



# **FLORIDA HURRICANE LOSS MITIGATION PROGRAM**

## **2010 ANNUAL REPORT**

*December 27, 2010*

Prepared by:  
Florida Division of Emergency Management

Charlie Crist  
Governor

David Halstead  
Director

# Table of Contents

Executive Summary.....	Page 2
Introduction.....	Page 5
Section I ..... Program Status	Page 7
Section II ..... Project Selection	Page 22
Section III ..... Recommendations	Page 24
Appendix A ..... State Fiscal Year 2009-2010 Projects	Page 26
Appendix B ..... State Fiscal Year 2008-2009 Projects	Page 28
Appendix C ..... Tallahassee Community College 2009-2010 Annual Report Mobile Home Tie-Down Program	Page 30

## Executive Summary

As populations continue to increase in Florida's coastal regions where the threat is highest, so does the possibility for even greater destruction. The risk of destruction can be devastating for entire communities and for the insurance industry, which ultimately must pay for a significant portion of the incurred losses. Such damages also affect local, state and even federal governments who have to struggle with the impact on their populations and economies. For these reasons, it is essential to reduce the destruction expected from future events.

In the aftermath of Hurricane Andrew, the Florida Legislature created a series of tools to stabilize the economy and insurance industry. These tools consist of the following programs:

- Citizens Property Insurance Corporation (formed from a merger of the Florida Windstorm Underwriting Association and the Florida Residential Property and Casualty Joint Underwriting Association), the state insurance plan for residents unable to obtain a conventional homeowners insurance policy;
- The Florida Hurricane Catastrophe Fund, section 215.555, F.S., a re-insurance fund established to limit insurance exposure after a storm; and
- The Bill Williams Residential Safety and Preparedness Act, which in 1999 created the Hurricane Loss Mitigation Program, section 215.559, F.S., with an annual appropriation of \$10 million. The statutory intent of this program is to direct funds to be used for,

“programs to improve the wind resistance of residences and mobile homes, including loans, subsidies, grants, demonstration projects, and direct assistance; cooperative programs with local governments and the federal government; and other efforts *to prevent or reduce losses or reduce the costs of rebuilding after a disaster*” (emphasis added).

This document satisfies the subsection 215.559 (7), F.S., requirements to provide a report accounting for activities undertaken through the Hurricane Loss Mitigation Program. Based on section 215.559, F.S., \$3 million from the Hurricane Loss Mitigation Program is directed to retrofitting existing public facilities to enable them to be used as public shelters. An annual report of the state's shelter retrofit program, the Shelter Retrofit Report, is prepared annually and submitted to the Governor and the Legislature pursuant to section 252.385, F.S.

The remaining funds are currently managed by the Division of Emergency Management (Division). The \$7 million, which the Division administers with input of the statutorily created Residential Construction Mitigation Program (RCMP) Advisory Council, is allocated as follows:

- 40 percent, or \$2.8 million is used to mitigate future losses for mobile homes – Tallahassee Community College;
- 10 percent, or \$700,000, is directed to the Type I Center of the State University System dedicated to hurricane research - Florida International University;

- 50 percent, or \$3.5 million is directed to programs developed by the Division with advice from the Advisory Council to help prevent or reduce losses or to reduce the cost of rebuilding after a disaster.

The effective period of this report is January 1, 2010 through December 31, 2010. During this time, the Hurricane Loss Mitigation Program (also known as the Residential Construction Mitigation Program or RCMP) continued to support projects that have proven successful in mitigating disasters. The reporting period stretches over parts of two State Fiscal Years, 2009-2010 and 2010-2011. As of December 31, 2010, SFY 2009-2010 projects were closed; SFY 2010-2011 projects are currently underway.

The Division, based on recommendations of the RCMP Advisory Council (FS 215.599 (5), F.S.) and guided by a set of project selection criteria and guiding principles, has embarked on a number of tangible mitigation efforts and educated Floridians on reducing the effects of disasters on their property. These activities are divided into subject categories including:

1. Residential Mitigation Retrofit Program: Through partnering with local housing authorities and non-profit organizations, the Division has been able to promote wind mitigation and provide hazard mitigation upgrades to residents. Funded activities include retrofits, inspections, and construction or modification of building components designed to increase a structure's ability to withstand hurricane-force winds.
2. Public Outreach: The RCMP aggressively promotes outreach on wind mitigation and wind mitigation related areas. In addition to general outreach, the program continues to explore research hurricane loss devices and explore techniques to validate and enhance existing building codes. Training, such as that regarding wind mitigation techniques, products and procedures continues to educate the public and professionals working in relative industries. Enhancing on-line wind mitigation information and increasing the visibility of mitigation programs keeps citizens up to date and better informed on mitigation options.
3. Mitigation Planning: The RCMP continues to encourage and increase integration of wind mitigation into comprehensive planning and local mitigation plans.
4. Program Administration: A small amount of program resources are dedicated to managing the RCMP.
5. Manufactured Homes: Tallahassee Community College is given an annual allocation to provide tie-downs to manufactured homes in communities throughout the State of Florida.
6. Hurricane Mitigation Research: Administered by Florida International University through an annual allocation, the Division continues to support hurricane loss reduction devices and techniques.

Projects represented in this report, for each State Fiscal Year, were selected by a panel appointed by the Division. The selection process was competitive and projects were ranked based on published

scoring criteria.

Many program milestones and achievements were reached during the calendar year including, but not limited to:

- The Residential Construction Mitigation Program is making a critical contribution to the State of Florida by ensuring that the built environment will have a better chance of surviving future impacts from hurricanes.
- The RCMP provided over \$793,366 in residential retrofits during fiscal year 2009-2010. The Division contracted with eight recipients, in which a total of 104 homes received RCMP funding for mitigation activities. Counties that benefitted from this funding included **Duval, Escambia, Palm Beach, Okaloosa, Santa Rosa, St. Lucie.**
- The Mobile Home Tie-Down program continues to provide funding to mobile home communities located throughout the state of Florida. Last fiscal year, Tallahassee Community College provided tie-downs and retrofitted over **1,969** manufactured homes in twelve communities within seven different counties.
- The format and content of Notice of Funding Availability (NOFA) for SFY 2010-2011 RCMP funding was streamlined for improved usability. The NOFA also included a performance measurement plan for projects awarded. The performance measurement plan allows for recipients and RCMP staff to determine what measures will be taken into consideration to accurately determine project and program performance. The incorporation of the performance management plan is to allow for distinct, quantifiable and measurable outcomes to support the RCMP program.
- RCMP staff provided technical assistance to State Fiscal Year 2010-2011 funded RCMP projects performing retrofits within the State of Florida. The training covered a vast amount of information concerning retrofitting homes, proper grant management and appropriate reporting procedures. The training was positively received and appreciated by the funded recipients.

The Division is proud of the accomplishments of the programs and projects funded under the Florida Hurricane Loss Mitigation Program. In its twelve years of financial and program support for innovations and research in residential mitigation techniques, the Division has sponsored proven solutions and has helped to change the mitigation culture of many Floridians. The Hurricane Loss Mitigation Program provided the seed money to develop and test the current curriculum used to train contractors and builders on cost-effective mitigation measures. It provided funding to develop the materials used to inform and educate the public on the value of residential construction mitigation. The program has also provided funding to assist individuals in mitigating their homes against future storm events. The Division looks forward to continuing to encourage and promote effective residential construction programs and practices.

## Introduction

In 1999, the Florida Legislature passed the Bill Williams Residential Safety and Preparedness Act, creating the Hurricane Loss Mitigation Program (section 215.559, F.S.) with an annual appropriation of no less than \$10 million. These funds are derived from the Florida Hurricane Catastrophe Fund (section 215.555, F.S.), and are provided to the Florida Division of Emergency Management for administration. Section 215.559, F.S., establishes minimum funding levels for specific areas and creates an Advisory Council to make recommendations on developing programs.

Based on section 215.559, F.S., \$3 million is used for retrofitting existing facilities that are used as public shelters. These funds are managed by the Division of Emergency Management. The annual report of this program, the Shelter Retrofit Report, was prepared for the Governor and Legislature. The Shelter Retrofit Report provides the Department's list of facilities recommended to be retrofitted using local, state and federal funds. The report also prioritizes facilities with specific projects and cost estimates which, when funded, will improve relative safety and reduce the emergency shelter space deficit of the state. For more information on the shelter retrofit program, visit <http://www.floridadisaster.org/Response/engineers/index.htm>.

