



# Transportation Resilience Metrics

Transportation Research Board

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San Diego County Regional Airport Authority

# Professional Background

- 20+ Years in Environmental Policy
- Climate Adaptation Planning Experience at Local, Regional, & State Levels
- Chair of ACI-NA Environmental Affairs Committee
- ACRP Panelist on:
  - [ACRP Synthesis 91](#): Microgrids and Their Application for Airports and Public Transit.
  - [ACRP Synthesis 100](#): Airport Greenhouse Gas Reduction Efforts.





# San Diego International Airport

An aerial photograph of the San Diego International Airport (Lindbergh Field) is shown. The airport's perimeter is outlined with a dashed cyan line. The image is overlaid with several colored callout boxes containing statistics. The background shows the surrounding urban area, including roads, buildings, and a body of water (San Diego Bay) at the bottom.

51-Gate  
Large Hub Airport

Over 25 Million  
Passengers Annually

Over 154,000 Tons  
of Cargo Annually

\$12 Billion Economic  
Impact Annually

Financially  
Self-Sustaining

SAN DIEGO  
COUNTY  
REGIONAL  
AIRPORT  
AUTHORITY





# Climate Impacts To Aviation Resilience

● Ticketing  
U S Airways



# How Is Aviation Impacted?

## **Flooding and sea-level rise:**

Inundation of runways and taxiways  
Loss of ground transport access  
Inundation of electrical infrastructure

## **Increased convective weather:**

Increased delay / loss of capacity  
Lack of capacity at diversionary airports

## **Increased precipitation:**

Impacts on capacity/delay  
Inundation of runways and taxiways  
Inundation of electrical infrastructure

## **Higher summer temperatures:**

Changes in summer demand patterns  
Heat damage to infrastructure  
Increased cooling requirements

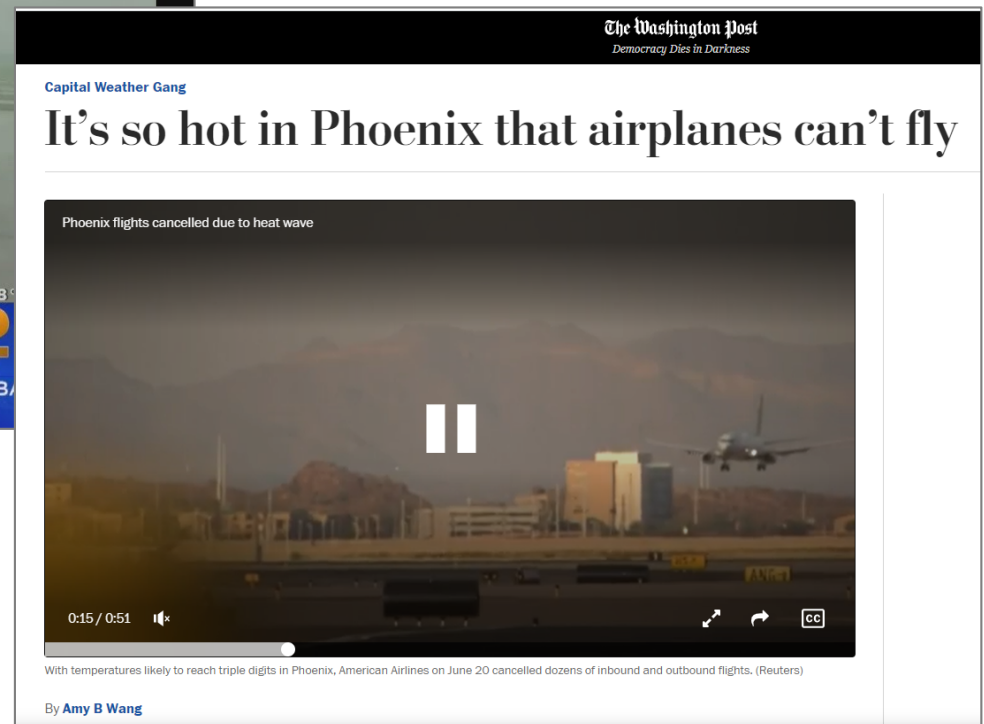
## **Changes in wind direction:**

Increased crosswinds  
Capacity implications  
Potential procedure changes  
Potential changes to noise distribution

