SUBCHAPTER E. TEXAS WINDSTORM INSURANCE ASSOCIATION

DIVISION 1. PLAN OF OPERATION

ADOPTION OF 28 TAC §5.4023 and §§5.4029 - 5.4041

DIVISION 2. REINSURANCE

REPEAL OF 28 TAC §5.4016

INTRODUCTION. The commissioner of insurance adopts new 28 TAC §5.4023 and §§5.4029 - 5.4041, concerning claim settlement guidelines to be used by the Texas Windstorm Insurance Association (TWIA).

Additionally, to allow room to adopt the new sections in 28 TAC Chapter 5, Subchapter E, Division 1, the commissioner adopts the repeal of 28 TAC Chapter 5, Subchapter E, Division 2, which includes only §5.4016, concerning reinsurance. The text of repealed §5.4016 is incorporated into new §5.4023, with changes to update Insurance Code references and to conform to current Texas Department of Insurance (TDI) rule drafting style.

The new sections are adopted with and without changes to the proposed text published in the September 9, 2016, issue of the *Texas Register* (41 TexReg 6920). Sections 5.4030 – 5.4033, 5.4035, 5.4036, and 5.4038 – 5.4041 are adopted without changes to the proposed text. Sections §§5.4023, 5.4029, 5.4034, and 5.4037 have nonsubstantive grammatical changes and nonsubstantive changes made to clarify the sections.

TDI held a public hearing on the proposal on October 28, 2016. TWIA was the only commenter.

REASONED JUSTIFICATION FOR REPEAL OF §5.4016 AND ADOPTION OF §5.4023. Section 5.4023, relating to reinsurance, adopts text similar to what was contained in §5.4016, which is repealed in this order. The text of §5.4016 is incorporated into §5.4023 to include it in TWIA's plan of operation, and §5.4016 is repealed to expand the section numbers in 28 TAC Chapter 5, Subchapter E, Division 1.

The text in §5.4023 differs from repealed §5.4016 in that §5.4016(d)(2) and (g)(2) required notice and hearing before the commissioner issued an order approving or disapproving an excess reinsurer or the amount of payment for the excess reinsurance, while new §5.4023(d)(2) and (g)(2) do not require notice and a hearing before the commissioner issues the order. The new section differs from repealed §5.4016 in this way because the notice and hearing requirement was removed from Insurance Code §2210.008 by HB 4409, 81st Legislature, Regular Session (2009).

New §5.4023 also differs from repealed §5.4016 in the following ways:

(1) include Insurance Code citations that reflect the recodification of the Insurance Code;

(2) not include unnecessary definitions; and

(3) draft text consistent with current TDI rule drafting style.

In addition, the text of §5.4023 as adopted has been changed from the version as proposed for consistency with TDI rule drafting style: the catchline "Payment to the association" has been added to Subsection (g), and the capital "A" in the word "Association" has been changed to lowercase in the first sentence in Subsection (g)(1).

REASONED JUSTIFICATION FOR ADOPTION OF §§5.4029 - 5.4041. The new sections are necessary to implement Insurance Code §2210.578, enacted by HB 3, 82nd Legislature, 1st Called Session (2011). The sections prescribe guidelines TWIA must use to settle certain claims. The guidelines are based on the recommendations of a panel of experts, appointed under Insurance Code §2210.578 and charged with recommending methods or models for determining the extent to which a loss may be or was incurred as a result of wind, waves, tidal surges, or rising waters not caused by waves or surges.

TWIA is the residual insurer of last resort for windstorm and hail insurance coverage in the seacoast territory for those unable to obtain wind and hail insurance in the private market. TWIA is similar to other insurers in that it sells policies, collects premiums, and pays claims. TWIA's largest risk is exposure to catastrophic losses from hurricanes. Under Insurance Code §2210.005, the commissioner designates the catastrophe area eligible for TWIA coverage. The catastrophe area currently includes the 14 first-tier coastal counties and parts of Harris County.

In August 2013, the commissioner appointed a panel of experts with the professional expertise and knowledge required by Insurance Code §2210.578(b) to advise TWIA on the extent to which a loss to insurable property was incurred as a result of wind, waves, tidal surges, or rising waters not caused by waves or surges. Because TWIA policies cover loss caused by wind and exclude loss caused by rising water in its various forms, the distinction is important for determining TWIA's liability for a claim.

Insurance Code §2210.578 requires the panel to recommend to the commissioner methods or models for determining the extent to which a loss may be or was incurred as a result of wind, waves, tidal surges, or rising waters not caused by waves or surges for geographic areas or regions designated by the commissioner. After considering the panel's recommendations, the commissioner must publish guidelines that TWIA must use to settle claims.

The panel developed a methodology, submitted it for peer review, and adjusted it based on the peer review. The panel also held nine public meetings in Austin and Corpus Christi to provide updates on the panel's progress. The panel submitted the final report containing its recommended methodology on April 18, 2016. The report is on TDI's website at tdi.texas.gov/reports/pc/documents/epfinalrpt.pdf.

The panel's recommended methodology estimates the percentage of damage each component of a structure sustained due to wind before the structure was likely destroyed by waves or surges. These estimates are probabilistic; they represent the average damage expected for a given structure and do not necessarily reflect what actually happened to the structure. The methodology also requires that TWIA check the damage estimates against observations. The new sections adopt the panel's methodology.

Applicability and Definitions

Section 5.4029 requires TWIA to use the guidelines set out in §§5.4030 - 5.4041 to prepare for and settle residential slab claims occurring in National Flood Insurance Program Zones V, VE, and V1 - V30 as the result of a defined organized weather system. The section requires use of the guidelines only in these flood zones because they are the most likely areas where slab claims will occur.

Sections 5.4029 - 5.4041 apply only when TWIA expects at least 500 residential slab claims. The panel's methodology uses the probability that a component of a structure will fail as a proxy for the expected amount of damage to the component. The methodology assumes a large number of slab claims. The 500 slab claim threshold also balances anticipated costs and benefits of implementation for a particular storm.

