ARCCA Learning Session

Building Business Resilience

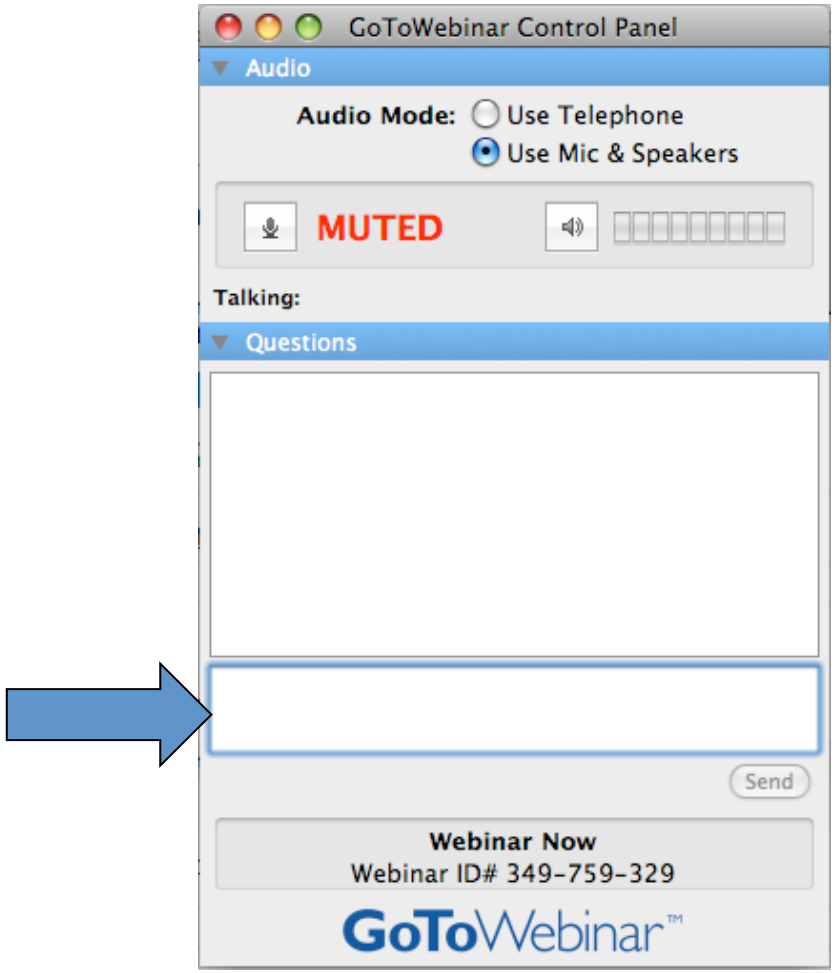
December 2, 2015

WEBINAR LOGISTICS

Questions:

At any point during the webinar, you can type your question into the question text box and click send.

All questions directed towards a speaker will be read aloud and answered at the end of the presentations, as long as time permits.



PANELISTS

Meg Arnold

Valley Vision

Katy Maher

Center for Climate and Energy Solutions

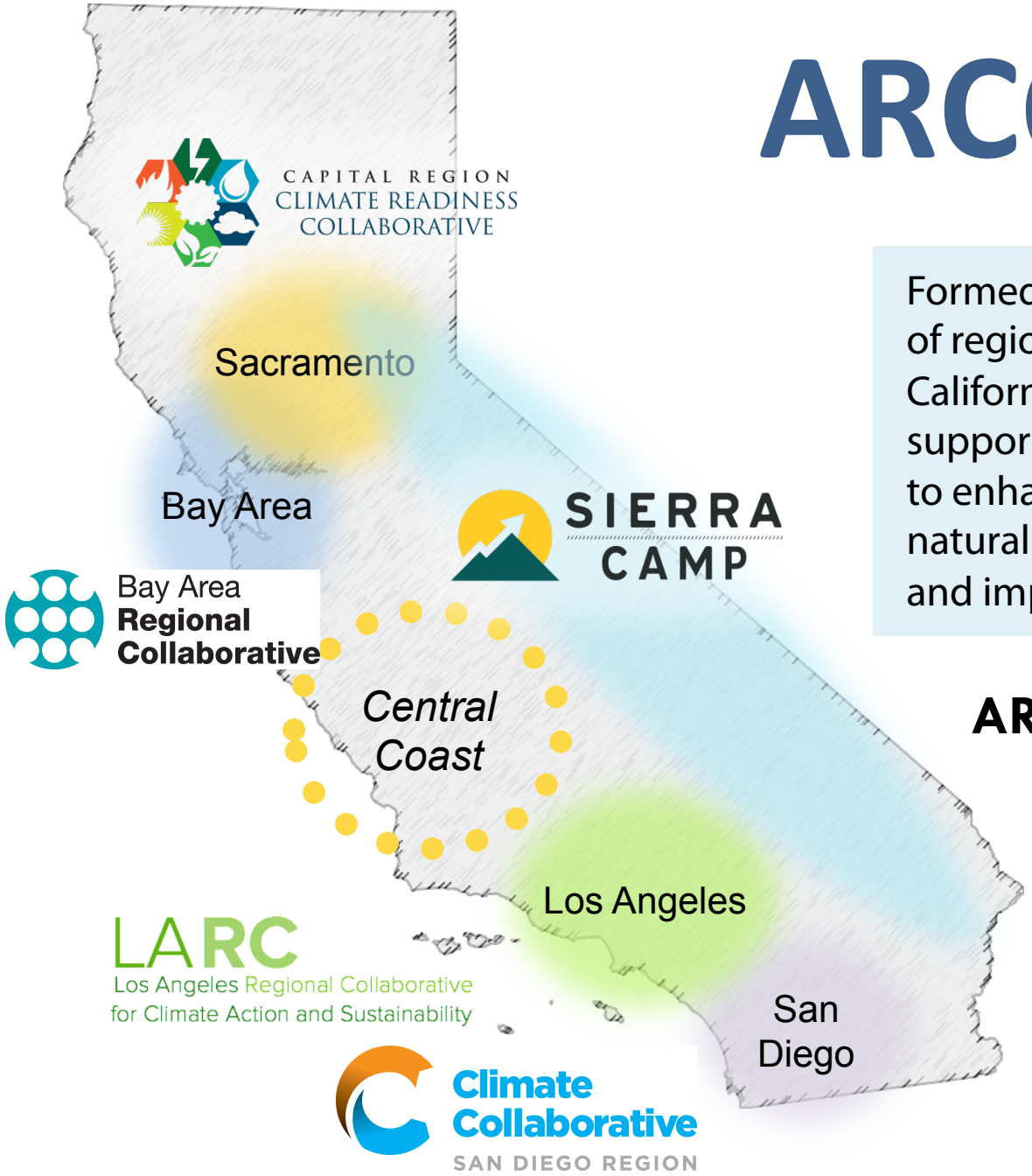
Chris Benjamin

Pacific Gas and Electric Company

WELCOME

Larry Greene

Sacramento Metropolitan Air Quality Management District



ARCCA

Alliance of Regional Collaboratives for Climate Adaptation

Formed in 2012, ARCCA is a network of regional collaboratives in California coordinating and supporting climate adaptation efforts to enhance public health, protect natural systems, build economies, and improve quality of life.

ARCCA encompasses over 80% of the state's population

ARCCA

Alliance of Regional Collaboratives for Climate Adaptation

ARCCA member regional collaboratives have come together to:

- **Amplify and solidify** their individual adaptation efforts
- **Give a stronger voice to regionalism** at state and federal levels, and ensure that state planning efforts consider regional needs and priorities.
- **Share** information on best practices and lessons learned
- **Identify** successful strategies and opportunities for support and collaboration between regions
- **Empower** collaboration across all sectors and levels of leadership

ARCCA

Alliance of Regional Collaboratives for Climate Adaptation

Our Work and Successes

- Identified as a resource for state agencies in the Climate Change Research Plan and the Governor's Executive Order B-30-15
- Built a toolkit to support the formation of new collaboratives

Organize and participated in a national training or regional collaboratives hosted by the Institute for Sustainable Communities

Participated in and helped to frame the program for the 1st and 2nd Bi-annual National Adaptation Forums in Denver and St. Louis.

- Shared information and resources on regional collaboration to national audiences at the 2014 National Council for Science and the Environment Conference, the 2015 New Partners for Smart Growth Conference, and the 2015 National Adaptation Forum
- Provided feedback and comments to State of California planning and reports, including the Governor's Office of Planning and Research *Environmental Goals and Policies Report*, the California Natural Resource Agency's *Safeguarding California*, and the Climate Change Research Plan

CAPITAL REGION
CLIMATE READINESS
COLLABORATIVE

Six counties in the Capital Region:
El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba

Goals:

- **Protect and strengthen** the Capital Region's people, economy, resources, and heritage.
- **Build a network** for regional cooperation, bringing together leaders from across sector and jurisdictional boundaries to address climate adaptation.
- **Amplify the voice** of the Capital Region at the state and national level in emerging and ongoing adaptation discussions and planning
- **Help members** identify, apply for and access funding for important regional priorities.

