

CALIFORNIA DEPARTMENT OF WATER RESOURCES

DWR Approach to Climate Analysis

National Academy of Science Panel

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SWP Climate Action Planning

- **SWP Delivery Capability Report (July 2024)**

Shows future delivery capability if we continue business as usual. No major adaptations, no changes in regulation, but climate continues to warm and precipitation becomes more extreme.

13-23% Declines in average annual deliveries

- **SWP Climate Adaptation Plan (Winter 2024/25)**

Shows future delivery capability if we implement key strategies that we are already working on. Shows how new infrastructure and science-based operations can improve reliability.

How can DCP, FIRO, and storage work together to improve the future?



SWP Delivery Capability Report

- Bi-annual report of Existing delivery capability
 - Over a range of hydrologic conditions
 - Historic extended dry cycle
 - Long-term average
- Future delivery capability added in 2007 looking 20-years into the future (business as usual+ climate change)



The DCR serves as the key planning information for SWP water users:

- Sustainable Groundwater Management Plans
- Urban Water Management Plans
- Agricultural Water Management Plans
- Integrated Regional Water Management Plans
- Integrated Resource Plans



The DCR serves as the default climate change scenario for SWP planning:



- Future energy resource planning
- Asset maintenance and management studies
- Environmental Impact Reports
- Various longer-range operations studies



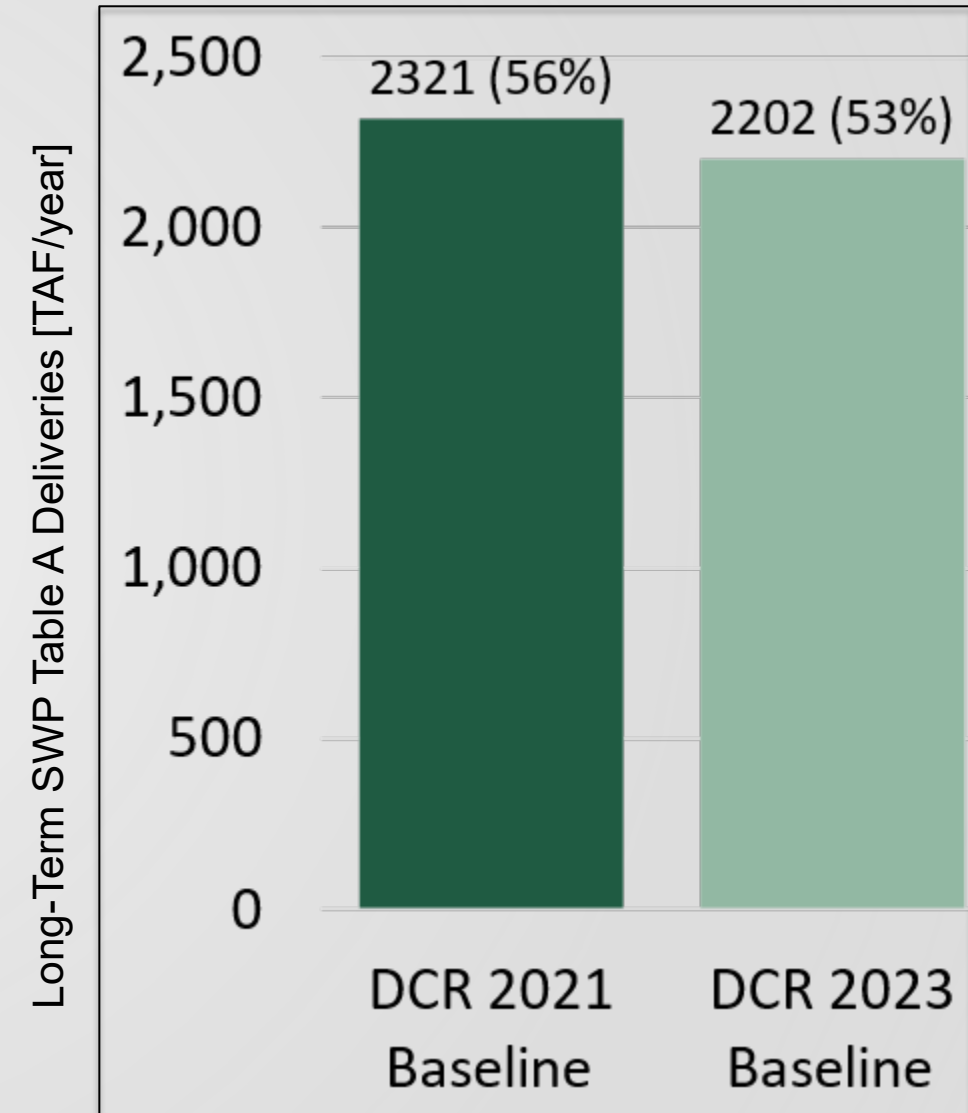
DCR 2023 Enhancements

- ✓ Account for climate changes that have already occurred
- ✓ New risk-informed future climate scenarios
- ✓ Peer review
- ✓ Greater alignment with other activities



