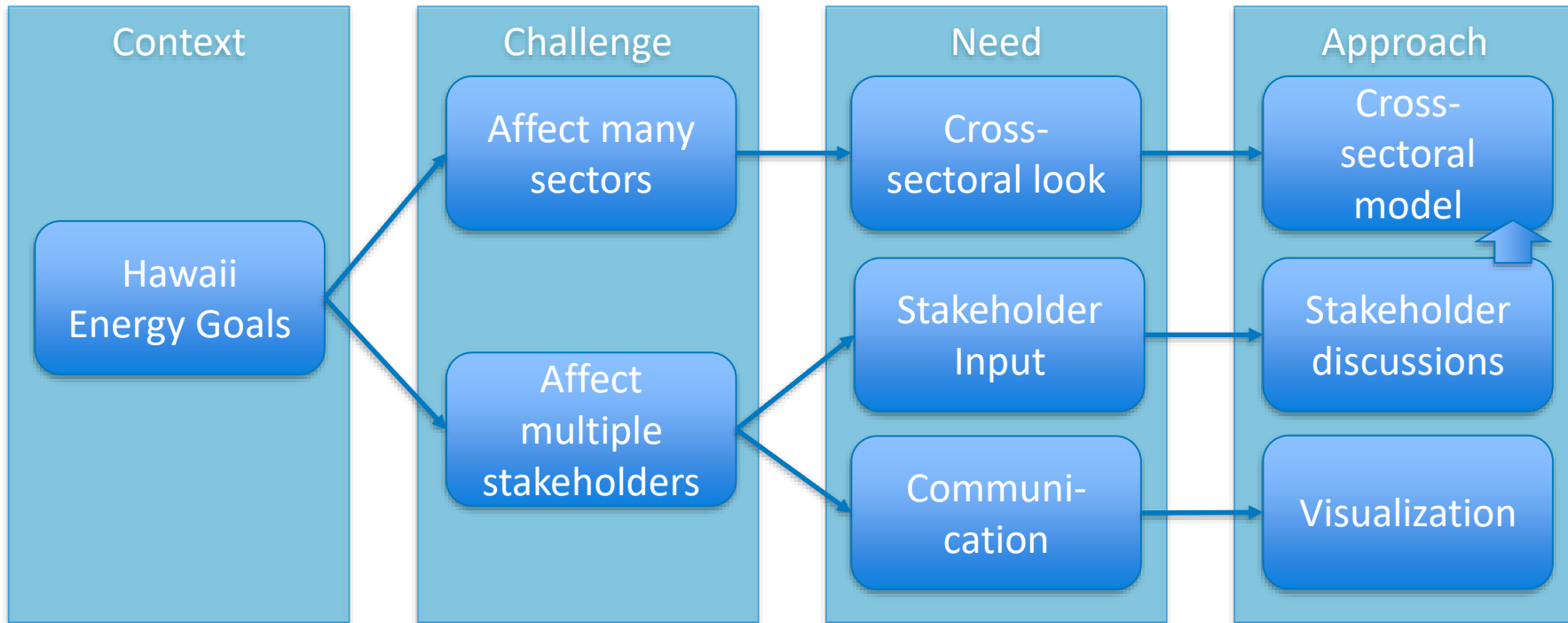


Hawaii Energy Visualization Initiative (HEVI)

Tom Harris
Robert Spencer
February 6th, 2019

Impetus

US DoE Energy Transition Initiative sponsors NREL to support Hawaii State Energy Office in assessing paths to the 2045 100% electric sector RPS



Stakeholder Discussions

Hawaii State Energy Office



Accessibility

- Hawaii Electric
- Hawaii Energy
- Hawaii Natural Energy Institute
- Kauai Island Utility Cooperative
- State of Hawaii Public Utilities Commission
- Maui County
- Division of Consumer Advocacy
- University of Hawaii