CAPITAL REGION CLIMATE READINESS COLLABORATIVE Members

ASCENT ENVIRONMENTAL

CALIFORNIA CENTER FOR CIVIC PARTICIPATION

City of SACRAMENTO

Davis California

Cool Davis

Local Government Commission

PG&E Pacific Gas and Electric Company®

SACOG

SACRAMENTO COUNTY

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

SMUD™

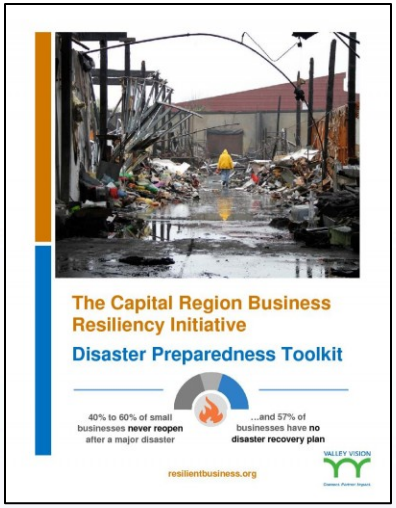
SACRAMENTO TREE FOUNDATION

UCDAVIS
POLICY INSTITUTE FOR ENERGY, ENVIRONMENT AND THE ECONOMY
Leveraging university expertise to inform better policy

VALLEY VISION
Connect. Partner. Impact.

CAPITAL REGION CLIMATE READINESS COLLABORATIVE

Highlights of our work



Reduce the risk and economic impact of weather-related disasters for small businesses in the region.

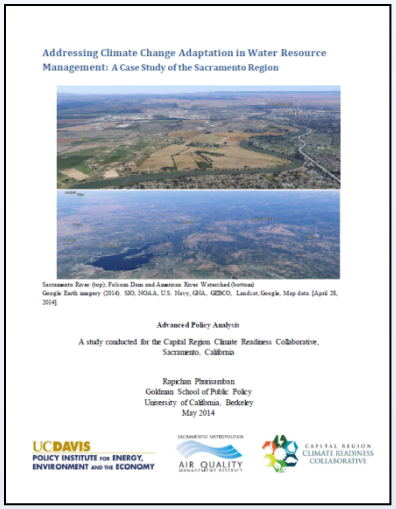
SACRAMENTO REGION TRANSPORTATION CLIMATE ADAPTATION PLAN

CivicSpark

Analyzing climate vulnerabilities for the region's transportation network

Increasing urban tree canopy for disadvantaged communities

SACRAMENTO TREE FOUNDATION



Identified needs and barriers faced by local water agencies in incorporating climate impacts in long-term water supply planning.

Cool Davis

Reduce household GHG emissions in the City of Davis.

Evaluate the implementation status of Yolo County's Climate Action Plan

CAPITAL REGION BUSINESS RESILIENCY INITIATIVE

Presented by Valley Vision

www.resilientbusiness.org

70,000+ acres • 6,400 structures threatened • 365 residences destroyed

~ Valley Fire Incident Information 9/17

“Unheard-of fire behavior”

~ Cal Fire

“Unprecedented cataclysm”

~ Washington Governor Jay Inslee

“This is the present, and the future, of climate change.”

~ Rolling Stone

Why is business resiliency important?

Building small business capacity *before* a time of crisis, to create businesses, and an overall community, better prepared to weather any storm.

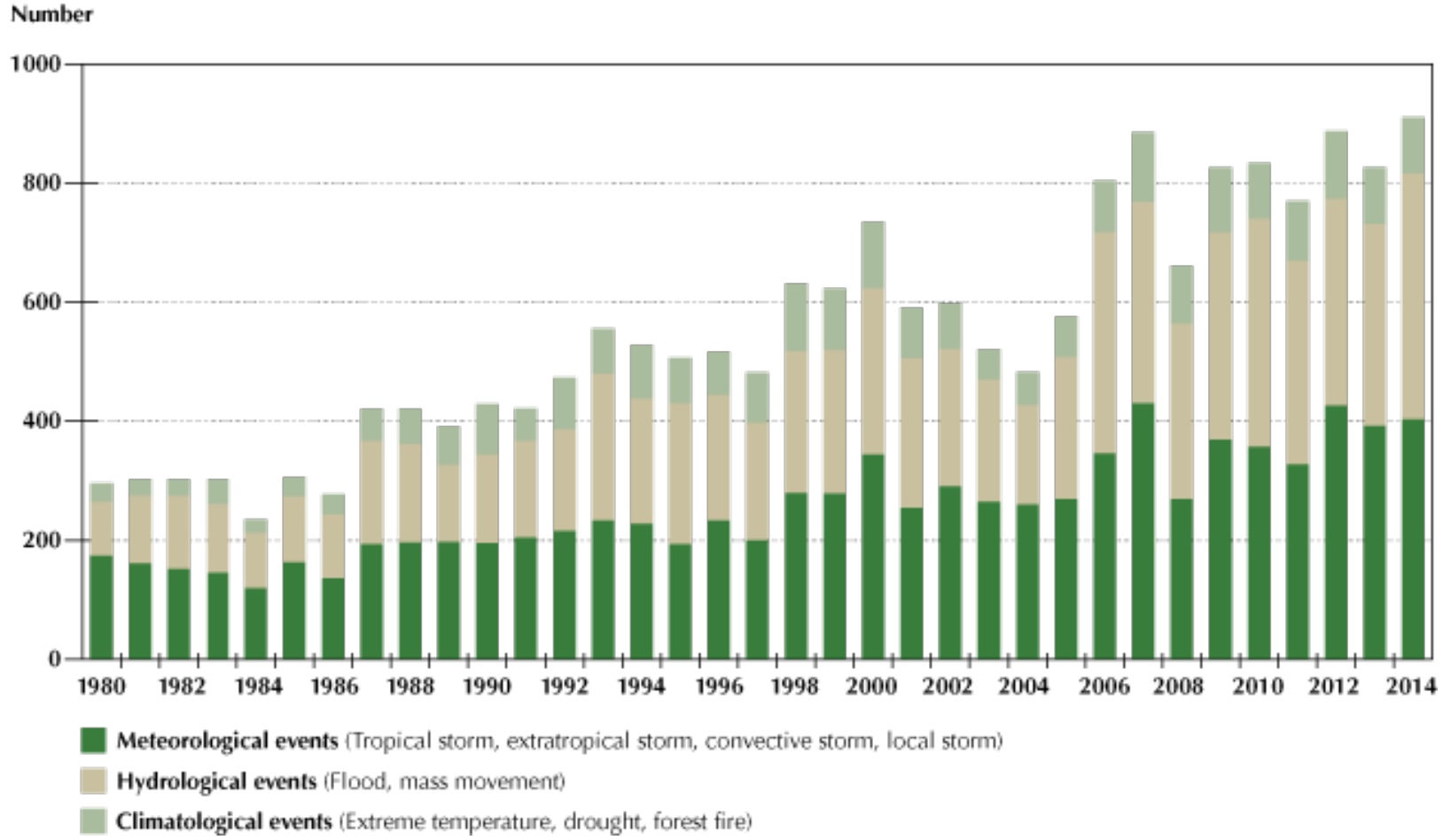
Resiliency is about protecting 3 major asset groups:

- **Your people**
- **Your facilities**
- **Your information**

Beyond "four walls" of individual businesses, resiliency is highly interdependent with public infrastructure (power, roads, etc.)

