

Colorado River Energy Distributors Association CREDA

**Glen Canyon Dam Adaptive Management Work Group
March 6, 2019
Tempe, Arizona**



In The Beginning.....



1902 and 1939 Reclamation Acts

1956 Colorado River Storage Project (CRSP) Act

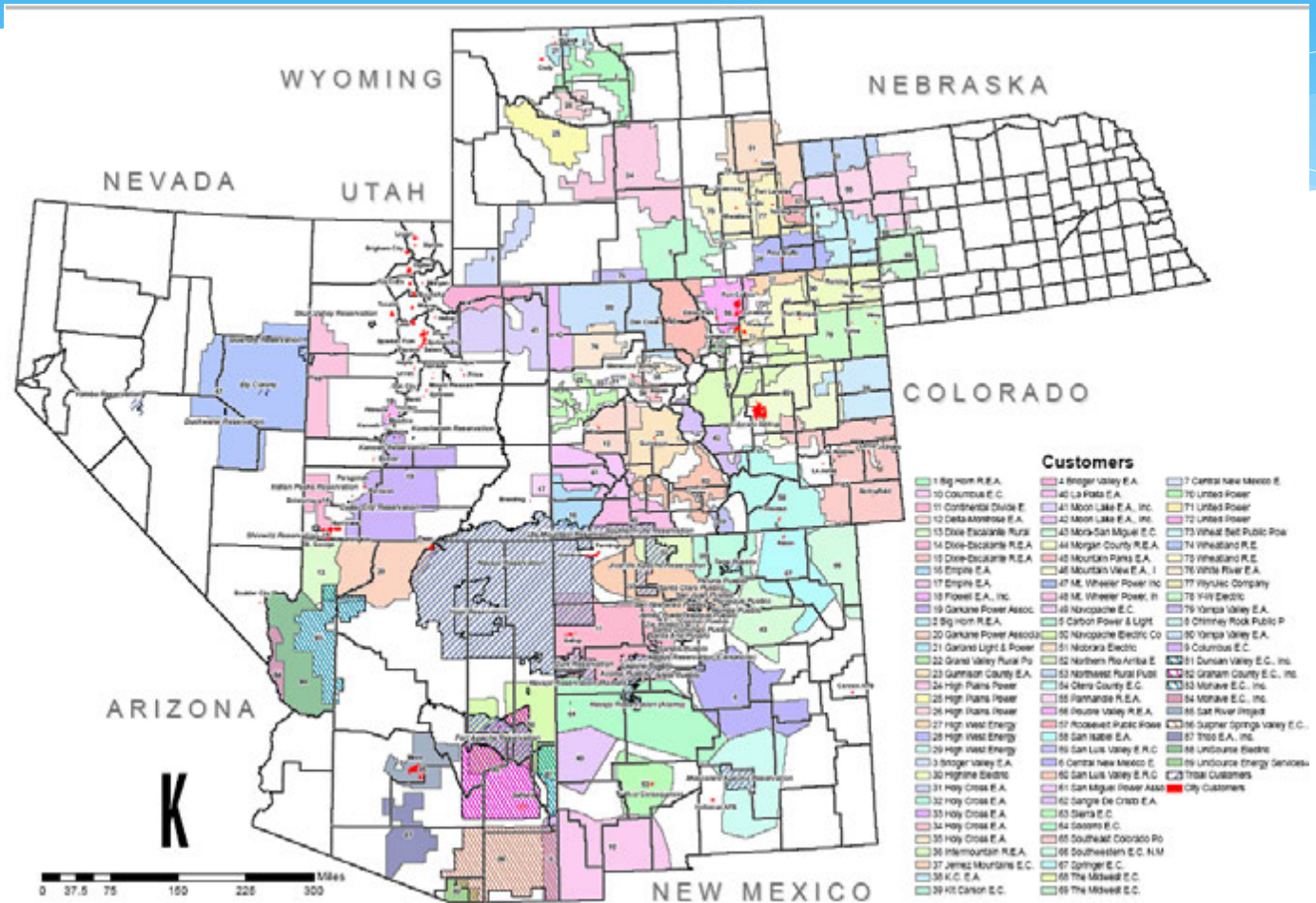
1977 DOE Organization Act (WAPA)

