

Consolidated Modeler Suggestions for Actuarial forms in ROA 11

October 19, 2011

Tallahassee, FL

Collaboration among modelers

- Since Sept meeting, modelers have met via teleconference 5 times
 - EQE, RMS, AIR,ARA,FPM
- 1 conference call with Professional team members on Oct 6
- Proposal represents consensus view of modelers
- 3 of the modelers have submitted example exhibits this week based on the Oct 10 proposal.
 - Based on this work, 2 further revisions are recommended

Sept 2011 Actuarial Form Suggestion Overview

■ Three broad suggestions:

1. Output Range reform:

- Moving the deductible relativity and coverage relativity out of Form A-6 and into:
- New set of Forms aimed at exposing “Logical Relationship to Risk” (LRTR) for review.
 - Deductible, coverage plus construction, building code (year built) and policy type relativities.
- Based on Notional Exposure Set at 5 km Grid spacing

2. Introduction of various notional exposure sets to calculate loss costs in other Actuarial forms

3. Consolidation and standardization of specifications currently found in Form A1 and Form A6

October 2011 Actuarial Form Suggestion Overview

■ Three broad suggestions:

Red = changes since Sept

1. Output Range reform:

- Moving the deductible relativity and coverage relativity out of Form A-6 and into **Form A7/A8**:
- New Forms aimed at exposing “Logical Relationship to Risk” (Trade Secret)
 - Deductible, coverage plus construction, building code (year built) and policy type, **and building strength** relativities.
- New Forms based on Notional Exposure Set **at ‘Grid B’ representing range of populated areas in state.**

~~2. Introduction of various notional exposure sets to calculate loss costs in other Actuarial forms~~

- ~~– (withdraw uniform grid idea for output ranges and Form A1)~~

3. **Output Ranges will be based on FHCF *without* existing ‘specifications’ so data is same as used in Form A3 / A9.**

4. Consolidation and standardization of specifications currently found in **Form A1 and** ROA09-Form A6

Detailed Form changes – Page 6 (1)

Old Form	New form	Changes
A-1	A-1	- Same as ROA09, except that all loss costs reported per thousand dollars of exposure rather than per dollar of exposure. Adjustment to example calculations
A-2	A-2	- Same as ROA09
A-3	A-3	- No changes, other than suggested at August 2011 meeting
A-4	-	- Deleted form at August 2011 meeting (Hurricane Andrew)
A-5	A-4	- Nominally same as ROA09 - Minor edits from Sept 2011 workshop to reflect that modelers should use all data in hlp2007c.exe, and not just com-res exposure.

Detailed Form changes – Page 6 (2)

Old Form	New form	Changes
A-6	A-5	<ul style="list-style-type: none"> - Moved deductible/coverage relativity results by county to two new forms (Logical Relationship to Risk), - Separating output range from deductible sensitivity will reduce size of output range table (and submission preparation time) without sacrificing any of the useful detail and relationships present in current form. - Summarize max/min/average loss costs by county using the same FHCF data as other forms (eg. A3/A9). Dropping use of 'notional' specifications in ROA09 that required special treatment of FHCF data for this form relative to other forms. - Add Commercial-residential (condo association) LOB to output form.
A-7	A-6	<ul style="list-style-type: none"> - Similar regional/county summary of percentage differences relative to previous model, based on analysis in output range Form from above. Changes to form means that modeler will now report percentage change in total Loss Costs by LOB, in addition, to the changes to individual deductible/coverage values in previous version (which have been moved to Form A-8 in ROA11 version).

Detailed Form changes – Page 6 (3)

Old Form	New form	Changes
A-8	A-6	<ul style="list-style-type: none"> - Move maps from Form A-8 into the revised version of Form A-6 above. Maps same as ROA09, except, instead of reporting change in loss costs for 2% deductible, the map will be based on actual deductible levels reported in data file (FHCF).
-	A-7	<ul style="list-style-type: none"> - New Form A7 for Logical Relationship to Risk. Uses Notional risks to test coverage and deductible sensitivity. - Introduces 4 additional sensitivity result sets (Construction / Policy / Year Built/ Building Strength) in new LRTR forms. - New Form A7 reveals relationships using notional structures at 40 specific locations throughout state. - Results of new form provide greater insight than before into model variations with input parameters in a series of 'all-else-equal' tests. - This new form should be considered trade secret as the level of detail could be used to derive factors in rate filings directly and put modelers at competitive disadvantage.