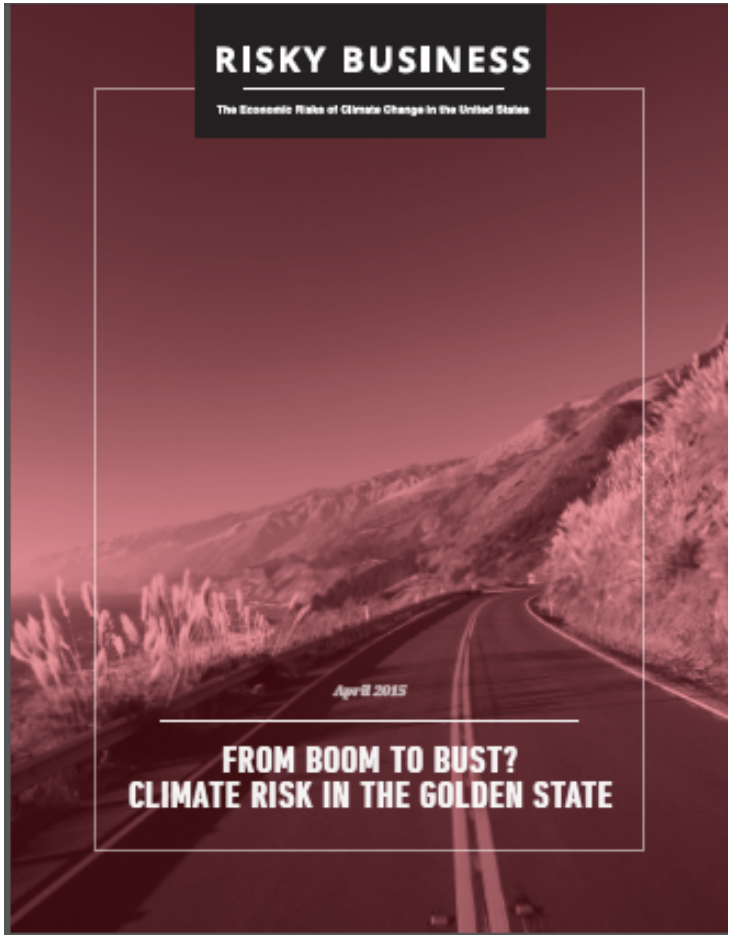
At a time when disaster threats are on the rise …

Number of Global Weather-Related Loss Events (1980–2014)



Source: *Weathering the Next Storm*, September 2015, Center for Climate and Energy Solutions

…California businesses anticipate state-specific climate impacts



- Increase in extreme heat
- Changes in precipitation
- Shifting agricultural patterns, crop yields
- Increasing electricity demand and higher costs
- Heat-related decline in labor productivity, worsening air quality

Preparedness Helps Minimize Business Risk

Disaster Impacts on Businesses

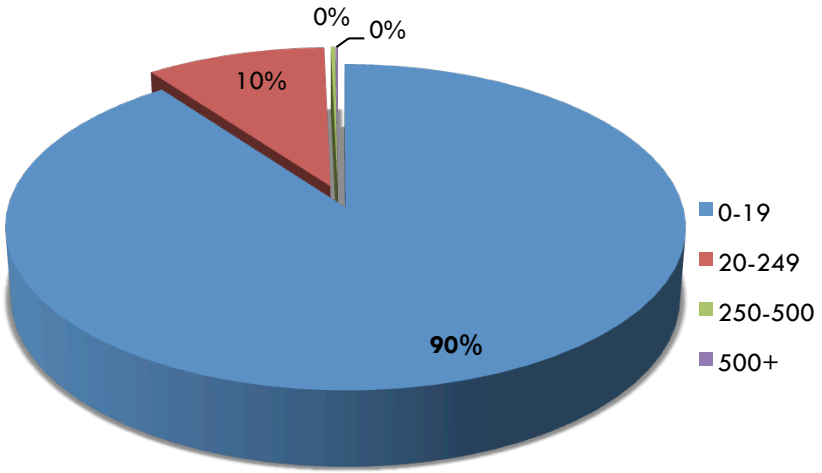
- Loss of sales & customers, both immediately and longer-term (reputational impact)
- Business disruption and downtime
- Uninsured loss
  - continuing operations costs
  - destruction of physical property
- Supply chain and/or distribution impacts
- Cash flow and cash balance challenges

Small business is critical to our economy

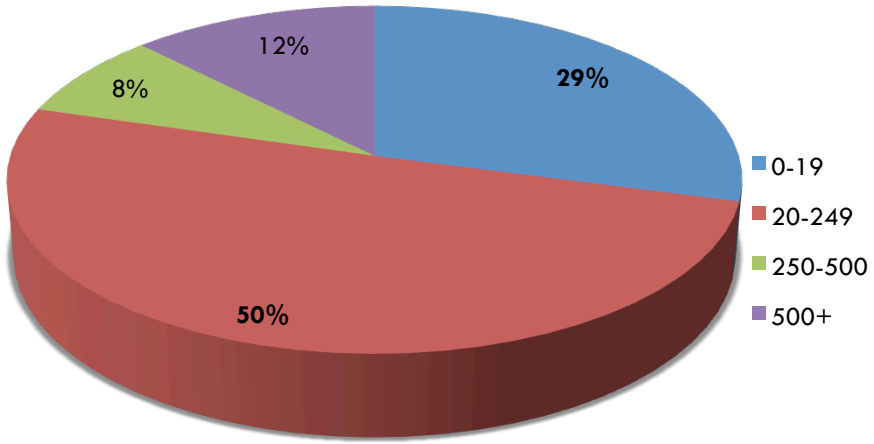
In California's Capital Region:

- Businesses with <20 employees account for **90% of the region's 60,000 businesses** in 2012
- Businesses with <249 employees account for almost **80% of all private sector jobs**

Total Businesses



Total Employees



Small business resiliency is essential

1. Businesses without business resiliency plans are the least likely to re-open or recover after a disaster.
2. Small businesses are the least likely to have put a resiliency plan in place
3. The smallest businesses are **less prepared to rebound** after a disruption
    - **More vulnerable to impacts** of extreme weather

~40-60% never reopen after a major disaster

The Business Resiliency Toolkit

Funders and Project Advisors

Funders: SMUD Powering forward. Together. · Pacific Gas and Electric Company · Sacramento Metropolitan Air Quality Management District

Channel Partners: Association of Sacramento Area Planners ASAP Business Continuity Planning · Davis Chamber of Commerce · metrochamber Sacramento Metropolitan Chamber of Commerce · America's SBDC California Northeastern CA Network · downtown Sacramento Partnership · The River District · El Dorado County Chamber of Commerce · Roseville Chamber of Commerce · Rancho Cordova Chamber of Commerce · sacramento Asian Pacific chamber of commerce · regionbuilders advancing regional economic growth · SRBX Sacramento Regional Builders Exchange

Project Advisory Team: SMUD Powering forward. Together. · Pacific Gas and Electric Company · Sacramento Metropolitan Air Quality Management District · City of Sacramento · SACOG · Capital Region Climate Readiness Collaborative · metrochamber Sacramento Metropolitan Chamber of Commerce

Technical Advisory Team: SMUD, Mulvaney's B&L, River City Food Bank, Connect Consulting Services, Association of Sacramento Area Planners

www.resilientbusiness.org resilientbusiness@valleyvision.org (916) 325-1630

The Capital Region Business Resiliency Initiative is a project of Valley Vision, a 501(c)3 nonprofit organization. valleyvision.org

Valley Vision — Connect. Partner. Impact.

Contact Info

VALLEY VISION
Connect. Partner. Impact.

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Weathering the Next Storm: A Closer Look at Business Resilience

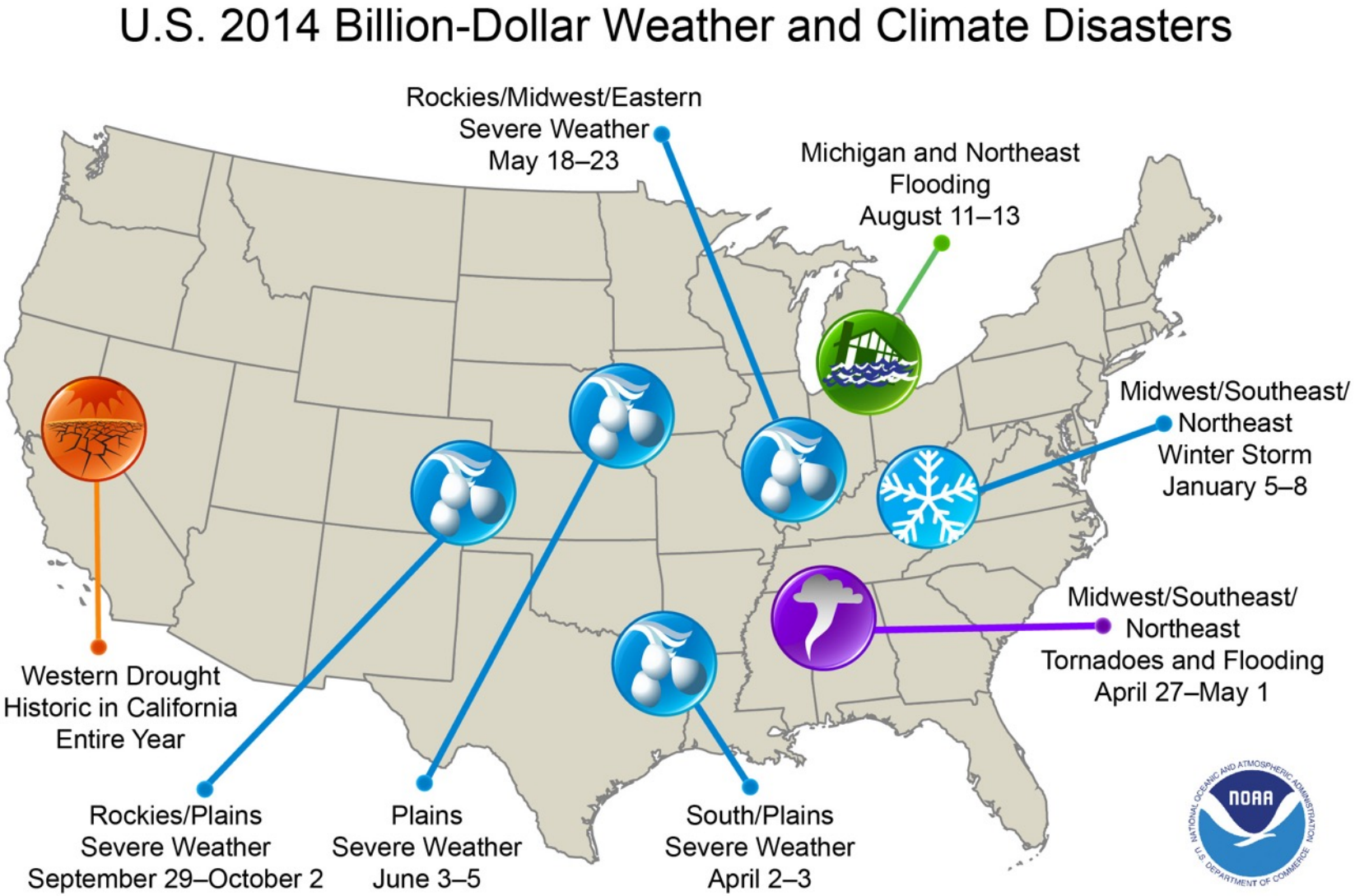
Katy Maher
Science Fellow and Resilience Coordinator
C2ES

