

EFETT: Toolset for Evaluating Hydropower Energy Flexibility – Environmental Tradeoffs

Hongfei Hou, Vishvas Chalishazar, Brenda Pracheil



Pacific Northwest
NATIONAL LABORATORY

November 15, 2023

Proudly Operated by **Battelle** Since 1965

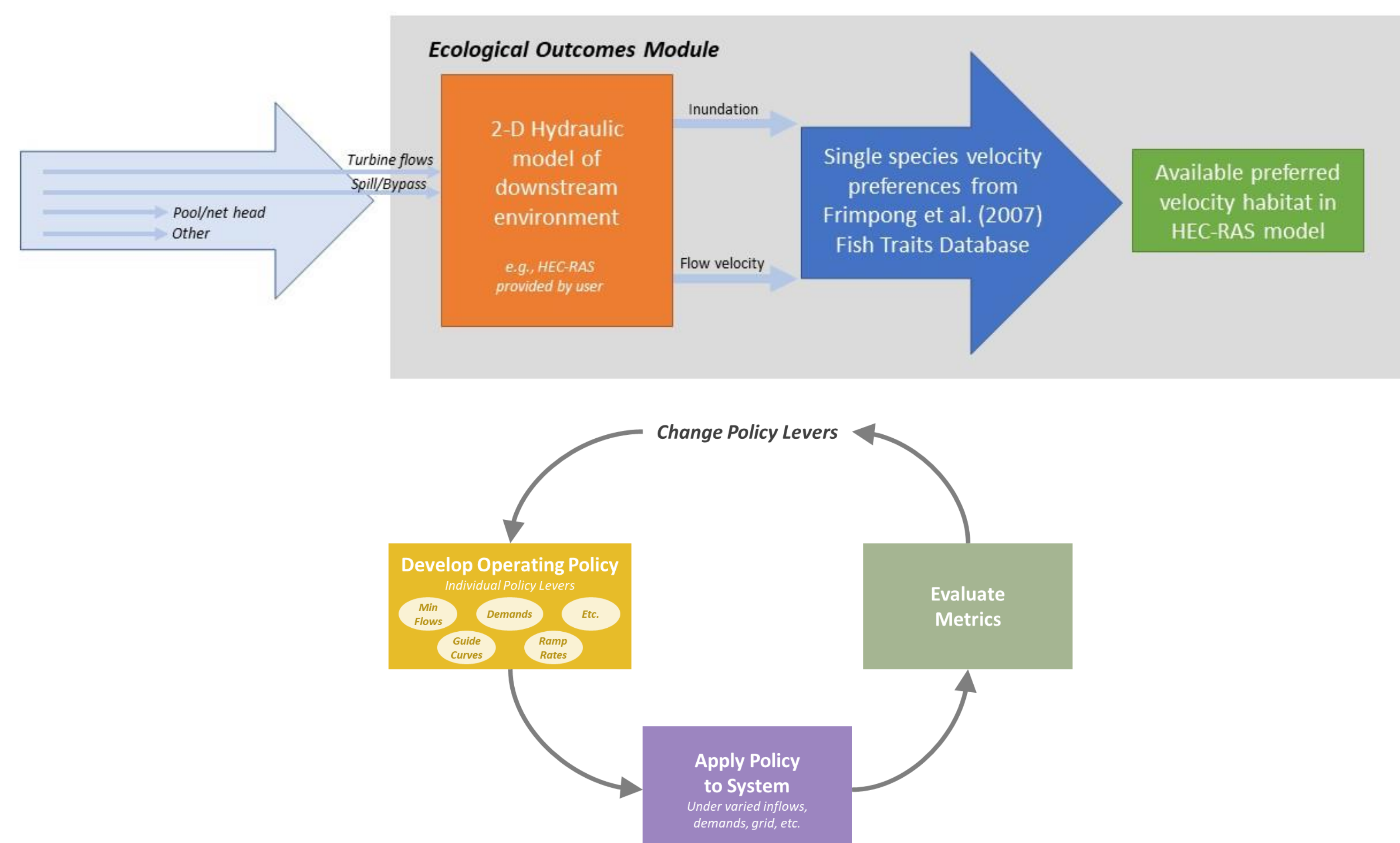
THE CHALLENGE

- Linking
 - Environmental Evaluation
 - Revenue Optimization
- Allowing Simultaneous Assessments of environment impact vs power generation
- Providing a high-performance, scalable, and versatile solutions

