

Effective Mitigation for Everyone

June 24, 2009

Safe Homes for All Leadership Forum

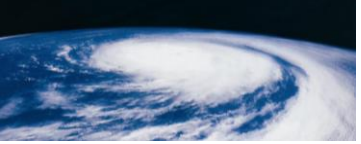
Innovative and Affordable Mitigation
Solutions for Low-Income Populations



Craig Tillman

President

WeatherPredict Consulting Inc.

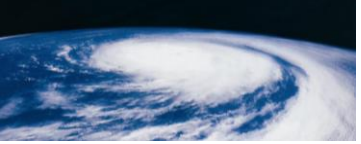


Mitigation Success

- **Coordinated**
 - Aligning All Stakeholders to Integrate Mitigation With Both Public and Private Efforts

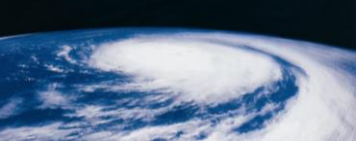
- **Strategic**
 - Using the Best Science to Maximize Mitigation Benefits for Every Invested Dollar

- **Innovative**
 - A Case Study of One Mitigation Solution

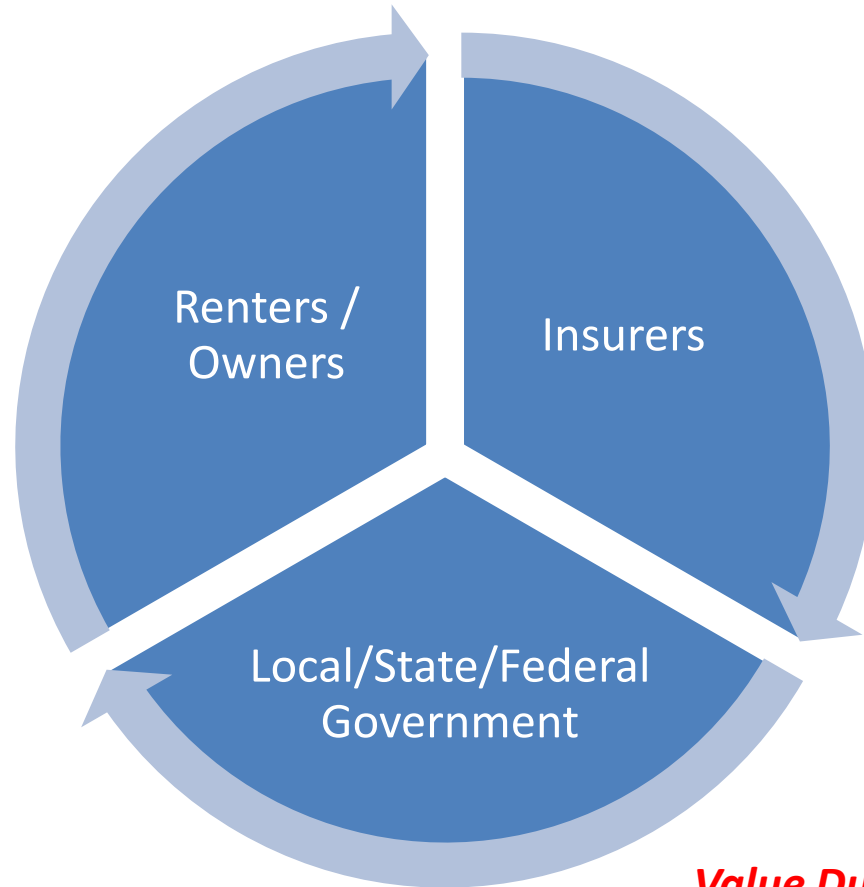


Effective Mitigation for Everyone

A COORDINATED MITIGATION EFFORT



Aligning Stakeholders Towards Mitigation



Motivation

- Family Safety
- Uninterrupted Use
- Premium Credits
- Real Estate Value

Value Duration

- Ownership / Term of Lease

Motivation

- Reduce Cat Losses
- Stable Portfolio

Value Duration

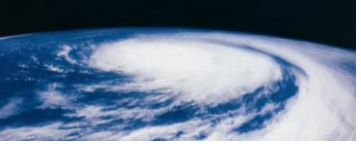
- Continues with Policyholder Relationship

Motivation

- Reduced Economic Interruption
- Reduced Need for Response/Recovery
- Resilient and Safe Communities