December 2, 2015

CENTER FOR CLIMATE AND ENERGY SOLUTIONS

C2ES.ORG

Weather and climate impacts are costly



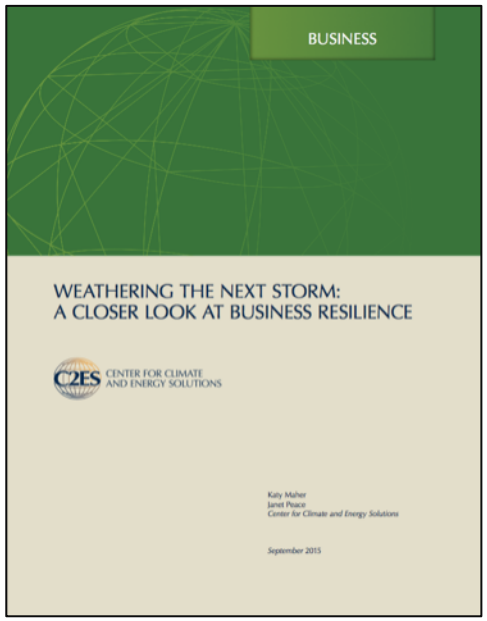
This map denotes the approximate location for each of the eight billion-dollar weather and climate disasters that impacted the United States during 2014.

A Closer Look at Business Resilience

C2ES CENTER FOR CLIMATE AND ENERGY SOLUTIONS

Bank of America

"Weathering the Next Storm" Report



- Examines how companies perceive extreme weather and climate impacts & their initial risk management steps
- Explores:
  - Strategies companies are using to prioritize and plan for climate risks
  - Data and tools used to evaluate vulnerabilities
  - Key barriers that impede resilience planning
  - Partnerships that bring together stakeholders involved in risk assessment and resilience planning

Methodology

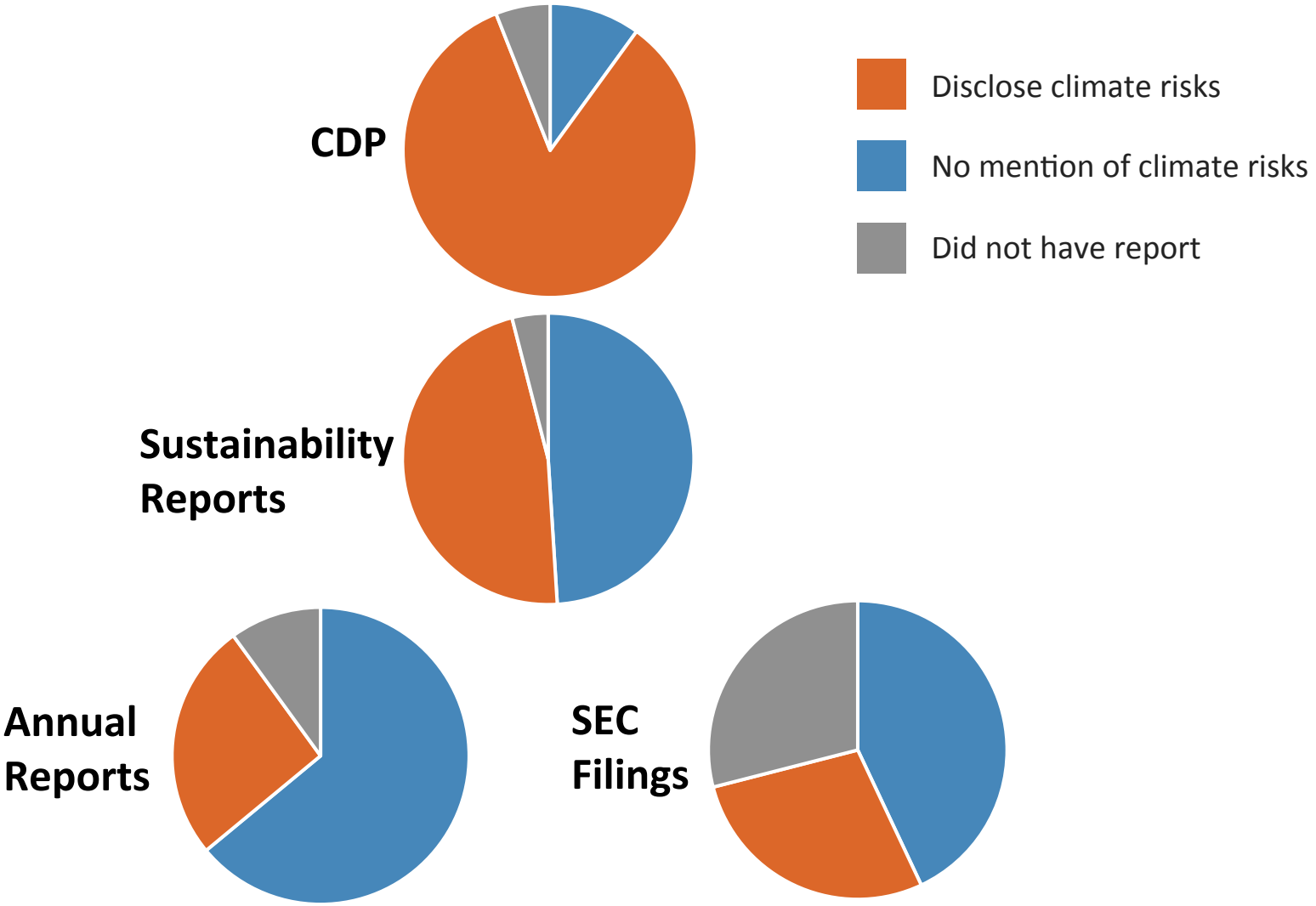
I. Review of S&P Global 100 for quantitative trends + examples of best practice in their CDP, financial filings, and annual/sustainability reports

II. Interviews with global companies to explore barriers to action, tools, partnerships, and best practices for business resilience

III. Business workshops with companies, government agencies, cities, NGOs and experts (July 2014, March and July 2015)

More than 90% of the world's largest 100 companies see extreme weather and other climate impacts as business risks.