Climate Impacts on Current Capability

- More variability in year-year runoff
- More seasonal variability
- Higher winter flows
- Lower spring flows
- **About 3% loss of long-term average annual allocation (5% by volume)**

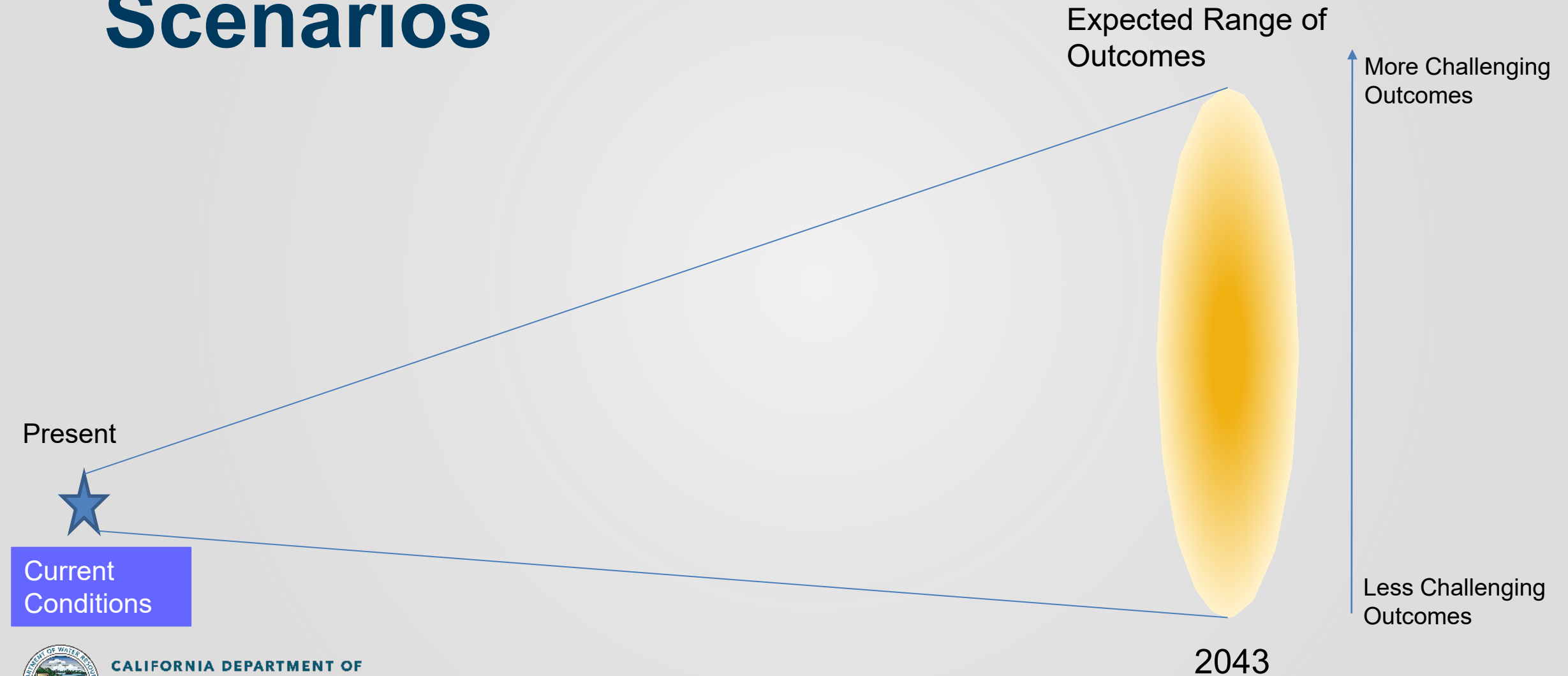


New Risk Informed Future Climate Scenarios