1978 **CREDA**

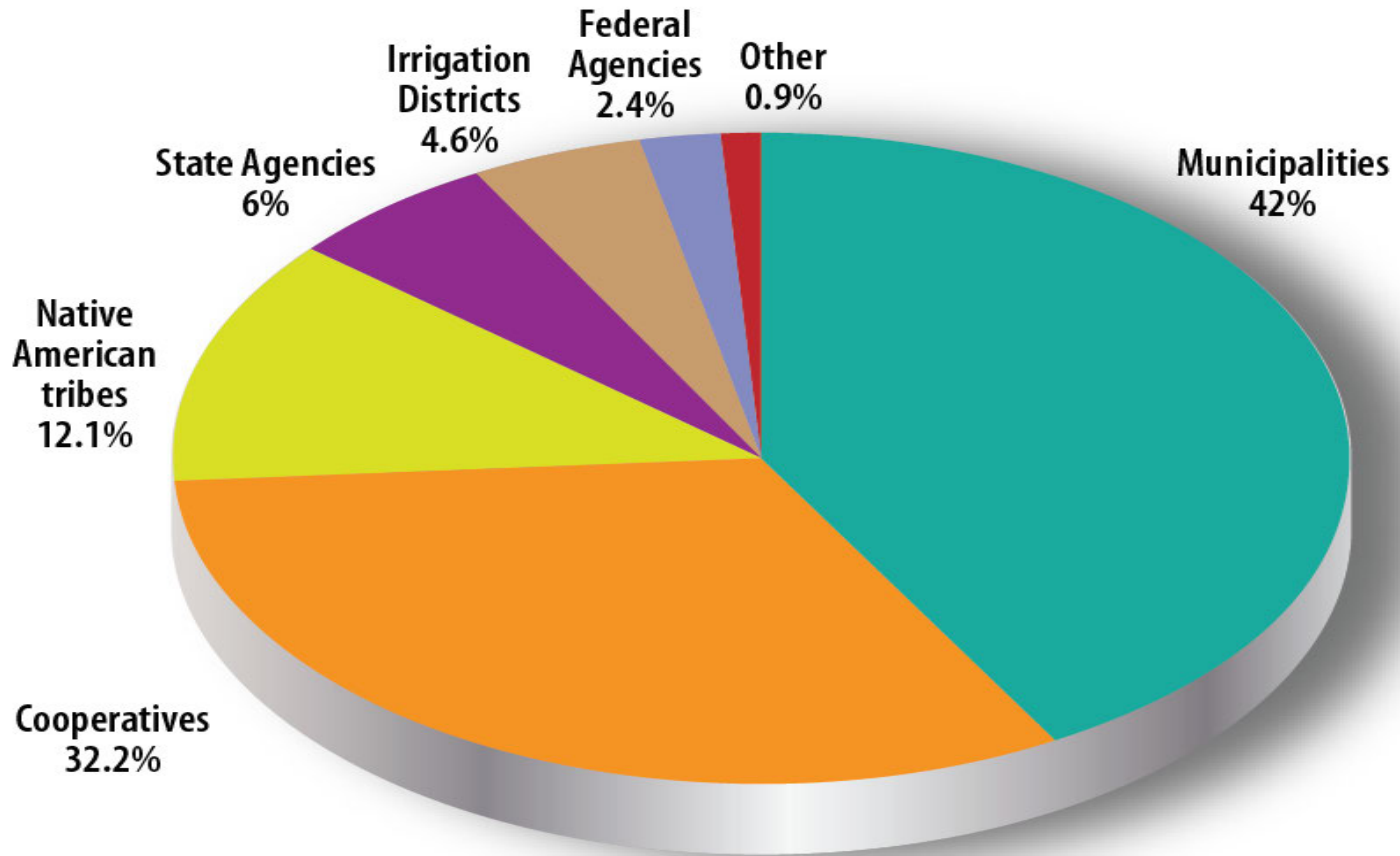
Colorado River Storage Project Mainstem Units



Without CRSP, There Would Be No CREDA!



