

# **A GENERAL DESCRIPTION OF HOMEOWNERS RATEMAKING METHODOLOGY**

**Act No. 427 of the 2014  
Regular Session of the Louisiana Legislature**



**Louisiana Department of Insurance  
Baton Rouge, Louisiana  
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# TABLE OF CONTENTS

<b>PURPOSE</b> .....	<b>6</b>
Act 427.....	6
Scope .....	6
Act 427 Data .....	6
Caution: Act 427 Data Not Sufficient for Ratemaking.....	6
<b>PROPERTY INSURANCE</b> .....	<b>7</b>
Homeowners .....	8
<b>ACTUARIAL SCIENCE</b> .....	<b>8</b>
Actuaries.....	8
Actuarial Societies .....	9
Ratemaking vs. Reserving.....	9
Ratemaking.....	9
Reserving .....	9
<b>RATES</b> .....	<b>10</b>
Rate Components.....	10
Insurance is a Business .....	10
Dollars In = Dollars Out.....	10
Rates as Estimates .....	11
<b>LOUISIANA REGULATION OF INSURANCE</b> .....	<b>11</b>
Rating Laws.....	11
Rate Standards .....	11
Excessive Rates .....	12
Inadequate Rates.....	12
Unfairly Discriminatory Rates.....	12
Review of Insurance Programs.....	12
Regulatory Review Period .....	12
Content of Filings.....	12
Review Process .....	12
Filing Guidance .....	13
<b>LOUISIANA STATUTES</b> .....	<b>13</b>

§ 1451. Systems for ratemaking.....	13
§ 1452. Purpose of rate regulation; construction; definitions.....	14
§ 1454. Rating standards and methods .....	14
<b>CATASTROPHE EXPOSURE.....</b>	<b>15</b>
U.S. Cat History.....	15
Exhibit 1 –Top 10 Most Costly Disasters in U.S. History.....	15
Top Catastrophe States.....	16
Exhibit 2 - Top Three States by Inflation-Adjusted Catastrophe Loss .....	16
Exhibit 3 - Average Homeowner Premium by State.....	17
Exhibit 4 - Coastal Areas Most Frequently Hit by Hurricane .....	18
Hurricanes Katrina and Rita .....	18
Exhibit 5 - Hurricane Katrina Insured Damage by Louisiana Parish .....	18
Exhibit 6 - Hurricane Rita Insured Damage by Louisiana Parish.....	18
<b>RATEMAKING PRINCIPLES.....</b>	<b>21</b>
Principle 1.....	21
Principle 2.....	21
Principle 3.....	21
Principle 4.....	21
<b>STATEWIDE RATE LEVEL INDICATIONS .....</b>	<b>21</b>
Ratemaking Example 1 .....	22
Ratemaking Example 2 .....	22
Table 1: Statewide Ratemaking Analysis.....	23
<b>ADJUSTMENTS TO HISTORICAL PREMIUMS .....</b>	<b>23</b>
Rate On-Leveling .....	23
Policy Rerating Approach .....	24
Parallelogram Approach .....	24
Premium Trend.....	24
AOI Changes .....	24
Market Events .....	25
<b>ADJUSTMENTS TO HISTORICAL LOSSES .....</b>	<b>25</b>
Loss Development.....	25

Estimation Techniques .....	25
Maturities .....	26
Loss Development Triangle .....	26
Table 2 Typical Loss Development Triangle .....	26
Loss Trend .....	26
Data Elements.....	27
Time Series Data .....	27
Calendar Year Paid Data .....	27
Countrywide vs. State Data .....	27
Application of Trend Factor.....	28
<b>CATEGORIES OF LOSSES .....</b>	<b>28</b>
Catastrophe Losses in Ratemaking .....	28
Traditional Catastrophe Loading .....	28
Hurricane Model Loading.....	29
Hurricane Models.....	30
Model Blending.....	30
Long-Term vs. Near-Term.....	30
Adjustments.....	30
Non-Hurricane Catastrophe Losses.....	30
Non-Hurricane Models .....	31
Non-Catastrophe Losses.....	31
<b>EXPENSES .....</b>	<b>31</b>
Variable expenses .....	31
Fixed expenses .....	31
Expense Categories .....	32
Loss Adjustment Expenses .....	32
Commissions and Brokerage Expenses .....	33
Other Acquisition Expenses.....	33
General Expenses .....	33
Taxes, Licenses and Fees .....	33
Cost of Reinsurance.....	33

Dividends .....	33
CREDIBILITY .....	34
PROFIT .....	34
Profit Provision .....	35
Investment Income .....	35
OVERALL STATEWIDE RATE INDICATION .....	35
TERRITORIAL RATEMAKING .....	35
RATING VARIABLES .....	36
DEDUCTIBLES .....	36
Hurricane vs. All-Peril Deductibles .....	36
Dual Deductibles .....	37
Single Season Deductibles.....	37
LOSS MITIGATION .....	38
CONCLUSION.....	38

# PURPOSE

## Act 427

This description of homeowners ratemaking methodology is hereby provided by the Louisiana Department of Insurance (LDI). It is required by Act No. 427 of the 2014 Regular Session of the Louisiana Legislature and enacted as La. Revised Statutes (R.S.) 22:1488 (Act 427).<sup>1</sup> Specifically, Act 427 requires the Commissioner to “post on the Louisiana Department of Insurance website a general description of the ratemaking methodology that the Commissioner permits insurance companies to use in establishing their homeowners insurance rates.”

## Scope

The provisions of Act 427 are applicable to all property and casualty insurance companies (insurers) authorized to issue homeowners insurance policies in Louisiana. For purposes of Act 427, “homeowners insurance” includes insurance for single family residences, condominiums, renters / tenants and mobile homes / manufactured housing. The provisions of Act 427 do not apply to insurance for creditor-placed property (also known as lender-placed or force-placed property), condominium associations, commercial entities or surplus lines policies (i.e., policies written by an approved unauthorized insurer.)

## Act 427 Data

Act 427 data has been collected and displayed on the LDI’s web site. Act 427 requires insurance companies writing “homeowners insurance” policies to annually submit data to the LDI, including total direct losses by peril, the number of policies written and direct written premiums by zip code and parish. Homeowners insurance is defined in Act 427 to “include condominium insurance, residential fire insurance, renter's and tenant's insurance, and mobile home and manufactured housing insurance.”

Data collected is displayed on an aggregated basis for all companies reporting, for each year from 2004 through the present.<sup>2</sup>

**Caution: Act 427 Data Not Sufficient for Ratemaking.** Though the reported Act 427 data is of great informative value, it is not sufficient to determine the actuarial adequacy of rates charged in Louisiana or any sub-geographic part of Louisiana. It is important to be careful when drawing conclusions from the reported data. The following are important, though not all inclusive, considerations:

1. For the sake of simplicity, loss adjustment expenses, operating expenses, profit, risk load and reinsurance costs are not considered in the data presented. Due to the hurricane exposure, reinsurance costs and risk load represent a much larger percentage of premium in the coastal and southern portions of Louisiana as compared with the central and northern portions.

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<sup>1</sup> For reference, see Act No. 427 of the 2014 Regular Session of the Louisiana Legislature or follow this link: <http://www.legis.la.gov/legis/ViewDocument.aspx?d=913589&n=HB909>.

<sup>2</sup> To access the data, visit the LDI website at <http://www.lidi.la.gov/industry/regulatory-forms/act-427>.

2. Some parishes and zip codes will show paid loss experience which is quite favorable (i.e., low relationships of losses to premiums), while some will show highly unfavorable experience. This is to be expected as it reflects the low frequency, high severity nature of hurricane and tornado events. It also demonstrates the randomness of these events impacting any geographic area during the decade or so of experience which has been collected and displayed under Act 427.
3. Non-catastrophe homeowners insurance data at the zip code level tends to be volatile, even for the Louisiana industry as a whole. For example, the presence or absence of a couple of large fire losses in one locality can make a significant difference in the results.
4. Wind-only policies will cause a double-counting of the number of policies written in a parish or zip code and may distort any calculation that involves the number of policies written. Most homeowners policies insure all perils, resulting in a single policy count and one premium per homeowner for wind, fire, hail, theft, etc. However, many homeowners, particularly in coastal parishes, have an excluding-wind (or “ex-wind”) policy with a private insurer and a wind-only policy with Louisiana Citizens Property Insurance Corporation (LCPIC)<sup>3</sup>. Combined, these two policies cover all the perils of the single, traditional homeowner policy. The combined premium of the two policies is a reasonable depiction of the cost to insure all the perils. However, this situation will create a policy count of two, instead of one, and distort the number of policies written data.
5. LCPIC had data coding issues for years prior to 2010 that result in an understatement of the number of policies written, direct written premium and direct paid loss by parish or zip code. When the parish is not known it is coded as “unknown” and when the zip code is not known it is coded as 99999. Though the statewide data reflects all policy counts, premium and paid loss data, the data at the parish and zip code levels may be understated.
6. Surplus lines insurers (approved non-authorized insurers that write hard-to-insure properties) are not regulated by the LDI and are not subject to Act 427’s data reporting requirements. Over the years 2004 to present, these insurers have written a substantial amount of business in coastal and southern Louisiana but did not have to report their data. This situation may lead to erroneous conclusions.
7. The data reported under Act 427 is as reported by the insurance companies. The LDI and the insurance companies have taken steps to ensure the reasonableness of the reported data. However, there may be undetected inconsistencies with regard to how companies assign loss to type of peril, and premium and loss was assigned to property location by parish and zip code. An example of the former is assignment of wind loss as a catastrophe or non-catastrophe event may differ by company. An example of the latter is one company may use geo-coding to assign the location of an insured property while another company may use mailing address.

## PROPERTY INSURANCE

There are three main types of insurance available to individuals or businesses. They are life insurance, health insurance and property and casualty insurance (property/casualty). Property/casualty insurance represents insurance against loss to property or loss for which an insured owner of property may be

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<sup>3</sup> LCPIC is Louisiana’s insurer of last resort. For more information, visit their web page: <http://www.lacitizens.com>.

found liable. Property/casualty has two main segments: personal lines and commercial lines. Personal lines represents policies sold to individuals (i.e., families or households), the most common being private passenger automobile and homeowners insurance. Commercial lines represents policies sold to businesses, such as workers' compensation, commercial automobile, general liability, and commercial property.