Communication



Hawaiian Electric
Maui Electric
Hawai'i Electric Light



Collaboration



Recurring Areas of Interest

- Land use & transmission
- Electrification of transportation
- Electric rates
- Fuel consumption and prices – and with decline in use of fossil fuels:
 - Refinery businesses and jobs
 - Effect on aviation
 - Ground transport fuel cost

Cross-sectoral model

Extensible model

Larger-scale model

Objectives

Facilitate scenario exploration

- Powerful – larger-scale problems
- Multi-sectoral
- Extensible
- Scenario/data management

Accessible and adaptable

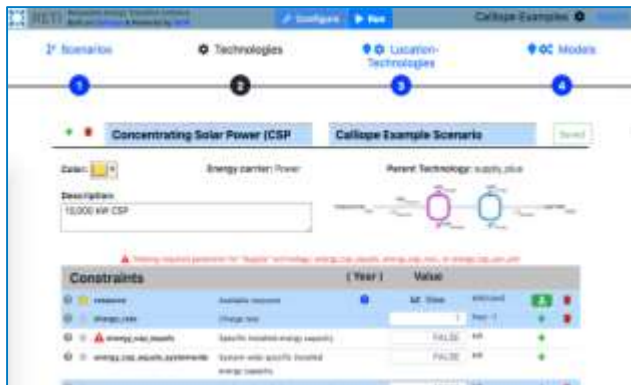
- User-friendly
- Communicative
- Free
- Hosted
- Model in active development
- Open-source

Facilitate collaboration

- Across stakeholder groups
- Among teams
- With experts

Architecture & Workflow

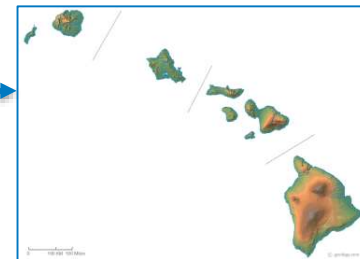
Configuration



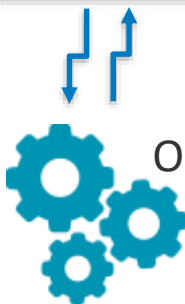
Optimization



Visualization (HAVEN)



Database
(Cloud-Based)



Optimization Solver
(SCIP)



Modular Extensibility
(Python)

