

Testing Cat Models and Pricing for Property Loss Mitigation

2000 CAS Ratemaking Seminar
PROP-12, Emerging Issues in
Homeowners Ratemaking
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Normalized Loss Data

- Issue discussed in “Evaluation of Models Using a Normalized Historical Record”, by Roger Pielke, Chris Landsea, Rade Musulin, and Mary Downton, *Journal of Insurance Regulation*, Winter, 1999.
- Key issue is how to salvage data from the historical record of catastrophe losses to complement output of catastrophe models.
- Procedure can be used on either industry or company loss data.

Why Bother? Use Models.

- Historical data contains valuable information.
- Actuaries should always seek additional sources of data.
- Many regulators are demanding that insurers use historical data.
- Reconciling the historical record with catastrophe model output can provide insight into trends affecting loss estimates.
- Standards of Practice compel us to test the models we are using.

The Normalization Process

- Normalization takes actual loss data from far in the past and adjusts it to current conditions.
- Outline of process:
 - Collect historical data.
 - Identify key normalization variables.
 - Calculate historical adjustment factors.
 - Adjust historical data to current conditions.

Pielke/Landsea Normalization

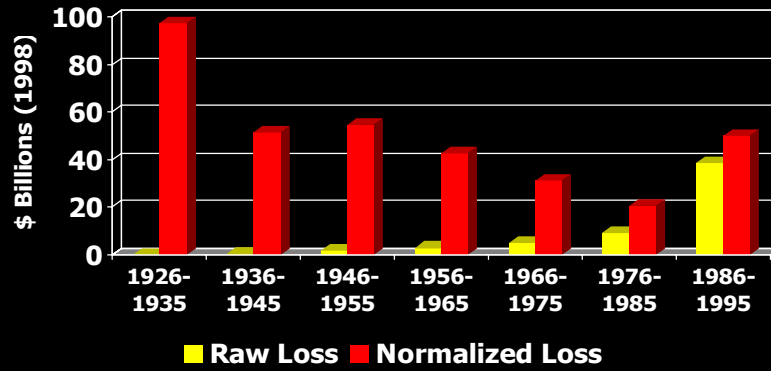
- NI_{present} = losses normalized to present.
 - Y = year of storm
 - C = counties affected
 - S = states affected
 - L_y = actual loss
 - I_y = Inflation factor
 - W_y = Wealth factor
 - $P_{y,c}$ = population factor
 - $H_{y,s}$ = housing factor
- $NI_{\text{present}} = L_y * I_y * W_y * P_{y,c} * H_{y,s}$

Comments

- Obviously, this is a very simplified model presented for illustrative purposes.
- Using regression techniques one could develop a better fit by weighting variables or adding additional ones.
- Nonetheless, this method produces results in good agreement with model output.

