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Data Centers and Water: Tribal Considerations

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- *Columbia River Inter-Tribal Fish Commission*

Wy-kan-ush-mi Wa-kish-wit

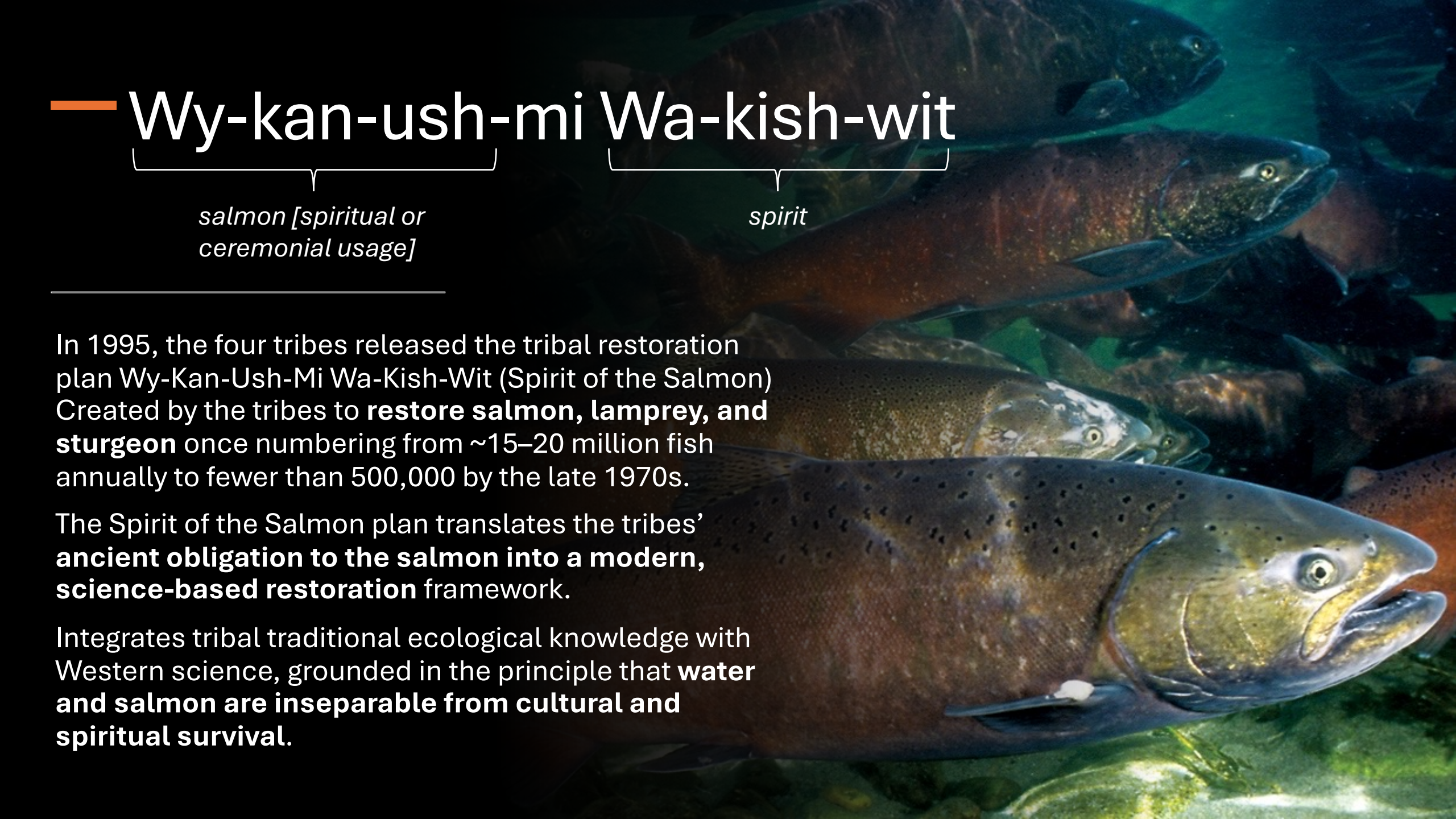
salmon [spiritual or ceremonial usage]

spirit

In 1995, the four tribes released the tribal restoration plan Wy-Kan-Ush-Mi Wa-Kish-Wit (Spirit of the Salmon) Created by the tribes to **restore salmon, lamprey, and sturgeon** once numbering from ~15–20 million fish annually to fewer than 500,000 by the late 1970s.

The Spirit of the Salmon plan translates the tribes' **ancient obligation to the salmon into a modern, science-based restoration** framework.

Integrates tribal traditional ecological knowledge with Western science, grounded in the principle that **water and salmon are inseparable from cultural and spiritual survival**.