Detailed Form changes – Page 6 (4)

Old Form	New form	Changes
-	A-8	<ul style="list-style-type: none"> - New Form A8 provides summary of percentage change in Logical Relationship to Risk exhibits - deductible and coverage levels by region in a format analogous to the current Form A7, but provides more detail on the 4 new sensitivity relationships in addition to deductible and coverage variations. - Add new tables to highlight percentage changes in the new relativity tables introduced above (deductible / construction / policy type / coverage / year built / strength). These tables will allow commissioners to see which parts of the state and policy types are affected by a given change in the model. - Tests model independent of zip aggregate hazard layers
A-9	A-9	<ul style="list-style-type: none"> - No Change, except remove exhibits based on only the personal residential FHCF data set (hlpm2007.exe) as discussed at August 2011 workshop.

Rational

- Reduces number of locations while providing more insight into model relationships.
 - Today Form A-6 requires more than 2.7 million location analysis
 - FHCF (389k locations) x 7 deductible levels
 - New output range and Logical Relationship forms
 - 436k locations total

Benefits

- Logical relationship to risk (LRTR) standards will be easily audited by providing exhibits in new Form A7/A8 that are based on notional ‘all-else-equal’ exposure sets.
 - greater insight to model changes by the professional team on-site and to commissioners both in trade secret sessions and in publicly disclosed information.
- Model run times will be significantly reduced – in particular Form A-6 (old) which drops from over 2.7 million locations to about 400 thousand.
 - will have a direct impact on modeler’s ability to QA submission results and reduce possibility of errors in submission documents.

Notional Exposure Sets – Form A7/A8 only

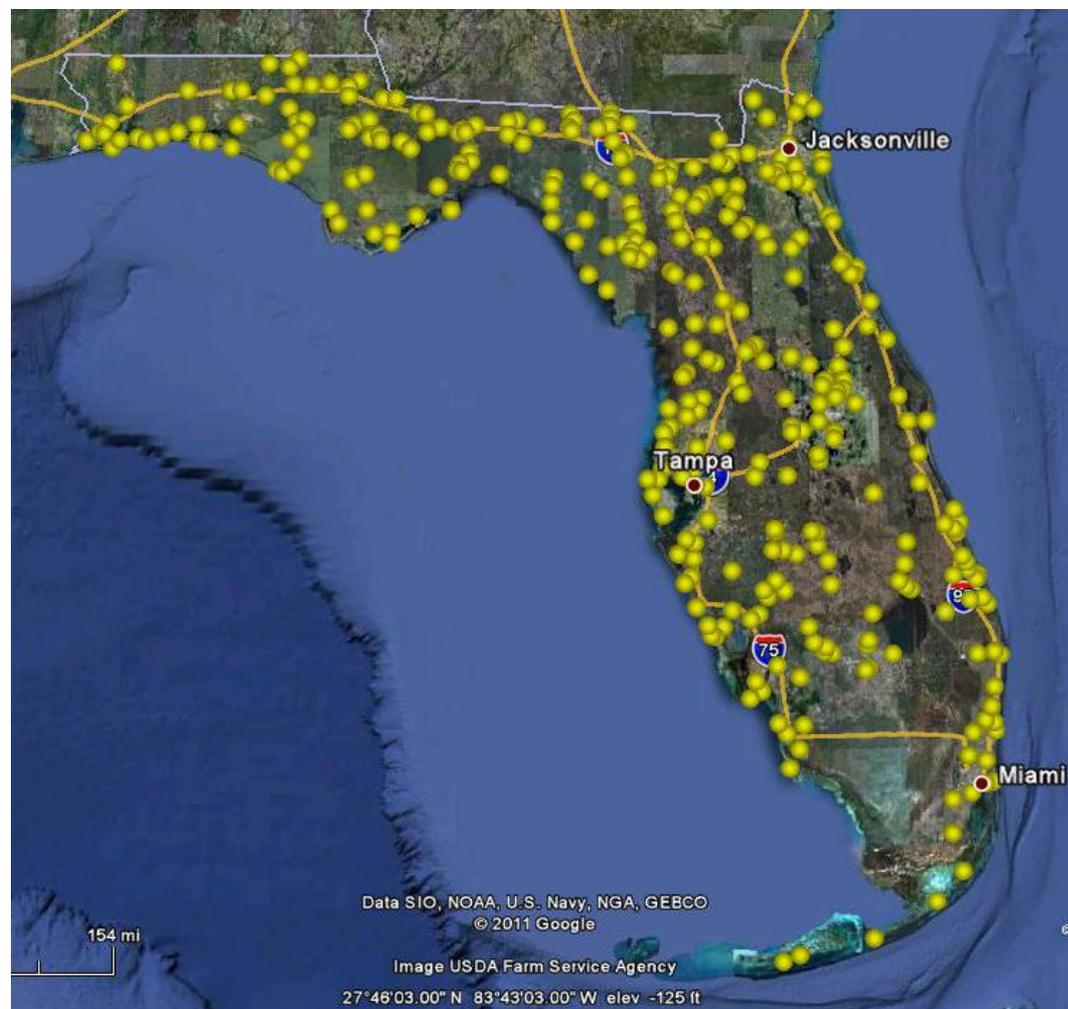
- Exposure sets designed to have a set(s) of notional risks located at a series grid locations
 - “Similar” to original design of Output Ranges (~10 years ago)
- Notional Risk Sets
 - Specified by “NotionalInput11.xls” data and “Notional Input Assumptions Specifications” in the Input Data section (see Model Identification section)