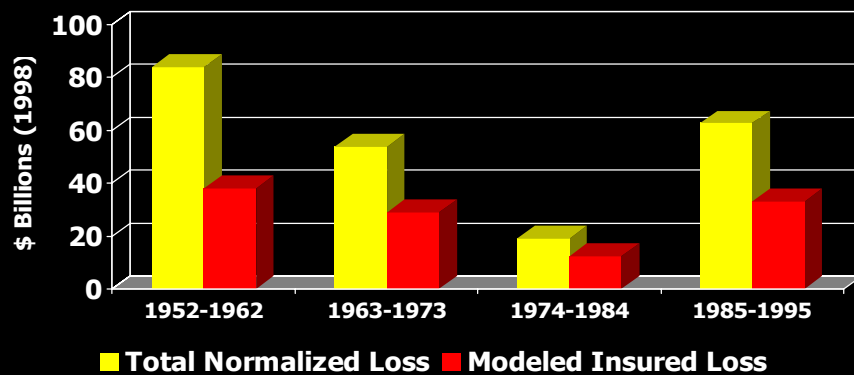
Normalized vs. Modeled Loss

Gulf/Atlantic Hurricane



Normalized Vs. Modeled Loss

Gulf/Atlantic Hurricane



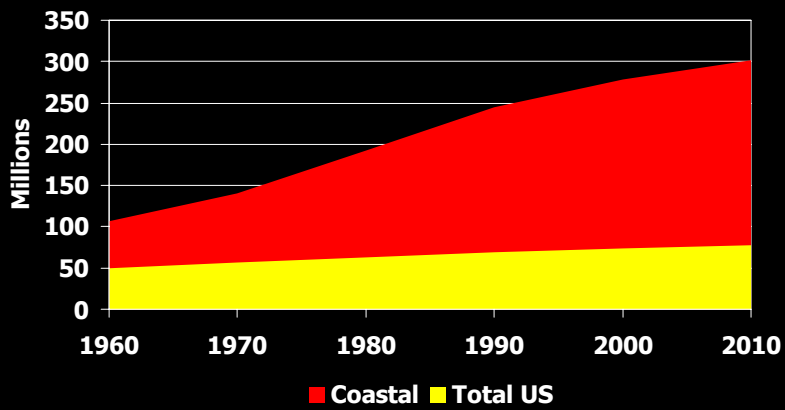
Applications of Normalization

- Provides a means of reconciling model output to historical data.
 - Can help with regulators.
 - Provides insight into losses.
- Identifies trends and long term cycles in losses.
- Provides a way of adjusting model output for changes in conditions:
 - Shifts since models were run.
 - Forecasts of future shifts.

Company Applications

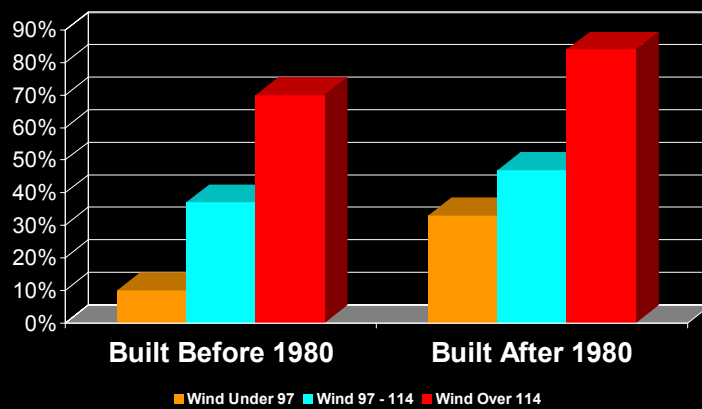
- Just as we adjusted industry losses to present conditions in our paper, the method could be used on company data.
- For example, historical losses could be adjusted using trends in policy counts, exposure, market share, deductibles, coverage levels, etc.
- Output can be compared to modeled results. If different, additional explanatory variables can be added.

Coastal Population Density



Construction Quality - Andrew

% of Homes Uninhabitable



If These Trends Continue...

- Catastrophe costs will explode.
- Premiums will become politically unacceptable.
- Insurer solvency will be threatened.
- Government will react:
 - Outright takeover (like Flood).
 - Enforce subsidies.
 - Confiscate private capital (pools).

Trends Can Be Changed

- The key is creating economic incentives for loss mitigation, which will reduce loss costs to the system and keep premiums affordable.
- Economic incentives can work:
 - Workers Compensation experience rating.
 - Automobile merit rating.
- Competition and government mandates can motivate insurers to act.

Government Mandates

- Texas roof type discounts.
- Florida mandates for storm shutters and BCEGs.
- 2000 Florida DOI legislative package: *"We're proposing legislation to expand the already-required shutter discounts to include other fixtures or construction techniques that protect against storm damages."*

Are Actuaries Prepared?

- Mitigation can make a huge difference in expected losses – FWUA up to 70%!
- Many Actuaries are ill-prepared to price for mitigation.
 - Little data is available.
 - Cost of acquiring data appears prohibitive.
 - Flexible classification systems are needed.
 - Inadequate understanding of models:
 - Capabilities.
 - Assumptions.

Hurricane Mitigation

- Roof shingles.
- Protecting window and door openings.
- Adequate roof sheathing.
- Sealing roof joints.
- Hurricane straps.
- Securing walls to slab/foundation.
- Roof type.