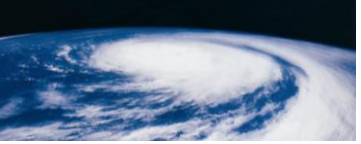
Value Duration

- Service Life of Structure



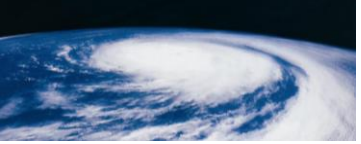
Aligning Stakeholders Towards Mitigation

- Investment time-horizon differences inhibit mitigation efforts
 - Balanced and shared financing is critical to incentivizing all stakeholders to partner in ***Effective Mitigation Solutions***
- **For Families...**
 - Avoiding the build-destroy-rebuild cycle saves capital and lowers carbon footprint
 - Increasing survivability and avoiding disruption of their livelihoods
- **For Communities...**
 - The resiliency of homes in close proximity to your own matters
- **For Coastal Regions...**
 - Protecting natural hurricane buffer reduces severe weather impacts on adjacent communities



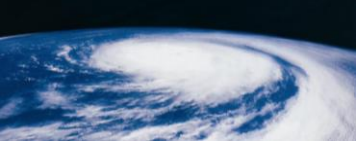
Aligning Stakeholders Towards Mitigation

- **Solutions Exist Now!**
 - FEMA: \$1 Spent on Mitigation Yields \$4 in Loss Reduction
 - IBHS: 50% Reduction in Claims, 40% Reduction in Severity
 - US Census: 12% of US Population are Most Threatened
- **Actual Savings is Higher Considering...**
 - Avoided Capital Destruction, Tax Revenue Loss, Emergency Response Costs
 - Prevention of Job Losses, Keeping Communities Economically Viable
 - Sustainable Construction: Energy Efficiency and Weather Resilience go hand-in-hand



Effective Mitigation for Everyone

A STRATEGIC MITIGATION APPROACH



Evolving to a Strategic Mitigation Approach

Science Informed
Risk Reduction

Focused to
Maximize Impact

Proven with Full-
Scale Testing



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Exposure Oriented...

- Existing Construction; Retrofit Efficacy

Hazard...

- Captures differences in frequency and severity by region

Vulnerability...

- Quantifying loss reduction with component-wise models



Evolving to a Strategic Mitigation Approach

Science Informed
Risk Reduction

Focused to
Maximize Impact

Proven with Full-
Scale Testing

Existing Multi-Family Homes...

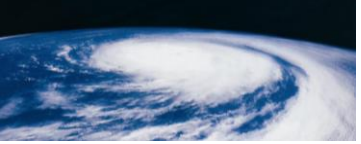
- Sustainable Solutions: Green and Resilient

Focus on High Density Counties...

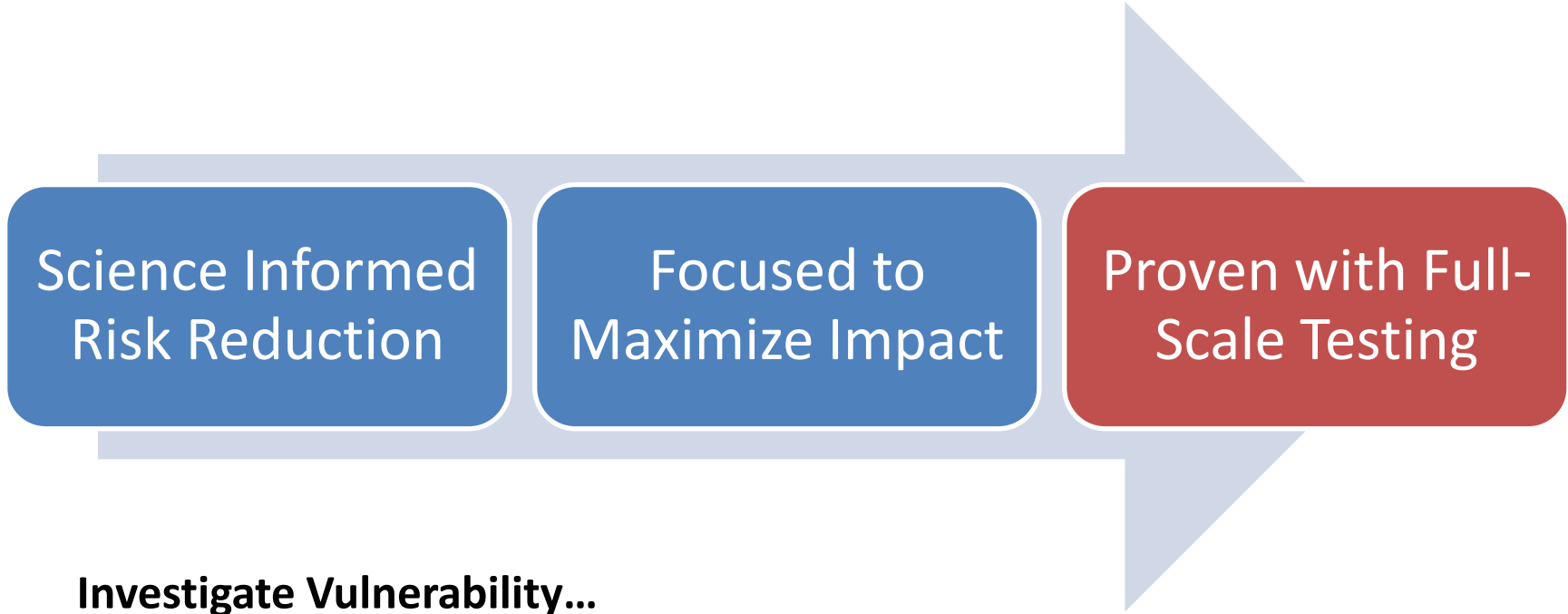
- Lower Catastrophe Loads on State Economies

