

RECLAMATION

Managing Water in the West

Water Supply Portfolio Expansion through Advanced Water Treatment

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U.S. Department of the Interior
Bureau of Reclamation

Mission Statement

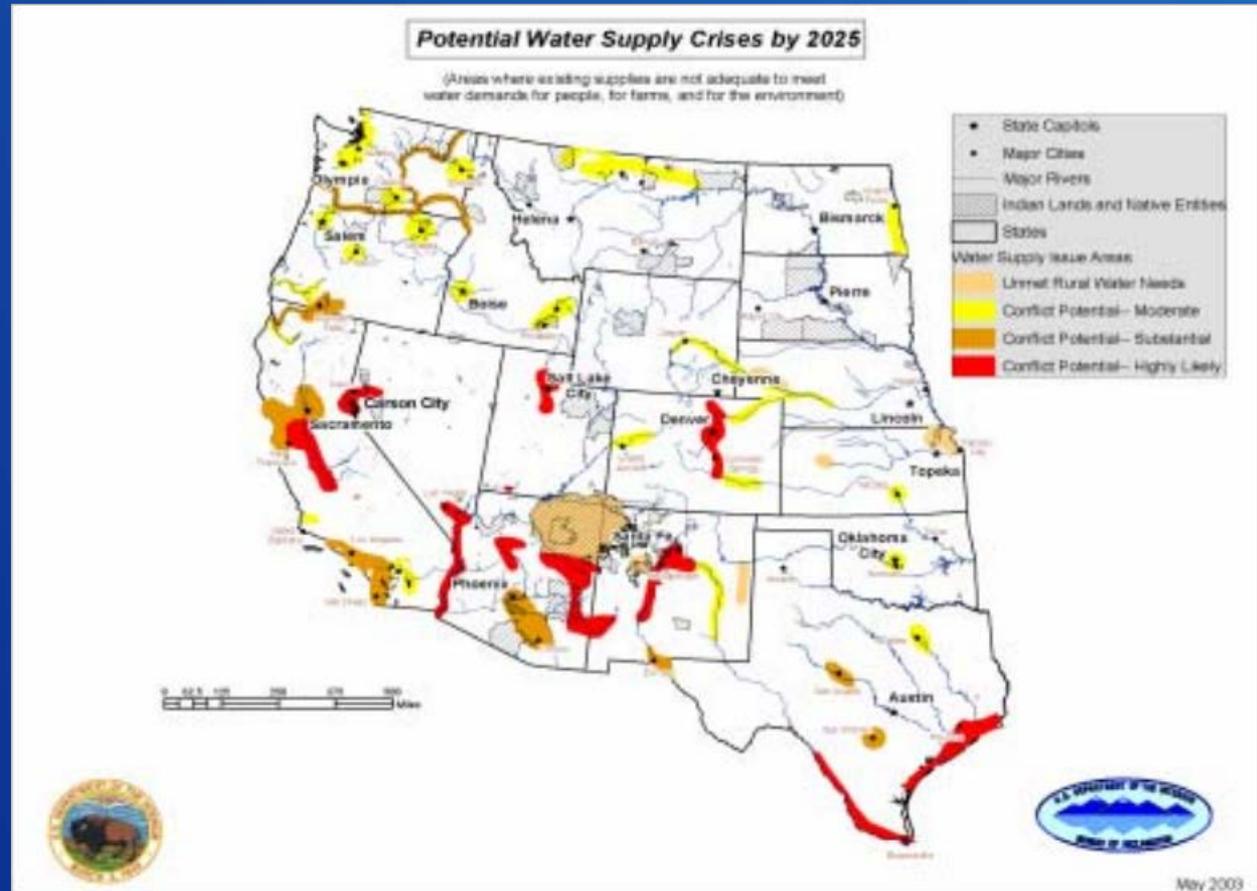
To manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.



