

The Integrated Basin Scale Opportunity Assessment Initiative, Feb 1 Deschutes Workshop

Deschutes Basin Case Study: Work to Date, Current Status, Potential Next Steps

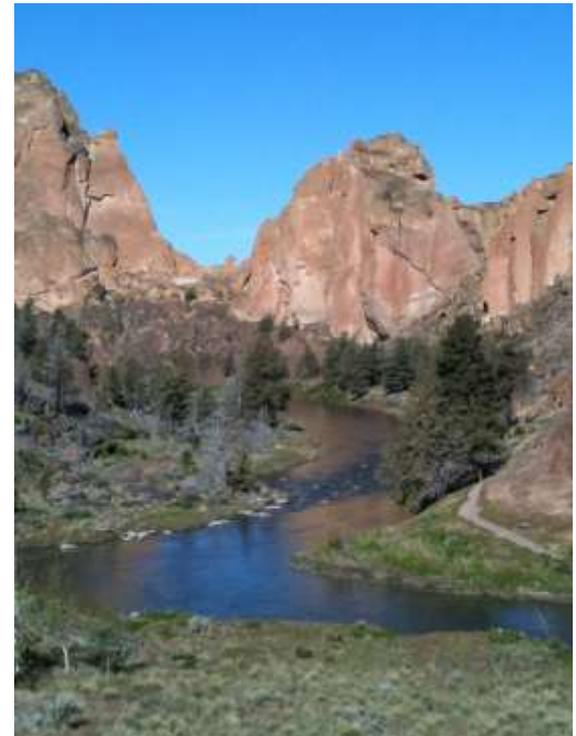
Simon Geerlofs

Pacific Northwest National Laboratory



Introduction

- ▶ Basin Scale Opportunity Assessment Overview
- ▶ Work to Date in the Deschutes
- ▶ Status of analysis
- ▶ Workshop Goals



Hydropower MOU

MOU for Hydropower among DOE, DOI and DOA

- Signed in March 2010, MOU highlights 7 key areas for interagency collaboration.
- Major ongoing activities to date
 - Assessments of energy generation potential and analysis of potential climate change impacts to energy generation at federal hydropower facilities
 - Exploring opportunities for collaboration across entire river basins to increase generation and improve environmental conditions
 - Green Hydropower Certification
 - Federal Inland Hydropower Working Group
 - Joint development and demonstration of advanced technologies
 - Renewable Energy Integration and Energy Storage
 - Facilitate permitting for federal and non-federal projects at federal facilities



