Time-Series and Flux Data

[redacted]

- capillary pressure, gas saturation, and water saturation at each bottom-hole location (aqueous and gaseous pressure are not computed separately in GEM, so the saturations of each phase were included)
- gas mass rate, cumulative gas mass, and bottom-hole pressure

The trapping mechanisms present in the model change through time and space in the grid. Some snapshots have been included to illustrate the progression through time. BP has also provided a graph showing the relative contribution of each phase (i.e., free gas, dissolved gas, and residually trapped gas).

Flux data provide a visual representation of fluid movement in the model but has no impact on the overall AoR [redacted]

Depending on the flux surface modeled, the magnitude and direction of water flux vary significantly [redacted]

The spike of water influx in the early time period is due to the commencement of injection. [redacted]

Flux data for CO_2 and water movement over time are included in the GSDT submittal.

Model Calibration and Validation

The current model underpinning the AoR has not yet been calibrated or history-matched, nor have any sensitivity analyses been run to help inform uncertainty ranges. Site-specific appraisal well data (including injectivity testing) was acquired after the existing model was built and will be included during AoR reevaluation as part of the model calibration process.

BP recognizes the importance of model calibrations and developing the sensitivity analysis to identify key parameters that have impacts on the model. A sensitivity analysis will be conducted to identify parameters for additional attention during data collection, parameter estimation, and model calibration. BP will consider the use of various calibration statistics that include the mean error, mean-absolute error, and the root-mean squared error.