TWIA must use the methodology based on an anticipated number of residential slab claims, regardless of the actual number TWIA ultimately receives. TWIA will not know the final, actual number of residential slab claims until after a storm. While the vast majority of residential slab claims would likely be made shortly after the storm, policyholders have until the first anniversary of the date of loss to file claims. Requiring the wind damage evaluation based on the anticipated number of residential slab claims provides clear guidance immediately after a storm as to what claim-settling procedures TWIA must use.

Section 5.4029 specifies when TWIA must make initial and final determinations of the number of expected claims resulting from an organized weather system. The deadlines are based on the time when TWIA, under its plan of operation, stops writing new policies in anticipation of an approaching storm and the latest reasonable time to set up mobile wind measurement platforms. The definition of an organized weather system is based on the definition of "named storm" in the National Flood Insurance Act.

Section 5.4030 contains definitions to be used with the guidelines.

Section 5.4031 requires TWIA to use both a probabilistic and an observational approach for residential slab claims when estimating the extent to which damage to a residence was caused by wind, waves, tidal surges, or rising waters not caused by waves or surges.

Sections 5.4031 - 5.4040 require TWIA to implement the panel's recommended methodology, which includes five components or modules, as follows:

(1) §5.4032, the property database;

(2) §§5.4033 - 5.4037, the hazard module;

(3) §5.4038, the damage estimation module;

(4) §5.4039, the economic loss module; and

(5) §5.4040, the report generation module.

Property Database

The property database described in §5.4032 consists of information on certain characteristics of each TWIA-insured structure to which the methodology might be applied. For example, this information includes age of the structure, type of roof covering, and height of the structure's lowest horizontal structural member. The property database also includes high-resolution aerial and ground photographs of each structure, providing further information on characteristics of the structure.

Information from the database, along with data on a particular storm from the hazard module, is used in the damage estimation module to calculate the probable extent of wind damage to a given structure. High-resolution aerial photographs also provide information on the terrain surrounding a structure, which is key to assessing its wind exposure. The damage estimation module assumes the worst exposure category in all wind directions for a structure.

As an enhancement, TWIA may input wind exposure for eight direction sectors into the damage estimation module. TWIA must populate the property database in advance of a storm and keep it up to date.

Hazard Module

The hazard module set out in §§5.4033 - 5.4037 provides data on wind, waves, and storm surges to which a given structure was exposed for the duration of a storm. To calculate the probable extent of wind damage to a given structure, the damage estimation module uses:

(1) wind speed and direction time histories;

(2) wave and surge time histories; and

(3) information from the property database.

Because taking measurements at every structure would be cost prohibitive or technically infeasible, the hazard module requires taking sufficiently detailed measurements during a storm to enable the use of models to project site-specific data.

In developing the hazard module, the expert panel investigated existing systems for modeling wind fields during a storm. For the purpose of the recommended methodology, a wind field model or models must provide site-specific wind speed and direction time histories and provide a wind field that can be used in a wave and surge model to generate site-specific wave and surge time histories. The wave and surge model requires input from the wind field model so that the histories from each model will be spatially and temporally correlated. The recommended methodology also requires that wind field models have a minimum amount of error at each specific site, where error is defined as the difference between model estimates and the observed wind speeds and directions measured during a storm.

The expert panel investigated three classes of wind field models by comparing each model's output wind speeds, predicted with data from Hurricane Ike, with observed wind speeds from Hurricane Ike. The expert panel recommended that an observational model or models be used in the hazard module to generate wind speed and direction time histories and wave and surge time histories. The rules require that TWIA use one or more observational models for this purpose. The rules also require TWIA to gather the data to be used in the model or models as the expert panel recommended.

The expert panel recommended inputting the wind field model into the wave and surge model. In addition, the wave and surge model requires measurements of waves and water levels during a storm and measurements of high-water marks taken after the storm. The wave and surge model uses these inputs to generate wave and surge time histories at a given structure. The expert panel recommended that TWIA contract with firms or government agencies to gather data during and after a storm and to develop a wave and surge model. The rules require that the wave and surge model contain the technical features the expert panel recommended and require TWIA to obtain the recommended data.

Damage Estimation Module

The damage estimation module, the use of which is described in §5.4038, uses wind speed and direction time histories and wave and surge time histories, along with information on the characteristics of a given structure. The inputs are used to estimate the percentage of each component in the structure damaged by wind before the point in time at which waves or surges likely destroyed the structure. The

expert panel recommended that TWIA use these percentages, after validating them with post-storm observations, to compute the total loss due to wind that occurred during a storm. The rules require that TWIA use the damage estimation module, defined in Section 6 and Appendix A of the expert panel's report and incorporated into the rules by reference.

The damage estimation module requires two independent determinations of probability: the probability that waves or surges destroyed the structure and the probability that wind destroyed it. For both hazards, the probability will vary throughout the time history.

The expert panel recommended that TWIA determine the probability that waves or surges destroyed a structure using an engineering methodology introduced in a paper in the *Journal of Waterway, Port, Coastal, and Ocean Engineering*, a peer-reviewed journal published by the American Society of Civil Engineers. The rules cite Tomiczek, T., Kennedy, A., and Rogers, S. (2014), *Collapse Limit State Fragilities of Wood-Framed Residences From Storm Surge and Waves During Hurricane Ike*, J. Waterway, Port, Coastal, and Ocean Eng. ASCE, 140(1), 43-55, *available at* dx.doi: 10.1061/(ASCE)WW.1943-5460.0000212. The paper is available through TWIA at compliance@twia.org.