Exhibit	Notional Set
Deductible Sensitivity	Set 1
Construction Sensitivity	Set 2
Policy Form Sensitivity	Set 3
Coverage Sensitivity	Set 4
Building Code / Enforcement (Year Built) Sensitivity	Set 5
Building Strength Sensitivity	Set 6

Location Grid B – 336 points

Form A8: Percent Change in LRTR

- Purpose: Points to report regional summary stats of analysis in Logical Relationship to Risk Forms
- Set big enough so difference in regions is related to broader underlying model changes vs. only location specific terrain issues (sampling issues)
- Based on location level geocoding (independent of zip aggregation of hazard)



Treatment of Grid A / Grid B

- Modelers will treat each point as a coordinate that results after a hypothetical geocoding process.
- Modelers may treat points by simulating loss at exact location or may find nearest modeled parcel/street/cell in their model.

Location Grid B – 336 points

Form A8: Percent Change in Logical Relationship to Risk

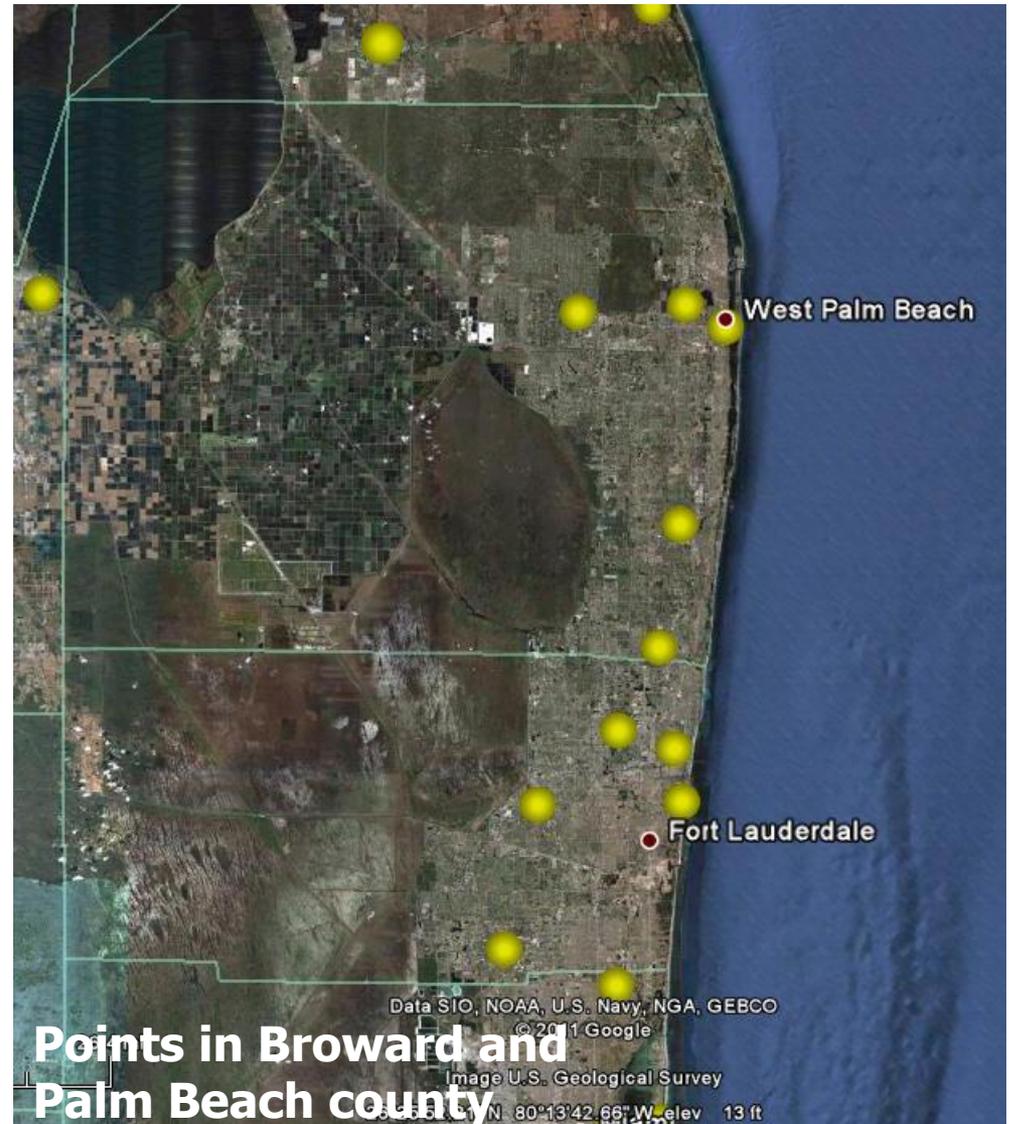
■ Development Methodology

- Creating a uniform grid of 500m resolution throughout the state
- Overlay the latest census housing count data and distribute houses into each 500 m cell assuming that housing units are uniformly distributed in each census block.
- Compile for each county, a list of cells sorted in descending order of housing counts and select the following rank percentiles from the list in each county; 100%, 97.5, 95%, 90%, and 80%. The center of each cell becomes the 5 points designated to represent each county in the Grid B set.
- Examine each county to ensure that the selected points are over residential areas and are generally distributed within different parts of the county (i.e. not too close together). Manual adjustments were made when points are located over water, in open fields (no development nearby), or were too close to each other in the county. Attempts were also made to ensure that 1-2 of the 5 points per county were on the coast when applicable.

