



EESI

Environmental and
Energy Study Institute

Materials will be available at:

www.eesi.org/021925rivers

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The Colorado River

Resilient and Healthy Rivers Series

Wednesday, February 19, 2025

About EESI



Nonpartisan Educational Resources for Policymakers

A bipartisan Congressional caucus founded EESI in 1984 to provide nonpartisan information on environmental, energy, and climate policies



Direct Assistance for Equitable and Inclusive Financing Program

In addition to a full portfolio of federal policy work, EESI provides direct assistance to utilities to develop “on-bill financing” programs



Commitment to Diversity, Equity, Inclusion, and Justice

We recognize that systemic barriers impede fair environmental, energy, and climate policies and limit the full participation of Black, Indigenous, people of color, and legacy and frontline communities in decision-making



Sustainable Solutions

Our mission is to advance science-based solutions for climate change, energy, and environmental challenges in order to achieve ***our vision of a sustainable, resilient, and equitable world***

Policymaker Education



Briefings and Webcasts

Live, in-person and online public briefings, archived recordings, and written summaries



Climate Change Solutions

Bi-weekly newsletter with everything policymakers and concerned citizens need to know, including a legislation and hearings tracker



Fact Sheets and Issue Briefs

Timely, objective coverage of environmental, clean energy, and climate change topics



Social Media (@EESIonline)

Active engagement on Bluesky, Facebook, LinkedIn, X, and YouTube



Upcoming Briefings in this Series



Resilient and Healthy Rivers Series

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The Mississippi River | Recording Available

The Tennessee River | Recording Available

The Columbia River | Recording Available

The Colorado River | Wednesday, February 19, 2025, 2-3:30 PM

The Hudson River | TBA

The Ohio River | TBA

“Small But Mighty” Rivers | TBA

Signup for our COP newsletter here: eesi.org/signup
Briefing RSVP here: eesi.org/rivers-briefings



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What did you think of the briefing?

Please take 2 minutes to let us know at:

www.eesi.org/survey

Materials will be available at:

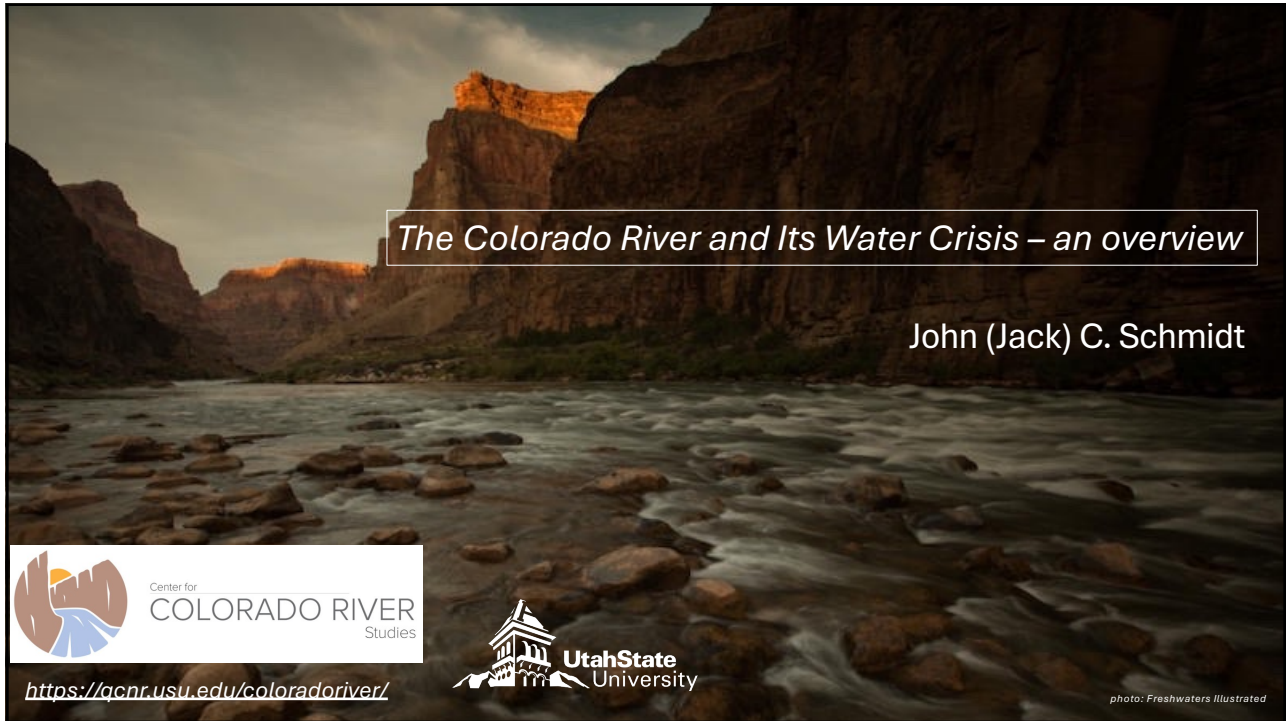
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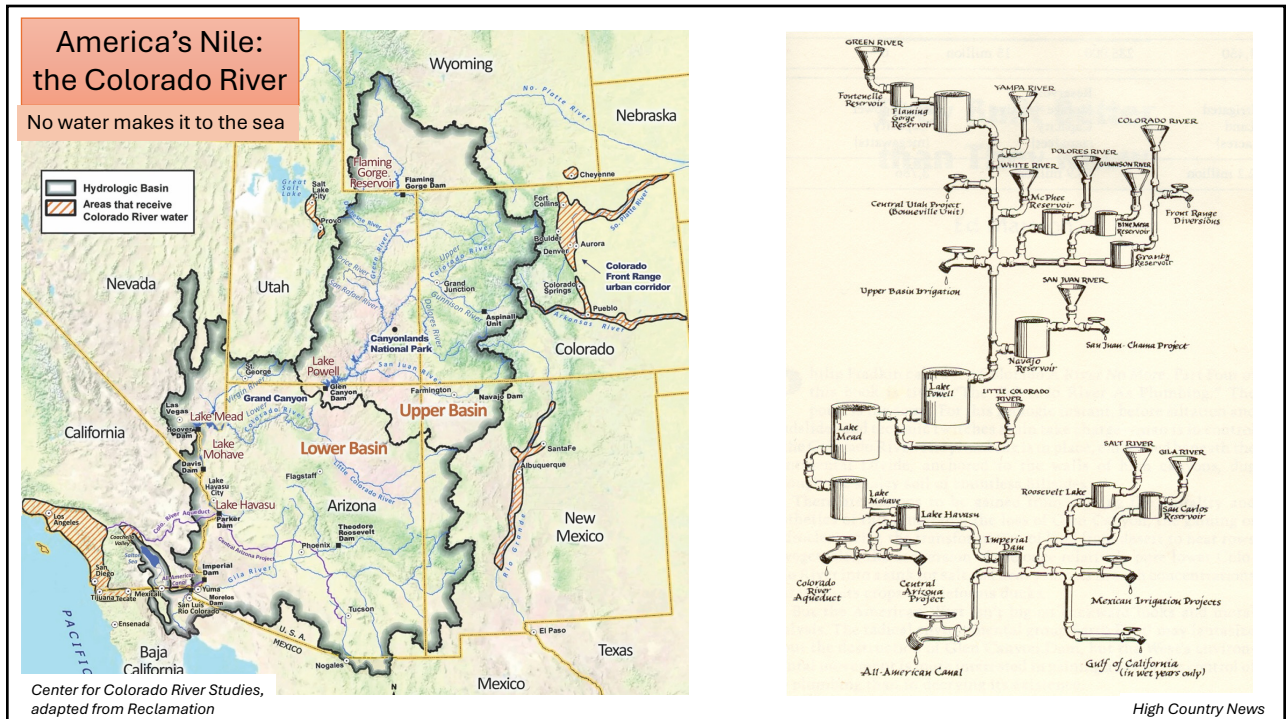
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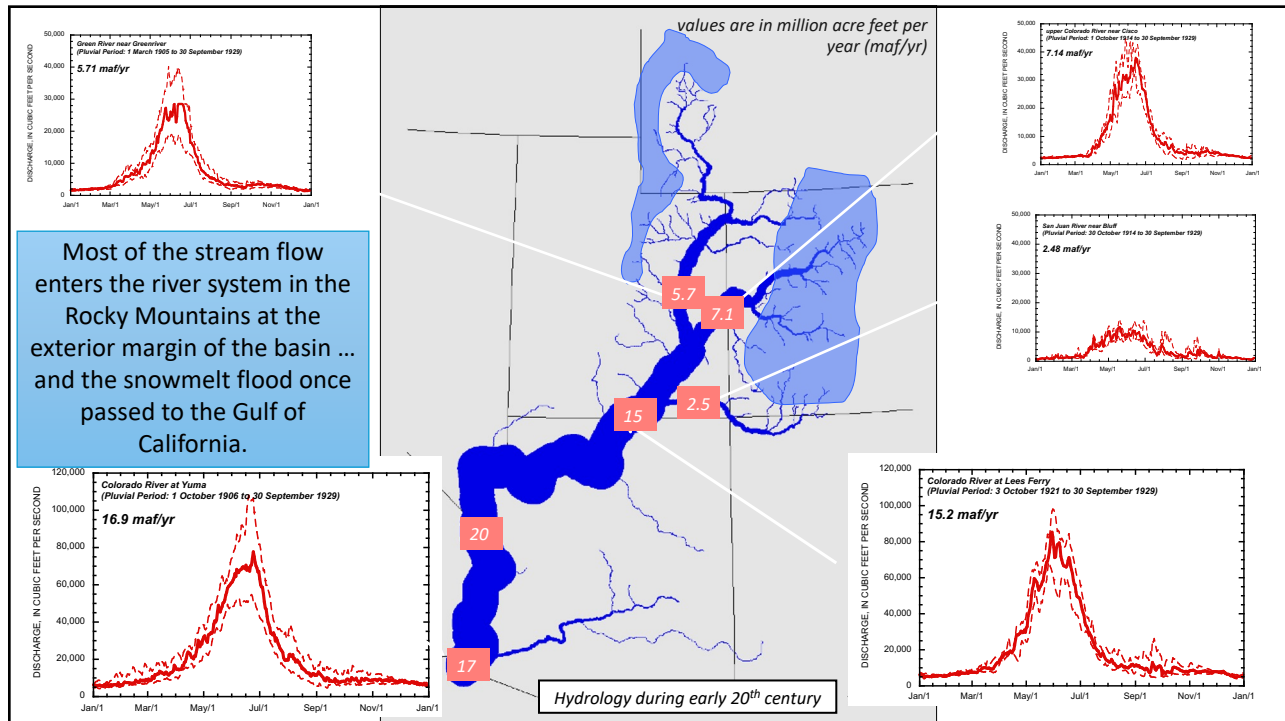
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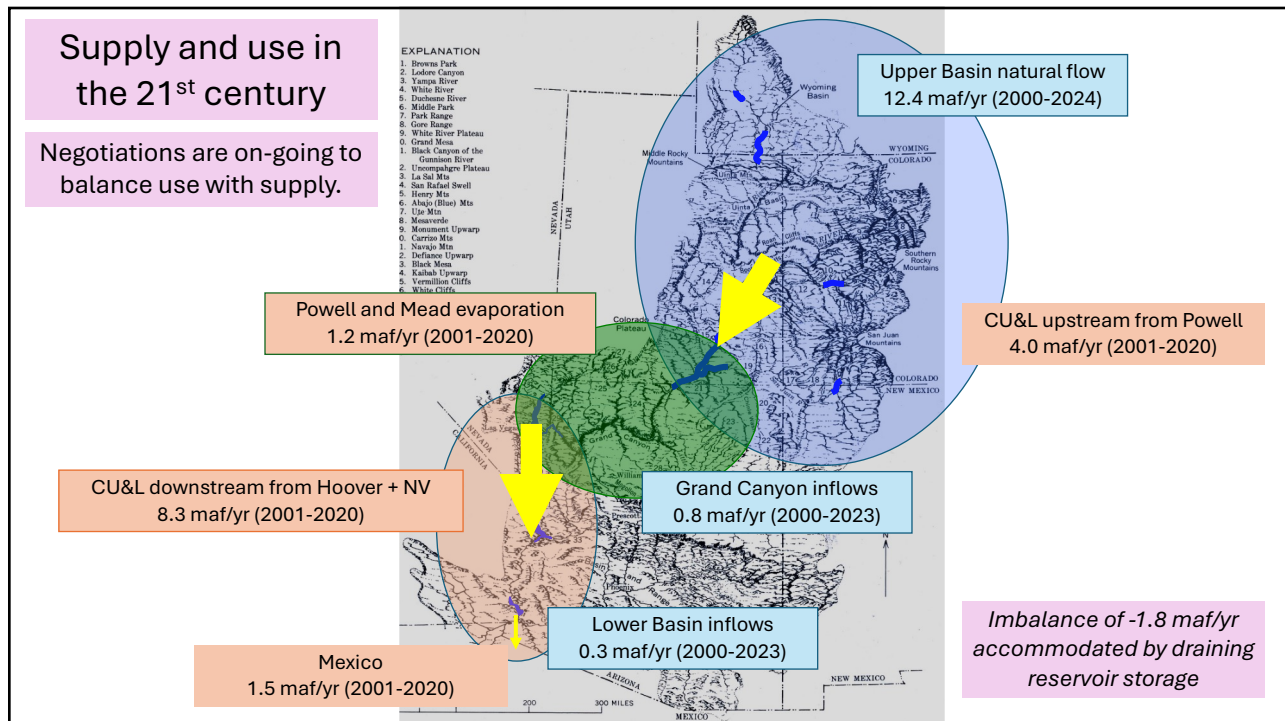