The \$7 million which the Florida Division of Emergency Management administers with the input of the statutorily created Advisory Council is referred to as the Residential Construction Mitigation Program or RCMP and is allocated as follows:

- 40 percent, or \$2.8 million is used to mitigate future losses for mobile homes;
- 10 percent, or \$700,000, is directed to the Type I Center of the State University System dedicated to hurricane research - Florida International University;
- 50 percent, or \$3.5 million is directed to programs developed by the Division with advice from an Advisory Council to help prevent or reduce losses or to reduce the cost of rebuilding after a disaster.

Subsection 215.559 (7), F.S., requires the Division to provide the Speaker of the House of Representatives, the President of the Senate, and the Majority and Minority Leaders of the House of Representatives and the Senate with an annual report on programs implemented under the Hurricane Loss Mitigation Program, referred to within the Division as the Residential Construction Mitigation Program or RCMP, The annual report must include: 1) a full report of program activities; 2) an accounting of program activities; and 3) an evaluation of these activities.

This report is intended to meet the mandate of section 215.559(7), F.S. It includes the following sections:

- Section I: This section addresses the legislatively mandated requirement to provide a full program report of activities during the period covering January 1, 2010 through December 31, 2010. Activities are addressed for two State Fiscal Years, 2009-2010 and 2010-2011. Spreadsheets detailing annual project awards and allocations for State Fiscal Year 2009-2010 and 2010-2011 are

included as Appendix A and Appendix B.

**Section II:** This section includes a discussion on the selection and evaluation of projects. Projects were submitted to the Division and selected based on designated criteria.

**Section III:** Recommendations for program enhancement are included in this section. Both short term recommendations (through State Fiscal Year 2010-2011) and long-term recommendations are provided.

## **Section I: Program Status**

This report covers portions of two state fiscal years, State Fiscal Year 2009-2010 and State Fiscal Year 2010-2011. Due to the timing of this report, projects identified in the 2010-2011 State Fiscal Year, though underway, are not completed. During each state fiscal year, \$3 million in HLMP funds were provided to the Division of Emergency Management to help reduce the state's hurricane shelter deficit. This statutorily designated funding provides communities with resources to complete shelter retrofit projects, including those that are not eligible under traditional federal mitigation grant programs, such as emergency power generators and pre-wire connections. These projects assist communities in meeting national guidelines for shelter space.

Pursuant to Section 215.559, Florida Statutes, the Residential Construction Mitigation Program annually makes available funds that shall be used for programs "to improve the wind resistance of residences and mobile homes, including loans, subsidies, grants, demonstration projects, and direct assistance; cooperative programs with local governments, the Federal Government other state agencies, universities and non-profit organizations; and other efforts to prevent or reduce losses or reduce the cost of rebuilding and mitigation."

Grants are awarded for a one-year performance period. Eligible parties submitted multiple applications, however; no single application received an award in excess of \$100,000. A panel consisting of four individuals evaluated and scored submitted proposals based on several criteria including, but not limited to, the RCMP need and priority, benefits to the program and consistency with State/Local emergency management plans. However, consistent with statutory requirements 40 percent, or \$2.8 million continue to be used to mitigate future losses for mobile homes – administered by Tallahassee Community College and 10 percent, or \$700,000, was directed to Florida International University to conduct ongoing hurricane research.

### **State Fiscal Year 2009-2010**

Florida International University and Tallahassee Community College both received their annual allocations for the State Fiscal Year 2009-2010. A total \$2,368,893 was advertised in the Notice of Funding Availability (NOFA) for RCMP competitive funding. The RCMP project solicitation period ended August 17, 2009 during which 26 proposals were received. On September 25, 2009, the RCMP Programmatic Committee met, scored and ranked all proposals. As a result of its scoring, 19 projects were recommended for funding.

During State Fiscal Year 2009-2010, projects were presented within the framework of the four subject categories advertised in NOFA. This categorization serves the purpose of ensuring that in the allocation of limited funds particular subject areas receive funding commensurate with their level of interest during each competitive cycle. The following projects were funded and completed in the categories outlined and defined below.

#### **I. Residential Mitigation Retrofit Program (Retrofit Program):**

The RCMP offered grants to Low to Moderate-Income (LMI) homeowners to undertake retrofit measures needed to strengthen their homes and lessen damages from high-wind storms. All work

performed was completed using the Blueprint for Safety Building Techniques. Fully licensed contractors that attended and successfully completed the Blueprint for Safety Class performed all retrofit work.

Individual grants up to \$100,000 each were awarded to nine recipients to retrofit LMI communities including: **Town of Century, Northeast Florida Community Action Agency, Community Action Committee Program, Inc., St. Lucie County, REBUILD Northwest Florida, Inc., Department of Financial Services, Okaloosa County, Santa Rosa County, and City of Jacksonville.** Projects utilized annual State Housing Initiatives Partnership program (SHIP), Hazard Mitigation Grant Program (HMGP), Home Investment Partnerships (HOME) and/or Community Development Block Grant (CDBG) allocations to leverage RCMP funds. A total of \$793,366 was spent on mitigation upgrades for approximately 104 residences.

## **II. Comprehensive Planning:**

The RCMP provides funding for projects that encourage and/or increase integration of wind mitigation into comprehensive planning, Florida Building Code and local mitigation plans. Plan integration is important to the success of mitigation efforts throughout the Florida.

**Field Evaluation of the Thermal Performance and Energy Efficiency - University of Florida** – A total of \$78,138 was utilized by the University of Florida for this project. Research at the University of Florida (1) developed comparative field data in an occupied home, to quantify the energy usage before and after the installation of a closed-cell spray-applied polyurethane foam layer to the roof deck in a vented attic configuration, (2) monitored the field performance of closed-cell spray-applied polyurethane foam and temperature, humidity and moisture movement and (3) evaluated performance of a radiant barrier – fire protection system to increase thermal efficiency of the closed-cell spray-applied polyurethane foam layer.

## **III. Program Implementation and Enhancement:**

Projects that enhance program effectiveness, measurement and attainment of project goals and recommendations for improvement.

**Florida Mitigation Portal – Florida State University** – A total of \$97,625 was given to Florida State University to implement a mitigation portal for Florida citizens. The final product included a database that identifies, catalogs, and analyzes state and federal programs/projects related to risk and mitigation.

### **Home Hardening Incentives Program: Innovative Finance Concepts for Wind – Florida State University**

The Storm Risk Center utilized \$75,000 to conduct research into the feasibility of Voluntary Home Hardening Bonds and Voluntary Home Hardening Loans for use in Florida. The University produced a report detailing the comparison of various possible sources of financial return for homeowners to undertake cost-effective mitigation measures.

#### **IV. Priority Areas**

Five priority areas were identified in the 2009-2010 Notice of Funding Availability including:

- A) Projects which implement wind mitigation/projects as identified in the State Hazard Mitigation Plan (SHMP)/ applicable Local Mitigation Strategy (LMS) and are clearly identified as projects/programs which can be initiated and completed within the grant contract period.
- B) Projects, which will provide for product testing, measurement or enhancements, which will improve, wind mitigation in residential structures.
- C) Projects that will address effectiveness of wind mitigation programs, projects and measures as specifically related to Florida landfalling hurricanes since the 2004 season and related or subsequent wind events.
- D) Projects, which promote residential wind mitigation through the code, trade or construction industries, including related or affiliated programs and organizations.
- E.) Projects which provide for public awareness about RCMP and its programs including support and maintenance of the RCMP website and on-line applications, including the Mitigation Incentives Database.

The following projects were submitted and funded under the priority areas identified above.

**Early Warning Outdoor Weather Siren System – City of Naples** – The City of Naples was allocated \$23,250 to implement an early warning system to prevent loss of life and reduce property damage and its associated costs due to localized extreme weather, lightning and associated wind events. Prior to implementation of the project, the City of Naples decided not to proceed and forwarded a letter of withdrawal to the Division.

