



WATER TOMORROW
2020 Integrated Resources Plan

IRP Update

Member Agency Manager Meeting

December 11, 2020

1

OVERVIEW

- Upcoming Board Committee Meeting
- Data Organization and Delivery
- 2015 IRP Retrospective Report
- Preliminary Assumptions and Gap Analysis
 - Complete analysis with initial estimates
 - Engaged demand and climate change experts
- Next Steps
 - Schedule

2

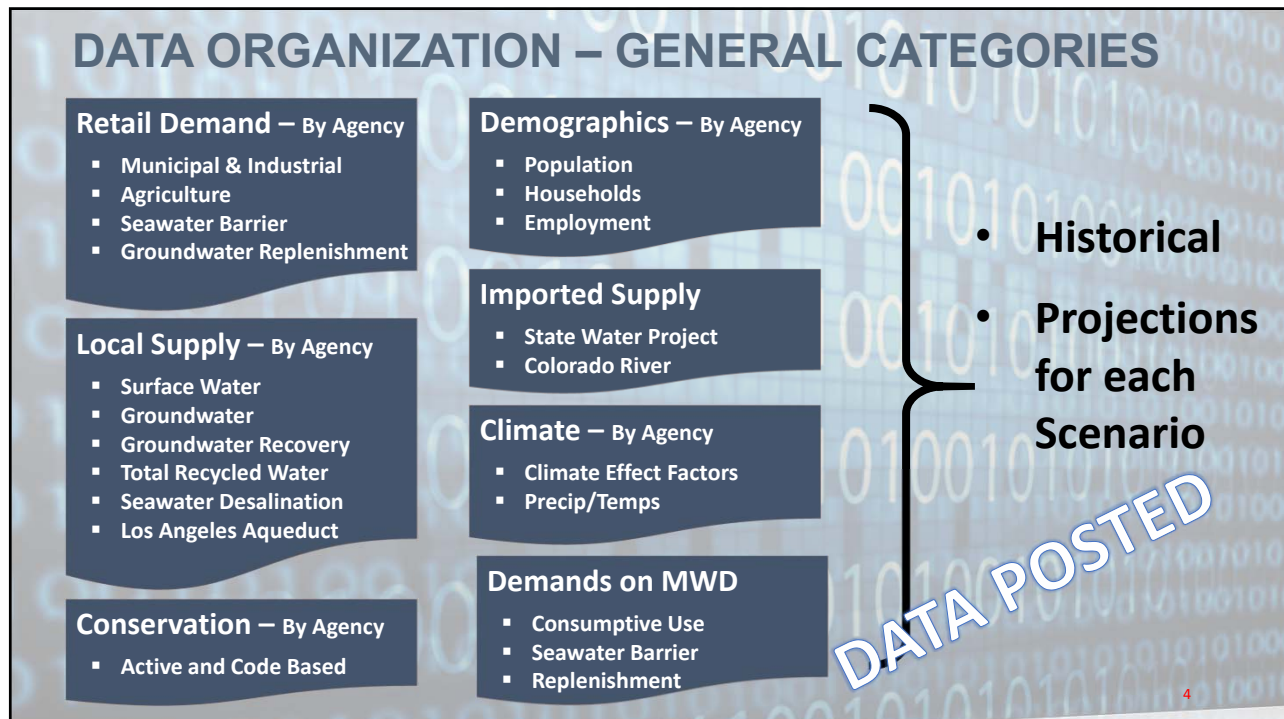
2

IRP BOARD COMMITTEE

- Three items for presentation on Dec. 15 (all posted)
 - Draft Retrospective of the 2015 IRP
 - Preliminary Gap Analysis of the 2020 IRP
 - Policy Implications of the Preliminary Gap Analysis

3

3



4

DRAFT RETROSPECTIVE REPORT

- Review planning assumptions in 2015 IRP Update and compare to recent observations
- Examine planning assumptions in context of recent literature
- Offer lessons learned
- Addresses member agency comments on first draft of report
- Posted to Board as draft with request for comment by Dec. 29