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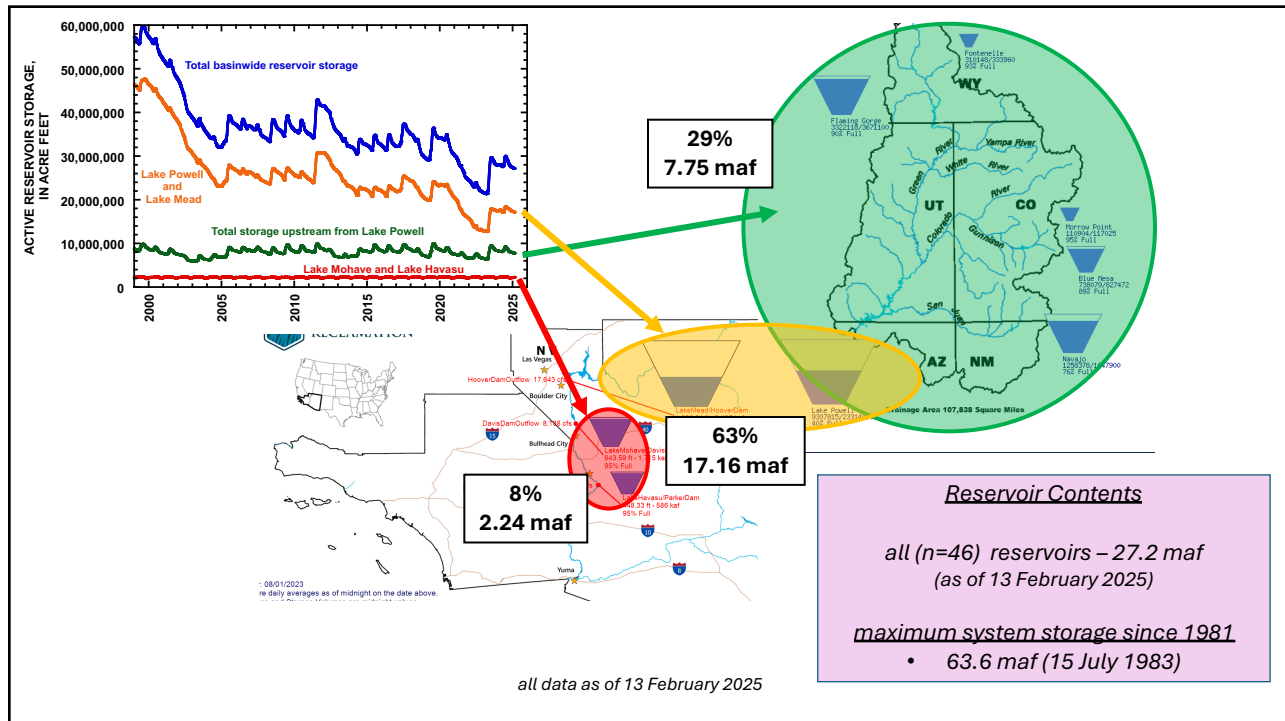
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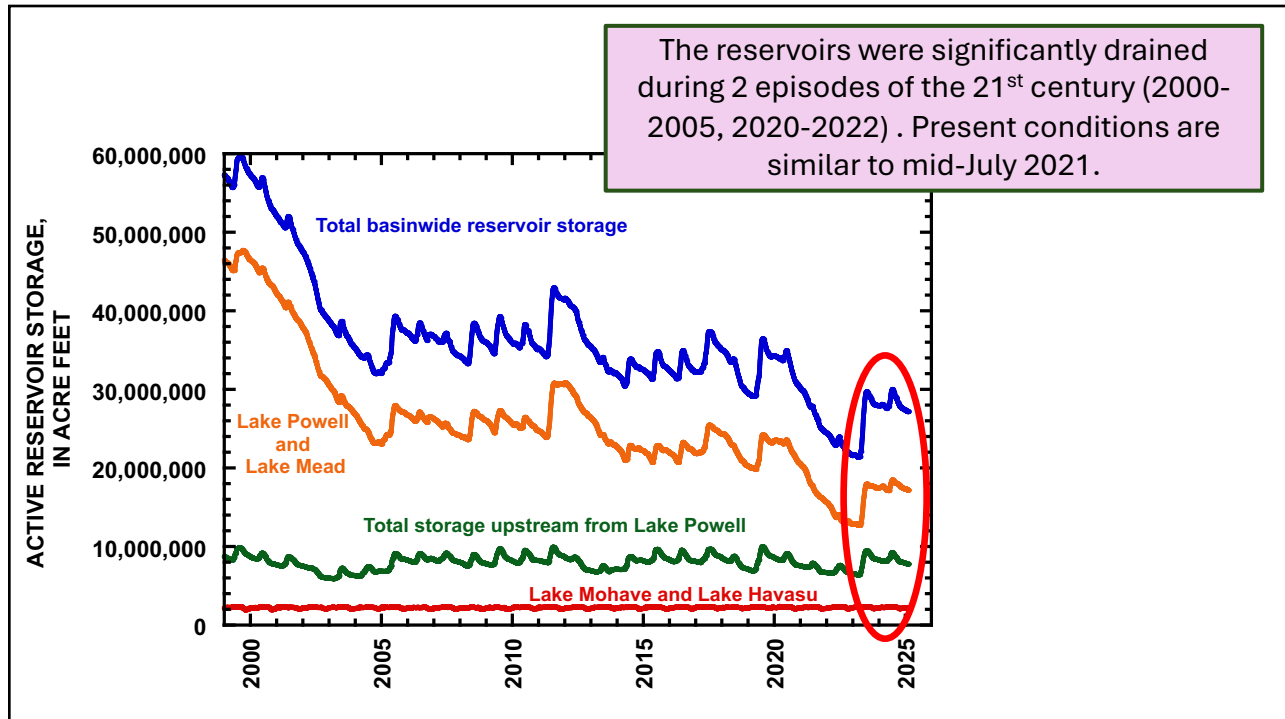
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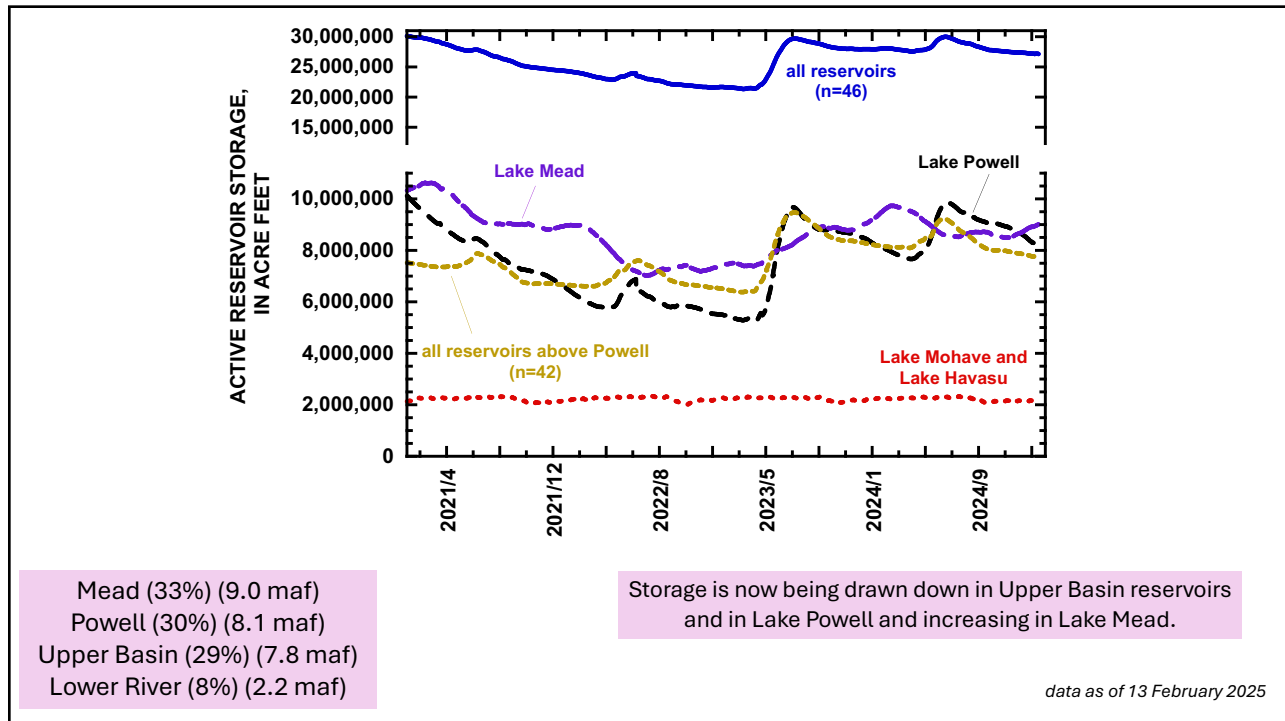
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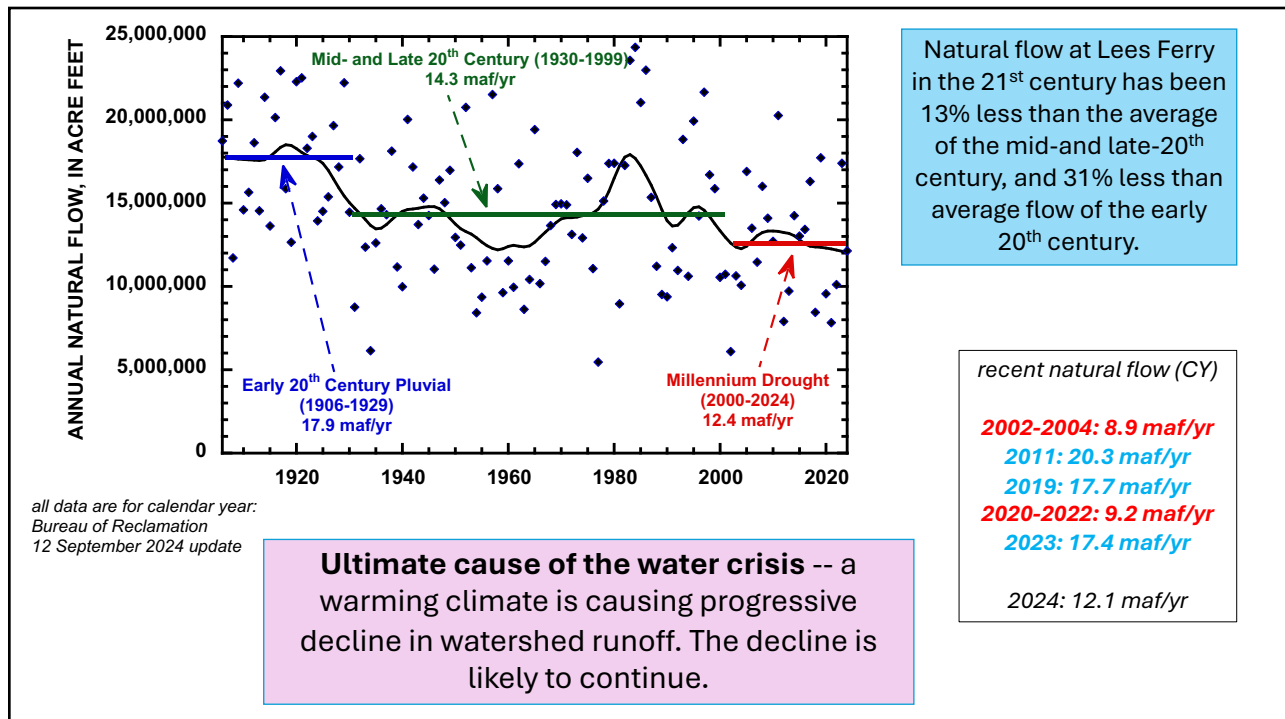