**Development of Unified Engineering Basis for the Assessment of Florida Residential Building Envelopes to Severe Wind-Driven Rain- University of Florida** – The University utilized \$98,332 of RCMP funding for the implementation of this project. Researchers at the University of Florida (1) designed an experimental testing apparatus that simulates water ingress through vertical, inclined and horizontal building planes in order to recreate wind-driven rain intrusion through windows, wall, soffits and roof systems, (2) applied wind-driven rain load scenarios to the various building mockups to identify the critical parameters, (3) developed a unified method to determine the rate of liquid water accumulation into the building interior and (4) used those results to assess the vulnerability of residential construction to wind-driven rain based on climatology of wind and wind-driven rain intensity in Florida.

**Mitigation of Hurricane Damage on Residential Structures - Florida Institute of Technology** – A total of \$100,000 was spent by Florida Institute of Technology (FIT) to conduct research on the

mitigation of hurricane damage on residential structures by direct measurement and characterization of hurricane wind loads on residential structures using a wireless sensor networking system. The university conducted this research by upgrading the existing wireless house pressure system with current technology and validating the performance characteristics of the wireless system in a laboratory controlled hurricane. FIT proposed to validate the information obtained from the wireless system and data collection software used on houses registered with the Florida Coastal Monitoring Program. However, due to the lack of severe storm occurrence this past season, no data was available.

**Mitigation of Damage on Aluminum Structures through Improved Connections – Florida State University** – Florida State University utilized \$99,858 to execute a series of experiments to test the strength of various aluminum connections. During the experiments, hurricane-resistant connections were identified. The project detected the strength of various aluminum connections and estimated system-level benefits of using the improved connections.

**Minding Your Business – Florida State University** – A total of \$97,335 of RCMP funding was awarded and expended by Florida State University to identify and promote mitigation techniques and strategies that can strengthen individual businesses, both before and after disaster strikes. Minding Your Business is a centralized portal that provides the business community with real time information through a virtual link to the State Emergency Operations Center and ESF 18 (Business and Industry), making them a full partner in the state’s response and recovery operation. The university also enhanced emergency business mitigation strategy development among the business community through a series of web-based facilitated training and planning tools. Important resources provided through the MYB site includes showcasing best business practices that Florida businesses have experienced with mitigation or other lessons as they came through disaster events and provide direct access to information on disaster-related funding, business loans, mitigation and insurance incentives, etc., targeted to the affected business community.

**Residential Construction Mitigation Program for the Disabled – Miami Dade Community Action Agency** – The recipient exhausted \$100,000 of RCMP funding this year by installing approximately 29 non labor-intensive shuttering systems, affordable high impact windows, and other required measures for building envelope protection. These systems were placed in the homes of very low-income, seniors and disabled individuals receiving SSI or other disability pensions throughout Miami Dade County.

## **V. Manufactured Homes**

**Mobile Home Tie-Down Program** – A total of \$2,800,000 was statutorily allocated to continue the Mobile Home Tie-Down Retrofit Program, which is administered by the **Tallahassee Community College (TCC)**. Based on legislative direction the Division of Emergency Management provided this funding directly to Tallahassee Community College. During fiscal year 2009-2010, a total of 1,969 homes were retrofitted in twelve mobile home communities located in seven counties throughout the state of Florida. A copy of the 2009-2010 annual report prepared by TCC can be found in Appendix C.

## VI. Hurricane Mitigation Research

**Full Scale Simulation of Wind, Water and Structural Interaction** – A total of \$700,000 was statutorily allocated to **Florida International University** to continue various research activities using the Wall of Wind full-scale testing apparatus. Research during 2009-2010 focused on several areas. Five major efforts were identified by the International Hurricane Research Center team in the areas of structural mitigation analysis, socioeconomic research and data dissemination to stakeholders and education/outreach.

**1) Wind Effects on Photovoltaic Panels Mounted on Residential Roofs (PIs: Dr. Arindam Gan Chowdhury and Norman Munroe)** - This research measured wind loads exerted on a roof-mounted photovoltaic panel in the 6-fan Wall of Wind (WoW) facility at Florida International University, in order to provide guidelines for PV installations in high-wind regions. The research focused on developing test-based data on roof mounted PV panels, which will allow designers to develop economical and safe strategies for mitigating wind damage to PV panels and the roof membrane and members supporting such panels. The study considered PV modules mounted on large-scale models of typical buildings, with module tilt angles parallel to the roof surface, 15 ° from the horizontal, and 45° from the horizontal. The wind-induced forces in the roof system by wind loading on the PV module were measured using six degree-of-freedom load cells. The study quantified the significant lateral and uplift forces acting on panels and their supporting systems.

**2) Wind Pressure and Resistance Evaluation for Hip and Ridge Tiles and Attachments (PI: Girma Tsegaye Bitsuamlak)** - Wind-induced external and background pressures on tiles installed on a low-rise building model with gable roof were investigated by using a full-scale wind testing facility generically named Wall of Wind (WoW). An optimal low-rise building test models with dimensions 2.74 m (9 ft) long, 2.13 m (7 ft) wide, and 2.13 m (7 ft) high that provided aerodynamically sound data were designed and constructed based on preliminary experimental as well as computational studies. The test building investigated at the Wall of Wind had interchangeable gable roofs with three different slopes (2:12; 5:12 and 7:12). For the field tiles, three different profiles namely high, medium and low (i.e. flat) profiles were considered. For the ridge three different tiles namely rounded, three-sided and V-shape tiles were considered. Effect of weather block on the background pressure developing between the tiles and the roof deck was examined. In addition to the experimental work, computational work was carried out to explain physics of the flow in more detail and generate aerodynamic data for those cases not considered during the experimental part of the study due to resource limitation. It also assessed holistically the structural resistance of a ridge system that comprises ridge tiles, ridge support member, and connectors/adhesives that closely resembles the loading of roofs ridges in real world by developing novel test procedure. A finite element model to characterize the resistance of ridge systems was developed.

**3) Combining Experimental and Survey Evidence for Promoting Hurricane Risk Mitigation Efforts and Disaster Preparedness (PI: Pallab Mozumder)** – This project investigated perceptions of hurricane risk and coastal vulnerability and preferences for facilitating mitigation and enhancing coastal resilience among Florida experts and decision makers (state, regional, county and municipal government personnel) through a series of focus-group interviews, an online survey and a policy

experiment with hurricane simulation. Analysis of survey responses from 476 Florida experts and decision makers, revealed the following important core findings:

- A large majority of Florida experts and decision makers surveyed (80%) is highly supportive of increased setbacks along shorelines; 78% is highly supportive of stricter density restrictions in low-lying coastal areas; 72% is highly supportive of new elevations standards; and 66% is highly supportive of strengthening building codes, given the risks posed by global climate change and sea-level rise.
- A large majority (75%) is highly supportive of expanded professional training to integrate mitigation techniques and code-plus standards; 71% is highly supportive of greater investment in public education/outreach to increase code compliance and home safety.
- A large majority (77%) vote yes in support of continuing the My Safe Florida Home Program (MSFH).
- A large majority (77%) is highly supportive of an interest-free loan initiative for households (statewide) to promote hurricane mitigation; 62% is highly supportive of longer amortization periods for mitigation loan repayments.
- A large majority (81%) is in favor of combining wind and flood insurance into a comprehensive insurance program for hurricane prone coastal areas.
- A majority (63%) is highly supportive of allowing insurance companies to set policy premiums at a level that more closely reflects the risk exposure of individual properties.
- A large majority (92%) is highly supportive of requiring insurance companies to have adequate capital to cover the liabilities associated with their policies.
- A large majority of Florida experts and decision makers surveyed (74%) thinks that global climate change is real, and impacts are being felt today; only 53% thinks that we will find solutions to mitigate the adverse impacts.
- A majority (63%) thinks that more destructive hurricanes as a result of global climate change is highly likely, and 62% thinks that this shift toward stronger storms poses a highly credible economic threat to the State of Florida.
- A large majority (73%) is highly supportive of establishing new criteria and standards for all significant public investment projects to reduce risks to global climate change and sea-level rise.
- A majority (66%) thinks that accelerating sea-level rise is highly likely, and 63% thinks that sea-level rise poses a highly credible economic threat to the State of Florida.
- A majority (60%) vote yes in support of creating a ‘Florida Adaptation Fund’ to mobilize resources and to support proactive measures focused on increasing coastal resilience and minimizing the adverse impacts of global climate change.
- A majority (64%) thinks that greater private property loss is highly likely; 62% thinks that damage to infrastructure (transportation, water management systems, etc.) is highly likely.
- A large majority (80%) thinks that higher insurance premiums are highly likely.

