

Dive In!

The NC Private Flood Program

CASE Presentation – March 23, 2021

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TODAY'S PRESENTERS



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The NFIP: North Carolina Results

9th

North Carolina's ranking nationally in SFH exposure to flood damage

112,000

Number of SFH NFIP policies in North Carolina, compared to 3.5M nationwide

\$24,500,000,000

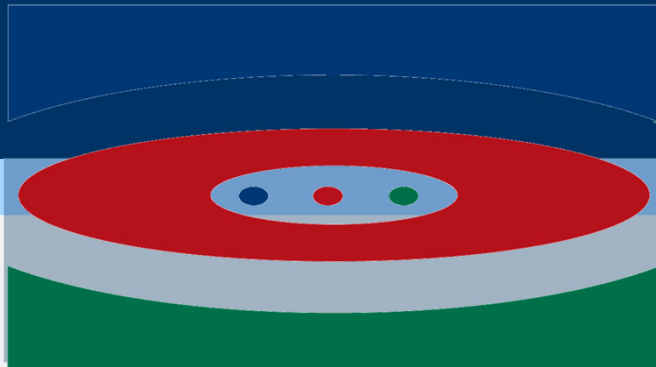
Total amount of losses from Hurricanes Matthew and Florence combined

Of that, \$10-13 billion were uninsured flood losses from Hurricane Florence

13%

Percentage of nationwide flood losses that are insured by the NFIP, as estimated by Milliman

NCRB-NCRF-NCIGA



Who is NCRB?

North Carolina Rate Bureau



The Bureau shall promulgate and propose rates for insurance against loss to residential real property with not more than four housing units

NCGS 58-36-1



Every insurer shall adhere to the uniform classification plan, experience rating plan, and policy form

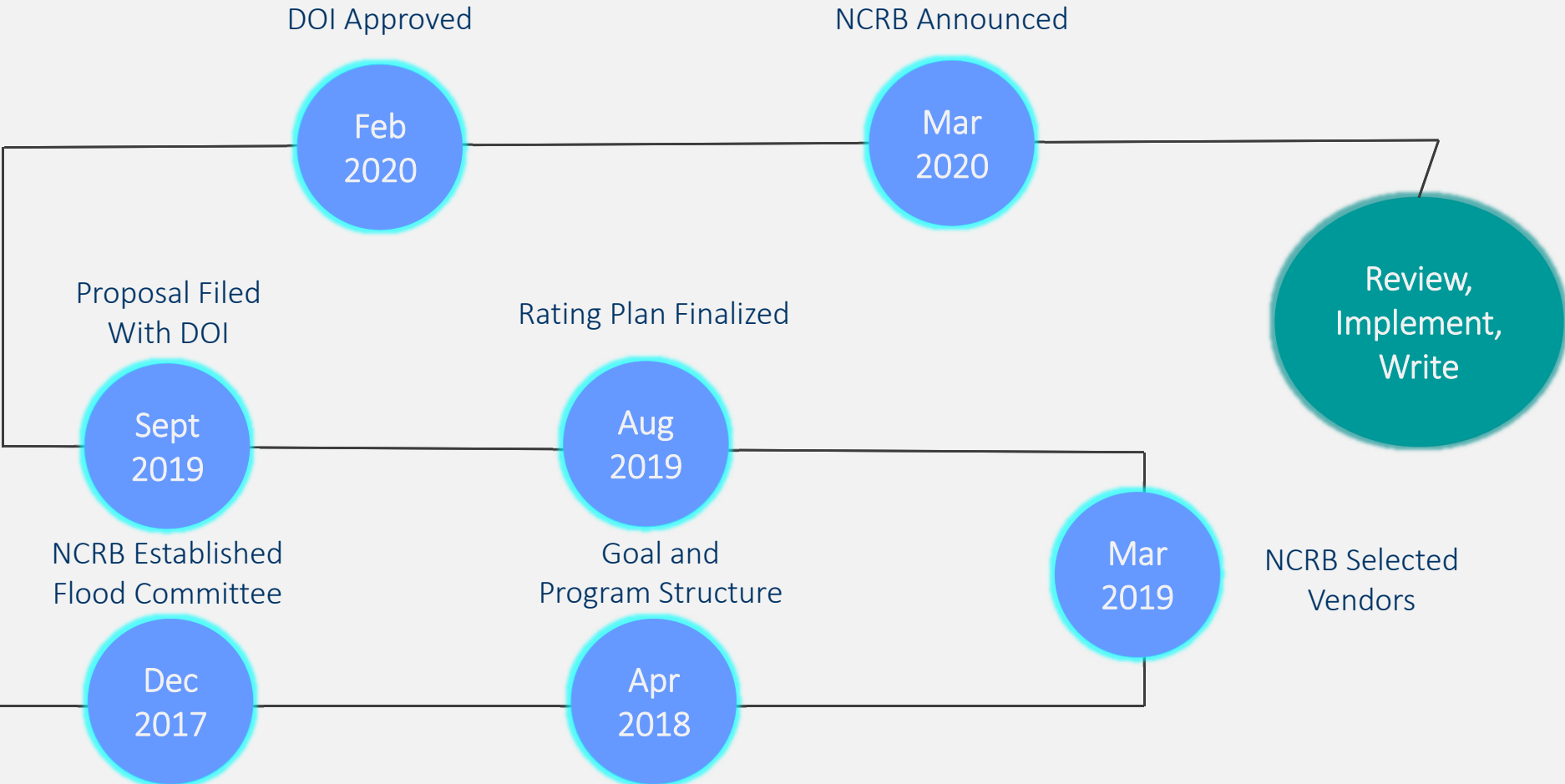
NCGS 58-36-100(o)



The DOI shall be authorized to take appropriate action to plan for and establish a private flood insurance market.

