

Destination 2045:

Making Plans for the Clean Energy Journey



Hawaiian Electric
Maui Electric
Hawai'i Electric Light

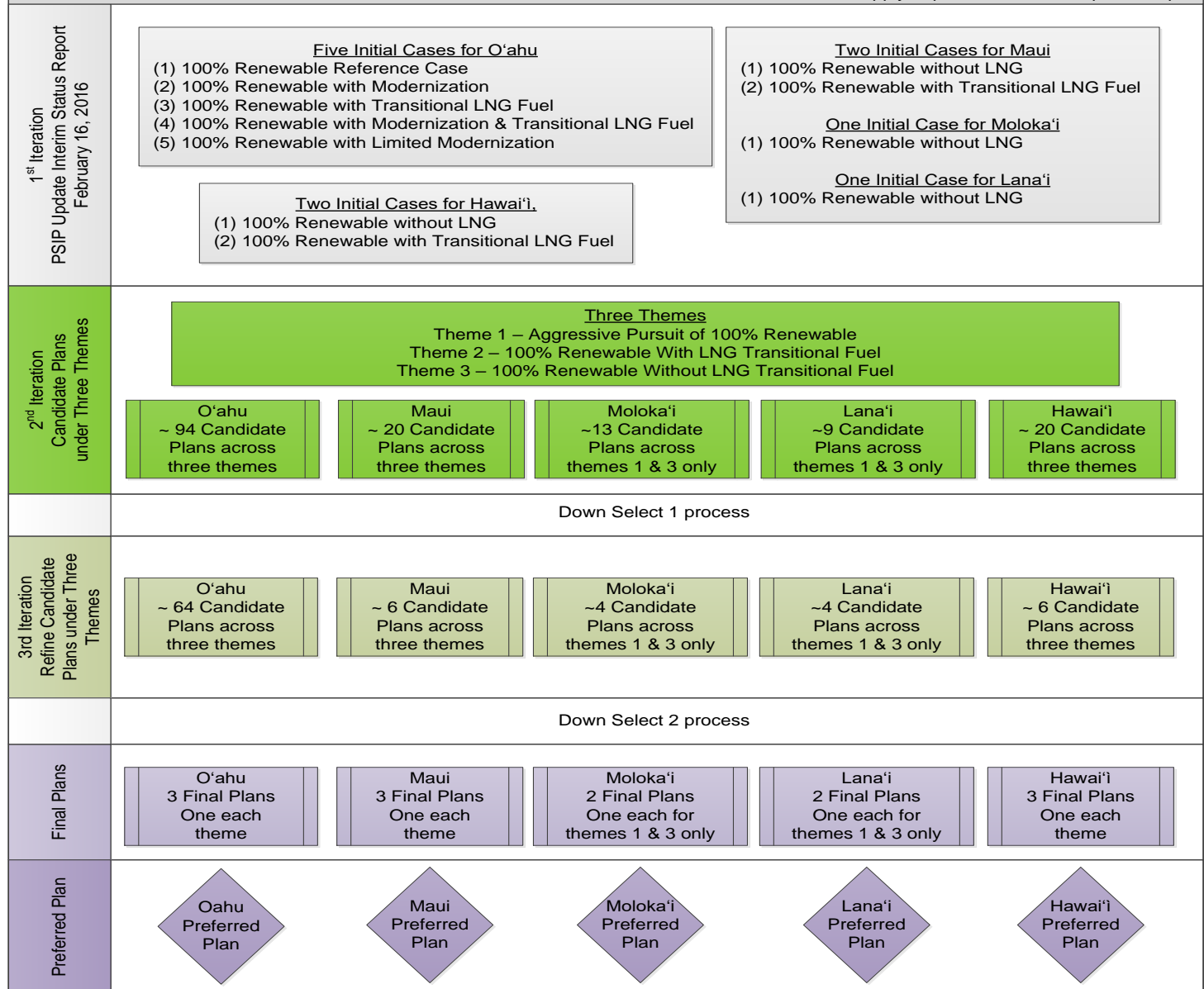
So what's a Power Supply Improvement Plan (PSIP)?

