IrrigationViz:

Accelerating reinvestment to unlock multi-sectoral benefits

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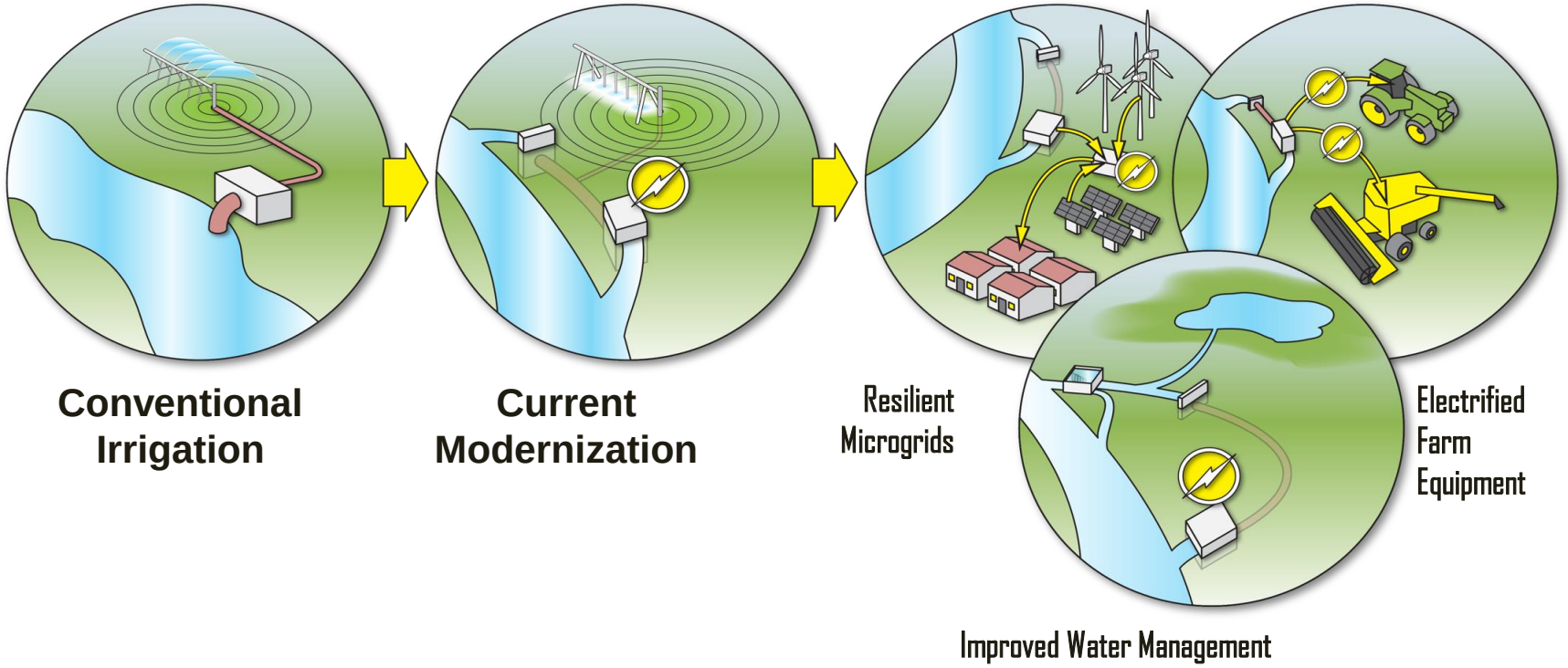
Irrigation Systems of the Future



Idaho National Laboratory

Pacific Northwest NATIONAL LABORATORY

FARMERS CONSERVATION ALLIANCE fca

Clean Currents

October 20, 2022

Irrigation is 37 percent of all water use in the U.S.