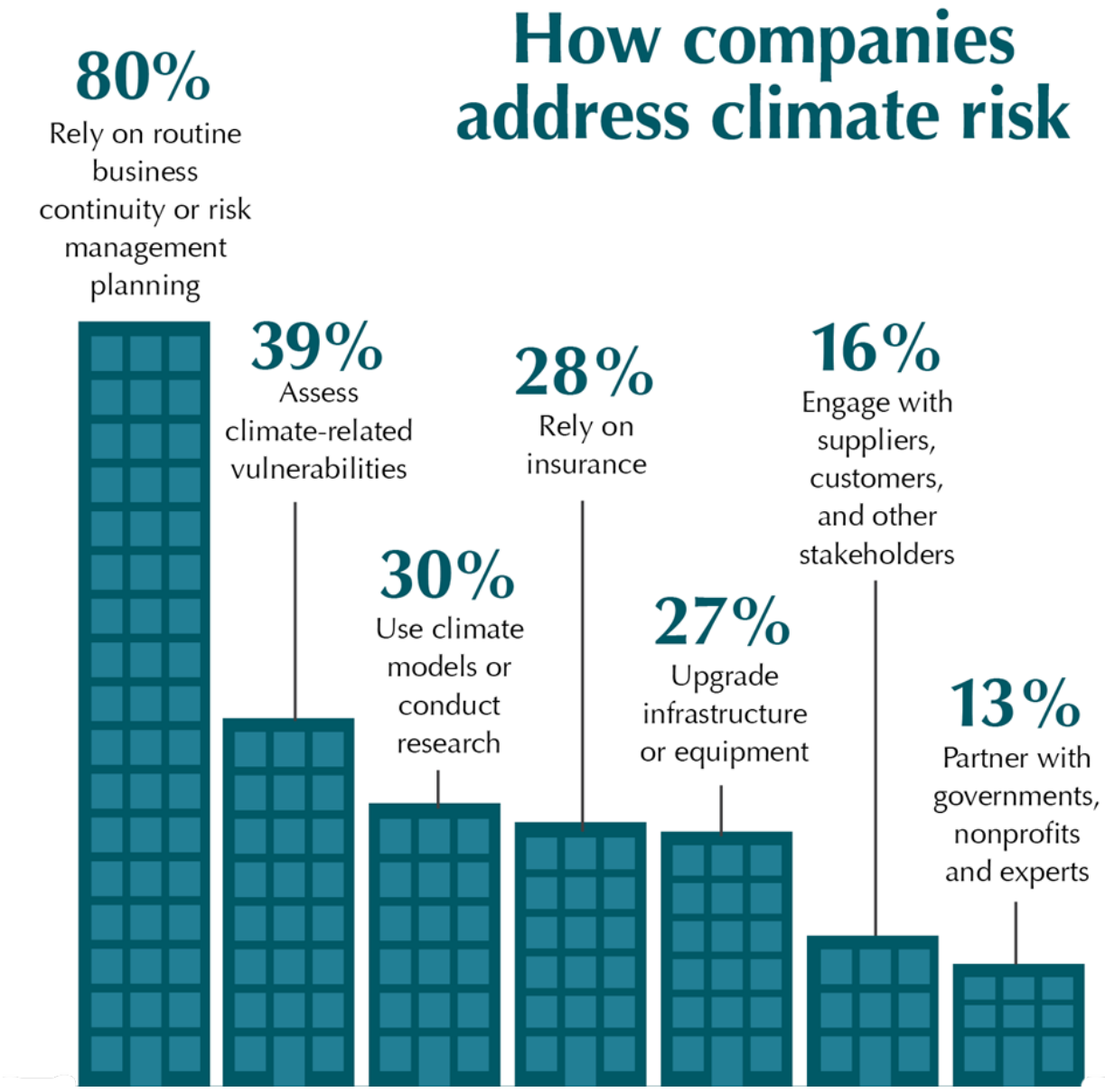
Where are companies disclosing climate change risks?



What are companies concerned about?

- **Extreme weather** events are important, as well as **long-term changes**
- **Precipitation extremes/drought** most common stressor mentioned
  - Future water risks
- Risks are seen as **near-term**
- Disruptions to **production capacity** and impacts on **operational costs**

Weathering the Next Storm



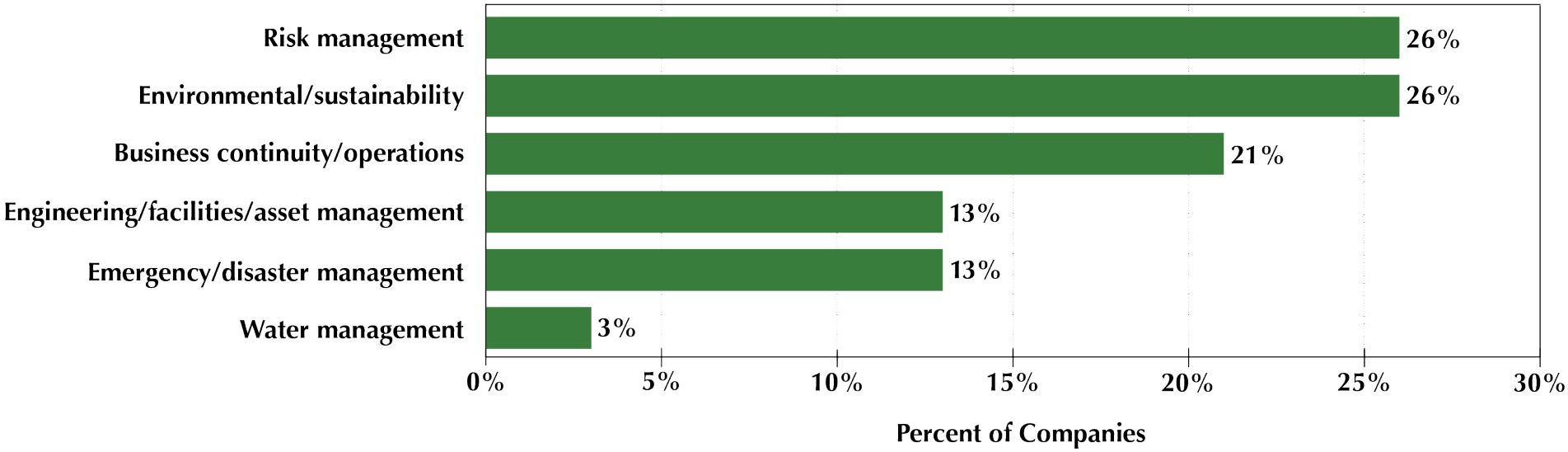
Weathering the Next Storm

Businesses see climate change as magnifying existing risks

Climate change can exacerbate threats to a company's core operations, supply and distribution chains, workforce and customers. Seeing existing risks through a climate lens places these risks within a business framework, but some impacts could be overlooked.

Climate change

What departments are responsible for addressing climate risks?



Businesses take two approaches to assessing climate risks

These approaches can complement one another.

Top-down

Assess climate risks across the whole spectrum of operations.

Bottom-up

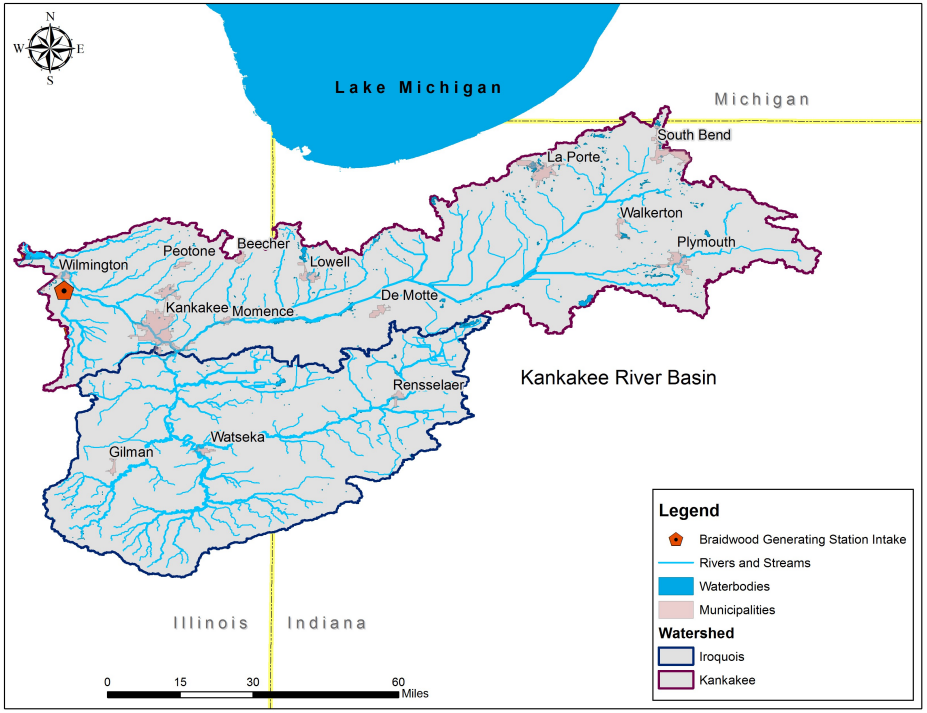
Assess climate risks for a specific region, facility, or threat, such as drought or flooding.