We also discussed implications of our findings in the context of facilitating mitigation and enhancing resilience in Florida and beyond.

**4) *An Archive and Internet Distribution System for Airborne LiDAR Data (PI: Keqi Zhang)*** - Recent advances in airborne Light Detection and Ranging (LiDAR) technology allow rapid and inexpensive measurements of the Earth’s surface topography over large areas. This technology is becoming the primary method for generating high-resolution digital terrain models which are

essential for predicting sea level rise impacts, storm surge and freshwater flooding. Florida Division of Emergency Management (FDEM) has been tasked by the Governor to collect LiDAR data for coastal areas vulnerable to storm surge flooding at a cost of \$25 million. The International Hurricane Research Center and Geographic Information System and Remote Sensing Laboratory at Florida International University have worked with FDEM to develop the internet GIS system to distribute the LiDAR data. The raw LiDAR data were divided into 5000 ft × 5000 ft tiles to facilitate the data downloading. The current LiDAR data set includes 21,283 tiles of point measurements which cover the majority of Florida's coastline. Two web sites <http://mapping.ihrc.fiu.edu/fldemlidar/> and <http://digir.fiu.edu/Lidar/lidarNew.php> based on ArcGIS Server and Google Map were built to distribute the LiDAR data. In addition to LiDAR data, tile polygon, major roads, and high-resolution satellite imagery were added to the internet GIS map to help users to search the appropriate dataset. The LiDAR distribution system has been visited more than 600 times since March 2010.

**5) Education and Outreach Programs to Convey the Benefits of Various Hurricane Loss Mitigation Devices and Techniques (PI: Erik Salna)** - This project disseminated the research findings resulting by promoting hurricane loss mitigation and the objectives of the RCMP. Erik Salna organized the *Wall of Wind Mitigation Contest (WOW! Contest)* through this project. Teams comprised of high school students brainstormed innovative mitigation concepts within a well defined problem scope developed with IHRC academia. These concepts were then tested at the IHRC as part of the contest competition. The students were tasked to benefit society as a whole by developing hurricane mitigation techniques that would lead to human safety, property loss reduction, insurance cost reduction, and a "culture of preparedness" for natural disasters. This learning experience also involved problem solving, teamwork, creativity and the subjects of meteorology, mathematics, engineering, architectural design and business entrepreneurship. Fifty high school students from five South Florida high schools participated in the contest. The four high schools that participated from Miami-Dade County were Miami Sunset Senior High School, Miami Coral Park Senior High School, Robert Morgan Education Center and Maritime and Science Technology High School (MAST Academy). Coconut Creek High School participated from Broward County. Each high school entered two teams, with 3 to 7 students per team, for a total of ten teams in the contest. The following media outlets attended and covered the contest: NBC 6-TV, CBS 4-TV, WPLG Ch. 10, ABC-TV, WSVN Ch. 7 FOX-TV, WSFL Ch. 39 CW-TV, Sun-Sentinel.com, and Florida International University News.

Erik Salna also partnered with Roslyn Viterbo, FPDM, Emergency Management Coordinator, Department of Emergency Management, Miami-Dade County and Melanie Abril, Visitor Experience Facilitator Miami Science Museum to develop, plan, coordinate and facilitate *Hurricane Science & Preparedness Day* at the Miami Science Museum on June 19<sup>th</sup>. This public education event showcased hurricane science, mitigation, preparedness and safety and *Wall of Wind* research and demonstrations. Hurricane science experts from the National Hurricane Center, Miami National Weather Service and the International Hurricane Research Center gave special presentations throughout the day in the planetarium. IHRC *Wall of Wind* researchers provided demonstrations with the *Small Scale 6-Fan Wall of Wind*. As a special mitigation learning activity for families, children constructed small model homes throughout the day and actually had them tested by the *Small Scale 6-Fan Wall of Wind*. Other special interactive exhibits and demonstrations included air cannon missile tests shooting pieces of wood at metal shutters, tropical weather briefings and a TV weather studio. The following media outlets attended and covered the contest: NBC 6-TV, CBS 4-

TV, WPLG Ch. 10 ABC-TV and the Miami Herald Newspaper.

Erik Salna partnered with Broward and Miami-Dade public school systems to discuss the development of distance learning tools that would connect high school science students and teachers with IHRC academia and showcase IHRC research, including the *Wall of Wind* and the *Wall of Wind Mitigation Contest*. These distance learning tools would build a pool of students motivated to attend Florida International University and go into IHRC / Engineering.

Erik Salna partnered with Dorothy Miller, Assistant Director of Emergency Management for Florida International University and developed and presented educational hurricane / mitigation seminars for FIU faculty and staff. The seminars covered lightning and rip current safety, hurricane science, forecasting, family preparedness, business preparedness, current mitigation technologies available to homeowners and renters, lessons learned from previous storms, storm surge, evacuations and generator safety. It was suggested that all campus departments review and update their specific disaster / hurricane plan, and know exactly where and how they will get emergency information. An all-hazards approach was taken when discussing the FIU plan for preparedness, response and recovery not only for hurricanes, but for any emergency or disaster event on campus. All seminar attendees were also informed and educated about the role and importance of Community Emergency Response Teams.

Consultant Erik Salna partnered with Anjila Lebsock, Emergency Management Coordinator, Miami-Dade Department of Emergency Management and Dorothy Miller, Assistant Director of Emergency Management for Florida International University, to start the development of a Community Emergency Response Team (CERT) at Florida International University. Anjila Lebsock, Emergency Management Coordinator, Miami-Dade Department of Emergency Management agreed to facilitate, supply and fund the creation of the first FIU CERT Team. Efforts to create the CERT team will begin in 2011.

## VII. Other Funded Projects

In addition to the projects listed above in their relative categories, the Division also advertised three separate Requests for Proposals (RFP). The following projects received funding and conducted the activities described below:

- **Federal Alliance For Safe Homes, Inc. – *Blueprint for Safety Training***

During FY 2009-2010 FLASH conducted seven (7) in-person trainings in seven (7) regions within the State of Florida utilizing the “Blueprint for Safety” guidelines as the primary basis of the course. The purpose of this training course is to provide “accurate, current and reliable information” concerning the methods and techniques of making homes more disaster-resistant in compliance with the Florida Building Code. The course provided contractors and inspectors seven (7) hours of continuing education in general and wind mitigation. The course provided the following topics:

  1. Improving the strength of your roof deck attachment
  2. Creating a secondary water barrier to prevent water intrusion

3. Improving the survivability of your roof covering
4. Bracing gable-ends in your roof framing
5. Reinforcing roof-to-wall connections
6. Upgrading exterior wall opening protections
7. Upgrading exterior doors

Upon completion of the instruction, a thirty-one (31) question, open book examination was administered to all contractors and inspectors in attendance of the course. Certificates were provided to individuals who successfully passed the examination.

- **Institute for Business and Home Safety (IBHS) - *Website Update Services for Residential Construction Mitigation Program***

IBHS updated the Hurricane Retrofit Guide (HRG) located on the floridadisaster.org website. Information concerning state-of-the-art wind mitigation has been updated in accordance with the Florida Building Code. The new update provided solutions for problems within the site, incorporated a frequently asked questions page, and added a new “Ask the Mitigation Expert” question and answer forum. IBHS worked with Division technical staff to ensure all information and updates were necessary to increase the performance and benefits of the website.

- **Applied Research Associates, Inc. - *Development of Wind Speed and Terrain Based Guidelines for Wind Borne Debris Protection in Florida***

ARA conducted research concerning the cost effectiveness of wind borne debris protection. The research has considered the effects of coastal terrain, as well as terrains that have a vast amount of trees, on loss relativities of single-family houses. This project also addressed the issues related to wind-driven rain and its impact on improved window protection systems.

