6.412	4.680	7.417	11.257
Nassau	LOW	0.104	0.117	0.948	0.002	0.006	0.029	0.022	0.224
	AVERAGE	0.536	0.456	1.465	0.103	0.092	0.156	0.156	0.611
	HIGH	0.882	0.854	2.921	0.160	0.154	0.198	0.189	0.796
Okaloosa	LOW	0.440	0.428	3.095	0.021	0.017	0.054	0.089	0.646
	AVERAGE	1.765	1.867	4.970	0.320	0.373	0.636	0.749	2.404
	HIGH	3.778	3.659	13.531	0.950	0.919	1.148	1.106	3.950

County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Okeechobee	LOW	3.727	3.659	14.507	0.215	0.130	0.298	0.242	2.342
	AVERAGE	5.082	4.806	14.526	0.518	0.455	0.482	0.671	2.724
	HIGH	6.333	6.178	14.612	0.608	0.574	0.783	0.814	3.043
Orange	LOW	0.647	0.636	3.510	0.013	0.012	0.035	0.020	0.444
	AVERAGE	1.745	1.751	5.146	0.111	0.099	0.167	0.157	1.017
	HIGH	2.541	2.486	6.591	0.214	0.202	0.307	0.289	1.321
Osceola	LOW	0.574	0.566	3.516	0.015	0.009	0.025	0.022	0.371
	AVERAGE	1.916	1.933	6.569	0.129	0.110	0.155	0.128	1.029
	HIGH	4.270	4.187	11.021	0.497	0.421	0.428	0.404	1.889
Palm Beach	LOW	4.743	4.554	20.538	0.201	0.178	0.438	0.367	2.149
	AVERAGE	7.327	6.834	25.418	1.165	1.071	1.675	1.508	5.625
	HIGH	12.783	12.283	32.906	3.109	2.967	3.885	3.702	10.026
Pasco	LOW	0.712	0.700	3.832	0.018	0.016	0.043	0.039	0.786
	AVERAGE	1.735	1.797	5.213	0.145	0.155	0.252	0.319	1.392
	HIGH	2.501	2.441	6.209	0.299	0.283	0.415	0.392	1.738
Pinellas	LOW	0.962	0.943	5.649	0.035	0.015	0.080	0.044	0.810
	AVERAGE	3.279	3.019	8.101	0.392	0.421	0.684	0.699	2.353
	HIGH	6.749	6.622	13.808	1.515	1.471	1.911	1.852	5.288
Polk	LOW	0.658	0.648	3.778	0.015	0.006	0.031	0.020	0.627
	AVERAGE	2.071	1.959	6.263	0.134	0.148	0.182	0.230	1.200
	HIGH	3.963	3.897	10.767	0.412	0.393	0.594	0.565	1.803
Putnam	LOW	0.207	0.202	1.574	0.009	0.007	0.017	0.015	0.431
	AVERAGE	0.504	0.500	2.133	0.037	0.033	0.063	0.040	0.476
	HIGH	0.931	0.901	3.041	0.060	0.053	0.082	0.075	0.531
St. Johns	LOW	0.209	0.203	1.717	0.004	0.004	0.010	0.009	0.282
	AVERAGE	0.611	0.728	2.651	0.090	0.095	0.164	0.210	0.798
	HIGH	1.606	1.559	5.654	0.301	0.290	0.371	0.357	1.501
St. Lucie	LOW	4.184	3.813	15.388	0.350	0.125	0.333	0.288	2.405
	AVERAGE	6.835	6.059	19.382	1.323	0.986	1.813	1.756	5.282
	HIGH	12.787	12.458	30.175	3.357	3.276	4.074	3.969	8.122
Santa Rosa	LOW	0.775	0.749	5.586	0.048	0.042	0.139	0.062	0.768
	AVERAGE	2.406	2.548	8.220	0.666	0.626	1.842	1.558	3.649
	HIGH	6.503	6.381	20.749	2.316	2.268	2.700	2.637	6.618
Sarasota	LOW	1.855	1.816	8.704	0.054	0.039	0.117	0.097	0.989
	AVERAGE	3.541	3.113	10.567	0.479	0.453	0.752	0.734	2.556
	HIGH	9.238	8.986	24.653	2.234	2.169	2.754	2.672	6.006
Seminole	LOW	0.554	0.545	4.032	0.005	0.005	0.029	0.024	0.428
	AVERAGE	1.512	1.526	4.425	0.093	0.085	0.145	0.143	0.888
	HIGH	2.216	2.160	5.463	0.174	0.164	0.261	0.244	1.381
Sumter	LOW	0.578	0.512	2.978	0.018	0.011	0.076	0.038	0.727
	AVERAGE	1.125	1.068	3.499	0.063	0.062	0.138	0.105	0.851
	HIGH	1.798	1.753	4.619	0.159	0.244	0.158	0.167	1.096
Suwannee	LOW	0.100	0.096	0.793	0.006	0.005	0.019	0.015	0.171
	AVERAGE	0.219	0.216	0.996	0.016	0.015	0.019	0.015	0.248
	HIGH	0.405	0.392	1.479	0.032	0.024	0.019	0.015	0.295
Taylor	LOW	0.056	0.065	0.453	0.003	0.006	0.005	0.004	0.136
	AVERAGE	0.145	0.144	0.637	0.010	0.009	0.010	0.010	0.136
	HIGH	0.220	0.214	0.694	0.014	0.013	0.020	0.015	0.136