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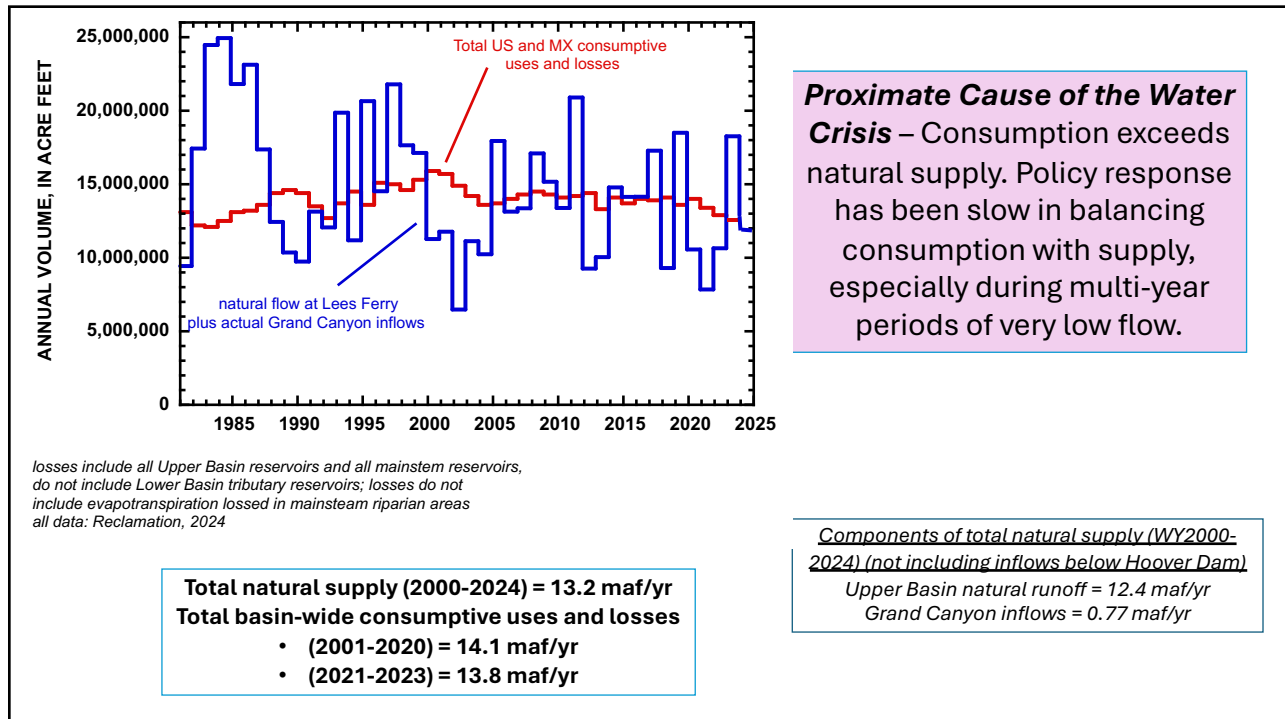
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Law of the River ...
 includes two interstate compacts, a bi-national treaty, Supreme Court rulings, laws, records of decisions, and administrative agreements