Choosh iwa Wa-kish-wit

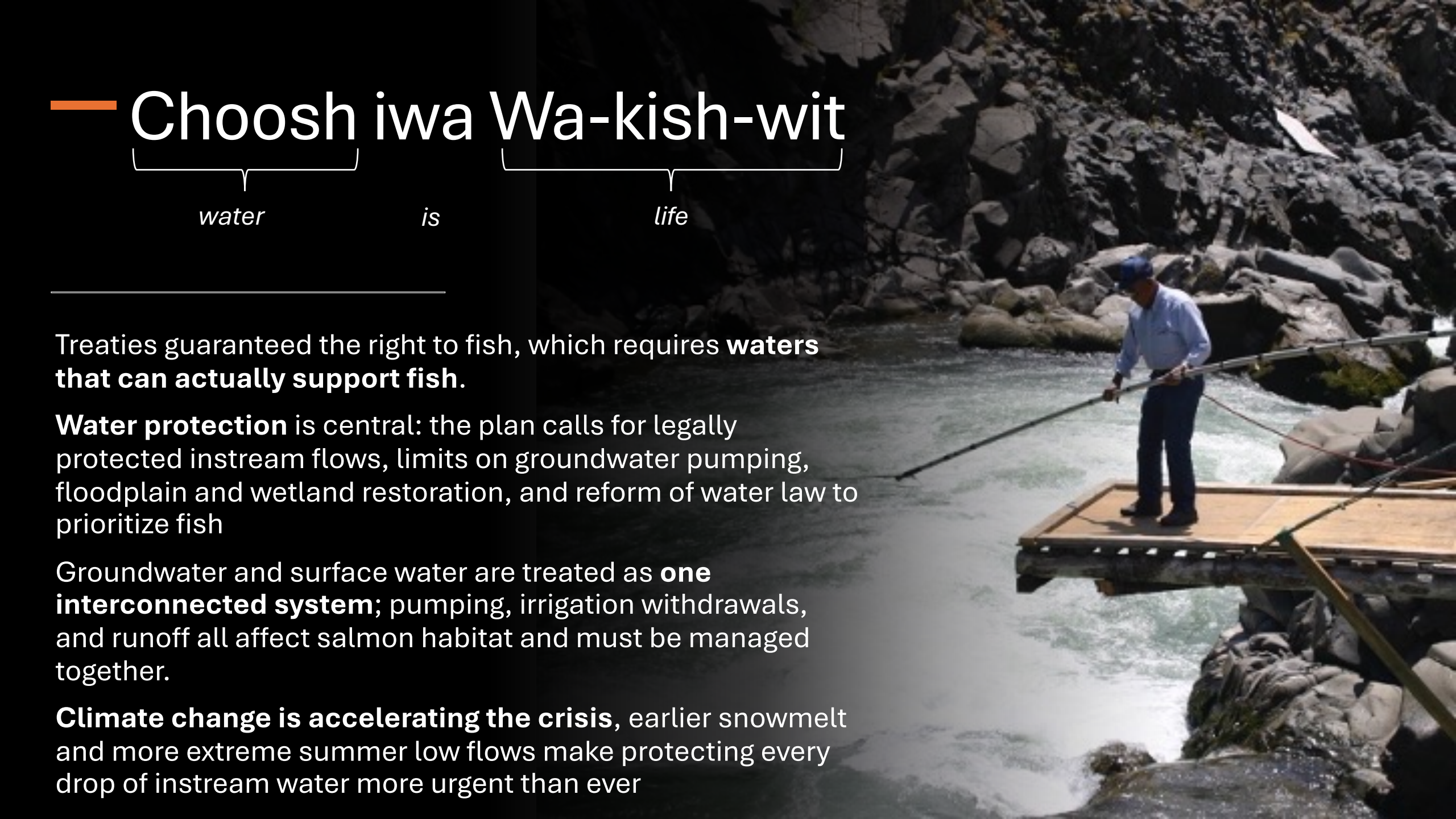
water *is* *life*

Treaties guaranteed the right to fish, which requires **waters that can actually support fish**.

Water protection is central: the plan calls for legally protected instream flows, limits on groundwater pumping, floodplain and wetland restoration, and reform of water law to prioritize fish

Groundwater and surface water are treated as **one interconnected system**; pumping, irrigation withdrawals, and runoff all affect salmon habitat and must be managed together.

Climate change is accelerating the crisis, earlier snowmelt and more extreme summer low flows make protecting every drop of instream water more urgent than ever



Wy-kan-ush-mi Wa-kish-wit

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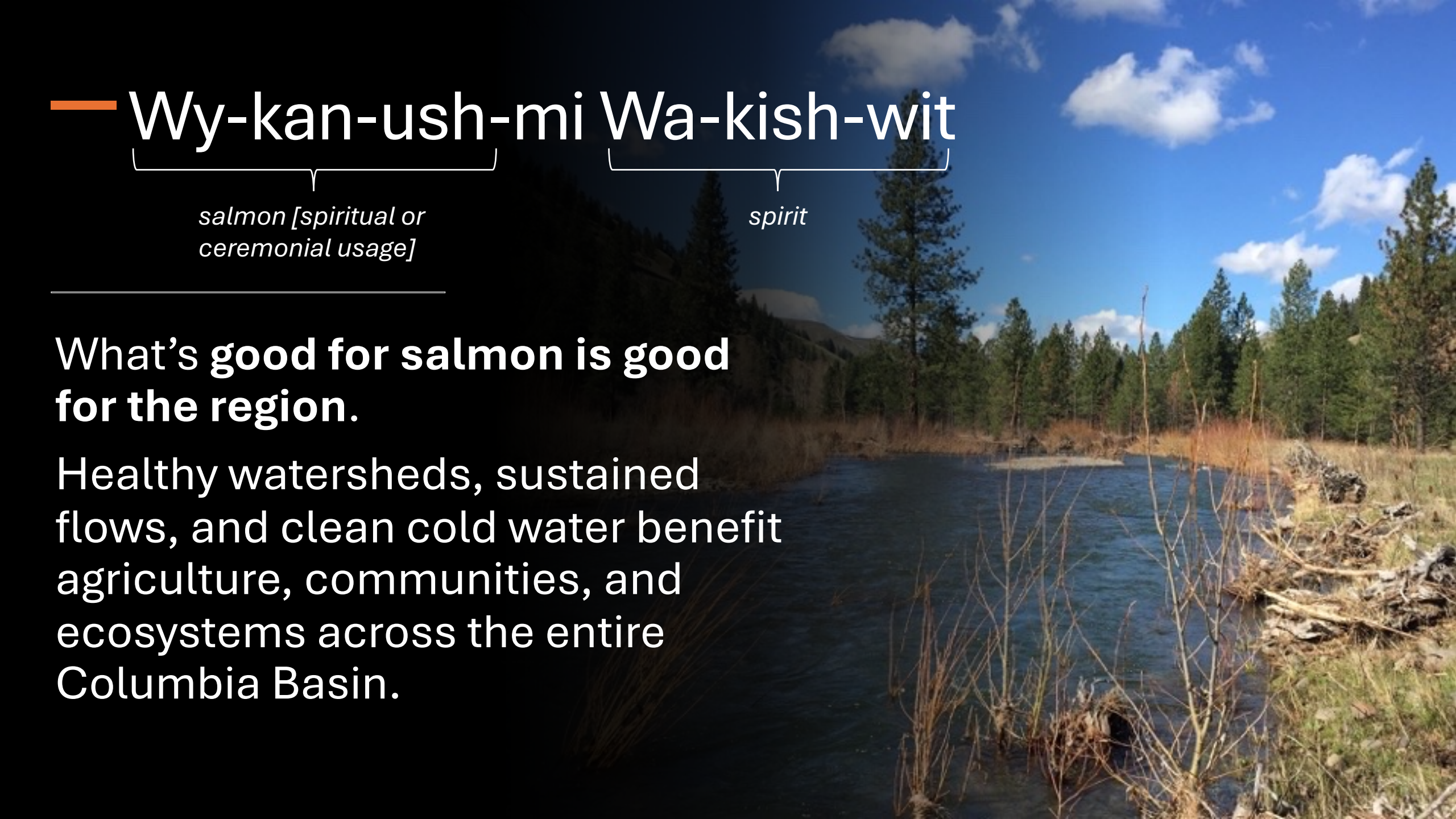
What's **good for salmon is good for the region**.

Healthy watersheds, sustained flows, and clean cold water benefit agriculture, communities, and ecosystems across the entire Columbia Basin.