Who Gets CRSP Power?



Who are CREDA Members?



ARIZONA

- Arizona Municipal Power Users Association
- Arizona Power Authority
- Arizona Power Pooling Association
- Irrigation and Electrical Districts Association
- Navajo Tribal Utility Authority
(also New Mexico, Utah)
- Salt River Project



COLORADO

- City of Colorado Springs
- Intermountain Rural Electric Association
- Platte River Power Authority
- Tri-State Generation & Transmission Cooperative
(also Nebraska, Wyoming and New Mexico)
- Yampa Valley Electric Association, Inc.



NEBRASKA

- Municipal Energy Agency of Nebraska

- **NON-PROFIT**

- **Preference
Customer**

- **CRSP Customer
(contract with
WAPA)**

- **Public
Power/Local**

Who are CREDA Members? (cont'd)



NEVADA

- Colorado River Commission of Nevada
- Silver State Energy Association



NEW MEXICO

- Farmington Electric Utility System
- Los Alamos County
- Tri-State Generation & Transmission Cooperative



UTAH

- City of Provo
- City of St. George
- South Utah Valley Electric Service District
- Utah Associated Municipal Power System
- Utah Municipal Power Agency



WYOMING

- Wyoming Municipal Power Agency

- **Obligation to Serve – over 4.5 million people**
- **Resource Planning**
- **Own Renewables (Hydro, Wind, Solar, Biomass, Nuclear and Small Modular Nuclear)**

CREDA's Mission

“To preserve and enhance the **availability, **affordability**, and value of Colorado River Storage Project (CRSP) facilities while promoting **responsible stewardship** of the Colorado River System.”**

Responsible Stewardship - Flexibility and Balance are Key

“.....the complex set of interests Reclamation must balance in operating the Dam. Those interests include not only the endangered species below the Dam, but also tribes in the region, the seven Colorado River basin states, large municipalities that depend on water and power from Glen Canyon Dam, agricultural interests, Grand Canyon National Park, and national energy needs at a time when clean energy production is becoming increasingly important.”

What CREDA Does

- * *Engages WAPA and Reclamation, who are responsible for generating and marketing CRSP resources, on rate and resource issues (**affordability and availability**)*
- * *Represents members in and provides outside expertise to environmental and industry programs (such as GCDAMP, RIP, DHS Dams Sector): biological, rate and economics, utility, and legal expertise (**stewardship**)*
- * *Maintains a strong working relationship with Congress and other regional and national organizations (APPA, NWRA, NRECA, Midwest)*