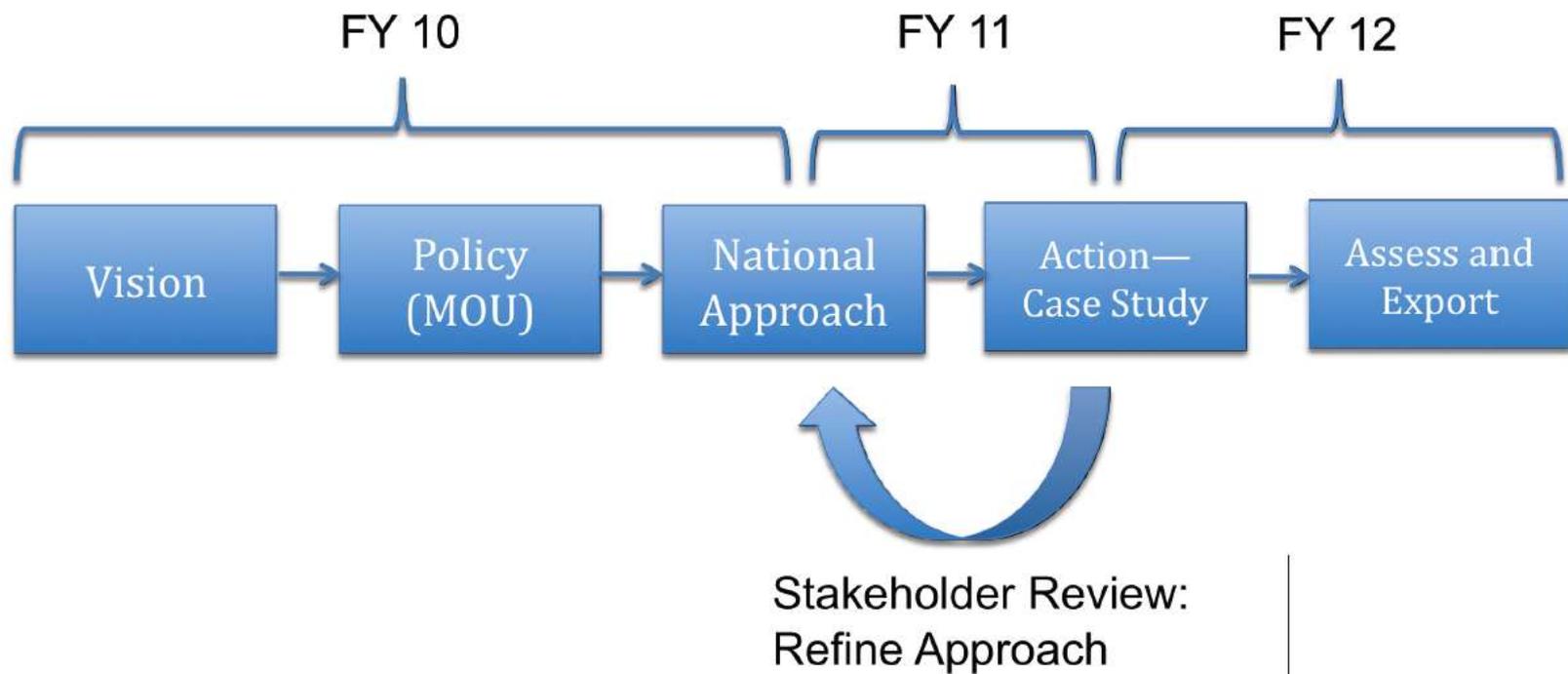
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National Goals for Opportunity Assessment

- ▶ Develop (in collaboration with stakeholders) an ***approach*** for basin scale identification and analysis of sustainable **hydropower** and **environmental** protection/restoration opportunities, within the context **of other water uses**.
 - **Stakeholder engagement**
 - **System-scale analysis**
 - **Data Aggregation, Display, and Dissemination**
 - **Inform**—Not meant to substitute for planning and regulatory processes

Initiative Process: Thousand-Foot View



Partners (to date)—It's a big tent...

- ▶ MOU Agency Leads—DOE, USACE, BOR
- ▶ National Steering Committee—
 - Hydro, Environment, NOAA, BOR, DOE, USACE
- ▶ Deschutes Basin Stakeholder Involvement
 - Logistics Team—PGE, BOR, BOC, TU, OWRD, DRC
 - Site Visit and Interviews—20+
 - Stakeholder Workshops (2)—40+
- ▶ Technical Team: PNNL, ORNL, ANL



Deschutes Basin Case Pilot Selection

- ▶ Objective criteria, considered by MOU agencies and Steering Committee
 - Potential for hydro (existing and new), environmental potential, active SH community, existing data, opportunity for learning
- ▶ Preliminary outreach in early 2011 with BOC, PGE, TNC, DWA, others—assessing stakeholder interest in working with us.
- ▶ Strong interest, but sensitivity around HCP and Crooked River processes—Assessment tools could be useful, but must also be careful to respect ongoing processes.
- ▶ Site visit in Spring, 2011 to scope further and preliminary ID of opportunities



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Upper Deschutes/Crooked River Pilot Project

- ▶ Central Oregon, three sub basins
- ▶ Unusual hydrology, ground water connectivity
- ▶ 7 irrigation districts
- ▶ Major irrigation reservoirs on Upper Deschutes and Crooked Rivers.
- ▶ 300+ MW facility at Pelton-Round Butte
- ▶ Existing in conduit hydropower and desire for more
- ▶ Complex environmental and regulatory issues
- ▶ Model basin for collaborative problem solving



Assessment Activities in the Deschutes

- ▶ Spring, 2011—Site visit and meetings with environmental community, irrigators, and PGE.
 - Crooked and Upper Deschutes: Bowman, Wikiup, Juniper Ridge, Ponderosa, PRB
- ▶ Late Summer, 2011—Bend stakeholder workshop
 - 48 stakeholders
 - Opportunity identification
 - Research agenda
- ▶ October, 2011—Preliminary Assessment Report
- ▶ February, 2012—Seattle modeling workshop with Bureau, OWRD, and DRC
- ▶ July, 2012—Site visit II: Scenario scoping with “Logistics Committee”
- ▶ Feb1, 2013—Today’s workshop