- 1) Mexico (1,500,000 af/yr)
- 2) Tribal reserved water rights and other perfected rights
 - all water rights held before ratification are valid; in time of severe drought, all rights fulfilled in chronological order, regardless of state (~3 maf pre-Compact water rights in CA)
- 3) Lower Basin
 - 7.5 maf/yr from mainstem; additional 1 maf/yr (some debate); tributaries don't count (some debate)
 - CA – 4,400,000 af/yr (rights are senior to all others); NV – 300,000 af/yr; AZ – 2,800,000 af/yr (AZ right is subservient to others)
- 4) Upper Basin
 - perfected rights are senior, but remainder available only after obligation to Lower Basin has been met (some debate)
 - AZ (50,000 af/yr); CO 51.75%; UT (23%); WY (14%); NM (11.25%)
 - Must deliver 75 maf/decade (generally accepted); 82.3 maf/yr (includes half of obligation to MX; some debate)

1920 population (when CRC negotiated):

New York City – 5,600,000
 Chicago – 2,700,000
 Philadelphia – 1,800,000
 Detroit – 990,000
 Cleveland – 900,000

California – 3,400,000
 Colorado – 940,000
 Utah – 450,000
 New Mexico – 360,000
 Arizona – 330,000
 Wyoming – 190,000
 Nevada – 77,000

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What needs to be negotiated for the future?