2016- HB287

NCRB Flood Timeline



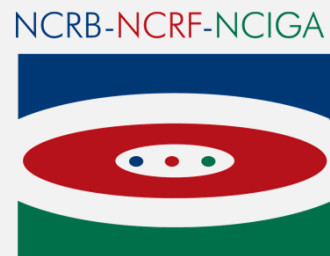
NCRB Program

Goal:

To develop a long term, quality flood solution for the state of North Carolina that is accepted by lenders and offers residential risk coverage options that are equal to or greater than the current policy offered by the NFIP.

Plan:

- ✓ Bring in industry experts to create a property flood subcommittee
- ✓ Bring in top flood experts to help build a new flood program for North Carolina
- ✓ Match price to risk and cover residential property types



Top Goals and Considerations

NC offers a Flood program that is consistent with a countrywide solution

NC offers a flood program that is similar to FEMA/NFIP program

NC Flood Solution should be a long term quality product

NC Flood Program has lender market acceptance (mortgage companies)



North Carolina: Program Overview

NFIP vs. NCRB Forms

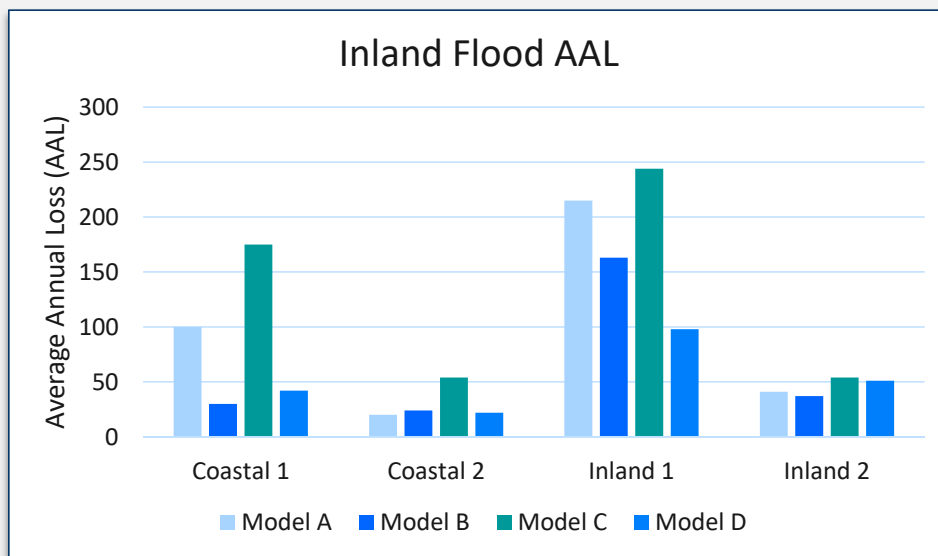
The following notable differences exist between NFIP and NCRB:

Program Detail	NFIP	NCRB
Coverage A: Dwelling Limits	\$250,000 maximum	No limit
Coverage C: Personal Property Limits	\$100,000 maximum	No limit
Coverage D: Additional Living Expenses	Not covered	Optional
Deductibles	Separate deductibles by coverage type	Single deductible per policy
Replacement Cost	Single family dwellings only Detached garage & personal property not covered	1-4 family dwellings, with 1 detached garage Optional endorsements for personal property and other structures
Basement/Below Ground Areas - Dwelling	Covered	Covered
Basement/Below Ground Areas- Contents	Not covered (exception for certain appliances)	Optional
Detached Garages/Structures	Up to 1 (Within the coverage A limit)	1 detached garage (Within the coverage A limit) - Optional (ex. 10% in additional to coverage A for <u>all</u> structures, or scheduled structures)
Increased Cost of Compliance	\$30,000 maximum	\$30,000 minimum, with higher limits available
Ordinance or Law	Not covered	Optional

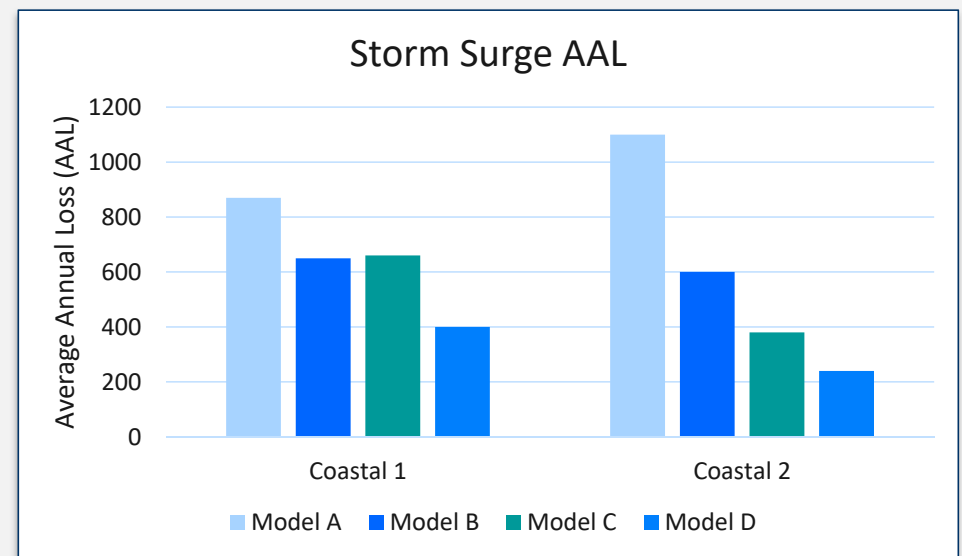
Model Evaluation: Average AAL

Average AAL impacts the rate level

Wide disparities exist across different models for inland flood



Storm surge also has sizeable variation of AALs among the models



Model Evaluation: Outlier Analysis

Model A inland flood AALs have more variation than other models

Inland Flood (4 Counties)

