

Bugs pay for days of steady reservoir releases

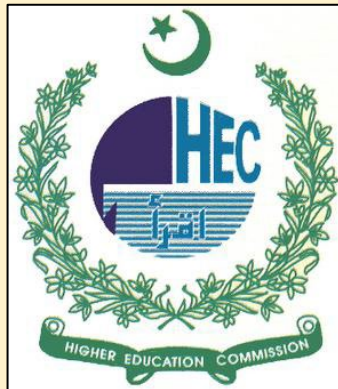
to reduce costs to hydropower customers and sustain funds to maintain infrastructure

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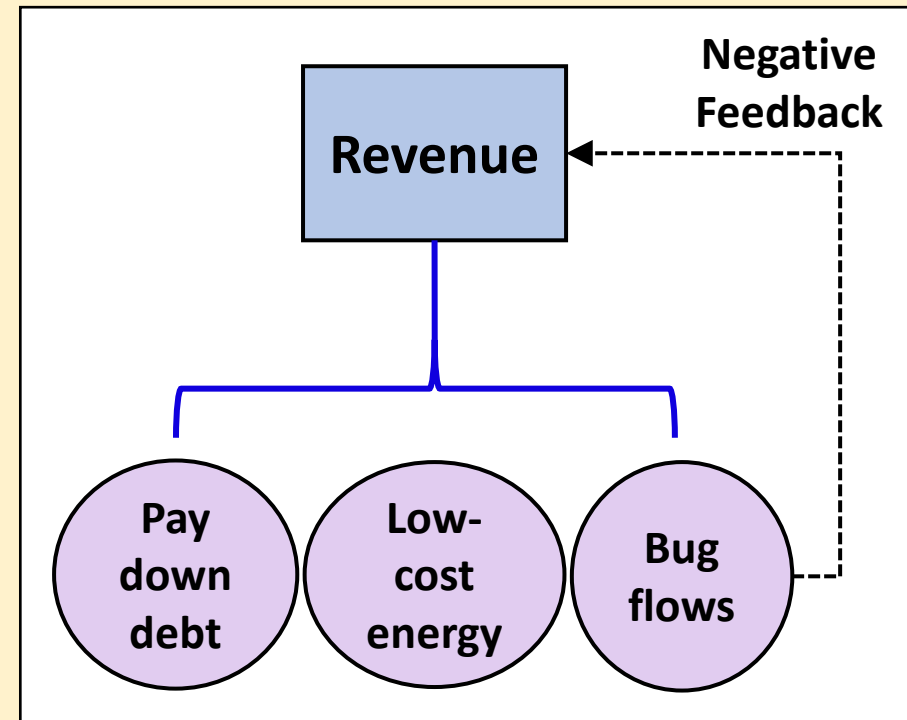


