

*A PARTNERSHIP FOR ADVANCING TECHNOLOGY IN HOUSING
POSITION PAPER :*

**HOMEOWNER'S INSURANCE AS A TOOL FOR THE
ADOPTION OF INNOVATION**

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EXECUTIVE SUMMARY

The PATH Barriers/Insurance Working Group is charged with exploring regulatory and institutional reforms which can accelerate the adoption of innovative technologies that can make housing safer, more affordable, and environmentally benign. In this regard, the Working Group has asked whether the decision to construct a home that uses technology to mitigate damage from insured events can result in discounted insurance premiums for homeowners. This report presents the research and findings of the investigation into this question.

In summary, the cost of a homeowner's insurance policy is determined by three factors: the perils covered by the policy, the amount of coverage provided, and the location and characteristics of the insured home. Using these factors in proprietary risk analysis models, homeowner's insurance providers are able to determine their expected "loss costs" – the amount they expect to pay as a result of homeowners' claims. The calculation of loss costs is based largely on claims data collected through the experience of insurers, upon which they then add company overhead expenses, contingencies, and a margin for profit to determine the annual premiums they will charge each homeowner.

State insurance departments can also influence the rates and discounts offered by insurance providers operating within their jurisdiction, as they apply two basic types of regulation to them: solvency and market. Because each state has the power to make and enforce their own laws regarding the insurance industry, there are many variations on the regulatory environment in which insurance providers operate. The cumulative effect of the regulations imposed by each state, or the lack thereof, is to influence the basic premiums and discounts that insurers are willing to provide to consumers in each state.

Though the insurance industry currently collects and analyzes little data on housing characteristics, many insurers currently offer discounted premiums for characteristics such as burglar alarms and fully sprinkled homes. These technologies reduce the risk of theft and fire in protected homes, thereby reducing the likelihood that an insurer will pay claims related to these events in homes. Recognizing the benefits of these housing technologies, many homeowner's insurance providers then offer corresponding discounts to consumers.

The Working Group believes that homeowner's insurance providers should also be willing to provide discounts to consumers for housing characteristics that increase the safety and mitigate the effects of disasters and other hazards on their home, its contents, and its occupants. If the consumer's home is built or modified to withstand disasters, it reduces the insurer's risk of paying claims. Thus, if a housing characteristic or set of characteristics can reduce an insurer's risk of paying a claim on a home – or reduce the potential amount of the claim –

then the insurance consumer should receive a reduced premium reflecting the financial benefit the insurer ultimately derives.

Evaluated in the context of how the insurance industry operates and the environment in which it conducts business, this belief brings to light many opportunities and barriers for PATH technologies to address three of the program's primary goals: improved quality and durability, safety and disaster mitigation, and affordability. The Working Group believes that if properly focused, and using PATH as its vehicle, a broad-based cooperative effort among all sectors of the housing industry is achievable. This effort should take a first step by committing energy and resources to address the following issues, which hold promise for the PATH initiative, individual homeowners, and the homeowner's insurance industry alike.

- 1. Data collection and analysis:** The Working Group strongly recommends that homebuilders, the insurance industry, and government work together under PATH to develop cost effective data collection and analysis strategies so as to obtain a meaningful historical record of performance for housing technologies.
- 2. Technology Bundles:** The Working Group recommends that the homebuilding and insurance industries identify "bundles" of housing technology that can protect homes, their contents, and occupants in the face of disasters.
- 3. Modeling and Testing:** The Working Group believes that the homebuilding and insurance industries must work cooperatively to increase testing of building components and work to gain the acceptance of modeling and testing as a basis for discounting premiums.
- 4. Strategic Focus:** The Working Group recommends that insurers and PATH work together to identify locations where PATH technologies can work within the existing competitive and regulatory environments to offer promising benefits for the builders, insurers, and consumers of homes.

A PARTNERSHIP FOR ADVANCING TECHNOLOGY IN HOUSING POSITION PAPER

HOMEOWNER'S INSURANCE AS A TOOL FOR THE ADOPTION OF INNOVATION

SUMMARY OF THE ISSUE

Sue Smith and her husband Mike are relocating from central Pennsylvania to the Atlantic coast of Florida. Having made several house-hunting trips, they are deciding between two newly constructed homes near the Fort Lauderdale area. One home is in a planned community approximately 15 miles west of the city center, the other is on the edge of an older neighborhood a couple miles north of the city limits.

Both homes they are considering can be purchased for about \$100,000. With mortgage interest rates around 7.5 percent, the Smiths calculate they are looking at a monthly loan payment of about \$630 if they put 10 percent down on the home. In the process of shopping around for a lender, the Smiths have learned that all lenders require them to purchase homeowner's insurance for any home in the area.

