MARSH INSIGHTS: PROPERTY

SUPERSTORM SANDY CAUSES DISRUPTION AND DAMAGE ALONG US EASTERN SEABOARD

A week after Superstorm Sandy made landfall, much of the East Coast of the United States remains in turmoil. The storm destroyed homes and businesses, decimated towns, damaged infrastructure, and was blamed in more than 80 deaths. The economic losses continue to mount: AIR Worldwide released an initial prediction of $7 billion to $15 billion in insured losses and EQECAT is estimating economic losses could reach $50 billion. It is expected the storm will be among the most costly disasters in US history. The true scope of losses, including property damage and business interruption, will take some time to fully understand and calculate. Many in New York, New Jersey, and other states are still without power at this writing and have yet to return to their properties to assess damages. Those clients that have been impacted by this storm should be in communication with their Marsh property brokers and their insurers to begin the claims process.

We invite you to visit our Disaster Recovery Portal, which has up-to-date information on the storm and its aftermath. Visit http://www.marsh.com/DisasterRecovery.aspx to access the site.

Additionally, Marsh hosted a special edition of our New Reality of Risk webcast series, "Managing Insurance Claims After Superstorm Sandy," to help our clients and prospects better understand the insurance issues related to the storm. To access a replay of this informative session, please visit our website: http://usa.marsh.com/NewsInsights/ThoughtLeadership/Articles/ID/26728.aspx.

To donate to the Superstorm Sandy Relief Fund please contact the American Red Cross at www.redcross.org or 1-800-RED CROSS.

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CATASTROPHE MODELING...WHY ALL THE FUSS?

By Duncan Ellis, US Property Practice Leader

Just five years ago, a mention of catastrophe (CAT) modeling may have induced many quizzical stares, all asking: What is that? Now CAT modeling for hurricanes and earthquakes has become the norm in property underwriting and is considered a "must have" for insureds to better understand their risk.

Three CAT models are used today: AIR Worldwide (AIR), Risk Management Solutions (RMS), and EQECAT, with RMS being the most widely used for retail insurers. In early 2011, RMS released an update to its software—Version 11—which became a major industry and insurer event. The new model takes into account lessons learned from several major wind events that occurred after RMS v10, in which the changes were driven by earthquake, not wind. Hurricane Ike and several other wind events led to significant model changes.

RMS v11 updated loss understandings around roof construction and roof types, anticipated higher inland wind speeds, heightened understanding around building vulnerability, and increased projected losses due to storm surge.

The updated model also increased insured loss results in a range from 20% to 100% or more. Some loss estimates in Texas and the mid–Atlantic states doubled, while smaller increases were seen in Florida. The model dramatically increased storm surge potential for coastal properties and classified areas in the Northeast as exposed that had not previously been considered exposed.

USES OF CAT MODELS

Insureds often use CAT models to guide them as to what sublimits they should buy for hurricane (windstorm) and earthquake exposures. Typically, insureds look to buy to the 1-in-250-year return period, which is the generally accepted return period. More conservative returns of 500 or 1,000 years also can be used.

All models produce data in the form of tables. The RMS table (illustrated in Figure 1) helps clients to understand what the expected losses may be from various CAT events; thus, helping insureds or insurers set acceptable program sublimits.

FIGURE 1 - LOSS SUMMARY: POST DEDUCTIBLE LOSS

RETURN PERIOD (YEARS)	EARTHQUAKE		HURRICANE		COMBINED	
	AEP	OEP	AEP	OEP	AEP	OEP
1000	181,594,630	163,306,992	16,084,432	15,756,189	181,960,688	164,672,083
500	142,713,867	134,761,313	11,884,434	11,520,877	140,748,670	134,730,931
250	134,742,676	134,729,905	8,531,243	8,220,634	132,177,226	129,272,979
100	102,406,446	99,082,900	5,253,313	5,023,187	101,837,595	98,582,031
AAL	**4,471,018**	**4,471,018**	**284,743**	**284,743**	**4,755,761**	**4,755,761**
Std Dev	19,799,632	19,799,632	1,386,267	1,386,267	18,237,725	18,237,725

(Note: For illustrative purposes only.)