	% Missing AAL	% Zero AAL	Below 50% of min	Over 150% of max
Model A	0.0%	19.5%	70.4%	4.8%
Model B	11.4%	1.2%	16.7%	7.2%
Model C	0.0%	0.0%	0.4%	16.3%
Model D	0.0%	0.5%	0.8%	45.4%

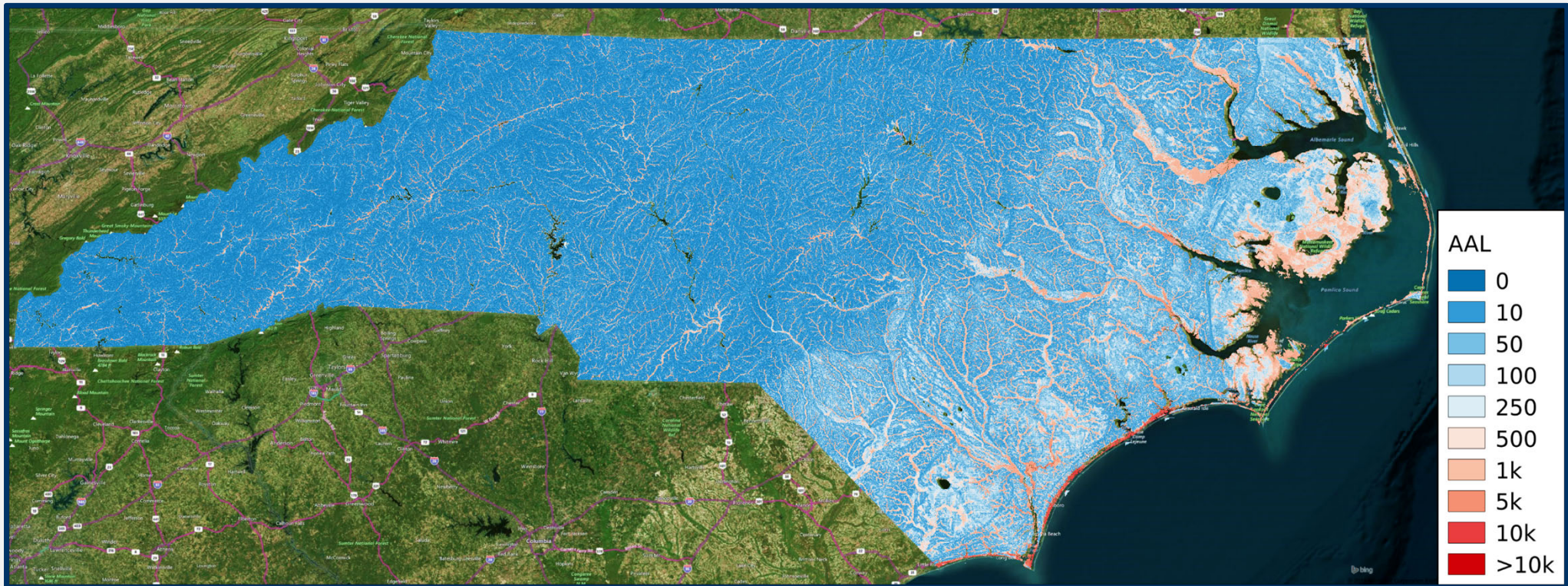
Models B and C have the fewest outliers; Model B had many locations with missing AAL

Storm Surge (2 Counties)

	% Missing AAL	% Zero AAL	Below 50% of min	Over 150% of max
Model A	0.0%	26.8%	0.5%	25.6%
Model B	4.7%	20.4%	0.0%	24.3%
Model C	0.0%	49.7%	20.3%	0.7%
Model D	0.0%	47.9%	11.4%	0.3%

Models A, B, and C have about 10-15% more outliers

Inland Flood + Storm Surge: Ground Up Loss



NFIP vs. NCRB Rating

In addition to reflecting North Carolina specific rates, the following notable differences exist between the NFIP and the North Carolina flood product:

Rating Characteristic	NFIP*	NCRB
Geographic Rating Granularity	Base Flood Elevation (BFE) in SFHA	30 Meters Statewide
Modern Multiplicative Rating Algorithm	No	Yes
Transparent Impacts of Property Characteristics	No	Yes
Insurance to Value	Limited	Yes

*Characteristics shown are based on NFIP rates as of April 2020. Risk Rating 2.0 is expected to address these issues

High Risk Flood Zone: Flood Map



Granular Flood Rating

Flood risk varies significantly within and across flood zones



North Carolina: Flood Rating

North Carolina Residential Flood Premium Calculation Example				
Step	Sample Inputs	Coverage		Rating Source
		A	D	
(A)	Base Risk Grid AAL	208,300	208,300	KatRisk Grid Results
(B)	Base Risk Adjustment	0.0018	0.0037	Section D, page 2
(C)	Coverage Value or Limit (Note 1)	200,000	100,000	(A) + (B) + (C) / 1,000
(D)	Coverage Base Rate	1.2116	0.98	
(1)	Deletable (Note 2)	0.988	0.878	Section D, page 8 and 12
(2)	Insurance to Value (Note 3)	1.000	1.000	Section D, page 7
(3)	Construction	0.800	1.000	Section D, page 11
(4)	First Floor Height (Note 4)	0.801	0.807	Section D, page 21 to 23
(5)	Number of Stories	0.800	0.800	Section D, page 23
(6)	Floor of Interest (Note 5)	1.000	1.000	Section D, page 21 to 23 and 29
(7)	Type of Below Ground Area Finish	1.000	1.410	Section D, page 29
(8)	Mobile Home To Drive (Note 6)	1.000	1.000	Section D, page 26
(9)	Building Equipment in a Crawl Space or Attached Garage (Note 7)	N	1.000	Section D, page 26
(10)	Ordinance of Law (Note 8)	N	1.000	Section D, page 26
(11)	Personal Property Replacement Cost (Note 9)	N	1.000	Section D, page 26
(12)	Optional Other Structures Equipment (Note 10)	Y	1.000	Section D, page 4
(13)	Coverage Loss Costs	375	334	Product of (2) and (11) to (12)
(14)	Loss Cost Multiplier (Note 11)	3.031	3.130	Section C, page 6
(15)	Coverage Base Premium	326	321	Product of (13) and (14)
Additional Coverages				
(16)	Optional Other Structures Limit	30,000		
(17)	Coverage B Base Premium	322		$(15)_A \times (16) / (\text{Coverage A Limit})$
(18)	Loss Assessment Limit	10,000		
(19)	Loss Assessment Premium	322		$(A)_A \times (B)_A \times (L)_A \times (18) / (1,000) + (14)$
(20)	Increased Cost of Compliance Limit	30,000		
(21)	Increased Cost of Compliance Factor	0.0000		Section D, page 40
(22)	Increased Cost of Compliance Premium	95		$(16)_A \times (20) / (1,000) \times (21)$
(23)	Premium Subtotal			$(15)_A + (15)_D + (17) + (18) + (22)$
(24)	Minimum Premium			Section D, page 1
(25)	Total Premium			Max((23), (24))