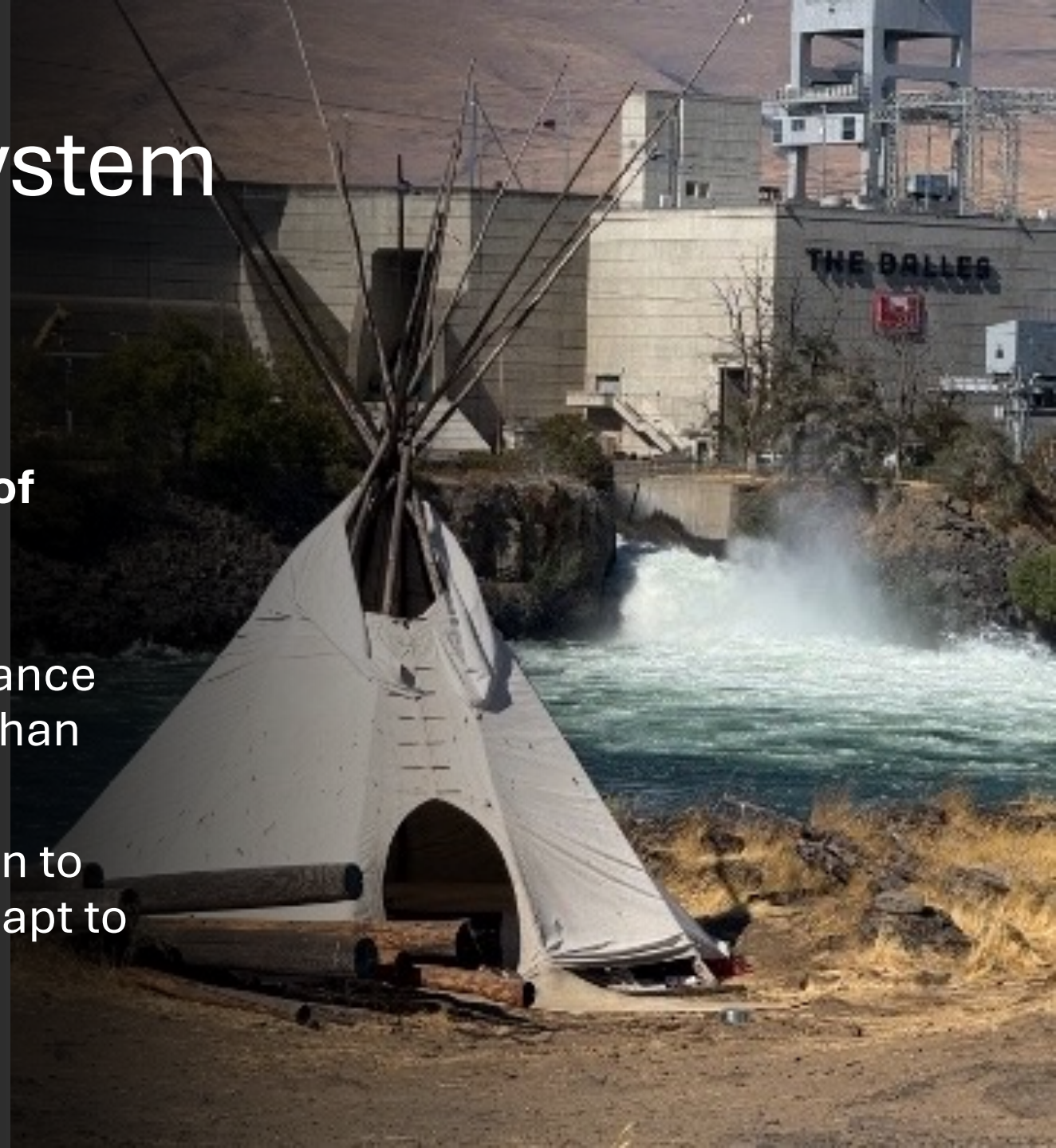


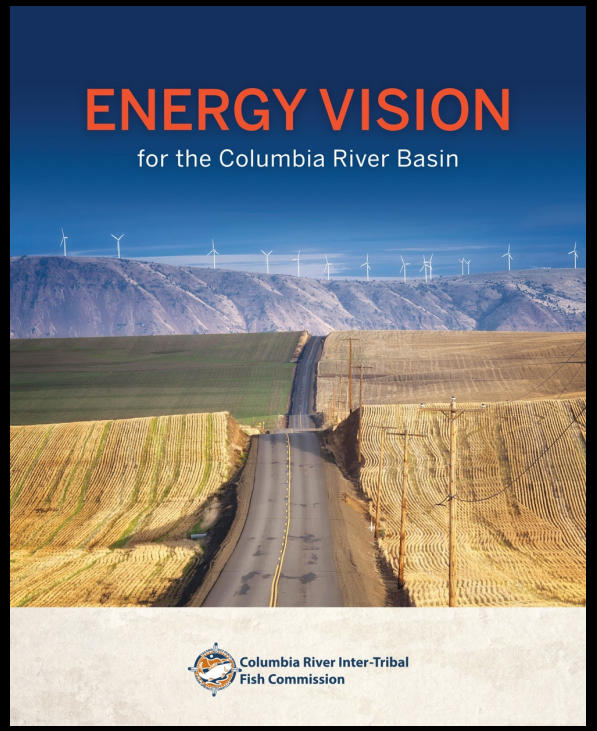
Burden of Energy System

Tribes and salmon have **borne the brunt of energy development** and received little benefit.

Lost 80% of salmon runs – current abundance dangerously low; tribal incomes are less than half national average.

Salmon have adapted as much as they can to our needs. How can the energy system adapt to salmon?





Tribal Energy Vision

Envisions an energy transition that **protects treaty-reserved resources** like salmon while still providing for **clean, reliable, and affordable electricity**.

Finds conservation, efficiency, and storage are most **“fish friendly” energy resources** and focuses on reducing peak energy demands

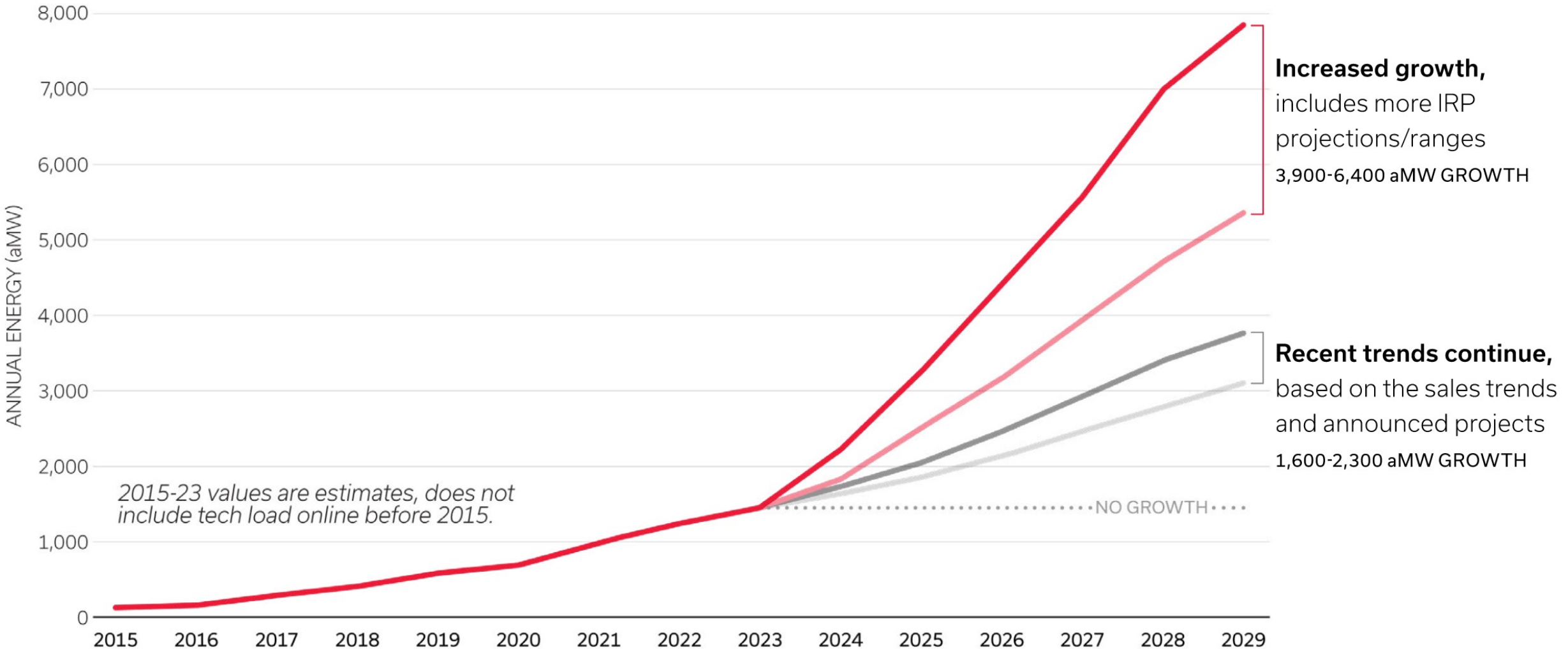
Siting is a regional planning responsibility, not a project-by-project exercise; a comprehensive regional plan should determine where development should and should not occur.

The goal is to **prevent new damage** to fish, water, and cultural resources.