The Smiths are surprised to learn, however, that the average premium for a homeowner's policy for wood construction in a high-risk area of Florida is \$1,568 a year, whereas their previous policy for a wood construction home in a low-risk area of Pennsylvania was \$303 a year.¹ The Smith's insurance costs will increase by \$1,265 a year, a rise from 3 percent to 21 percent of their monthly loan payment.²

Even though they will still save approximately \$51 a month on their total housing payment (a result of the lower cost of housing in Florida) the Smiths begin to wonder if the home in the community west of the city might help reduce their housing costs. Sue recalls their real estate agent mentioning that the builder used new PATH technologies to reduce the risk of damage to the home that might be caused by hurricanes and other wind storms occasionally striking the area, so they decide to investigate the possibilities.

¹ Mean homeowner's insurance costs from data in Consumer Reports, January 1999.

² Pennsylvania house value (\$125,000) from Consumer Reports, 10 percent down, 7.5 percent interest rate.

The PATH Barriers/Insurance Working Group is currently investigating this issue on behalf of the Smiths and the owners, insurers, and builders of homes throughout the United States. The Working Group is charged with exploring regulatory and institutional reforms which can accelerate the adoption of innovative technologies that can make housing safer, more affordable, and environmentally benign. In this regard, the Working Group has asked whether such a decision by a builder – i.e., to construct a home that uses PATH technology to mitigate damage from insured events – can result in discounted insurance premiums for homeowners.

OVERVIEW OF THE HOMEOWNER'S INSURANCE INDUSTRY

Homeowner's insurance, as a specific type of insurance policy, is part of a product line commonly referred to as "personal property and casualty insurance." This line of insurance includes other types of insurance familiar to many people, such as automobile insurance.

There were more than 3,300 insurance companies offering some form property/casualty insurance in the United States in 1997.³ Some of the larger homeowner's insurance providers, such as State Farm, Allstate, and Farmers, together insure more than 40 percent of American homes.⁴ These large companies may have a large market share in some states, but elect not to provide "personal lines" of insurance in other states. Alternatively, smaller insurance companies may operate in only one state, but compete successfully with the larger insurers in their chosen market.

In recent years, many consumers of homeowner's insurance have experienced increases in annual premiums while the terms of their coverage have become more restrictive. No longer can homeowners purchase unlimited replacement-cost coverage from Allstate, State Farm, or Farmers; each company now offers replacement-cost coverage equal to only 150, 125, and 120 percent of the insured value of the dwelling, respectively.⁵ Other consumers have had their insurance policies canceled altogether by the commercial providers, and must rely on state-run insurance pools to protect their homes and property.

These industry trends are due in large part to the aftermath of Hurricane Andrew in 1992 and the Northridge Earthquake of 1994, which caused more than \$15.5 billion and \$15.3 billion in insured losses, respectively.⁶ These events are the two most costly U.S. catastrophes on record (in terms of estimated insured losses), followed by Hurricane Hugo in 1989 (\$4.2 billion), Hurricane Opal in 1995 (\$2.1 billion), and a 20-state winter storm in 1993 (\$1.75 billion).⁷

With the market driving premiums lower and lower – and companies offering better and better coverage terms to consumers – before the disasters of the 1990s, insurers were fortunate to have investments that performed well enough to help cover all of the claims that rolled in afterward. For example, property/casualty insurers as a whole suffered an underwriting loss of \$5.8 billion in 1997, but achieved an overall operating gain of \$35.5 billion as a result of more than \$41 billion in investment income.⁸

³ Insurance Information Institute, *The Fact Book 1999: Property/Casualty Insurance Facts*. 1998. p. 9.

⁴ Consumer Reports, January 1999.

⁵ Ibid.

⁶ Institute for Business and Home Safety, *Insured Losses from the Northridge Earthquake*. January 1999.

⁷ *The Fact Book 1999: Property/Casualty Insurance Facts*. 1998. p. 9.

⁸ Ibid. p. 20.

SETTING HOMEOWNER'S INSURANCE PREMIUMS

Direct written premiums for homeowner's insurance totaled almost \$29 billion in 1997. Homeowner's insurance premiums in California, Texas, New York, and Florida accounted for 35 percent of the direct premiums written in the United States. Homeowner's insurance premiums in Pennsylvania, Illinois, Michigan, and New Jersey accounted for an additional 15 percent of the direct premiums written by insurers.⁹

In order to determine the annual premiums households are charged each year for a specific level of coverage, many insurers employ a variety of statistical and economic methods. Other, typically smaller insurers, may be less statistically sophisticated and rely more on the market to help set their premiums. In general, however, there are three basic determinants of homeowner's insurance premiums: the perils covered by the policy, the amount of coverage provided, and the location and characteristics of the insured home.