A detailed plan that describes the specific actions that the Hawaiian Electric Companies will take from 2017 through 2021 to accelerate the achievement of Hawai'i's 100 percent Renewable Portfolio Standard (RPS) by 2045

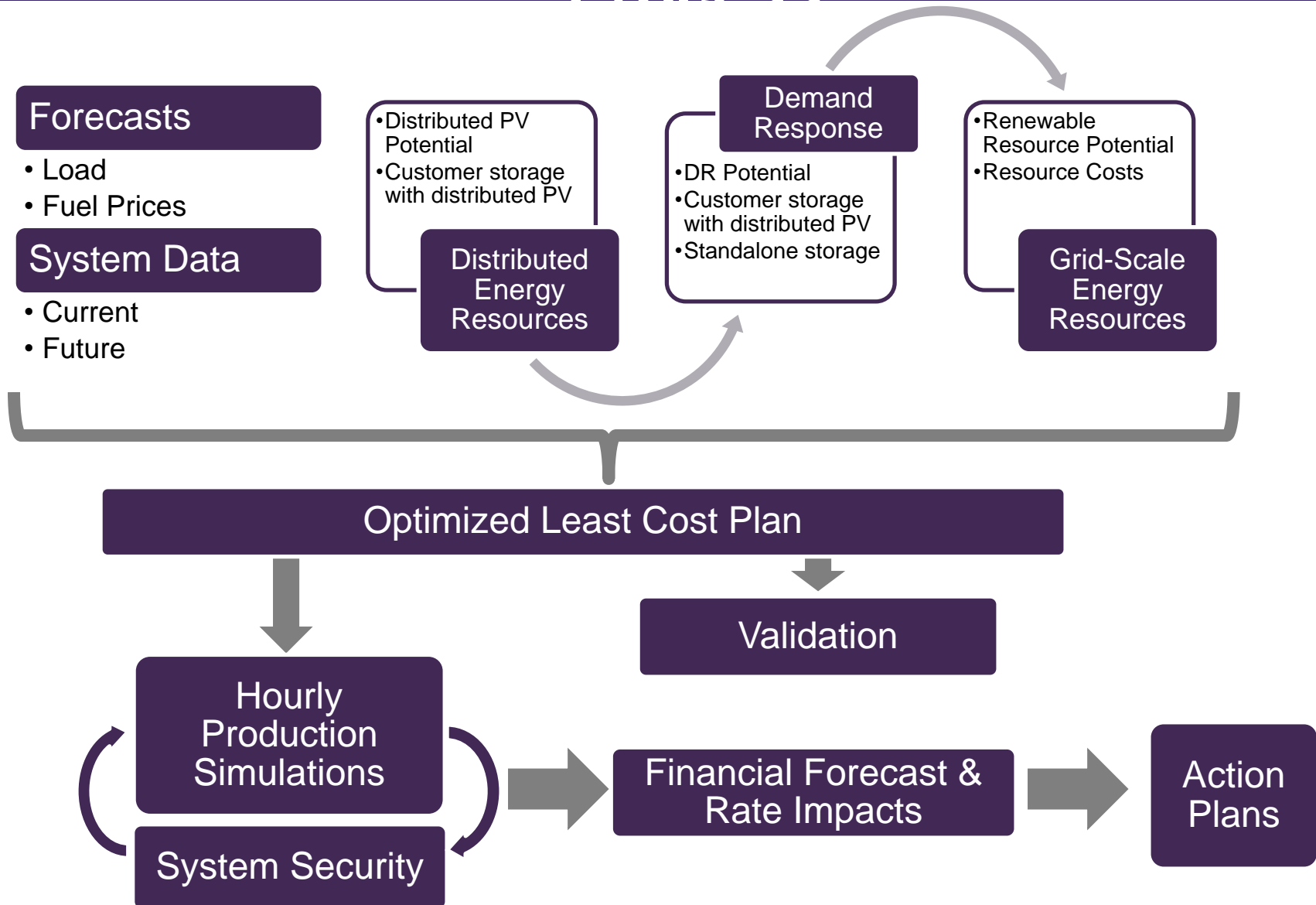
April 2016 PSIP Resource Planning Process