IBHS Fortified Home (Wind)

- Entry doors, windows, skylights meet ASTM E1996, SSTD-12 or Dade County.
- Hurricane resistant garage doors.
- Anchor exterior structures (carports).
- Hurricane straps.
- Gable end tie backs.
- 5/8" plywood decking.
- Sealed roof deck joints.
- Certified roof covering.

Hail Mitigation

- UL2218 testing standard using steel balls.
- IBHS trying to get requirement for impact resistant roofing products in certain geographic regions.
- Standard depends on analysis of probability of hail of certain size (ie. to resist 1.25" hail UL Class 2 required).

Wildfire Mitigation

- FIREWISE Community Workshops.
- Increased defensible space.
- Class A roof covering.
- Fire resistive siding.
- Reduce hazardous ground covering (such as pine bark).

Earthquake Mitigation

- Proper load path.
- Unreinforced masonry and masonry facades.
- Attachment to foundation.
- Non-structural damage (HVAC, mechanical equipment, water).
- Performance based codes.

ISO BCEG Rating

- Intended to measure enforcement capability, rather than the code itself.
- Do modelers measure enforcement? If not, what is their base?
- BCEG Issues:
 - Community based, but economic incentives for mitigation should be risk based.
 - May be redundant with risk based inspection.
 - No off balance, no separate base rate.

Storm Shutter Credits

- Important mitigation feature, but should be combined with other steps.
- Do they overlap with model assumptions on damage functions?
 - Shutters are part of South Florida code.
 - “The vulnerability functions are modified to incorporate the effects of building codes in these different regions.”

Modeling Mitigation

- “Garbage in, Garbage out”.
- Most models have built in defaults:
 - Building height.
 - Roof type.
 - Construction quality.
- Most modelers can modify damage functions for specific factors:
 - Screen enclosures.
- IBHS “Fortified Modeling Project”.

Reinsurance & Mitigation

- To date, most reinsurance pricing has not been sensitive to mitigation.
- Potential disconnect between primary rating and reinsurance rating.
- Could lead to market segmentation:
 - Heavily reinsured primary insurers write unmitigated property.
 - Primary insurers that retain risk write mitigated property.

“Mitigation Guide” Objectives

- Provide consumers and insurers with a standardized, multi-dimensional measurement of a structure’s relative ability to survive natural disasters.
 - Consumer benefits:
 - Focus on mitigation - factor in purchase decision.
 - Can quantify differences in structures.
 - Insurer benefits:
 - More focused rating.
 - Significantly improved modeling capability.
 - Reduced uncertainty, increased capacity.

Examples of Public Grading

- Yellow “Energy Guide” stickers on appliances.
- “Nutrition Facts” on food products.
- EPA “MPG” mileage estimates on automobiles.
- Violence ratings on movies and music.
- Uniform “APR” interest rate calculation on loans.
- Tar and Nicotine content on cigarettes.
- Tread wear ratings on tires.

Purpose of Public Grading

- To increase consumer awareness of an issue, i.e. energy consumption.
- To provide a means of comparing complex products in a way easily understandable to consumers, i.e. APR interest rates.
- To provide a basis for industry-wide measurement, i.e. manufacturer automobile fleet mileage.

The Mitigation Guide Sticker

- A standardized scoring of a structure (1-100) measuring its relative damageability.
- It would be communicated to prospective purchasers of the property at sale/resale.
- It could be supplemented by loss cost information to yield "annual loss cost" estimate, similar to annual energy cost estimates on appliances. Important because exposure to disasters varies by location.

You Can Help

- We currently have a chicken and egg problem:
 - Models do not generally contain extensive mitigation information because most insurers cannot supply needed input data.
 - Insurers do not capture information because models cannot use it.
- Actuaries can help by supporting efforts to develop new classification structures to account for loss mitigation.

Mitigation Guide Conclusions

- Public grading has worked very well in other areas - why not property mitigation?
- Making mitigation a direct factor in the sale price of a home provides a huge economic incentive for mitigation or retrofit.
- Consumers need some way to easily measure mitigation if this is to occur.
- Insurers need better risk specific information to base prices on.