## Homeowners

Homeowners insurance protects against property and liability loss exposures for owner-occupied residential dwellings. In homeowners insurance, uncertain future events in need of coverage include loss due to fire, lightning, hurricane, tornado, straight-line winds, hail, falling trees, water damage, frozen pipes, theft, dog bites and for other accidents. Homeowners represents the second largest property/casualty line of insurance in the U.S. (private passenger automobile insurance is largest and workers' compensation is third largest.) One of the key reasons to carry homeowners insurance is to cover loss due to catastrophic events such as hurricane, tornado and hail. Most homeowners policies are written for a 12-month contractual term.

Most homeowners insurance policies sold today use the "HO-3" or equivalent policy form. For the residential building, the coverage is "open perils" meaning that the policy covers all perils with stated exclusions, such as war, neglect, intentional acts, etc. For the contents of the residence, the coverage is "named perils" meaning that the policy covers the perils specifically named therein. There are some variations in the basic homeowners coverage offered by the various insurers, but these are generally minor. As with other lines of business, various endorsements can be attached to the basic policy to add special coverages or exclude coverages not needed. Examples of special coverages include replacement cost coverage on contents, increased liability limits, earthquake coverage, and mechanical breakdown coverage.

## ACTUARIAL SCIENCE

Actuarial science is the quantification, analysis and management of future contingent risk and that risk's financial consequences. Ratemaking is the process of establishing rates used in insurance and other risk transfer mechanisms. The estimation of costs associated with the transfer of risk from the insured to the insurer encompasses costs such as claims, claim settlement expenses, operational and administrative expenses and the cost of capital.<sup>4</sup>

## Actuaries

An actuary is a business professional who deals with the measurement and management of risk and uncertainty. The name of the corresponding profession is actuarial science. The risks analyzed by actuaries can affect both sides of the balance sheet, and require asset management, liability

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<sup>4</sup> Draft of the revised Statement of Principles Regarding Property and Casualty Insurance Ratemaking exposed for comment through January 31, 2015.



management, and valuation skills. Actuaries provide assessments of financial security systems with a focus on their complexity, their mathematics, and their mechanisms.<sup>5</sup> Most actuaries work in the insurance field managing the risks underlying property/casualty insurance, life insurance, health insurance and pension systems.

## Actuarial Societies

Property/casualty insurance (of which homeowners insurance is a part) has its own professional society, the Casualty Actuarial Society (CAS). For life, health and pension, the Society of Actuaries (SOA) is the counterpart of the CAS. The CAS and SOA represent the primary educational bodies of the actuarial profession. There is also the American Academy of Actuaries (AAA). The AAA is a professional association whose mission is to serve the public and the U.S. actuarial profession. Academy members include corporate executives and staff, regulators, consultants, academicians, and retired actuaries.

## Ratemaking vs. Reserving

**Ratemaking.** Ratemaking is one of two key activities performed by actuaries in property/casualty insurance. Ratemaking involves the estimation of the premium to be charged the policyholder to transfer risk from the policyholder to the insurer for a specified policy period. Ratemaking involves quantitative analysis of the numerous risk characteristics underlying an insurance program.

The goal of ratemaking is to assure that the insurance transaction is appropriately balanced. In other words, the rates should be set so that the premium is expected to cover all costs and achieve the target underwriting profit. This is covered in the second principle of the CAS *Statement of Principles Regarding Property and Casualty Insurance Ratemaking*.<sup>6</sup> The Casualty Actuarial Society's Committee on Ratemaking Principles states "A rate provides for all costs associated with the transfer of risk."<sup>7</sup>

**Reserving.** Reserving involves the estimation of monies that need to be set aside, as liabilities on an insurer's balance sheet, to cover future claim payments arising from policies which have already been written. A claim reserve is a provision for its related liability and is composed of five elements:

- Case reserve;
- Provision for future development on known claims;
- Reopened claims reserve;
- Provision for claims incurred but not reported; and
- Provision for claims in transit (incurred and reported but not recorded).

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<sup>5</sup> Trowbridge, Charles L. (1989). "Fundamental Concepts of Actuarial Science" Revised Edition. Actuarial Education and Research Fund. Retrieved June 28, 2006.

<sup>6</sup> Casualty Actuarial Society, adopted by the Board of Directors of the CAS May 1988; <http://www.casact.org/professionalism/standards/princip/sppcrate.pdf>.

<sup>7</sup> Basic Ratemaking, Geoff Werner, FCAS, MAAA and Claudine Modlin, FCAS, MAAA, VERSION 4, OCTOBER 2010, © Copyright Casualty Actuarial Society, 2010.

This document will not discuss the actuarial concepts and techniques used in setting claim reserves as the primary focus is ratemaking.

## RATES

An insurance product filed with the LDI contains three components: rates, rules and forms. The rates can be thought of as a matrix of prices for the various risk characteristics considered by the insurer. The rules are generally intertwined with the rates and disclose such things as discounts, surcharges, fees, premium calculation formulas, and cancellation procedures. The forms are the policy documents which define the coverages provided for the premium charged. Forms include the specific language of the basic policy and its endorsements.

### Rate Components

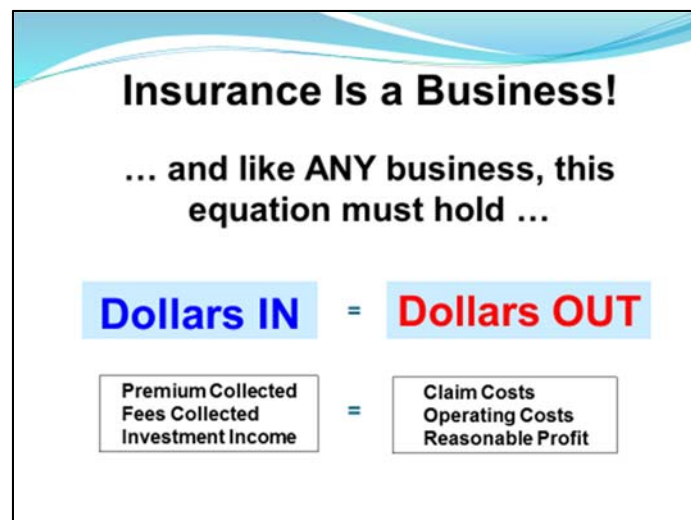
Fundamentally, the rates need to cover three items:

- Claims to be paid by the insurer (including claim adjustment expenses)
- Expenses of operating the insurance program
- A reasonable return on invested capital (profit)

When a rate reasonably reflects these components for a given risk, the rate is said to be actuarially justified.

**Insurance is a Business.** It is important to keep in mind that insurance is a business. Like all businesses, an insurer must balance the dollars that flow into the company with the dollars that are expected to flow out of the company. In this context, part of the outflow is a reasonable profit. This profit is essential to attracting the capital needed to support the insurer's operations and provides a safety margin in the event that losses are higher than expected, such as in the event of catastrophe.

**Dollars In = Dollars Out.** The fundamental insurance equation that needs to be maintained is the equality of dollars in and dollars out of the insurance operation:



Fees collected can include billing installment fees, inspection fees and other types of fees. Investment income is earned on the capital invested in the company as well as on the policy cash flows, e.g., the lag between the time premiums are collected and the time that claim costs and operating costs are paid.

When setting rates, the actuary generally tries to strike a delicate balance between the insurer's interests and the policyholder's interests. That is, the rates need to be high enough for the insurer to cover its costs, and yet low enough to be affordable to the policyholder.

**Rates as Estimates.** As stated in the CAS's *Statement of Principles Regarding Property and Casualty Insurance Ratemaking*, rates are estimates of future costs. In catastrophe-prone states such as Louisiana (which is subject to hurricane, tornado, severe convective storms and winter storms), the estimation of future costs must contemplate catastrophic events. Catastrophe costs include the expected loss caused by the peril under consideration, reinsurance costs to protect the insurer and the cost of increased capital required to maintain solvency after a high-severity event.

## LOUISIANA REGULATION OF INSURANCE

In the U.S., property/casualty insurance is regulated by the respective state regulatory body (generally referred to as the "insurance department" of each state). The Louisiana Department of Insurance (LDI)<sup>8</sup> serves a variety of functions, including looking after the best interests of the public, regulating the insurance product, monitoring insurer solvency, and handling consumer complaints.

### Rating Laws

The various states have different rating laws in effect for property/casualty insurance rates. Some states, including Louisiana, have a "prior approval" rating law. Prior approval is the strictest of rating laws and means that an insurer must obtain approval from the insurance department prior to implementing the new rates. Some states have a "file and use" law, which means that the insurer can start using the new rates after filing them, but may have to make amends if the rates are subsequently disapproved. Other states have a "use and file" law, which is similar to file and use except that the insurer has a certain number of days (e.g., 30 days) to make a filing after implementing the new rates. A small number of states have a "no file" law, generally meaning that filing material need only be kept at the insurer's offices and available for inspection by the insurance department upon request.

### Rate Standards

Most states, including Louisiana, have called for actuarially justified rates by legislating statutes requiring that rates be "not excessive, inadequate or unfairly discriminatory." Rates meeting this standard are said to be "actuarially justified," i.e., aligning closely with the costs associated with the transfer of the risk under consideration.

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<sup>8</sup> The LDI's web site is <http://www.lidi.la.gov>.

**Excessive Rates.** The public does not want excessive rates because that means the insurer will make too much profit at the expense of the consumer and the insurance coverage may be unaffordable. In a competitive market, an insurer with excessive rates will not attract consumers because the consumer will tend to shop and find lower-priced insurance with a different insurer.

**Inadequate Rates.** The public does not benefit from inadequate rates, i.e., rates below those that are actuarially justified. Inadequate rates can undermine the competitiveness of the market, can result in insufficient premium being collected and may lead to insurer insolvency. Insolvency means the insurer will not have the cash to pay claimants or to return any unearned premiums due the policyholders. In addition, inadequate rates reduce the incentive for insurers to want to write business in a given state as the insurer would lose money with each policy written.

**Unfairly Discriminatory Rates.** Insurance premiums charged are designed to recognize differences in risk, i.e., loss potential. One of the state's primary regulatory purposes is to ensure that consumers with similar risk characteristics are charged a similar rate. There are a few risk characteristics that are banned from use in ratemaking by statute; these include race, religion and national origin. Unfair discrimination is when either statutorily banned characteristics are used in insurance ratemaking or when similar risks are not charged a similar premium.

## **Review of Insurance Programs**

When an insurer is new to the insurance market of a given state, the company will generally have no loss experience of its own on which to base the rates. Nevertheless, the insurer will need to make a filing of initial rates, rules and forms with the LDI. The filing material may be based on a similar program of the company's in other states (if applicable), along with competitors' programs already filed in the state under consideration. These latter programs will provide important information on rate levels appropriate for the new state and the various rating territories within that state. (Rating territories for homeowners and other lines of business can be defined by county/parish, city, zip code or combinations thereof.)