From Dam to Home



**Wholesale
Power From
GCD to NTUA
for Delivery to
its Retail
Customers**

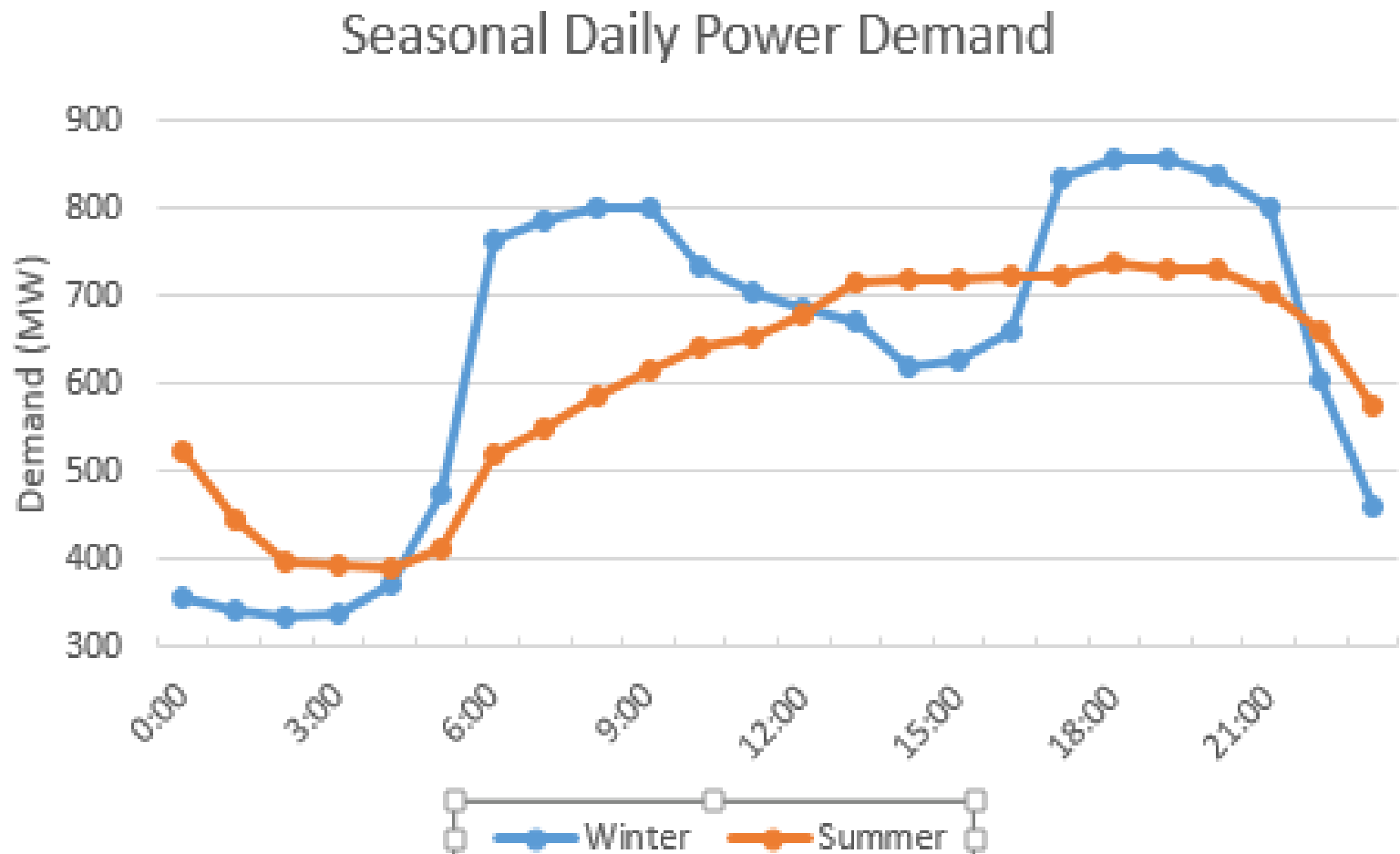
Availability and Affordability Challenges for CREDA and GCDAMP

- * Drought Contingency Planning
- * Long-Term Experimental and Management (LTEMP)
EIS/ROD Implementation
- * Non-Power/Environmental Program Participation
(AMP, RIP and Salinity)
- * Agency Policy/Regulatory Decisions
(Local/Regional/National)
- * 3 “Cs” – Court, Congress, and CRSP Regional Market
and Technology Changes
(Law/Politics/Hydrology/Science)

What Does GCD Have To Do With Market and Technology Changes?