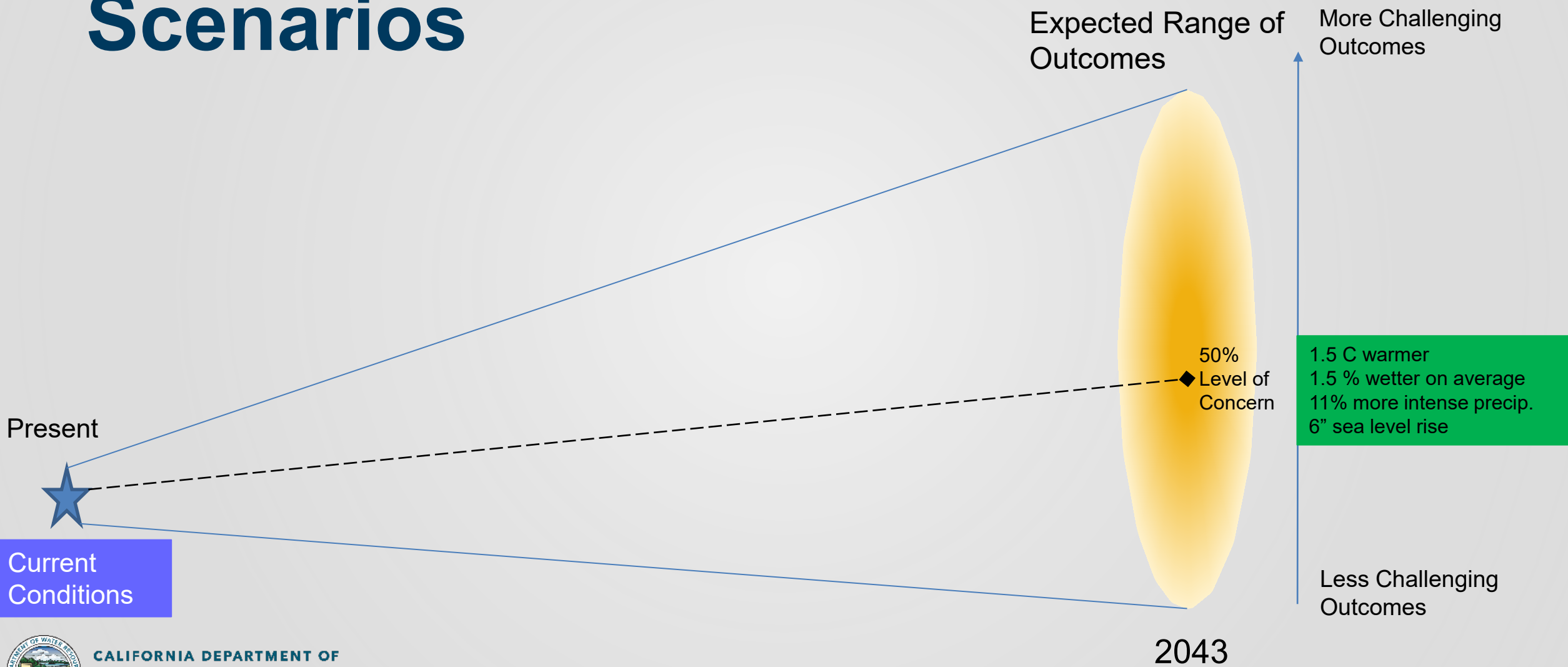
- Future conditions scenarios evaluate combinations of climate changes (temperature, precipitation, and sea level rise) that represent different levels of risk- the “**Level of Concern**” percent number describes the percent of model informed climate outcomes that would result in better system performance.