Aden Arnold Rosenberg

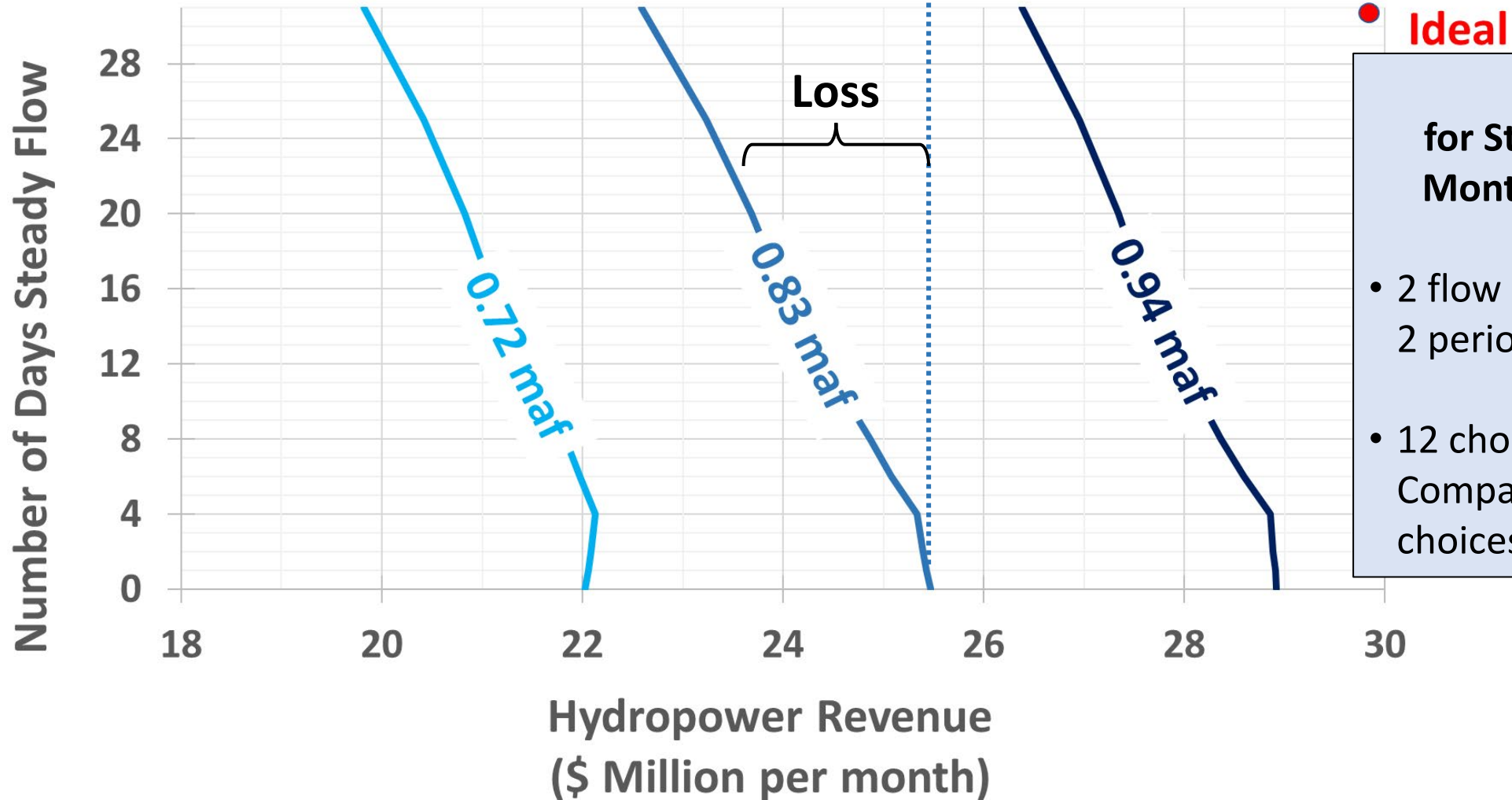
Jan. 3, 2023

Key Ideas

1. Conflict => **Time & Stress, Administered**
2. Move days of steady flows to Spring/Fall months.
3. Create ecosystem fund to compensate for releases that help bugs.



Idea 1. Quantify Hydropower – Bug conflict (August)



MAX Revenue for Steady Days, Month, Monthly release volume

- 2 flow patterns, 3 day-types, 2 periods per day-type.
- 12 choices per month. Compare to 720 hourly choices.

Idea 2. Shift Days of Steady Releases to Spring/Fall Months

**Revenue loss
(\$ million)**

Season	Days of Steady Releases per Month			
	4	8	9	15
May, June, July, August	\$0.3	\$1.9	\$2.7	\$5.0
March, April, September, October	\$0.5	\$1.5	\$1.6	\$2.6