The probability that wind destroyed a structure will be determined from the maximum of the probabilities of failure for three key components of the structure. The expert panel investigated different techniques for estimating component failure probabilities, including the First-Order, Second-Moment, Mean Value (FOSM-MV) reliability analysis; the Rackwitz-Fiessler procedure; and Monte Carlo simulation. The panel chose to use the FOSM-MV reliability analysis to demonstrate the calculation of failure probabilities in its report, but any of the three techniques can be used effectively in the damage estimation module. Appendix C of the expert panel's report discusses the strengths and weaknesses of the different techniques.

In the damage estimation module, the independent probabilities of destruction by waves and surges and destruction by wind are used in an equation with the percentage of a given component that was damaged by wind before the structure was likely destroyed by waves or surges. The equation creates a probability-weighted average of the expected wind damage to the component before waves and surges likely destroyed the structure, and the damage that would have occurred if wind destroyed the structure. The equation is calculated for every component. Pages 6-3 and 6-4 of the expert panel's report show examples of how the equation would function with different damage levels and collapse probabilities.

The damage estimation module uses the probability that a component of a structure will fail as a proxy for the expected amount of damage to the component. This is because damage is estimated

probabilistically as the average damage expected for a structure with given characteristics. The average damage expected can be used when there are a large number of properties being considered. From Page 6-8 of the expert panel's report:

> "As an example, consider roof panel damage in one corner zone of a roof. Only one piece of plywood may occupy this location due to the relative sizes of plywood sheets and of roof corner zones for typical residences. For a single property, only two outcomes are possible: damage or no damage. If the Damage Estimation Module estimates that the probability of damage to the roof decking in this location is 10 percent, then it is reasonable to conclude that a single property would not experience damage to roof decking in this roof area. However, if 100 properties are under consideration, and the Damage Estimation Module estimates that the probability of damage to the roof decking in this location is 9 percent, then it is reasonable to conclude that 9 of 100 properties experience damage to roof decking in this area, and the average damage rate for these 100 properties is 9 percent. That is, 9 of 100 properties would experience total damage, and the other 91 would experience no damage.
>
> "This example demonstrates a fundamental characteristic of the Damage Estimation Module: the most likely result and the average result are not the same. The Damage Estimation Module produces the average result, and because of this characteristic, the assumption that probability of failure can be considered as a proxy for damage rate is acceptable. The total damage ratio for a component over the entire building is the sum of the areas, weighted by their individual failure probabilities.
>
> "For illustration, consider the following simple hypothetical scenario. One portion of a building roof covers 10 percent of the roof area, and the probability of failure for this area of roof is 50 percent. If the probabilities of failure in all the other portions of the roof are zero, then the total damage ratio for the roof is five percent."

In addition to the probabilistic approach, the damage estimation module contains an observational approach (not to be confused with the observational models developed as part of the hazard module). The rules require TWIA to use this observational approach, the purpose of which is to check the results from the probabilistic approach.

Economic Loss Module

The economic loss module set out in §5.4039 contains the expert panel's recommendation that adjusters use the component damage estimates from the damage estimation module to determine the scope of work and associated costs for each component. The panel's expertise covers damage to structures, not to contents. Therefore, the panel also recommended that adjusters or other professionals estimate losses to contents.

Report Generation Module

The report generation module set out in §5.4040 requires:

(1) pre-storm and post-storm site-specific information;

(2) wind and wave and surge hazard information and building vulnerability; and

(3) damage information (the results of the damage estimation module).

TWIA must combine this information in a report sent to the policyholder. The policyholder can then supplement any building, damage, or hazard magnitude information used as inputs to the model.

Insurance Code §2210.573(b) allows TWIA to ask a claimant for additional information not later than the 30th day after the claim is filed. Section 5.4040(a) uses the same time frame to require TWIA to ask the policyholder for information that may be used to verify or correct model inputs, thus tying the two actions to the same deadline.

Insurance Code §2210.573(d) requires TWIA to accept or deny a claim not later than the 60th day after the claim is filed. Section 5.4040(b) requires TWIA at the same time to provide the policyholder with a complete residential slab claim report and a summary of the results, again tying a new requirement to an existing deadline.

The expert panel's report recommends that TWIA give the residential slab claim report to the policyholder after running the model. The rule departs from this timing so that the communications between the policyholder and TWIA can be combined with the claim-processing correspondence in Insurance Code §2210.573. Incorporating the new requirements into the claim-settling process is less burdensome for TWIA and policyholders than creating a new set of deadlines.

Validation of Recommended Methodology

The expert panel validated its recommended methodology by using the damage estimation module to predict damage for past hurricanes using data from those hurricanes, and then comparing the predictions with residential claims resulting from the hurricanes. The panel compared predictions for Hurricanes Charley (2004), Ivan (2004), Katrina (2005), Rita (2005), and Ike (2008) with residential

windstorm claims drawn from insurer bulk claims data, individual claim reports, open literature, and existing catastrophe loss models.

Qualitative analysis confirmed the damage estimation module is reasonable in terms of overall approach, with its predictions comparing favorably with qualitative observations from post-storm damage photographs. Quantitative analysis showed that the module's predictions generally compared favorably with data interpreted from claim files, with the module providing reasonable estimates of the magnitudes and trends of damage when compared to observations of actual damage. Detailed discussion of the validation, including data and limitations, is in the expert panel's report.

The damage estimation module was also reviewed (independently of the expert panel) by employees of Exponent, Inc., which is an ISO 9001-certified firm, to verify the reliability of the calculations underlying the module's predictions, which were based on the FOSM-MV reliability analysis.

Peer Review of Recommended Methodology

TDI contracted with five reviewers from industry and academia to each conduct an independent peer review of the expert panel's report. Each reviewer looked for compliance with accepted standards of professional and technical practices, and each provided a final report of his findings to TDI. The expert panel reviewed each peer review report and, where necessary, modified its final report on the basis of the peer review suggestions or comments.