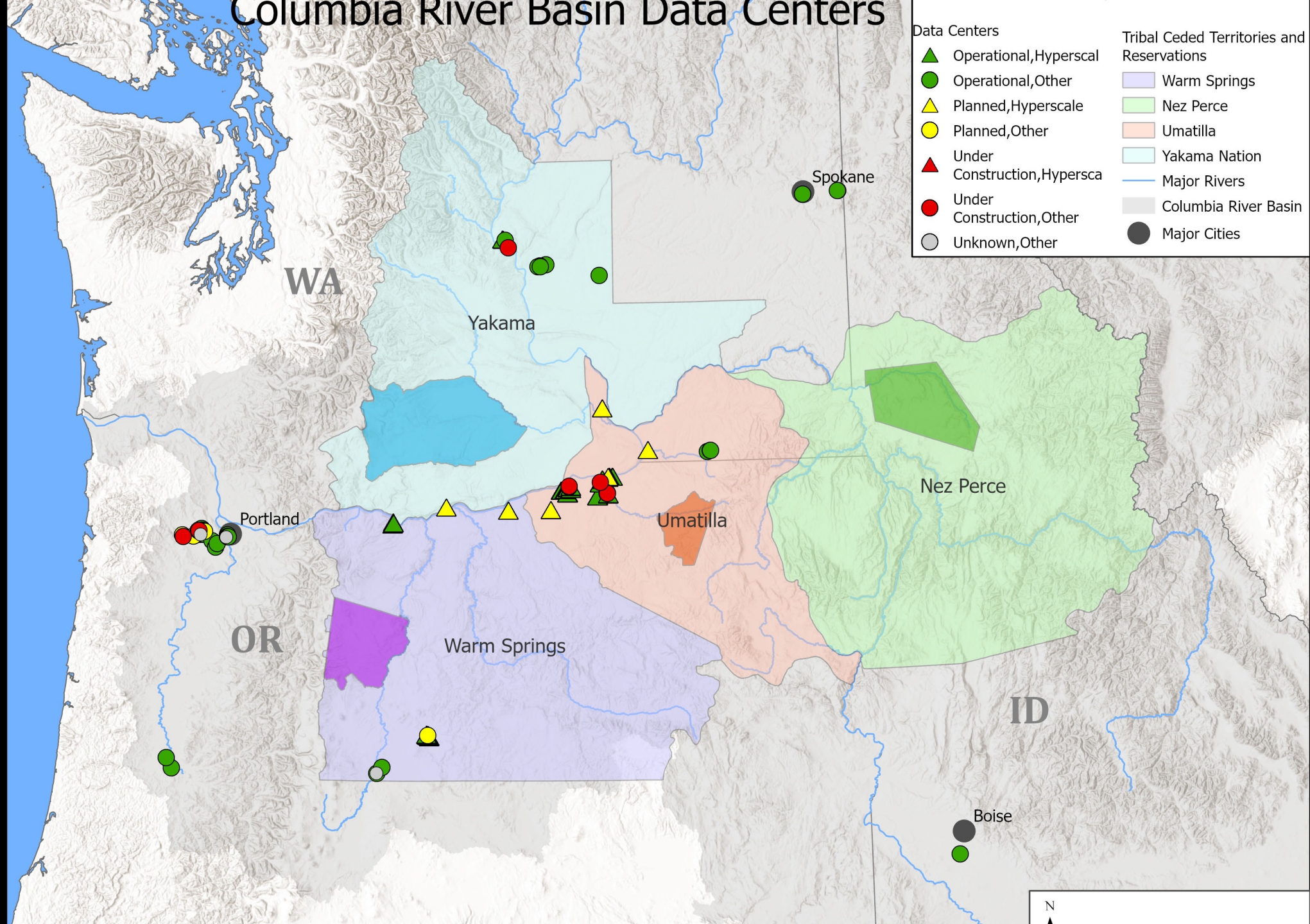
DRAFT TECH LOAD FORECAST TO 2029

Source: Northwest Power and Conservation Council

Note: Tech Load Forecast is predominantly data center loads but does not include semi-conductor fabrication.



PNW Data Centers

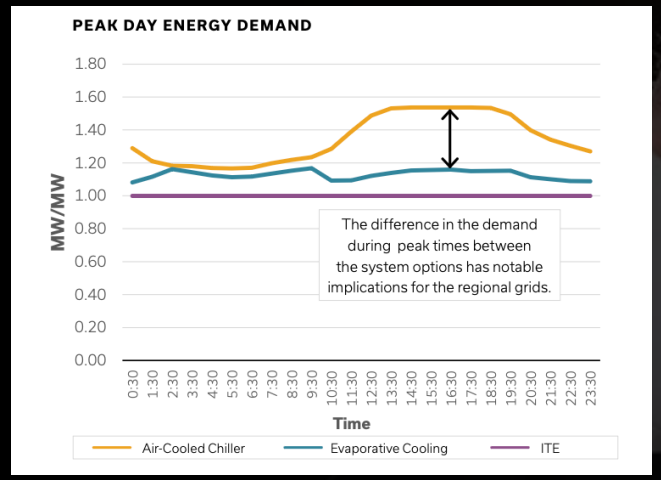


PAE Data Center Study

Efficiency Opportunities & Water Use Tradeoff

Study found:

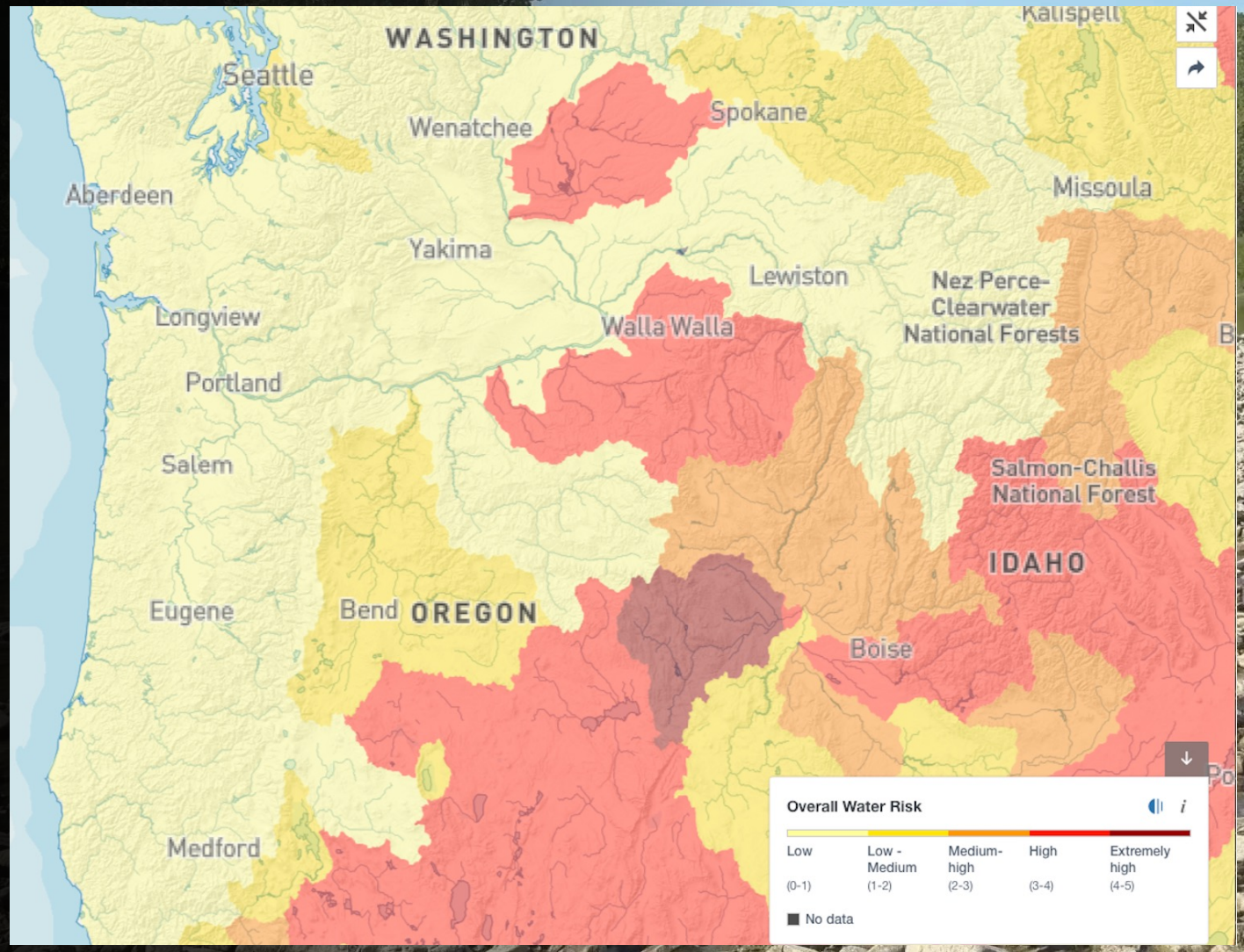
- Air-cooled System = **high load energy** use, but **less water** use
- Evaporative-cooled System = better **energy efficiency**, but **more water** needs (direct and indirect)
- Building efficiency can significantly reduce peak load