In the example in Figure 1, the expected loss from earthquake and hurricane for the 250-year return period is approximately $134.7 million and $8.5 million, respectively. We typically focus on the aggregate exceedance probability (AEP) versus the occurrence exceedance probability (OEP). The AEP is the probability that the associated loss level will be exceeded by the aggregated losses in any given year, and is used when the insurance program is written on an aggregate basis. The OEP is the probability that the associated loss level will be exceeded by any event in any given year. It is used when the insurance program is written on an occurrence basis, or when the loss associated with one event is important.

Insurance brokers use the modeling results to help design the program structure, as modeling can be performed on each individual layer as well as the overall program. This allows brokers to analyze various options, such as insureds self insuring layers that may be too costly or transferring risk to various insurers where they see value and efficiency in so doing.

Additionally, modeling allows brokers to look at annual average loss (AAL) figures, which are the minimum annual charge (premium) over an infinite time period that would need to be collected to fund for the expected loss: This is often referred to as the "technical premium." Carriers often use a multiple of this figure to determine the actual annual premium charged. Accordingly, comparing a company's AAL for earthquake and windstorm perils versus the actual premium paid can help clients determine how well priced (or not) their program is overall.

MODELING: A BEST PRACTICE

The rating agencies use modeling to assess catastrophe risk as a primary threat to an insurer's solvency. They run the models on an insurer's aggregate exposure, which, depending upon how exposed an insurer is, may impact its rating. As of September 2012, all US property carriers have implemented the new version of RMS 11, assuming they use RMS modeling, and their ratings reflect such.

Insurers use the models in a similar way to insureds, brokers, and rating agencies: to help them understand loss expectancy, AAL pricing, exposure to their capital base, and risk aggregations. RMS v11 has had the effect of significantly increasing aggregations and the amount of capital insurers need to have on hand.

RMS v11 has been considered to be the equivalent of a $25 billion to $35 billion capital event in the property market, which in turn has led to an increased cost of doing business in CAT-exposed areas as insurers need to maintain higher capital adequacy ratios as measured by the rating agencies. This has led to carriers raising more capital, raising premiums, reducing their portfolio accumulations in high CAT areas, and/or purchasing more reinsurance.

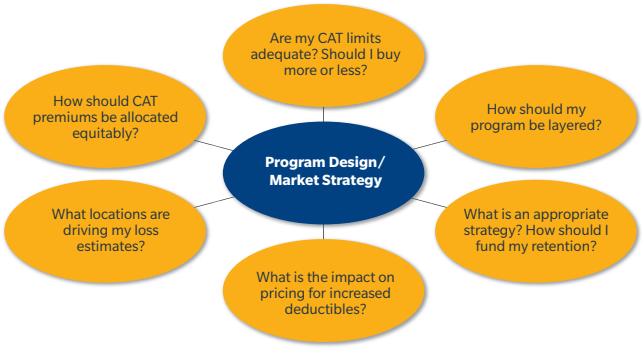
It is also important to mention that an insurer first models a risk on its individual characteristics, producing the table similar to Figure 1, to determine natural risk break points as well as probable maximum loss (PML) and AAL estimates. An insurer then runs the model of this new insured against its entire portfolio of risks to see how this new risk impacts its portfolio exposures and aggregations. As such, an insurer looking at a new risk with heavy wind exposures whose portfolio is already heavily wind exposed will likely charge a higher premium for that new risk as opposed to an insurer whose portfolio is not so wind exposed. This helps to explain why there can be such a difference between various insurers' pricing for the same risk.

CAT MODELING IMPACTS ON PROGRAM PRICING, CAPACITY, AND STRUCTURE

Modeling is all about the data. Models are sophisticated, but depend on the information given to them. For example, differences in how buildings in a similar location are constructed may respond to the same event differently (e.g., a brick building may fare better in a windstorm than one made from wood). Models are capable of developing loss levels for a range of building types, ages, sizes, and occupancies.