Summary

- Comparing cat model output to normalized historical data can be beneficial.
- Mitigation can affect losses significantly.
- Mitigation is likely to become a dominant issue in Homeowners insurance pricing.
- Insurance class plans and rate structures do not adequately address mitigation measures.
- A standardized mitigation measure is needed.

Speaker Contact Information

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ATTACHMENT TO STATEMENT OF UNDERSTANDING

January 13, 2000

Florida Pilot

Fortified...for Safer LivingSM

Brochure - Introduction

How does the program work? It provides you with guidelines and invaluable information about improving your home. If you can handle a hammer and saw, you can do much of what's necessary yourself. Some of the work may require a building contractor, and some may call for a registered design professional. You should clear all of the work you undertake with local building or floodplain management authorities to be sure that it complies with local building codes and floodplain management regulations. ***Criteria that are not tied to specific product standards must meet or exceed the building code and floodplain management requirements in your community. The edition of the model building code must not be older than five years from date of inspection and your community must participate in the National Flood Insurance Program (NFIP). If your community does not enforce the requirements of a recent edition of a model building code, you may hire a registered professional architect or engineer to certify that your home meets all of the required Fortified Home program requirements.***

When you satisfactorily complete the necessary changes to satisfy **all** criteria relevant to **each** natural hazard that confronts your home, your home qualifies as a Fortified Home. Just have an authorized inspector verify the work and fill out the Fortified Home certification form that you'll find in this booklet.

Procedure

Your inspector should send the original, signed certification checklist to IBHS and give a copy to you. IBHS keeps a central database of the checklists. If your home meets all of the relevant criteria, it qualifies as a Fortified Home. You can determine whether your home's checklist is registered with IBHS by sending a self-addressed, stamped envelope to:

Fortified Home Program, Institute for Business & Home Safety, 175 Federal St., Suite 500, Boston, MA 02110.

IBHS makes no representations about and assumes no liability or responsibility for the competence of any inspector, the degree to which your home will or will not resist natural disasters, and the compliance of your home with state and community floodplain management ordinances, building code, and other laws, ordinances, and regulations as a result of your participation in the Fortified program. If you want any assurance about the safety of your home, you must consult a qualified engineer or architect. If you want any assurance about whether your home complies with any state or local codes or regulations, you should consult with local community officials. IBHS does not inspect or certify homes for compliance with the criteria, issue certificates or seals of compliance, or vouch for any inspectors or their work.

IBHS makes no representations that you will qualify for any insurance discounts or other incentives based on your participation in the Fortified program, since insurance rates are established by other parties. For flood insurance, rate credits are provided on a community-wide basis under a program called the Community Rating System administered by the National Flood Insurance Program. To find out if your community participates in the rate credit program, you can contact your community floodplain management official or call 1-800-427-4661.

WINDSTORMS

Most people imagine hurricanes and tornadoes when they think about disasters that involve wind, but severe thunderstorms and unique local wind conditions can be just as dangerous. In fact, high winds cause more insured damage year in and year out than any other natural disaster. All of Florida is subject to hurricane force winds.

To qualify your home, your inspector must determine whether your home has:

- Entry doors that comply with the most recent version of ASTM E1996, SSTD-12 or Miami-Dade County protocol A 201 for debris impact resistance.
- Windows, skylights and patio doors greater than one square foot that comply with the most recent version of ASTM E1996, SSTD-12 or Miami-Dade County protocol A 201, or else protection by shutters that comply with one of those standards.
- Hurricane-resistant garage doors and garage door tracks that comply with the most recent version of ASTM E1996, SSTD-12 or Miami-Dade County protocol A 201.
- Securely anchored connections for exterior structures such as carports and porches that attach to the main structure of your home.
- Hurricane straps or other hardware that connect the roof to the walls installed with the proper number and type of nails per manufacturer's recommendations.
- All gable end walls tied back to the roof or ceiling structure to prevent pullout.
- A plywood roof deck at least $\frac{5}{8}$ " thick properly fastened (minimum 8d nails @ 6" o.c.) to truss or rafters. If you cannot verify fasteners when inspecting, building or replacing the roof, use alternate methods to reinforce. For example, you can apply adhesives to the underside of the sheathing as described in the IBHS publication identified below.
- Roof deck joints sealed by a self-adhering polymer modified bitumen roofing underlayment (thin rubber or asphalt sheets with peel and stick undersides located beneath the roof covering) or a foamed polyurethane sheathing adhesive that is applied to seal all joints in the sheathing to protect from interior water intrusion. All products must be installed per the manufacturer's recommendations. Roofing felt and similar paper-based products do not qualify as joint sealant.
- A roof covering certified for use in hurricane regions (i.e., Miami-Dade approved or similar) and installed per manufacturer's recommendations.
- Only one layer of roof covering.