Overview of the Plan Development and Selection Process

Power Supply Improvement Plans Update Report



December 2016 PSIP Resource Planning Process



Multiple models are necessary to develop and optimize system resources

Inputs & assumptions

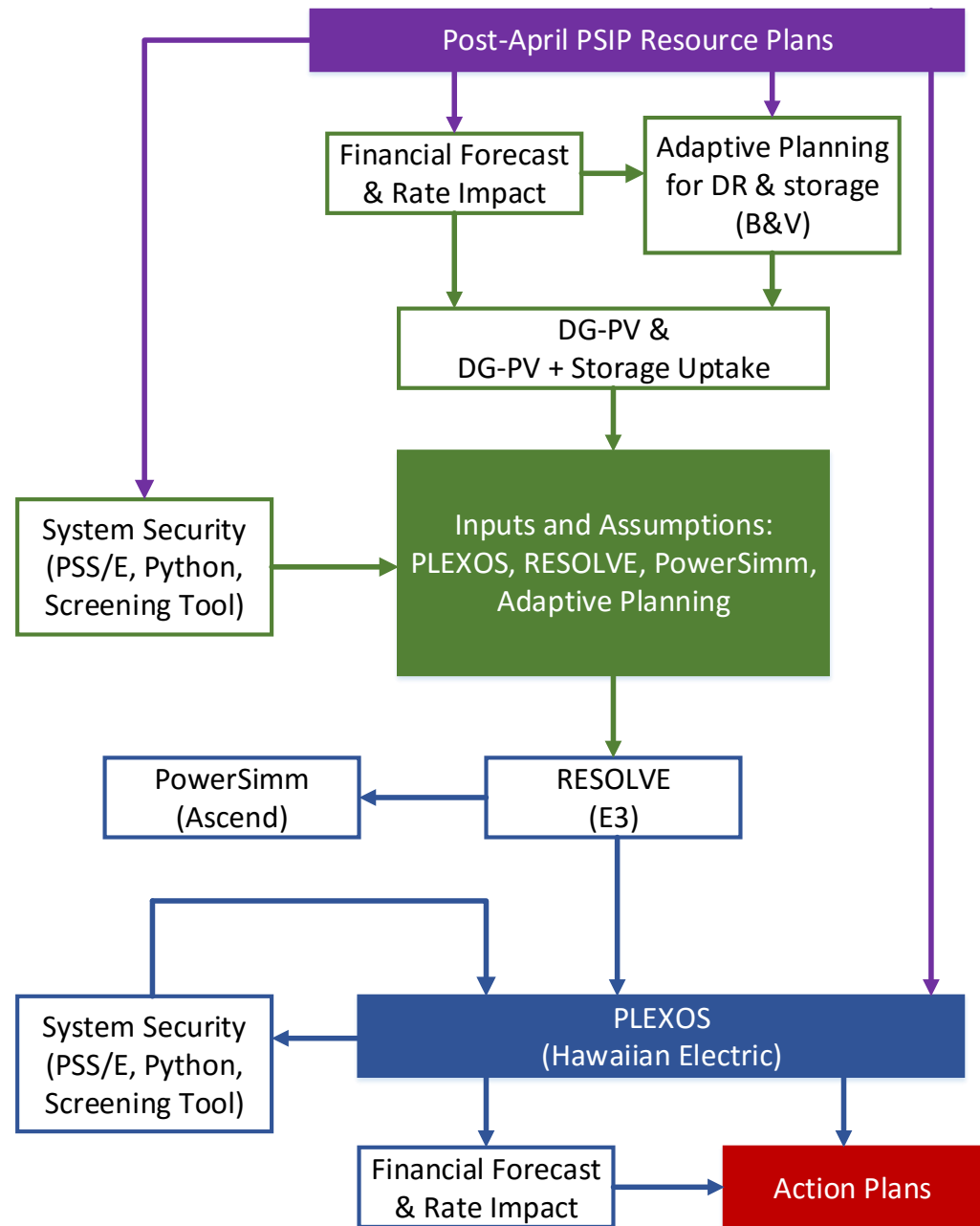
- Assumed high DER forecast possible through wires approach; GMS determined advanced technologies less costly
- Limited transmission upgrade costs included due to uncertainty where grid scale resources would be located

Capacity expansion resource optimization

Production simulation

System security analysis

Financial analysis



Our resource planning process used a **credible, transparent, and objective** analytical approach.

