FAIL-SAFE AND SAFE-TO-FAIL ADAPTATION: DECISION-MAKING FOR URBAN FLOODING UNDER CLIMATE CHANGE

Yeowon Kim1, D. A. Eisenberg2, E. N. Bondank2, M. V. Chester2, G. Mascaro2, B. S. Underwood2
1School of Sustainability, Arizona State University, Tempe, Arizona, USA
2Civil, Environmental, and Sustainable Engineering, Arizona State University, Tempe, Arizona, USA

As climate change affects precipitation patterns, urban infrastructure may become more vulnerable to flooding. Flooding mitigation strategies must be developed such that the failure of infrastructure does not compromise people, activities, or other infrastructures. “Safe-to-fail” is an emerging paradigm that broadly describes adaptation scenarios that allow infrastructure to fail but control or minimize the consequences of the failure. Traditionally, infrastructure is designed as “fail-safe” where they provide robust protection when the risks are accurately predicted.

Q1. How might extreme weather due to climate change increase flooding of Phoenix roadways?

Q2. What “safe-to-fail” roadway solutions and adaptation strategies exist to mitigate climate change induced flooding?

Q3. How should the City of Phoenix prioritize “safe-to-fail” strategies?