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Existing Water Supplies

- Water supply shortage
 - Population growth
 - Climate change
 - Drought



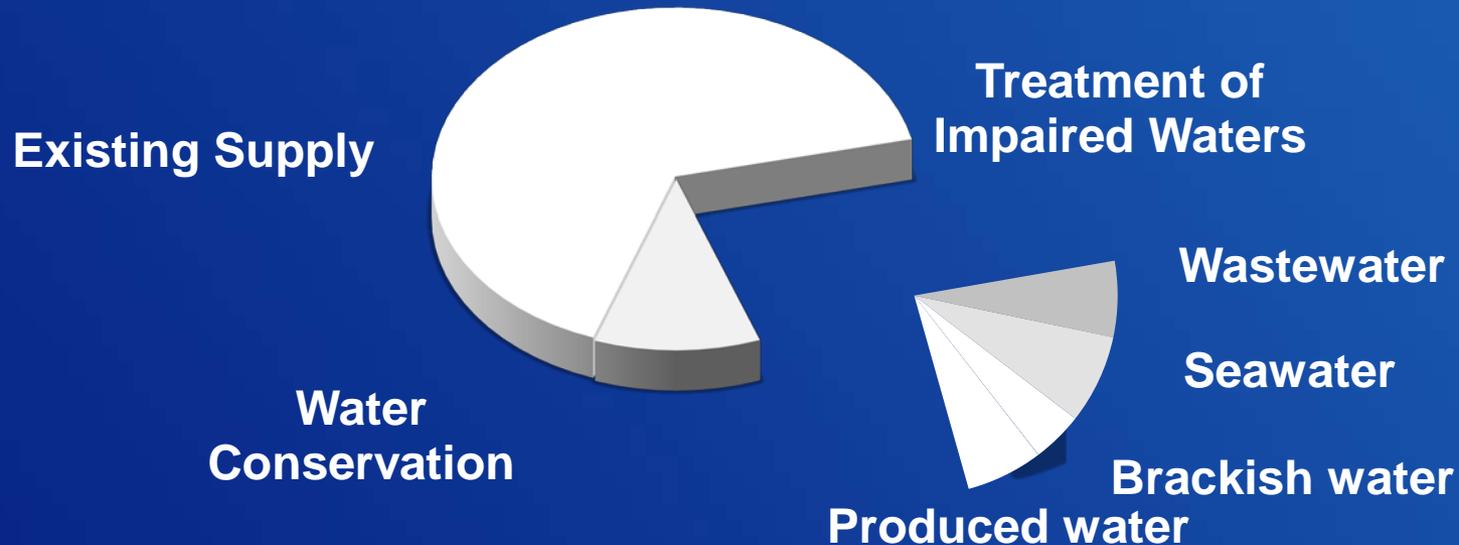
Water 2025: Preventing Crises and Conflict in the West

* Pie chart not drawn to scale.

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The Role of Advanced Water Treatment (AWT)

Create new, usable water supplies from non-traditional sources



* Pie chart not drawn to scale.

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Benefits AWT

- **Benefits**
 - Mitigate supply risks from drought and climate change
 - Provide local control of water supply
 - Increase in-stream flows
 - Reduce groundwater overdraft and seawater intrusion
- **Beneficiaries**
 - Metropolitan areas
 - Rural and Native American drinking water
 - Water intensive industries
 - High value agriculture