# How Is Aviation Impacted?

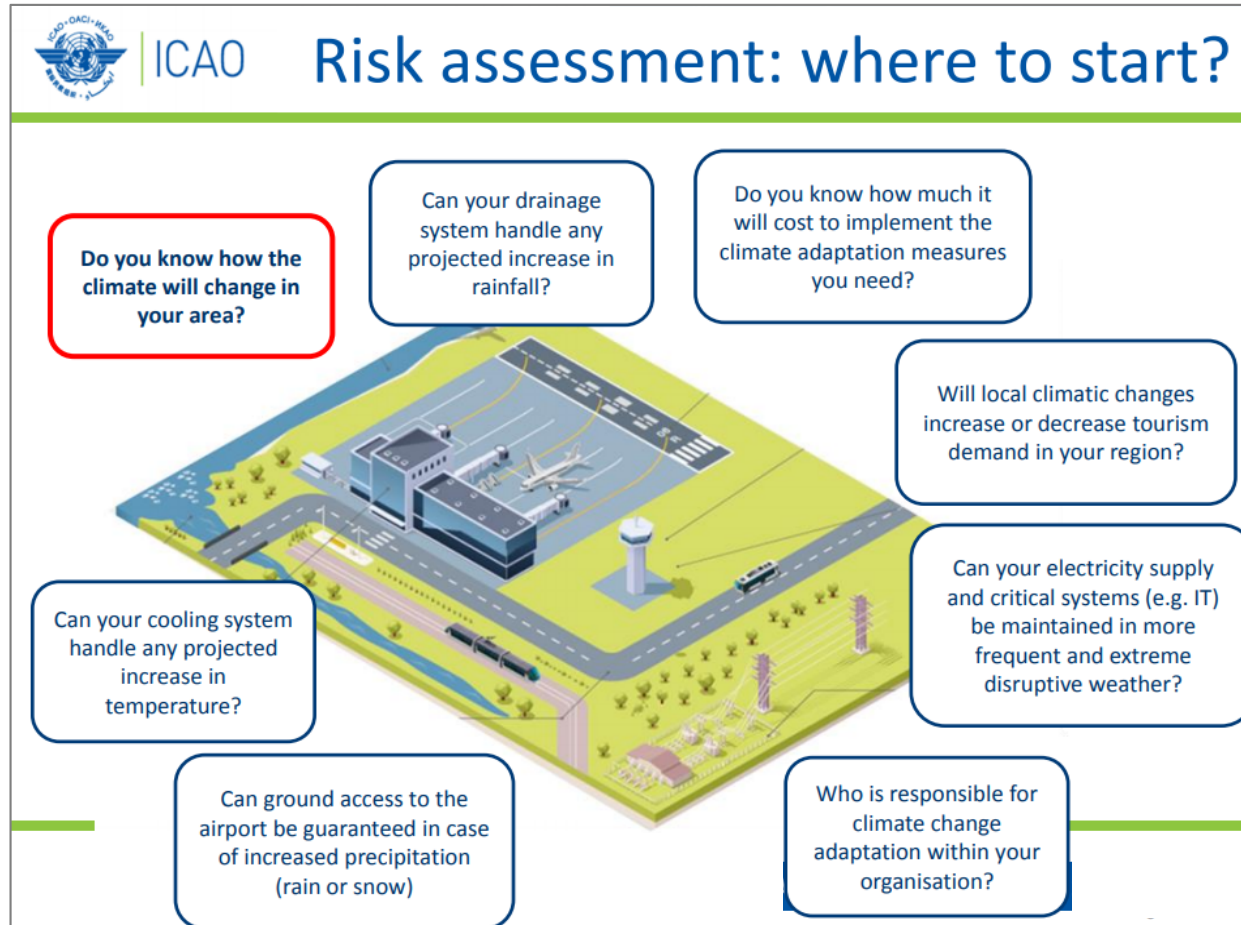


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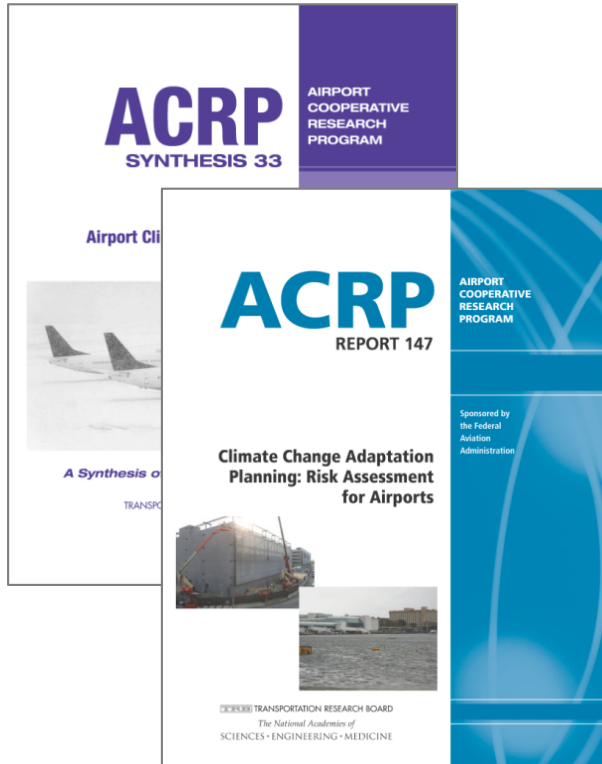




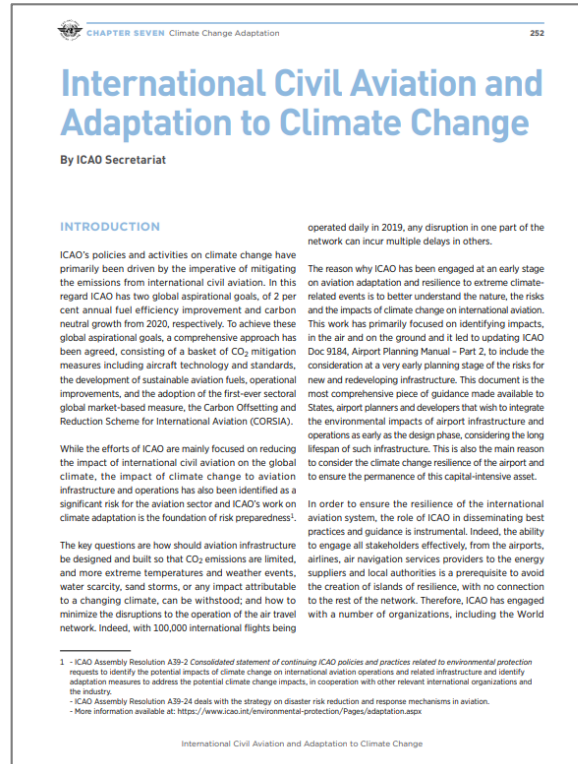