County	Loss Costs	Frame Owners	Masonry Owners	Mobile Homes	Frame Renters	Masonry Renters	Frame Condo Unit	Masonry Condo Unit	Commercial Residential
Union	LOW	0.127	0.124	0.999	0.005	0.001	0.014	0.012	0.258
	AVERAGE	0.273	0.271	1.162	0.018	0.018	0.014	0.012	0.258
	HIGH	0.365	0.354	1.184	0.022	0.020	0.014	0.012	0.258
Volusia	LOW	0.421	0.413	2.322	0.011	0.005	0.030	0.026	0.305
	AVERAGE	1.662	1.561	4.288	0.140	0.142	0.383	0.451	1.349
	HIGH	3.954	3.885	10.282	0.688	0.666	0.888	0.857	2.787
Wakulla	LOW	0.050	0.049	0.522	0.000	0.002	0.004	0.008	0.093
	AVERAGE	0.117	0.124	0.545	0.006	0.005	0.016	0.026	0.170
	HIGH	0.290	0.281	1.017	0.022	0.023	0.032	0.030	0.197
Walton	LOW	0.333	0.325	2.866	0.020	0.016	0.033	0.016	0.611
	AVERAGE	1.467	1.302	4.634	0.218	0.210	0.580	0.460	2.260
	HIGH	3.309	3.202	12.189	0.740	0.712	0.906	0.869	3.480
Washington	LOW	0.254	0.249	2.007	0.017	0.015	0.026	0.000	0.413
	AVERAGE	0.551	0.560	2.404	0.041	0.038	0.026	0.000	0.468
	HIGH	0.838	0.804	2.653	0.054	0.049	0.026	0.000	0.584
Statewide	LOW	0.040	0.044	0.448	0.000	0.001	0.001	0.001	0.039
	AVERAGE	2.088	3.723	7.446	0.284	0.513	0.552	1.097	3.840
	HIGH	16.447	16.144	41.824	6.531	6.412	4.860	7.417	11.954

## **Form A-8: Probable Maximum Loss for Florida**

- A. *Provide a detailed explanation of how the Expected Annual Hurricane Losses and Return Periods are calculated.*
- B. *Complete Part A showing the personal and commercial residential probable maximum loss for Florida. For the Expected Annual Hurricane Losses column, provide personal and commercial residential, zero deductible statewide loss costs based on the 2012 Florida Hurricane Catastrophe Fund's aggregate personal and commercial residential exposure data found in the file named "hlp2012c.exe."*

*In the column, Return Period (Years), provide the return period associated with the average loss within the ranges indicated on a cumulative basis.*

*For example, if the average loss is \$4,705 million for the range \$4,501 million to \$5,000 million, provide the return period associated with a loss that is \$4,705 million or greater.*

*For each loss range in millions (\$1,001-\$1,500, \$1,501-\$2,000, \$2,001-\$2,500) the average loss within that range should be identified and then the return period associated with that loss calculated. The return period is then the reciprocal of the probability of the loss equaling or exceeding this average loss size.*

*The probability of equaling or exceeding the average of each range should be smaller as the ranges increase (and the average losses within the ranges increase). Therefore, the return period associated with each range and average loss within that range should be larger as the ranges increase. Return periods shall be based on cumulative probabilities.*

