

Windpool

Exposure Risk Management

By Ming Li and Zack Schmiesing

Windpool operations and assessments are changing the face of property catastrophe risk management in the United States.

Because of their sudden and severe nature, catastrophe risks are the primary threat to property insurer solvency. But catastrophe risk management, at least in the U.S., is becoming more successful — and more complex — owing to the emergence of windpools. The convergence of several factors, including recent hurricane landfall activity, economic swings and legislative activity at the state level, have made potential windpool assessments a fundamental piece of catastrophe risk management and an essential part of companies' risk optimization practice. As a result, many insurers now need to consider new approaches to better understand and manage their windpool exposure.

Overview of Windpools

State-operated beach and coastal windpools have grown significantly in the U.S. in the past few decades and in many cases are among the top holders in market share within their respective states. Originally designed as residual insurers, beach and coastal windpools stem from the 1968 Urban Property Protection and Reinsurance Act. This act was intended to provide burglary and robbery coverage to residents in urban areas who were unable to obtain it from the private sector due to increasing rioting and civil disorder at the time. States quickly followed suit by developing state-operated Fair Access to Insurance Requirements (FAIR) organizations. FAIR plans established a property insurance source in high-risk areas for those who were unable to obtain coverage in the standard markets. These residual markets are meant to operate as the insurer of last resort by establishing conservative pricing and exposure requirements.

State-operated FAIR plans (typically formed as joint underwriting associations) are usually governed by the state's insurance regulator. These residual plans (also referred to as shared or involuntary) operate by sharing, or pooling, all writings, profits, operating expenses and paid losses among the association, which comprises specified companies licensed to write within the state. Association members are assigned annual assessments that calculate their portion of the profits or loss costs based on their written premium, as defined by the association guidelines.

Windpools typically cover only losses due to hurricanes, generally exclude flood and operate within clearly defined areas that are eligible for pool consideration. (There is a separate national insurance program for flood hazard.) Applicants are subject to specific maintenance and mitigation responsibilities, and are required to prove they are unable to obtain coverage in the private market. Pool member insurers are assessed based on their written premium market share within the state. Companies can decrease or "write out" of their assessment by voluntarily assuming a certain calculated value of risk within the defined territory.

Beach and coastal windpool associations currently operate in Alabama, Mississippi, North Carolina, South Carolina and Texas. Florida and Louisiana operate Citizens Property Insurance Corporations that have combined FAIR plans with windpools and operate like a traditional insurance company. The remaining eastern Atlantic states (other than Maine, which does not have a FAIR plan) write wind coverage through their FAIR plans.

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Expansion of the Residual Markets

Windpool associations currently face a vexing situation. Private markets have been quick to respond to recent catastrophic tropical events, using updated actuarial models to support rate increases that mitigate loss potential and account for reinsurance costs and modeled loss expectancies. This has priced many coastal policyholders out of the private market and forced them to take out policies with the state-operated windpool association. Other companies have withdrawn coverage in highly exposed coastal states such as Florida and Massachusetts due to politically suppressed pricing adjustments, such as proposed rate increases that have been rejected by the insurance commissioner or denial of the ability to apply reinsurance surcharges to policyholders. Windpools, as the insurers of last resort, have seen exposure values and policy counts for these markets rocket upward in recent years.

This problem is compounded by significant population booms in coastal counties all along the Gulf Coast and Eastern Seaboard. Florida's Gulf Coast population has increased by an estimated 91% since 1980, and its eastern coast population has increased by 87%. The coastal population of Texas increased by 66% during this time (Figure 1). The situation in Texas, where the insurance department operates the Texas Windstorm Insurance Associa-

tion (TWIA), has spiraled out of control as exposure increased 362% from 2000 to 2007, and policy counts doubled from 2005 to 2007. The association paid only \$536 million in claims from 1971 through 2007. TWIA paid approximately \$2.1 billion in 2008 alone.

Recent Legislative Developments

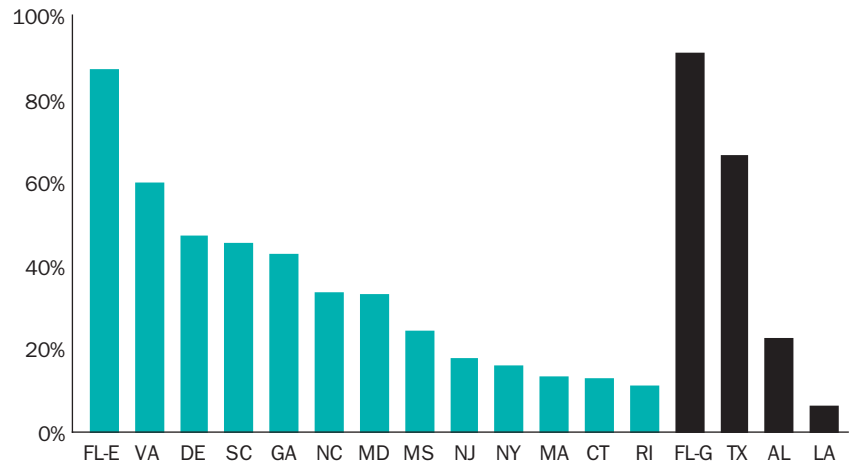
In response to rapidly expanding windpools and recent catastrophe losses, some states have turned to legislative reform to stem the increase in exposures and prevent funding shortfalls.