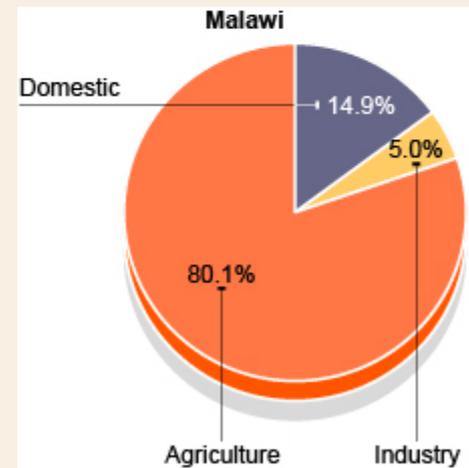
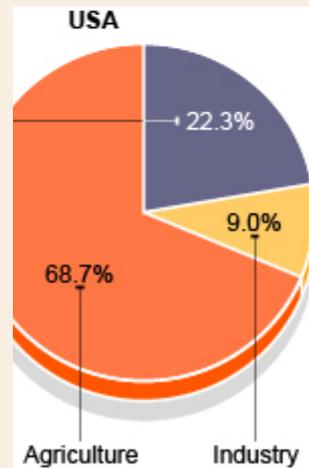
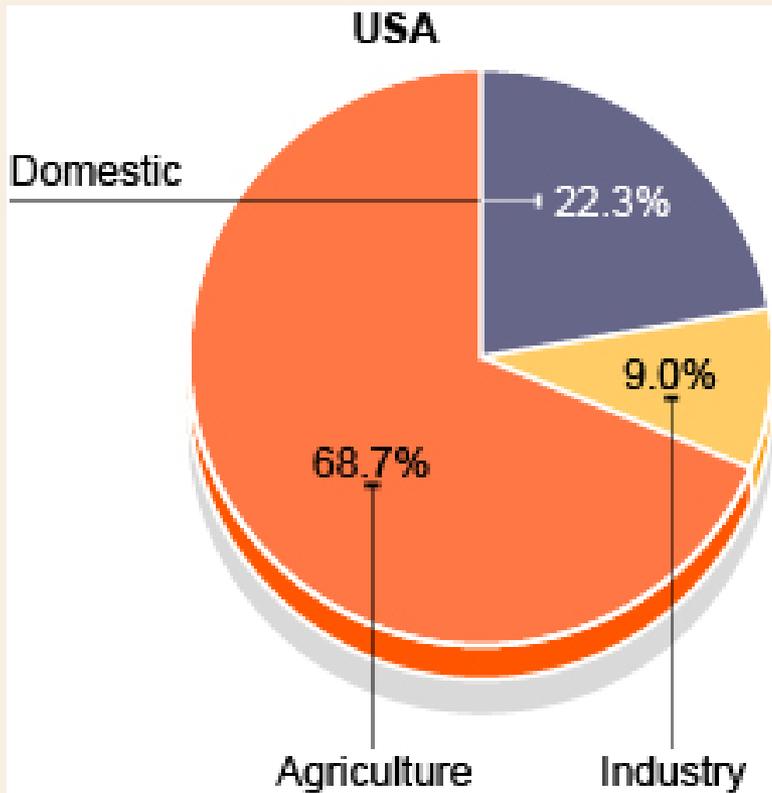
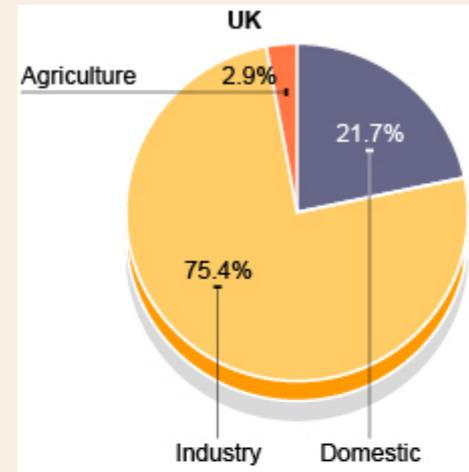
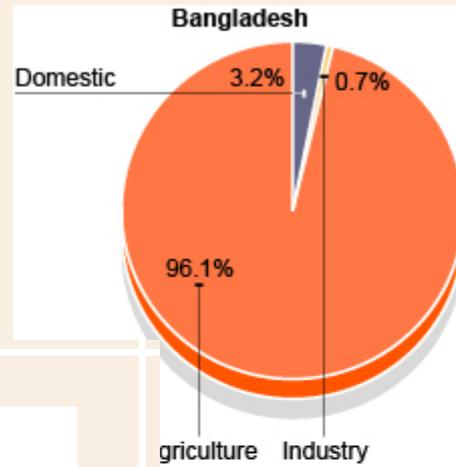