Using these three factors in proprietary risk analysis models, insurers determine their expected "loss costs" – the amount they expect to pay as a result of homeowners' claims. Insurers then consider and respond to internal, market, and regulatory forces when putting a price on the policies they sell.

The calculation of loss costs is both a science and an art, but is based largely on claims data collected through the experience of insurers. Larger insurers often collect and analyze a substantial amount of data based on their own experiences throughout the country. Smaller insurers, however, may contribute data from their experiences to specialized firms that manage and analyze data from hundreds of insurers. The Insurance Services Office, Inc. (ISO) is the largest of these firms, and collects and analyzes data from more than 1,500 insurers.

ISO collects and analyzes data on many factors in the personal lines of insurance, including a total of 35 data factors used for homeowner's insurance purposes.¹⁰ Of these 35 factors, three are directly related to the characteristics of the insured unit: the construction type (frame or masonry), year of construction, and whether the unit has a tie-down feature (for mobile homes.) Two additional factors are based on the local government in a unit's area: the Building Code Effectiveness Grade and the Public Protection Class evaluate the effectiveness of local government operations in developing and protecting safe homes. An important geographic factor is the Zip Code of the unit, which is used to assess crime rates, exposure to natural hazards, and other factors relevant to insuring a home, its contents, and occupants.

These factors are then analyzed with the 29 other data factors – relating to deductible types and sizes, coverage limits, types of exposures, claim counts,

⁹ *The Fact Book 1999: Property/Casualty Insurance Facts*. 1998. p. 36.

¹⁰ A total of 39 data factors are collected by ISO for homeowner's and earthquake insurance analysis.

causes of loss, and loss amounts – to arrive at estimates of expected loss costs.¹¹ While the methods of analysis used by individual firms are fairly standard, they are not necessarily identical. Therefore, depending upon how analysts for one firm or another use the same data, insurers may arrive at different estimates of loss costs.

Whatever estimate of loss costs the analysts arrive at, insurance companies then factor in company overhead expenses, contingencies, and a margin for profit to determine the annual premium they will charge each homeowner. Because insurance companies face stiff competition in the homeowner's insurance line of business, the market generally helps to limit the overhead expenses and profit included in their premiums. The contingency expenses in their premiums (or the costs associated with booking and managing risk, such as reinsurance expenses) are more closely related to the location of the insured unit, however.

Industry officials report that on average 55 to 75 percent of a homeowner's insurance premium dollar goes to loss costs. An additional 20 to 25 percent of the premium dollar goes to company expenses, up to 5 percent goes to contingencies, and up to 5 percent is for profit.¹² These percentages can vary dramatically, however, based upon the location in which the policy is written. While a company's expenses and profit are generally allocated to all policies on a more fixed-cost basis, the amount of loss costs and contingency expenses are the components that really make a company's policy in Florida more expensive than the same company's policy in Pennsylvania. This means that in Pennsylvania, for example, the loss cost portion of a premium may account for only 40 percent of the premium dollar, while in Florida it may be 90 percent.

STATE REGULATION

Every insurance provider is regulated by any and all states in which it provides insurance services. Each state has the power to make and enforce laws regulating the insurance industry within its jurisdiction. The result is many variations on the regulatory environment in which insurance providers operate.

State insurance departments (SIDs) apply two basic types of regulation to the insurance industry: solvency and market. *Solvency* regulation is used by states to ensure that companies writing policies in their state will be able to fulfill their financial commitments to all covered homeowners in a time of need. The solvency of an insurer is based primarily on: the premiums charged by the company and the deductibles applied in response to a covered event; the cash reserves, investment income, and other financial attributes of the company; and the overall exposure and level of re-insurance of the company. These attributes of the company describe the cash and other assets that are available to cover potential losses to which the company is exposing itself.

¹¹ The insurance industry as a whole generally tracks and uses factors similar to ISO's, though how a company actually derives its premiums is proprietary information.

¹² Interview with Mike Podeshen, Insurance Services Office, Inc.

Solvency regulation is designed to protect consumers from paying premiums for insurance, only to have their insurer declare bankruptcy before they can collect on a legitimate claim. If insurers offer very low premiums and deductibles in areas prone to widespread disasters, they might not be able to pay all of the policyholders' claims resulting from a major event. For the insurance industry, solvency regulation can have the effect of creating a "floor" for homeowner's insurance premiums and deductibles, below which the company will not be able to meet its obligations to consumers.¹³

Market regulation, by contrast, can have the effect of creating a "ceiling" on homeowner's insurance premiums and deductibles. Market regulation is also designed to protect consumers, but this time from companies who might otherwise overprice insurance policies for the level of coverage provided. The issue of whether a policy is overpriced, however, can be simultaneously economic, actuarial, and regulatory.