## **State Fiscal Year 2010-2011**

Pursuant to Section 215.559, Florida Statutes, RCMP makes funds available annually to pursue the following objectives: to improve the wind resistance of residences and mobile homes through subsidies, grants, outreach, demonstration projects, direct assistance; to educate persons concerning the Florida Building Code cooperative programs with local governments and the federal government; and to prevent losses or reduce the cost of disasters and reduce the cost of rebuilding after a disaster. Florida International University and Tallahassee Community College received their annual allocations for the State Fiscal Year 2010-2011 as indicated in 215.559, F.S. A total of \$2,467,389 was advertised in the Notice of Funding Availability (NOFA) for RCMP competitive funding.

The format of the SFY 2010-2011 NOFA was streamlined for readability, and in addition, provided an application template that specifically detailed all information required for scoring. The RCMP project solicitation period ended August 16, 2010 during which 21 proposals were received. Four individuals outside of the Division were recommended to review and

independently score all applications. On August 31, 2010, the RCMP Programmatic Committee met, scored and ranked all proposals. As a result of its scoring, 17 projects were recommended for funding.

During State Fiscal Year 2010-2011, the project categories were slightly modified to provide a more detailed description and give specific types of projects to be funded within each category. The NOFA also included a Performance Measurement Plan requirement which will allow applicants to track and review the progress of funded projects. Each project will be measured on efficiency, management and effectiveness. These measures will determine whether activities are conducted in a cost efficient manner, managed properly and achieved the expected results. The plan serves as a mechanism to evaluate project performance, as well as overall performance for the RCMP. Projects were presented within the framework of the three application categories advertised in the NOFA. The categories, along with projects funded this fiscal year, are outlined and defined below.

## **I. Residential Mitigation Retrofit Program (Retrofit Program)**

Through partnering with local housing authorities and non-profit organizations, the Division has been able to promote wind mitigation and provide hazard mitigation upgrades to residents. The Division encourages recipients to leverage RCMP dollars with other funding sources, which allows homeowners to receive far more upgrades and protection for their homes. Activities funded within this category include retrofits, inspections, and construction or modification of building components designed to increase a structure's ability to withstand hurricane-force winds. All activities must comply with the Florida Building Code. Retrofit projects will undergo a benefit-cost analysis conducted by State staff prior to construction. The following projects were allocated funding under this category:

**City of Tamarac, Home Rehabilitation/Disaster Mitigation Program** **\$100,000**

RCMP funding will be used to wind mitigate 8-10 homes in Tamarac, FL purchased under the Neighborhood Stabilization Program (NSP), which will be used as match towards this project.

**REBUILD Northwest Florida** **\$100,000**

REBUILD will perform systematic retrofits to homes throughout Escambia and Santa Rosa Counties. An estimate of fifty (50) homes are to be completed utilizing RCMP as matching grant funds for the Hazard Mitigation Grant Program (HMGP).

**City of Fort Pierce** **\$100,000**

The applicant will perform systemic retrofits on fourteen (14) homes within the City of Fort Pierce. RCMP funding will be leveraged with State Housing Initiatives Partnership (SHIP) funds.

**University of Florida** **\$ 75,000**

UF will perform a systematic retrofit on a home in Alachua County. Instruments will be provided on the home to test monitor and test its energy use and temperature.

**Hendry County Board of County Commissioners** **\$100,000**  
Hendry County will provide wind retrofit measures, such as impact resistant windows and doors, to be installed in fifteen (15) homes of low income elderly and disabled individuals in Hendry County.

**Northeast Florida Community Action Agency** **\$100,000**  
The applicant will retrofit up to ten (10) homes in Sherwood Forest Front Porch Community in Jacksonville. Match will be provided with Weatherization Assistance Program (WAP) funding.

**City of Jacksonville** **\$100,000**  
The City of Jacksonville will perform seven (7) retrofits in accordance to the Florida Building Code for low income residences. RCMP funding will be leveraged with Community Development Block Grant (CDBG) and SHIP funding.

**I Hope, Inc.** **\$ 47,176**  
The applicant proposes to install shutters, which were donated by Home Depot, to a minimum of thirty (30) low-to-moderate income homes in Immokalee, FL.

**Retrofit Southwest Florida, Inc.** **\$100,000**  
Applicant proposes to implement a program similar to Rebuild NW FL. Retrofit measures will be implemented on 9-10 homes in Collier County and surrounding areas.

## **II. Public Outreach**

The RCMP aggressively promotes outreach on wind mitigation and wind mitigation related areas. In addition to general outreach, research continues to explore hurricane loss devices and techniques to validate and enhance existing building codes. Training such as that regarding wind mitigation techniques, products and procedures continues to educate the public and professions working in relative industries. Enhancing on-line wind mitigation information and increasing the visibility of mitigation programs keeps individuals up to date and better informed on mitigation options. Much of the Division's outreach activities, including its effort to educate the public on mitigation, through the work of organizations such as the Federal Alliance for Safe Homes (FLASH), are designed to improve the market for mitigation. The following public outreach projects received funding for State Fiscal Year 2010-2011:

**University of Florida** **\$ 99,937**  
Information will be produced from the results of a retrofit project. UF will partner with FLASH to provide online photos and graphics of the project. Also, two workshops, online materials and promotional activities regarding residential retrofitting will be provided with this funding.

**Florida State University, Center for Disaster Risk Policy** **\$98,035**  
The proposal places emphasis on conducting outreach, training and developing partner quick cards for use of the Disaster Contractors Network and Minding Your Business

portals; they will also update license and contractor rules and regulations. Information will be readily available in one centralized location.

**Department of Community Affairs, Division of Housing and Community Development \$100,000**  
Mitigation and Code Training will be conducted for the Construction Industry, Building Department and Design Professionals. The applicant proposes to conduct eight (8) training sessions dealing with wind mitigation issues at no cost to the attendees.

### **III. Mitigation Planning**

The RCMP continues to encourage and/or increase integration of wind mitigation into comprehensive planning and local mitigation plans.

**Florida State University, Florida Catastrophic Storm Risk Management Center \$100,000**  
This project will help local governments design financing programs for residential wind mitigation and home hardening projects. This concept makes wind mitigation more affordable and encourages more homeowners to mitigate their homes.

**Florida State University \$94,419**  
The applicant proposes to provide an assessment of retrofit options for aluminum screen enclosures to assist in mitigation planning.

**Columbia County \$ 45,200**  
Residential Structure Vulnerability Assessment will be conducted on structures in Columbia County.

**Calhoun County \$ 45,200**  
Funding will be used to conduct a vulnerability assessment of the structures within the area, produce a land use map and incorporate the information into the local mitigation strategy.

**Liberty County \$ 33,900**  
Funding will be used to conduct a vulnerability assessment of the structures within the area, produce a land use map and incorporate the information into the local mitigation strategy.

### **IV. Manufactured Homes**

**Mobile Home Tie-Down Program** – A total of \$2,800,000 was statutorily allocated to continue the Mobile Home Tie-Down Retrofit Program, which is administered by the **Tallahassee Community College (TCC)**. Based on legislative direction the Division of Emergency Management provided this funding directly to Tallahassee Community College. As of December 2010, a total of two mobile home communities have received funding, providing tie-downs to 248 manufactured homes.

## V. Hurricane Mitigation Research

Six major efforts have been identified by International Hurricane Research Center team for RCMP FY 10-11 funding in the areas of structural mitigation analysis, socioeconomic research and data dissemination to stakeholders and education/outreach:

### 1) **Building Envelope Performance under Hurricane Conditions and Mitigation Methods to Promote Sustainable Buildings (PI: Dr. Arindam Gan Chowdhury)**

- Building envelope protects the occupants from ambient and extreme environmental loads (such as high wind and rain during hurricanes), regulates these loads for building operation, and helps maintain safe, comfortable, and stable indoor environmental conditions. A sustainable building envelope performs these functions while being: (1) resilient: maintaining its integrity in extreme events such as hurricanes and recovering from these with minimum efforts, (2) durable: having an extended service life and maintaining its functions with minimum need for maintenance and repair, (3) energy efficient: conserving non-renewable energy and profiting from renewable energy during the building service life, and (4) cost effective. Lessons from the past have also shown that technologies and strategies that aim at improving one envelope function may be detrimental to other performance functions. There has been limited research based on a “systems approach” to evaluate the repercussions of extreme events on the envelope system performance and on that of the overall building. The proposed research will allow testing of building envelope systems to understand and characterize their structural and hydrothermal performance under varied ambient and extreme climatic conditions, measure the performance recovery capacity of the envelope after extreme events, provide reliable data to improve envelope materials and technologies, develop remediation strategies, and enhance building codes. Thus the project will benefit the State of Florida and other coastal states by: (1) developing the scientific underpinnings of performance-based building envelope design, (2) achieving more resilient and energy-efficient building envelopes resulting in sustainable communities with enhanced human safety. The following deliverables have been established for this effort:

- Development of benchmark test-based data on building envelope performance under pre-, in-, and post-hurricane conditions.
- Development of preliminary guidelines to enhance resiliency, durability, energy efficiency, and cost effectiveness of building envelope systems.
- Development of preliminary guidelines to benefit codes and standards by adding new provisions related to design and installation of building envelope systems.

