How to Use Climate Change Analytics to Activate Resilient Infrastructure Investments

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Background/Objectives. Identifying and measuring climate risks is key to addressing them. With this in mind, ICF uses climate change analytics and scientific expertise to refine future climate hazards into realistic assessments of vulnerability and risk for public and private sector clients. To build on these capabilities, ICF recently developed a platform called ClimateSight which creates customized climate projections for a range of hazards across any time horizon and geography in support of risk analyses. By synthesizing and tailoring forward-looking climate projections to decision-making contexts, using enabling technologies such as ClimateSight, ICF provides a holistic and quantitative approach to understanding climate risks and taking actions toward resilience. This helps federal, state and local, and private sector actors use data and analytics to identify opportunities for climate resilient investments.

Approach/Activities. ICF employs climate change analytics on a range of projects, but three specific examples are recent climate change vulnerability assessments with Duke Energy and Con Edison and a stormwater resilience study with Miami Beach. The Duke Energy study leveraged ClimateSight to develop probabilistic and downscaled climate change projections across the service area tailored to infrastructure and system sensitivities. This supported an assessment of system-wide risks and prioritization of resilience investments. Con Edison used advanced climate science and extreme weather stress-test scenarios to support a comprehensive assessment of climate change risks and strategies to improve utility and customer resilience. In Miami, ICF used climate change analytics to evaluate impacts from sea level rise and infrastructure investments on factors such as flood damages, property values, insurance premiums, tax revenue, business disruptions and more.

Results/Lessons Learned. ICF's deep expertise in climate science and climate change analytics was central to supporting the following results:

- The Miami Beach study found that public and private adaptation are both critical components of Miami Beach's overall resilience. The benefits exceed the costs for the resilience investments ICF analyzed. Citywide investments of at least $2 billion for road elevation and storm protection would be cost beneficial. Investments could lead to a 4.9% to 14.1% increase in residential property value per foot of nearby road elevation, and an 8.5% to 11.5% increase in residential property value per foot of parcel elevation.
- Con Edison is now developing a comprehensive plan to address future climate risks. The influence of climate change may require investments between $1.8 billion and $5.2 billion by 2050 to protect their electric, gas, and steam delivery systems and customers from the impacts of climate change. This plan will allow Con Edison to focus on and enhance resiliency while meeting the responsibilities to their customers, the environment, and an ever-changing energy market.
- The Duke Energy study will inform development of a flexible adaptation strategy that includes incorporating climate change projections into process changes, identifying standards and processes that need to be updated to reduce identified risks, prioritizing high-priority adaptation options, and identifying signposts for continued adaptation actions.