Economic theory argues that insurers have incentives to price their policies competitively, because those with higher premiums will lose out to others with lower premiums in the market. In the meantime, sophisticated actuarial models are employed by insurers and regulators to help determine the risk, financial exposure, and premiums necessary to cover potential losses. Despite what actuarial models or economic theory say an insurer should charge for their coverage, state insurance commissioners may also find it necessary to impose rate limits on the entire industry within a state in order to keep insurance affordable for citizens.

The states use six general methods of regulation to govern insurers operating within their borders. The following chart defines these six methods and indicates the number of states (including the District of Columbia) that use each method to regulate the homeowner's insurance providers operating in their state.¹⁴ The important distinction between the methods of regulation is the level of freedom they offer insurers in increasing or decreasing the premiums they charge consumers for a policy.

State Regulation of the Homeowner's Insurance Industry

Method	Definition	Number*
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¹³ In practice, this "floor" is rarely imposed by state solvency regulators, as they consider the overall financial condition of a company when determining whether it will be able to meet its obligations. Companies with extremely productive investments, for example, may be able to charge lower premiums and/or deductibles – and even take an accounting loss when compared to claims payments – because less of the capital necessary to pay claims has to be raised through monthly premium payments or self insurance.

¹⁴ A state may use different methods of regulation for different lines of insurance. Many also use a range of methods for a single line of insurance based on the degree of market competition in that line.

<i>Prior Approval</i>	Rates must be filed with and approved by the SID before they can be used.	20
<i>Modified Prior Approval</i>	Rate revisions involving change in expense ratios or rate relativity require prior approval; those based only on experience are subject to “file and use” laws.	1
<i>Flex Rating</i>	Prior approval required only if rates exceed a certain percentage above (and sometimes below) the previously filed rates.	2
<i>File and Use</i>	Rates must be filed with the SID within a specified period prior to their use. Specific approval is not required but the department retains the right of subsequent disapproval.	18
<i>Use and File</i>	Rates must be filed with the SID within a specified period after they have been placed in use.	8
<i>No File</i>	Rates are not required to be filed with or approved by the SID. Companies must maintain, and the insurance commissioner may request, records of experience and other information used to develop the rates.	2

Source: National Association of Insurance Commissioners, *Compendium of State Laws on Insurance Topics*, 1999.

* Assumes that all state homeowner’s insurance markets are competitive (more restrictive methods are occasionally used if a state determines a market is not competitive) and that the insurer chooses the least restrictive method of regulation when given the choice (this option is available only in Florida.)

State regulators may also place requirements on the types of perils and levels of coverage that must be provided in a homeowner’s insurance policy. For example, the peril of “wind” must be covered by any homeowner’s policy sold in Virginia, while it is an optional coverage with additional premiums in neighboring North Carolina.¹⁵ In California, as in most states, the earthquake peril is also an additional coverage that must be purchased separately. Flood insurance is never included in homeowner’s insurance policies, but must also be purchased separately from the federal government’s National Flood Insurance Program.

Some states also require higher levels of personal liability coverage in a homeowner’s policy than do others. The cumulative effect of the regulations imposed by each state, or the lack thereof, is to influence the basic premium – particularly the parts made up of loss costs and company expenses – that consumers end up paying for a homeowner’s insurance policy in each state.

¹⁵ A homeowner in North Carolina will likely be required by their mortgage lender to purchase the “optional” wind coverage, however.

CURRENT INFLUENCE OF HOUSING CHARACTERISTICS ON PREMIUMS

Despite the fact that the insurance industry currently collects and analyzes little data on housing characteristics, many insurers offer discounted premiums for technologies such as burglar alarms and fully-sprinkled homes. These technologies reduce the risk of theft and fire in protected homes, thereby reducing the likelihood that an insurer will pay claims related to these events in homes. Recognizing the benefits of these housing technologies, homeowner's insurance providers may offer corresponding discounts to consumers. For example, ISO currently recommends up to a 13 percent discount on premiums for fully-sprinkled homes.¹⁶ (Each ISO client determines whether to offer the discount to its consumers or not.)

The National Flood Insurance Program (NFIP), in which the Federal government provides flood insurance directly to participating homeowners, provides an example of housing characteristics generating discounted insurance premiums. The NFIP has instituted a Community Rating System (CRS) that values community efforts beyond the NFIP minimum standards by reducing premiums for the community's property owners. The discounts, ranging from 5 to 45 percent, provide an incentive for new flood mitigation, planning, and preparedness activities that can "help save lives and protect property." At the request of community leaders, the NFIP assesses local codes and ordinances – such as those influencing housing characteristics – as well as other activities, then automatically provides premium discounts to participating homeowners.