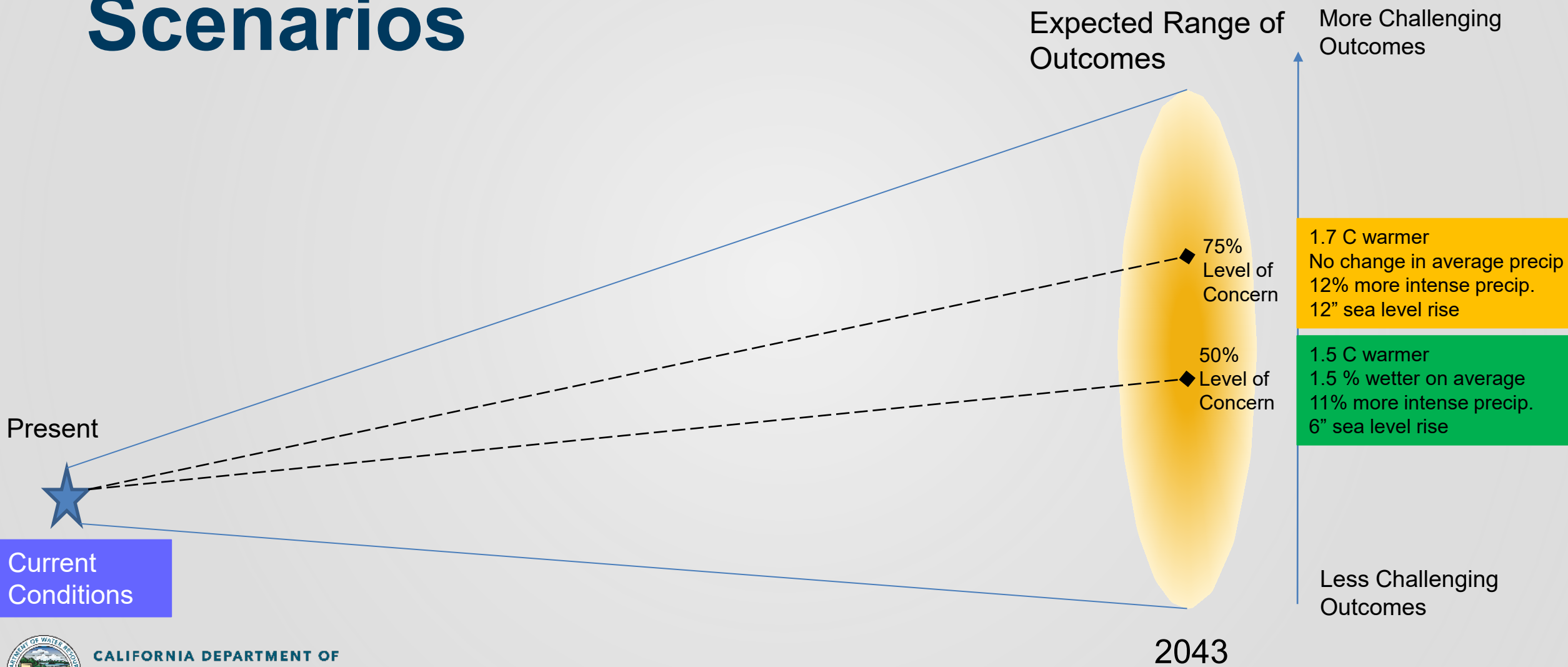
New Risk Informed Future Climate Scenarios