Data Center Impacts are Local

PAE study noted that data centers may use 0.2% of the overall water use in Oregon, but that does not tell the whole story.

A data center's building systems and its location has measurable impact on **local resources**.



Freshwater vulnerability map
Source: Aqueduct Water Risk Atlas, wri.org (2026)

Data Center Water Use
(the input)

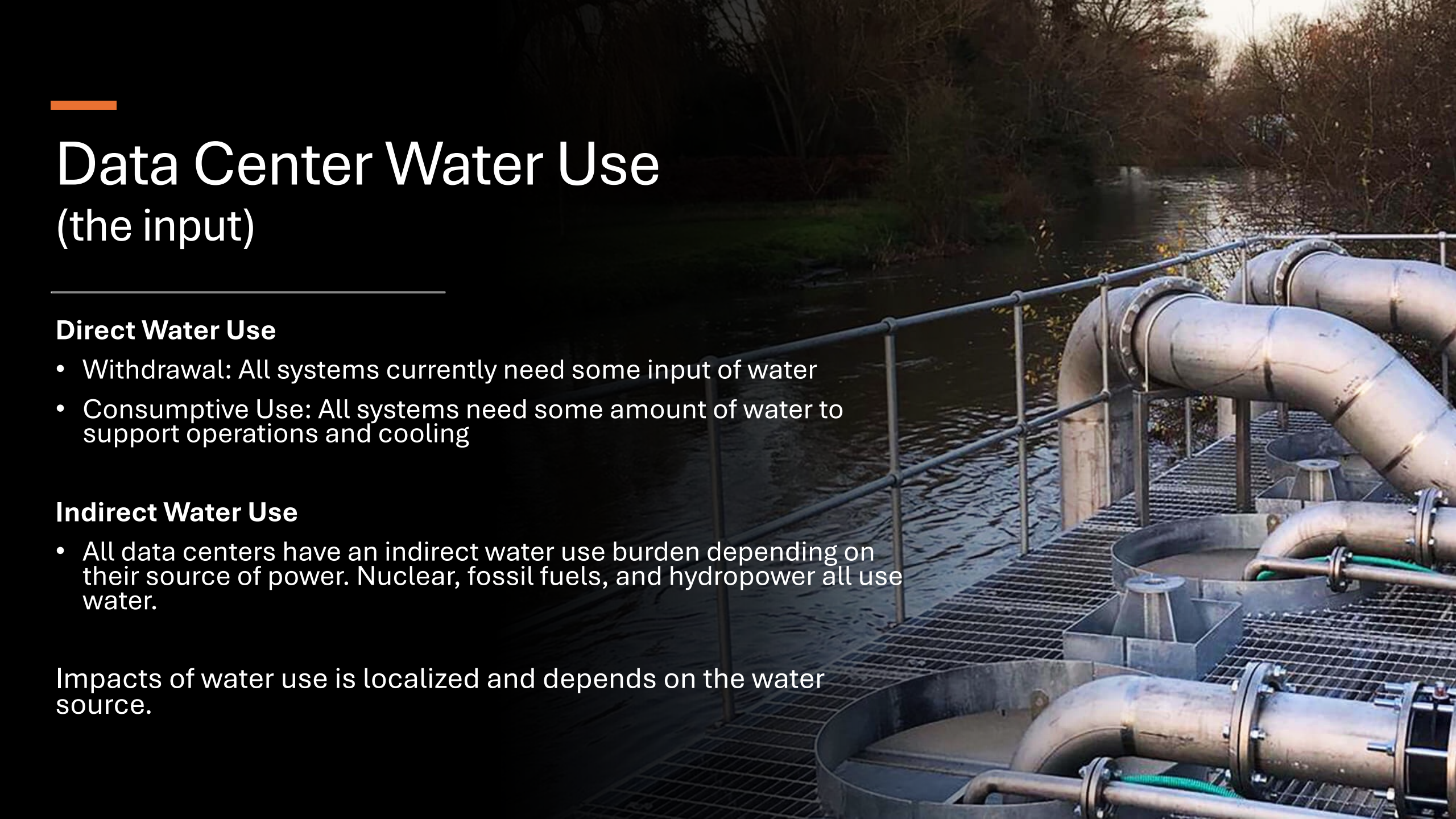
Direct Water Use

- Withdrawal: All systems currently need some input of water
- Consumptive Use: All systems need some amount of water to support operations and cooling

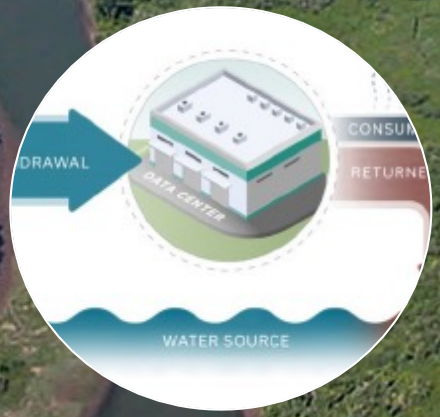
Indirect Water Use

- All data centers have an indirect water use burden depending on their source of power. Nuclear, fossil fuels, and hydropower all use water.

Impacts of water use is localized and depends on the water source.