Top-Down Example: Diageo

- **Assessing risks to water supply**
  - Conducts annual company-wide evaluations of potential risks to water in operations and key agricultural sourcing areas
  - Developed integrated water strategy to reduce water usage and replenish supplies
- **Evaluating agricultural risks**
  - Conducted climate vulnerability assessment for top six most critical agricultural commodities (cream, sorghum, barley, grapes, agave, sugar)
  - Selected one of these six (cream) and implemented a program to improve the sustainability of supply

Bottom-Up Example: Exelon

- **Assessing water-related climate risks to utility**
  - Used WRI's Aqueduct tool to identify locations vulnerable to water risks
  - Conducted water vulnerability assessment for one particular region
  - Developed detailed watershed model to examine how changes in climate would impact water availability
- **Implementing resilience actions**
  - Building new gas-fired, combined-cycle power pants in water-stressed areas that are air-cooled



Businesses face challenges in addressing climate risks

It's a struggle to connect the dots from science to needed business actions. Many companies are still using historic data that may not take into account future risks. Businesses need:

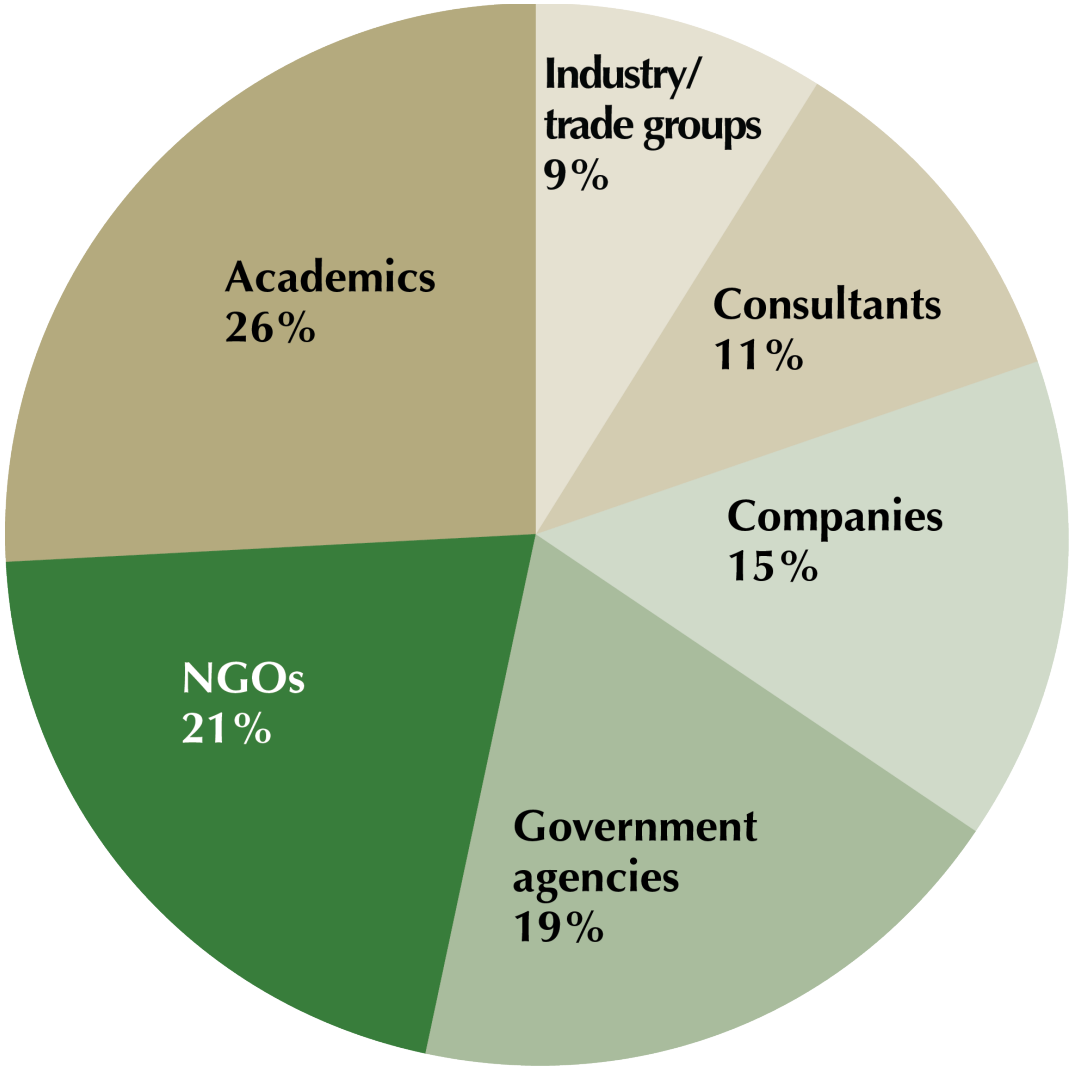
Locally-specific climate data

Guidance to translate data into specific risk scenarios

Approaches to fit long-term climate impacts into a company's shorter-term financial horizon

Connections with cities and states to work on mutual challenges

Who are businesses partnering with?



Public-Private Partnerships for Resilience

- Businesses face risks beyond their fence lines, and cities recognize this risk
- Partnerships in local resilience planning are common, but inclusion of companies in planning process is rare

Public-Private Partnerships for Resilience

- Intermediary institutions can play an important role in bringing business voices to urban resilience planning

Bay Area Climate Collaborative
Global Challenge. Regional Response

Boston Green Ribbon Commission

California Climate Collaboratives

Public-Private Partnerships for Resilience

- It has been a challenge to attract private capital to urban resilience projects
- Many resilience efforts at the local level are funded by grants from government agencies or foundations

Key Takeaways

- Most companies **acknowledge risks** from extreme weather and climate change publicly, but often are **taking more action** than what they are disclosing in reporting documents
- Many companies examine climate as a **magnifier of existing risks**, and may not consider climate as a **standalone risk**
- Some companies address risks through **top-down management**, while others address risks on a **site-by-site** basis, or **a hybrid approach**
- Businesses have opportunities to **partner** with government agencies and other organizations to assess risk and implement resilience
- Improvements in **data, scenario planning, engineering guidance, standards, cost-benefit analyses, and benchmarks** can assist companies in resilience planning

CENTER FOR CLIMATE
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FOR MORE INFORMATION

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Climate Change Resilience and Preparedness

Chris Benjamin
Director, Corporate Sustainability

December 2, 2015

Climate Change Resilience

- **Robust emergency response plans and procedures** to address near-term risks, including storms and wildfires
- **Active engagement** at the federal, state, and local level
- **Risk assessment and operational planning** to assess longer-term risks and prioritize infrastructure investments
- **Staying abreast of the science** through in-house climate change science team

CURRENTS

NEWS AND PERSPECTIVES FROM PACIFIC GAS AND ELE

JUNE 23, 2015

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Posted on April 22, 2015

PG&E Participates in New U.S. Climate Resilience Partnership Between DOE and Utilities

Risk Assessment: Natural Hazard Asset Performance

- **Long-term, multi-year, and holistic assessment of the risks from multiple natural hazard scenarios on PG&E assets:**
  - Identifying potential impacts to PG&E assets
  - Enabling the evaluation of climate-change-related risks to facilities and the development of necessary adaptation strategies

Sample Scenario: Flood

Scenario

- Assess PG&E assets against FEMA 100- and 500-year flood zone maps

Status of Risk Assessment

- Reviewing assets and developing risk response plans

Near-Term Actions Taken

Elevated structures at several PG&E substations:

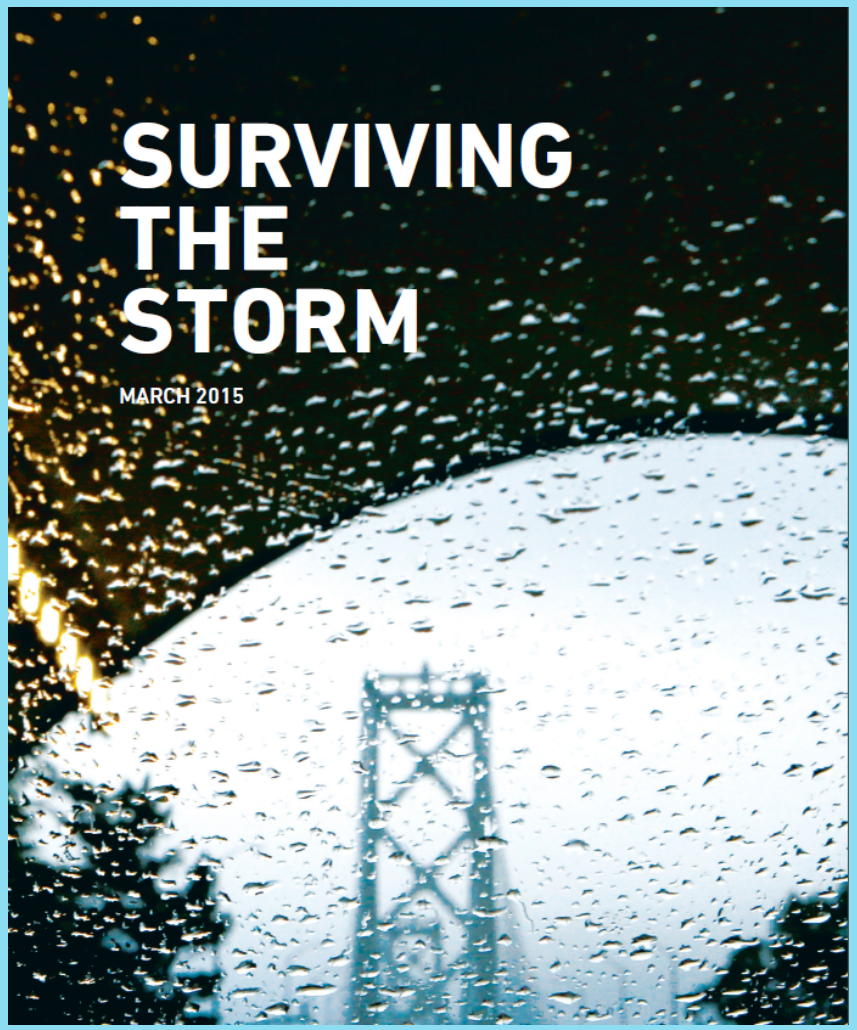
- San Mateo 115kV GIS building
- Napa Substation Building and Switchgear
- Richmond R Building and Switchgear