### 2) **Wind Pressure and Resistance Evaluation for Overhanging Roof Edges (PI: Girma Tsegaye Bitsuamlak)**

- In recent hurricane seasons such as 2004 and 2005, few structural problems were observed with buildings designed and constructed according to recent building codes in contrast to the building envelope damage. In areas affected by Hurricane Charley, for example, damage to roof coverings and rooftop equipment was the leading cause of building performance problems (Smith 2009). Membrane lifting and peeling because of failure of metal edge flashings was also observed. In many instances, the metal edge flashing failure was caused by gutter blow-off (Smith 2009). Overhanging roof edges (gutters), rooftop equipments and vents (goose neck, turbine, soffit, gable

end etc) has fallen outside the radar of wind engineering research in the past. *“Unfortunately, there is virtually no guidance for gutter wind-resistance design...Development of a gutter wind design guide is critically needed.”* (Smith 2009). In a recent Wall of Wind workshop conducted at Florida International University both the Miami Dade Building Compliance Office and the National Roofing Contractors Association identified research on wind-resistant Gutters to be a priority among roofing-related wind research. (Gascon, Graham 2009). Therefore, the purpose of the proposed study is to evaluate wind pressure coefficients for most commonly used types of gutters in Florida under different hydro-aerodynamic (wind + rain) conditions. This will benefit the state of Florida by developing safe design criteria by providing proper design wind loads for overhang edges thus reducing significant gutter damages whose failure usually cascade to other roof failures and becomes a source of wind born-debris that affect other buildings in the vicinity. The objectives of the proposed study include:

- Evaluation of pressure coefficients useful for design of wind-resistant Gutter Systems commonly used in Florida. Realistic high resolution wind pressure distribution data using proper turbulent and large size wind field at the Wall of Wind will be produced. Four common type of gutter systems in Florida will be investigated under different wind and wind-driven rain as well as cover (i.e. to protect leafs filling the gutters) conditions. Effects of wind directionality and roof slopes to which the gutters will be attached will also be investigated.
- Preliminary design guide lines on the connection of gutters to the roof system
- Computational aerodynamic mitigations by optimizing the aerodynamic shape of gutters and their location vis-à-vis the roof edge, both to reduce high wind pressures on the gutter and at eave of the roof.

**3) Phase II: Combining Experimental and Survey Evidence for Promoting Hurricane Risk Mitigation Efforts and Disaster Preparedness (PI: Pallab Mozumder)** – Hurricane-induced losses are skyrocketing. On the other hand, investment in hazard risk mitigation activities is highly efficient from the viewpoint of economic returns. Given that, the relevant questions are what factors affect homeowner’s mitigation behavior and how to promote this behavior to hedge against catastrophic hurricanes? Other words, how to design public policy that can influence behavior in scaling up hurricane risk mitigation. The proposed research addresses these issues. With funding from DEM in 2009-10, FIU has developed a research framework that involves combining survey and experimental evidence for promoting hurricane risk mitigation efforts and disaster preparedness. In 2009-10, the university developed a pilot survey instrument and experimental protocols that have been tested with a small set of respondents. In 2010-11, FIU proposes to conduct full scale implementations of the survey instrument and the experimental set-up. This research would provide a set of policy-relevant recommendations for promoting hurricane mitigation behavior. Key objectives of the study include:

- Understanding household risk perceptions of vulnerability against hurricanes.
- Understanding household preferences for different sets of incentives in promoting hurricane risk mitigation behavior.
- Exploring policy implications to influence household behavior in scaling up hurricane risk mitigation.

**4) An Archive and Internet Distribution System for Airborne LiDAR Data (PI: Keqi Zhang) -**

Airborne light detection and ranging (LiDAR) technology allows accurate and inexpensive measurements of topography. The Florida Division of Emergency Management (FDEM) has collected billions of LiDAR measurements for coastal areas in the state that are vulnerable to storm surge flooding. The IHRC has managed the large volume of data and created an interactive internet GIS web site (<http://mapping.ihrc.fiu.edu/>) to distribute LiDAR data with the funding from FDEM in the 2009-2010 fiscal year. However, the LiDAR data provided by the FLDEM is in LAS binary formats. Although the LAS files facilitate the distribution and exchange of LiDAR data by using binary format, the files cannot be read by the GIS software such as ArcGIS which performs spatial analysis such as the impacts of sea level rise and storm surges using LiDAR data. Therefore, it is necessary to convert points in binary formats into regularly spaced grids which can be loaded into ArcGIS for users to analyze the LiDAR data. In 2010-2011, we propose to convert both unfiltered and filtered LiDAR points into ArcGIS grids to facilitate the usage of this valuable data set by government agencies, private sectors, and the public. Objectives of the proposed research include:

- Develop a tool to convert irregularly spaced LiDAR points into ArcGIS Grids. Since there are large amounts of LiDAR point binary tile files, an automatic or semi-automatic interpolation tool needs to be developed to process the data.
- Convert both unfiltered and filtered LiDAR points for each tiles into ArcGIS Grids
- Create metadata for LiDAR grids in terms of data processing procedure
- Add the ArcGIS grids into the LiDAR distribution website.

**5) Education and Outreach Programs to Convey the Benefits of Various Hurricane Loss Mitigation Devices and Techniques (PI: TBA)** - Activities will build on the foundation of work initiated during previous grant periods. Research findings resulting from this grant will be showcased and shared with others as a way of promoting hurricane loss mitigation and the objectives of the RCMP. To achieve these goals, the scope of work for this project consists of the following tasks:

**Educational Outreach:**

- *Wall of Wind Mitigation Contest:* The IHRC will develop and coordinate the 2<sup>nd</sup> Annual Wall of Wind Mitigation Contest. Teams comprised of high school students will brainstorm innovative mitigation concepts within a well defined problem scope developed with IHRC academia. These concepts will then be tested at the IHRC as part of the contest competition. The research is expected to benefit society as a whole by developing hurricane mitigation techniques that will lead to human safety, property loss reduction, insurance cost reduction, and a "culture of preparedness" for natural disasters. This educational activity may also aid in developing a trained workforce. Contest participation will involve South Florida high school level students. South Florida media and special guests will be invited to attend and participate in the contest, allowing for the opportunity for IHRC to showcase its educational projects, research and Wall of Wind.
- *On-line Mitigation Education Resource:* The IHRC will assist with improving, expanding and updating the Wall of Wind Mitigation Contest web page on the IHRC website. This web page will serve as an online resource providing contest information, mitigation education and showcase Wall of Wind research. Researchers will partner with the Broward and Miami-Dade public school systems to provide and share the web page information to their high school students.
- *Hurricane / Mitigation Seminars:* The IHRC will partner with FIU Emergency Management

and coordinate hurricane/mitigation seminars, targeting faculty and staff, on the FIU Main Campus and the Biscayne Bay Campus. These seminars will cover hurricane science, preparedness and safety, review current mitigation technologies available to homeowners and renters and highlight on-going research with the Wall of Wind.

#### **Community Partnerships:**

- *Hurricane Science, Mitigation & Preparedness Day:* The IHRC will partner with Miami-Dade County Emergency Management and the Miami Science Museum to develop Hurricane Science, Mitigation & Preparedness Day at the Museum. This public education event will showcase hurricane science, mitigation, preparedness and safety and Wall of Wind research and demonstrations.

#### **Targeted Outreach Events:**

- *National Hurricane Survival Initiative:* The IHRC will collaborate with the National Hurricane Survival Initiative and their annual media conference focused on the latest Mason Dixon Poll on public hurricane preparedness.