An initiative related to housing characteristics was also introduced by the insurance industry after Hurricane Andrew – the Building Code Effectiveness Grading Schedule (BCEGS). Driven in part by the dramatic variation in losses experienced in different areas of Florida after Hurricane Andrew, BCEGS grades local building codes and the local government's enforcement of codes. While it does not provide for direct premium discounts to individual consumers, the BCEGS grade of each jurisdiction is used as a factor in setting premiums for all insurance consumers in that jurisdiction. Thus, individual homeowners benefit indirectly when jurisdictions adopt and enforce building codes that require specific housing characteristics relevant to the hazards in the area.

Homeowner's insurance premiums are similarly influenced by the insurance industry's evaluation of a community's fire protection codes, facilities, and effectiveness. Emergency response times, staffing levels, and local fire codes are graded by analysts in a system known as Public Protection Classes (PPC). The better a local government's grade in their PPC evaluation, the lower homeowners in that jurisdiction can expect their premiums to be. Like BCEGS, however, the PPC does not provide for direct premium discounts to individual homeowners but is used as a factor when premiums are priced by the insurers.

¹⁶ Interview with Mike Podeshen, Insurance Services Office, Inc.

The Institute for Business and Home Safety (IBHS), an insurance industry trade association, recently rolled out a “Fortified Home” designation program for the homeowner’s insurance industry. The program is designed to provide homebuyers with incentives to purchase safer homes, and provide insurers with a consistent definition of what constitutes a “Fortified Home.” “Fortified Homes” are defined based on their location, but the key is that each home is constructed to include a set of safety features making it resistant to *all* hazards in the area. Individual homes may be built with these features, or an entire development of “Fortified Homes” might be constructed by a builder. In either case, an inspector trained by IBHS first verifies that the designated features are properly built into the units, then insurers participating in the program can elect to offer discounted premiums or deductible waivers to consumers purchasing the “Fortified Homes.”

OPPORTUNITIES AND BARRIERS FOR PATH TECHNOLOGIES

This description of the homeowner’s insurance industry illuminates many opportunities and barriers for PATH technologies to address three of the program’s primary goals: improved quality and durability, safety and disaster mitigation, and affordability.

The Federal government should have a particular interest in housing characteristics that mitigate the effects of disasters, as it spends billions of taxpayer dollars each year preparing, cleaning up, and rebuilding communities that face disasters. For example, the Federal Emergency Management Agency (FEMA) estimates that disaster costs over the last five years have averaged \$2.5 billion per year for FEMA alone, excluding the Northridge earthquake.¹⁷ Other federal agencies, including the Department of Housing and Urban Development (HUD) and the Department of Agriculture (USDA), also play important roles in assisting communities faced with disaster.

Providers of homeowner’s insurance should also have an interest in housing characteristics that increase the safety and mitigate the effects of disasters and other hazards on a home, its contents, and its occupants. If housing is built or modified to withstand disasters, it reduces their risk of paying claims. Taking the statement one step further, if a housing characteristic or set of characteristics can reduce an insurer’s risk of paying a claim on a home – or reduce the potential amount of the claim – then the insurance consumer should receive a reduced premium reflecting the financial benefit the insurer ultimately derives.

However, this opportunity for achieving a premium reduction through housing characteristics must be evaluated in the context of how the insurance industry operates and the environment in which it conducts its business.

¹⁷ Federal Emergency Management Agency, “FEMA asks Congress for \$3.4 billion 2000 budget.” <http://www.fema.gov/nwz00/99020.htm>. Accessed 11/11/99.

Industry Opportunities and Barriers

- ✓ **Competition for Customers** - One economic characteristic of the homeowner's insurance industry is particularly encouraging for consumers of PATH technology: the level of competition among homeowner's insurance providers in most states. Insurers are constantly competing for market share in a competitive environment, and unique discounts can be a source of customer attraction and retention. Thus, insurers who choose to offer discounts for homes incorporating PATH technologies should be in a good position to build their customer base.
- ✓ **Using Informed Judgment to Discount Premiums** - Another opportunity for PATH technologies to generate discounted homeowner's insurance premiums is the fact that insurance providers can offer initial discounts based upon the informed judgment of the company. An example from automobile insurance is useful in illustrating this point: insurers offered discounts for airbags before they were absolutely sure that the airbags actually reduced claims. Based upon testing and analysis, however, insurers acted to encourage increased – and more expensive – safety in automobiles. Since their introduction, airbags have accumulated a historical record of their application that can now be used for actuarial analysis. PATH technologies can be tested, encouraged, and evaluated in much the same way, though the life cycle of the process will likely be longer.
- ✓ **Offering Discounts for Technology “Bundles”** - When considering discounted premiums for homeowner's policies, insurers are likely to be interested in “bundled” technologies that constitute an identifiable housing feature or characteristic and mitigate the full range of hazards a home faces. (As opposed to the “piecemeal” application of advancements.) For example, while hurricane shutters are an effective method of protecting windows from debris and breakage in a storm, they do little to protect the home, its occupants, and contents if a storm blows off the home's roof. However, a home with a “bundled” system of hurricane shutters, hurricane clips, reinforced gable ends, and foundation bolts provides protection throughout the building envelope.
- × **Lack of Historical Records** - A major barrier limiting the potential influence of PATH technologies in the insurance industry is that the evaluation of risk, and therefore the projected costs of future insurance claims, is based on historical data. Insurers are reluctant to project the future benefits of a technology without a historical record, but a historical record cannot be generated unless the technology is applied and tracked. New PATH technologies, however, may not have a record demonstrating their success or failure in applications.
- × **Lack of Attention to Housing Characteristics Data** - Compounding the barrier of historical records is the fact that current data collection efforts in the