The most significant modification the panel made in response to peer review comments was to change the equation used to calculate the percentage of damage each component sustained. The panel made the change to take into account situations in which the probability of both destruction due to wave and surge and destruction due to wind was low. Also, in response to peer reviewer comments, the expert panel added a sensitivity analysis of failure probability calculation techniques, comparing roof cover damage results obtained using the FOSM-MV technique with results obtained using Monte Carlo simulation for different wind speeds and structure characteristics. The panel concluded that the limitations of the FOSM-MV, which a reviewer had also mentioned, have "little practical significance for the methodology as currently proposed." The sensitivity analysis is in Appendix C of the expert panel's report.

The panel's final report, containing its recommended methodology, is on TDI's website at tdi.texas.gov/reports/pc/documents/epfinalrpt.pdf. The peer reviews are also on TDI's website at tdi.texas.gov/commercial/pctwia.html#expert.

Changes to §§5.4029, 5.4034, and 5.4037

Adopted §5.4029 differs from the proposed version in that it contains a subsection (f), added to allow TWIA time for implementation, which states that §§5.4029 - 5.4041 are applicable beginning June 1, 2018. This effective date is consistent with the expert panel's recommendation as to the time necessary to implement the recommended methodology.

Adopted §5.4034(d) requires that when TWIA deploys mobile wind measurement platforms along the coast in front of a land-falling storm, TWIA must ensure that a high-resolution wind field with small errors can be developed for use in wind damage prediction. An error is the difference between the wind speed predicted by the wind field model and the wind speed measured during the storm. The proposed rule stated that "small errors" means "no more than 2 percent of the maximum sustained wind measured in a 30-minute period." The adopted rule is changed at the suggestion of the expert panel to clarify that "small errors" refers to errors of plus or minus 2 percent.

As proposed, §5.4037(d) required TWIA to "ensure that errors are minimized." As adopted, §5.4037(d) instead requires TWIA to "take steps to minimize" errors between storm surge wave model estimates and observed storm surge and wave heights. The reason for the change is to make §5.4037(d) consistent with a similar requirement in §5.4035(b).

SUMMARY OF COMMENTS AND AGENCY RESPONSES.

Commenter: TDI received comments from TWIA supporting the rule proposal with changes. TWIA included with its comments an independent cost assessment report by Accenture Consulting.

Comment on §5.4034(c). TWIA asked TDI to delete §5.4034(c), which would allow TWIA to deploy fewer mobile wind measurement platforms. The subsection requires that, during an applicable storm, TWIA deploy at least 40 to 60 mobile wind measurement platforms in two layers--along the coastline and approximately 20 miles inland.

TWIA estimated the cost of complying with §5.4034(c)--including purchasing the mobile wind measurement platforms, readying them for deployment, and placing them for an applicable storm--would be a combined cost per unit of $45,000, or a minimum of $1.8 million for the minimum of 40 units required by the rule.

TWIA suggested the rules should allow for the possibility that a high-resolution wind field could still be created with fewer than 40 mobile wind measurement platforms if the platforms are combined

with fixed monitoring stations. TWIA pointed out that §5.4034(d) requires TWIA to deploy a sufficient number of platforms based on the specific characteristics of an applicable storm.

Agency Response to Comment on §5.4034(c). TDI disagrees with the comment and declines to delete the subsection. Accurate wind measurement before and during a storm provides critical data for the hazard and damage estimation modules. Proper deployment of the mobile wind measurement platforms requires the spacing and operational elements specified in §5.4034(c), and is key to obtaining the necessary wind measurement data.

According to the expert panel, a high-resolution wind field is essential to the panel's recommended methodology. The expert panel confirmed that at least 40 mobile wind measurement platforms must be deployed to achieve a sufficient high-resolution wind field. Also, as the panel stated,

"[Fixed] platforms are good auxiliary sources of data . . . However, they may be subject to a loss of power (and thus their data) during a hurricane . . . Mobile platforms are preferable over fixed platforms since they can be positioned at strategic locations in the storm path when the storm is close to landfall. Fixed platforms may or may not be in the best position relative to the storm path to supply wind speed information for wind field modeling. Report, Page 4-7."

Comment on the Cost of Implementing the Rule Proposal. Based on Accenture's report, TWIA stated that implementation costs would be significantly higher than the expert panel's estimates. TWIA recommended that the panel be directed to consider alternative requirements with the goal of developing a methodology substantially less costly to implement and maintain.

Agency Response to Comment on the Cost of Implementing the Rule Proposal. TDI disagrees with the comment and declines to ask the expert panel to develop alternative requirements for implementing its methodology. The panel's report distinguishes between essential elements and those that are beneficial but not essential. Report, pages 11-1 and 11-2. TDI also consulted the expert panel about TWIA's concerns. The panel confirmed that the requirements in the new rules are essential to implement the recommended methodology.

As its report reflects, the panel considered alternative approaches for a number of elements in developing the recommended methodology. The panel determined that all the elements of its recommended methodology are essential. The methodology requires a step-by step progression through each of the modules. The methodology was peer-reviewed before the panel finalized its report. The rules

incorporate the entire recommended methodology. Therefore, TDI declines to deviate from the recommended methodology.

TDI is not persuaded by Accenture's cost assessment. The expert panel reviewed Accenture's report and raised several concerns.

The panel believes Accenture based its report on vendor estimates that did not properly consider the methodology and assumed an unreasonably short time for implementing the methodology. Accenture sent each vendor the proposed rules, the expert panel report, and followed up with a telephone call or email. Vendors were not given a request for proposal or a request for qualifications from which to develop their estimates. Vendors made estimates based on a six-month period to implement the methodology, but the panel concluded that a substantially longer period is needed to implement the rules. The panel also concluded that the vendors either did not have or did not use the panel's report supplement, "Spreadsheet Demonstrating Damage Estimation Module."

Accenture used the highest price provided by each vendor to develop its cost estimates. Accenture also included expenditures that are not required by the panel's methodology, such as a "Slab Potential CAT Model."