- * **GCD has obligations to the electrical grid**
- * **GCD can provide black start capability in the event of an emergency**
- * **Intermittent resources are expanding (but they are STILL intermittent!)**
- * **Technology is changing how and when people use electricity (aka: FLEXIBILITY and TIMING IS EVERYTHING)**
- * **Carbon-free resources increasingly important**

“Traditional” Demand Curves



Glen Canyon Dam Challenges

Pre-ROD and Post-ROD ('96)

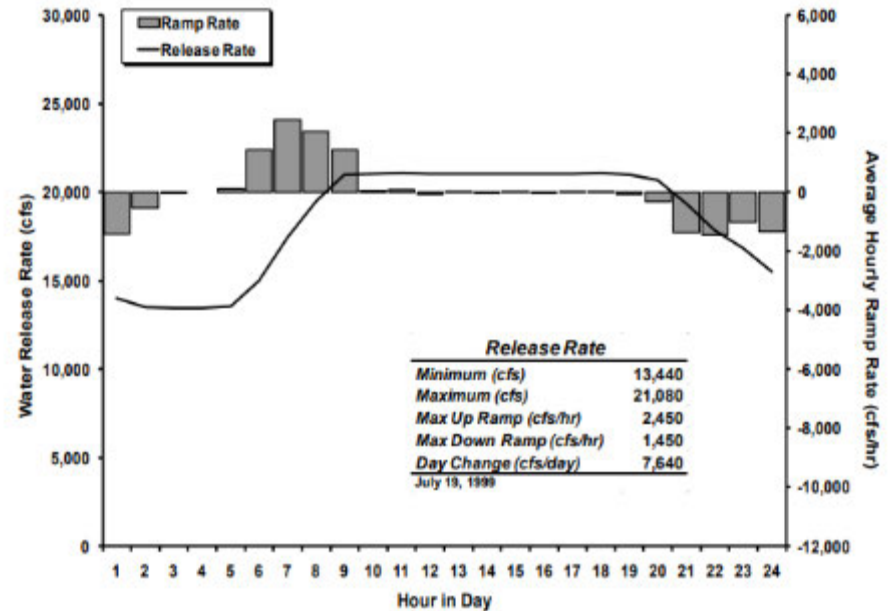
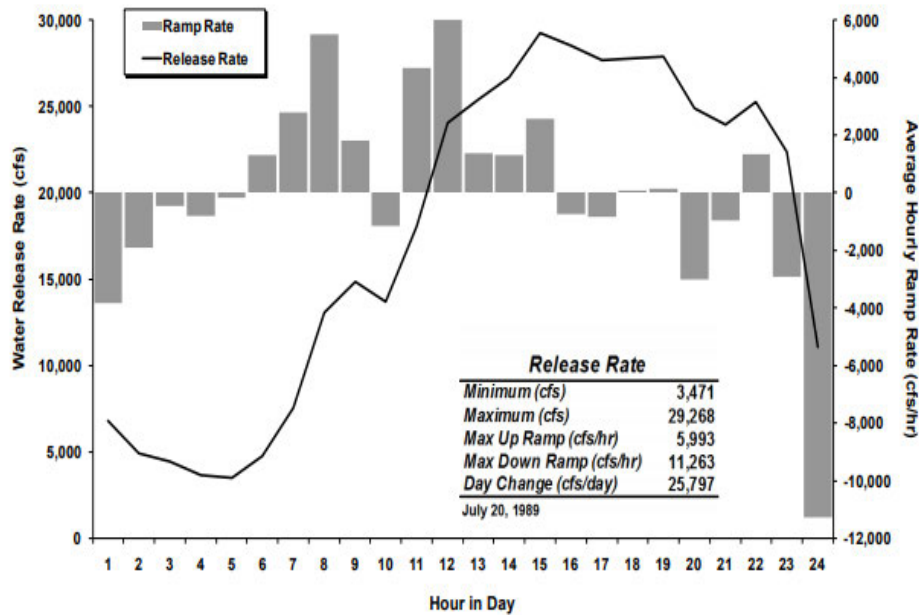


Figure 2.8 Glen Canyon Releases over a Single Day Prior to More Stringent Operating Restrictions (July 20, 1989, is shown)