When a new program has been submitted to the LDI for review, the LDI will review the rates, rules and rating plans for statutory compliance and reasonableness. The review will often consist of comparing the proposed rates for the new insurer to those of established insurers. If the rates and coverage are similar to those of the established insurers, the submission will generally be approvable.

**Regulatory Review Period.** The LDI has 45 days to review and to act on the rates, rules and forms submitted by the insurer. Final action will normally take the form of approval, disapproval or approval with amendments.

**Content of Filings.** A rate filing or rate/rule filing is expected to contain sufficient information and appropriate actuarial support for all proposed rates and rules. The LDI may request additional information from the insurer, in which case, the review period (45 days) is reset.

**Review Process.** Rates and rules, whether filed for the first time or as a change to existing rates and rules, are reviewed by the LDI's compliance examiners and actuaries. The compliance examiner verifies

compliance with state statutes and completeness of the filing<sup>9</sup>. The actuary looks for adequate support for the proposed rates and ensures that the support is compliant with actuarial principles<sup>10</sup> and standards<sup>11</sup>. When the LDI has completed its review, the filing is either approved or disapproved. Sometimes, before the review is completed, the filing is withdrawn. When this happens, the review process is halted without approval or disapproval.

## Filing Guidance

The LDI's website ([www.lidi.la.gov](http://www.lidi.la.gov)) provides a wealth of filing guidance for insurers to follow in making property/casualty rate and rule filings as well as form filings. The LDI's *Rate and Rule Filing Handbook*<sup>12</sup> as published by the LDI's Office of Property and Casualty is a particularly good source of information.

# LOUISIANA STATUTES

## § 1451. Systems for ratemaking

The LDI receives its authority to review property and casualty rates from the Louisiana legislature. Louisiana Revised Statutes Title 22 requires homeowners and other property/casualty insurance rates, rules and policy forms<sup>13</sup> to be filed with the LDI. Specifically, rates shall not be inadequate, excessive, or unfairly discriminatory. Statutes for rates and rules include (in part):

- A. As used in this Subpart, the term "commissioner" shall mean the commissioner of insurance.
- B. The commissioner shall have the exclusive authority to accept, review, and approve any application for insurance rates or rate changes for all lines of property and casualty insurance. The commissioner shall exercise his authority in accordance with the provisions of this Section.
- C. ...
- D. ...
- E. ...
- F. No provision of this Section shall prohibit the commissioner from conducting market conduct exams to ensure the rates being charged by insurers are not inadequate, excessive, or unfairly discriminatory.

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<sup>9</sup> In Louisiana, see La. R.S. 22:1464(A)(2)

<sup>10</sup> Casualty Actuarial Society, Statement of Principles Regarding Property and Casualty Insurance Ratemaking, adopted May 1988; <http://www.casact.org/professionalism/standards/princip/sppcrate.pdf>.

<sup>11</sup> The Actuarial Standards Board adopts many standards that impact property and casualty ratemaking. See <http://actuarialstandardsboard.org/index.asp> for those standards.

<sup>12</sup> The handbook can be found at:

<http://www.lidi.louisiana.gov/docs/default-source/documents/propertycasualty/rating/rate-and-rule-filing-handbook.pdf>

<sup>13</sup> Forms are filed with the LDI pursuant to La. R.S. 22:1261 et seq., 22:1281 et seq., 22:1311 et seq. and 22:1331 et seq.

## **§ 1452. Purpose of rate regulation; construction; definitions**

A. The purpose of this Subpart is to promote the public welfare by regulating insurance rates to the end that they shall not be excessive, inadequate, or unfairly discriminatory and to authorize and regulate cooperative action among insurers in ratemaking and in other matters within the scope of this Subpart. Nothing in this Subpart is intended:

- (1) To prohibit or discourage reasonable competition.
- (2) To prohibit or encourage, except to the extent necessary to accomplish the aforementioned purpose, uniformity in insurance rates, rating systems, rating plans, or practices.

B. This Subpart shall be liberally interpreted to carry into effect the provisions of this Section.

C. ...

## **§ 1454. Rating standards and methods**

A. Rates shall not be inadequate or unfairly discriminatory in a competitive market. Rates shall not be excessive, inadequate, or unfairly discriminatory in a noncompetitive market. Risks may be classified using any criteria except that no risk shall be classified on the basis of race, color, creed, or national origin.

B. In determining whether rates are excessive, inadequate, or unfairly discriminatory, consideration may be given to the following items:

(1) Basic rate factors. Due consideration shall be given to past and prospective loss and expense experience within and outside the state, catastrophe hazards and contingencies, events, or trends within and outside the state, dividends or savings to policyholders, members, or subscribers, and all other relevant factors and judgments. Fines and penalties against an insurer, whether levied by a court or regulatory body, shall not be used by the insurer or considered in any manner in the loss or expense experience for the purpose of setting rates or making rate filings.

(2) Classification. Risks may be grouped by classification for the establishment of rates and minimum premiums. Classification rates may be modified for individual risks in accordance with rating plans or schedules which establish standards for measuring probable variations in hazards or expenses, or both.

(3) Expenses. The expense provisions shall reflect the operating methods of the insurer, the past expense experience of the insurer, and anticipated future expenses.

(4) Contingencies and profits. The rates shall contain a provision for contingencies and a provision for a reasonable underwriting profit and shall reflect investment income directly attributable to unearned premium and loss reserves.

(5) Other relevant factors. Any other factors available at the time of the rate filing.

C. Except as provided by this Subpart, the commissioner shall not approve or otherwise regulate rates.

# CATASTROPHE EXPOSURE

Louisiana is catastrophe-prone mostly due to the exposure to hurricanes emanating from the Atlantic hurricane basin. Louisiana’s exposure is particularly large due to the state’s long coastline along the Gulf of Mexico.

## U.S. Cat History

Exhibit 1 –Top 10 Most Costly Disasters in U.S. History shows the total value of claims paid by insurers due to the largest catastrophic events in U.S. history. Hurricane Katrina was by far the most costly event in U.S. history, with the insurance industry paying out over \$41 billion to policyholders (\$50 billion to Louisiana property owners – 2014 dollars).

<b>Exhibit 1</b> <b>Top 10 Most Costly Disasters in U.S. History</b> <b>Estimated Insured Loss<sup>1</sup></b> (\$ Millions)				
Rank	Disaster	Year	Dollars when Occurred	Dollars in 2014 <sup>2</sup>
1	Hurricane Katrina	2005	\$ 41,100	\$ 49,700
2	Hurricane Andrew	1992	\$ 15,500	\$ 26,100
3	9/11 Attacks	2001	\$ 18,800	\$ 25,100
4	Northridge Earthquake	1994	\$ 12,500	\$ 19,900
5	Super Storm Sandy	2012	\$ 18,800	\$ 19,300
6	Hurricane Ike	2008	\$ 12,500	\$ 13,700
7	Hurricane Wilma	2005	\$ 10,300	\$ 12,500
8	Hurricane Charley	2004	\$ 7,500	\$ 9,400
9	Hurricane Ivan	2004	\$ 7,100	\$ 8,900
10	Tornadoes, flooding	2011	\$ 7,300	\$ 7,700

1. Property coverage only. Does not include flood damage (approximately \$15,600 Million) covered by the federally administered National Flood Insurance Program.

2. Adjusted for inflation through 2014 by ISO using the GDP implicit price deflator.

Source: ISO’s Property Claim Services unit (PCS)

## Top Catastrophe States

Exhibit 2 - Top Three States by Inflation-Adjusted Catastrophe Loss shows Louisiana being the third most catastrophe-prone state, behind Florida and Texas, when measured by insured catastrophe losses paid out between 1983 and 2013. Considering the much smaller population of Louisiana compared with either Florida or Texas, one can see clearly that catastrophe coverage is important in Louisiana and a key reason that Louisiana homeowners insurance premiums are among the highest in the country.

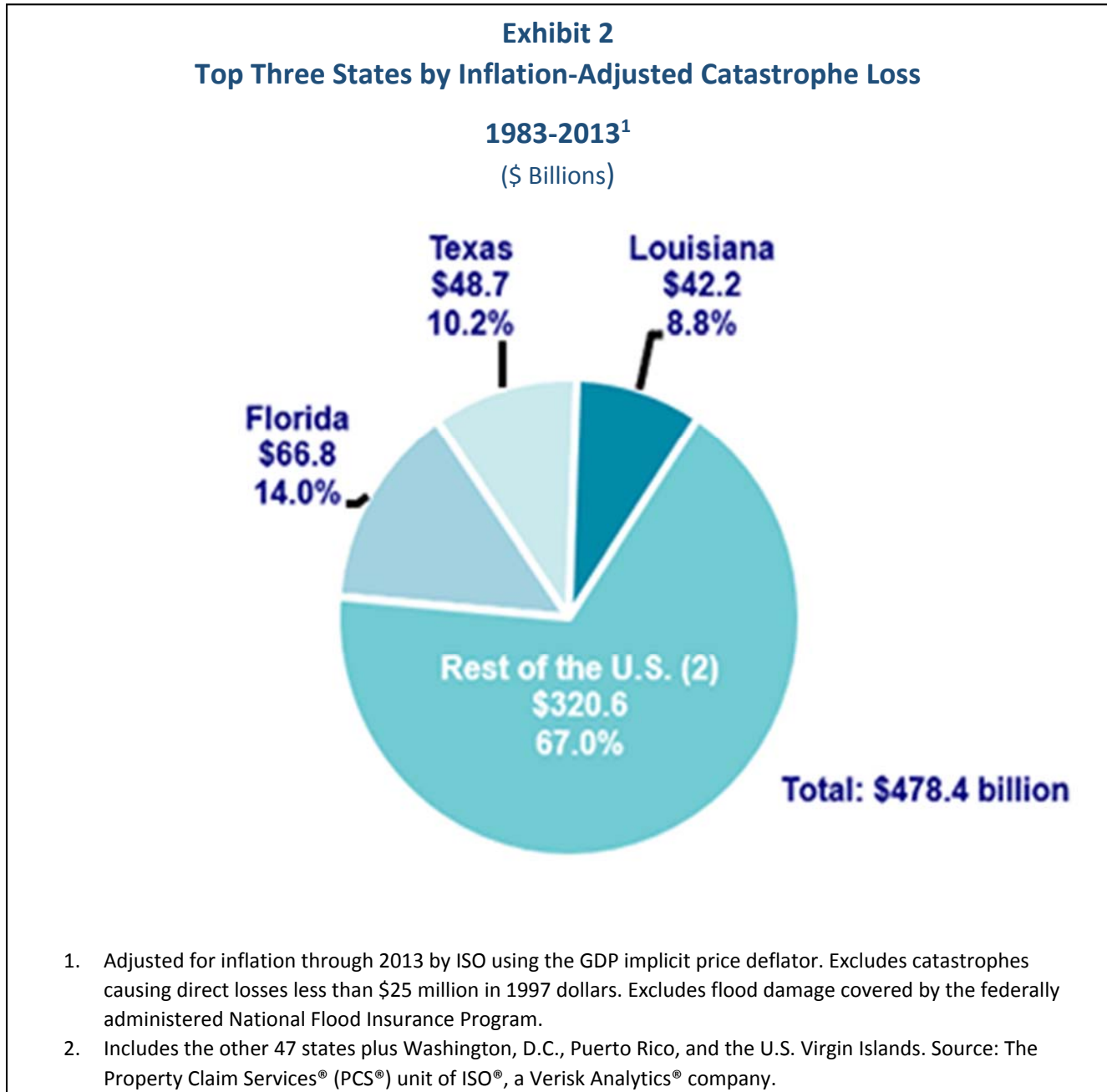




Exhibit 3 - Average Homeowner Premium by State shows the rank of average homeowners insurance premium by state. Not surprisingly, the three states with the greatest insured catastrophe dollars paid over the past several decades also have the highest average homeowners premium.