Accenture included other unnecessary expenditures that appear to be for redeveloping existing methodology components, such as the damage estimation, economic loss, and report generation modules. The Accenture report also assumes costs for functions, such as formulating economic loss estimates and claims adjusting, that TWIA would perform regardless of whether TDI adopts the recommended methodology.

Accenture made substantive and arithmetic mistakes that lessen the report's credibility. For example, the Accenture report misstates how wind collapse probability is determined using the methodology. The report contains miscalculations of vendor estimates and mistakenly matches vendors with estimates provided by other vendors.

TWIA's comments consider only the cost of implementing the rule proposal. Potential benefits should be considered alongside costs.

One goal of the rules is to reduce litigation costs and contested claims. TWIA received approximately 2,700 slab claims following Hurricane Ike. Almost all of the claims were the subject of litigation, resulting in settlement and litigation costs of approximately $200 million.

By comparison, the expert panel estimated costs of approximately $925,000 - $1.34 million for implementing the recommended methodology, with approximately $35,000 - $65,000 in annual costs and $150,000 - $250,000 in costs per storm.

SUBCHAPTER E. TEXAS WINDSTORM INSURANCE ASSOCIATION

DIVISION 1. PLAN OF OPERATION

28 TAC §5.4023 and §§5.4029 - 5.4041

STATUTORY AUTHORITY. The commissioner adopts new §5.4023 and §§5.4029 - 5.4041 under Insurance Code §§36.001, 2210.008, 2210.152, 2210.505, 2210.578, and 2210.580.

Section 36.001 provides that the commissioner may adopt any rules necessary and appropriate to implement the powers and duties of TDI under the Insurance Code and other laws of this state.

Section 2210.008(b) authorizes the commissioner to adopt reasonable and necessary rules to implement Chapter 2210.

Section 2210.152(c) provides that TWIA's plan of operation must require it to use the claim settlement guidelines published by the commissioner under §2210.578(f) in evaluating the extent to which a loss to insured property is incurred as a result of wind, waves, tidal surges, or rising waters not caused by waves or surges.

Section 2210.505(c) authorizes the commissioner to adopt rules as necessary to implement §2210.505, relating to reinsured excess limits.

Section 2210.578(f) provides that after consideration of the recommendations made by the expert panel, the commissioner must publish guidelines that TWIA will use to settle claims.

Section 2210.580 authorizes the commissioner to adopt rules regarding the provisions of Subchapter L-1.

CROSS-REFERENCE TO STATUTE. The new sections implement Insurance Code §§2210.152, 2210.505, and 2210.578.

TEXT.

SUBCHAPTER E. TEXAS WINDSTORM INSURANCE ASSOCIATION

DIVISION 1. PLAN OF OPERATION

28 TAC §5.4023 and §§5.4029 - 5.4041

§5.4023. Per Risk Reinsured Excess Coverage.

(a) Purpose. Under Insurance Code §2210.505, the Texas Windstorm Insurance Association may issue a policy of windstorm and hail insurance that includes coverage for an amount in excess of the maximum limit of liability approved by the commissioner.

(b) Definitions. The following words and terms when used in this section have the following meanings unless the context clearly indicates otherwise.

(1) Available reinsurance capacity--Amount of reinsurance purchased by the association pursuant to the excess per risk reinsurance contract to provide reinsured excess coverage to association policyholders as provided in Insurance Code §2210.505.

(2) Excess per risk reinsurance contract--An agreement entered into by the association with an approved reinsurer to provide coverage to association policyholders for an amount in excess of the liability limits approved by the commissioner.

(3) Reinsured excess coverage--Coverage provided under a windstorm and hail insurance policy issued by the association through a reinsurance agreement with an approved reinsurer for amounts of insurance that are in excess of the maximum limits of liability available to the individual risk from the association.

(4) Reinsured excess coverage program--The program operated by the association to provide reinsured excess coverage, the excess per risk reinsurance contract or contracts entered into between the association and the commissioner-approved reinsurer or reinsurers, this section, and any orders issued, including the collection of premium, issuance of coverage under the windstorm and hail insurance policy, and the processing and payment of claims for the reinsured excess coverage.

(c) Administration.

(1) The association must administer the reinsured excess coverage program on behalf of each policyholder of a windstorm and hail insurance policy to which reinsurance is provided by an approved reinsurer.

(2) The association must distribute the available reinsurance capacity for the reinsured excess coverage in a fair and reasonable manner to risks qualifying under the association's reinsured excess coverage program.

(3) The association must annually review the reinsured excess coverage program, including the rates, reinsurers, excess per risk reinsurance contracts, use of available reinsurance capacity, the association's costs to administer the reinsured excess coverage program, and the rules in this section, and must provide an annual summary of the review to the commissioner.

(d) Approval of reinsurer. Before the association may provide reinsurance coverage on an individual risk that is in excess of the maximum limits of liability approved by the commissioner, the association must first obtain from a reinsurer approved by the commissioner reinsurance for the full amount of policy exposure above the limits approved by the commissioner for any given type of risk. The approval of the reinsurer must be in accordance with this subsection.

(1) The association must submit a petition to the commissioner requesting approval of the reinsurer before any excess per risk reinsurance contract or renewal of such contract becomes effective. The petition must include the name of the proposed reinsurer or reinsurers; the reinsurance proposal; the draft excess per risk reinsurance contract; information on the financial health of the proposed reinsurer or reinsurers and any other information related to the reasons for the association's selection of reinsurer or reinsurers; estimated costs for the reinsurance; the proposed cost to the association to administer the reinsured excess coverage program; estimated total premium for the reinsurance; the method of making the reinsurance capacity available to policyholders; and any other information the association or the commissioner deems necessary to enable the commissioner to determine whether to approve or disapprove the proposed reinsurer or reinsurers.