Notes

- Coverage A Value, Coverage C Limit, and Coverage D Limit are used for the purposes of calculating the Coverage Base Rate.
- Does not apply to Coverage D. Deletable Percent of Value calculated as Deletable / (Coverage A Value + Optional Other Structures Limit + Coverage C Limit).
- Only applies to Coverage A. Coverage Insurance Coverage A Limit equal to Coverage A Value. Insurance to Value calculated as Deletable Percent of Value + Coverage A Limit / Coverage A Value.
- Use a factor of 1.000 for Condominium Unit-owners and Tenants located above the first floor.
- Floor of Interest factors for Condominium Unit-owners and Tenants are developed based on First Floor Height factors if above the first floor, and Below Ground Area factors if below the first floor.
- Only applies to Mobile Homeowners.
- Does not apply to Coverage C.
- Only applies to Coverage A.
- Only applies to Coverage C.

Overview of Ratemaking Process

1. Run catastrophe model

2. Develop geographic base rates

3. Develop rating factors

4. Develop coverage factors

5. Apply rates to market basket



6. Adjust rates to match coverage

7. Add provisions

8. Develop expense loads

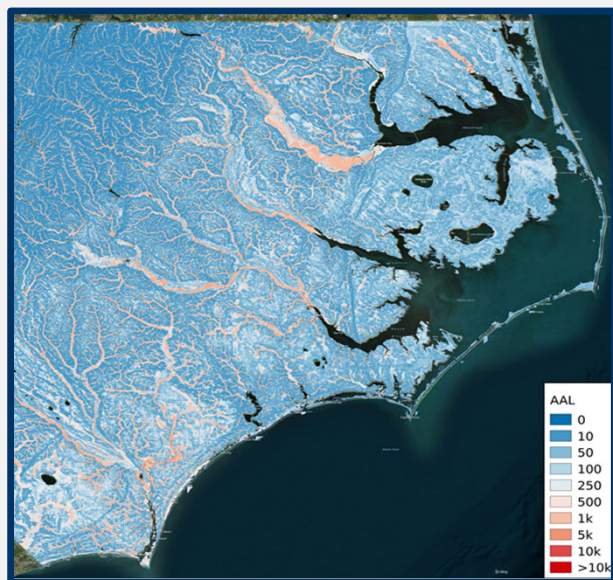
9. Apply final rates

10. Compare to other premiums

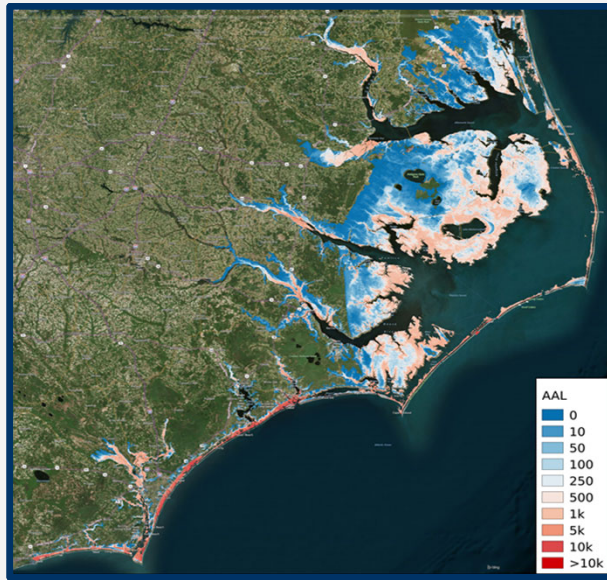
Catastrophe Modeling and Base Rates

SpatialKat

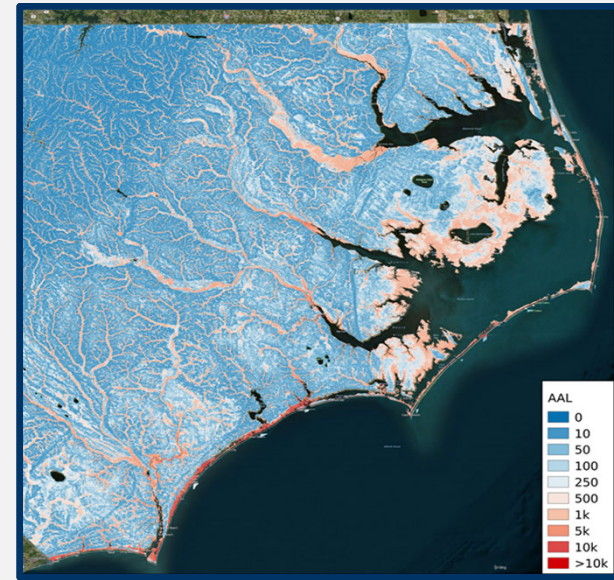
- ✓ Probabilistic Inland Flood and Hurricane Wind/Storm Surge Model
- ✓ For this analysis, the NCRB is using the Inland Flood and Storm Surge Models