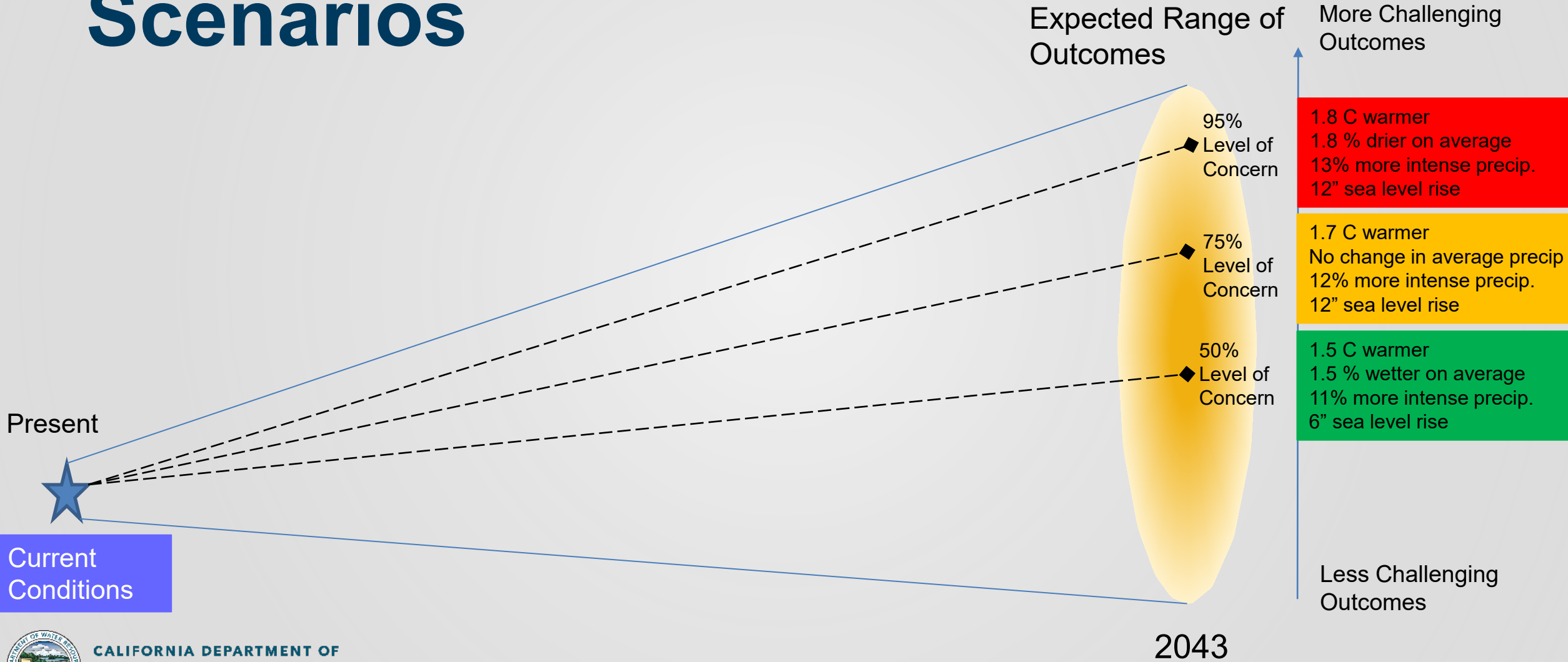
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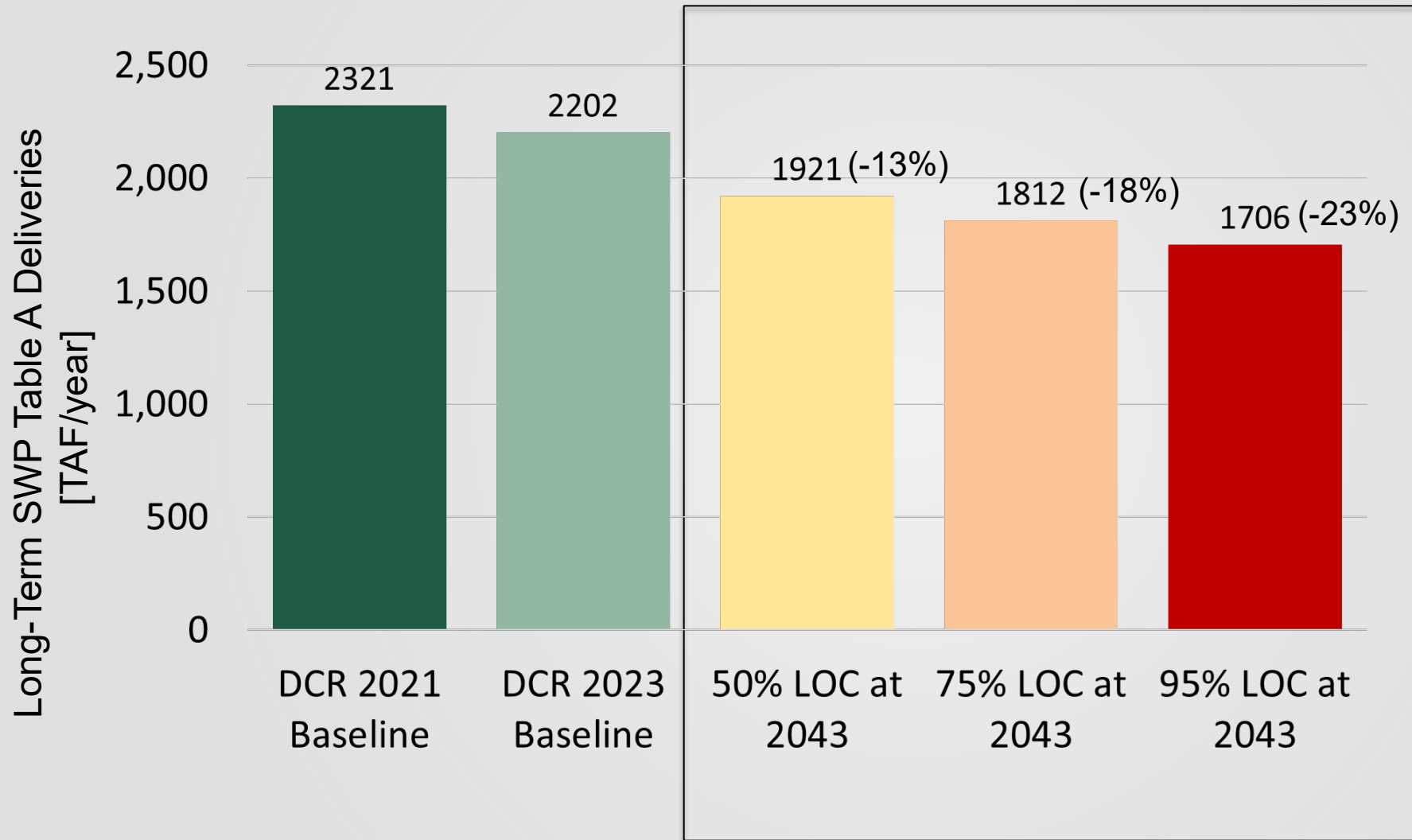
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New Risk Informed Future Climate Scenarios