For more information about protecting your home and family from windstorms, check the following sources:

Is Your Home Protected From Hurricane Disaster?; A Homeowner's Guide to Hurricane Retrofit. 1998. Institute for Business & Home Safety. Boston. <http://www.ibhs.org>

The National Oceanic and Atmospheric Administration Web site: <http://www.nws.noaa.gov/om/hurrbro.htm>

FLOOD

Floods happen more frequently than any other natural disaster. They occur everywhere from coasts and rivers to desert arroyos and city streets, sometimes in a flash and sometimes in a slow cresting that takes weeks. No matter when, where or how they arrive, they can always endanger lives and damage property.

If your home is not in a Special Flood Hazard Area, you do not need to meet any of the flood criteria. Start by checking with your community floodplain management official, mortgage lender, or insurer or insurance agent to find out what your flood zone is. If a Flood Insurance Rate Map (FIRM) indicates that your home is in flood zone A, AE, A1-A30, AH, AO, AR, V, VE, or V1-V30, then the home is in a Special Flood Hazard Area.

Next, find out from your local floodplain management official the base flood elevation (BFE) for your property. For Zone AO, use the depth of flooding shown on the FIRM.

Then consult your community's records or your property survey for the elevation of your home's lowest floor. If the community records and the property survey do not indicate the elevation of the lowest floor, you will need to hire a licensed surveyor to determine it. The lowest floor is the lowest enclosed area (including basement). The checklist that follows provides more information on what constitutes a lowest floor.

Provide the flood zone, the Base Flood Elevation (BFE), and the elevation of the lowest floor to your inspector who will verify the information and complete the certification checklist. Before constructing or renovating your home, consult your local building and floodplain management officials regarding local codes and ordinances.

For more information about protecting your home and family from floods, check the following Web sites:

<http://www.nws.gov/om/ffbfo.htm>

<http://www.fema.gov/nfip/>

WILDFIRE/FOREST FIRE

More people are spreading out from urban centers to create rural neighborhoods in what's known as wildland/urban interface. In the process, they make themselves vulnerable because the trees and underbrush in these areas provide fuel for devastating wildfires during hot and dry seasons. Florida is no exception.

If your home is in a wildland/interface area, it must have:

- A non-combustible street number at least four inches high, on a contrasting background, visible from the road.
- A minimum of 100 feet of “defensible space” around the home, unless the exterior cladding has a fire-rating of at least one hour, in which case the minimum “defensible space” can be 50 feet. “Defensible space” is defined as land free of vegetation likely to fuel a wildfire such as wooded areas and undergrowth.
 - For slopes from 8 to 20%, increase the defensible space on the downhill side of the home from 100 to 150 feet for non-rated exterior walls and from 50 to 80 feet for one-hour-rated walls.
 - For slopes above 20%, increase the defensible space on the downhill side of the home from 100 to 200 feet for non-rated exterior walls and from 50 to 100 feet for one-hour-rated walls.
- Firewood storage at least 50 feet away from any part of the home structure.
- Noncombustible screening with a mesh size no greater than ¼ inch covering the fireplace chimney and the attic and sub-floor vents.
- Eaves of noncombustible material.
- Noncombustible material enclosing the undersides of aboveground decks and balconies to prevent collection of additional fuel sources.
- A roof assembly with a Class A fire-resistive rating. Wood shakes and wood shingles do not qualify regardless of rating.
- Multilayered glazed panels in exterior windows, glass doors and skylights, or solid, exterior shutters.
- A driveway at least 12 feet wide with at least 13.5 feet of vertical clearance.
- If gated, a gate that opens inward and that has an entrance at least two feet wider than the driveway and at least 30 feet from the road.