On April 30, 2009, the Texas Senate passed a windstorm bill in an attempt to solve the crisis facing TWIA after the \$2.1 billion-plus losses paid from Hurricanes Dolly and Ike in 2008 left TWIA with no money in its reserve fund. To restore TWIA to financial health, policyholders face an estimated rate increase of 5% a year for three years. TWIA member insurers can still be assessed up to \$400 million after a storm, which they will not be able to recapture through a policyholder surcharge. At the time of legislation, TWIA proposed three \$500 million reinsurance layers to pay out potential claims; however, the layers were never placed, owing to high reinsurance pricing and a lack of capital for premium funding. Essentially, TWIA operated uninsured in 2009, with all financial responsibility shared among member companies (through assessments) and those privately insured (through rate increases).

The Miami skyline during the peak of the construction boom.



Figure 1. Coastal population change 1980–2008



Source: <http://oceanservice.noaa.gov>, www.census.gov

In Florida, House Bill (HB) 1495 was signed into law in May 2009, making sweeping changes to the Florida Citizens Property Insurance Corporation and Florida Hurricane Catastrophe Fund. HB 1495 allowed Citizens to increase rates to pay into the Florida Hurricane Catastrophe Fund's (Cat Fund) "cash buildup" program and replace the Temporary Insurance Coverage Limits (TICL) program in six years through private sector rate increases and private reinsurance. In November, as part of HB 1495, rates were increased for roughly 330,000 policyholders in high-risk areas, along with a state-wide average increase of 5.2% for homeowner policies, 11% for mobile homes and 9.3% for nonresidential commercial property. The goal of the rate increase is to achieve actuarial soundness within Citizens' traditional rating structure through annual capped adjustments.

On August 26, 2009, North Carolina HB 1305 was passed, putting into place a comprehensive set of "Beach Plan" changes. Its provisions include requirements that the surplus be retained by the plan from year to year, along with an annual \$1 billion cap on nonrecoupable assessments, a 10% cap on catastrophe recovery charges to policyholders, and building coverage caps for residential and commercial structures.

Catastrophe Models and Coastal Risk Management

Ongoing political pressure to limit rate increases has created a grim situation within windpools and FAIR plans. Dedicated capital and reinsurance coverage often do not provide sufficient funds to support recovery from even moderate tropical hurricane damage. The impact of potential assessments, coupled with uncertainty over the solidity of FAIR plan and windpool recovery structures, is forcing private companies to retool their exposure management in coastal states. Some writers are shedding exposure statewide to reduce market share, thus lowering potential assessments, while others are shying away from expansion in the quickly growing coastal regions. Those writers choosing to stay have recognized the risk, balancing their coastal exposure (including potential windpool assessments) as an important part of overall portfolio optimization.

Catastrophe models can be used to help insurers make risk management decisions regarding windpools. These models contain tens of thousands of simulated events that can be used to analyze a portfolio's potential catastrophe losses. Companies can obtain the catastrophe modeling results of the windpool associations' exposure portfolio and determine the likelihood of assessments for various return periods. However, an extensive evaluation must be conducted before the modeling results are used to make any financially significant decision.

For example, companies need answers to the following questions:

- Are the results based on recent exposure data?
- What version of the model was used?
- What modeling options were used?
- Should any additional adjustments be made for nonmodeled perils or losses?

If the results are based on older data, exposure trend factors may need to be applied to create a more accurate view of the current exposure. It is often the case that the results are based on an older model version due to the lag between the windpool associations' portfolio analysis and companies' evaluation processes. The results then need to be adjusted to be compatible with the new models. It is also important to review the model assumptions used, for instance, long-term event set versus near-term rates, or allowing for storm surge and demand surge options. Additional adjustments may be necessary to account for loss adjustment expenses and nonmodeled perils or losses.