## **Section II: Project Selection**

### **Project Selection**

For the State Fiscal Year 2009-2010 program cycle, staff of the RCMP, based on the success of programs and input from the RCMP Advisory Council in previous state fiscal years, developed a roster of projects based on a competitive process. The project review committee used the scoring system, as identified in each NOFA, with emphasis on vulnerabilities and risks as well as consistency with the SHMP and appropriate LMS. All applications are scored by each reviewer independently. Through consensus, the committee totals and averages the project scores to determine ranking. Funding priority goes to the project with the overall highest score. Other projects are prioritized in descending order. Applications that receive less than 300 points were not considered for funding.

The listing of ranked projects was presented to the RCMP Advisory Council for review and comment. Ultimately, a final list of recommended projects is forwarded to the Division Director for approval and funding. A copy of the scoring criteria for State Fiscal Year 2010-2011 can be found in Appendix D.

### **The RCMP Advisory Council**

The RCMP Advisory Council and its participating entities are established in Section 215.559, F.S. The participating entities recommend potential members to the Director of the Division of Emergency Management for approval. These members serve until replaced by the participating entity. The following representatives are currently on the SFY 2010 council.

**State Fiscal Year 2010-2011  
Member Roster**

<b>Organization</b>	<b>Representative</b>
Florida Association of Counties Board of Directors	Commissioner Gordon Goodin
Federation of Manufactured Home Owners Of Florida Incorporated	Mr. Jim Newman
Florida Insurance Council Inc.	Mr. Peter Forester
Florida Home Builders Association	Mr. Larry Strickland
Office of the Chief Financial Officer	Mr. John Venable
Florida Manufactured Housing Association	Mr. Ed Sims

The RCMP Advisory Council meets a minimum of once during the state fiscal year. The Advisory Council addresses a range of considerations, including:

- a status review of the current year projects, and
- the preparation of a roster of recommended projects for funding in the next fiscal year to be presented to the Director of the Division of Emergency Management for approval based upon the program criteria.

Other business related to the management of specific projects is also discussed.

As was the intent of the enabling statute through the broad representation of the Advisory Council's members, the RCMP Advisory Council helps ensure that projects selected for funding represent the full community of interests involved in hurricane loss reduction, in support of the project selection criteria and guiding principles discussed above.

## Section III: Recommendations & Observations

It is essential that the RCMP – both the specific projects and the overall program – address the requirements of section 215.559, F.S., “*to prevent or reduce losses or reduce the costs of rebuilding after a disaster*” (emphasis added). To actively reduce the exposure of insured property in the state, it is critical that the program be administered efficiently and effectively, fund innovative and cost-effective projects, and reflects the input of a broad community of organizations active in the field of hazard mitigation.

### Short Term Recommendations and Observations:

The short term recommendations listed below form the core of an action plan for program staff in the day to day management of the RCMP. Central to these recommendations is the implicit understanding that progress must be made in each area listed by the end of next fiscal year. Continued improvement in project management and program accountability remains a focal point. With these considerations in mind, the following recommendations are provided:

1. Develop a monitoring schedule based on relative monitoring risks and conduct monitoring visits utilizing other Division staff, as appropriate.
2. Revisit the competitive processes in place to ensure prospective projects are properly scored and awarded in a timely manner.
3. Conduct Benefit-Cost Analysis on wind retrofit projects to ensure projects are cost effective and project benefits are quantifiable.
4. Develop and encourage a method for Recipients to report on insurance reductions obtained by homeowners receiving mitigation upgrades through the RCMP.
5. Continue to implement the performance measurement framework to ensure projects

### Long Term Recommendations and Observations:

The following goals are focused on ensuring that as the RCMP continues to mature, its efforts are both measurable and defensible, and that through these efforts, hurricane loss exposure is reduced. The following recommendations address these broader concerns:

1. Expand the network of partners working with the RCMP, including subgrantees and contractors, to take advantage of innovations in project identification and implementation.
2. Capture and obtain information from RCMP retrofit projects through cost-avoidance reports to help quantify the benefits of mitigation and determine whether projects were effective in mitigating against a disaster event.

3. Where possible, leverage RCMP funds with other funds from federal, state, local government or private sources.
4. Continue an aggressive approach at identifying non-regulatory market based solutions to promoting mitigation, including the reexamination of supporting mitigation loans.
5. Continue to promote a competitive grant process that encourages innovative solutions for residential construction mitigation.
6. Continue to document the success of the mitigation innovations funded under the RCMP and promote their continuation through resources of allied programs.

# Appendix A

## Hurricane Loss Mitigation Program Activities for State Fiscal Year 2009-2010

### Shelter Retrofit Program:

Partnering Grantee	Project Description	Award Amount
Department of Community Affairs	Retrofit of Public Shelters	\$3,000,000.00
<b>SUBJECT CATEGORY ALLOCATION:</b>		<b>\$3,000,000.00</b>

### Residential Mitigation Retrofit Program:

Partnering Grantee	Project Description	Award Amount
Town of Century	Low-to-moderate income home retrofits	\$49,999.15
St. Lucie County Board of County Commissioners	Low-to-moderate income home retrofits	\$94,436.99
Rebuild Northwest Florida	Low-to-moderate income home retrofits	\$100,000.00
Northeast Florida Community Action Agency	Low-to-moderate income home retrofits	\$88,690.46
My Safe Florida Home (DFS)	Low-to-moderate income home retrofits	\$61,114.20
Community Action Program Committee, Inc. (Okaloosa)	Low-to-moderate income home retrofits	\$99,658.66
City of Jacksonville, Housing and Neighborhoods Dept.	Low-to-moderate income home retrofits	\$100,000.00
<b>SUBJECT CATEGORY EXPENDITURES:</b>		<b>\$593,899.46</b>

### Comprehensive Planning:

Partnering Grantee	Project Description	Award Amount
University of Florida	Field Evaluation of the Thermal Performance and Energy Efficiency of Closed-cell	\$78,138.56
<b>SUBJECT CATEGORY ALLOCATION:</b>		<b>\$78,138.56</b>

### Program Implementation and Enhancement:

Partnering Grantee	Project Description	Award Amount
Florida State University	Florida Mitigation Portal	\$97,625.00
Florida State University	Home Hardening Incentives Program: Innovative Finance Concepts for Wind	\$75,000.00
<b>SUBJECT CATEGORY EXPENDITURES:</b>		<b>\$172,625.00</b>

**Priority Areas:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
City of Naples	Early Warning Outdoor Weather Siren System	\$23,250.00
University of Florida	Development of Unified Engineering Basis for the Assessment of the Resistance	\$98,332.75
Miami-Dade County Community Action Agency	Wind resistant Florida residential construction	\$100,000.00
Florida Institute of Technology	Mitigation of Hurricane Damage on Residential Structures: Direct Management	\$100,000.00
Florida State University	Mitigation of Damage on Aluminum Structures through Improved Connections	\$99,858.00
Florida State University	Minding Your Business	\$97,335.00
Community Action Program Committee, Inc.	RCMP Shuttering Program-Santa Rosa County	\$99,467.52
REBUILD Northwest Florida	Rebuild Northwest Florida Residential Weatherization/Wind Retrofit Grant Program	\$100,000.00
<b>SUBJECT CATEGORY EXPENDITURES:</b>		<b>\$594,993.27</b>

**Additional Projects:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
Federal Alliance For Safe Homes, Inc.	BluePrint for Safety Training	\$100,000.00
Institute for Business and Homes Safety	Hurricane Retrofit Guide Website Updates	\$94,975.00
Applied Research Associates, Inc.	Effects on wind-driven rain and tree and coastal terrain on hurricane induced losses	\$294,541.00
<b>SUBJECT CATEGORY EXPENDITURES:</b>		<b>\$489,516.00</b>

**Manufactured Homes:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
Tallahassee Community College	Installed tie-down retrofit devices on manufactured homes	\$2,800,000.00
<b>SUBJECT CATEGORY EXPENDITURES:</b>		<b>\$2,800,000.00</b>

**Hurricane Mitigation Research:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
Florida International University	Hurricane loss reduction devices and techniques	\$390,730.76
<b>SUBJECT CATEGORY EXPENDITURES:</b>		<b>\$390,730.76</b>

**TOTAL EXPENDITURES (STATE FISCAL YEAR 2009-2010)****\$8,119,902.59**

Projects in red withdrew their funding and are not calculated in the overall total.