(2) The commissioner must issue an order approving or disapproving the proposed reinsurer. The order must be issued no later than December 31 of each year preceding the calendar year in which the reinsured excess coverage program is operated except for the first year the program is operated when the order must be issued following the adoption of this section.

(3) An excess per risk reinsurance contract may not become effective until the commissioner has issued an order approving the reinsurer. The excess per risk reinsurance contract does not require approval by the commissioner.

(4) The association must submit written notice of any amendments to any existing excess per risk reinsurance contract to the commissioner at least 30 days prior to the effective date of the proposed amendments. The notice must include an explanation of the reason for the amendments and a copy of the draft amendments. The reinsurer under the amended contract must be deemed approved by the commissioner unless within 30 days following the submission of the written notice the commissioner enters an order disapproving the reinsurer. Amendments to the contract do not require approval by the commissioner.

(e) Coverage. The association may issue a policy of windstorm and hail insurance that includes coverage that is in excess of a liability limit approved by the commissioner. Any such policy must be issued in accordance with this subsection.

(1) Excess liability limits. The amount of reinsurance excess coverage available to an individual risk must be determined in accordance with the reinsured excess coverage program.

(2) Policy provisions.

(A) The total limit of liability must be the limit of liability insured by the association and the amount of reinsured excess coverage provided on the individual risk under the reinsured excess coverage program.

(B) All terms and conditions of the windstorm and hail insurance policy issued by the association must apply to the reinsured excess coverage provided under the windstorm and hail insurance policy.

(C) The amount of reinsured excess coverage must be shown separately on the declarations page of the policy.

(3) Types of risks.

(A) The association may provide reinsured excess coverage for dwelling structures only, commercial structures only, or for both dwelling structures and commercial structures.

(B) Reinsured excess coverage may be provided on either buildings or contents, or on building and contents. If reinsured excess coverage is provided on building and contents, building structures must be insured for 100 percent replacement cost, up to the total maximum limit of liability available for the risk and the available reinsured excess coverage amount provided under the reinsured excess coverage program before reinsured excess coverage may be applied to contents.

(f) Premium.

(1) Premium computation. The total premium charged by the association for the reinsured excess coverage provided on a windstorm and hail insurance policy issued by the association must be the total of:

(A) the amount of the excess per risk reinsurance premium charged to the association by the reinsurer for the reinsured excess coverage provided on any given risk; and

(B) the payment to the association that is approved by the commissioner.

(2) Display of premium. The total premium charged by the association for the reinsured excess coverage provided in a windstorm and hail insurance policy issued by the association must be shown separately on the declarations page of the policy.

(g) Payment to the association. The premium charged by the association for the excess coverage must be equal to the amount of the reinsurance premium charged to the association by the reinsurer plus any payment to the association that is approved by the commissioner.

(1) The payment to the association that may be proposed by the association for approval by the commissioner may include the amount of the direct and indirect costs identified by the association to administer the reinsured excess coverage program and may include costs for claims, underwriting, accounting, technical and administrative support, computer equipment, agent commissions, taxes, and any other administrative costs approved by the commissioner.

(2) The commissioner will issue an order approving or disapproving the proposed payment to the association. The commissioner may take action in the order issued under subsection (d)(2) of this section.

§5.4029. Applicability and Effective Date of 28 TAC §§5.4029 - 5.4041.

(a) This section and §§5.4030 - 5.4041 of this title prescribe guidelines that the Texas Windstorm Insurance Association must use to prepare for and settle residential slab claims in Zones V, VE, and V1-V30, as defined by the National Flood Insurance Program.

(b) This section and §§5.4030 - 5.4041 of this title apply only to residential slab claims resulting from an organized weather system that:

(1) has a defined surface circulation and maximum sustained winds of not less than 39 miles per hour;

(2) the National Hurricane Center of the United States National Weather Service names as a tropical storm or a hurricane; and

(3) that the association expects will result in more than 500 residential slab claims.

(c) The association must make an initial determination as to the expected number of claims when the organized weather system is in the Gulf of Mexico or within the boundaries of longitude 80 degrees west and latitude 20 degrees north.

(d) The association must make a final determination as to the expected number of claims no later than 24 hours before expected landfall.

(e) The association may contract with appropriate private or governmental entities to obtain any of the data or services required in this division.

(f) This section and §§5.4030 - 5.4041 are applicable beginning June 1, 2018.

§5.4030. Definitions Applicable to §§5.4029 - 5.4041. The following definitions apply to §§5.4029 - 5.4041:

(1) Applicable storm--An event described in §5.4029(b) of this title.

(2) Catastrophe area--A municipality, a part of a municipality, a county, or a part of a county designated by the commissioner of insurance under Insurance Code §2210.005.

(3) Damage estimation module--The module incorporated by reference in §5.4041 of this title.

(4) Expert panel--The panel created under Insurance Code §2210.578.

(5) Hazard module--The component of the wind damage evaluation in which the association gathers data from an applicable storm and uses that data to generate wind speed time histories and surge and wave time histories.

(6) Residential slab claim--A first-party claim on a residential structure of which nothing more remains than foundation elements such as pilings, floor framing members, or concrete slab, and there is insufficient evidence to enable the association to determine the extent to which the loss occurred as a result of wind, waves, tidal surges, or rising waters not caused by waves or surges.

§5.4031. Wind Damage Evaluation. To estimate the extent to which damage to structures that are the subject of residential slab claims has been caused by wind, waves, tidal surges, or rising waters not caused by waves or surges, the association must employ both a probabilistic approach and an observational approach as described in §§5.4032 - 5.4040 of this title. The association must use:

(1) a property database, described in §5.4032;

(2) a hazard module, described in §§5.4033 - 5.4037;

(3) a damage estimation module, described in §5.4038;

(4) an economic loss module, described in §5.4039; and

(5) a report generation module, described in §5.4040.