5

5

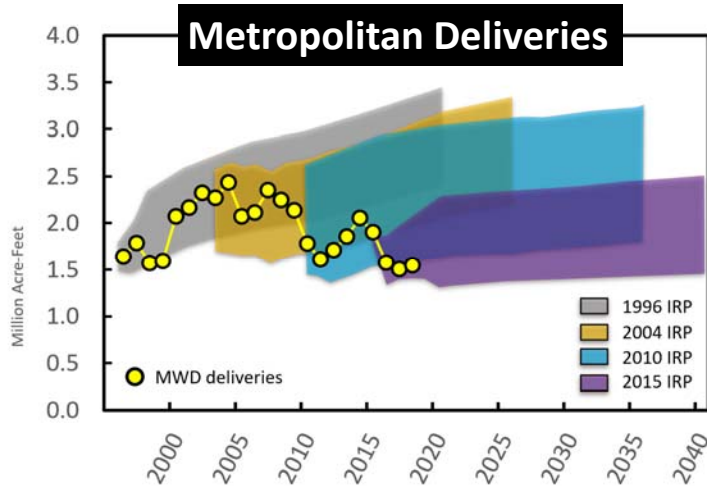
FIVE YEARS OF CHANGING CONDITIONS

- 2015 IRP compiled while California experienced once-per-millennium drought
 - Statewide emergency declarations
 - Mandatory urban conservation
 - Depleted storage
 - Large initiatives to change water use behavior
- Swing from extreme drought to record runoff
- Regulatory actions on constituents of emerging concern in groundwater