Balance consumption with supply

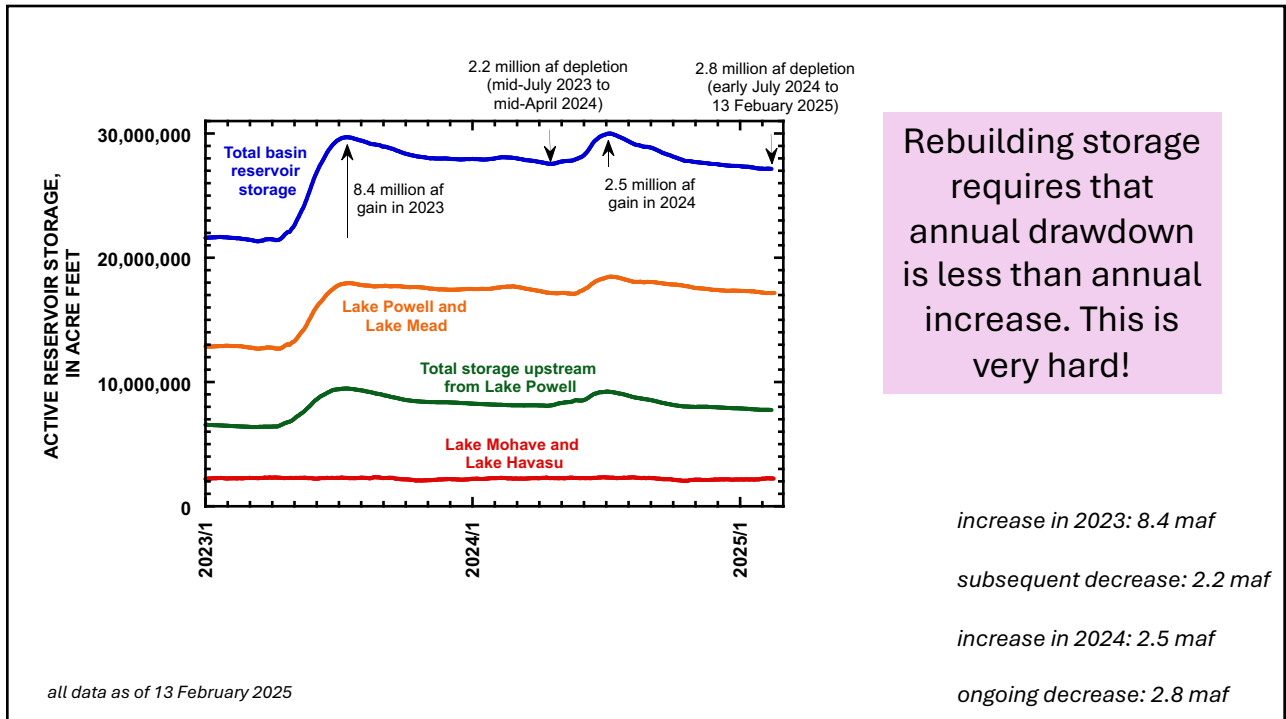
- who takes the cuts? how implemented? when initiated?
- must recover reservoir storage when it is lost

Management of river and reservoir resources

- where to focus concern?
- what are desired resource outcomes?
- how achieve those outcomes?

Tribal empowerment

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Rebuilding storage requires that annual drawdown is less than annual increase. This is very hard!