<p style="text-align: center;"><b>Exhibit 3</b>  <b>Average Homeowner Premium by State</b>  <b>Calendar Year 2012</b></p>					
Rank	State	Average Premium	Rank	State	Average Premium
1	Florida	\$2,084	26	North Carolina	\$927
2	Louisiana	\$1,742	27	Kentucky	\$916
3	Texas	\$1,661	28	Illinois	\$881
4	Oklahoma	\$1,501	29	Montana	\$871
5	Mississippi	\$1,314	30	New Hampshire	\$848
6	Alabama	\$1,284	31	New Mexico	\$844
7	Rhode Island	\$1,233	32	Virginia	\$843
8	Kansas	\$1,213	33	Indiana	\$840
9	Connecticut	\$1,160	34	Maryland	\$837
10	New York	\$1,158	35	Wyoming	\$821
11	Massachusetts	\$1,150	36	Pennsylvania	\$804
12	Minnesota	\$1,140	37	Michigan	\$802
13	South Carolina	\$1,134	38	South Dakota	\$789
14	District of Columbia	\$1,103	39	Vermont	\$782
15	Arkansas	\$1,096	40	Iowa	\$779
16	Missouri	\$1,091	41	West Virginia	\$771
17	Nebraska	\$1,040	42	Maine	\$741
18	Colorado	\$1,038	43	Ohio	\$721
19	North Dakota	\$1,038	44	Arizona	\$691
<b>CW</b>	<b>COUNTRYWIDE</b>	\$1,034	45	Delaware	\$678
20	Tennessee	\$1,008	46	Nevada	\$674
21	New Jersey	\$981	47	Washington	\$648
22	California	\$980	48	Wisconsin	\$631
23	Georgia	\$975	49	Utah	\$580
24	Hawaii	\$957	50	Oregon	\$567
25	Alaska	\$942	51	Idaho	\$538

Source: National Association of Insurance Commissioners, *Dwelling Fire, Homeowners Owner-Occupied, and Homeowners Tenant and Condominium/Cooperative Unit Owners Insurance: Data for 2012, January 2015.*

Exhibit 4 - Coastal Areas Most Frequently Hit by Hurricane further demonstrates Louisiana’s vulnerability to hurricanes. In this exhibit, all coastal parishes (“counties” in other states) are ranked based on the number of hurricanes making landfall in that parish/county between 1960 and 2008. Of the top 11 parishes/counties countrywide, Louisiana landed in five spots.

<b>Exhibit 4</b> <b>Coastal Areas Most Frequently Hit by Hurricane</b> <b>(1960-2008)</b>			
<b>Parish/County</b>	<b>State</b>	<b>Number of Hurricanes</b>	<b>Percent Change in Population, 1960-2008</b>
Monroe	Florida	15	51%
Lafourche	Louisiana	14	67%
Carteret	North Carolina	14	104%
Dare	North Carolina	13	466%
Hyde	North Carolina	13	10%
Jefferson	Louisiana	12	109%
Palm Beach	Florida	12	455%
Miami-Dade	Florida	11	157%
St. Bernard	Louisiana	11	17%
Cameron	Louisiana	11	5%
Terrebonne	Louisiana	11	79%

Source: U.S. Census Bureau, Decennial Census of Population and Housing: 1960 to 2000; Population Estimates Program: 2008

### Hurricanes Katrina and Rita

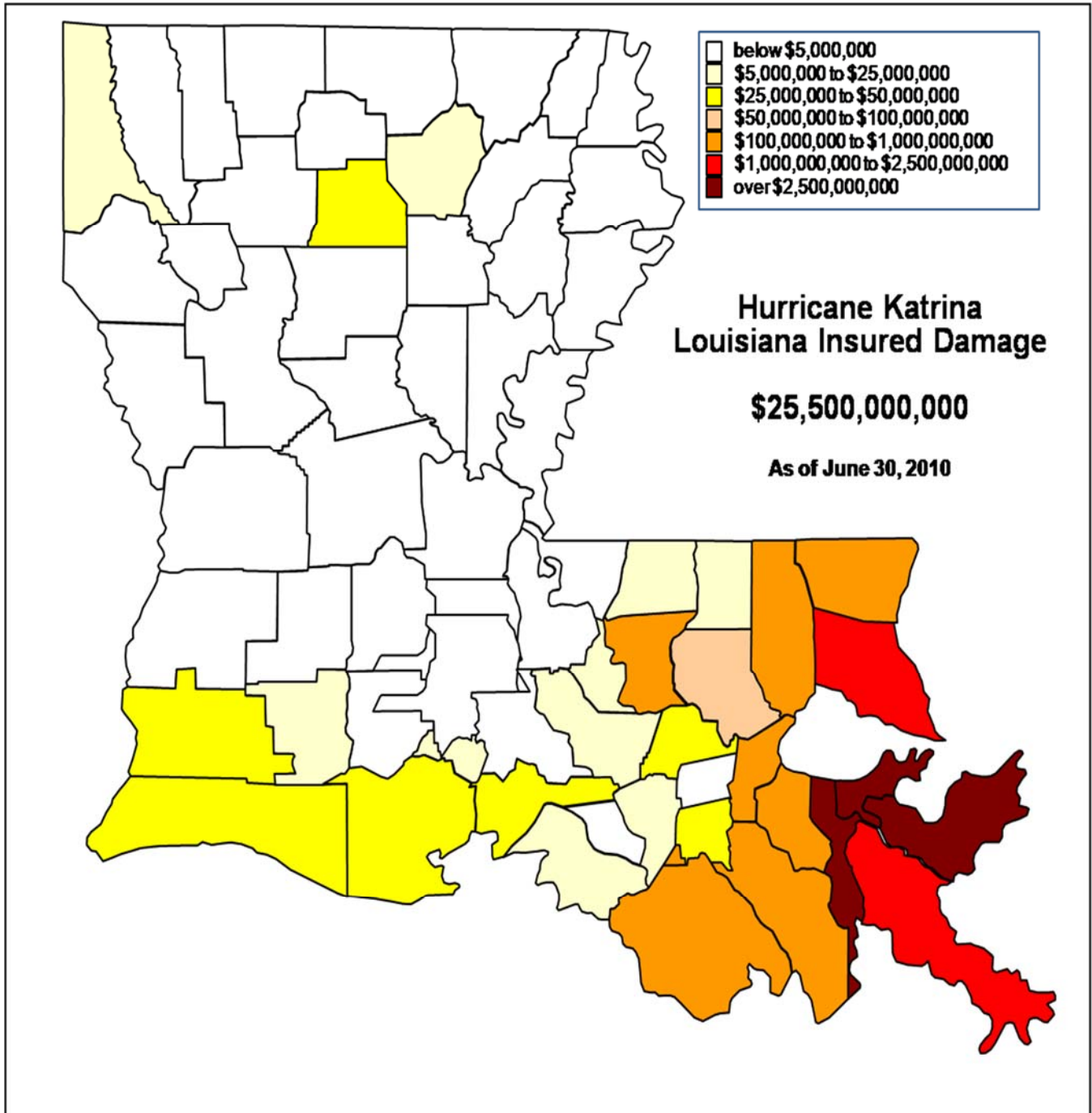
Exhibit 5 - Hurricane Katrina Insured Damage by Louisiana Parish shows the estimated loss dollars paid by insurers for Hurricane Katrina. During Hurricane Katrina, several parishes had paid, insured losses exceeding \$1 billion.

Exhibit 6 - Hurricane Rita Insured Damage by Louisiana Parish shows the estimated loss dollars paid by insurers for Hurricane Rita damage. During Hurricane Rita, Calcasieu Parish had paid, insured losses exceeding \$1 billion.

These two maps clearly point out the vulnerability to huge hurricane losses for many parishes in south Louisiana.