*A return period for an average loss of \$4,705 million within the \$4,501-\$5,000 million range should be lower than the return period for an average loss of \$5,455 million associated with a \$5,001- \$6,000 million range.*

- C. *Provide a graphical comparison of the current submission Residential Return Periods loss curve to the previously accepted submission Residential Return Periods loss curve. Residential Return Period (Years) shall be shown on the y-axis on a log 10 scale with Losses in Billions shown on the x-axis. The legend shall indicate the corresponding submission with a solid line representing the current year and a dotted line representing the previously accepted submission.*
- D. *Provide the estimated loss and uncertainty interval for each of the Personal and Commercial Residential Return Periods given in Part B. Describe how the uncertainty intervals are derived.*
- E. *Provide this form in Excel format. The file name shall include the abbreviated name of the modeling organization, the standards year, and the form name. A hard copy of Form A-8 (Probable Maximum Loss for Florida) shall be included in a submission appendix.*

**A.** Return time represents the mean return period associated with a storm producing a loss equal to or greater than the average loss within a given limit range ( $a_i$ ). The formula is:

$$RP = \frac{1}{1 - e^{-\lambda x}}$$

where  $\lambda = \frac{n_{events}}{n_{years}}$  and  $x = 1 - \frac{n_{events\ with\ loss < a_i}}{n_{events} + 1}$

**B.** See Form A-8, Part A.

**C.** A graphical comparison of return times for the current submission and the previously accepted submission is provided in Figure 5.

**D.** See Form A-8, Part B. The uncertainty intervals given in Part B represent the 5<sup>th</sup> and 95<sup>th</sup> percentiles of the maximum loss observed in each consecutive  $n$ -year period of the 300,000 years of simulated losses, where  $n$  is 5, 10, ..., or 1,000 years.

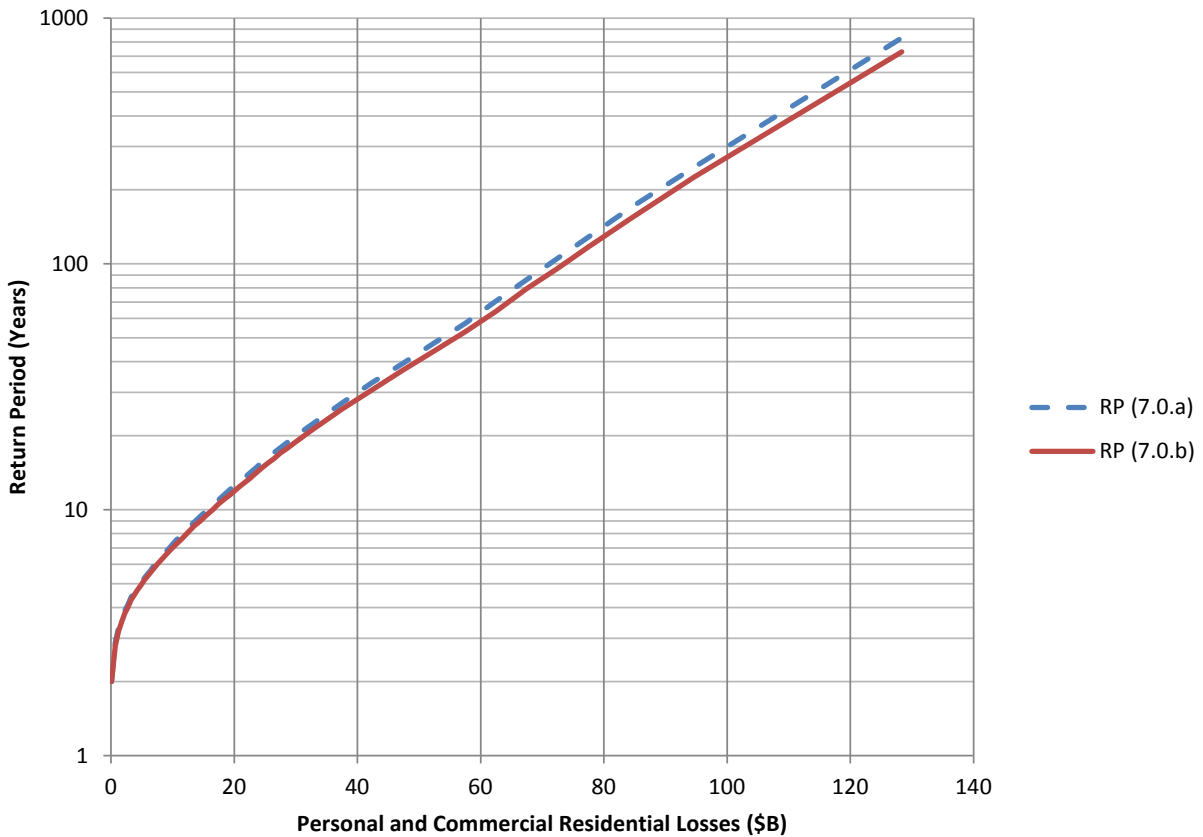
**E.** See file ARA13bFormA8\_revised\_2016-11-14.xlsx.



