

Recent Progress:

1. One week left on contract.
2. Improved miniWECC validation graphs.
3. 3 Area miniWECC created. Initial BA tests are similar to six machine results.
4. Stepping Pm of a governed generator tested. (governor states must be set)
5. GitHub updated:
<https://github.com/thadhaines/>

Current Tasks:

1. Work on miniWECC case development.
2. Continue to Update Code flowchart to aid in further development.
3. Continue to Refine BA ACE actions.
4. Bring wind into simulation?
(ramp ungoverned generators) ?
5. Find best way to trip gens in PSLF from python.

Current Questions:

1. Should the exponential load model be a priority?
(RJ miniWECC had Q as constant impedance, P as constant current)
2. What is the end goal of this research?

Develop a simulation framework to facilitate the analysis of long-term power system dynamics with a focus on governor and AGC interaction to various perturbances.

Simulation uses large time steps, ignores inter-machine oscillations, utilizes a time sequence of power flows for system bus states, a single aggregate swing equation for frequency, and uses reduced governor models.

Future Tasks: (possibly by me)

- (a) Use generic governor for non-modeled governors (WECC)
- (b) Account for different types of loads? (exponential load model)
- (c) Add import mirror / bypass mirror init sequence option to prevent repeated mirror creations.
- (d) Investigate line current data.

Future Work: (not by me)

- Work to incorporate Matt's *Suggested Use Cases* into simulation.
 - Add Shunt Group Agent
 - Work to Define Definite Time Controller user input
- Formulate feasible plan of action for casting all WECC governors to LTD governors (tgov1). Possibly:
 - (a) Parse models of interest from dyd.
 - (b) Create dyd from parsed model.
 - (c) Automate a 'scaled' Pref step test for a one machine infinite bus in PSDS.
 - (d) Read and analyze output data
 - (e) Generate/Calculate LTD equivalent model parameters from results (this will probably use MATLAB and `jfind`)
 - (f) Export custom dyd for LTD simulation. (PSDS would still use original the dyd, though *could* use modified dyd)
- Investigate ULTC action.
- Create an agent for every object: ULTC, SVD, Transformer, ...

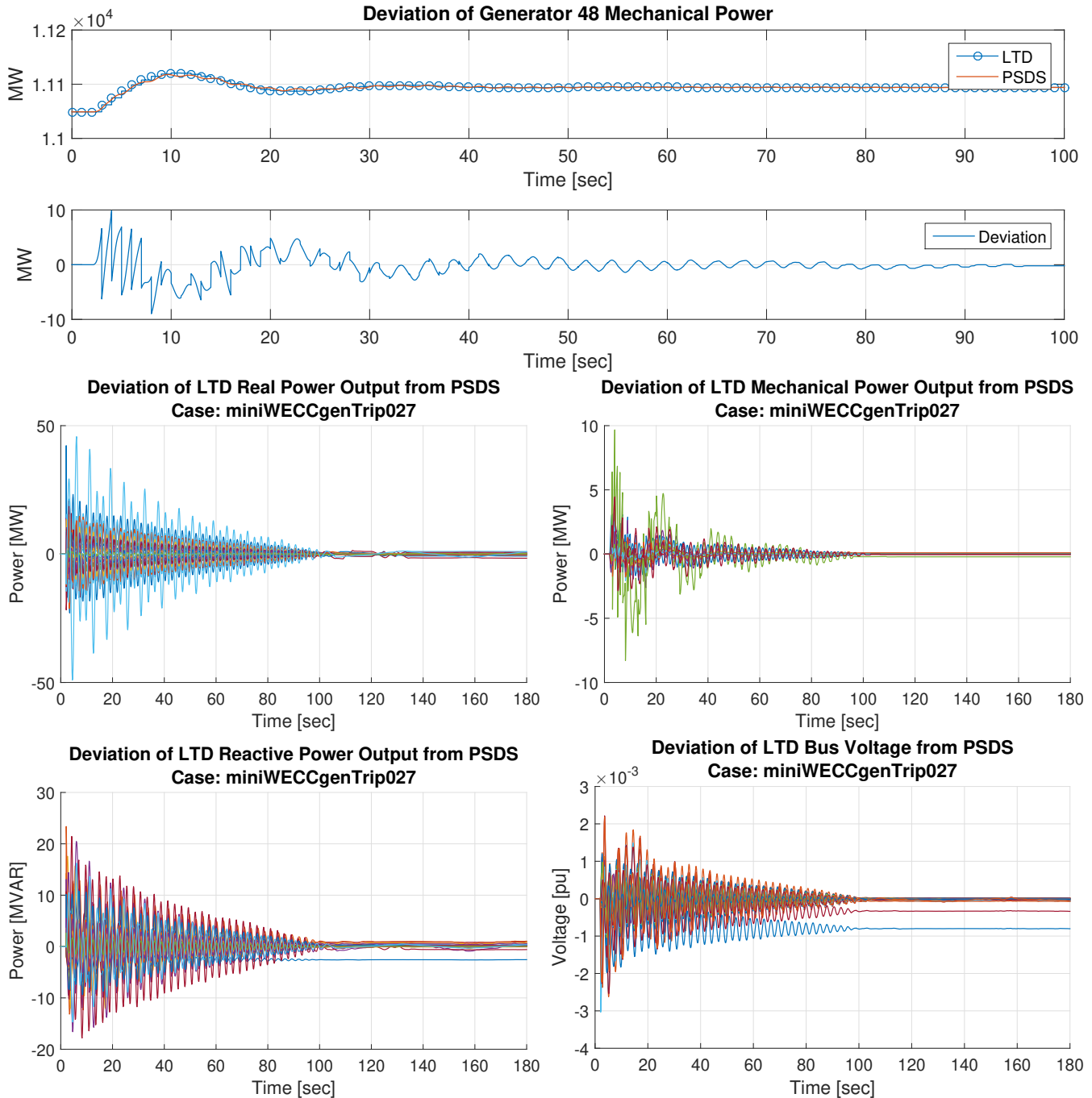
Matt Requests:

- (a) Enable multiple dyd files to overwrite / replace previously defined agents/parameters
- (b) Allow for variable time steps.

Deviation Plots: To make large numbers of comparisons easier to comprehend], deviation plots were created to show the difference between LTD and PSDS data.

One way to think of these plots is $LTD_{data} + Deviation_{data} = PSDS_{data}$.
(Assuming all time step issues are handled appropriately.)

Alternatively, the deviation data could be thought of as data that is filtered out due to the larger time steps and assumptions made by LTD.



Angle deviation not included as PSDS angles wrap oddly and would result in a misleading deviation.