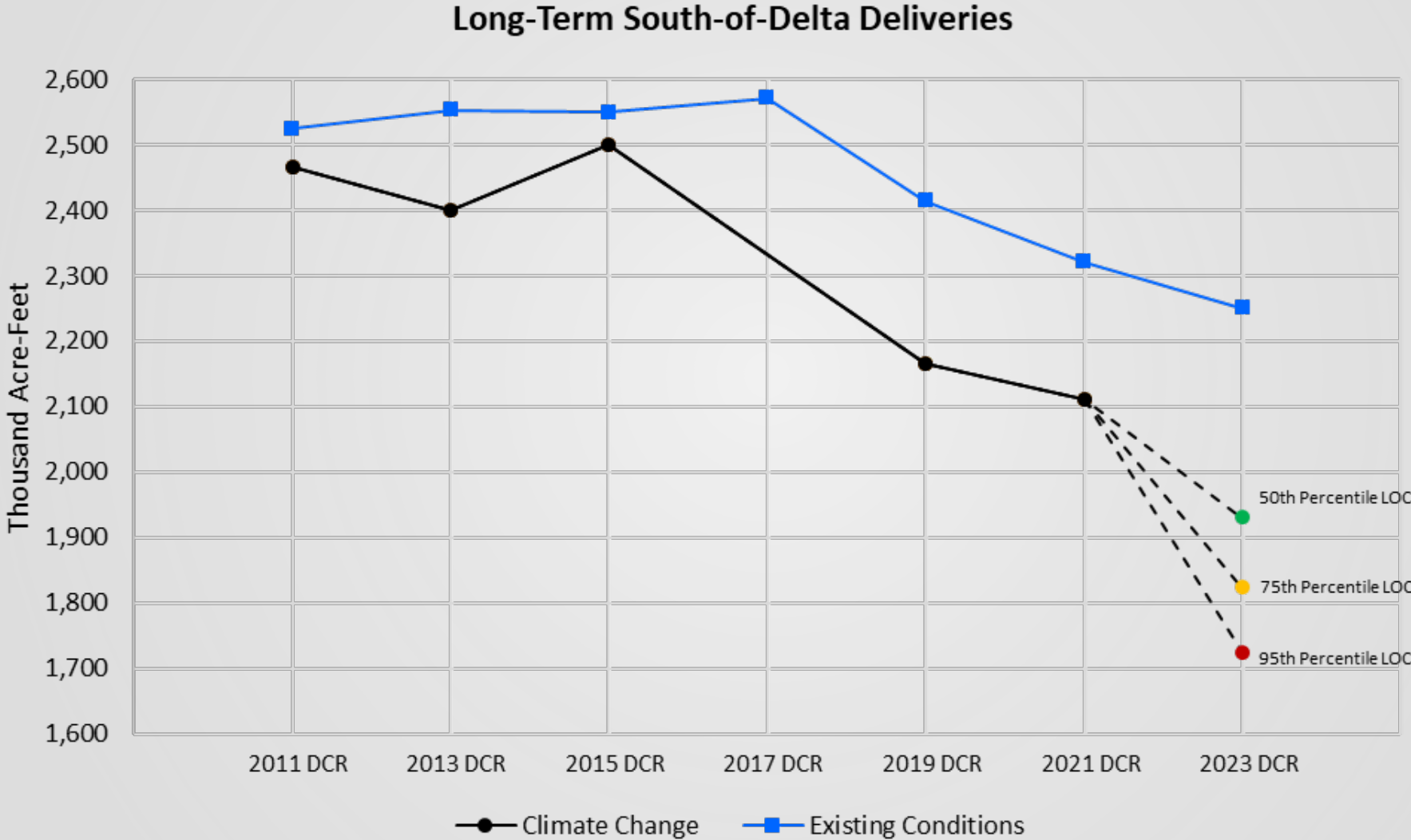
Average Annual SWP Table A Deliveries



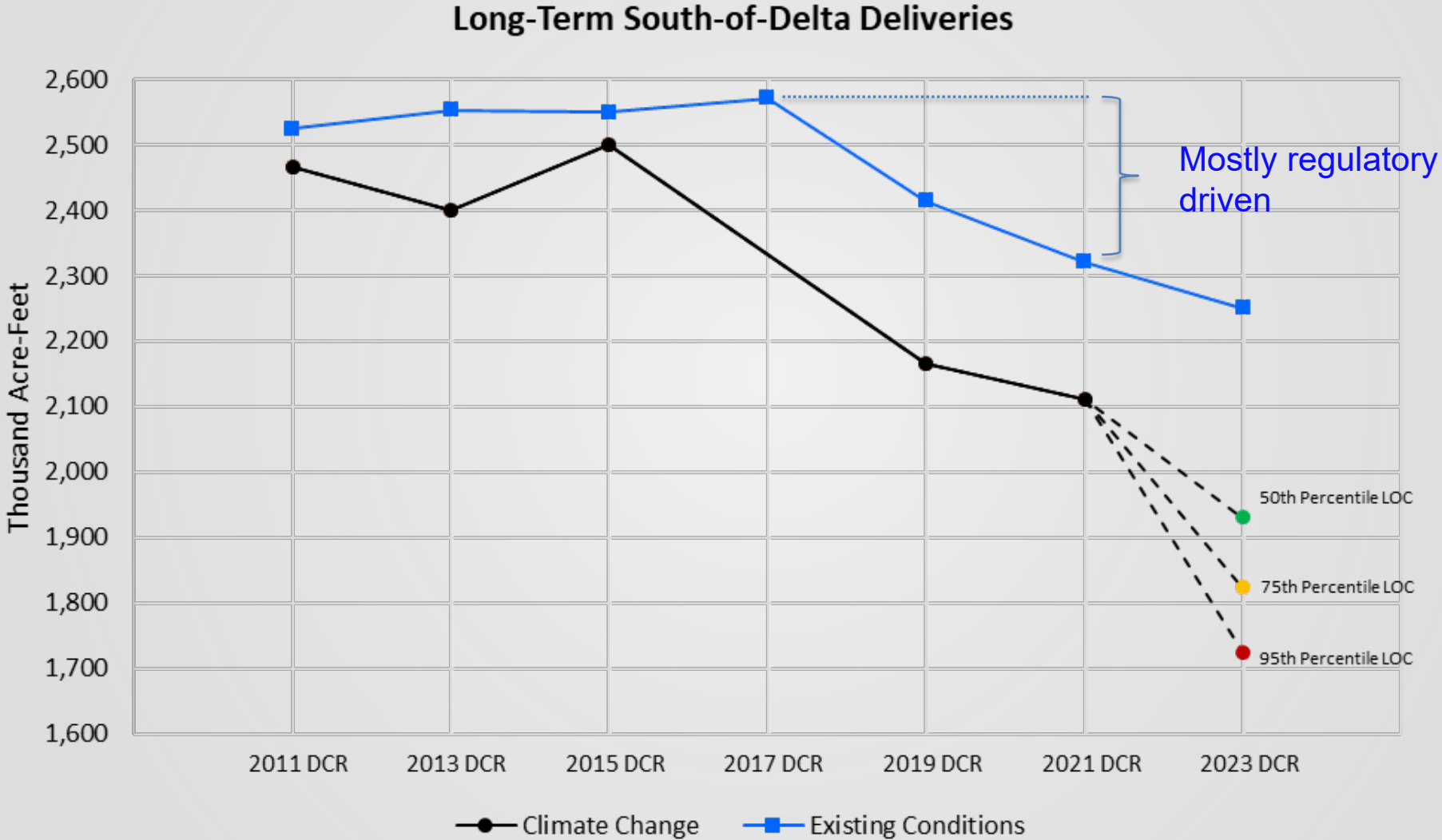
Climate change with NO adaptation likely to decrease average long-term deliveries by 13-23%