For more information about protecting your home and family from wildfire and forest fires, check the following Web sites:

<http://www.firewise.org/FireWiseFeatures.html>
<http://www.nfpa.org/>

The owner of the home must complete this section:

Name of Owner: _____ Home Phone: _____
Address of Home: _____ Year Built: _____
City: _____ County: _____ Zip Code: _____

IBHS makes no representations about and assumes no liability or responsibility for the competence of any inspector, the degree to which your home will or will not resist natural disasters, and the compliance of your home with state and community floodplain management ordinances, building code, and other laws, ordinances, and regulations as a result of your participation in the Fortified program. If you want any assurance about the safety of your home, you must consult a qualified professional. If you want any assurance about whether your home complies with any state or local codes or regulations, you should consult with local community officials. IBHS does not inspect or certify homes for compliance with the criteria, issue certificates or seals of compliance, or vouch for any inspectors or their work.

IBHS makes no representations that you will qualify for any insurance discounts or other incentives based on your participation in the Fortified program, since insurance rates are established by other parties. For flood insurance, rate credits are provided on a community-wide basis under a program called the Community Rating System administered by the National Flood Insurance Program. To find out if your community participates in the rate credit program, you can contact your community floodplain management official or call 1-800-427-4661.

Original Signature of Homeowner Date

The inspector of the property must complete this section and the checklist:

I am a:
 Licensed Architect or Engineer Home Inspector Building Dept. Official Other _____

All inspectors must successfully complete the Fortified Home training recognized by IBHS.

Name of Inspector: _____

Business Name: _____

Business Address: _____

City: _____ County: _____ Zip Code: _____

Phone: _____ License Number and Type: _____

I hereby certify **under the pains and penalties of perjury** that I personally inspected the home listed above by the homeowner, that I have successfully completed the training prescribed by IBHS for Fortified inspectors and that I have completed the attached certification checklist.

Original Signature of Inspector Date

CERTIFICATION CHECKLIST

To qualify for the Fortified Home designation, a home must meet **all** of the criteria for each natural peril affecting the home.

Yes No

- Community enforces a current model building code (edition is less than 5 years old from date of inspection).**
Edition year and name of model building code being enforced. _____
Community's Building Code Effectiveness Grading Schedule (BCEGS) score (1-10). _____ (1-highest score, 10-lowest score)
- Community participates in the National Flood Insurance Program.**

If your community does not enforce a current model building code, your home can qualify only if a registered professional architect or engineer completes this checklist and attaches to it a signed statement that your home meets all applicable requirements of the Fortified Home program. Otherwise, any person who has qualified as a Fortified inspector can complete the checklist.

CAREFULLY READ THE CRITERIA AS OUTLINED WITHIN THE BROCHURE!

WINDSTORMS

What type of roof covering is on the house? Examples are asphalt shingles, tiles, wood shakes, and metal shingles. Write your answer below:

What year was the current roof covering installed? (if known): _____

You must complete this section. All homes in Florida have to meet the windstorm criteria, regardless of their location within the state.

Yes No

- All entry doors meet impact-resistant criteria.
- All windows, skylights and patio doors greater than one square foot meet impact-resistant criteria.
- Garage door(s) and tracks meet impact-resistant criteria. The home has no garage.
- Carports and porches adequately connected and anchored. The home has no carports or porches.
- Roof-wall (hurricane straps) connection hardware in place.
- Gable end walls reinforced. The home has no gable walls.
- Roof deck is $\frac{5}{8}$ " thick or greater and is properly attached to truss/rafters.
- Roof deck joints are sealed.
- Roof covering is certified for wind resistance and installed per manufacturer's recommendations.
- Only one layer of roof covering.

For data collection only. Not required for Fortified Home status.

- Wall-to-foundation (anchor bolts/re-bar) connection exists. Unable to verify the wall-to-foundation connection.

FLOOD

Yes No

- The home is in a Special Flood Hazard Area as designated on the community's Flood Insurance Rate Map.** If the home is not in a Special Flood Hazard Area, you can skip the rest of this section.