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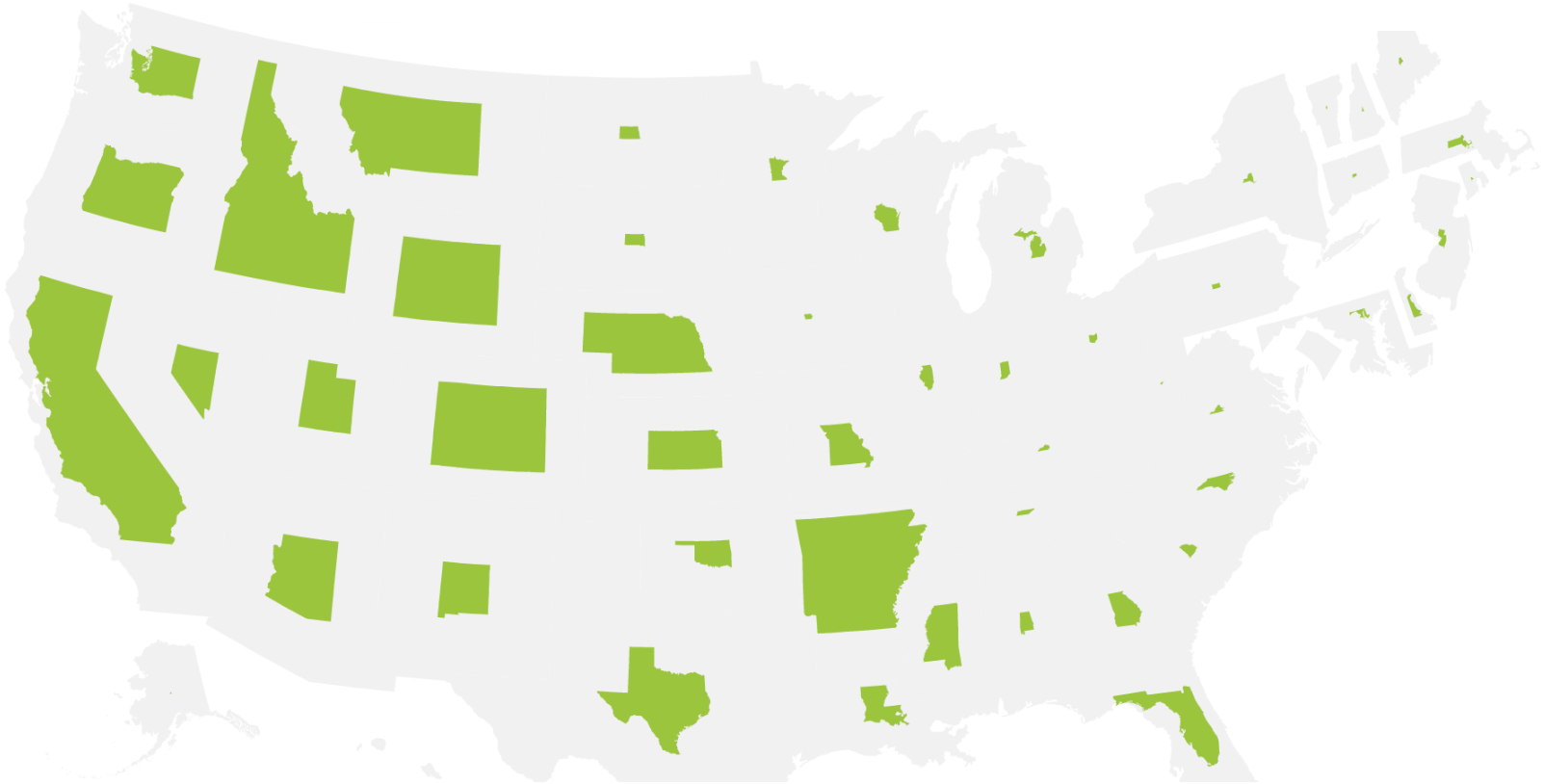
- Irrigation uses 846 million gallons per day.[1]
- Outdated irrigation systems can lose up to 30 percent of their water (mostly from seepage into the ground).[3]

Irrigation water use by State
(size proportionate to use)



The existing system can be up to 120 years old

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- **Operations and maintenance is expensive**
  Modernization reduces these costs
- **Loses 30 to 80 percent of water**
  Modernization enables more water to be left in rivers
- **Requires extensive pumping**
  Modernization reduces costs and diesel consumption
- **The list of opportunities goes on…**

Irrigation systems are a huge opportunity for small hydropower

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- 80% of consumptive water use in the Western States is for irrigation
- 13.7 million acres across 17 Western States are served by off-farm sources
- Much of this is gravity fed
- Some of this infrastructure is up to 125 years old