Best use of Dollars for Investment

- Targeted for highest likelihood of benefit



Evolving to a Strategic Mitigation Approach



Investigate Vulnerability...

- Full-Scale, Controlled, and Repeatable Tests
- Better Building Codes and Enforcement

Motivate Consumers to Take Action...

- Visual Education of Building Performance
- Prove Effectiveness to the Consumer

Propagate Better Building Practice...

- Foster Competition to Provide Resilient Homes



In a Strategic Approach: Details Matter!





Effective Mitigation for Everyone

ONE MITIGATION SOLUTION: VORTEX SUPPRESSION



Dominant Roof Cover Damage

Wind Testing Confirms Post-Storm Observations

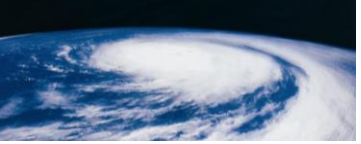


- 75% of hurricane footprints have wind speeds less than a category 2 storm
- Predominant failure mode: High frequency but low severity roof cover damage
- **Majority of roof cover damage initiated at leading edges and ridges which is a precursor of roof cover peeling**



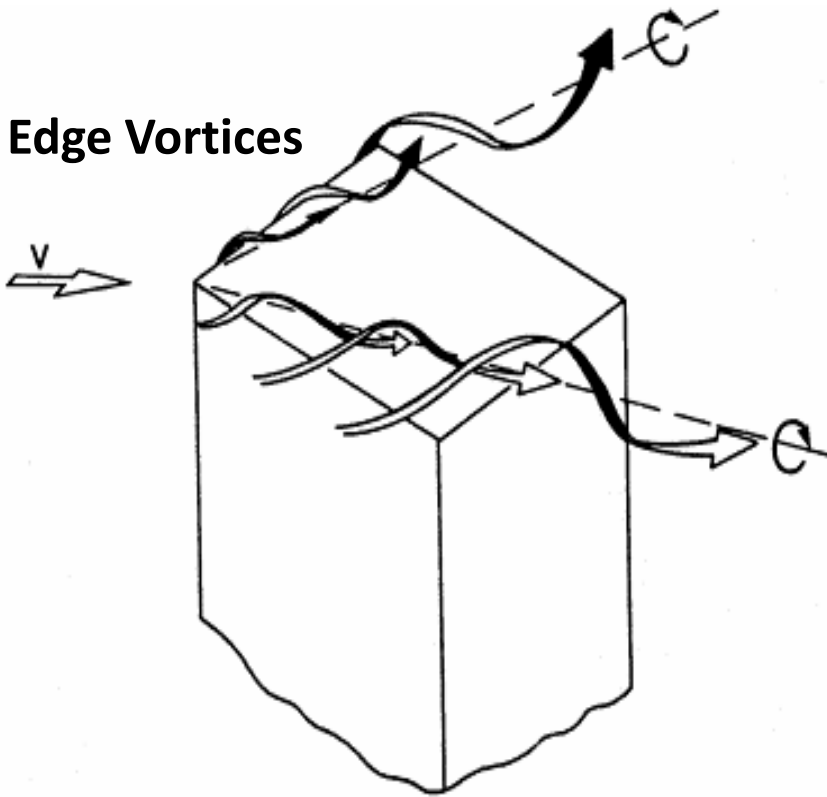
Residential Roof Damage Patterns





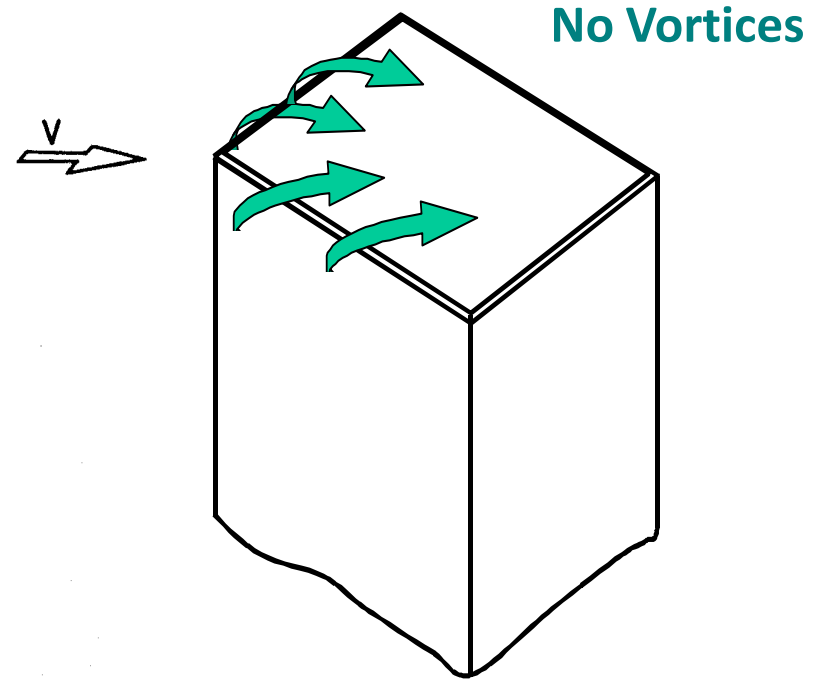
Vortex Suppression Reduces Loads on Roofs

Conventional Roof Edge



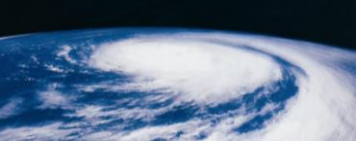
Uplift
(Shown in wind tunnel tests)

AeroEdge™ Aerodynamic Roof Edge



Reduced Uplift
(Proven in Wind Tunnel Tests)