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Upper Deschutes/Crooked River Pilot Project

► Hydro Opportunities

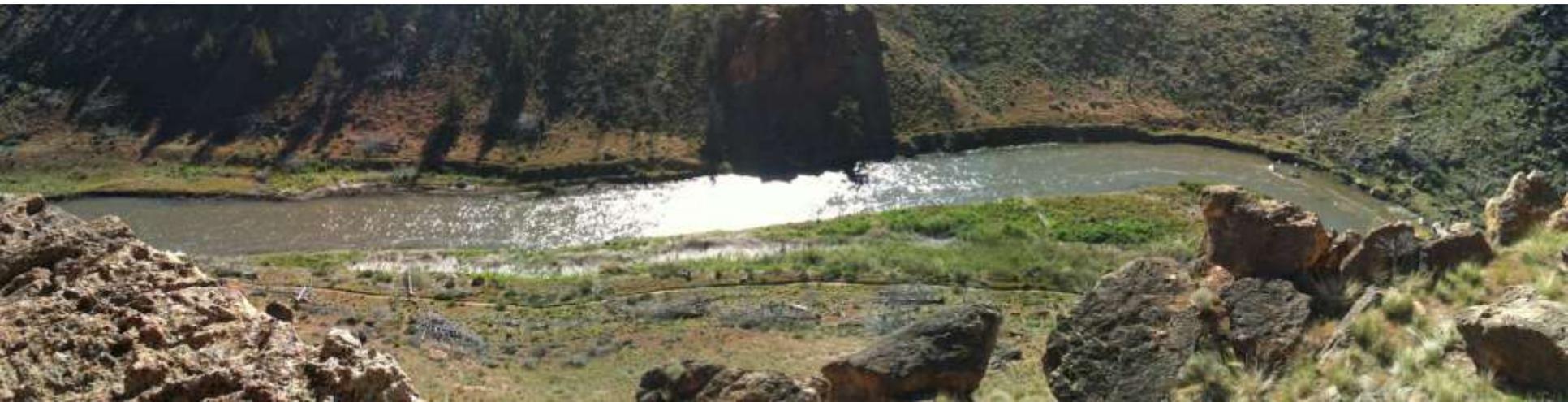
- Powering non powered dams
 - BOR facilities
 - Municipal facilities
 - Opportunities related to irrigation reservoirs
- New small hydro in irrigation canals and conduits
 - Build on existing success stories and assessments
- Flow shaping to maximize hydro value
 - Pelton-Round Butte



Upper Deschutes/Crooked River Pilot Project

► Environmental Opportunities

- Enhanced flows below reservoirs
- Habitat restoration and water quality improvements
- Explore creative ideas for new revenue streams for environmental work
- Water conservation projects
- Low impact development of hydro resources
- Information: Assist HCP and other environmental planning processes through application of modeling tools and data aggregation.



Upper Deschutes/Crooked River Pilot Project

- ▶ Understand context for opportunities
 - Irrigation intersects with many of the power and environmental opportunities
 - Flatwater recreation on reservoirs
 - Operate within context of HCP, existing environmental law, and other ongoing processes
- ▶ Integration
 - System-wide water balance model--hydropower, environmental flow, and irrigation
 - Aggregate existing data and model data into visualization tool