If yes, what is the flood zone _____.
(The flood zones are A, AE, A1-A30, AH, AO, V, VE, V1-V30)

What are the base flood elevation (BFE) and the elevation of the lowest floor?

BFE: _____ ft.
(in Zone AO, use depth of flooding)

Elevation of lowest floor: _____ ft.
(For buildings in V-zones, the elevation is measured from the bottom of the lowest horizontal structural member of the lowest floor.)

***FLOOD continued**

3) If the home is in an A Zone:

Yes No

- a) Is the elevation of the lowest floor at or above the BFE?
- b) Is there an enclosed area below the lowest floor?
- c) If there is an enclosed area, is it used solely for parking of vehicles, building access, or storage?
- d) Are there at least two permanent openings (flood vents) in the enclosure within one foot above the adjacent grade?
- e) Are electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities elevated to or above the BFE (except for minimal electrical required to meet code for life-safety)?

4) If the home is in a V zone:

Yes No

- a) Is the elevation of the bottom of the lowest horizontal structural member of the lowest floor at or above the BFE?
- b) Is there an enclosed area below the lowest floor?
- c) If there is an enclosed area, is it used solely for parking of vehicles, building access, or storage?
- d) Is the building elevated on piles, piers, posts, or column foundation?
- e) Are electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities elevated to or above the BFE (except for minimal electrical required to meet code for life-safety)?

If the lowest floor of your home is at or above the BFE **and** the answer to questions 3. a), c), d), and e) are “yes”, **or** the answer to questions 4. a), c), d), and e) are “yes”, then your home meets the Fortified flood criteria.

WILDFIRE/FOREST FIRE

Yes No

- The home is in a wildland/interface area.**

If yes, the home must meet the following criteria. If not, you can skip the rest of this section.

Yes No

- Non-combustible street numbers at least 4” high on a contrasting background and visible from the road.
- Grade slope is less than 8%
 At least 100 feet of defensible space. At least 50 feet of defensible space because the exterior cladding has a one-hour or better fire rating.
- Grade slope is 8-20%
 At least 150 feet of defensible space. At least 80 feet of defensible space because the exterior cladding has a one-hour or better fire rating.
- Grade slope is above 20%
 At least 200 feet of defensible space. At least 100 feet of defensible space because the exterior cladding has a one-hour or better fire rating.
- Firewood stored 50 feet away from structure. No firewood present.
- Eaves of noncombustible material.
- Fireplace chimney outlet covered with non-combustible screening ¼ inch or less. No fireplace chimney.
- Attic and sub-floor vents covered with noncombustible screening ¼ inch or less. No attic or sub-floor vents.
- Underside of balconies and aboveground decks enclosed with non-combustible material. No balconies or decks.
- Roof assembly with a Class A fire-resistive rating and not containing wood shakes or shingles regardless of fire rating.
- All exterior glass made of multilayered glazed panels or protected by solid, exterior shutters.
- Driveway at least 12 feet wide with at least 13.5 feet of vertical clearance.
- Driveway gate that opens inward and has an entrance at least two feet wider than the driveway and at least 30 feet from the road. No gate.

The inspector must check a box on each line that applies. Failure to do so may prevent the home from being recognized as a Fortified home.

You should maintain all of the features that made your home a Fortified Home, particularly your roof covering, in good condition even after you qualify. Good upkeep pays dividends in protecting your family and your property.

COMMUNITY LAND USE

If your home meets the Fortified criteria, congratulations. But please don't stop thinking about home safety. The location of your home can be just as important as how well it's built. Homes on unstable slopes, for instance, or on soil vulnerable to earthquakes, or on migrating sands, all face greater risk of damage regardless of the quality of their construction.

The Institute for Business & Home Safety urges every community to have a land use plan that addresses every natural hazard affecting the community. For a start, the plan should identify areas that are unsafe for building, and eliminate or minimize development in those areas. It should also prepare for emergencies by providing, at a minimum, emergency shelters and detailed evacuation procedures. Ask your local officials about your community's land use plan. Find out whether it sufficiently protects your family and your neighbors. If not, or if your community has no plan, get involved in developing one. A safe community will make a Fortified Home that much safer.