## Exhibit 5

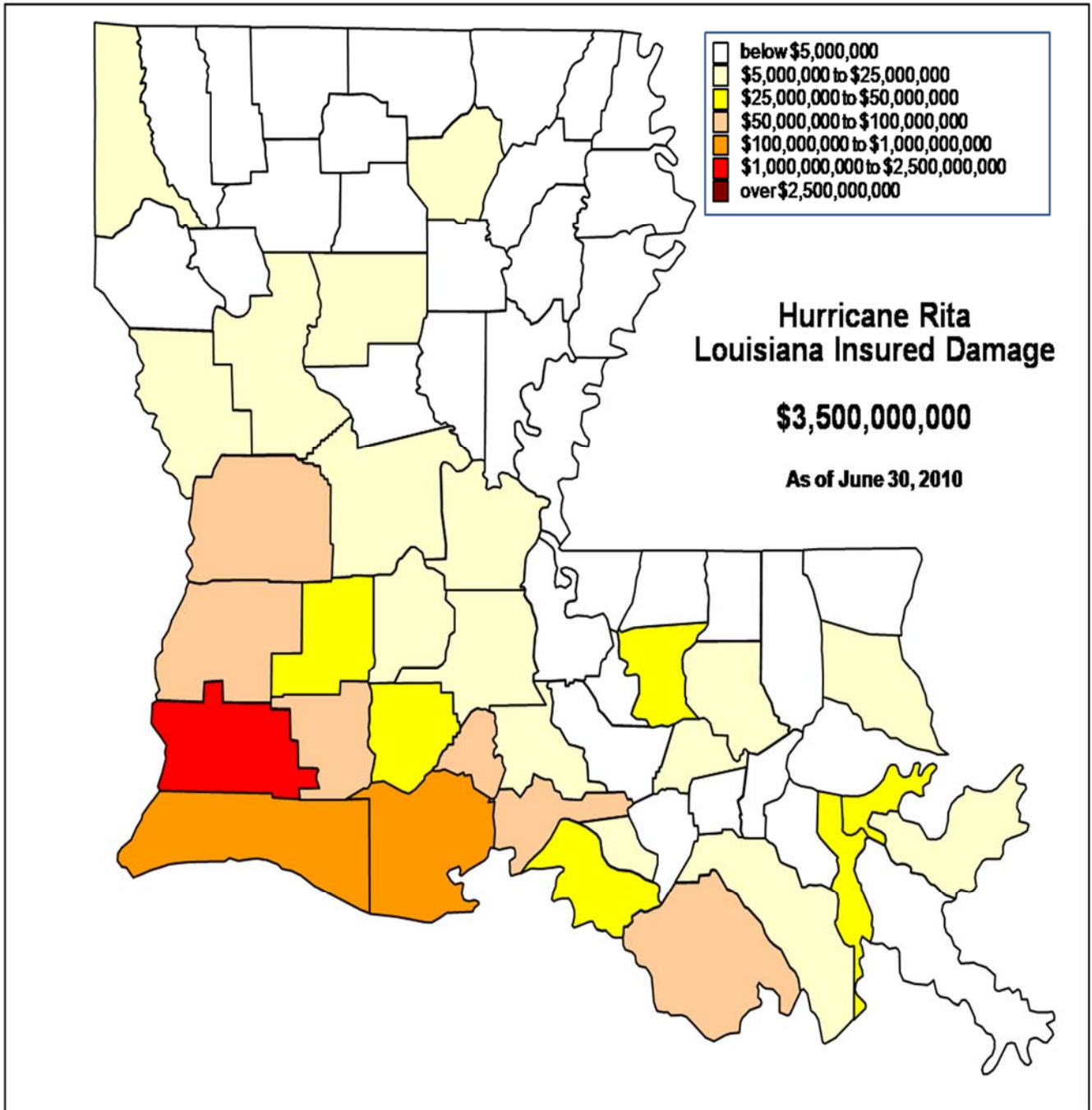
### Hurricane Katrina Insured Damage by Louisiana Parish



Source: Louisiana Department of Insurance.

## Exhibit 6

### Hurricane Rita Insured Damage by Louisiana Parish



Source: Louisiana Department of Insurance.

# RATEMAKING PRINCIPLES

According to the Casualty Actuarial Society's *Statement of Principles Regarding Property and Casualty Insurance Ratemaking*:

**Principle 1: A rate is an estimate of the expected value of future costs.**

Ratemaking is prospective because the property and casualty insurance rate must be developed prior to the transfer of risk.

**Principle 2: A rate provides for all costs associated with the transfer of risk.**

Ratemaking should provide for all costs so that the insurance system is financially sound.

**Principle 3: A rate provides for the costs associated with an individual risk transfer.**

Ratemaking should provide for the costs of an individual risk transfer so that equity among insureds is maintained. When the experience of an individual risk does not provide a credible basis for estimating these costs, it is appropriate to consider the aggregate experience of similar risks. A rate estimated from such experience is an estimate of the costs of the risk transfer for each individual in the class.

**Principle 4: A rate is reasonable and not excessive, inadequate, or unfairly discriminatory if it is an actuarially sound estimate of the expected value of all future costs associated with an individual risk transfer.**

Ratemaking produces cost estimates that are actuarially sound if the estimation is based on Principles 1, 2 and 3. Such rates comply with four criteria commonly used by actuaries: reasonable, not excessive, not inadequate and not unfairly discriminatory.

Ratemaking is prospective and the indicated rate level is the rate level that achieves a balance between the expected premium income and the expected losses and expenses (including a profit provision that considers investment income) for a future policy period. In addition to complying with the principles set forth above, the results of actuarial ratemaking must comply with Louisiana's statutory requirement that rates not be excessive, inadequate or unfairly discriminatory (La. R.S. 22:1452).

## STATEWIDE RATE LEVEL INDICATIONS

Most usually, ratemaking is performed on an "accident year" basis. In other words, the loss dollars are assigned to the year in which the accident took place, regardless of when the claim was reported or paid. The premium dollars are assigned to the year in which the premium was earned, regardless of when the premium was collected. By using "earned" premium, premiums are matched up with the losses which those premiums funded. For homeowners insurance, the most common ratemaking methodology entails reviewing the latest five accident years of premium and loss experience. In addition, for expense experience, the latest three years of experience are normally used. Once the premiums and losses have

been tabulated for the past five accident years, various adjustments (especially inflation) are made to place the premiums and losses at the level that can be reasonably anticipated for the future policy period for which rates are being made.

### Ratemaking Example 1

To provide insight into the ratemaking process, let's work with a simple hypothetical example. This example will show that a rate is in essence a claims costs provision which is "grossed up" for expense provisions. This "grossing up" process is seen in many non-insurance endeavors, such as when a price is grossed up for a tax rate.

Suppose the actuary determines that the expected losses (including loss adjustment expenses or LAE) for a policy are \$1,200. (This expected or long-term average claims cost is called the "pure premium").

Pure premium:	\$1,200
---------------	---------

Further, suppose the actuary estimates that the makeup of the premium dollar should be as follows:

Claims cost (including LAE)	60%
Agent commissions	12%
Other expenses	22%
Profit	<u>6%</u>
Total	100%

So, claims costs are assumed to represent 60% of the premium, and expenses and profit are assumed to represent the other 40% of the premium. Given these assumptions, the rate that would need to be charged is \$2,000 (= \$1,200 / 0.60). This is the amount that will allow 40% or \$800 to be available for expenses and profit, and still leave \$1,200 available to fund the expected claims cost.

As can be seen in this example, the claims cost of \$1,200 is being "grossed up" for a 40% expense and profit ratio. The result is \$2,000, which represents the quotient of \$1,200 and the complement of (e.g., 1.00 minus) 0.40.

### Ratemaking Example 2

This example will demonstrate the "loss ratio approach" to ratemaking. Specifically, when the actuary makes a projection of the loss ratio (ratio of losses to premiums) for the projected policy period, the relativity (or ratio or quotient) of that loss ratio to the targeted loss ratio reveals the indicated rate change.

Suppose the actuary is making rates in 2015 for policies to be written in 2016. Suppose the targeted expense and profit ratio (relative to premium) is 40% (as in Ratemaking Example 1 above), so that the permissible or targeted loss ratio is 60% (= 100% - 40%). Suppose the actuary tabulates loss ratios as

shown in Table 1 below. (The premiums and losses, and thereby the loss ratios, are “adjusted” for inflation and other factors to be later discussed in detail).

<b>Table 1:</b> <b>Statewide Ratemaking Analysis</b> (Amounts in \$000’s)			
Adjusted Accident Year	Adjusted Earned Premium	Adjusted Incurred Losses	Loss Ratio
2010	\$1,500	\$1,200	80%
2011	\$1,600	\$1,100	69%
2012	\$1,800	\$1,420	79%
2013	\$1,950	\$970	50%
2014	\$2,125	\$1,380	65%
<b>Total</b>	<b>\$8,975</b>	<b>\$6,070</b>	<b>68%</b>
<b>Selected Loss Ratio:</b>			<b>66%</b>
<b>Target Loss Ratio:</b>			<b>60%</b>
<b>Indicated Rate Change:</b>			<b>+10%</b>

As shown, the actuary’s analysis suggests an adjusted loss ratio (ratio of adjusted losses to adjusted premiums) of 66%. Then the indicated rate change would be +10% (= 66% / 60% - 1). In other words, if the past premiums had been 10% higher than they actually were, then the adjusted loss ratio would have been 60% and the rates would appear just adequate today. But the past premiums were not 10% higher in the past, so they need to be increased by 10% today, at least on an indicated basis.

## ADJUSTMENTS TO HISTORICAL PREMIUMS

The historical premiums collected by the company need to be adjusted so as to represent the future policy period for which rates are being made. A few adjustments that require consideration include:

- Rate on-leveling
- Premium trend
- Market events

### Rate On-Leveling

Rate on-leveling adjustments are intended to adjust the historical premiums for rate changes that have already taken place since the time of the historical year under consideration. If this adjustment were not made, then the rate indication that results from the ratemaking analysis would include rate changes that have already been implemented. This would represent a double-counting. By restating historical



premiums at today's rates, the ratemaking analysis will indicate what rate change needs to be taken relative to the current set of rates, not some past set of rates. There are two common approaches to on-leveling the historical rates: policy rerating and parallelogram. These are described below.

**Policy Rerating Approach.** In this approach, the insurer computes the rate on all policies in a past experience period based on the rating plan and rates currently in use. Some insurers have sophisticated computer systems that can rerate all policies from a past data period at today's rates so as to make this adjustment. This method is the most accurate way to place historical premiums at current rate level.

**Parallelogram Approach.** Not all insurers have the ability to use computer systems to rerate all policies on current rate plans and at current rate levels. For these insurers, a standard mathematical approximation formula known as the parallelogram approach is used to make an appropriate premium adjustment.

## Premium Trend

For homeowners insurance, premium trend is driven by changes in the amount of insurance (AOI) or policy limit selected by the policyholder. Three premises are at work here:

1. All insurers use an AOI curve in their rating plan to reflect higher rates to be charged for properties with higher replacement costs. As an example, if the base AOI is \$100,000 (i.e., AOI rating factor of 1.000), the AOI rating factor for \$103,000 may be 1.025 and the rating factor for \$200,000 may be 1.800.
2. The U.S. economy is an inflationary economy, with inflation generally to be expected every year.
3. Because of inflation to building replacement costs, policyholders generally increase their selected AOI for their policy over time so as to be fully covered in the event of a total loss.

Given these premises, it should be apparent that even with nothing else changing (such as the insurer filing for a rate increase), the insurer will collect more premium for a policy as time goes by. Under the aforementioned example and assuming 3% annual inflation to building costs, if the policyholder had \$100,000 of coverage this year, then next year he is likely to buy \$103,000 worth of coverage, and his premium will automatically increase by 2.5%.