Marsh is able to provide clients with two of the three most used models—RMS and AIR—which support a wide range of risk management applications.

FIGURE 2



Models can accommodate extensive additional refinements through secondary modifiers beyond the required primary attributes or data. It is essential that the data be accurate, as if it is not the model will produce inaccurate results, potentially affecting pricing, capacity offered, and limits purchased.

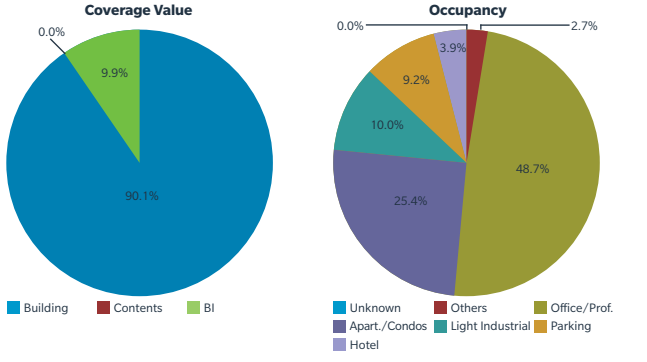
What if data is missing? The models can accommodate missing information to some extent; however, this increases the uncertainty around the modeled results. The more uncertainty, the more compensation in terms of the premium that insurers will likely need.

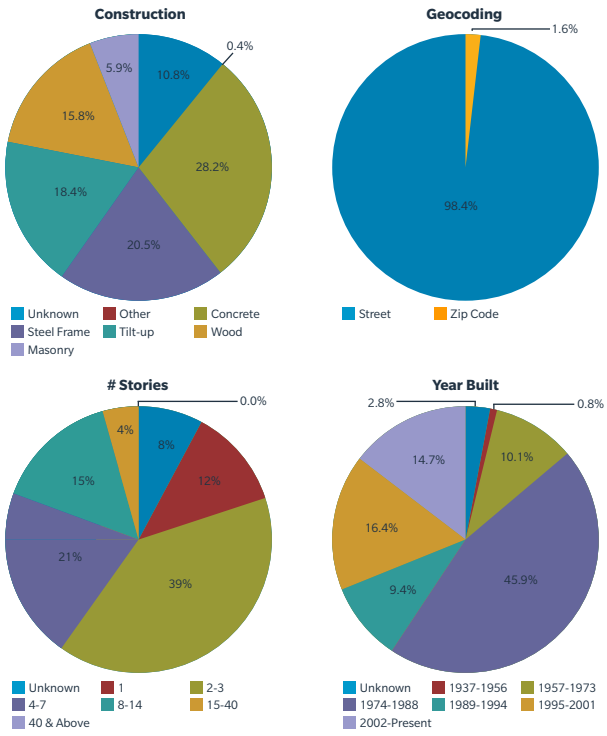
Models also "keep score" and look at a number of factors based upon the primary and secondary attributes provided. A "bad" score in any one of the categories noted in Figure 3 can hurt an insured both in relation to pricing, capacity, and limits purchased, and in an insurer's confidence that the insured understands its risk. In the example provided, the secondary modifiers score is poor at 11%, and knowledge of locations' construction types could be improved from 89%. Conversely, the geocoding and occupancy scores are quite high, demonstrating the insured's understanding of these categories.

FIGURE 3 - EXPOSURE STRATIFICATION

PERIL	LOCATIONS	TIV	HIGH RES GEOCODING	CONSTRUCTION	OCCUPANCY	NUMBER OF STORIES	YEAR BUILT	SECONDARY MODIFIERS
EQ/HU	521	5,533,957,198	98%	89%	100%	92%	97%	11%

(High Res Geocoding = Where geocoding at street level or better.)





Percentages are based on TIV.

Marsh helps clients accurately obtain their primary attributes/modifiers (including addresses, geocoding, construction, occupancy, number of stories, and year built) as well as their secondary attributes/modifiers (including roof geometry, roof anchorage, maintenance programs, presence of parapets, equipment on roof, external ornamentation, and roof sheathing).