Photo credit: NY Times

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Water Use

The % share of total water usage:

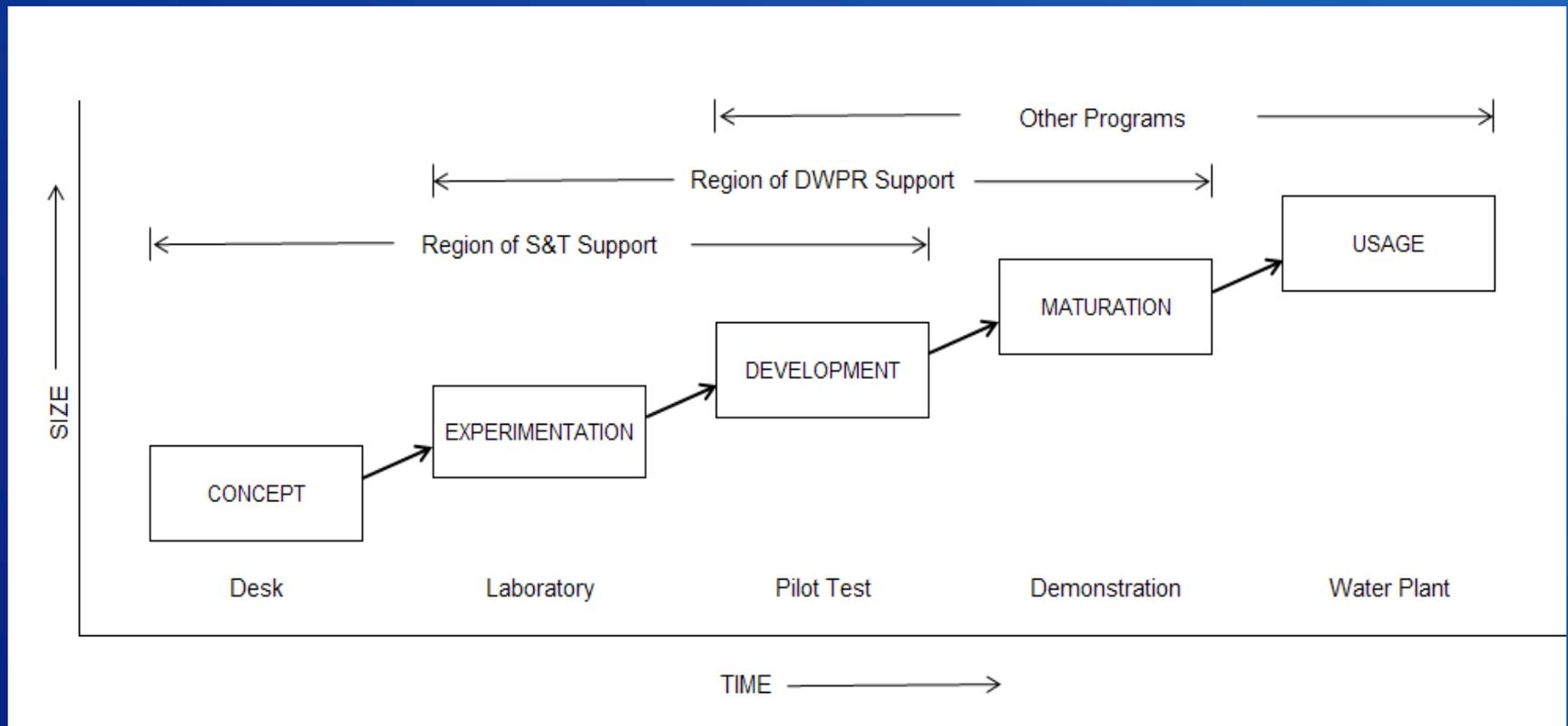


[co.uk/schools/gcsebitesize/geography/water_rivers/water_usage_rev1.shtml](http://www.co.uk/schools/gcsebitesize/geography/water_rivers/water_usage_rev1.shtml)