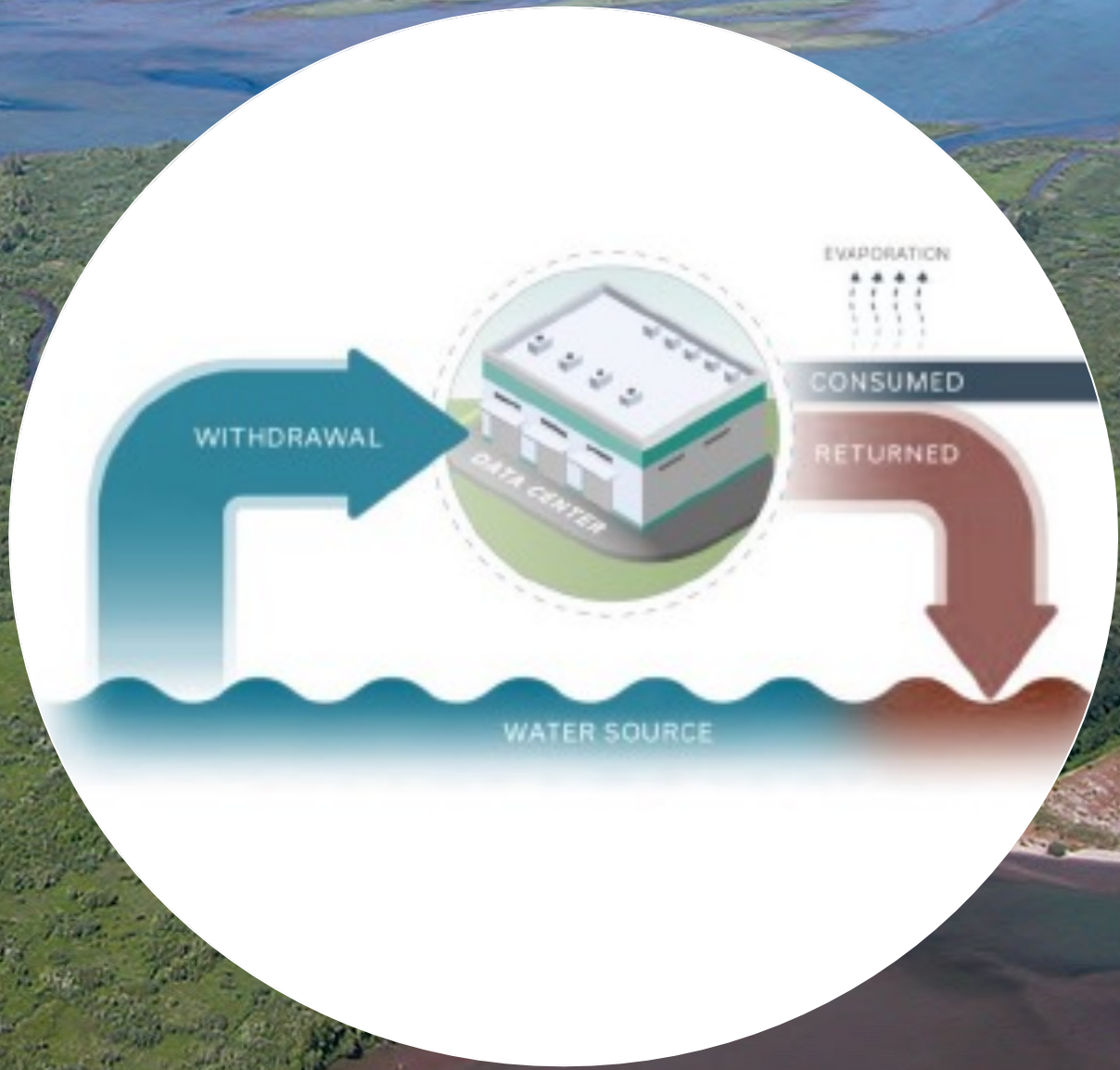


Questions to Consider for Water Use



Characterize Water Use

- What is the building system, and what are its direct water needs across all operational phases?
- How much water is consumed versus returned, and in what condition is it returned?
- What is the indirect water demand of the project's power source, and has full lifecycle water use been accounted for?

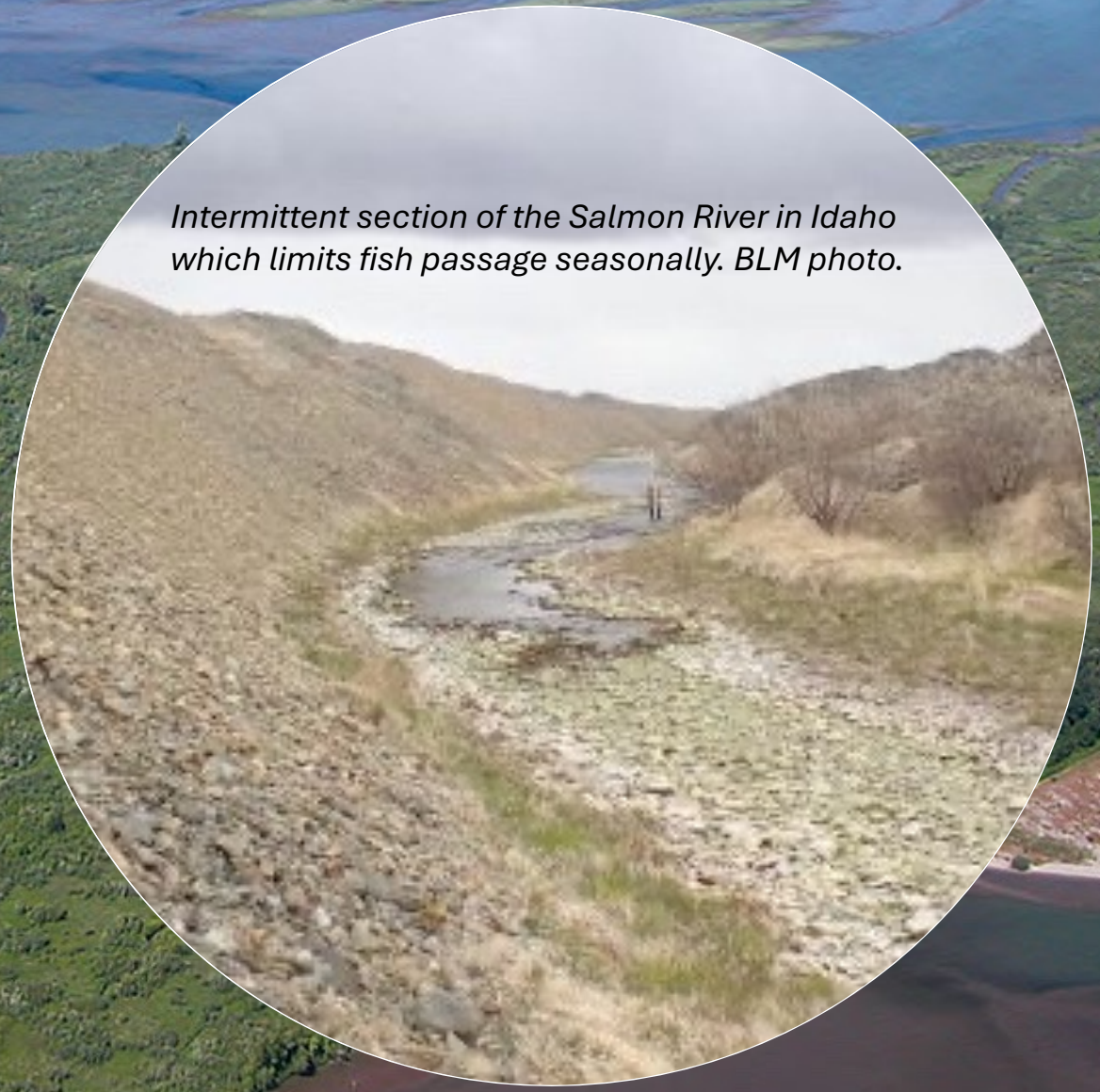


What is the Source?

- Surface water, groundwater (aquifer), municipal?
- If municipal, what is the **volume available** in the current permit?
- What is the **hydrological connection** between that source and nearby salmon-bearing streams?