ACCURATE PRIMARY AND SECONDARY ATTRIBUTES/MODIFIERS ARE CRITICAL

We strongly recommend insureds invest in CAT modeling. Properly used, CAT models maximize clients' buying power, allowing them to make informed decisions, proactively design a pre-emptive marketing strategy, differentiate their risks for the negotiation of favorable terms, create transparency around the sharing of assumptions with underwriters and internal decision makers, and implement risk-based allocations. Qualified modelers within Marsh Global Analytics—combined with engineers in Marsh Risk Consulting—ensure such a process.

For additional information, or to request a model of your properties, please contact your Marsh property broker or other Marsh representative.

THE PROPERTY RISK CONTINUUM: IT'S NOT JUST ABOUT BUYING INSURANCE, IT'S ABOUT FINANCING RISK

By Jeff Fieldson, US Property Practice Sales Leader

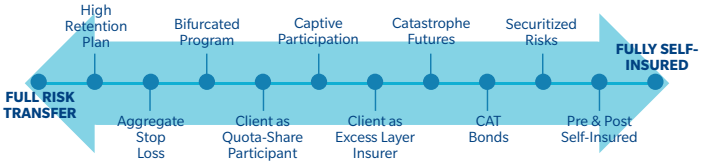
The role of insurance brokers and risk managers is to manage all facets of a company's risk—with all of the tools available to them—to obtain broad terms and conditions, mitigate loss, and effectively transfer its exposures with a focus on total cost of risk. As with all types of insurance, property insurance is in essence the business of renting capital in advance of an event.

Although conventional risk transfer (buying insurance) provides efficient access to contingent capital, companies increasingly are seeking alternative risk treatment mechanisms. Clients often ask about the various options for financing risk, including what new products are available and how to access them. A "property risk continuum" is one way to visualize the alternative products available, driven by the needs and desires of insureds. Figure 1 illustrates some potential options as insureds' exposures grow in size and complexity.

PROPERTY RISK CONTINUUM

The key elements to more sophisticated property risk solutions lie in the advance of risk-specific analytics. Underwriters, brokers, and clients are making risk decisions based on technical underwriting analytics prepared with clients' data and their direct input.

FIGURE 1: PROPERTY RISK CONTINUUM



Consider these aspects along the property risk continuum:

- Property deductibles are evaluated following a detailed loss retention analysis, which can be performed across a wide range of retention levels, including aggregate stop loss, and analyses of losses by various perils. The retention level that generates the greatest return—defined as a reduction in rate/premium—for the organization can easily be determined: A return of 40% to 60% of the retention delta usually suggests a good return for taking higher deductibles. For example, a company increasing its deductible from $250,000 to $1 million should look for a premium reduction of $300,000 to $450,000, thus it may be in the company's best interest to take the higher retention. As a rule of thumb, a 60% premium credit can essentially prefund an organization's increased retention in approximately two years.
- Captive participation allows companies to more closely manage their retentions globally or as a quota share risk taker, making them equally invested as an insurer in their own program.
- Collateralized risk and securitized risk options are now routinely used by reinsurers. On a selective basis these program options may be used by individual large clients with sophisticated risk appetites.
- Moving to fully self-insured programs is a decision that relies heavily on risk analytics to quantify the impact to a client's financial statement and to ensure the programs are in line with corporate governance regarding risk assumption.

There is an extraordinary variety of conventional and alternative risk solutions available in the property marketplace. When Marsh and our clients seek to bring about substantive change to existing programs, we discuss the options and financially vet the range of appropriate solutions.