## AOI Changes

For a homeowners policy, AOI changes need to be measured and reflected in the ratemaking methodology. AOI changes are usually due to one of three events impacting the policy's Coverage A (amount of insurance on the structure):

1. Inflation guard endorsement;
2. Discretionary increases to Coverage A; or
3. Insurance-to-value program.

When an inflation guard endorsement is attached to a policy, it provides for the AOI on the policy to be increased automatically each year at a predetermined rate (e.g., 4% per year) so as to maintain adequate coverage over time.



With a discretionary increase, a policyholder may not have inflation guard protection but may increase his AOI every few years so as to keep up with inflation. The insurer may also re-underwrite the risk and increase the AOI at any point in time.

With an insurance-to-value program, an insurer may implement such a program in a given year to adjust a large percentage of its policies to adequate replacement cost levels at each policy's next renewal. This represents a form of re-underwriting of the book of business but is performed on a consistent and periodic basis.

## Market Events

Premiums may need to be adjusted for significant market events. For example, the legislature may pass a statute that makes a change to the homeowners business at a point in time. This occurred, for instance, when the Louisiana Legislature passed a law requiring hurricane deductibles to be applied only once during a hurricane season rather than once per hurricane event.

Market events may occur on a one-time or a continuous basis. As such, the historical premium used in ratemaking may need adjustment in just one year, or in all of the years. The impact of these events may or may not be picked up by premium trend adjustments. It is incumbent upon the actuary to carefully consider the overlap of all premium adjustments in the actuarial ratemaking analysis.

# ADJUSTMENTS TO HISTORICAL LOSSES

## Loss Development

Insurance represents the sale of coverage for financial loss due to future unfortunate events. As such, the final costs relating to the sale of a block of insurance policies will not be known until after such policies have been sold, policy periods have expired and all, or virtually all, related claims have been fully paid. Depending upon the type of insurance, this can take many years. This situation stands in contrast to manufacturing industries, where costs are incurred first and product is sold later.

As described above, loss data is normally organized by accident year, meaning that losses are assigned to the year in which the accident occurred, regardless of when the claim was reported or paid. As such, the loss dollar evaluation of a given accident year will change even after the end of the accident year.

**Estimation Techniques.** Reported incurred losses are paid losses plus reserves for expected future loss payments on claims already reported to the insurer. Reported incurred losses for each of the historical years used in the ratemaking exercise may be immature. In other words, some claims are still not fully settled and reserves set aside for future payments are estimates made by claims adjusters (usually understated but sometimes overstated). Actuarial techniques used include loss development triangles, the Bornhuetter-Ferguson method, the chain-ladder method and the Cape-Cod method, to name a few. Past patterns of loss development are analyzed and used to project the amount of development from immature loss values to estimated ultimate loss values.

For property lines of insurance, losses are generally paid out soon after the accident occurs. Therefore, loss development is not very significant, and the adjustment factors that are needed are close to unity (1.000). This is in contrast to liability lines of insurance, where claims may take years to work their way through the court systems, and loss development will generally be significant. This occurs as injuries are often found to be more serious than originally thought, and the dollar evaluation of such claims will normally develop upward.

While homeowners insurance represents a package of property and liability coverage, the property coverage will generally represent 90% or more of the exposure to loss. Property losses are usually paid quickly because they are not generally contested in court. Therefore, loss development will generally be small for the homeowners package as a whole.

**Maturities.** The maturity or evaluation of an accident year is the amount of time elapsed since the inception of that year. As an example, consider accident year 2011. The first evaluation of this accident year will often be at December 31, 2011, or 12 months of maturity. The second evaluation would then be at December 31, 2012, or 24 months of maturity. The third evaluation would be at December 31, 2013, or 36 months of maturity. And so on.

**Loss Development Triangle.** Let’s say the paid-to-date claim dollars (in \$000’s) are tabulated as shown below as of December 31, 2014. The array shown is called a “loss development triangle.” The shape is triangular because the earlier years have more historical evaluations available as of a given point in time, as compared with later years.

Table 2 Typical Loss Development Triangle				
Accident Year	Maturity			
	12 Months	24 Months	36 Months	48 Months
2011	1,000	1,110	1,110	1,110
2012	1,200	1,320	1,320	
2013	1,400	1,540		
2014	1,500			

Based upon the above loss development triangle, the actuary may discern that after 24 months of development, a given accident year is basically fully developed. However, between 12 and 24 months of maturity, the cumulative losses develop upward between 10% and 11%, and the actuary may select 10% for 12-24 month loss development. He would then apply a factor of 1.10 to the 12-month evaluation of \$1,500,000, to estimate the ultimate amount of loss incurred at \$1,650,000 for accident year 2014.

**Loss Trend**

Fundamentally, loss trend can be thought of as inflationary adjustments to losses. Losses are subject to continuous change from economic forces such as inflation. In the calculation of the indicated rate level

change, the actuary recognizes the continuous change in the frequency and severity of claims when projecting a future loss level.<sup>14</sup>

The trend rate from one year to the next can be influenced by temporary shortages of repair/replacement supplies. Adjustments are needed to bring historical losses to the dollar level projected for the future period for which rates are being made. As an example, it may have cost \$20,000 to repair a kitchen damaged by fire in 2013, but that same kitchen would have cost \$22,050 to repair two years later in 2015. The average annual inflation rate over the years, in this example, is 5% per annum, i.e.,  $\$22,050 = \$20,000 \times 1.05 \times 1.05$ .

There are various methods used by insurers to adjust losses to the expected cost level underlying the projected future time period.

**Data Elements.** With respect to the data elements which are analyzed for loss trend purposes, there are normally two approaches. The first approach is to analyze pure premium, which is total loss dollars per unit exposure (or policy count). The second approach is to analyze the two components of pure premium, which are frequency and severity. Frequency is the claim count divided by the exposure; and severity is loss dollars divided by claim count. Note that pure premium equals frequency multiplied by severity.

**Time Series Data.** To calculate an appropriate loss trend adjustment, the insurer will generally analyze historical time series data for pure premium, frequency and/or severity for the given line of insurance and state. The time series data will typically be for the latest 16 calendar quarters. A statistical curve is typically fit to the time series data to calculate the average annual percentage change in the pure premium, frequency or severity time series under study. The most commonly used statistical curve in trend analysis is the exponential curve, also known as “compound growth.”

**Calendar Year Paid Data.** Loss trend analysis is usually based upon calendar year paid data. That is, the loss dollars paid and number of claims closed in a given calendar year are related to the exposures earned in that calendar year. The use of calendar year paid data eliminates the need for loss development factors, since calendar year paid data does not develop after the end of the calendar year.

**Countrywide vs. State Data.** If the insurer does not write much business for the given line and state, the trend data will generally not be statistically reliable. In these cases, the insurer will often supplement the loss trend analysis with state-specific industry data and/or insurer’s countrywide data. State-specific industry data is available through industry organizations that provide statistical services, such as the Insurance Services Office (ISO). A common source of statewide and countrywide pure premium, frequency and severity data for supplemental loss trend analysis is ISO’s *Fast Track Report*. The analysis of such data would proceed along the same lines as described above, with fitting of statistical curves to the assembled time series data.

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<sup>14</sup> Jones, Burt D., “An Introduction to Premium Trend,” February, 2002, [www.casact.org/library/studynotes/jones5.pdf](http://www.casact.org/library/studynotes/jones5.pdf) is a good actuarial reference on the subject of premium trend.

## Application of Trend Factor

The loss trend factor is applied to each historical accident year of loss data used in the ratemaking experience period. The loss trend factor applied to a given historical accident year must reflect the time between the average loss date underlying that historical accident year and the average loss date expected in the future year for which the actuary is developing rates.

Let's say the actuary is making rates in 2015 for annual policies to be written uniformly throughout 2016. The average policy writing date will be midway through 2016 (i.e., July 1, 2016), and the average accident date will be six months after the average policy writing date, or January 1, 2017. Let's say the actuary is using historical accident years 2010 through 2014 to make his projections. The average accident date in accident year 2010 is July 1, 2010. Therefore, the losses for accident year 2010 must be increased by 6.5 years of loss trend to put those losses on a January 1, 2017 level. Assuming a 3.0% annual trend rate has been selected, the loss trend factor applicable to 2010 would be 1.212 ( $= 1.030^{6.5}$ , where “^” denotes exponentiation). Similarly, the loss trend factor for accident year 2011 would be 1.177 ( $= 1.030^{5.5}$ ), and so on.

## CATEGORIES OF LOSSES

In homeowners ratemaking, the actuary typically separates losses into three key categories: hurricane losses, non-hurricane catastrophe losses (such as tornado and hail) and non-catastrophe losses (such as fire, theft, water and liability). Some insurers separate losses into more refined categories, for example, fire, personal liability, theft, water damage (not flood), winter freeze, hurricane, non-hurricane wind or reinsurance. However, only the aforementioned three key categories will be discussed below.

### Catastrophe Losses in Ratemaking

As discussed previously, Louisiana is a catastrophe-prone state. In particular, Louisiana is subject to somewhat frequent and often severe hurricane winds. The long-term cost of these losses must be reflected in homeowners premium. This is accomplished through catastrophe loadings in the ratemaking process.

**Traditional Catastrophe Loading.** Prior to the advent of hurricane models around 1990, insurers would look at 20 or more years of actual hurricane (or catastrophe or “cat”) experience to derive a hurricane load to apply to non-hurricane loss. The problems with this historical multi-year loss methodology include:

- Random fluctuations. The experience period is too short and subject to random, and sometimes volatile, swings in the experience. For example, if the latest 20 years are analyzed it is assumed that every year's experience is expected to repeat every 20 years. When a major, 1-in-200-year event occurs such as Hurricane Katrina, that one year can cause the 20-year hurricane load to increase by multiples. The opposite can happen when such a year drops out of the 20-year period.
- Changes in weather patterns. Historical data may not reflect the current weather cycle.

- Changes in population density. Like many states, the population in Louisiana has shifted over the past 20 to 30 years toward coastal areas. As a result, the observed hurricane losses of 20 years ago do not reflect the current population density.
- Changes in construction. Changes in the values of new and replacement construction must be considered and adjusted for when analyzing data which is 20 or 30 years old.
- Territories. It is difficult to allocate statewide indicated hurricane losses to smaller geographic areas (e.g., an insurer's rating territories). The smaller the geographic area, the less certain the allocation can become.