# How Do Airports Reduce Risk?



# Related Research & Guidance



**Airport Cooperative  
Research Program  
Reports**



**ICAO Environmental  
Reports**



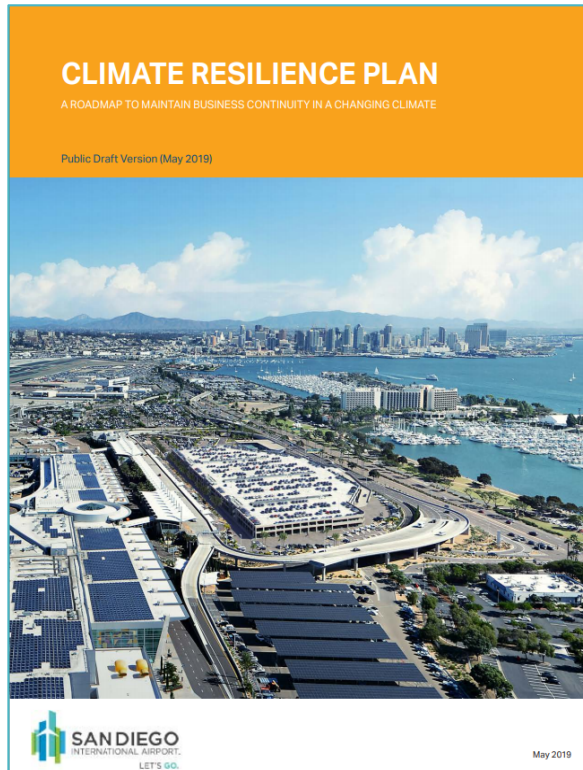
**ACI Business Continuity  
Management Handbook**