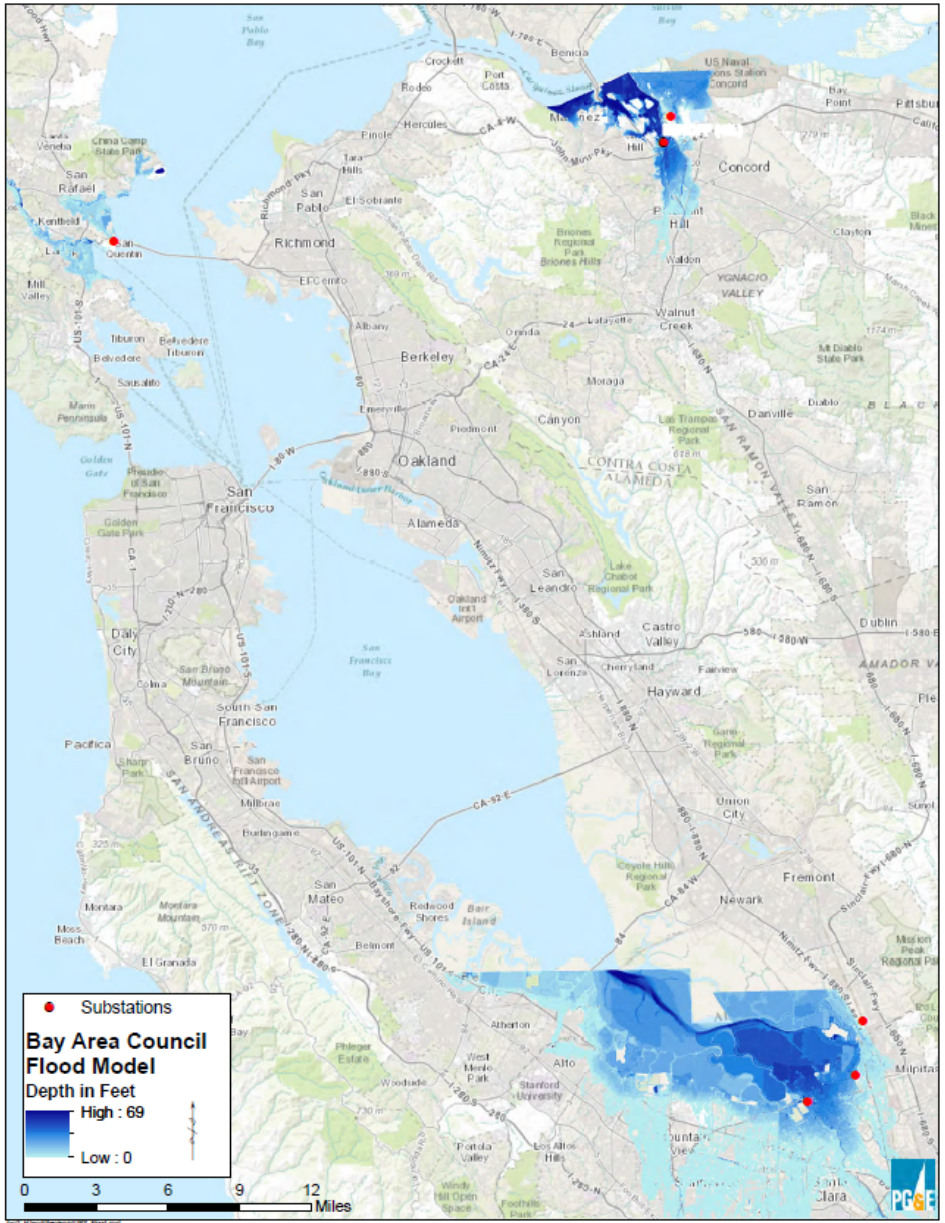
Partnering on Studies

PG&E participated in a recent Bay Area Council Economic Institute Report, which found that a Superstorm and associated flooding could have a $10.4 billion impact on the Bay Area economy.

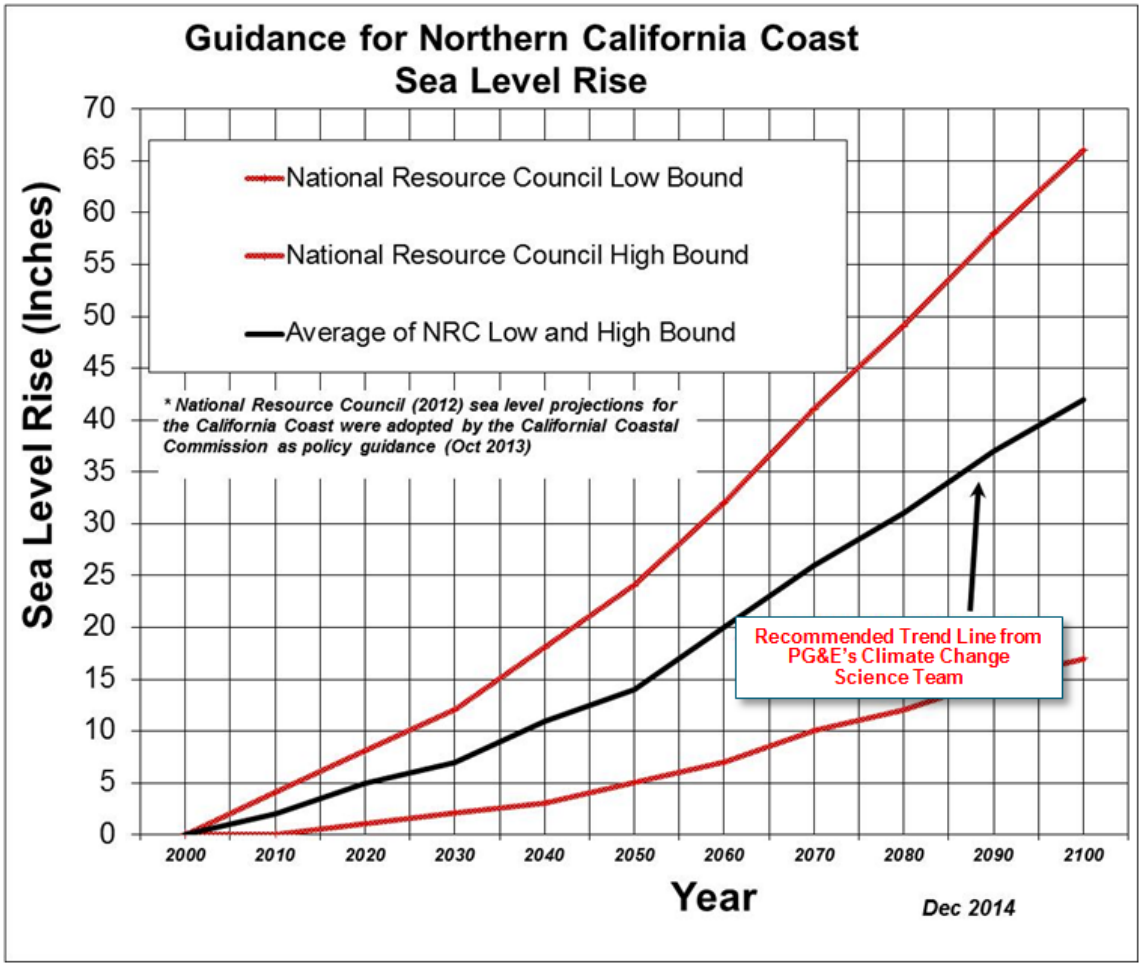
The report included solutions for creating greater regional resilience with a focus on the need for increased investment in flood control.