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2012 Research Agenda

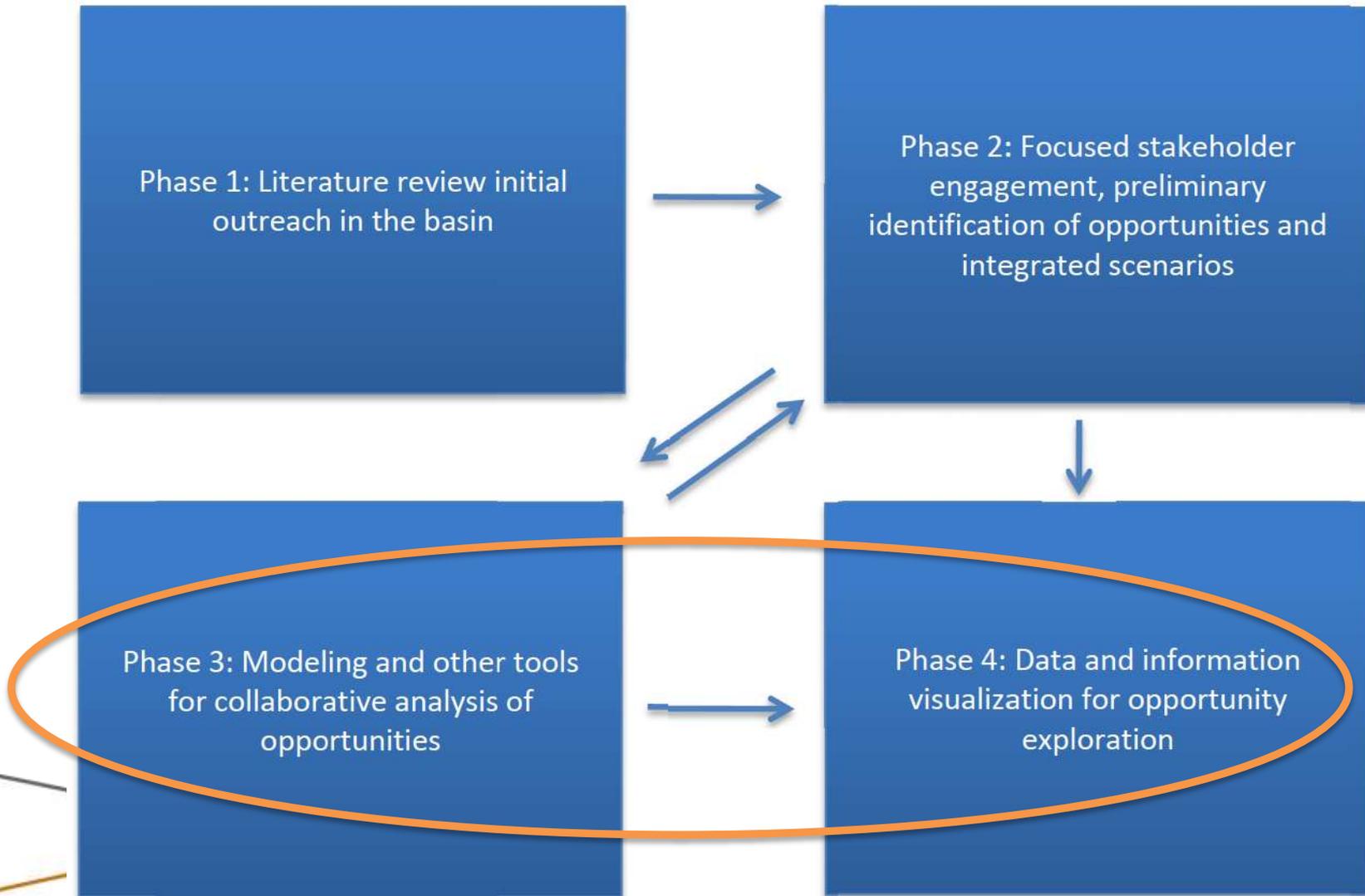
- ▶ Develop and refine opportunity **scenarios**
- ▶ Develop **daily-time step operational model**—Major reservoirs, existing infrastructure, proposed hydro, ground water, surface water, inflows
- ▶ **Simulation** of opportunity scenarios—looking across historic record 1928-2008
- ▶ **Small hydro case study**
- ▶ **Catalog** existing site specific hydro and environmental opportunities
- ▶ Develop **data visualization and collaborative analysis tool**
- ▶ **Collaborate** with local experts



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Pilot Project Approach



Thoughts for Today's Workshop

- ▶ Assessment tools build on previous models and existing data.
- ▶ Scenario-based approach relies on stakeholder input and collaborative iteration.
- ▶ Start from the basics to understand tension between opportunities and build data infrastructure.
- ▶ Flexible architecture allows more detailed scenarios in the future.
- ▶ What you see today represents a first iteration. We hope to refine with your help!

Today's Goals

- ▶ Report on initial results from our analysis.
- ▶ Gain input from stakeholders on assessment tools and approach.
- ▶ Discuss next steps and potential for future uses of assessment tools.



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