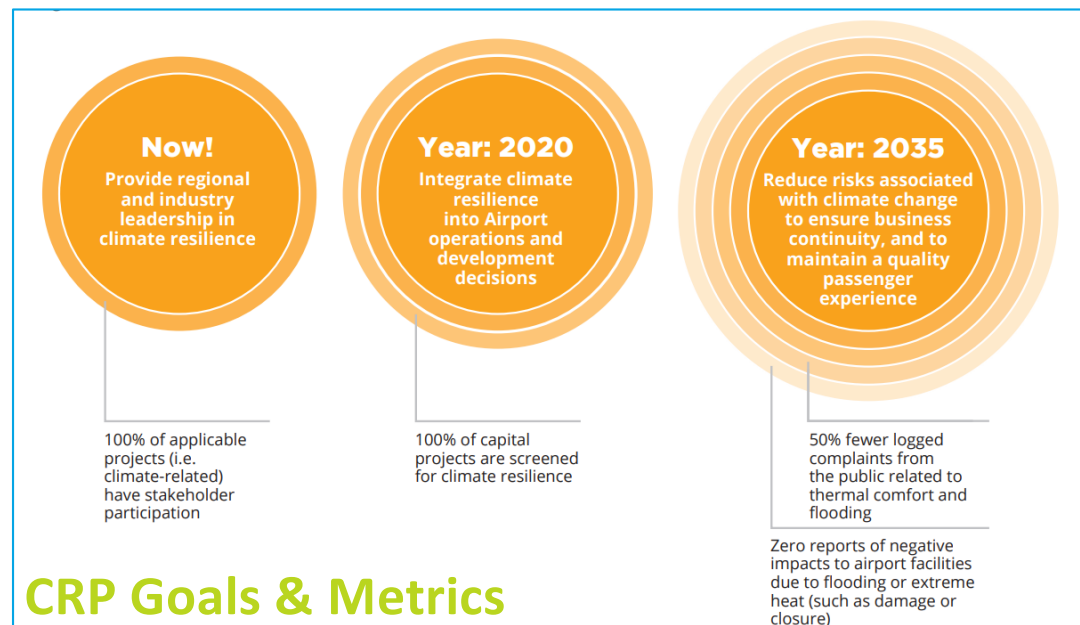


# **SAN's Climate Resilience Planning**

# SAN Climate Resilience Plan




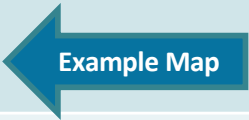

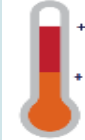
The CRP (2019) provides the Authority's strategy for achieving **uninterrupted business continuity in future climate conditions.**





# SAN Climate Resilience Plan

## Climate Stressors

Hazards	2050	2100	Source
 <b>Sea Level Rise</b>	1.6 Feet	2.5 Feet 4.9 Feet 	OPC 2018
 <b>Precipitation</b>	No change (SAN Drainage Study)	+0.2" annual increase Less frequent, but slightly heavier rainfall	SAN Drainage Study CAL-Adapt
 <b>Extreme Heat</b>	+5.5 days extreme heat +1 day heat wave duration	+23.5 days extreme heat +3 days heat wave duration	Extreme >89° CAL-Adapt CHAT
Other:			
<b>Wildfire</b>	Some data, still an area of active research		
<b>Wind/Fog</b>	No strong future trends observed in data		