Property Alternative Program Options

- Risk incentive sharing program (RISP)
- No claims bonus
- Multi-year single limit (MYSL)
- Indemnity and parametric facilities/capacity
  - County Weighted Industry Loss (CWIL)®
- Integrated programs
- Revaluation
- Tiered deductibles
- Captives
- Dual trigger programs
- Profit sharing/swing plan
- Stock throughput

PROPERTY DYNAMICS: ANALYTICALLY DRIVEN SUPPORT FOR RISK MANAGEMENT FINANCE DECISIONS

Marsh's analytic tools help clients make technical and sophisticated decisions in property program design, placement, sourcing of capital, and funding of alternative risk. Underwriters, seeking to justify increases in rates and reductions in capacity for key coverages such as contingent time element, flood, earthquake, and named windstorm, cite their technical underwriting against their risk adjusted cost of capital. As not all underwriters have the same adjusted cost of capital, it can be assumed their pricing would vary for the same exposures: Those with a lower cost of doing business would likely charge less.

If insureds and their brokers could better understand each carrier's risk adjusted cost of capital, they could align underwriting, loss control, supply chain, and other property risk management strategies to those carriers whose capital may provide the most appropriate solutions. This is where analytics provide the platform for advancing the interests of all involved in property risk management. The following tools and financial architecture are designed to help insureds achieve their goals:

- Strategic decision support tools for evaluation of risk help companies determine whether to retain, transfer, mitigate, and/or hedge their risks.
- Quantitative risk analysis by peril and location helps companies assess the full range of potential outcomes.
- Financial analysis helps insureds to:
  - Evaluate the financial impact of various outcomes.
  - Explicitly measure the value of volatility reduction.
  - Calculate a tangible risk threshold to measure outcomes detrimental to the organization (risk bearing capacity).
  - Effectively use its cost of capital—not the insurer's.
- Strategy optimization uses all available tools to better:
  - Work with carriers to obtain the best results.
  - Hedge where appropriate.
  - Spend efficiently on risk mitigation.
  - Retain and understand exposures at risk when other methods are not cost effective.

One of the most compelling diagnostic tools Marsh has is the ability to determine premium efficiency quotients by layer within a property placement. This is highly beneficial when using or contemplating using captives, when high retentions are considered, and in negotiating with underwriters as it illustrates instances where their pricing may be out of line with analytically determined price of capital within layers of insurance.

INSURANCE PROGRAM OPTIMIZATION: QUANTIFY VALUE OF RISK TRANSFER

Insurance program optimization helps clients strategically evaluate their insurance structure by comparing value created versus premium by layer. Additionally, it helps them evaluate how efficient layer premiums are based on analysis of historic losses and layer exposures.

The treatment and application of alternative risk transfer (ART) programs—also known as alternative risk financing or alternative risk solutions—likely will be at the forefront of discussions with property insureds, insurers, and reinsurers in the future. Sustainable alternatives to the traditional reinsurance market in the form of capital markets-backed risk transfer tools include catastrophe bonds, insurance-linked securities, sidecars, and collateralized reinsurance entities.

As Robert Hartwig and Claire Wilkinson of the Insurance Information Institute (III) have said: "One characteristic of alternative risk solutions for larger-scale exposures is their reliance on nontraditional sources of capital… The capacity of global capital markets to absorb risk dwarfs that of the world's insurers and reinsurers, a point that makes ART an attractive solution for large, unique problems." [1]

Clients expect their brokers to help them create liquidity following a catastrophe. Property insurance is unique in that it is one line of coverage an insured buys that acts as a firewall to their balance sheet. Typically, an organization's need for cash is immediate following a loss—and a properly designed property program delivers.

One potential alternative is a parametric solution, which enables companies to complement traditional insurance programs with customized risk transfer. In general, parametric programs:

- Provide liquidity (cash) when needed.
- Cover a wide range of losses, such as wind and business interruption (BI).
- Significantly shorten the claims process.
- Are typically CAT-based, for example covering earthquake or windstorm.
- Are written as multi-year (generally up to three years), fixed price programs.
- Complement existing programs, increase capacity, and broaden coverage.
- Diversify capital by providing access to financial market capital rather than insurance market capital.
- Offer flexible solutions that can be tailored to individual needs.

County Weighted Industry Loss (CWIL) is an example of an efficient hybrid indemnity and parametric program, designed to provide a payout in the event of a catastrophe such as an earthquake, or windstorm.

