

Summary of the Atkinson Center Topic Lunch;

“New York After Sandy: New and Old Challenges to Infrastructure Sustainability”

Presented by: Rick Geddes and Oliver Gao

Attendees: David Dieterich, Frank DiSalvo, Amy Galford, Fred Gouldin, Shailly Gupta, Rod Howe, David Jung, David Kay, Richard Kiely, Mark Milstein, Timothy Mount, Tom O’Rourke, Jonathan Ochshorn, H. Pick Oliver, Karen Pinkus, Susan Riha, Jeff Tester, Michael Tomlan, Leonardo Vargas-Mendez, Mildred Warner, Wendy Wolford

What issues did the Topical Lunch address?

Hurricane Sandy caused extensive damage to physical infrastructure throughout the New York metropolitan area, particularly along the New York, New Jersey and Connecticut coasts. Serious infrastructure damage was sustained in the form of buckled and undermined roadways, contaminated water systems, flooded subways and construction sites, and corroded electrical networks, among other systems. Hurricane Sandy has revealed the vulnerability of the region’s built environment to both natural and synthetic disasters. The damage sustained by Sandy illustrates starkly the vulnerability of the region’s infrastructure as well as the urgency of reassessing its design, construction, and operation. It also offers a unique opportunity to adopt smarter, more sustainable infrastructure in which private partners can play a larger role.

Why was this issue addressed at Cornell?

Cornell University is uniquely positioned to provide a comprehensive, multidisciplinary response to the array of challenges presented by the need to re-think and rebuild those sections of the area’s infrastructure most damaged by the storm. The purpose of this Topical Lunch is to gather members of the Cornell community who share an interest in applying their expertise in addressing the engineering, materials, operational, policy and financing issues generated by Hurricane Sandy’s impact on infrastructure. This may include faculty and students in a variety of fields and departments, including Civil and Environmental Engineering, Materials Science, City and Regional Planning, Policy Analysis and

Management. The provision of both scientific foundations and practical guidance in responding to the hurricane are consistent with Cornell University's mission as New York State's land grant university. We hope that this Topical Lunch will help identify those faculty committed to providing such a response, and that it will result in follow-up efforts, such as advice to state and local government, as well as expert panel discussions in New York City.

What were some of the key issues addressed at the lunch?

Professors Gao and Geddes distributed a detailed questionnaire to all participants in order to assess their specific interests. The responses will be used to develop a framework regarding how we can best move forward on Cornell's response to Sandy.

The lunch discussion was wide ranging, and included the following main themes:

- How might Hurricane Sandy affect plans for the development of the new tech campus on Roosevelt Island? Cornell's response to the Hurricane seems to be particularly important since the new campus will be situated close to the water. Do we need design changes in light of the Hurricane?
- Cornell needs to liaise with its contacts in Albany to see how we can be more fully involved in responding to the storm at the state level.
- We need a multi-disciplinary response, which must include the integration of engineering, policy, finance, planning, design, and many other disciplines to understand all of the important inter-relationships between various aspects of the redesign and reconstruction.
- In some cases, we must accept that it is necessary to not construct so close to the water's edge. We need to "give up some land to the sea." This may be hard for many to accept in the NYC area where flooding is less frequent.
- The main sectors on which we should focus include water systems, sewer systems, transportation, and energy. The important interactions between energy systems and transportation (such as between the signaling and switches in subways and the power system) were noted. These interactions are growing more important with technology.
- The importance of including students in the storm response was noted by Mildred Warner. A graduate student in attendance indicated that this would be a terrific opportunity for learning and thought that many students in such units as CIPA would be very interested in participating.

- Regarding the importance of inter-disciplinary responses, it was noted how important behavioral and social sciences are for working on a storm response. Geddes noted that Cornell has a terrific behavioral economics group.
- The importance Geographic Information System (GIS) analysis for the hurricane response was stressed as important to include in future discussions.
- The concept of Urban Resilience was stressed in the context of “hard versus soft” infrastructure responses, where soft infrastructure suggests infrastructure that does not try to keep the water back, but instead tries to adapt to it, such as through floating structures. The group thought that this was a key question.
- The critical importance of working with companies and with the private sector generally was stressed, with a focus on how public-private partnerships can help address funding and financing issues.
- The concept of “lifeline infrastructure” was stressed. This includes infrastructure systems for water, energy and transportation that will remain intact even in the event of a major disaster. It was noted that the transformer that blew on the east side would not have blown if the storm surge had not coincided with high tide.
- Governor Cuomo has asked for major federal aid. Some of this should go towards research. Some participants thought that the appeal of NSF funding for the study of disasters would increase in importance, and that the NSF has already committed substantial funds to these issues.
- It was stressed that an executive committee should form to move Cornell’s Hurricane Sandy responses forward.