**Part A: Personal and Commercial Residential Probable Maximum Loss for Florida**

LOSS RANGE (MILLIONS)			TOTAL LOSS	AVERAGE LOSS (MILLIONS)	NUMBER OF HURRICANES	EXPECTED ANNUAL HURRICANE LOSSES*	RETURN PERIOD (YEARS)
\$ -	to	\$ 500	19,673,925	95	206,883	65.6	2.0
\$ 501	to	\$ 1,000	19,406,410	716	27,073	64.7	2.8
\$ 1,001	to	\$ 1,500	18,196,206	1,230	14,782	60.7	3.2
\$ 1,501	to	\$ 2,000	17,038,384	1,735	9,816	56.8	3.5
\$ 2,001	to	\$ 2,500	16,690,070	2,239	7,453	55.6	3.8
\$ 2,501	to	\$ 3,000	16,291,732	2,741	5,943	54.3	4.0
\$ 3,001	to	\$ 3,500	15,729,107	3,240	4,854	52.4	4.3
\$ 3,501	to	\$ 4,000	15,362,857	3,747	4,100	51.2	4.5
\$ 4,001	to	\$ 4,500	15,666,014	4,244	3,691	52.2	4.7
\$ 4,501	to	\$ 5,000	15,622,798	4,747	3,291	52.1	4.9
\$ 5,001	to	\$ 6,000	30,926,882	5,484	5,639	103.1	5.2
\$ 6,001	to	\$ 7,000	30,879,992	6,486	4,761	102.9	5.6
\$ 7,001	to	\$ 8,000	31,455,361	7,496	4,196	104.9	6.0
\$ 8,001	to	\$ 9,000	31,389,349	8,490	3,697	104.6	6.4
\$ 9,001	to	\$ 10,000	30,738,210	9,492	3,238	102.5	6.8
\$ 10,001	to	\$ 11,000	29,451,849	10,492	2,807	98.2	7.2
\$ 11,001	to	\$ 12,000	31,444,525	11,488	2,737	104.8	7.6
\$ 12,001	to	\$ 13,000	30,339,077	12,490	2,429	101.1	8.1
\$ 13,001	to	\$ 14,000	30,720,517	13,497	2,276	102.4	8.6
\$ 14,001	to	\$ 15,000	30,145,922	14,500	2,079	100.5	9.0
\$ 15,001	to	\$ 16,000	28,850,376	15,502	1,861	96.2	9.5
\$ 16,001	to	\$ 17,000	29,561,945	16,496	1,792	98.5	10.0
\$ 17,001	to	\$ 18,000	27,897,902	17,490	1,595	93.0	10.6
\$ 18,001	to	\$ 19,000	28,530,454	18,490	1,543	95.1	11.1
\$ 19,001	to	\$ 20,000	26,479,534	19,498	1,358	88.3	11.6
\$ 20,001	to	\$ 21,000	26,747,288	20,480	1,306	89.2	12.2
\$ 21,001	to	\$ 22,000	27,028,963	21,485	1,258	90.1	12.8
\$ 22,001	to	\$ 23,000	26,207,651	22,495	1,165	87.4	13.4
\$ 23,001	to	\$ 24,000	25,980,734	23,511	1,105	86.6	14.1
\$ 24,001	to	\$ 25,000	25,721,306	24,496	1,050	85.7	14.8
\$ 25,001	to	\$ 26,000	24,503,999	25,498	961	81.7	15.5
\$ 26,001	to	\$ 27,000	24,601,187	26,509	928	82.0	16.2
\$ 27,001	to	\$ 28,000	22,837,589	27,482	831	76.1	17.0
\$ 28,001	to	\$ 29,000	22,565,025	28,491	792	75.2	17.7
\$ 29,001	to	\$ 30,000	23,025,667	29,482	781	76.8	18.5
\$ 30,001	to	\$ 35,000	103,773,383	32,388	3,204	345.9	20.9
\$ 35,001	to	\$ 40,000	88,979,423	37,386	2,380	296.6	25.6
\$ 40,001	to	\$ 45,000	79,127,638	42,382	1,867	263.8	30.8
\$ 45,001	to	\$ 50,000	69,668,556	47,425	1,469	232.2	37.0
\$ 50,001	to	\$ 55,000	67,469,350	52,423	1,287	224.9	44.2
\$ 55,001	to	\$ 60,000	58,247,535	57,500	1,013	194.2	53.0
\$ 60,001	to	\$ 65,000	63,951,307	62,452	1,024	213.2	64.1
\$ 65,001	to	\$ 70,000	50,206,804	67,391	745	167.4	79.0
\$ 70,001	to	\$ 75,000	45,067,038	72,455	622	150.2	95.8
\$ 75,001	to	\$ 80,000	37,748,961	77,354	488	125.8	116.5
\$ 80,001	to	\$ 90,000	65,366,712	84,562	773	217.9	154.2
\$ 90,001	to	\$ 100,000	46,298,771	94,680	489	154.3	225.7
\$ 100,001	to	Maximum	140,389,396	128,326	1,094	468.0	728.2
<b>Total</b>			<b>1,784,003,704</b>		<b>356,526</b>	<b>5,946.0</b>	