6

6

IRP ADAPTS USING BEST-AVAILABLE INFORMATION



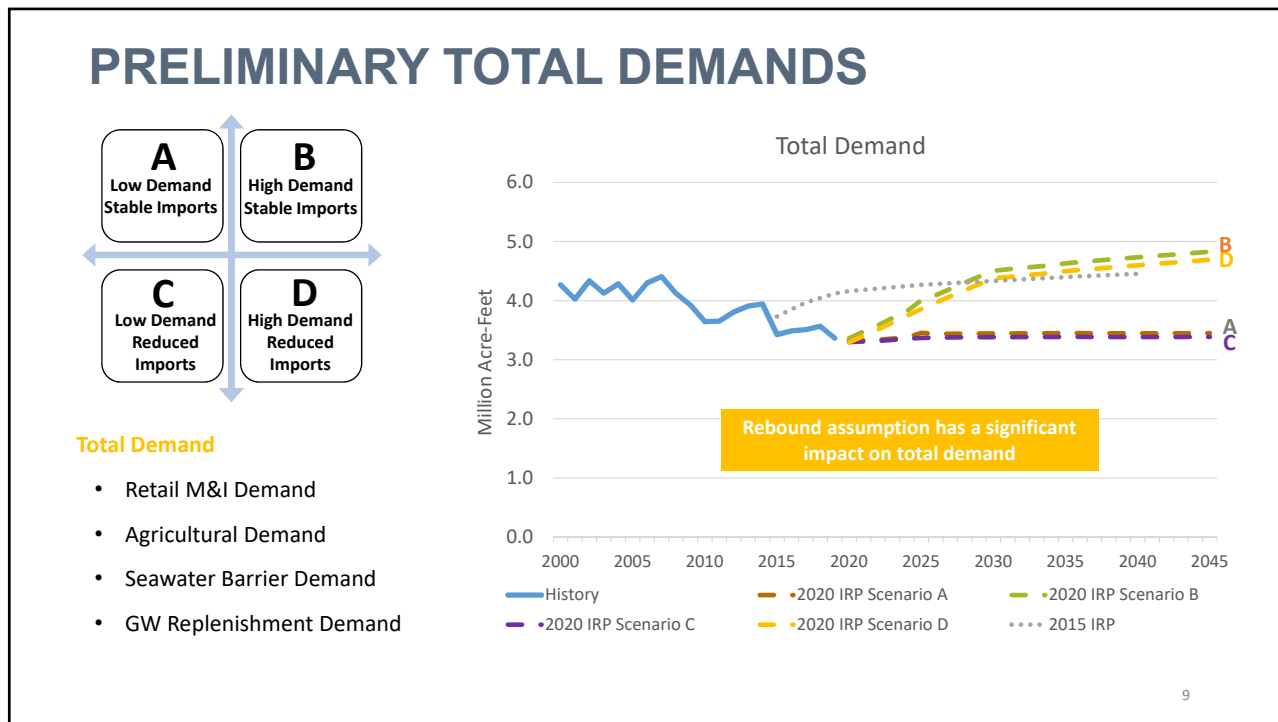
7

LESSONS LEARNED

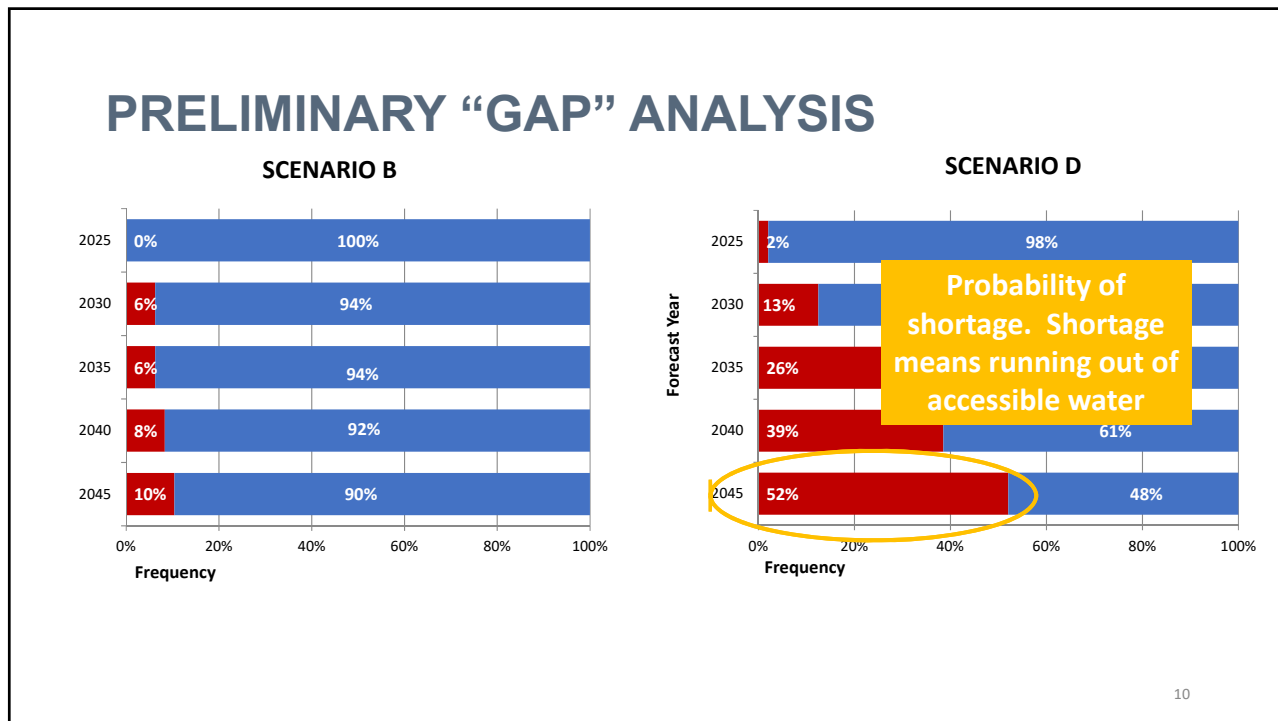
- Severe drought and behavioral change persistently suppressed per-capita water demand
- Regional investments helped local supplies hold steady
- Prior investments accelerated recovery from severe drought
- Risks remain and scenario planning offers useful tool to examine risks

8

8



9



10

FEEDBACK AND FURTHER EXAMINATION UNDERWAY

- Investigate drivers for continued low demands in order to inform demand rebound assumptions
- Plausible higher/lower population, demographic and economic growth
- Agricultural demand patterns
- Update seawater barrier demands and operating assumptions

11

DEMAND EXPERTS



• Kurt Schwabe Ph.D.

*Assoc. Dean/Chair & Prof of Environmental Economics & Policy, UC Riverside
Adjunct Fellow, Water Policy Center, Public Policy Institute of California (PPIC)*

- Dr. Schwabe's research focuses on economic issues associated with water use, agricultural production, urban water conservation, ecosystem services, and environmental regulation. His papers have appeared in wide range of peer-reviewed publications, including ***Nature Sustainability***, ***Proceedings of the National Academy of Sciences***, ***Journal of Risk and Uncertainty***, ***Land Economics***, and the ***American Journal of Agricultural Economics***, and is co-editor of two recent books on water titled, Drought in Arid and Semi-Arid Regions: A Multi-Disciplinary and Cross-Country Perspective, and The Handbook of Water Economics.