# Appendix B

**Hurricane Loss Mitigation Program Activities for  
State Fiscal Year 2010-2011**

**Shelter Retrofit Program:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
Department of Community Affairs	Retrofit of Public Shelters	\$3,000,000.00
<b>SUBJECT CATEGORY ALLOCATION:</b>		<b>\$3,000,000.00</b>

**Residential Construction Program Retrofits:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
City of Tamarac	Low-to-moderate income home retrofits	\$100,000.00
REBUILD Northwest Florida	Low-to-moderate income home retrofits	\$100,000.00
City of Fort Pierce	Low-to-moderate income home retrofits	\$100,000.00
University of Florida	Low-to-moderate income home retrofits	\$75,000.00
Hendry County Board of County Commissioners	Low-to-moderate income home retrofits	\$100,000.00
Northeast Florida Community Action Agency	Low-to-moderate income home retrofits	\$100,000.00
City of Jacksonville	Low-to-moderate income home retrofits	\$100,000.00
I Hope, Inc.	Low-to-moderate income home retrofits	\$47,176.00
Retrofit Southwest Florida, Inc.	Low-to-moderate income home retrofits	\$100,000.00
<b>SUBJECT CATEGORY ALLOCATION:</b>		<b>\$822,176.00</b>

**Mitigation Planning:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
Florida State University	Assessment of retrofit options	\$94,419.00
Columbia County	Residential structure vulnerability assessment	\$45,200.00
Calhoun County	Vulnerability Assessment and land use mapping	\$45,200.00
Liberty County	Vulnerability Assessment and land use mapping	\$33,900.00
Florida State University	Home Hardening Projects	\$100,000.00
<b>SUBJECT CATEGORY ALLOCATION:</b>		<b>\$318,719.00</b>

**Public Outreach:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
University of Florida	Dissemination of Research regarding Structural and Energy Retrofits	\$99,937.00
Florida State University	Mitigation portals for Disaster Contractors Network and Minding Your Business	\$98,035.00
Department of Community Affairs	Mitigation and Code Training	\$100,00.00
<b>SUBJECT CATEGORY ALLOCATION:</b>		<b>\$297,972.00</b>

**Manufactured  
Homes:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
Tallahassee Community College	Installed tie-down retrofit devices on manufactured homes	\$2,800,000.00
<b>SUBJECT CATEGORY ALLOCATION:</b>		<b>\$2,800,000.00</b>

**Hurricane Mitigation Research:**

<b>Partnering Grantee</b>	<b>Project Description</b>	<b>Award Amount</b>
Florida International University	Hurricane loss reduction devices and techniques	\$700,000.00
<b>SUBJECT CATEGORY ALLOCATION:</b>		<b>\$700,000.00</b>

**TOTAL AWARD AMOUNT (STATE FISCAL YEAR 2010-2011)                      \$7,938,867.00\***

*\*Additional projects will be awarded through the RFP process and has yet to be allocated.*

# Appendix C

## Tallahassee Community College Mobile Home Tie-Down Program

Annual Report 2009-2010

**2009-2010 ANNUAL REPORT**  
**TALLAHASSEE COMMUNITY COLLEGE**  
**MOBILE HOME TIE DOWN PROGRAM**

The program for this fiscal year was completed the end of April with 1969 mobile home owners participating. The popularity of the program continues to grow as more mobile home communities across the State are nominated to participate. Successful programs were completed in twelve mobile home communities in seven counties across the State.

Community nominations were again solicited throughout the previous fiscal cycle and thirty-six communities' submitted nominations and letters of intent to be accepted into the program. Tallahassee Community College (College) and the program contractor, Windstorm Mitigation, Inc. (WMI) responded to hundreds of telephone calls and e-mails during the nomination process. As is the case every year, critical assistance and advisement was provided by the Federation of Mobile Home Owners (FMO) in sending out our Community Selection Guide. We sincerely appreciate the annual efforts put forth by the FMO in advancing the awareness of this program.

Site visits commenced during September 2009 and twenty-five communities were evaluated by the end of October 2009. WMI staff completed the following steps during the evaluation visits.

- Interviews with the management and/or homeowners association representatives.
- Soil compaction tests throughout the community
- Visual inspection of all homes within the community.

Following the inspection process, rejection letters were sent to eleven communities that did not meet the criteria of the program and follow-up calls were made by WMI explaining the failure of these communities to qualify. These communities either were lacking in insurable value or had significant physical obstructions that made it impossible to accomplish the scope of work mandated by the program.

The Selection Committee met on October 8, 2009 at the College and fourteen communities were chosen to participate in this year's program activities. Six communities subsequently dropped out of the program due to either economic reasons or lack of resident participation. Four new communities were then graded and selected to participate in the program. Overall, twelve communities located in seven different counties were completed during the fiscal year ending June 30, 2010.

Work commenced in mid-November and 1,969 homes were retro-fitted with new foundation systems by the end of April 2010. During the calendar year of the program WMI staff conducted fifteen resident meetings with attendance at those meetings exceeding thirteen hundred citizens. As always, an integral part of the meetings were segments on resident safety and firm instructions to the homeowners to follow all instructions of emergency management officials during a natural disaster or windstorm experience.

With the every changing status of insurance underwriting in the State of Florida, we have noticed an increase in the number of calls from residents of mobile homes throughout the calendar year. Measures will be taken to address some of these resident's concerns with insurance underwriting standards prior to the start of next year's program.

Please refer any questions relating to this report or the program in general to:

Amy Bajoczky

Tallahassee Community College

444 Appleyard Drive

Tallahassee, Florida 32304

850/201-8025

**COMPLETED COMMUNITES FOR MOBILE HOME TIE DOWN ENHANCEMENT PROGRAM**

2009-2010

PARK NAME	TOTAL/70%	ADDRESS	COUNTY	CITY	CONTACT	PHONE #	COMMENTS
Country Lakes Village	248/174	5700 Bayshore Rd	Manatee	Palmetto	MARY BAUER	941-531-3610	Completed - 191 Homes
Fisherman's Cove	74/62	36100 Docksides Place	Pasco	Dade City	Vivian Striano	352-567-9307	Completed - 62 Homes. 15 new homes, 8 mortared, 2 vacant lot
Friendly Shores HOA	37/26	2201 S Ridgewood Ave	Volusia	Edgewater	Doris Magrich	dorisonorman@msn.com	Completed - 26 Homes 3 vacant lots, 4 mortared
Horizon Village	558/391	9200 Littleton Rd	Lee	North Fort Myers	JAMES LOGAN	(239) 997-1140	Completed - 512 Homes
Pinewood Village	211/148	10441 Gandy Blvd	Pinellas	st. petersburg	John & Pam Beaten	727-577-9440	8 vacant lots, 5 new units, 14 mortared.
Riverside Oaks	66/46	27205 Joans Loop Rd	Charlotte	Punta Gorda	carole howes	941-505-2018/941-637-8359	Completed -- 173 HOMES Completed - 48 Homes. 15 units mortared, 16 units retrofitted by FEMA in 2004
Shady Lane Village	137/96	15666 49th St N	Pinellas	Clearwater	SUE HEATH	727-536-9548	Completed - 109 Homes. 5 vacant lots, 2 new units, 6 mortared
Senate Manor Estates	282/197	6905 Clemens blvd	Pasco	Port Richey	Joseph Musumeci	727-868-2900	Completed - 247 Homes
Sugar Creek MHP	238/167	10265 Ulmerton Rd	Pinellas	Largo	ROBERT CICCI	727-812-2280	Completed - 184 Homes. 1 vacant lot, 5 new units, 6 mortared
Moultrie Oaks	178/125	245 Wildwood Dr.	St. Johns	St. Augustine	John Staschiak	904-797-7493 - moaks@att.net	Completed - 131 Homes
Country Lakes II	224/157	6201 US 41 North	Manatee	Palmetto	Eugene Jambor	941-776-7401	Completed - 208 Homes
Honeyvine Park	101/71	10365 Ulmerton Rd.	Pinellas	Largo	Robert Szulwach	585-313-3918	Completed - 78 Homes