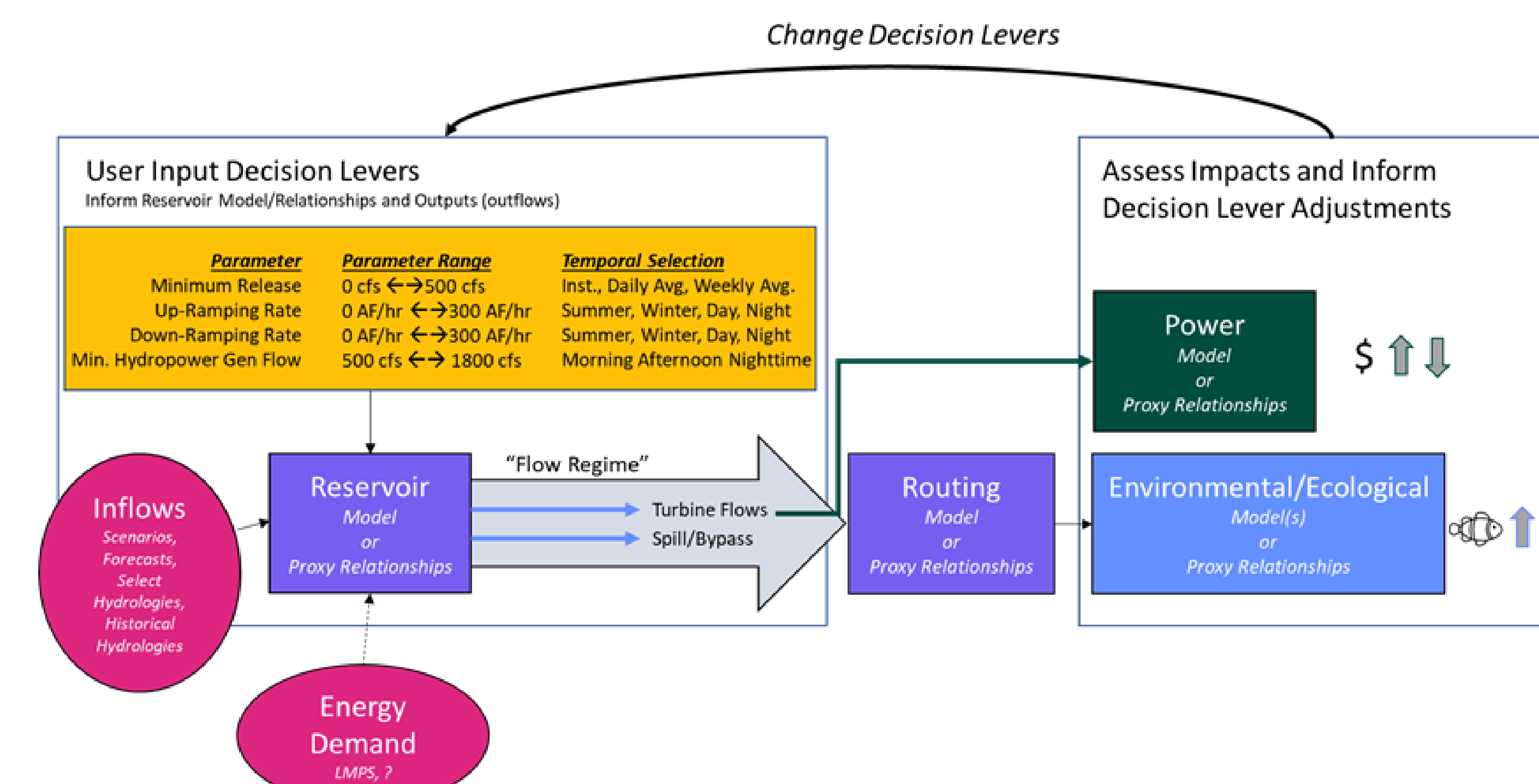
EFETT'S GOALS AND SPECIFIC AIMS

- Design and develop
 - Novel modules
 - Environmental impact evaluation
 - Energy generation optimization
 - Data storage
 - Data acquisition
 - Design efficient procedures
 - Publications
- Balancing the energy generation and environmental impact tradeoff