Inland Flood



Storm Surge



Inland Flood + Storm Surge

Property Characteristics



Limits for Coverage A/B/C/D	\$200K/20K /100K/60K
Replacement Value of Dwelling	\$200K ITV = 100%
First Floor Height	1 Ft
# Stories	2 without basement

Limits for Coverage A/B/C/D	\$100K /20K /100K/60K
Replacement Value of Dwelling	Same as House A ITV = 50%
First Floor Height	Same as House A
# Stories	Same as House A

Limits for Coverage A/B/C/D	Same as House A
Replacement Value of Dwelling	\$400K ITV = 50%
First Floor Height	Same as House A
# Stories	Same as House A

Limits for Coverage A/B/C/D	Same as House A
Replacement Value of Dwelling	Same as House A ITV = 100%
First Floor Height	8 Ft
# Stories	Same as House A

Limits for Coverage A/B/C/D	Same as House A
Replacement Value of Dwelling	Same as House A ITV = 100%
First Floor Height	Same as House A
# Stories	1 with finished basement

Premium: \$1,022

Premium: \$921

Premium: \$1,478

Premium: \$296

Premium: \$2,584

Property Characteristics

- ✓ Developed an Exposure set specifically for Rate Development
- ✓ Utilized a Generalized Linear Model, targeting Ground Up Loss and controlling for geographic risk
- ✓ Used training dataset to ensure rates matched modeled loss
 - ✓ Added interactions based on storm surge exposure and overall risk
- ✓ Indicated Rates developed and validated on holdout dataset for:

Basement
Type

Construction

First Floor
Height

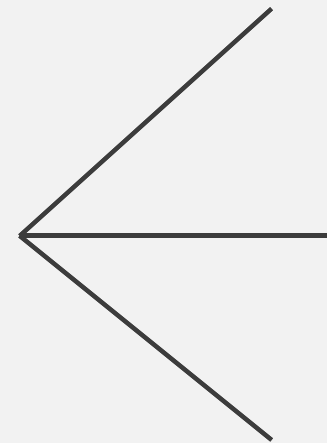
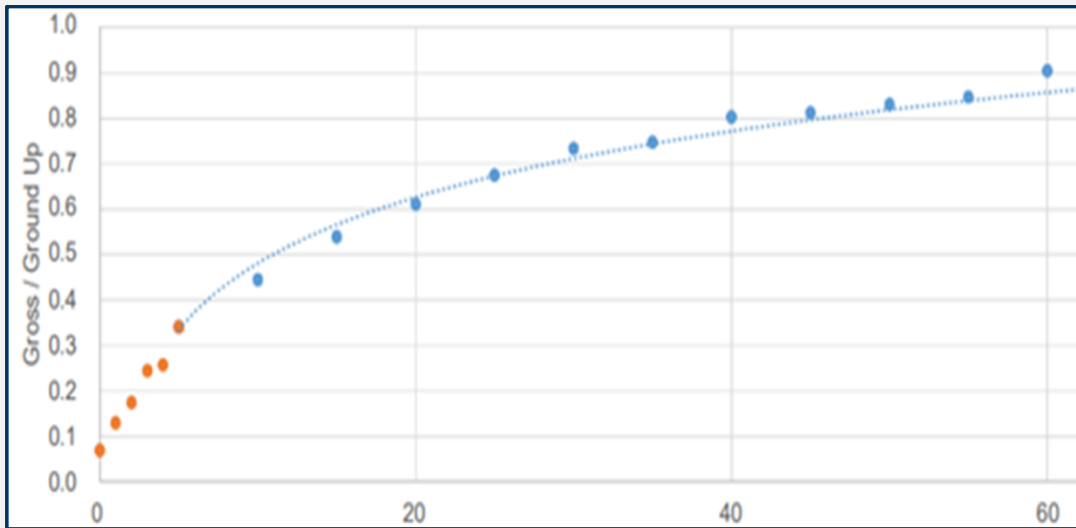
Floor of
Interest

