

Improving Hydropower Modeling for Power Systems Planning and Operational Studies



Slaven Kincic, Sohom Datta, Nader Samaan, and Abhishek Somani, *Pacific Northwest National Laboratory*
 Jin Tan, *National Renewable Energy Laboratory*
 Rojan Bhattarai, *Idaho National Laboratory*

Hydropower modeling needs an upgrade. ➔ **With industry input, we're modernizing it.** ➔ **Better modeling will support a more resilient and reliable grid.**

Accurately modeling hydroelectricity generation in operational studies and power systems planning is key to ensuring a reliable and resilient future grid in the face of climate change and growing power demands. Currently, hydroelectric generation is not accurately represented in power systems planning and operational studies due to limitations and gaps in existing models.

We aim to increase industry awareness of the current misrepresentation of hydroelectric generation, improve future models and studies, and support greater power system reliability by engaging industry stakeholders and developing new tools and dynamic models.

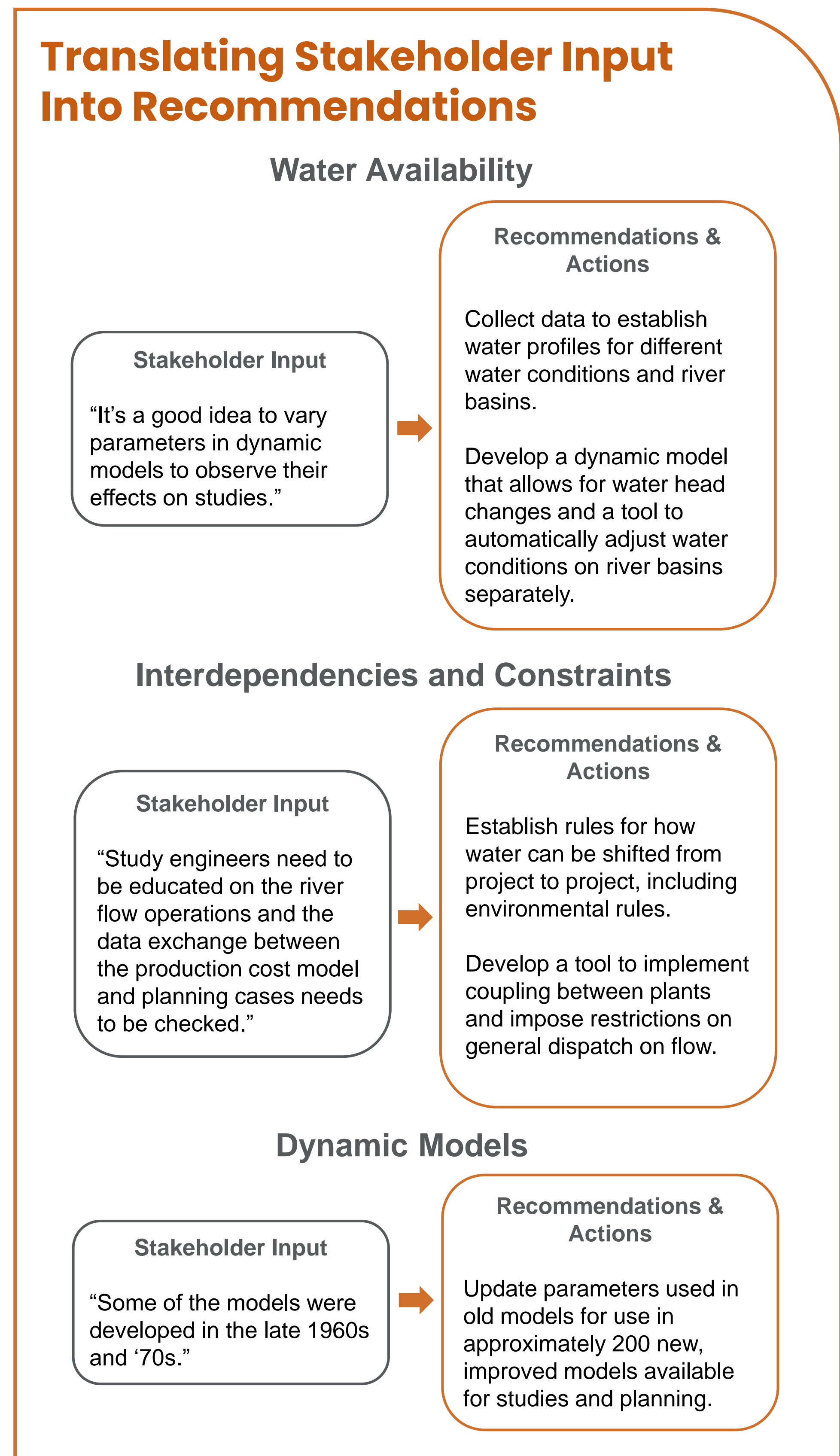
We solicited stakeholder input to inform recommendations for better data collection methods, dynamic models, and new tools that better represent the role of hydroelectricity generation in power systems—improving future power planning and reliability.