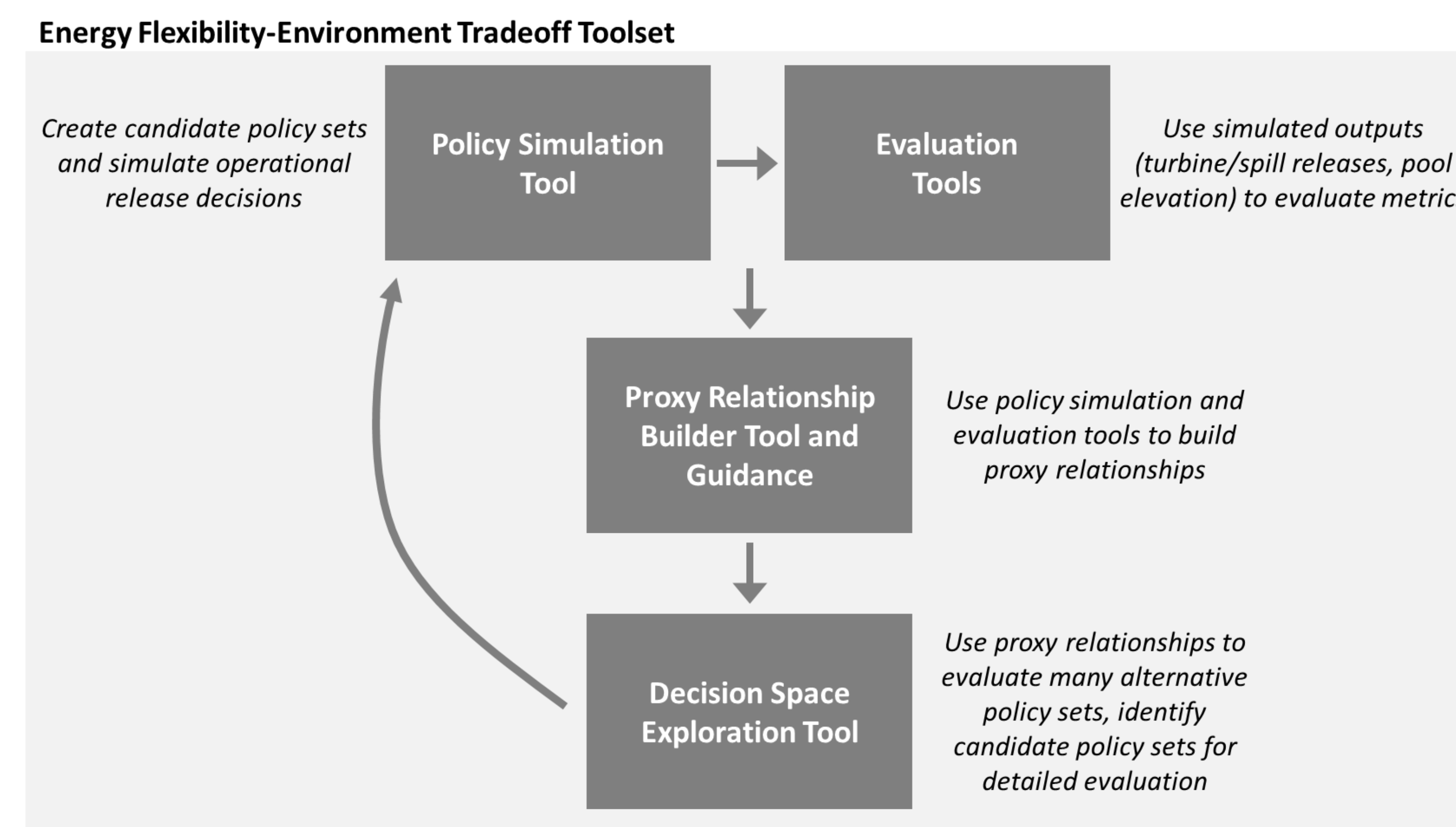
METHOD



PROPOSED SOFTWARE STACK AND FEATURES



Pracheil B.M., V.H. Chalishazar, S. Carney, H. Hou, et al. 2023. Energy Flexibility-Environment Tradeoff Toolkit for Hydropower Environmental and Operational Flows Demonstration. American Fisheries Society Annual Meeting, Grand Rapids, Michigan. PNNL-SA-184608.