§5.4032. Property Database. To ensure the accuracy of information related to residential slab claims, the association must:

(1) gather and, not less frequently than once every year, update applicable pre-event data on insured structures located in the area described in §5.4029(a) of this title. The pre-event data consists of characteristics--specified in the damage estimation module--pertinent to the performance of each insured structure during an applicable storm; and

(2) acquire pre-event high-resolution aerial and on-ground photographs of structures located in the area described in §5.4029(a) of this title to define building characteristics and terrain.

§5.4033. Hazard Module.

(a) The hazard module must generate synchronous, site-specific wind speed and direction time histories and storm surge and wave time histories.

(b) The hazard module must include one or more wind field models and a storm surge and wave model.

(c) The association must develop plans and capabilities to obtain reliable surge, wave, and wind field data, which is necessary to implement the hazard module. To the extent possible, this task should be performed in collaboration with federal agencies and other organizations.

§5.4034. Hazard Module - Wind Measurements.

(a) Before an applicable storm, the association must take steps to ensure the deployment of mobile measurement platforms and fixed surface-level devices that:

(1) provide real-time wind speed and direction measurements during the applicable storm; and

(2) can be used both for forecasting and producing post-event wind field hindcasts.

(b) Wind measurements must be capable of generating gust wind speed and wind-direction time histories during an applicable storm.

(c) The association must deploy at least 40 to 60 mobile wind measurement platforms in two layers, with the first layer in close proximity to the coastline and the second layer approximately 20 miles inland. The mobile wind measurement platforms must be deployed as follows:

(1) three to five miles apart in the eyewall region of the storm;

(2) up to 10 miles apart in the outer regions of the storm;

(3) with a wind speed and direction sampling frequency of 10 hertz or higher; and

(4) a temperature, barometric pressure, and relative humidity sampling frequency of 1 hertz or higher.

(d) The association must deploy sufficient mobile wind measurement platforms along the coast in front of a land-falling storm to ensure that a high-resolution wind field with small errors--no more than ±2 percent of the maximum sustained wind measured in a 30-minute period--can be developed for use in wind damage prediction.

(e) Wherever reasonable, the mobile wind measurement platforms must be co-located with surge and wave gauges.

§5.4035. Hazard Module - Wind Field Model.

(a) The association must develop one or more observational models for constructing a wind field to obtain:

(1) site-specific wind speed and direction time histories that are used for wind damage prediction; and

(2) a wind field that can be used as input for a surge and wave model that outputs time histories for surge and wave damage prediction.

(b) The association must take steps to minimize errors between model estimates and the observed wind speeds and directions measured during an applicable storm.

§5.4036. Hazard Module - Storm Surge and Wave Measurements.

(a) The association must obtain physical measurements of surge, waves, and high-water marks during and after an applicable storm. Physical measurements of surge, wave, and high-water marks include:

(1) water-level time series during the applicable storm from the National Oceanic and Atmospheric Administration and other permanent tide gauges;

(2) post-event high-water marks;

(3) surge and wave heights from rapidly deployed surge and wave gauges deployed at sites with the potential to be significantly damaged by surge and waves; and

(4) other indications of surge and wave magnitudes, such as elevations of surge and wave damage on buildings.

(b) Before an applicable storm, the association must take steps to ensure that as soon as possible after an applicable storm, the association can acquire and process high-resolution aerial photographs and light detection and ranging (LIDAR) measurements.

(c) Where data is not available from federal or state agencies, the association must take steps to acquire physical measurements of surge, wave, and high-water marks. Any contracts must be in place before each hurricane season.

§5.4037. Hazard Module - Storm Surge and Wave Model.

(a) Before an applicable storm, the association must take steps so that it will be able to obtain rapid, post-event high-resolution surge and wave modeling to provide surge and wave time histories.

(b) The surge and wave hazard module must directly incorporate both numerical modeling and the high-resolution aerial photographs and LIDAR measurements required under §5.4036(a) and (b) of this title.

(c) The technical features of the storm surge and wave model must include:

(1) a domain of surge and wave modeling that extends from at least Pensacola, Florida to the Mexican coast at latitude 23 degrees north, and at minimum, 500 km offshore of Texas;

(2) for Texas and parts of Louisiana west of longitude 93.5 degrees west, sufficiently high-resolution nearshore and overland to show dunes and other significant features impeding flow, such as a grid with 50 meter or finer resolution (resolution may be coarser offshore and in other locations), with models run on the same grid, if possible, to avoid interpolation errors;

(3) the same wind field used to compute wind damage, which must be a best available reanalysis wind field that incorporates measurements made during the applicable storm;

(4) a drag coefficient that features a high wind cutoff that is defensible from observations or the scientific literature;

(5) wave computations that use a third-generation unsteady spectral wave model that has been tested closely against data from Hurricane Ike and other storms in Texas;

(6) wave computations that include feedback from velocities and water levels generated by the surge model;

(7) wave breaking dissipation that is spectrally based and does not use a simple depth-limited cutoff;

(8) a shallow water model (either depth-averaged or multilevel) that includes convective processes and bottom friction that varies with substrate or vegetation;

(9) tides as an integral part of the model;

(10) the ability to produce initial estimates within 48 hours of landfall;

(11) the ability to readily incorporate new LIDAR topographical data into the grid, and wind data into the surge and wave model as it becomes available post-event, to rapidly produce improved surge and wave model simulations;

(12) the ability to quickly produce estimates of waves and surge as additional data becomes available, and pass these estimates to the association for use in the damage estimation module;

(13) the ability to compare model estimates with measured wave and water level data as it becomes available; and

(14) the ability to produce error estimates for each applicable storm.

(d) The association must take steps to minimize errors between model estimates and the observed storm surge and wave heights measured during an applicable storm.

§5.4038. Use of Damage Estimation Module.

(a) The association must use the damage estimation module to estimate damage to components of a structure that is the subject of a residential slab claim. The association must use the following inputs:

(1) outputs from the wind field and surge and wave models described in §5.4035 and §5.4037, respectively, of this title; and

(2) property database information.