Idea 3. Create Eco Budget, Let Ecologists pick Months & No. of Days

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Next Steps

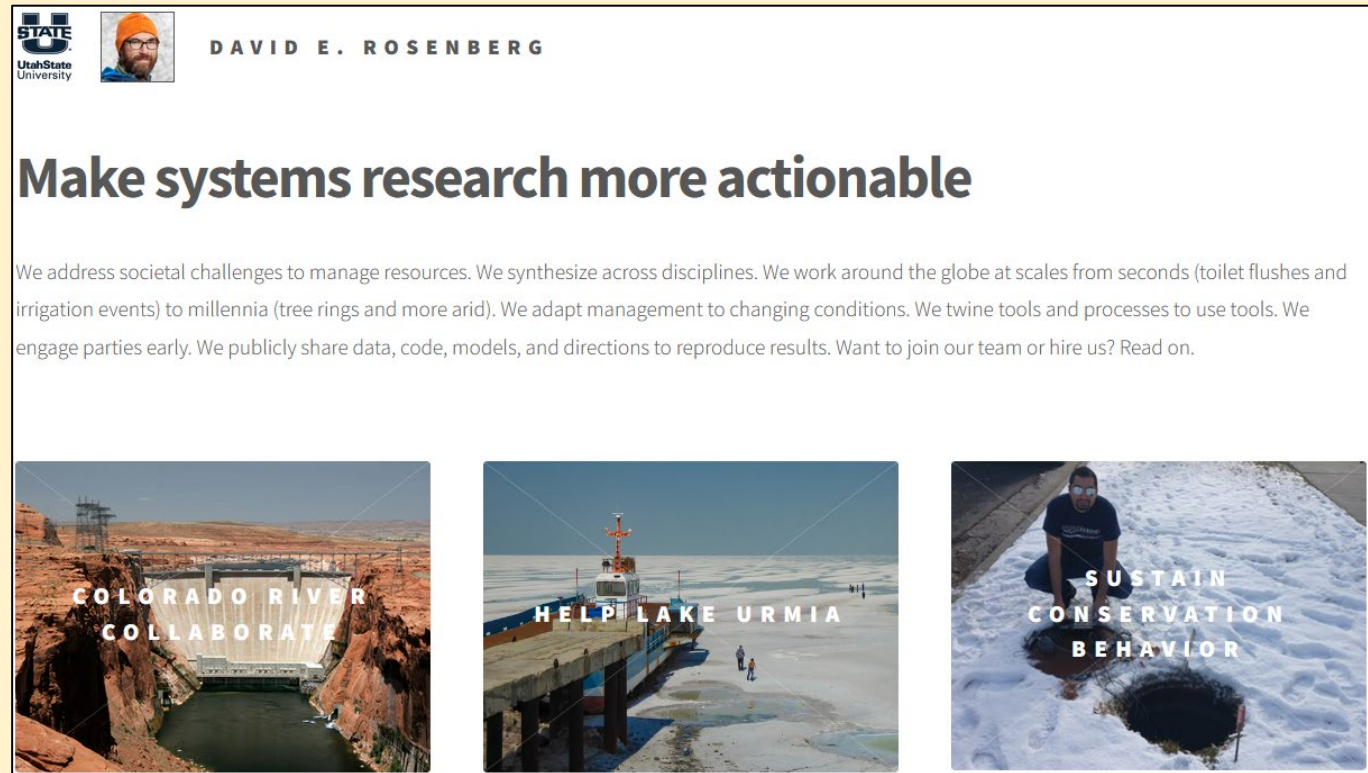
More at <http://rosenberg.usu.edu>

- Present to AMP
- Update energy prices
- Validate with GT-Max

May also help move sediment
and control invasive fish

Public wants
ecosystems and
low-cost energy

Save our
colleagues
time & stress



The screenshot shows a website profile for David E. Rosenberg at Utah State University. It includes the university logo, a profile picture of David, and his name. The main heading is "Make systems research more actionable". Below this is a paragraph of text describing his research focus on societal challenges, resource management, and interdisciplinary work. At the bottom, there are three images: a dam with the text "COLORADO RIVER COLLABORATE", a boat on a dry lake bed with the text "HELP LAKE URMIA", and a person in a snowy field with the text "SUSTAIN CONSERVATION BEHAVIOR".

Utah State University

DAVID E. ROSENBERG

Make systems research more actionable

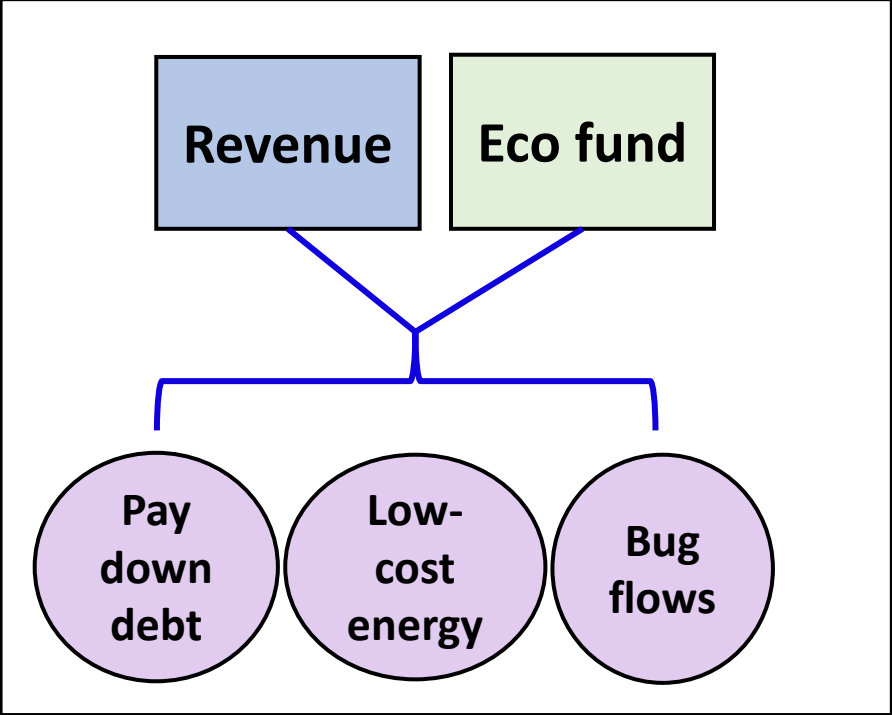
We address societal challenges to manage resources. We synthesize across disciplines. We work around the globe at scales from seconds (toilet flushes and irrigation events) to millennia (tree rings and more arid). We adapt management to changing conditions. We twine tools and processes to use tools. We engage parties early. We publicly share data, code, models, and directions to reproduce results. Want to join our team or hire us? Read on.

COLORADO RIVER COLLABORATE

HELP LAKE URMIA

SUSTAIN CONSERVATION BEHAVIOR

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Flow offset => point of collaboration