insurance industry give little attention to housing characteristics beyond fire retardancy factors. (The age of the house provides information about the age of the wiring, while the construction type indicates whether the home is wood or masonry.) Therefore, more comprehensive collection, reporting, and analysis of housing characteristics data is necessary if PATH technologies are to generate the historical records used to evaluate their potential for reducing claims.

- × ***Inadequate Data Collection Practices*** - The insurance industry's focus on the collection and analysis of *claims* data presents another barrier limiting the ability of PATH technologies to reduce insurance premiums. If a PATH technology is successful enough to eliminate a homeowner's need to file a claim at all, that success is not necessarily included in the technology's historical record. For example, a PATH technology may prevent damage to a home or its contents during a minor earthquake, while many neighboring homes without the technology suffer several thousand dollars in damage.

In the processing of claims, insurers will gather data on the damaged homes, which will then be included in subsequent analyses. The home with the PATH technology, however, will not file a claim, will not be examined by an insurance appraiser, will not be included in a subsequent analysis of insurers' risk, and therefore will never have its value to the insurance industry captured. Leaving such "success stories" out of the claims process, and therefore out of the actuarial analysis, artificially limits the measurable benefits of housing technology for insurers, homeowners, and society.

- × ***Higher Costs of Data Collection and Analysis*** - Another barrier is the cost of reporting, collecting, and analyzing additional data factors on housing characteristics. In particular, the cost of running disaster prediction models to include in the analysis of loss costs is high, while the confidence levels of current models are very low. Thus, the cost to evaluate the value of a PATH technology designed to mitigate the impact of disasters can be very high, while the results will likely be inaccurate – regardless of the technology's actual ability to fulfill its purpose.

In addition, the net value of collecting additional data on housing characteristics must be evaluated in the context of the factors that determine a homeowner's insurance premium. Housing safety characteristics – including sprinklers, burglar alarms, roofing, and other characteristics – are estimated to account for 10 to 15 percent of the current homeowner's insurance premium.¹⁸ In contrast, the geographic location of the house and its replacement cost have far more influence on the premium.

In other words, the estimated loss costs for a home with PATH technologies may go down, but the company's costs of doing business may increase to the

¹⁸ Interview with Eric Nordman, Director of Research, National Association of Insurance Commissioners.

point that they negate or even exceed the expected savings for the individual homeowner. Therefore, it is necessary to first evaluate whether housing characteristics should account for more of the homeowner's insurance premium, then compare the costs associated with collecting and analyzing data on PATH technologies with the expected savings for the individual homeowner.

Regulatory Opportunities and Barriers

- ✓ ***Extent of Actuarial Scrutiny Varies*** - State regulation of the insurance industry may limit the ability of insurers to offer discounted premiums to consumers. The impact of regulation will vary dramatically from state to state as some, such as "prior approval" states, are more likely to subject the proposed rate changes to strict actuarial scrutiny. In such states, insurers may be less likely to offer a discounted premium based on their informed judgment. A potential opportunity also exists in this situation, however, as larger insurers may be able to develop a historical record for PATH technologies in states with less stringent regulation, then use the data to present actuarial bases for discounts in the more stringent states.
- ✗ ***Premium Controls Reduce Discounts*** - Another important issue relevant to PATH technologies is the control state insurance regulators can impose on premiums in their state. For example, Florida's insurance commissioner imposed rate freezes or cuts on the state's top three homeowner's insurance providers as a result of the increasing premiums the insurers were seeking after Hurricane Andrew. Though the insurance providers thought higher premiums were justified, the premiums became too expensive for many homeowners. In addition, the policies of some homeowners were cancelled by insurance providers in order to lessen their risk exposure.