IBHS PROJECT PLAN

PROJECT NAME: Mitigation Guide Feasibility Study

STATEMENT OF THE OPPORTUNITY:

What opportunity will this project address and why should IBHS proceed?

Creating economic incentives for consumers to mitigate losses is essential to achieving success in IBHS' core mission of loss reduction. A lack of standardized information on the vulnerability of property to loss is a major impediment to:

- Consumer decisions on investments in mitigation.
- Consideration of mitigation level at the time of sale of property.
- Insurers granting appropriate discounts and other incentives.
- Mortgage lenders' ability to assess lending risk.
- Mortgage and bank lenders' ability to assess cost/benefit of mitigation investments for purposes of making loans for retrofit.
- Public policy planning on the cost/benefit ratio of various mitigation strategies.

The Fortified Home Program has made an excellent start in this area, but is incomplete because:

- It is largely focused on new construction.
- It is "binary", with a structure either qualifying or not. A more refined system with various levels of mitigation is needed to address the retrofit problem.
- It does not solve the problem of a lack of information on individual structures' degree of resistance to loss. Such information is critical if proper economic incentives are to be created for loss mitigation on existing housing stock.

This project will build on the "Fortified Home" program by creating a scoring system that will provide consumers and insurers with the information needed to evaluate how well structures can withstand catastrophic loss.

THE PROJECT GOAL:

What is the project goal, i.e., what will this project accomplish?

Determine whether it is feasible to create a standardized scoring system for residential property that will provide consumers with the tools to evaluate investments in mitigation, similar to the successful "Energy Guide" program used to rate appliances for energy efficiency.

How will the project accomplish this goal?

By developing a model scoring system and encouraging its use by insurers, local building inspectors, mortgage lenders, and builders.

What key result areas of the IBHS mission is the project goal consistent with?

Reducing losses, increasing consumer awareness of loss exposure.

Who will benefit from the accomplishment of the project goal?

Consumers, insurers, mortgage lenders, public policy planners.

THE PROJECT OBJECTIVE:

What specific, measurable objective will indicate that the project is complete?

A feasibility study will be completed on the possibility of creating a model scoring system to evaluate a structure's resistance to loss from wildfire, wind, or earthquake. The system would provide a grade of 0 to 100 for each peril and perhaps identify the particular peril-resistant features in a checklist for each home. If the project is found to be feasible, a following phase will develop the system and promote its use by insurers, mortgage lenders, and local building inspectors.

How long will it take for IBHS to meet the objective?

Nine months for the feasibility study. Much of the basic scientific work on a scoring system has been done for hurricane (ARA, RCMP Program in Florida). The role of IBHS will be to bring together the experts who have already developed the science and decide whether we can produce an easy to use product.

How will IBHS measure or verify achievement of the objective?

By the production of a feasibility study. The ultimate goal of the larger project is the development and promotion of the scoring system.

THE PROJECT MILESTONES:

What specific milestones will the project achieve on the way to the objective?

1. Determine the experts and government officials who should have input.
2. Collect their recommendations.
3. Draft a report outlining whether the work can be done, how, when, and by whom, and at what cost.

How long will it take to achieve each of these milestones?

Approximately three months..

How will IBHS measure or verify achievement of the milestones?

By reviewing the workproduct.

PROJECT RESOURCES:

How much funding does the project need?

Unknown, but the financial commitment should be modest for the feasibility study. The ultimate objective, a scoring system, should have a very high benefit/cost ratio, as the effort will be limited to creating, rather than actually using, the tool.

What manpower and skill sets does the project need?

The first phase of the project will involve IBHS hosting one or more meetings involving engineering and government experts to take the existing work done on inspections by the Florida RCMP and decide whether it can be transformed into an easy to use model inspection/scoring system. IBHS will need to contribute an engineer and facilitator/organizer from staff.

Who will supply the funding and the manpower?

See above. IBHS is in a unique position to facilitate this project.

Date submitted to IBHS:

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Person submitting the plan:

Rade Musulin
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