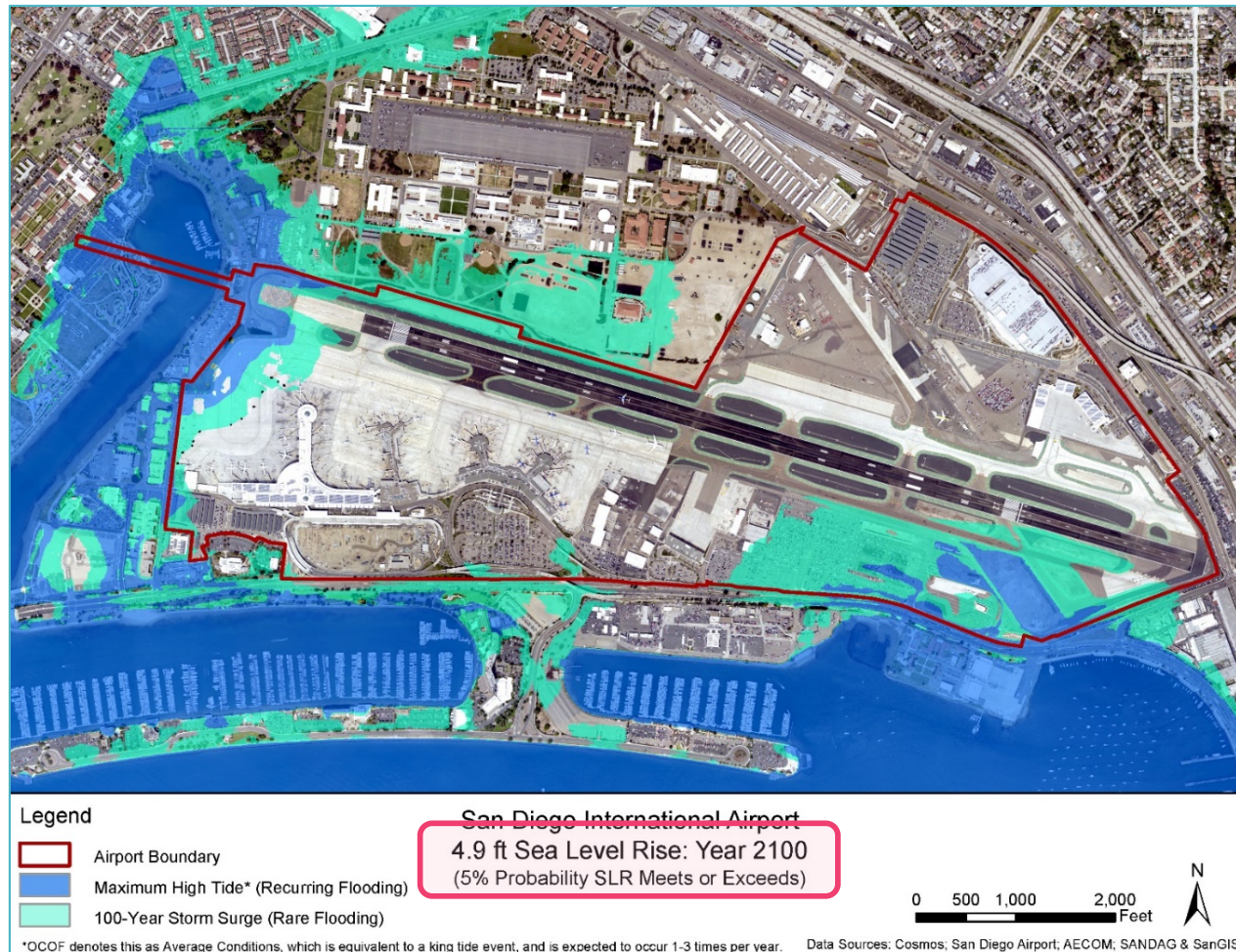
# SAN Climate Resilience Plan

## Climate Stressor Example



Year 2100  
5% Probability

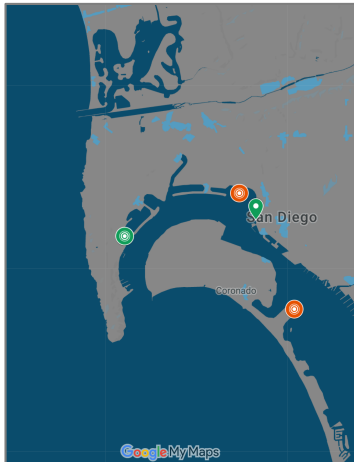
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# SAN Climate Resilience Plan

## Examples of Resilience Strategies



**Install SLR Sensors  
in San Diego Bay**  
[w/ Scripps CCCIA]



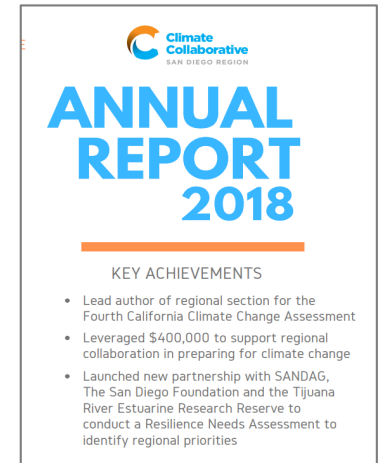
**Update Employee  
Safety Plan**



**Pilot the USGBC's  
New RELi Guidelines**



**Expand Storm Water  
Capture & Reuse  
System**



**Regional  
Coordination &  
Leadership**

# Questions?

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