Low Flow Conditions and Fish Needs

- Under what conditions (drought, low-flow years, climate projections) could withdrawals push streams below flows needed for fish passage, spawning, or rearing?
- Will this project impact instream flows elsewhere in the watershed?
- What is the cumulative withdrawal impact when combined with existing agricultural, municipal, and industrial users in the same watershed?
- What happens to water demand if the project scales up or extends its operational lifespan beyond original projections?
- Have tribal water rights and instream flow needs been specifically accounted for?

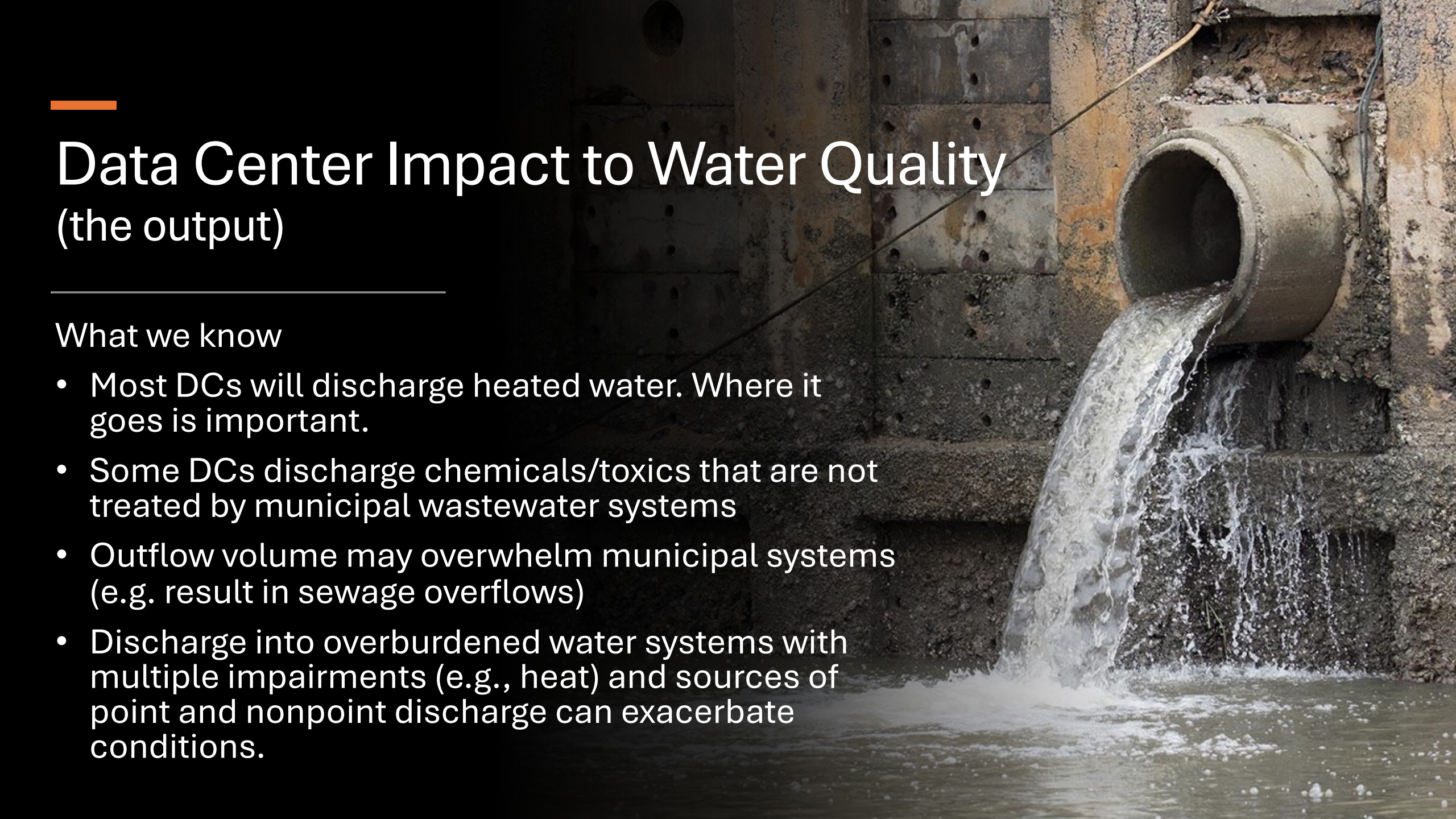


Intermittent section of the Salmon River in Idaho which limits fish passage seasonally. BLM photo.

Data Center Impact to Water Quality
(the output)

What we know

- Most DCs will discharge heated water. Where it goes is important.
- Some DCs discharge chemicals/toxics that are not treated by municipal wastewater systems
- Outflow volume may overwhelm municipal systems (e.g. result in sewage overflows)
- Discharge into overburdened water systems with multiple impairments (e.g., heat) and sources of point and nonpoint discharge can exacerbate conditions.



Data Center Impact to Water Quality

(the output)

The Columbia River is a stressed water system. Discharges into the river need careful assessment.

Characterize the Discharge

- What is the discharge amount and how does it vary?
- Is the discharge heated and at what temperatures?
- What chemicals are being discharged?

Assess Municipal Capacity

- Can the receiving WWTS handle both the volume and chemistry of the discharge?
- What happens during storm events or system upsets?
- Has cumulative loading from all permitted dischargers into the system been assessed?

What is the surface water (receiving body)?

- Are there tribal fishing sites, critical habitat, or cold water refuges downstream of the outfall?
- What chemicals are used in operations and what is in the discharge stream?
- What are the low-flow conditions of the receiving water body?

Spill and Emergency Planning

- What chemicals are stored on-site, in what quantities, and how close to surface water and storm drains?
- What happens during storm events or system upsets?
- Is the spill response plan chemical-specific and does it include notification protocols for tribes?

Data Center Impacts on Tribal Treaty Resources

Where data centers are sited in the Columbia River Basin matters

Its interconnected tributaries, streams, and aquifers ultimately feed the cold, clean flows that tribal treaty fisheries depend on.

Treaty fishing rights attach to specific places.

Instream Flows for Fish

Water withdrawals compete directly with the flows salmon need for spawning, passage, and rearing. Water withdrawals miles from a river can still dewater a salmon stream.

Tributaries and Aquifers

The region’s tributaries are essential for supporting cold water refuge for salmon; what happens upstream or in the aquifer doesn’t stay there.

Toxics & Thermal Hazards

- Thermal or toxic discharge that might be diluted in a healthy river can be lethal under the low-flow conditions the basin increasingly faces
- Back up generation options are heavy air polluters affecting tribal fishers and others along the river.
- Chemicals for operations pose spill hazards that could impact fish.