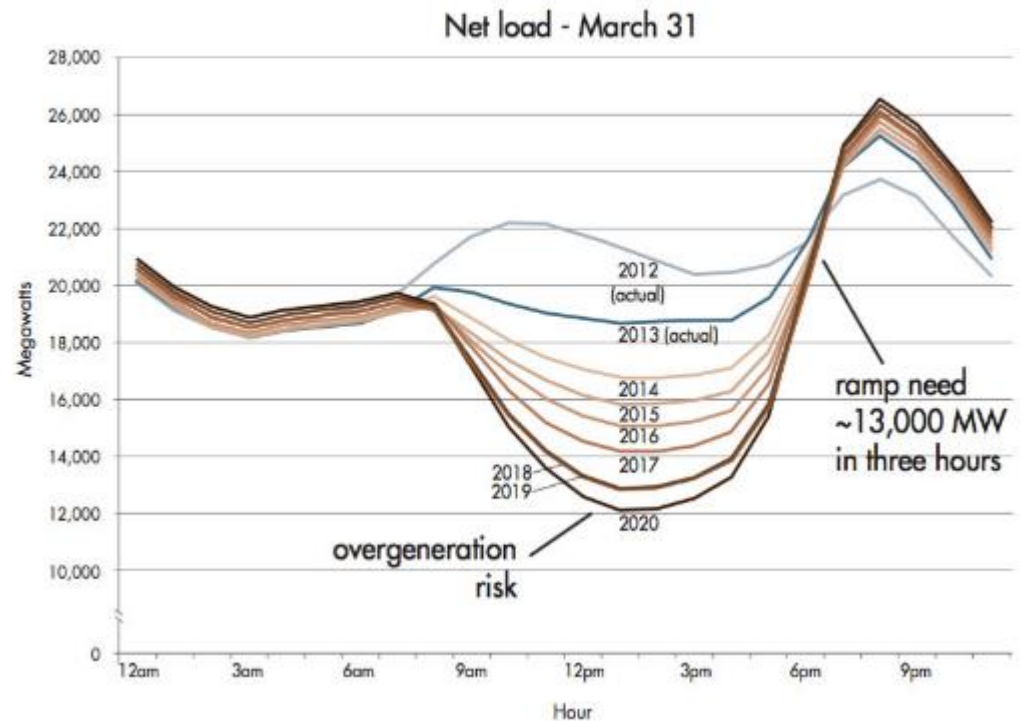
Figure 2.10 Glen Canyon Releases over a Single Day under ROD Restrictions (Normal Condition) (July 19, 1999, is shown)

It's All About Supply and Demand, and CURVES ARE CHANGING



Intermittent Resource
and New Technology
Challenges

Figure 2: The duck curve shows steep ramping needs and overgeneration risk



What Do These Curves Mean for CREDA Members/CRSP Customers?

Availability and Affordability

*When CRSP Resource Curves \neq Contract/Customer Curves, WAPA/Customers Must Purchase Power

*Increased 

*Likely Not Carbon-Free



*Market Price Curves/Volatility

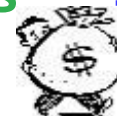


*Regional Market Participants Have Differing Objectives

*Serve Customers/Communities



*Serve Shareholders/Investors



*Commodity v. Grid Security/Reliability



*Many CRSP Customers are Economically Disadvantaged

“Power DFC Objectives

- Ensure continued **delivery** to existing customers.
- Ensure sufficient **production** to provide revenue support.
- Maximize capacity and energy while seeking to achieve a **balance** with CRE resource objectives.
- Maximize operational **flexibility** consistent with AMP goals and objectives.
- Maintain operational **flexibility** for regional system reliability and emergency operating criteria for safety and human health situations.”

Source: AMWG presentation, July 26, 2010. (**emphasis added**)



Thank you!

BUT WAIT, THERE'S MORE!

ADDITIONAL RESOURCES/AMWG PRESENTATIONS

- *8/08/13 Lynn Jeka “Who is CRSP”**
- *8/27/15 Lynn Jeka “CRSP”**
- *2/24/16 Don Ostler “History/Basin Fund”**
- *2/14/18 Ted Rampton “UAMPS/AMWG”**

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