IrrigationViz helps solve challenges

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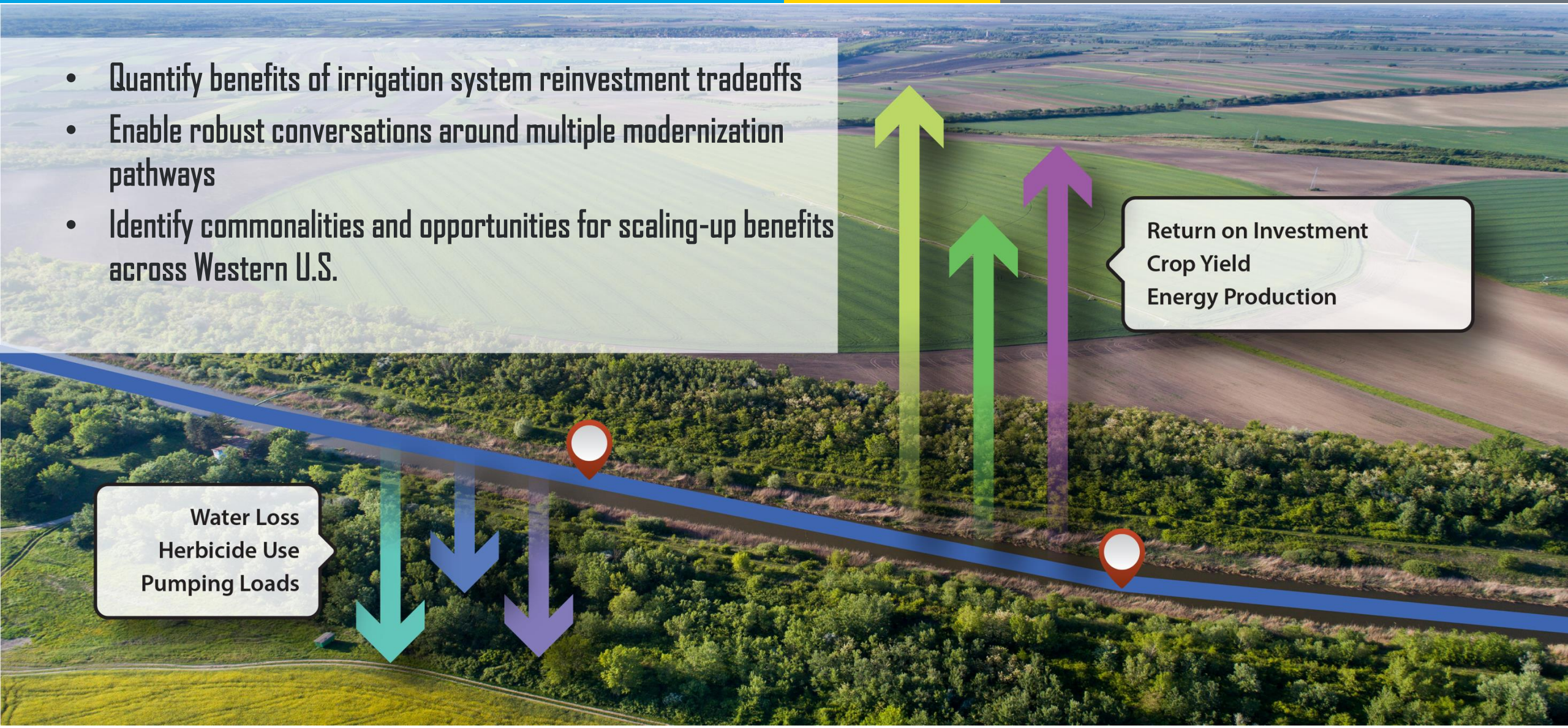
- Quantify benefits of irrigation system reinvestment tradeoffs
- Enable robust conversations around multiple modernization pathways
- Identify commonalities and opportunities for scaling-up benefits across Western U.S.



IrrigationViz is composed of rigorous decision support model and web-based user interface

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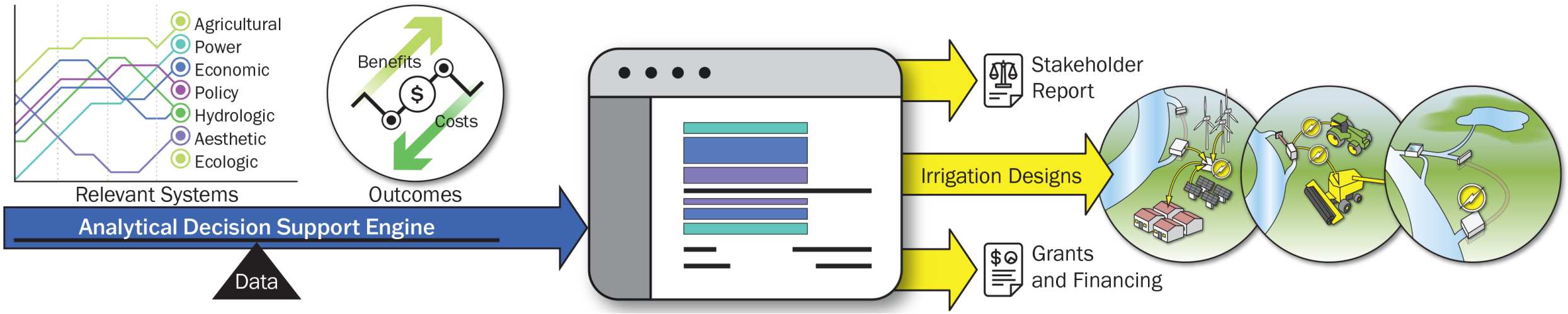
Decision Support Model

- Composed of multiple process modules (e.g., hydropower, water loss, ag potential, water purification, etc.)
- Assesses modernization benefits and costs based on design choices

Web-based Dashboard

- User loads current infrastructure and inputs "what-if" upgrade scenarios
- Sees tradeoffs of choices in near real-time
- Can generate output statistics and reports to support next steps



IrrigationViz Demo

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