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Reclamation AWT Activities

- AWT mainly in Municipal/Domestic



AWT at BOR

- **Need**

- Lower cost of desal

- Sea water desal - \$2-3 per 1000 gal
- Brackish desal - \$1.5+ per 1000 gal
- MWD import water - ~\$0.75 per 1000 gal

- Decrease energy usage

- Increase efficiency of existing systems

- **Barriers**

- Adoption

- Cost

- Complexity

Research Emphasis Areas

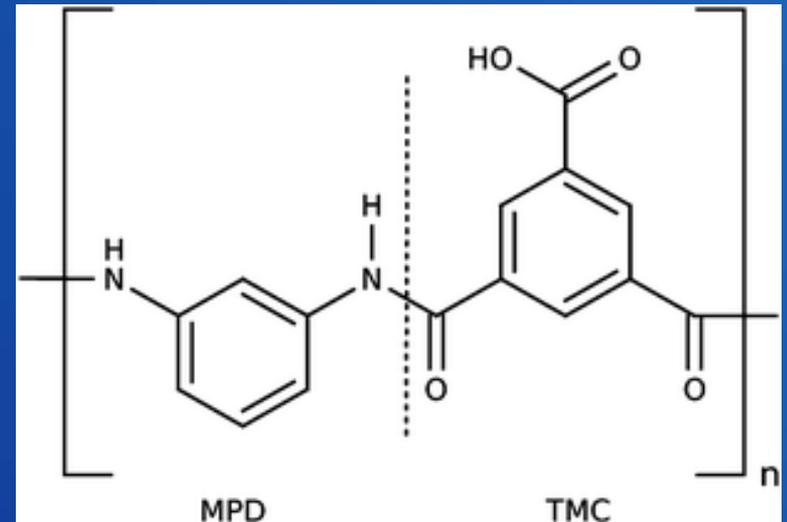
- Environmental impacts including seawater intakes/outfalls
- Novel materials and processes
- Energy efficiency
- Inland concentrate management and minimization



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Science and Technology Program

- Internal to Reclamation
- Competitive, merit based
- Encourages partnership
 - Stakeholders
 - Municipality
 - Private Sector
 - Academia
 - NGO's
- Emerging Technologies
 - Chlorine Resistant Membranes
 - Chrome Removal
 - Pretreatment to RO to remove heavy metals



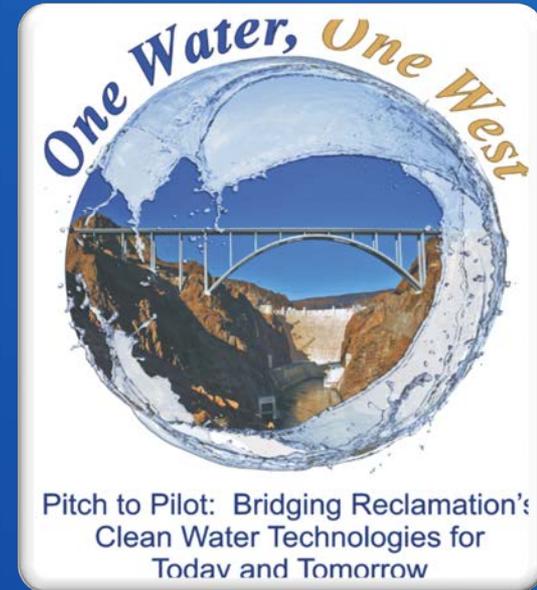
Desalination and Water Purification (DWPR) Program

- External to Reclamation
- Competitive, merit based
 - Nation wide
- Advance state of AWT
 - Novel water treatment technologies to increase water supply, reduce operational costs, reduce energy consumption, and or reduce environmental impacts
 - Innovative new smart systems to improve the efficiency, longevity, and reliability of water treatment systems for real-time monitoring and automation
- Annual Funding Cycle – Typically in the Fall
 - www.Grants.gov search for DWPR

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Pitch to Pilot FOA

- Seeking innovative water treatment technologies at the pilot scale
- Offering up to 3 grants of \$100k each
 - Phase I: 15 page white paper
 - Phase II: In-person “pitch” at BGNDRF in Alamogordo, NM
- Winners
 - Lehigh University
 - Pacific Advanced Civil Engineering, Inc.
 - University of North Texas



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Water Prize Competition Center

Share your expertise and ideas!