Location Grid B – 336 points

Form A8: Percent Change in Logical Relationship to Risk

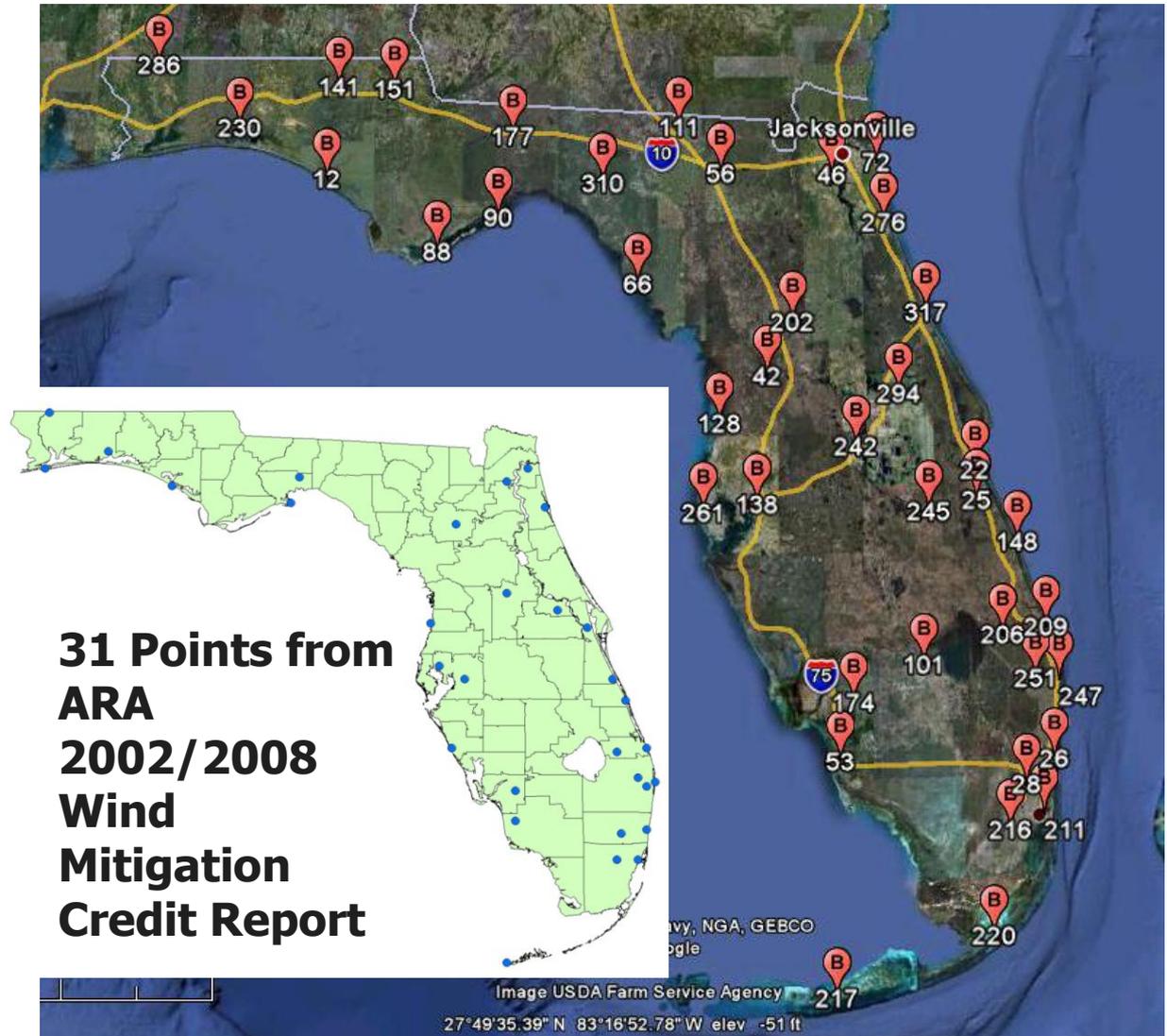
- 5 points per county
 - Dade = 6
 - Total = 336 points
- All counties equally represented
- Resulting points reflect range of where houses are built in state today. – i.e. rural to dense urban.
- Average of points will not mimic TIV distribution in state unless weights are assigned to each point



Location Grid A – 40 points

Form A-7: Logical Relationship to Risk

- Used with Notional Exposure Sets 1-6
- Points selected to mimic the points from ARA report
- ARA points represent specific populated areas that span reasonable range of inland/coastal, urban, rural, variations in design wind speed.
- Added 9 more points to fill in blanks and interior of state.



Limitations

- The ROA11 output ranges will be based on FHCF data with varying deductible levels rather than uniform 2% deductible.
 - May be slightly different than before
- The difference between the percentage change in coverage by region in ROA09-Form A7 will be different than equivalent in ROA11-Form A8