For many companies, the loss of revenue resulting from an interruption to its business operations can be a greater risk than the actual physical damage caused by a CAT event. The objective of a revenue protection structure is to provide a company with the liquidity of a lump sum payout quickly following a major CAT event. The solution uses a double trigger to determine:

1. If the event is major, as determined by the losses it causes.

2. If it impacted a region deemed sensitive, meaning the named counties in the policy.

Once the two triggers occur, the company receives a lump sum payout. And the program can be structured to increase with the size of the event. It is important to note the solution is not dependent upon a company's property exposure.

THE RISK FINANCE LANDSCAPE

In some respects, the risk finance landscape may appear as if insurers want to break into the banking industry, and the banking/investment industry wants to enter the insurance business. The synergies are obvious in that both earn profits based on their capital. Insurance brokers need to stay ahead of the curve in understanding the development of products coming from these two sectors and in helping clients see when alternative risk solutions are most appropriate.

Traditional reinsurance and insurance-linked securities have converged in the market: Insurers perceive capital as capital and follow strategies to optimize it. Risk managers need to assess how they currently access capital, how to best access it in the future, and how to deploy it most effectively to mitigate and transfer risk. Marsh is leading the way with world-class analytics and cutting edge risk solutions, incorporating both conventional risk transfer and alternative risk solutions.

1 Hartwig, R. P., Wilkinson, C. (2007) "An overview of the alternative risk transfer market" Handbook of International Insurance: Between Global Dynamics and Local Contingencies, New York: Springer Science

BUSINESS INTERRUPTION COVERAGES

By Steven Liguori, Special Advisor, Contracts and Wording, Property Practice

Most commercial property insurance policies provide coverage for business income loss by adding an endorsement to the insured's property policy. This endorsement is designed to protect the insured for losses of business income it sustains as a result of direct loss, damage, or destruction to insured property by a covered peril. Although many such clauses are in use today, a typical business income insurance clause reads as follows:

We will pay for the **actual loss** of **business income** you sustain due to the necessary suspension of your "operations" during the **period of "restoration."** The suspension must be caused by the direct physical loss, damage, or destruction to property. The loss or damage must be caused by or result from a covered cause of loss.

In order to better understand business income insurance let's explore the three terms highlighted above:

- **Actual loss sustained**: Business income coverage covers the actual loss sustained by the insured as a result of direct physical loss or damage to the insured's property by a peril not otherwise excluded from the policy. The insurer is only obligated to pay if the insured actually sustained an interruption of business leading to a business income loss. If the insured does sustain a business income loss, the extent of the insurer's obligation is limited to the dollar amount of loss actually sustained, but not to exceed the applicable policy limit.

- **Business income**: Usually, the carrier is liable for the reduction in net income that results from suspension of operations—whether wholly or partially—due to a physical loss at the insured's premises. This following commonly used definition of business income is intended to clarify what sums can be included when calculating the amount of loss.

  "Business income includes the net income (net profit or loss before income taxes) that would have been earned or incurred by the insured and the continuing normal operating expenses incurred, including payroll."

- **Period of restoration**: Insurers are liable for the loss of business income only during the period of restoration, which is often defined as the length of time required to rebuild, repair, or replace the damaged or destroyed property. The period of restoration begins when the physical loss or damage occurs; it ends when the property should, with reasonable speed, be repaired or replaced.

  Expiration of the policy does not end the period of restoration. As long as the physical loss occurs during the policy period, the business income coverage will provide coverage for the duration of the period of restoration, even if the policy expires before the period of restoration ends.

  The business income endorsement published by the Insurance Service Office (ISO)—as well as some insurer forms—includes a 30-day extended period of restoration beyond the standard period of restoration (the period from the time of loss until the time of repair or replacement). However, the insured may require more than this 30-day limit. To address this issue, an insured may elect to increase this limit from 30 days to any multiple of 30 days up to 720 days. This is accomplished by purchasing the extended period of indemnity optional endorsement offered through ISO.