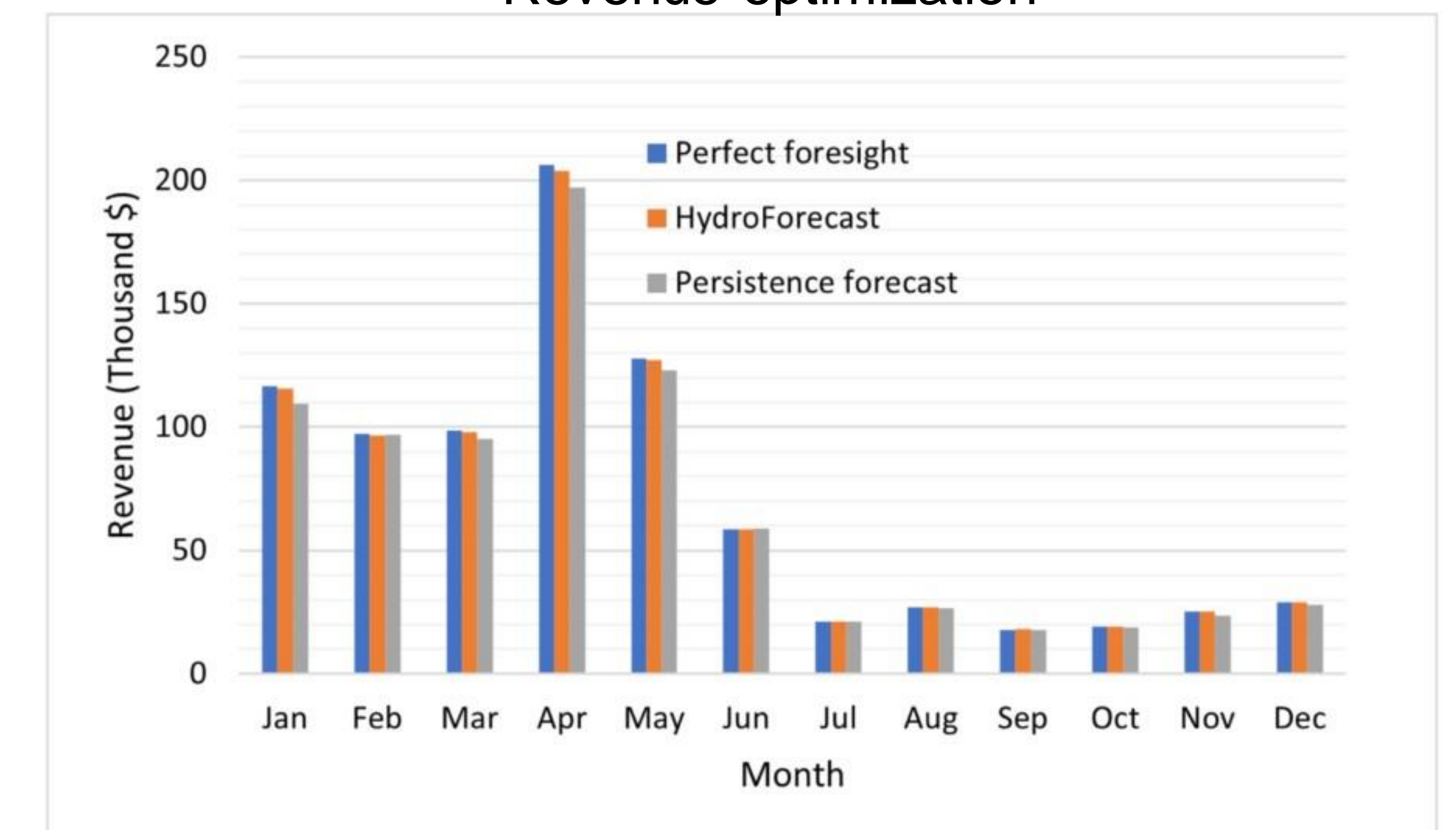


<https://github.com/HydrowiresEnFlex/enflex-ui>

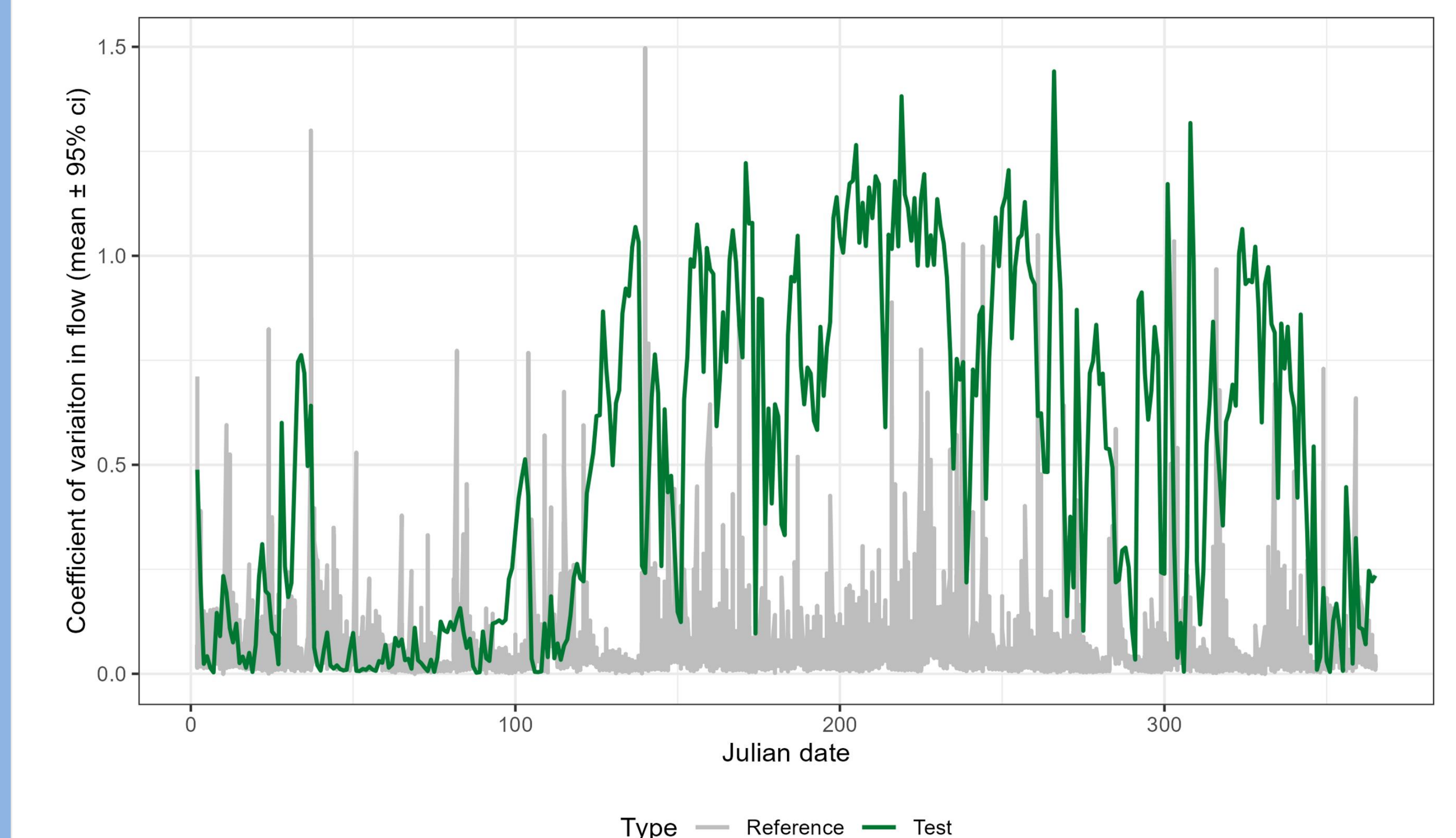
Acknowledgments

The work described in this article was funded by the U.S. Department of Energy (DOE) Water Power Technologies Office.

RESULT AND CONCLUSION



Environmental evaluation



ETETT empowers users with the flexibility to conduct scenario comparisons, allowing selecting the most suitable operational policy combinations for maximizing revenue generation while simultaneously adhering to regulatory environmental standards.