Stakeholder review on input assumptions and scenarios

Scenario analysis and resource optimization for long-range plans (~15-30 years)

Distributed Energy Resources

Demand Response

Grid-scale Energy Resources

Detailed evaluation of optimized long-range plans

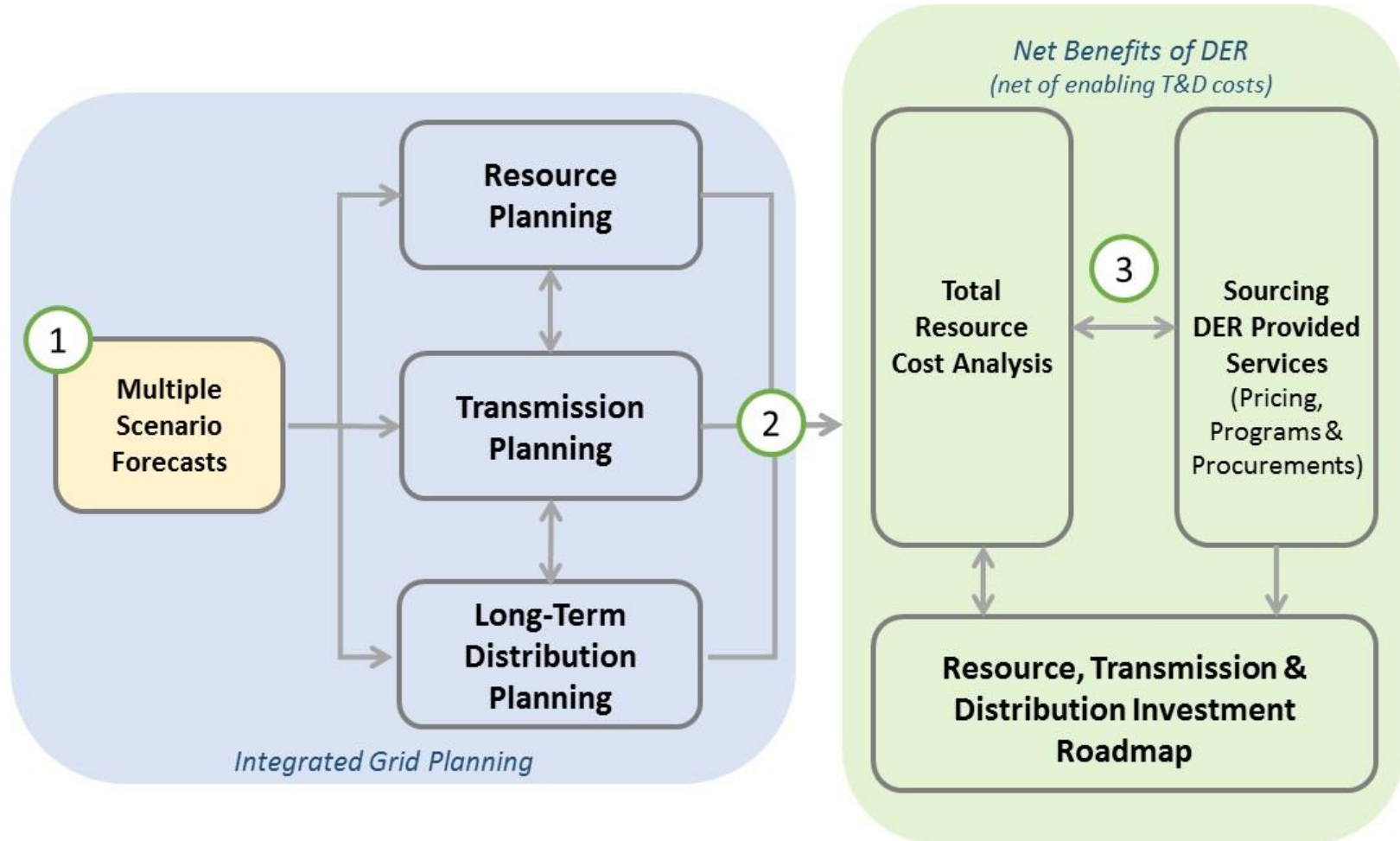
Hourly production simulations (~15-30 yrs)

System Security (transmission system)

Action Plans (~5 years)



Conceptual Integrated Grid Planning Process





Mahalo!



Hawaiian Electric
Maui Electric
Hawai'i Electric Light