In addition to coverage for business income, the business income endorsement of the property policy can provide other coverages, know as "additional coverages." An example of an "additional coverage" is extra expense, which is detailed below.

Extra expense is defined as the necessary expense incurred by the insured during the period of restoration that it would not have been subjected to if there had been no physical loss to real or personal property caused by a covered peril. Note that when a business income loss occurs, the insured is obligated to take reasonable steps to try to avert or minimize such loss: Any expenses incurred to reduce the loss are covered as part of the business income loss. The insurer will typically limit such expenses to the point that such expenses reduce the business income claim. In other words, the insurer will not pay any part of the expense that is more than the claim itself. For example, the insurer will reimburse the insured $100 to reduce the claim by $200; but the insurer will not reimburse the insured $100 if the claim is only reduced by $50. Any additional expenses above this that are incurred to continue the business may be recoverable under an extra expense provision in the insurance policy.

Additionally, the business income endorsement section of property policies can include "extensions of coverage," wherein the insured's policy will insure against business income losses resulting from a variety of causes, including the following. (Note a sublimit typically applies for these optional, additional coverages.)

- **Service interruption** provides coverage for an insured for direct physical loss, damage, or destruction to electrical, steam, gas, water, sewer, telephone, or any other utility or service including

transmission lines and related plants, substations, and equipment of suppliers of such services. The owners, managers, or operators of such utilities or services cannot be a named insured under the policy. The loss, damage, or destruction at the location of the utility or service must be the result of a peril(s) similar to the peril(s) covered under the insured's policy. Note that the policy may impose some limitations, such as:

1. Limitations regarding distances (such as where the actual loss occurs to the utility's property in relation to the insured's premises where the business income loss occurs.

2. Exclusion for certain perils such as earthquake.

3. Exclusions for overhead transmission and distribution lines.

- **Contingent business interruption** (CBI) is designed to cover an insured's business income loss resulting from loss, damage, or destruction of property owned by others, including: direct "suppliers" of goods or services to the insured and/or direct "receivers" of goods or services manufactured or provided by the insured. The property damage to these suppliers or receivers must be of a type that would be covered by the insured's policy had the damage happened to the insured's property.

  As noted, CBI coverage provides coverage for the "direct" relationship between the insured's "suppliers" or "receivers" of its goods or services. This can create a gap in coverage for insureds involved in multi-tiered supply chains. For example, consider that a supplier or customer of one of the insured's direct suppliers experiences a loss resulting in an interruption to its operations, which in turn causes a disruption to the insured's direct supplier/customer. Ultimately, this also causes a business income loss to the insured. Its policy will likely exclude coverage for this business income loss as the insured's direct supplier did not experience direct physical damage/loss.

  This coverage is typically added to a property policy by endorsement if requested by the insured. Commonly, the suppliers of the direct supplier—known as the "indirect" suppliers or "receivers"—must be identified.

- **Leader property** is an endorsement that provides coverage to the insured for direct physical loss, damage, or destruction of the type insured by the insured's property policy to property not owned or operated by the insured, located within the stated distance to insured's property or business, and which attracts business to the insured. Examples would include a nearby amusement park, casino, mall, or destination retail store.

- **Interruption by civil or military authority** coverage is provided to the insured for the actual loss sustained by the insured during the length of time when access to such described premises is specifically prohibited by order of civil authority as a direct result of damage as insured against in the insured's policy, to covered property on the described premises or property adjacent to the premises described in the insured's policy.

  The coverage time period most commonly stated in this endorsement is either 14 or 30 consecutive days. The carrier may also impose a waiting period that must be reached in order for coverage to attach: Common waiting periods are 24 hours, 48 hours, or 72 hours.

As illustrated by the various coverage options discussed, there are many considerations that businesses must weigh when purchasing business interruption coverage. In fact, the above are basic coverages; additional coverage options exist and can be customized based on an individual company's needs. To learn more about business interruption, or to discuss the coverages that would be most appropriate for your organization, please contact your local Marsh representative.