Number of
Stories

Tie Downs

Other
Structures
Coverage

Coverage Factors

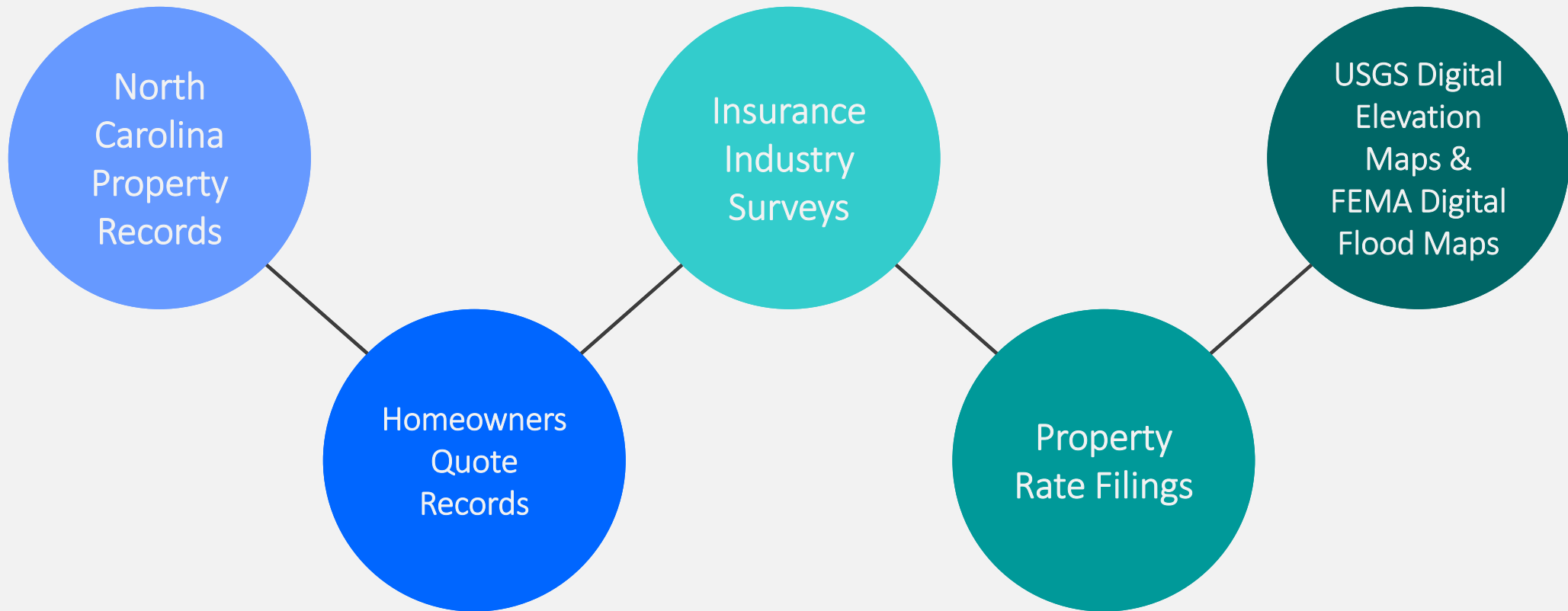


Rate development
exposure set

Insurance to value
adjustments

Deductible
adjustments

Market Basket Validation



Match Rates to Forms

01

Coverage differences

02

Develop non-modeled rating factors

03

Select expenses

Competitive Analysis



OUTSIDE OF HIGH
RISK FLOOD ZONE,

95%

OF RESIDENCES SAW
A **LOWER RATE!**



INSIDE HIGH RISK
FLOOD ZONE,

40%

OF RESIDENCES SAW
A **LOWER RATE!**

Overview of Ratemaking Process

1. Run catastrophe model

2. Develop geographic base rates

3. Develop rating factors

4. Develop coverage factors

5. Apply rates to market basket

6. Adjust rates to match coverage

7. Add provisions

8. Develop expense loads

9. Apply final rates

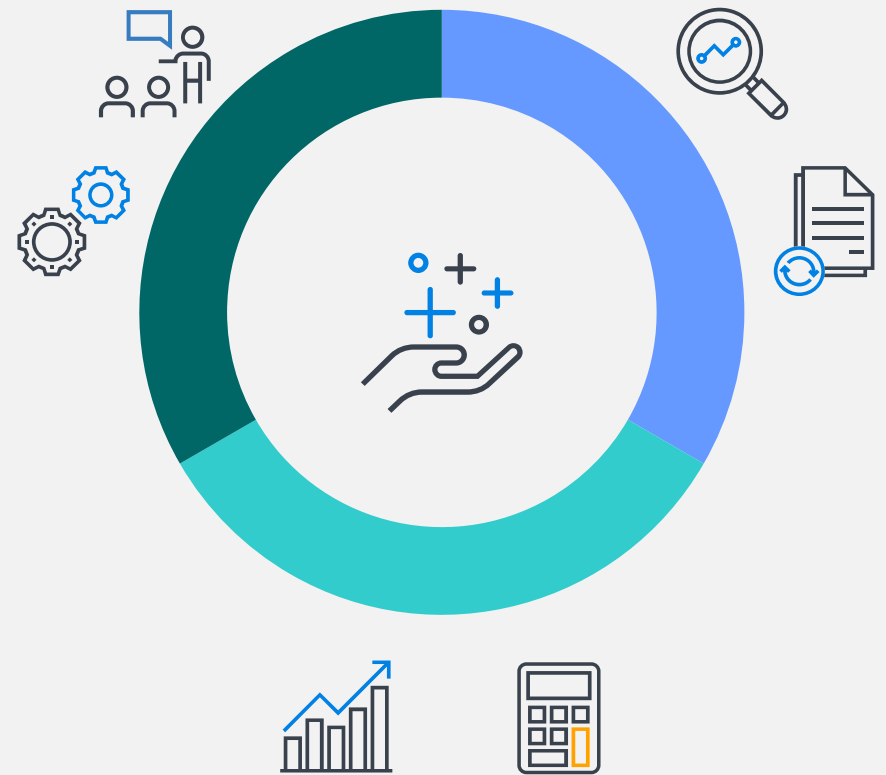
10. Compare to other premiums



Filing Strategies

Working with the existing patchwork of requirements by state

- ✓ Trade secret protected meetings
- ✓ Public rate examples
- ✓ Regulator controlled access to rates



Step	Sample Inputs	Coverage		
		A	C	D
(A) Base Risk Grid AAL		208.350	208.350	208.350
(B) Base Rate Adjustment	Without Storm Surge Exposure	0.00316	0.00297	0.00076
(C) Coverage Value or Limit (Note 1)		200,000	100,000	60,000
(D) Coverage Base Rate		131.68	61.88	9.50
(1) Deductible (Note 2)	2.0%	0.868	0.876	
(2) Insurance to Value (Note 3)	100%	1.000		
(3) Construction	Masonry	0.850	1.000	0.830
(4) First Floor Height (Note 4)	FFH = 1, Group 2	0.801	0.807	0.737
(5) Number of Stories	2	0.630	0.550	0.580
(6) Floor of Interest (Note 5)	1	1.000	1.000	1.000
(7) Type of Below Ground Area Finish	Finished	1.560	1.410	1.590
(8) Mobile Home Tie Down (Note 6)	N/A	1.000	1.000	1.000
(9) Building Equipment in a Crawl Space or Attached Garage (Note 7)	N	1.000		1.000
(10) Ordinance or Law (Note 8)	N	1.000		
(11) Personal Property Replacement Cost (Note 9)	N		1.000	
(12) Optional Other Structures Adjustment (Note 10)	Y	0.984		
(13) Coverage Loss Costs		\$75	\$34	\$5
(14) Loss Cost Multiplier (Note 11)	Storm Surge Percent = 0.00	3.831		
(15) Coverage Base Premiums		\$288	\$130	\$21
		Additional Coverages		
(16) Optional Other Structures Limit		20,000		
(17) Coverage B Base Premium		\$28.80		
(18) Loss Assessment Limit		10,000		
(19) Loss Assessment Premium		\$21.90		
(20) Increased Cost of Compliance Limit		30,000		
(21) Increased Cost of Compliance Factor		0.0006		
(22) Increased Cost of Compliance Premium		\$5.18		
(23) Premium Subtotal		\$494.88		
(24) Minimum Premium	Homeowners			
(25) Total Premium		\$494.88		