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After the modeling assumptions are fully understood and any necessary result adjustments have been made, companies need to examine the guidelines and mechanisms of the windpool’s recovery plan and determine the size of their potential assessment. There are certain critical factors that need to be considered:

- The composition of the fund
- Reinsurance structure and activation level
- Recoverable versus nonrecoverable assessment portions
- Current surplus levels of the fund

With the windpool’s modeling results and a full understanding of its operating mechanisms, companies can determine the size of their potential assessment. For each event simulated in the model, the reinsurance structure is applied and the losses adjusted to reflect the windpool’s current surplus level and the recoverable assessment portion based on the relevant state guidelines. Companies’ participation ratios are then applied to derive an event set that contains companies’ assessment for each event. The results are then combined with companies’ own portfolio modeling results to calculate the marginal impact of companies’ exposures to the windpool. Companies can use

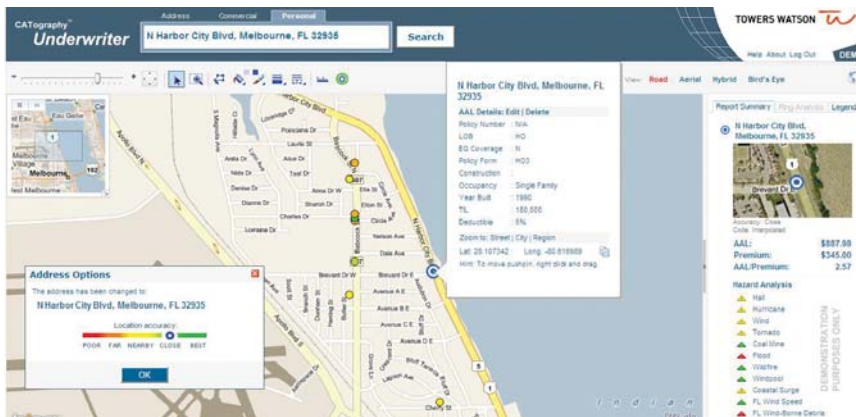
these results to evaluate the impact of their participation and review their reinsurance structures to understand the options they have with the pools to reduce their participation ratio.

Policy-Level Risk Balancing

Since many windpool exposure and subsequent potential assessments have increased significantly in recent years, some insurers selectively write out of the pools. Most states will credit voluntary underwriting within the defined coastal zone when calculating market share for assessment participation ratios, thus decreasing a company’s financial obligation to the plan. In such cases, catastrophe model loss estimates can be accessed through web-based GIS utilities such as Towers Watson’s CATography™ Underwriter (Figure 2) to help determine what types of policy and what areas should be targeted for writing. Different combinations of building characteristics within the pool’s defined eligible exposure area can be evaluated based on the modeled loss estimate results (Figure 3). These GIS utilities can combine existing portfolio concentrations of policyholders with hazard, market and historical loss information. With access to modeled results based on a potential property’s specific risk characteristics, users can determine the impact from voluntarily writing different numbers and kinds of policies with the goal of achieving the premium target — while adding minimal risk.

It is also important for insurers to consider the potential assessment when deciding how much catastrophe reinsurance coverage to buy. This is also likely to be an active discussion topic among primary insurers, brokers and reinsurers. If primary insurers have a sizable participation in the pools, reinsurers want to see what cedants have done to manage their exposure and mitigate portfolio loss potential. The company may wish to share its overall approach to coastal underwriting with reinsurers to reduce their participation ratio to an acceptable level.

Figure 2. CATography Underwriter



Windpool Risk Assessment Alternatives

Windpools, which have grown at an explosive rate in many coastal states, affect the risk management efforts of many private companies and make them reluctant to write business in high-risk coastal areas. The problem is compounded by skepticism regarding the effectiveness of windpools' reinsurance and assessment recovery plans. Political pressure to suppress policyholder rate adjustments has further complicated risk assessments.

Insurers can use windstorm modeled loss estimates to account for potential assessments and incorporate the results into their catastrophe risk management plan. It is important to understand the modeling methodology and assumptions when examining the results. Additionally, companies can leverage modeled location results for various combinations of risk characteristics to target exposure with acceptable loss estimates for underwriting, thereby lowering their assessment share while mitigating portfolio cat loss potential.

By integrating the management of windpool exposure in their overall portfolio optimization strategy, insurers can provide coverage selectively and manage risk prudently. With individual windpool structures, reinsurance, capital and political focus in constant flux, the response techniques used in these strategies must be flexible. It is also essential for insurers to have a clear understanding of the market share assessment risk versus the assumed underwriting risk when they selectively write in coastal zones to lower assessment potential. While catastrophe models are a source of guidance, they should not be the only tool used to determine risk.

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Figure 3. Coastal North Carolina hurricane modeled damage ratio