12

12

DEMAND EXPERTS



- **Lisa Maddaus P.E.**
CFO, Senior Engineer - Maddaus Water Management Inc.
 - Senior water resources engineer with experience preparing water resources planning studies for water suppliers across the country. Her passion is integrated water resources planning, and her specialty is in conservation, drought and climate change planning
- **Dan Rodrigo**
Vice President - CDM Smith
 - Specializes in integrated water resources planning and decision science, and has utilized specialized computer tools and management techniques to help garner stakeholder consensus and develop water plans with adaptive management strategies

13

13

DEMAND EXPERTS



- **Tom Chesnutt Ph.D., Pstat, CAP**
CEO, A&N Technical Services, Inc.
 - Pioneered innovative water rate reform, probability management, stochastic simulation and forecasting in the fields of water policy and economic modeling
- **Stephen Levy**
Director and Senior Economist - Center for Continuing Study of the California Economy
 - Specializes in regional job projections for California regional planning agencies, including understanding of national, state and regional job trends and projections and assessments of regional competitiveness conditions and the implications for public policy. He has prepared growth forecasts for regional agencies including ABAG, SACOG, SCAG, AMBAG and SBCAG and for the City of San Jose

14

14

CLIMATE CHANGE EXPERTS



- **Heather Cooley**

Director of Research – Pacific Institute

- Conducts and oversees research on an array of water issues, such as sustainable water use and management, the connections between water and energy, and the impacts of climate change on water resources

- **Julie Vano**

Director of Research – National Center for Atmospheric Research

- Research interests include hydrology, water resource management, science policy, climate change impacts, and system dynamics. Her current work aims to better connect climate science and the applications community and use these connections to develop innovative ways to address climate impacts on local water resources

15

15

CLIMATE CHANGE EXPERTS



- **Brad Udall**

Senior Water & Climate Research Scientist, Colorado Water Institute - Colorado State University

- Specializes in the impacts of climate change on water resources in the American West


- **Alex Hall**

Professor in the Department of Atmospheric and Oceanic Sciences and Institute of the Environment and Sustainability and Director of the Center for Climate Science - UCLA

- Specializes in the development of *downscaling* techniques to understand climate change at the scales most relevant to people and ecosystems and use these techniques to create neighborhood-scale projections of future climate

16

16

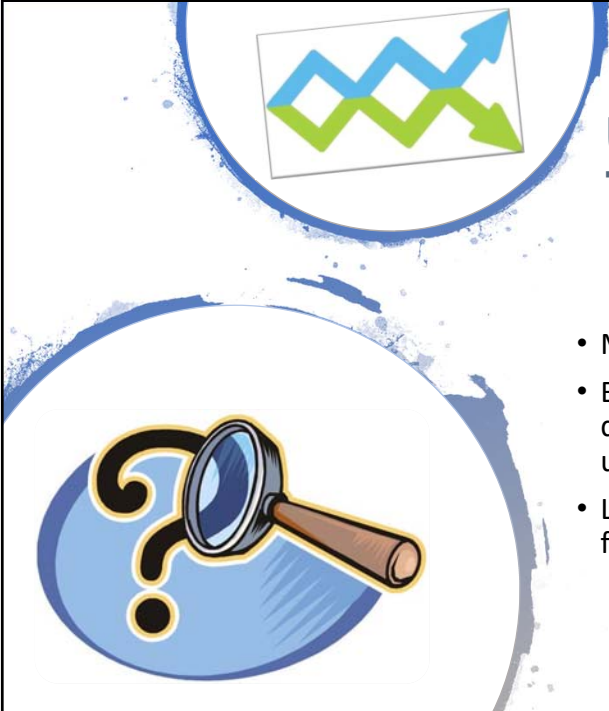


AREAS OF POLICY DISCUSSION

- Advancing Metropolitan's role in influencing reliability outcomes in the future
- Being prepared for increased or decreased dependence on imported water by the region and by member agencies
- Being prepared for climate change and other uncertainties affecting supply and demand
- Balancing resource reliability priorities with financial sustainability concerns

17

17



USING SCENARIOS TO INFORM POLICY

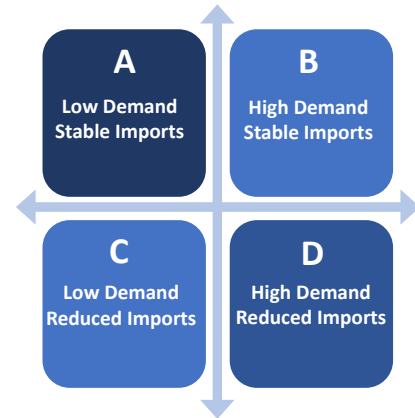
- Moved from single forecast to scenario planning
- Built scenarios around drivers of supply and demand with greatest impact and greatest uncertainty
- Looking at the preliminary gap analyses for all four scenarios together reveals important insight

18

18

INSIGHT FROM PRELIMINARY GAP ANALYSES

- Actions we must take will vary based on the scenario
 - We will not know what scenario will unfold
- Protect both local and imported supplies
- Regional demands are a big factor under all scenarios
- May need to broaden view of reliability



19

19



20

20