WECC

LDES Advisory Group Proposed Modeling Approach

July 21, 2022

Stan Holland

Part 1 Studies

Clean Energy Projects near Delta, UT

- "IPP Renewed" Project with Natural Gas and Hydrogen blended fuel
- Advanced Clean Energy Storage project to store clean hydrogen in salt caverns
- Do we want to model these in our cases, including the reference case?

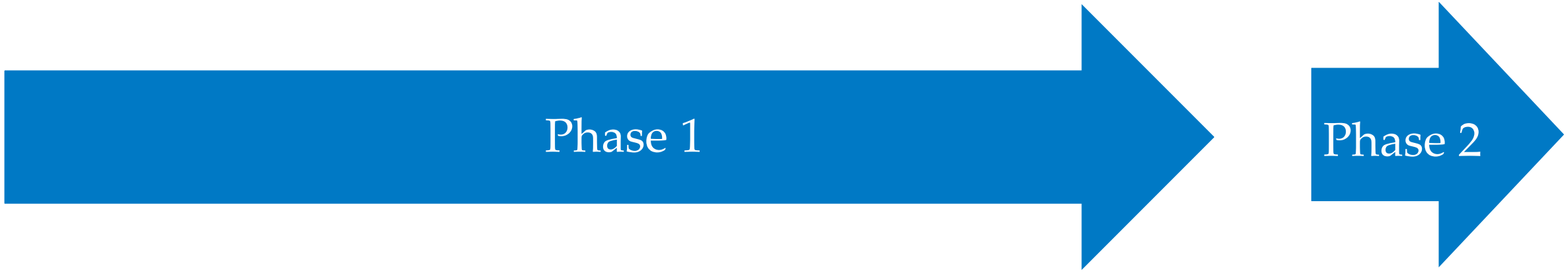
LDES Study Plan – Part 1 (Proposed)

Study #	Clean %	LD Duration
0*	80	N/A
1	90	24
2	90	48
3	90	72
4	90	168
5	90	336
6	100	24
7	100	48
8	100	72
9	100	168
10	100	336

* Reference case

- Keep all shorter-duration BESS (≤ 12 hours)
- Part 1 LDES additions will be modeled as batteries, but using pumped storage hydro model in GridView
- Proposed input assumptions of additions
  - Capacity = 300 MW
  - Charge price = $0
  - Discharge price = $200
  - Efficiency = 85%
- Place LDES units near load centers or variable energy resources (VER) facilities with no storage
- To reach 90% and 100% clean energy, remove thermal units from 80% case
- Turn off Emerging Clean & Flexible (ECF) units in study cases
- Add additional VER if needed for LDES charging
- Full-year runs (could be preceded by test runs)

Modeling Approach



Rerun 80% clean energy case with 12-hour batteries having smaller capacities (200-300 mw)

Model 90% clean energy case with storage having 24, 48, 72, 168 and 336-hour storage durations

Model 100% clean energy case with storage having 24, 48, 72, 168 and 336-hour storage durations

Identify which technologies from posted LDES technology parameters are capable of required storage durations

Evaluate need for additional modeling for technologies with required storage durations

Study Result Analysis Metrics

- Unserved load
- Wind and Solar curtailments
- Dispatch of Energy Storage
  - Hourly average by month
  - Total charge and discharge energy by month
- Dispatch Summary comparison to 2040 80% Clean Scenario (reference case)
- Path congestion report

Next Steps

Next Steps

- Work with GridView vendor to obtain final storage modeling methodology
- Model Delta clean energy projects if LDESAG is in favor
- Revise 2040 80% Clean Scenario for use as the reference case
- Prepare and run the Part 1 studies
- Bring results back to LDESAG for review

WECC

Electric Reliability and Security for the West

Contact:

Stan Holland

sholland@wecc.org