

I/UCRC Wind Hazard and Infrastructure Performance (WHIP) Center

Center Director's Report: Feb. 1, 2019 – Jan. 31, 2020 (Year 1)

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Introduction

The WHIP Center was established in 2019 which is first year of the Center. It is a collaborative Center between the two institutions, Texas Tech University and Florida International University. Florida Institute of Technology is an affiliate institute with Texas Tech.

Six companies are members of the Center. These members are:

- AIR-WORLDWIDE – A Verisk Business, Boston, MA
- Berkshire Hathaway – Specialty Insurance, Boston, MA
- GAF Materials, Parsippany, NJ
- Permasteelisa Group, Italy
- SCOR – The Art & Science of Risk, Chicago, IL
- StateFarm – Insurance, Bloomington, IL

The three academic institutions (including one affiliate) and six companies provide abundant synergy to pursue industry selected research projects. Of the six companies, three represent insurance industry, one is risk a management company, one is roofing material company and one is building cladding specialty company.

Florida International University has the Wall of Wind (WOW) experimental facility that can test building and components from model to full scale at wind speeds up to 150 mph. This facility is also a part of NSF funded NHERI Infrastructure nationally shared facility. Texas Tech University has conducted wind engineering experimental and analytical research on effects of wind on low buildings since 1970. The research facilities at Texas Tech include VorTECH (simulating tornado), 200-m tower for atmospheric measurement, Stick-net for spatial wind measurement in hurricane, Doppler radars, and others. The faculty and facilities at these two institutions compliment to pursue a variety of research in wind hazard and infrastructure performance.

Current Status of the Center

The Center has a good start during the year 1. The inaugural IAB meeting was held immediately after the award from NSF. The IAB members representing companies took active part in both annual and semi-annual meetings. Significant actions at the meetings suggests positive status of the health of the Center and indicates where growth and improvements are needed.

Inaugural IAB Meeting on March 21-22, 2019

At this meeting eight company representatives, two NSF representatives, four Texas Tech Administrators (UPC members), fourteen faculty members and eleven research personnel and students

participated. Being the first meeting held soon after the awards by NSF, IAB members were allowed to participate without the signed Membership Agreement.

The meeting went very smoothly with IAB selecting six projects out of twelve projects presented by the faculty in closed door meeting. The IAB also selected IAB Chair (Peter Dailey of RMS) and IAB Chair-elect (Kevin McGrath of GAF) for a two-year term.

Subsequent to the meeting, two companies pulled out from the Center because of major change in company administration and disagreement with the indemnification clause of the Membership Agreement. Result of the pulling out of two companies was the reduction of projects funded by IAB from six to four. The IAB agreed of this reduction through an e-mail ballot. It is realized that the number of companies left in the Center is minimum. A concerted effort is made to increase company membership as discussed in the section of *Targeted Growth*.

Semi-Annual IAB Meeting on October 23-24, 2019

For this meeting invitations were sent to 21 companies, 4 government agencies, 3 industry associations, and 2 institutions to observe and participate in the open part of the meeting. In addition to IAB members, FIU administrators, faculty and students, representatives from 6 companies, 2 government agencies, and 2 universities participated in the meeting. This participation by non-members allowed them to understand formulation of WHIP Center and potential for joining the Center.

The proceedings at this meeting included progress reports of the four funded projects, discussion of overarching subject area of Climate Change and its impact, and articulation by IAB members and participants of the type of research they would like the Center to pursue.

Targeted Growth

Concerted efforts are made to publicize the WHIP Center and to influence companies to join the Center. As mentioned earlier companies were invited to semi-annual IAB meeting. Also, personal visits to three companies were made (one is planned in January 2020). Outreach efforts included presentations and sessions at national and international conferences, e.g. FLASH, ICWE 15, ILS, and ASCE and news stories in NHERI and institutional communications.

Two institutions, University of Alabama and University of Connecticut, were invited to semi-annual IAB meeting. University of Connecticut has Eversource Center dealing with electric power. The institutional site along with power industry can be a complimentary research area to WHIP Center. University of Alabama has structural testing laboratory with strong floor. Structures of wood and steel can be tested in the laboratory. Wood and steel industry can make buildings more resilient with innovative structural system. These two sites with companies in different research focus can complement current research in WHIP Center. The institutions are waiting for the new solicitation from NSF.

Moving forward I anticipate one or two companies and one federal agency to join the WHIP Center in year 2 (2020), though none of them have committed yet. Membership fee due date is March 1 as specified in the Membership Agreement. Current six members are committed with the date of annual meeting planned in late March 2020.

Faculty-Student Participation

The participation by the faculty is strong as evidenced by fourteen of them participated in the inaugural meeting and presented 12 research proposals. The Site Directors are pursuing other faculty members with different ideas on potential projects. The discussion on potential research projects by the IAB members and other participants at the semi-annual meeting helps to focus on potential projects by the faculty.

Student participation can be improved. Since the projects started very early in the first year after award from NSF, there was not enough time to augment available resources from NSF for undergraduate and graduate students. Effective use of additional resources for students available from NSF will improve in the future.

Institutional Control

University Policy Committees are established at both institutions. Effectiveness of the UPC at Texas Tech became evident when a change in PI/Site Director had to be processed. Daan Liang, original PI/Site Director left Texas Tech in September 2019 (six months in to the project). UPC agreed on a new PI/Site Director, Delong Zuo in a short time and obtained permission from the NSF. This change has little effect in the operation of the Center.

Unanticipated Problems and Solutions

There were several unanticipated problems during the first year of the Center operation. These problems are resolved as given below and the Center operation is running smoothly.

- Change in PI/Site Director at Texas Tech was managed without major difficulty.
- Staff Program Coordinator (part-time) that was employed for the project resigned after six weeks. A new Program Coordinator position is in interview stage.
- Loss of two companies (along with loss of research funding) after initial selection of projects necessitated deletion of two projects with the concurrence of IAB members. It also necessitated reallocation of research funds. Project PIs reworked the scope of the remaining projects with the agreement of IAB.
- There was a delay of membership fee released by one of the companies. The Project PI was able to start the project and the delay did not have significant impact on research progress.

Realizing that there will be some unanticipated problems in the future because of dealing with many different entities (companies, faculty, and students), the current leadership of IAB Chair, Site Directors, and Center Director will be able to manage the problems.