Surviving the Storm Report





Sample Scenario: Sea Level Rise



	Trend Line	Low/ High Range
Year	Inches	Inches
2010	2	0 – 4
2020	5	1 – 8
2030	7	2 – 12
2040	11	3 – 18
2050	14	5 – 24
2060	20	7 – 32
2070	26	10 – 41
2080	31	12 – 49
2090	37	15 – 58
2100	42	17 - 66

Sample Scenario: Sea Level Rise

Scenario

- 24 inch sea level rise by 2050

Status of Risk Assessment

- Reviewing assets and developing risk response plans

Near-Term Actions Taken

- Participating in local studies and initiatives
- Responded to recent request for state's Sea Level Rise Planning Database, as required under AB 2516

Engaging in Local Initiatives

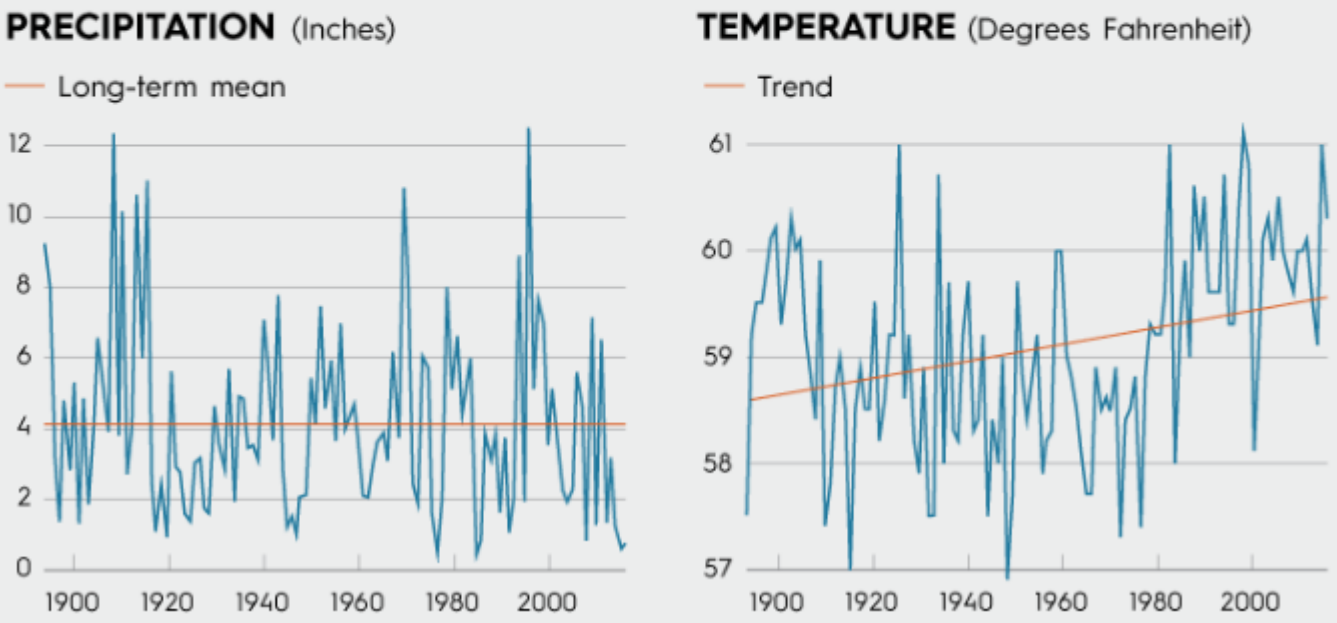
PG&E is participating in San Mateo County's effort to identify and assess community assets and natural resources that will be most affected by sea level rise and storm events along the County's bayshore and coastline.

This is one of nearly a dozen local studies and initiatives in which PG&E is participating.

Low Precipitation and Snow Pack, High Temperatures

No Rain, High Temperatures

California has always battled drought in many forms, both meteorological drought (caused by below average precipitation rates) and hydrologic drought (caused by below average runoff from water sources). But the last few years have been unique. Precipitation rates are the lowest on record, and temperatures are rising.



SOURCE: http://www.visualnews.com/2015/04/13/californias-worst-drought-in-history-the-breakdown/

PG&E's Drought Response

- Established Internal Drought Task Force
- Addressing vegetation impacts on gas and electric infrastructure and coordinating with key agencies to prevent and respond to wildfires
- Maintaining dry-cooled power generation
- Reducing water use in our facilities and exceeded 5-year company water conservation goal
- Offering customers a wide range of energy efficiency options to help them reduce their water use
- Strategically managing water supplies to optimize hydropower and the availability of water for fisheries and downstream users' needs

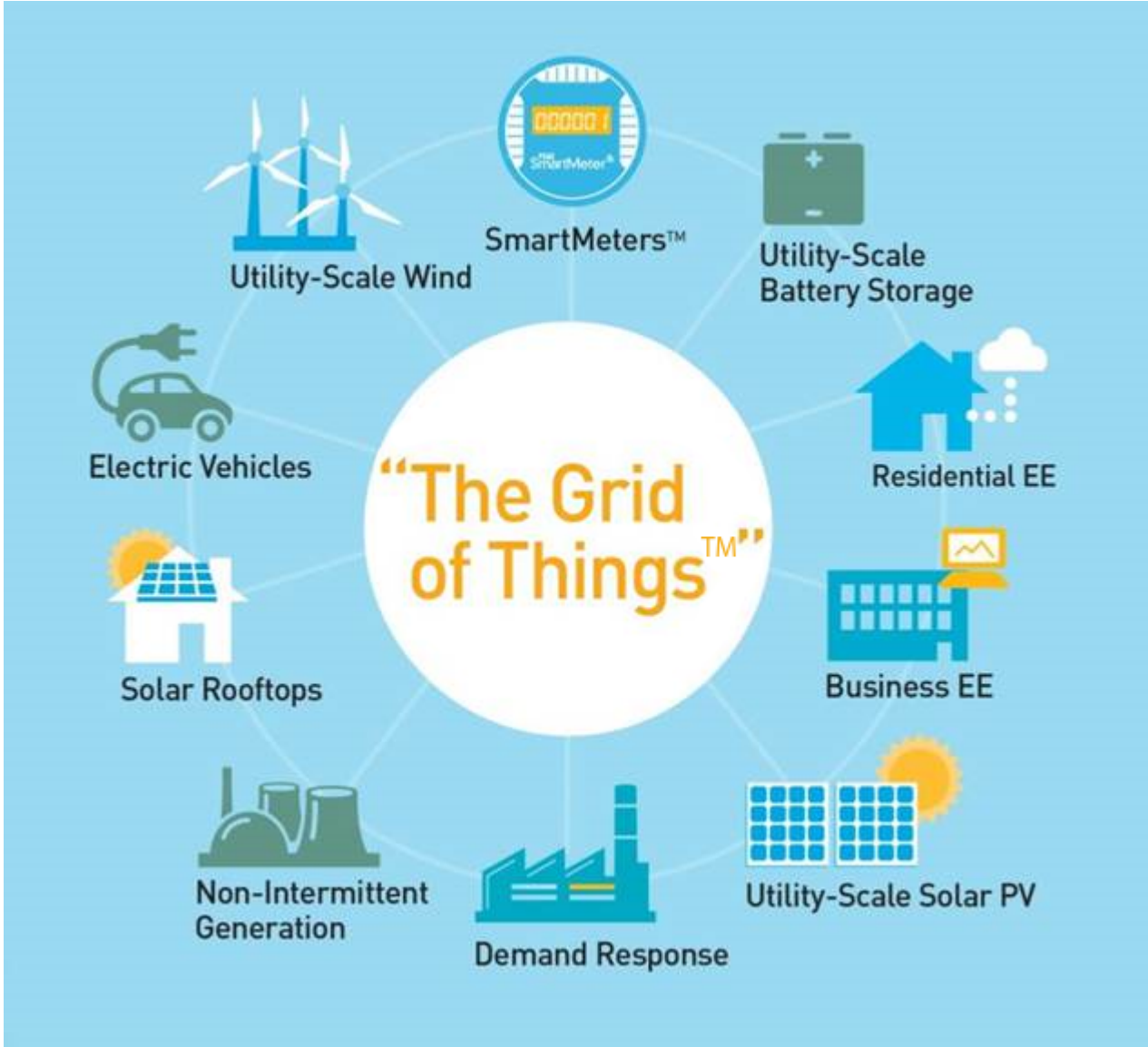
Managing Hydro Operations: Longer-Term Planning

- Collaborating on research and developing new modeling tools for forecasting runoff to plan for potential snowpack reductions in the Sierra Nevada Mountains
- Investigated Northern California's aquifers to better understand how they may respond to climate change
- New research with the University of California and DWR on a project to monitor snowpack, climate, soil moisture and other factors on the upper Feather River

PG&E has presented and published several scientific papers on our research into how climate change is impacting the Northern Sierra Nevada and Southern Cascade watersheds that supply our hydroelectric system.

Looking Forward: Grid of Things™

A smarter, more flexible, and more distributed grid will be a more resilient system in the face of a changing climate.



Q&A

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THANK YOU

Learn more about ARCCA:

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