The effect of such price regulation on PATH technologies can present a significant barrier. If an insurer feels that rates in certain areas are artificially low as a result of regulation, the company will not have an incentive to reduce premiums in response to facing lower risk as a result of PATH technologies.

- ✓ However, the industry should recognize that it then needs, and should actively pursue, the incorporation of risk-reducing housing characteristics in order to protect itself against expected claims. In other words, while price regulation may present a barrier to the ability of PATH technologies to generate discounted premiums, the same regulation should also encourage insurance providers to actively advocate the incorporation of promising technologies into housing.
- ✗ ***Mandated Discounts Preempt Voluntary Discounts*** - A similar barrier to PATH technologies arises when state regulators mandate discounts for certain housing characteristics, such as hurricane shutters and hail resistant roofs. For example, the State of Florida currently mandates a 29 percent

premium discount for homes with hurricane shutters, and Texas mandates a similar discount for homes with hail resistant roofs. These mandatory premium discounts can have the effect of limiting an insurer's ability to consider the value of a PATH technology for a voluntary discount. A PATH technology, or combination of technologies, may have superior performance than the mandated characteristic, but the insurer may be unwilling to provide discounted premiums because the state regulation is focused on a certain technology or product and already requires a discount.

Other Opportunities and Barriers

- × ***Costs of Inspecting Units*** - One of the fundamental requirements of an insurance company's willingness to provide a discounted premium will likely be evidence that a PATH technology has been incorporated into the insured unit. For some technologies, this can be as complicated as repeated inspections by a qualified inspector during several phases of construction. Others may require no inspection at all, as the consumer can simply inform the insurer that his or her home has the specific feature. These inspections are another cost factor that needs to be included in an evaluation of the expected net savings resulting from the technology.
- ✓ ***Performance Standards Create Confidence*** - Standards of product performance will also be important if PATH technologies are to generate discounted homeowner's insurance premiums. In many cases, several manufacturers may want to produce products that qualify a homeowner for a particular discount. In addition, state regulators will likely have an interest in whether each product actually performs as promised.
- ✓ ***Promising Benefits Encourage Action*** - Finally, as this paper has described, the amount of work it requires to collect and analyze data, and ultimately change a premium, can be substantial. Therefore, PATH technologies must offer promising benefits that are valued by consumers, builders, and insurers in economic, financial, and/or social terms if they are to be seriously considered for pilot or permanent discount programs.

RECOMMENDATIONS OF THE PATH BARRIERS/INSURANCE WORKING GROUP: OVERCOMING THE BARRIERS AND TAKING ADVANTAGE OF THE OPPORTUNITIES

Clearly, the question posed at the beginning of this paper - “Can a builder’s decision to construct a home that used PATH technologies to mitigate damage from insured events result in discounted insurance premiums for homeowners? - is not subject to a simple answer. However, there are opportunities and actions that hold promise for the PATH initiative, individual homeowners, and the homeowner’s insurance industry alike. The Working Group believes that if properly focused, and using PATH as its vehicle, a broad-based cooperative effort among all sectors of the housing industry is achievable. This effort should take a first step by committing energy and resources to addressing the following issues:

- 1. *Data collection and analysis:*** The PATH Barriers/Insurance Working Group strongly recommends that homebuilders, the insurance industry, and government work together under PATH to develop cost effective data collection and analysis strategies so as to obtain a meaningful historical record of performance for housing technologies. The first step in developing a new data collection and analysis strategy is for the industry, together with HUD and/or FEMA¹⁹, to research existing studies and data collection efforts related to housing characteristics. The second step is to determine how to cost effectively collect additional data on housing characteristics, such as using sampling to reduce data collection and storage costs. The third step is to develop a strategy for collecting data on insured housing that survives disasters without the need for owners to file claims.²⁰ This will allow companies to analyze whether housing characteristics played a role in disaster resistance. A fourth step is to analyze whether requirements of local building codes have been effective at decreasing the financial risk for insurers.
- 2. *Technology Bundles:*** The homebuilding and insurance industries should identify “bundles” of housing technology that can protect homes, their contents, and occupants in the face of disasters. The PATH initiative should serve as a catalyst to bring the parties together for constructive dialog about what the specific housing needs are in various regions of the country, what technologies are available to address them, and how such changes might ultimately affect the housing consumer.
- 3. *Modeling and Testing:*** Waiting for a historical record of technology performance to be developed can take many years. The Working Group

¹⁹ Currently, FEMA is not authorized to undertake research. However, the Working Group believes Congress should consider authorizing FEMA to conduct research on such topics related to disaster prevention.