**Hurricane Model Loading.** Today, almost all insurers utilize hurricane computer models in their Louisiana ratemaking methodology. Hurricane models have resolved the shortcomings of analyzing 20 or 30 years of actual hurricane experience. Hurricane models are based on sophisticated simulation methods and computer programs that capture how hurricanes behave and the impact that they have on a state's housing inventory. Scientists and engineers combine simulations of the natural occurrence patterns and characteristics of hurricanes with an insurer's information on property location, property values, construction types and occupancy classes. They do this by modeling the hurricane hazard, structural damage and financial impact of the hurricane hazard on the insurer's housing inventory in a geographic area. Model output provides information concerning the potential for large losses before they occur so that insurers and local government can prepare for their financial impact.

Hurricane models have the advantage over 20-year or 30-year historical experience because:

- The hurricane model is based on historical meteorological data using records dating back to around 1900.
- The hurricane model incorporates damageability models that are sensitive to construction type and construction quality.
- The hurricane model evaluates the insurer's current policy mix by geography and risk characteristics.

In ratemaking, the hurricane loss component of the future rate is estimated to be the hurricane model's average annual loss (AAL) output value. This value is at current cost levels associated with the evaluation date of the exposure data used as input to the model. Therefore, model output requires minimal adjustment for inflation and no adjustment for loss development (modeled output is at the ultimate, settled valuation as of the date the model is run). An inflation adjustment can be introduced by adjusting the underlying exposure data to the needed future time period. Alternatively, the modeled output (loss) can be adjusted to a level consistent with the needed future time period.

In Louisiana, the most commonly used vendors of hurricane models are:

- RMS (Newark, CA)
- AIR (Boston, MA)
- EQECAT (Oakland, CA)

These vendors employ professionals with expertise in areas including meteorology, structural engineering, statistics, actuarial science, information technology and other fields.

## Hurricane Models

When filing rates based on hurricane models, the insurer must provide to the LDI many statistics and other data regarding the hurricane model's use, by completing *Bulletin No. 2013-04, Catastrophe Model Interrogatories* (Interrogatories).<sup>15</sup> Reported upon in the Interrogatories are information about the model and model version, data the insurer inputs into the model, the settings used by the insurer when running the model, and the resulting output of the model. The Interrogatories also require that the model vendor provide detailed information about the model's creation and the model's sensitivity to changes in data.

A few areas of regulatory concern include model blending, near-term view of hurricane potential and adjustments to model input or output. These are discussed below.

**Model Blending.** Most insurers use modeled results from just one model. However, some insurers will run two (or more) models from different model vendors and average the modeled results to develop what the insurer views as more stable estimates. This latter technique is called blending and is permitted by the LDI.

**Long-Term vs. Near-Term.** Hurricane models can provide both a long-term estimate and a near-term estimate. Currently the near-term estimate is higher than the long-term estimate as it reflects anticipated greater frequency and severity of storms due to the currently elevated Atlantic water temperatures. As of the publishing of this document, the LDI does not permit the use of the near-term versions of the models for ratemaking purposes.

**Adjustments.** The LDI always verifies which model version was used, as well as what adjustments were made to the model. The LDI is concerned with model input and any scrubbing of a company's data before it is fed into a model. "Scrubbing" is any judgmental adjustment to the data for missing data points and other shortcomings of the recorded data. Obviously, the LDI is looking to avoid the possible "garbage in, garbage out" scenario. Though it is unlikely that data fed into a model will be questionably scrubbed, it is possible that data can be tweaked in a manner that is not in the public's best interests.

The LDI generally permits two adjustments to the modeled output: (1) demand surge, reflecting the anticipated increased cost of building materials and labor after a hurricane due to supply shortage, and (2) loss adjustment expense, covering the cost of the claims adjusters handling the claims.

## Non-Hurricane Catastrophe Losses

Many insurers calculate a provision for non-hurricane catastrophe losses based upon a long-term experience period. This period is usually 20 to 30 years. Usually, the ratio of non-hurricane catastrophe

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<sup>15</sup> Bulletin No. 2013-04 can be found on the LDI's web site at <https://ldi.la.gov/docs/default-source/documents/legaldocs/Bulletins/Bul2013-04-Cur-CatastropheModelInte>.

losses to non-catastrophe losses (“cat-to-non-cat” ratio) is calculated for each such year, and an average cat-to-non-cat ratio is calculated across the years. A cat-to-non-cat ratio is then selected and applied to the projected non-catastrophe losses in order to estimate the non-hurricane catastrophe portion of the projected rate.

**Non-Hurricane Models.** In recent years, loss simulation models have been developed for perils other than hurricane, including severe convective storms (i.e., thunderstorms), winter storms, flood, earthquake and terrorism. Some insurers use these models in lieu of actual historical data to estimate loss provisions for these perils. In Louisiana and for homeowners, hurricane and severe convective storm models are the only such models currently permitted in support of a rate filing.

### **Non-Catastrophe Losses**

Non-catastrophe losses are usually analyzed using five years of historical data. Two adjustments must be made to these losses: (1) loss development, to project reported losses to their ultimate, settled value, and (2) loss trend (i.e. the impact of inflation). This stands in contrast to hurricane losses and non-hurricane catastrophe losses, where the results often need little or no adjustment for loss development or trend since these phenomena are already reflected in the output of the analysis as outlined above.

## **EXPENSES**

In the ratemaking exercise, at least three historical years of expenses are normally reviewed. These expense monies are needed to support the insurer’s business operation, including acquiring and servicing policies. These expenses are often referred to as underwriting expenses (or operational and administrative expenses).

In ratemaking, expenses are categorized into variable or fixed expense and are treated differently in the actuarial ratemaking formula.

### **Variable expenses**

Variable expenses are expenses which are calculated as a percentage of premium. Commission paid to salespeople based on the premium of the insurance product sold is good example of variable expense. Other variable expenses considered in ratemaking include taxes and some overhead to run the insurance company.

### **Fixed expenses**

Fixed expenses include costs that a business is obligated to pay and cannot decrease over the short run without significant changes to human resources or physical facilities of the business. Fixed expenses are the costs of doing business that, for all practical purposes, cannot be changed easily over the short term. Fixed expenses do not react to changes in the sales level. If an insurer wants to decrease fixed expenses significantly, it needs to downsize the business (lay off workers, sell off property, and so on). A business should be careful not to overreact to a temporary downturn in sales by making drastic reductions in its fixed costs, which it may regret later if sales pick up again.

## Expense Categories

Key categories for expenses analyzed in homeowners insurance ratemaking are:

- Loss adjustment expenses
- Commissions and brokerage expenses
- Other acquisition expenses
- General operating expenses
- Taxes, licenses and fees
- Cost of reinsurance
- Dividends

In the actuarial ratemaking exercise, the expenses that are expected to arise in the future policy period must be estimated and considered in the future rates. Moreover, Louisiana Revised Statute 22:1454 (B)(3) provides that “[t]he expense provisions shall reflect the operating methods of the insurer, the past expense experience of the insurer, and anticipated future expenses.”<sup>16</sup>

The following discussion provides detail for each key expense category<sup>17</sup>:

**Loss Adjustment Expenses.** Loss adjustment expenses are expenses incurred by the insurer in adjusting the claims. They are usually broken down in one of two ways: ALAE vs. ULAE, or DCC vs. AO. These acronyms are defined as follows:

**ALAE – Allocated Loss Adjustment Expenses.** These are adjustment expenses which can be directly allocated to a given claim and typically include legal costs, investigatory expense, independent adjuster expenses, etc.

**ULAE – Unallocated Loss Adjustment Expenses.** These are adjustment expenses which cannot be directly associated with a given claim and typically include claims department overhead, in-house claims adjuster’s salaries, etc.

**DCC – Defense and Cost Containment Expenses.** These usually represent all legal costs and investigatory expenses associated with adjusting claims.

**AO – All Other Adjustment Expenses.** These usually include claims adjustment expenses (whether the adjuster is in-house or an independent adjuster), claims department overhead, etc.

When the actuary uses the ALAE vs. ULAE approach for analysis, ALAE is normally tracked in the loss data with the losses to which these loss adjustment expenses are allocated. ULAE is projected separately, by analyzing the historical relationship of paid ULAE to paid loss and ALAE, or the relationship of paid ULAE to earned premium.

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<sup>16</sup> La. R.S. 22:1454(B)(3)

<sup>17</sup> Casualty Actuarial Society’s text Basic Ratemaking by Geoff Werner and Claudine Modlin, Fourth Edition, October 2010, Chapter 7. Basic Ratemaking is an excellent source for ratemaking practices that are commonly used in Louisiana.



When the actuary uses the DCC vs. AO approach for analysis, DCC is normally tracked in the loss data just like ALAE, since these loss adjustment expenses can most usually be allocated to specific claims. AO is projected separately, much like ULAE in the ALAE vs. ULAE approach.

**Commissions and Brokerage Expenses.** Commissions and brokerage fees represent amounts paid to agents or brokers as compensation for generating business. Typically, these amounts are paid as a percentage of premium written. Commission rates may vary between new and renewal business. In addition, contingent commissions vary the commission based on the quality (e.g., resulting loss ratio) or amount of business written (e.g., predetermined volume goals).

Commissions and brokerage fees are intended to compensate the agent or broker for the many costs which they incur. These costs include those of obtaining the business for the insurer and servicing the policy on behalf of the insurer. Such servicing costs include those of writing the policy, answering policyholder questions and assisting with claims during the policy's contractual term.

**Other Acquisition Expenses.** Other acquisition costs are expenses that are paid to acquire business other than commissions and brokerage expenses. Costs associated with media advertisements, mailings to prospective insureds and salaries of sales employees who do not work on a commission basis are included in this category.

**General Expenses.** General expenses include the remaining expenses associated with insurance operations and any other miscellaneous costs, excluding investment income expenses (these expenses are typically reflected as an offset to investment income). For example, the general expense category includes overhead associated with the insurer's home office (e.g., supplies, rent, building maintenance) and salaries of certain employees (e.g., actuaries).

Often, a portion of general expense is viewed as fixed as opposed to variable. (By contrast, commissions and premium taxes are almost variable expense, since they will vary proportionally with the premium regardless of the magnitude of the premium for the book of business under consideration.)

**Taxes, Licenses and Fees.** Taxes, licenses and fees include premium taxes and other taxes, assessments and fees payable by the insurer to the state. These amounts do not include federal income taxes (FIT). Actuaries normally factor FIT into their calculations of needed underwriting profit.

**Cost of Reinsurance.** The cost of reinsurance can be a significant and necessary expense consideration for an insurer writing property insurance in catastrophe-prone areas such as Louisiana. For insurers with significant reinsurance protection, it is appropriate to reflect the cost of reinsurance in the rate.