Industry Survey Results

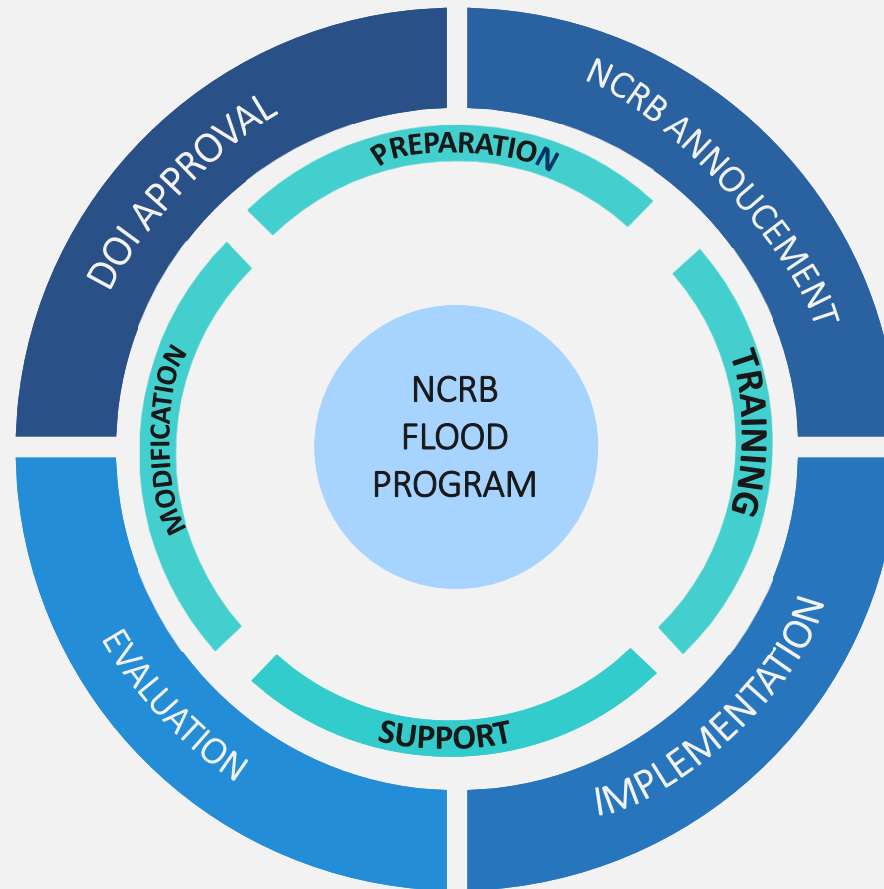
What concerns would you have with implementing a flood program for an insurance carrier?

1. Reinsurance availability and price stability
2. Volatility of flood risk
3. Flood model and data uncertainty
4. Underwriting risk of severe repetitive loss properties
5. Lack of consumer demand
6. Uncertainty of state rate and form regulation
7. Lack of expertise in underwriting and claims
8. Perceived inability to compete with the NFIP



Flood Program: Next Steps

Flood Program: Next Steps



Flood Program: Education



NC
Coastal Agents



NCRB
Member
Companies





“Our overall conclusion is that the Rate Bureau plan is a healthy addition to the flood insurance marketplace ... We see an observable positive benefit of the Rate Bureau’s plan to the State Of North Carolina”