Pictured here is the Glen Canyon Dam, which provides power to multiple states in the western United States. It has been significantly impacted by ongoing drought conditions in the region. Dynamic models, such as the ones being developed in this project, will support better hydropower modeling that takes into account extremes in water conditions to support better planning for the future. (Photo by Dauf | Shutterstock.com)

Industry Stakeholders and Partners

* WECC Subcommittees on Modeling and Validation and System Review

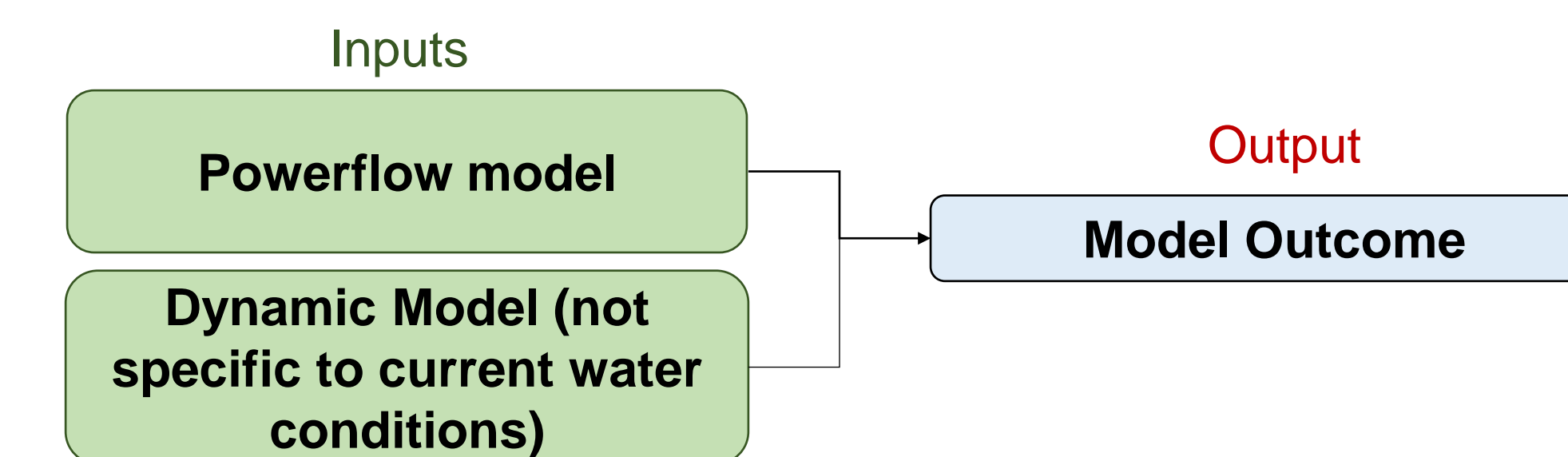


Improving Hydropower Modeling

Using the recommendations and actions gleaned from stakeholder engagement, we are developing new tools, dynamic models, and workflows that can be used to modernize hydropower modeling in operational studies and power systems planning.

With these tools, industry stakeholders will be able to more accurately evaluate hydropower's contribution to grid reliability and role in the integration of other renewable resources in rapidly evolving power systems.

Current Hydropower Modeling Process



New Hydropower Modeling Process