Energy Sources, Load Requirement, Timing

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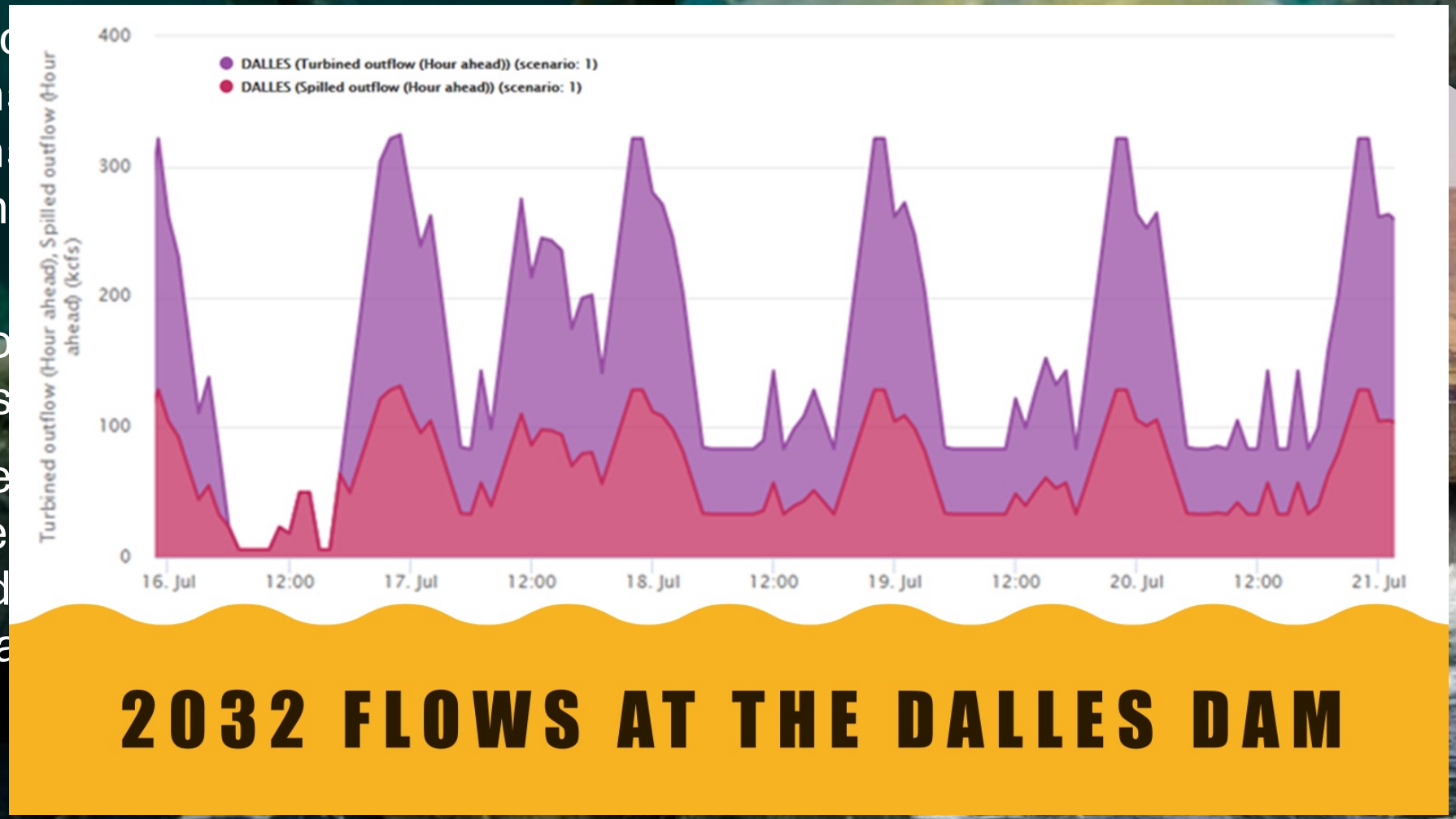
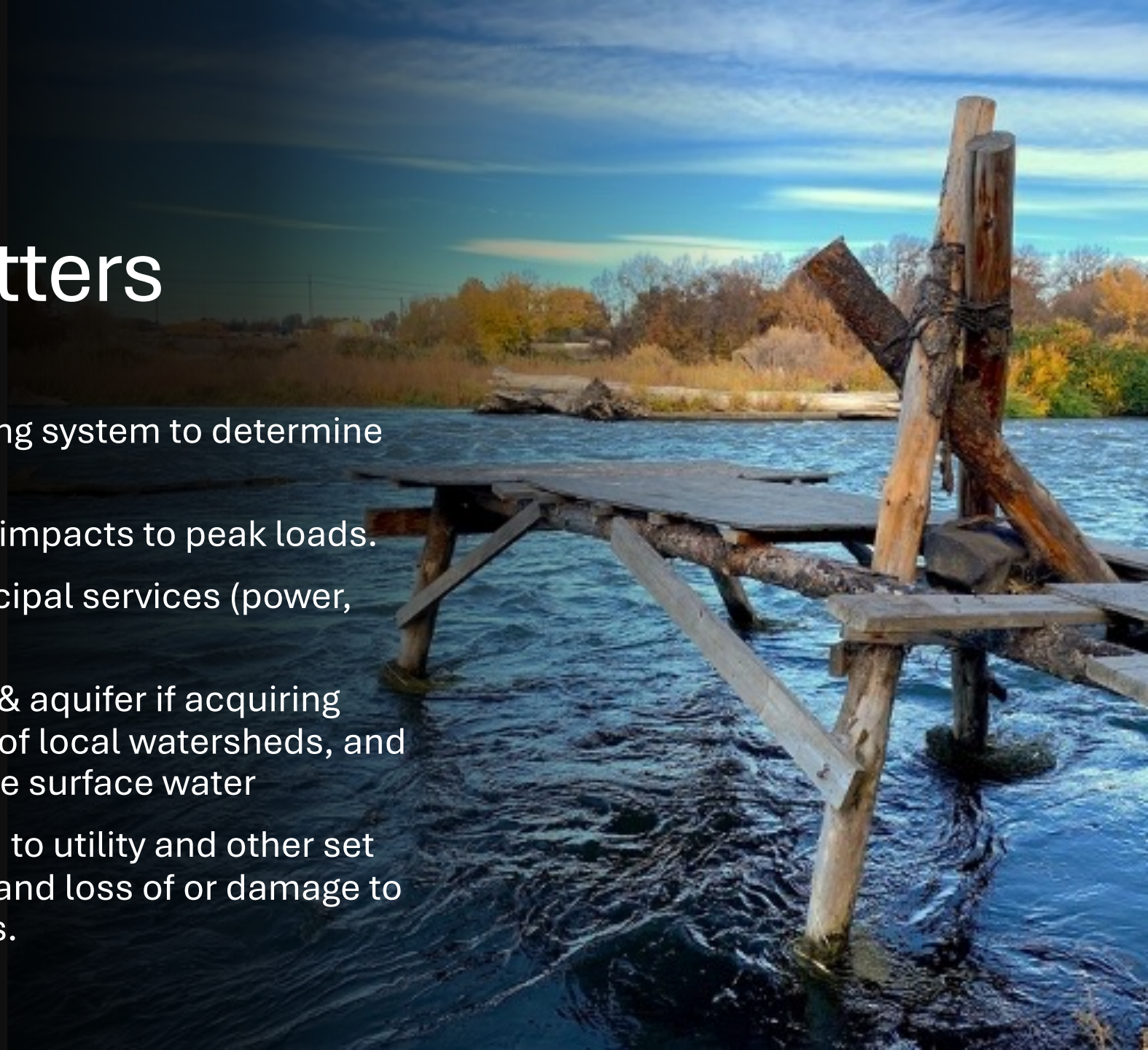


Transparency Matters

- Location information & type of building system to determine energy and water needs
- Power usage, generation source and impacts to peak loads.
- Assess impacts to utilities and municipal services (power, water, wastewater)
- Assess impacts to local watersheds & aquifer if acquiring water rights, the overall vulnerability of local watersheds, and impacts of discharges to the available surface water
- A true costs analysis that, in addition to utility and other set costs, accounts for climate change, and loss of or damage to resources, including treaty resources.



Time is running short and so is our water

March 20, 2025

Teacup Nordic Ski Area

Mt Hood: Hood River watershed (East Fork Hood River sub-watershed)

March 20, 2025