-Brantley Risk and Insurance Center, Appalachian State University

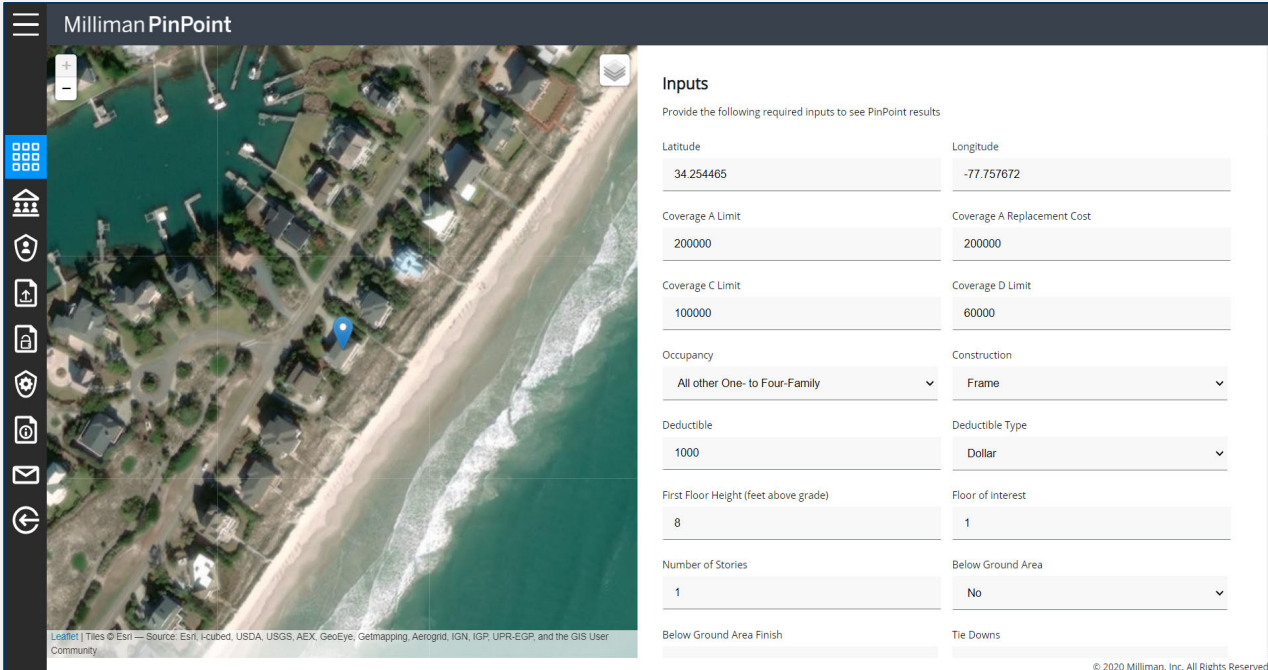
Steps for Company Implementation

Option 1

North Carolina Flood Tool
(API)

Option 2

Obtain from the Rate Bureau
the entire set of data (140
million records)



Milliman PinPoint

Inputs

Provide the following required inputs to see PinPoint results

Latitude	Longitude
34.254465	-77.757672
Coverage A Limit	Coverage A Replacement Cost
200000	200000
Coverage C Limit	Coverage D Limit
100000	60000
Occupancy	Construction
All other One- to Four-Family	Frame
Deductible	Deductible Type
1000	Dollar
First Floor Height (feet above grade)	Floor of Interest
8	1
Number of Stories	Below Ground Area
1	No
Below Ground Area Finish	Tie Downs

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Steps for Company Implementation



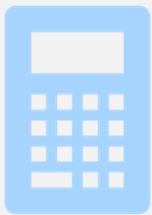
“Waiting Period”
on obtaining
insurance



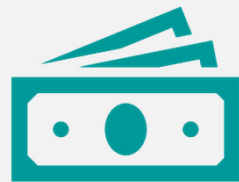
Determine first
floor height



Cap coverage A
limits, yes or no?



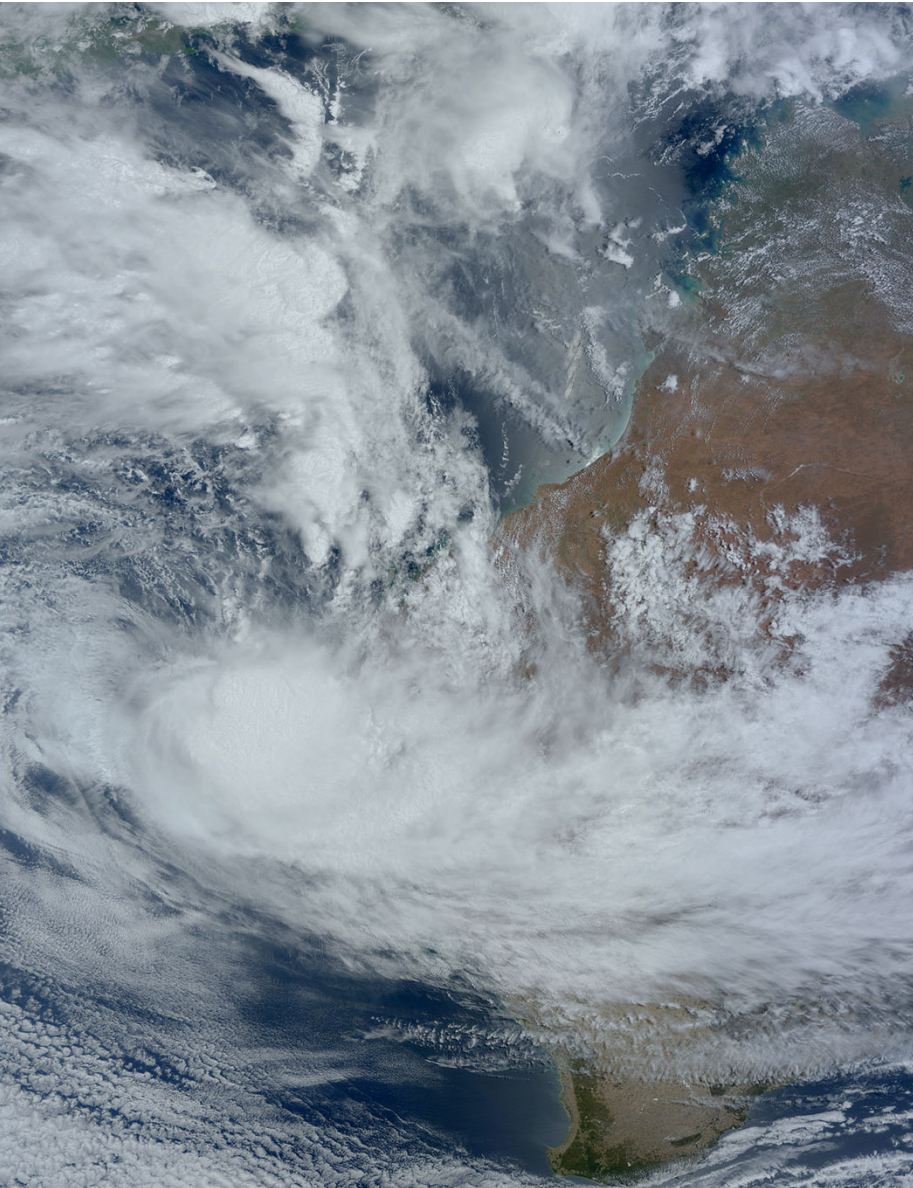
Determine
whether to use
rate deviations



Source for
replacement cost
for the property



Cover properties
identified in the Coastal
Barrier Resources Act



Any Questions?

NCRB-NCRF-NCIGA



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