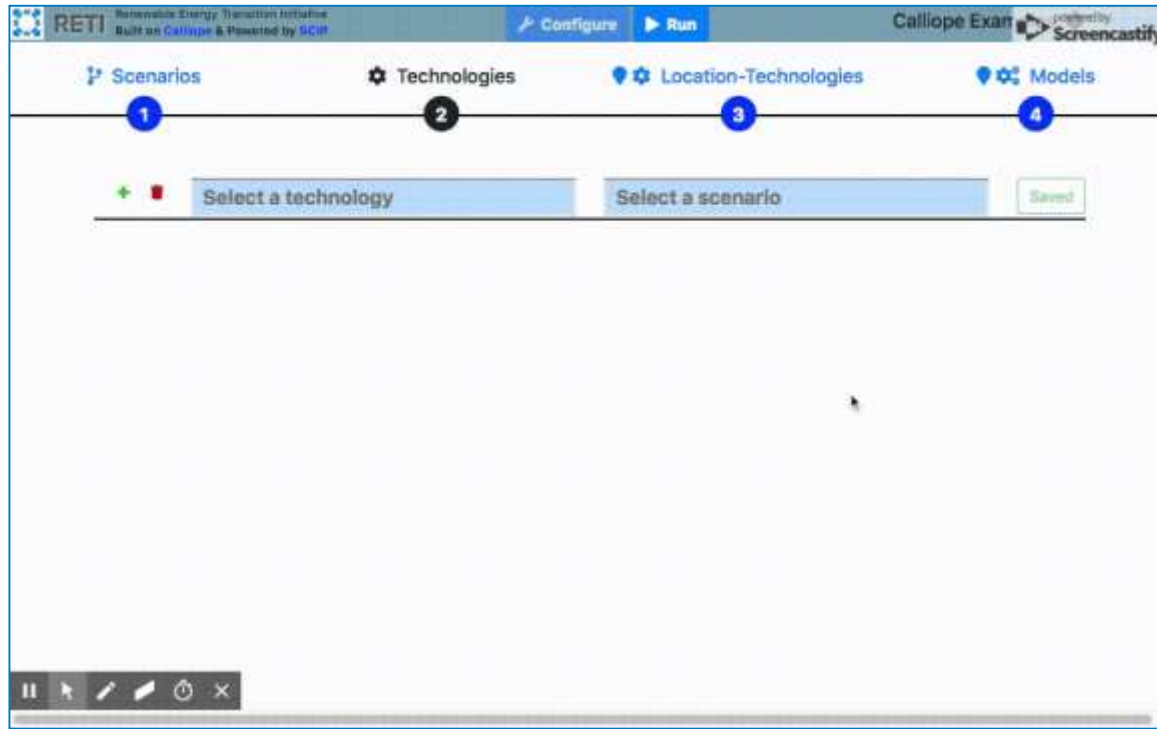
History

Objectives

Software

Applications

A Collaborative Platform



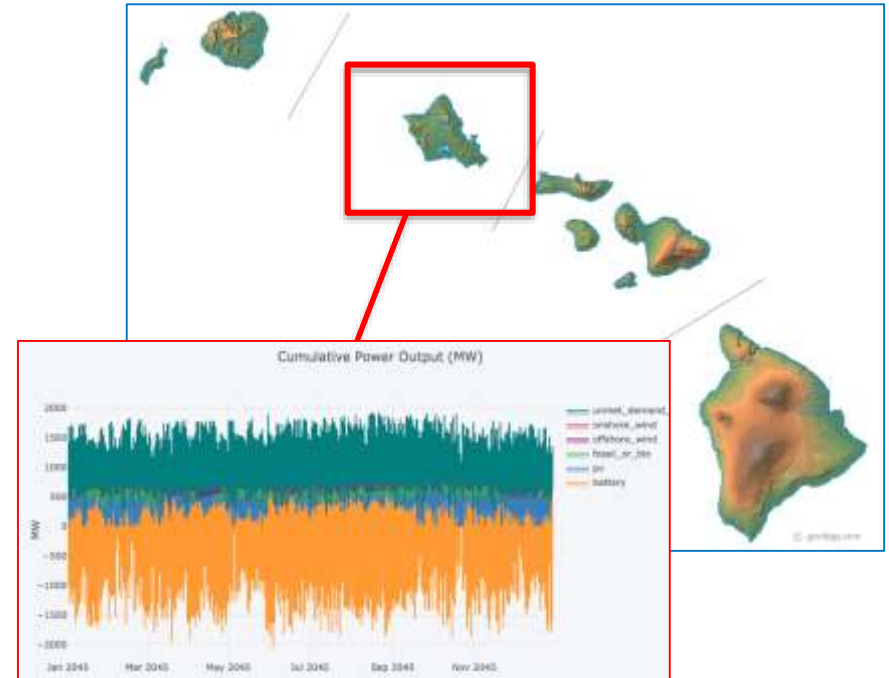
Jon (Hawaii)



Rob (Colorado)

Applications

- Multiyear modeling of Oahu
 - Recreating PSIP Scenarios
 - “Copperplate” Model
 - 2030, 2035, 2040, 2045 @ Hourly Resolution
 - Exploratory load scenarios
 - Energy efficiency
 - EV smart-charging
- Puerto Rico



Summary

- Powerful, extensible energy planning model for rapid multi-sectoral scenario exploration
- Facilitating communication and collaboration among diverse stakeholder groups, teams, experts
- Accessible and adaptable to user-specific capabilities and applications

Thank you

www.nrel.gov

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