(b) The association must determine the total damage to a structure attributable to wind by:

(1) estimating the time history of wind damage to components and systems according to the damage estimation module, without considering the effects of storm surge and waves;

(2) estimating the probability of collapse due to surge and waves (P_{surge}) using Variant 5 of the methodology in Tomiczek, T., Kennedy, A., and Rogers, S., *Collapse Limit State Fragilities of Wood-Framed Residences From Storm Surge and Waves During Hurricane Ike*, Journal of Waterway, Port, Coastal, and Ocean Engineering (ASCE), (2014) 140(1), 43-55, dx.doi: 10.1061/(ASCE)WW.1943-5460.0000212;

(3) estimating the probability that wind caused the collapse of the structure (P_{wind}) by determining the maximum of the probabilities of failure for wall studs in bending, the connections of the wall studs to the wall plates, and the shear walls using the damage estimation module;

(4) calculating the time of surge slabbing (t_{surge}), which is the earlier of the time at which:

(A) the probability of surge and wave collapse (P_{surge}) reaches its maximum; or

(B) the probability of surge and wave collapse first reaches 50 percent;

(5) calculating the wind damage to each building component at the time of surge slabbing (D_{t_surge}) using the damage estimation module; and

(6) calculating wind damage each building component sustained during the applicable storm ($D_{total\_component}$) using the formula:

Figure: 28 TAC §5.4038(b)(6)

$$D_{total\_component} = \frac{P_{surge} D_{t\_surge} + P_{wind}}{P_{surge} + P_{wind}}$$

(c) The association must also use an observational approach, as described in Section 6 of the expert panel's report, along with the probabilistic approach described in §§5.4032 - 5.4040. In using an observational approach, the association must consider the following:

(1) modeled or observed surge and wave heights;

(2) peak wind speed;

(3) post-event photographs referenced in §5.4036(b) of this title; and

(4) observed damage to surviving structures.

(d) The association may input representations of the wind exposure category for eight direction sectors.

(e) The association may also incorporate other methods for computing probabilities of component and system failure due to wind such as the Monte Carlo simulation or the Rackwitz-Fiessler method.

§5.4039. Economic Loss Module.

(a) The association must adjust residential slab claims using the damage estimates obtained as described in §5.4038 of this title.

(b) The association must use the wind damage estimates obtained as described in §5.4038 of this title to determine the scope of work and associated costs for each component that was likely damaged by wind.

(c) The damage estimation module does not generate estimates on damage to contents; association adjusters must determine the amount to pay for contents by taking into consideration:

(1) the adjuster's knowledge and experience; and

(2) information about the particular property from the property database, the policyholder, and other sources, including applicable information from the damage estimation module.

§5.4040. Report Generation Module.

(a) Not later than 30 days after a policyholder files a residential slab claim, the association must:

(1) notify the policyholder that the association will use the wind damage evaluation method; and

(2) send the policyholder a request for any information the policyholder has on:

(A) wind speed and direction, and surge and waves, at the site of the structure for the duration of the applicable storm;

(B) damage to the structure during the applicable storm; and

(C) new information on the characteristics of the structure. When it sends the request for information, the association must also send the policyholder a copy of the association's current data in the property database on the structure's characteristics.

(b) If the association sends a letter under Insurance Code §2210.573(b), the letter may include the request required under subsection (a)(2) of this section.

(c) At the same time that the association provides the information required in Insurance Code §2210.573(d), the association must also provide to the policyholder a complete residential slab claim report and a summary of the results of the wind damage evaluation. A complete residential slab claim report contains the percentage of damage to each component of the structure, as determined in the damage estimation module, and all the information that the association used in making that determination, including the following:

(1) information on the characteristics of the structure;

(2) wind and wave and surge time histories; and

(3) all information used in the observational approach.

(d) An extension under Insurance Code §2210.573(d) also applies to the deadlines in this section.

§5.4041. Incorporation by Reference. This rule incorporates by reference the expert panel's damage estimation module (Section 6 and Appendix A), which is part of the expert panel's report, James R. Bailey, Samuel D. Amoroso, William Coulbourne, Andrew Kennedy, & Douglas A. Smith, *A Proposed Methodology for Estimating Wind Damage to Residential Slab-Only Claims Resulting from a Hurricane Impacting the Texas Coastline*, Section 6, Appendix A, April 18, 2016, *available at* tdi.texas.gov/reports/pc/documents/epfinalrpt.pdf.

SUBCHAPTER E. TEXAS WINDSTORM INSURANCE ASSOCIATION
DIVISION 2. REINSURANCE
28 TAC §5.4016

STATUTORY AUTHORITY. The commissioner adopts the repeal of Division 2, consisting of 28 TAC §5.4016, under Insurance Code §§36.001, 2210.008(b), and 2210.505(c).

Section 36.001 provides that the commissioner may adopt any rules necessary and appropriate to implement the powers and duties of TDI under the Insurance Code and other laws of the state.

Section 2210.008(b) authorizes the commissioner to adopt reasonable and necessary rules to implement Chapter 2210.

Section 2210.505(c) authorizes the commissioner to adopt rules as necessary to implement §2210.505, relating to reinsured excess limits.

CROSS-REFERENCE TO STATUTE. The repeal implements Insurance Code §2210.152 and §2210.505.

Division 2. Reinsurance.

§5.4016. Per Risk Reinsured Excess Coverage.

CERTIFICATION. This agency certifies that legal counsel has reviewed the repeal and adoption and found them to be valid exercises of the agency's legal authority.

Issued at Austin, Texas, on March 7, 2017

Norma Garcia
General Counsel
Texas Department of Insurance

The commissioner adopts the repeal and the new sections.

David C. Mattax
Commissioner of Insurance

COMMISSIONER'S ORDER NO. **2017-4978**`