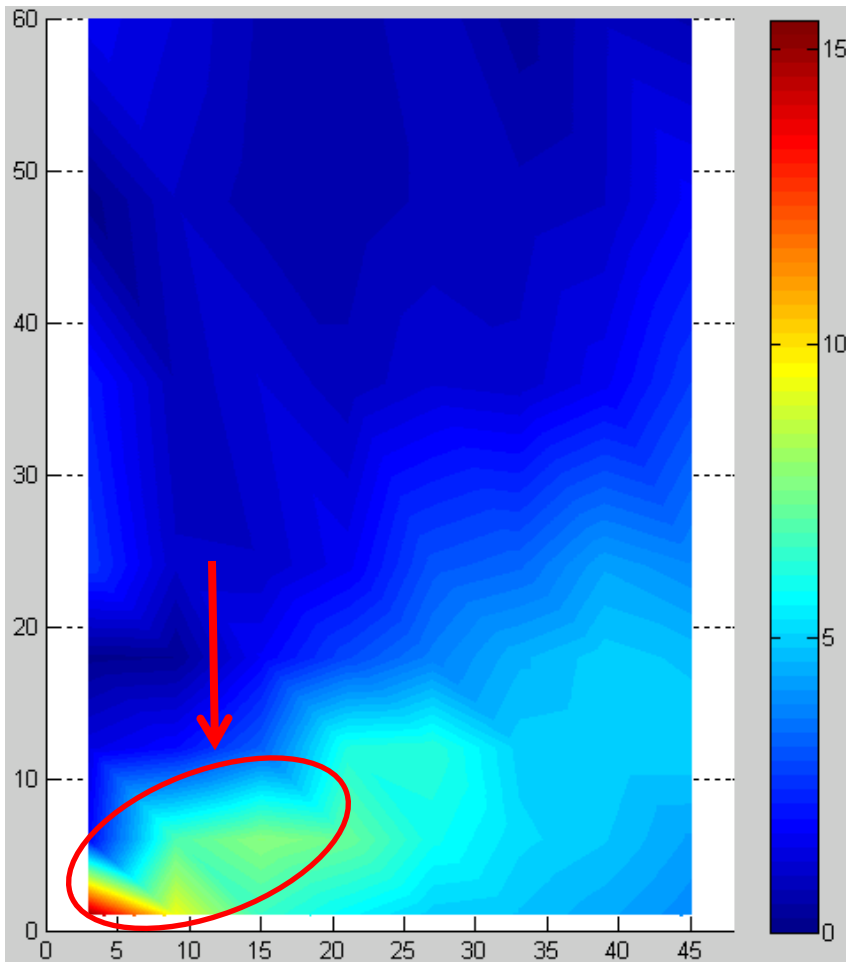
AeroEdge
vs
Conventional



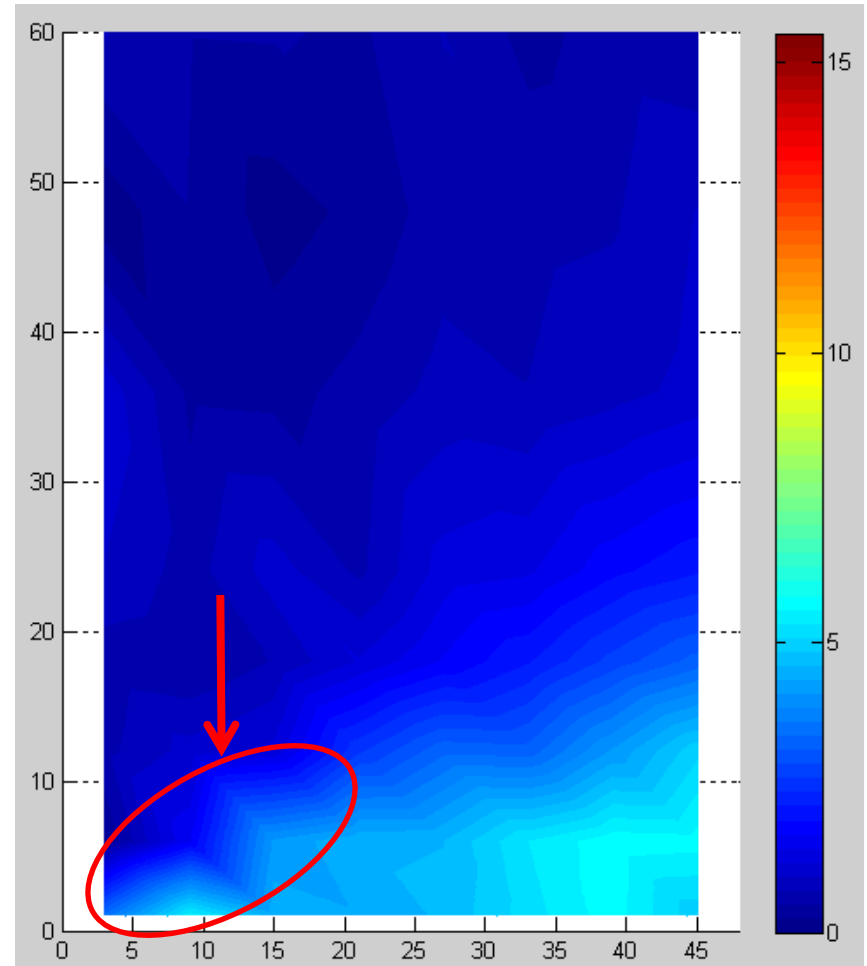
Real Data Proves AeroEdge is Effective

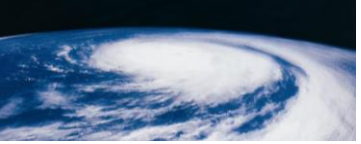
Leading edge loads reduced by factor of 3...

No Mitigation: Peak Load is 15



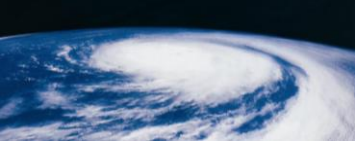
Aero-Edge Mitigation: Peak Load is 5





Are there Cost Effective Retrofits for Existing Buildings? Yes!





Summary

- Policy leaders need to align the efforts of all stakeholders toward mitigation action
 - It's critical to overcome the mismatch in investment time-horizons
- By evolving to a strategic mitigation approach:
 - Increased policyholder safety from assessments
 - Increased solvency for the insurance industry
 - Better utilization of public and private resources toward effective mitigation measures
- AeroEdge™ is one example innovation in mitigation
 - Public universities are brain-trust of hurricane science and wind engineering talent
 - Public investments will not only drive more innovation but also build an industry capable of delivering **Effective Mitigation for Everyone**