The actuary reflects the reinsurance cost in the projected rates as "net cost of reinsurance." This is the premium paid to the reinsurer ("gross cost of reinsurance") less the expected recoveries from the reinsurer. Essentially, the net cost of reinsurance represents the reinsurer's long-term expense and profit needs.

**Dividends.** Policy dividends are a return of premium when an insurer has had a good year financially. Dividends are most often paid by mutual insurance companies (however, not all mutual companies pay

dividends). In ratemaking, when dividends are expected to be paid, premiums are adjusted to include the expected dividend.

## CREDIBILITY

Credibility refers to the statistical reliability of a given data set. The larger the data set, the more statistically reliable. The credibility of any rate level indication needs to be assessed by the actuary. To the extent that the indication is not fully credible, the indication needs to be adjusted so as to make it more reliable.

As an example, if the loss experience for a given book of business has little or no credibility, the actuary may deem it appropriate to adjust the rates by one year's inflation (assuming annual rate reviews). In other words, with no information afforded by the non-credible loss experience, the actuary nevertheless knows with a high degree of certainty that inflation exists, and will use that inflation to complement the available loss experience.

## PROFIT

Similar to all businesses, insurance is a business and insurance companies must earn a profit to stay in business. Underwriting profit is defined as the difference between the premiums earned and the losses and expenses incurred for a given calendar year. This is in contrast to operating profit, which is underwriting profit plus investment income. In homeowners, and depending on the company making a rate filing, "profit" is sometimes referred to as "underwriting profit," "profit and contingencies," "risk load" or the combination of all these categories.

Profit is important in several ways:

- (1) Attraction of capital. Without a profit, the investment capital that supports the insurance operation will move to another investment opportunity and there will be fewer insurance companies willing to do business in a given state. The fewer insurance companies actively doing business in the state, the fewer choices consumers will have when looking for an insurer to protect their property.
- (2) Building of surplus. The accumulation of profit allows an insurer to build capital or surplus. Such accumulation allows the company to be able to write an increased number of policies over time, which benefits the public by making insurance more available.
- (3) Ability to stay solvent. An insurer must collect and hold sufficient funds so that it can comfortably pay all future claims, even in the event of a large catastrophe, without becoming insolvent.

## Profit Provision

The traditional, non-catastrophe profit provision for homeowners insurance is 5% of premium, plus a 1% contingency load (to cover unforeseen events such as fire conflagration). This means that insurers will typically charge rates that include a 6% profit provision for normal homeowners insurance operations.

When a book of business has a high level of exposure to catastrophic losses such as hurricane, the profit required by investors in insurance companies must be larger than that for non-catastrophe exposure. This is because, in its role as a safety cushion to pay larger-than-expected losses, the money needed to support the business must be larger and invested in very liquid investments. Since this money must be readily available in order to immediately pay losses that may exceed the total premiums collected (e.g., Hurricane Katrina, Hurricane Rita, Hurricane Gustav), investors expect a much higher investment return on their money. This additional needed profit is often referred to as “risk load.”

## Investment Income

Investment income to the insurer is earned on funds from several sources:

- Surplus invested in the entity to guard against higher-than-expected losses
- Funds held between the time of premium collection and claim submission
- Funds held between the time of claim submission and final settlement/adjudication (this amount of time is usually relatively short for property insurance)

It is appropriate for the investment income to be reflected in the rates. It is normally reflected as an offset to the needed profit provision. For example, if 8% of premium is needed for underwriting profit before investment income consideration, and investment income is worth 2%, then the underwriting profit provision will be 6% of premium.

With respect to federal income tax (FIT), actuaries normally make calculations of needed underwriting profit by factoring in FIT.

## OVERALL STATEWIDE RATE INDICATION

Generally, an insurance department will not permit an insurer to select a rate change which would represent more movement than the indication suggests. In other words, if a rate increase is indicated, the proposed or selected rate increase should be no higher than the indication. Conversely, if a rate decrease is indicated, the proposed or selected rate decrease should be no lower than (i.e., no more of a decrease than) the indication.

## TERRITORIAL RATEMAKING

Company territories do not change with every filed rate request. Territory changes can include a change to a territory’s rating factor or to the territory’s geographic definition, e.g., set of parishes or zip codes. When an insurer files for a statewide rate change, the insurer may file to adjust the overall rate level

only, or the overall rate level plus the territorial (and possibly other) rating plan relationships. To justify the territorial rate changes, insurers need to include in the rate filing actuarial support for the requested changes. The ratemaking by territory generally proceeds using the same steps as the ratemaking at the statewide level. As a final step, the average territory change is generally balanced to zero so that the intended overall statewide rate change is still achieved.

## **RATING VARIABLES**

Homeowners insurance is usually rated using a number of key rating variables. These must be supported by sound actuarial analysis. Such variables have generally included, but are not limited to, the following:

- Rating territory (geographic location)
- Replacement value of property
- Architectural construction (masonry vs. frame)
- Fire protection class
- Age of the property
- Age of the roof
- Burglary and fire alarms
- Past claims history
- Past number of years insured with the company
- Existence of prior insurance
- Presence of special hazards (e.g., vicious dog, swimming pool, trampoline)
- Presence of extraordinarily valuable items (e.g., jewelry, furs)
- Credit score

## **DEDUCTIBLES**

Deductibles are a means of keeping consumers' insurance premiums more affordable. A deductible represents monies the policyholder pays out-of-pocket before the insurer pays anything toward a claim for loss or damage. For example, given a deductible of \$500, and repairs from a fire of \$1,800, the policyholder would be responsible for paying the first \$500 and the insurer would pay the remaining \$1,300. Because of deductibles, insurance premiums are cheaper than otherwise; also, the higher the deductible, the lower the premium.

Like any other rating factor, deductible discounts must be filed with the LDI. The LDI reviews deductible discounts for reasonableness. Louisiana Bulletin No. 2013-08 describes filing requirements that were introduced by Louisiana's Insurance Commissioner in 2013 to ensure that wind-related rating factors remain viable over time, i.e., not inadequate, not excessive and not unfairly discriminatory.

### **Hurricane vs. All-Peril Deductibles**

Several different deductibles may be written into a policy's language and based on either the type of coverage (e.g., jewelry, computer or home office) or the cause of the claim (e.g., theft, loss-of-use, hurricane or water back-up). It is important for the policyholder to know the coverage limits and deductibles laid out in the policy. The two most widely known homeowners deductibles in Louisiana are the hurricane deductible and the general, all-peril deductible. This latter deductible is applicable to almost all non-hurricane loss events covered under the homeowners policy. (Note that some insurers use a "named-storm" or "wind and hail" deductible in lieu of a hurricane deductible.)

There are two basic reasons why insurers find it necessary to impose deductibles. Both of these reasons serve the insurer but also the policyholder by keeping the premiums charged lower and more affordable.

- First, a deductible helps insurers guard against what is called a moral hazard. An example of a moral hazard may be an individual who decides they would rather take the chance having a tree with dead limbs fall on their house, rather than remove the limbs. The moral hazard arises because the individual thinks "the insurance company will replace my roof if it's damaged by the tree." With a deductible, that person would be left on the hook for a pre-determined amount of money, which may cause them to think twice about not trimming the tree.
- The second reason is to limit small or trivial insurance claims. Small claims (e.g., for \$100 or \$200) cost more to resolve (i.e., claim settlement cost) and would significantly drive up everyone's insurance rates. Without a deductible on an insurance policy, some people would file a claim to replace one \$5 shingle on their roof. However, the expense of investigating and paying the claim would far exceed the five dollars. With a deductible, all consumers are responsible for minor damages to their homes.

## Dual Deductibles

In Louisiana and other hurricane-prone states, it is common for insurers to have two deductibles depending on the type of loss event. One is a mandatory deductible for hurricane events (or named storm or wind/hail) which is often a percentage of the property's covered structural value. Common percentage deductibles are 2%, 5% and go as high as 15% of the property's covered value. The second is a dollar-denominated deductible for all other loss incidents. Dollar deductibles generally start at \$500 and can increase to amounts as high as \$10,000.

## Single Season Deductibles

In ratemaking, the actuarial methodology must take into consideration the statutory requirement that a separate deductible for hurricane, named storm or wind and hail damage resulting from a named storm or hurricane event shall be applied on an annual basis to all named storm or hurricane losses that are subject to the separate deductible during the calendar year [La. Revised Statutes (R.S.) 22:1377]. If homeowner has losses from more than one named storm, hurricane or wind and hail event during a calendar year, the insurer may apply a deductible to the succeeding loss from a named storm, hurricane or wind and hail events that is equal to the remaining amount of the separate deductible, or the amount of the deductible that applies to all perils other than a named storm or hurricane, whichever is greater.

This application of deductibles is known as a “single season deductible” and exists in Louisiana and a few other states.

## LOSS MITIGATION

Louisiana Revised Statute 22:1483 requires that insurers provide discounts to property insurance rates when the owner has either built to or retrofitted the property structure to withstand wind damage.

Like any other rating factor, loss mitigation discounts must be filed with the LDI. The LDI reviews loss mitigation discounts for reasonableness. Louisiana Bulletin No. 2013-08<sup>18</sup> describes filing requirements that were introduced by Louisiana’s Insurance Commissioner in 2013 to ensure that wind-related rating factors remain viable over time, i.e., not inadequate, not excessive and not unfairly discriminatory.

Related statutory and regulatory guidance may be informational and helpful when reviewing Bulletin No. 2013-08:

- La. R.S. 22:1483 - Premium discounts, credits, rate differentials, adjustments in deductibles, and other adjustments for compliance with building codes and for damage mitigation.
- Regulation Number 94 - Premium Adjustments for Compliance with Building Codes and Damage Mitigation.
- Bulletin No. 09-01 - The Certification Clause on the Louisiana Hurricane Loss Mitigation Survey Form in Regulation 94.

## CONCLUSION

Homeowners rates are determined, maintained and filed by insurance company actuaries. Filed homeowners rates are reviewed by insurance department actuaries to ensure that they are actuarially sound, reasonable and appropriate for the coverage afforded. These processes are well-established in Louisiana and other states. The Louisiana Department of Insurance remains committed to maintaining a financially sound, efficient, and fair market for homeowners insurance in Louisiana.

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<sup>18</sup> Bulletin No. 2013-08, Wind Mitigation Credits, Wind Exclusion Credits, and Deductible Credits for Residential Property Insurance; <https://ldi.la.gov/docs/default-source/documents/legaldocs/Bulletins/Bul2013-08-Cur-WindMitigationCredit>