\*Personal and commercial residential zero deductible statewide loss using 2012 FHCF personal and commercial residential exposure data – file name: *hlpm2012c.exe*.



**Figure 5. Comparison of Revised Form A-8 Results (version 7.0.b) to the Previously Accepted Submission (version 7.0.a)**

***Part B: Personal and Commercial Residential Probable Maximum Loss for Florida***

Return Period (Years)	Estimated Loss Level	Uncertainty Interval	
		5%	95%
Top Event	317,945,611,896	N/A	N/A
1000	136,857,846,247	106,345,845,093	224,445,480,448
500	116,984,077,480	86,781,859,500	197,360,824,811
250	97,687,945,450	68,722,583,461	179,777,324,069
100	73,452,307,919	45,269,439,248	156,116,186,764
50	55,826,744,956	27,838,897,363	135,876,307,371
20	31,195,807,662	10,702,573,266	109,818,333,801
10	16,419,552,962	2,400,937,830	90,647,170,200
5	5,034,760,043	204,627,305	73,033,627,097

**Form S-5: Average Annual Zero Deductible Statewide Loss Costs –  
Historical versus Modeled**

- A. *Provide the average annual zero deductible statewide personal and commercial residential loss costs produced using the list of hurricanes in the Base Hurricane Storm Set as defined in Standard M-1 based on the 2012 Florida Hurricane Catastrophe Fund’s aggregate personal and commercial residential exposure data found in the file named “hlpm2012c.exe.”*
- B. *Provide a comparison with the statewide personal and commercial residential loss costs produced by the model on an average industry basis.*

*Average Annual Zero Deductible Statewide Personal and Commercial Residential Loss Costs*

<b>Time Period</b>	<b>Historical Hurricanes</b>	<b>Produced by Model</b>
<i>Current Submission (7.0.b)</i>	\$5.22B	\$5.95B
<i>Previous Accepted Submission (7.0.a)</i>	\$4.99B	\$5.69B
<i>Percentage Change Current Submission/Previously Accepted Submission</i>	4.6%	4.6%

- C. *Provide the 95% confidence interval on the differences between the mean of the historical and modeled personal and commercial residential loss.*

The 95% confidence interval on the difference between the mean of the historical loss and the mean of the modeled loss is -\$3.34B to +\$1.87B.

- D. *If the data are partitioned or modified, provide the average annual zero deductible statewide personal and commercial residential loss costs for the applicable partition (and its complement) or modification as well as the modeled average annual zero deductible statewide personal and commercial residential loss costs in additional copies of Form S-5.*

Not applicable.