You can help solve some of the most critical water and water-related resource problems facing our Nation!

Partners can Contribute...

- Prize Purse Money
- Technical Experts
- Judges
- Testing Facilities
- Marketing
- Commercialize Winning Solutions
- Prize Competition Administrators

www.usbr.gov/research/challenges

WATER

PRIZE COMPETITION CENTER

Hundreds of thousands in prize \$\$\$!



Follow us at Challenge.gov
(search Reclamation)

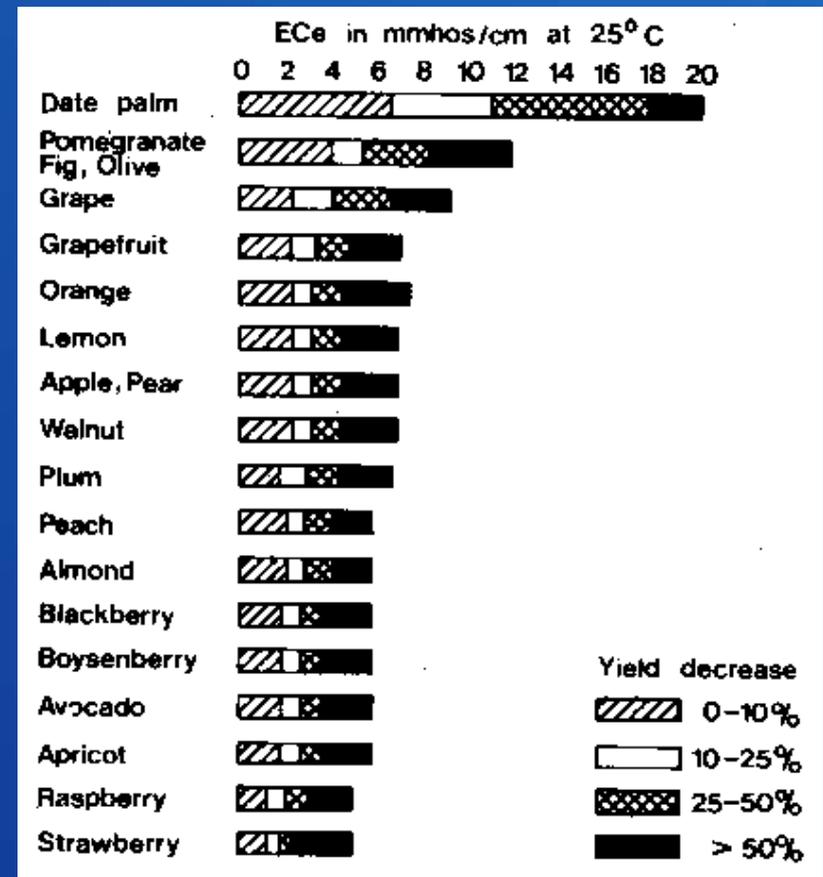
Other Application of AWT

Ag Water Treatment

- Benefits
 - Significant user of water
 - Better crops
 - Improved crop yield
 - Better use of available water
- Barrier
 - Perceived Cost
 - Complexity
 - Quantity

On farm utilization of AWT in Jordan and Israel in the middle east

Not a BOR AWT research area



<http://www.fao.org/docrep/x5648e/x5648e0e.htm>

AWT Research Activities at BOR

- S&T - Annual internal proposal Call in spring
- DWPR - Annual proposal Call on Grants.gov - Typically in Fall
- Pitch to Pilot - Annual proposal Call on Grants.gov - Typically in Fall
- Prize Competitions - www.usbr.gov/research/challenges
- Reclamation Facilities - Reach out to facility anytime
- CRADA - Reach out to lab or BOR researchers anytime

Thank You

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