2019 NARUC Summer Policy Summit
“Extreme Weather Events and Climate Variation”

Presented by:
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AGENDA

• Company Overview
• Changing Climate – “Is this the new norm?”
• Managing Risk
• Wildfire Task Force
California Water Service Group

- Largest in the West
- 3rd largest in U.S.
- Serves 2 million+ people via...
  - 6,000+ miles of main
  - 1,130 wells
  - 662 storage tanks
  - 155,000+ valves
  - 50,000+ hydrants
  - 2,010+ sampling stations
  - 6 surface water treatment plants
  - 10 wastewater treatment plants
California Drought:

- 2014 - Sustainable Groundwater Management Act (SGMA) Emphasizes local management and formed groundwater sustainability agencies (GSAs) from local and regional authorities
- Ensure sustainable groundwater management by 2040
- 2015 - Executive order to reduce urban water use by 25%
- Customer first approach – provided numerous options

“Is this the new norm?”
Wildfires:

- **2016 Erskine Fire** – Lake Isabella, Kern County
  - 47,800 acres burnt, 2nd largest fire of 2016
  - 300+ buildings destroyed
  - 2 fatalities

- **2018 Complex Fire** – Lucerne (Clear Lake)
  - 459,123 acres burnt, largest recorded fire in state history
  - 500+ structures destroyed
  - 1 fatality

“Is this the new norm?”
Wildfires:

• **2018 Woolsey Fire – Westlake Village, CA**
  - 96,949 acres burnt
  - 1500+ structures destroyed
  - 3 fatalities

• **2018 Camp Fire – Paradise/Chico, CA**
  - 153,336 acres burnt, most destructive fire in the history of the state of California
  - 13,973 homes and over 4,500 structures destroyed
  - 86 fatalities
  - 11 employee’s homes destroyed – 18 employees displaced – 1/3 of the workforce
Managing Risk

• Robust risk management model
• Enterprise Risk Management assessment
  ✓ Water Supply
  ✓ Climate change - natural or human caused disasters and “Inverse Condemnation”
Managing Risk - Water supply

• Water conservation is the new norm
• Working with agencies and creating partnerships to ensure a reliable future water supply for the communities we serve
Managing Risk – Natural Disasters

• People first approach, #1 priority in any emergency
• Robust emergency response planning and training
• Created “Wildfire Taskforce” to identify, reduce, and manage risk created from wildfires
Managing Risk – Wildfire Task Force

• Conducted risk assessments for all districts
  ✓ Identified and ranked systems vulnerable to the threat of wildfire
  ✓ Developed and prioritized a list of critical capital projects to reduce risks and add reliability against the threat of wildfires (back up power generators and equipment)
Managing Risk – Wildfire Task Force

• Ensure that equipment and assets, are in proper working order or are repaired/replaced – “all hands on deck” approach

• Conducted mandatory training for all district employees on: Red Flag Warning, Weather Watch/Warning/Advisory, Hydrant Maintenance SOPs, Hot-work and Vegetation Management BMP’s

• Develop regionalized emergency response for: strike teams, EOCs, trainings, emergency supply, and equipment storage/“Emergency Response Trailer Units”
Managing Risk – Wildfire Task Force

Manage “Public Safety Power Shutdowns” (PSPS)

• Employee and customer safety
• Firefighting
• Hospitals, critical care units
• Fuel for generators & vehicles
• Assure continuous water quality support during critical incidents
Extreme Weather
NARUC Summer Policy Summit

7/23/2019

Megan Levy
Local Energy Programs Manager &
Energy Assurance Coordinator
Office of Energy Innovation
Public Service Commission of WI
DMSP F15
14 August 2003
0129Z
~20 hrs before Blackout
DMSP F15
15 August 2003
0114Z
~7 hrs after Blackout
Photo by Jim & Connie Sathre
Adams, MN

02/25/2007
More Frequent News Stories on Extreme Weather Impacts?

The Telegraph, Alton, Illinois - May 20, 2019

KSDK.com June 3, 2019
Relocated and Modernized Water Plant
- Improved Resiliency, Treatment, Efficiency and Security

1993
100+ Year Old Plant Flooded

2001
New Plant Commissioned
How does 2018 compare to history?

- Highest in days with precipitation
- 66% above average in extremes (more extremes than average year)
- Ranked 8th highest in 109-yr record
- 5th highest year in extremes in warm minimum temperatures

Source: NOAA
Variability in Same Year – Meramec River, Missouri

https://www.youtube.com/watch?v=_cMs4ZNCmh8
Impacts - Large Natural Disasters Across U.S.

- Above average precipitation (4.69 inches)
- 3rd wettest year on record (124-year record)
- 1st wettest year in past 35 yrs
- 14th warmest year on record
- 22nd consecutive warmer-than-average year for the U.S.

8th consecutive year with 8 or more Billion-Dollar disasters
Increasing Frequency and Magnitude of Events

Billion-Dollar Disaster Event Types by Year (CPI-Adjusted)

- Winter Storm
- Wildfire
- Trop Cycl
- Severe Storm
- Freeze
- Flooding
- Drought

Cost in Billions of Dollars

Number of Events

Years: 1980 to 2018
Compound extremes also increase the risk of cascading infrastructure failure
How Do Changes in the Water Cycle Impact Utilities

Fourth National Climate Assessment

1. Changes in Water Quality and Quantity
2. Deteriorating Water Infrastructure at Risk
3. Water Management in a Changing Future

Source: EPA.gov 2017
Resiliency Toolbox

Hardening of Assets to Emergency Response Plans

- **Harden Assets**
  - Examples:
    - Floodwall/Flood proofing
    - Emergency Power

- **Diversify Facilities**
  - Examples:
    - Multiple sources/plants
    - Surface/ground/purchased water

- **“Capex Lite” Solutions**
  - Examples:
    - Emergency Interconnections
    - Blind Flanges
    - Portable Generators

- **Optimize Reliability**
  - Examples:
    - Reliability Centered Maintenance
    - Predictive Maintenance
    - Supply Chain diversification

- **Emergency Plans**
  - Business Continuity & Disaster Recovery Planning
    - Drought Mgmt
    - Customer Communications
    - Emergency Agency Coord.
Work in Flood Hazard Area

Building Codes Cite ASCE-24 Flood Design Standard

Essential facilities (Flood Design Class 4)
Elevation of lowest floor:

Base Flood Elevation (100yr flood) + 2 ft,
Design Flood Elevation,
or 500-year flood elevation,

whichever is higher.
“Harden Assets” Example: Davenport Iowa

- The river crested at a record 22.7’ in 2019
- The previous record flood for this area was 22.63’ in 1993
message to local media: “We are operating normally and continually monitoring the water quality. The plant is operating under normal conditions and well protected by the flood wall.”
Water Service Available Before, During and After Event

4th National Climate Assessment: Compound extremes can also increase the risk of cascading infrastructure failure since some infrastructure systems rely on others, and the failure of one system can lead to the failure of interconnected systems, such as water–energy infrastructure (Ch. 4: Energy; Ch. 17: Complex System)
What’s Next?  
AWIA- America’s Infrastructure Act of 2018

• Conduct risk and resiliency assessments
• Revise emergency response plans
• Review and, if necessary, revise these documents at least every 5 years
• Consider physical risks posed by malicious acts and natural disasters, as well as risks from cyber threats
THANK YOU