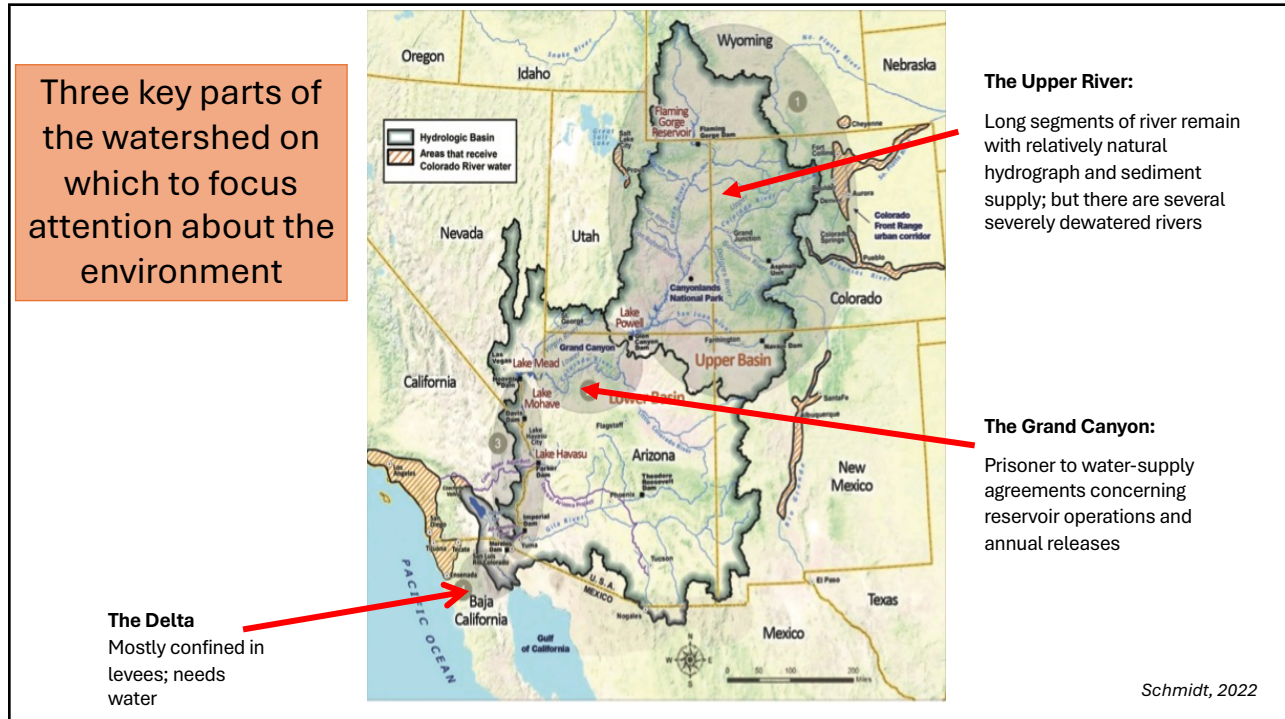
increase in 2023: 8.4 maf

subsequent decrease: 2.2 maf

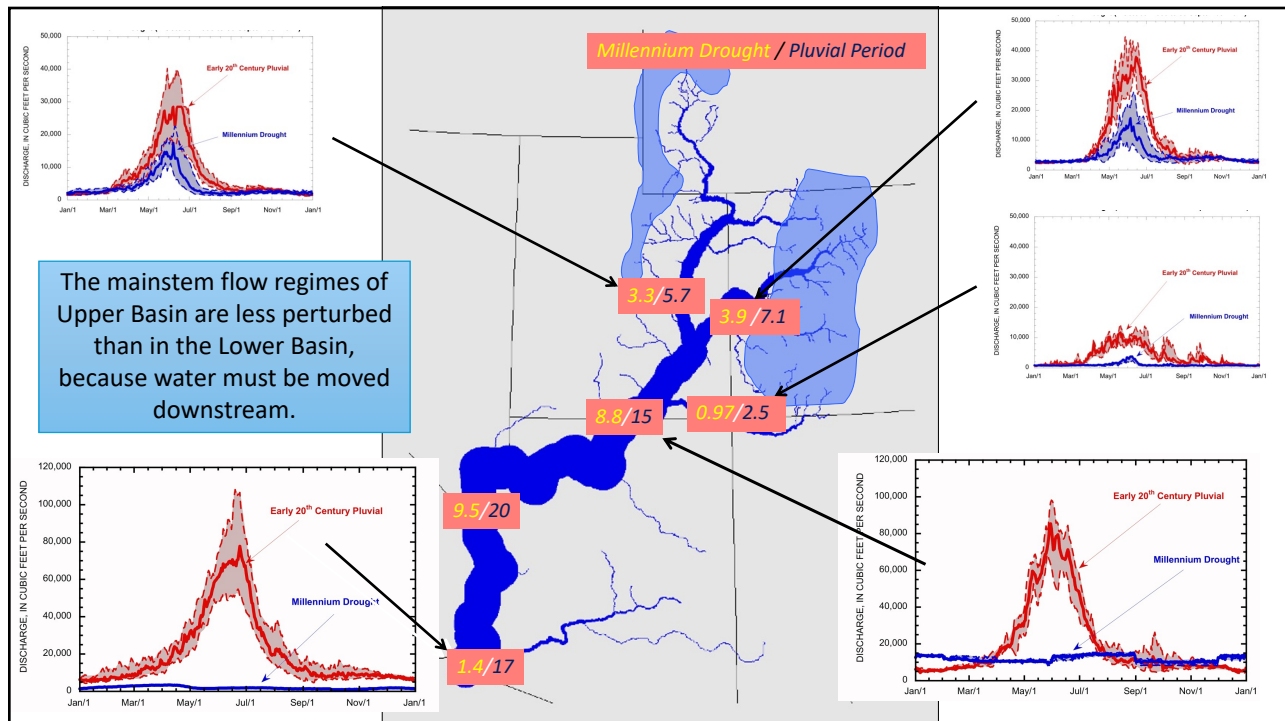
increase in 2024: 2.5 maf

ongoing decrease: 2.8 maf

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How to allocate storage between Lake Mead and Lake Powell? How to operate annual releases from Powell to Mead?

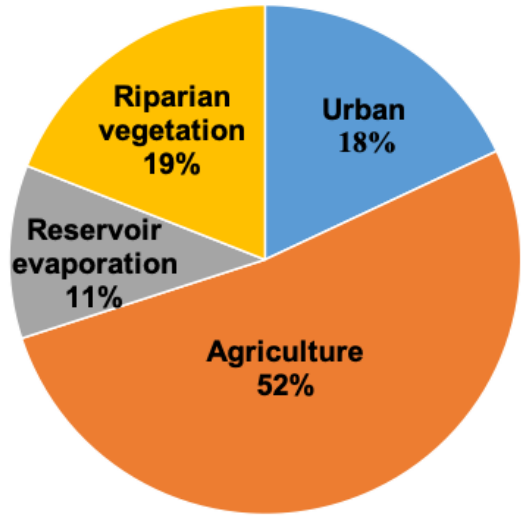
- average storage in Powell+Mead is *unlikely to be >50% of capacity*; where to emphasize storage?
- Preferential storage in Lake Powell may be effective in controlling non-native fish invasions into Grand Canyon
- Existing release strategy is to implement *designer flows* (controlled floods, bug flows) to mitigate adverse environmental impacts
- **Annual releases** are an important *determinant of ecosystem condition* in Grand Canyon and may be considered in new operating agreements