²⁰ For example, FEMA is currently similar to the homeowner’s insurance industry in that it collects data on homes that fail in disasters while ignoring homes that survive disasters.

believes that the homebuilding and insurance industries must work cooperatively to increase testing of building components and work to gain the acceptance of modeling and testing as a basis for discounting premiums. In addition, the building code organizations must exhibit a willingness to also accept such data when reviewing proposed code changes.

4. **Strategic Focus:** The greatest opportunities for PATH and the industries to work together to protect homes, their contents, and occupants in the face of disasters exist in high-risk locations. Opportunities for initial insurance discounts, pilot projects, and data collection are more likely to exist in states with less stringent regulation, a highly competitive homeowner's insurance market, and where a large percentage of insurance premiums are based on risks that can be mitigated with PATH technologies. Insurers and PATH should work together to identify locations where PATH technologies can offer promising benefits for home builders, insurers, and consumers.

ITEMS FOR CONTINUED CONSIDERATION

In addition to the above recommendations, the PATH Barriers/Insurance Working Group provides the following items for additional consideration by the homebuilding and insurance industries.

- **“Bang for the Buck” Exercise** – For the purposes of this paper, a simple thought exercise becomes useful for evaluating the potential influence of PATH technologies on the Smith’s homeowner’s insurance premiums in Florida. If PATH technologies can be built into a Florida home such that they reduce the insurer’s risk to the level of an equivalent home in Pennsylvania, then the Florida premium should reflect this reduction in risk. This would mean that the Smiths pay the same premium for a policy on the wood home in Florida as they did for their wood home in Pennsylvania.²¹

Thus, the expected premium savings for the Florida home incorporating PATH technologies is equal to \$1,265 annually, or \$1,568 (the non-PATH premium in Florida) minus \$303 (the expected PATH premium in Florida). If the Smiths realize this \$1,265 annual savings every year over the course of their 30-year mortgage (at 7.5 percent), then the present value of the expected premium savings is just over \$15,000.²² Therefore, the question to consider regarding the potential influence of PATH technologies on homeowner’s insurance premiums can become, “How can \$15,000 worth of technological improvements built into a new home in Florida reduce the level of risk an insurer faces to that of Pennsylvania?”

- **Premium Breakdowns Needed** – In order to evaluate where PATH housing technologies can provide meaningful incentives, more specific information about the actual breakdown of insurance premium components on a micro-level basis is needed. For example, to what degree are non-loss cost expenses variable by location and risk level? That is, are the non-loss cost expenses per policy almost the same for a policy written in Pennsylvania as in Florida? Within each state, are contingency expenses generally allocated evenly or based on regional risk?
- **Types of Data Currently Available** – Do any insurers currently collect and analyze more data on housing characteristics than the Insurance Services Office? Larger insurers are more likely to collect and analyze their own data, and may therefore be sources of additional information and guidance on some of the key questions identified in this paper.

²¹ This thought exercise does not account for the potential variation in the replacement cost of the two homes, nor the fact that the premiums in each location are based on combinations of perils that may be quite different in each location. It is simply meant to illustrate - in a straightforward way - one method for valuing the influence of PATH technologies, and does not purport to represent the actual savings a homeowner may reasonably expect.

²² Assuming the Smith’s insurance premium is paid in equal monthly installments throughout the year.

- ***Deductible Waivers as Incentives*** – Are the deductible waivers that may be offered by insurers through the IBHS “Fortified Homes” program a meaningful incentive to consumers? How exactly are the waivers written and structured for disaster mitigation measures built into the home?
- ***Cost of Reinsurance*** – Can PATH play a role in the re-insurance markets to help facilitate the incorporation of technology into housing? For example, PATH technologies may reduce risk not only for homeowner’s insurance providers, but also for the re-insurance industry. Can an insurer seeking reinsurance for its book of business in Florida pay lower reinsurance expenses, and therefore pass on fewer charges to the consumer, if its portfolio contains a critical mass of homes with PATH technologies? Alternatively, can PATH serve as a partner in the reinsurance industry, effectively absorbing some of the risk of technologies that have not developed extensive historical records for actuarial analysis?

Monday, January 25, 2000

The PATH Working Group on Barriers/Insurance

Early in the PATH program the partners quickly recognized that there were a number of institutional barriers to the acceptance of innovation. One of the major barriers to the introduction of new and innovative products into the home building industry is the fear of liability from the failure of the product. Home building presents some unique circumstances which justify developing a special program to address this issue. There is a need for a program that will permit builders' insurance companies to fully cover all risk inherent in the deployment of new technologies at a reasonable rate to the builder; and, a program that will reassure builders that the manufacturer will be there to honor the warranty. Another insurance issue is property insurance. Many PATH technologies can reduce risks of damage under natural disasters. How can the insurance industry factor in these technologies in setting rates and provide incentives for PATH technologies?

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