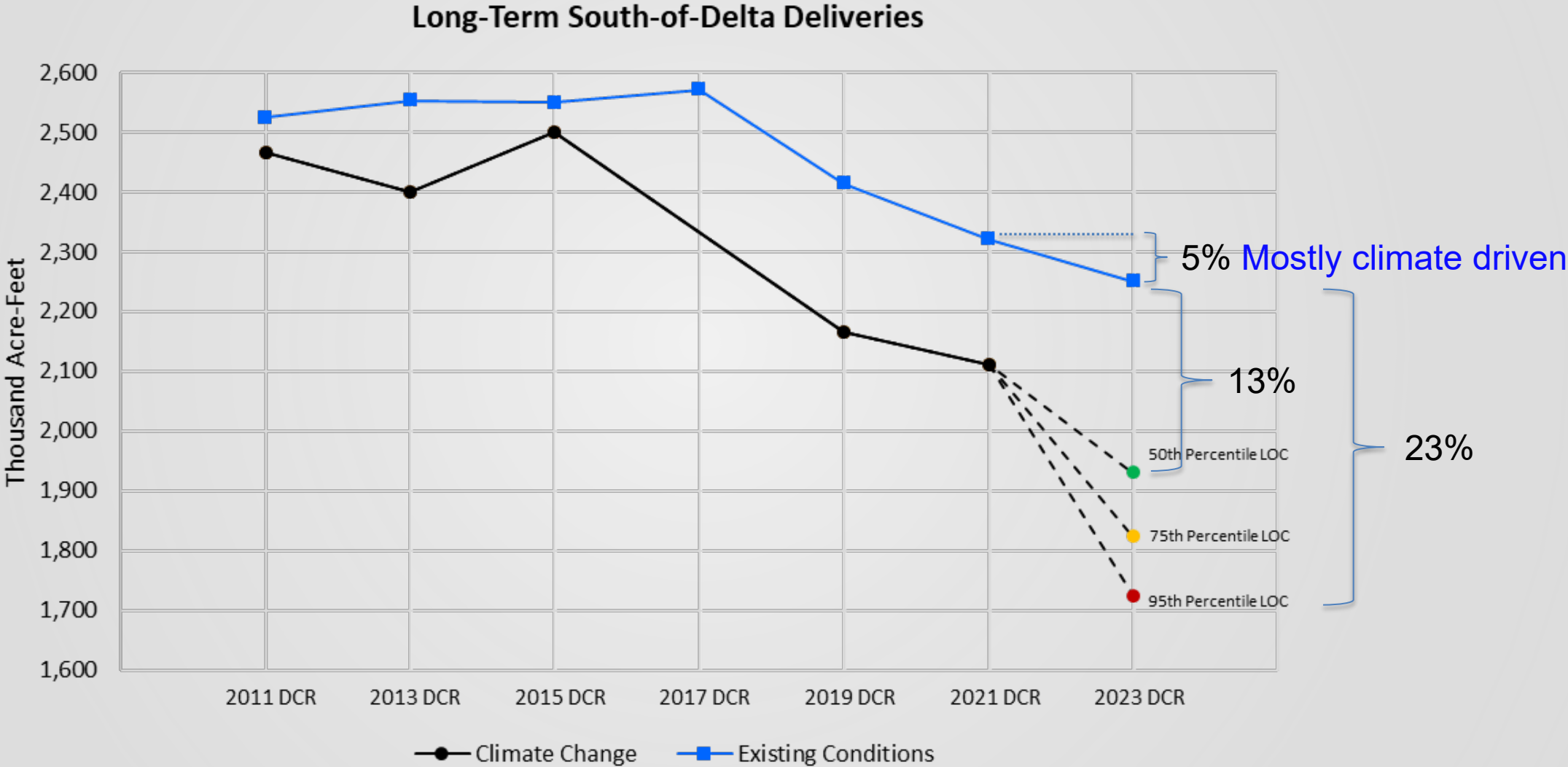
DCR Delivery Trends (2011 – 2023)



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DCR Delivery Trends (2011 – 2023)



Key SWP Operational Challenges

- Loss of snowpack, earlier runoff
- Use of storage to meet Delta regulations (SLR)
- Water temperature issues below dams
- Increasing demand (depletions along Sac R.)
- Extreme weather events
- Aging infrastructure



SWP Climate Adaptation Plan

We can change to keep up with climate



- **SWP is developing several significant projects that would provide climate adaptation and resilience**
- **Evaluate the current strategies alone and in combination**



Key Benefits of this Study

- Builds on top of DCR work—alternative futures where we have improvements in place by 2045
- Looks further into the future (2085) to the end of the current water supply contracts with and without adaptation
- Shows how combinations of projects are more than the sum of their parts
- Shows how SWP is preparing for a hotter more extreme future



Key SWP Adaptation Measures

Structural Measures

- **Delta conveyance project**
- **California aqueduct subsidence project**
- **Increased south of Delta storage**
- Delta barriers
- Pumped storage and other energy benefits identified in flexible resource study

Operations and Management Measures

- **Forecast informed reservoir operations/Lake Oroville flood control manual update**
- **SWP enhanced asset management**
- Improved seasonal forecasting
- Revised carryover storage targets
- Shaping SWP power load and generation
- Enhanced financial management and contract extensions
- SWP Delta islands management
- WSIP project integration
- Reservoir temperature management

Nature Based Solutions

- Recreation development
- Feather river watershed management
- Environmental restoration



DCR Key Take Aways

- If we don't act:
 - Changes in snow accumulation, precipitation, temperature, and sea level will reduce deliveries
 - Average SWP deliveries ↓ by >10% by 2043
 - Dry/Critical Year SWP deliveries ↓ by >20% by 2043
 - **That doesn't mean there isn't water, its just that our current infrastructure wasn't designed for these conditions, we can adapt...**



Adaptation Plan Key Take Aways

- SWP Adaptation Plan will show:
 - How adaptation can lead to alternative futures and mitigate climate impacts
 - How multiple adaptation strategies work together
 - Residual vulnerabilities



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THANK YOU



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