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- The 21st century water crisis continues
- General pattern of basin storage:
 - Mead: 30%
 - Powell: 30%
 - Upper Basin: 30%
 - Lower river: 10%
- Although the ultimate cause of the water crisis is declining watershed runoff, the proximate cause is that consumption is not quickly reduced during dry periods when storage is already low
- Large drawdown of reservoir storage occurred, primarily 2000-2005 and 2020-2022
- Reservoirs are bathtubs. They should be replenished, but it is hard to refill them if the drains remain wide open.
- Key foci of environmental concern
 - Upper Basin
 - Grand Canyon
 - Delta

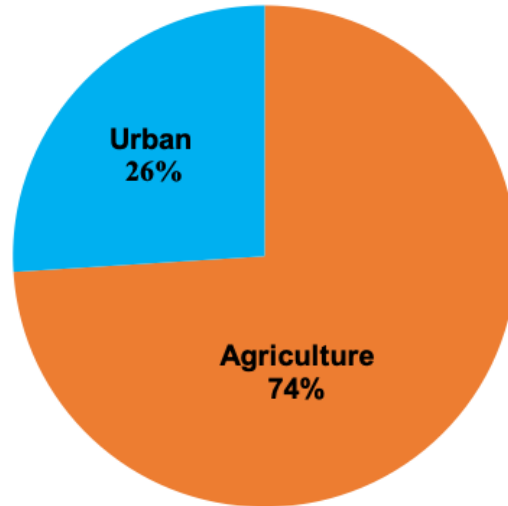
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Colorado River Basin



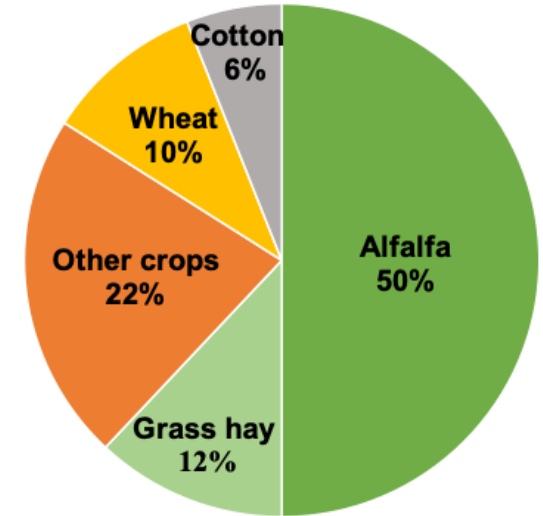
All Water Consumption

Colorado River Basin



Direct Use

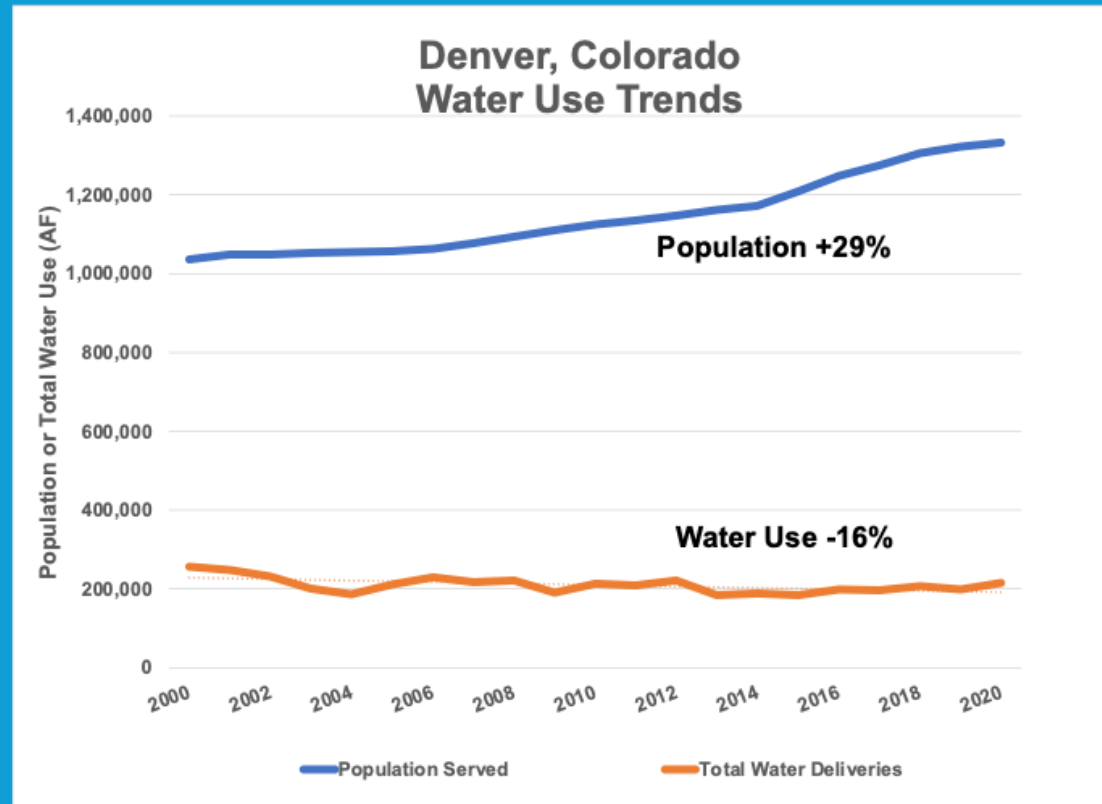
Colorado River Basin



Crop Water Consumption

Cities and industries account for 26% of water consumed directly

However, cities using Colorado River water have been able to grow by 24% while their water use *decreased* by 18%



How did they do it?

- Reduced outdoor landscape watering
- Replaced indoor plumbing fixtures (water-efficient toilets, washing machines, dishwashers)
- Tiered rate pricing
- Leak detection and repair

Irrigated farms account for 74% of water consumed directly

Relatively small percentage reductions can add up to a LOT of water

How to reduce farm water use

- Switch to crops with lower water needs
- Lower production of water-intensive crops (split season irrigation)
- Improve irrigation efficiency
- Temporary fallowing of some farmland
- Permanent retirement and repurposing