Recent Progress:

1. MiniWECC step test results
2. Matt approach of ggov1 model attempted.
3. Code flowchart being compiled to aid in further development.
4. Shunts and Branches added to Mirror
5. custom `single2float` function added to reduce casting error during PSLF⟶LTD value exchange
6. `shelve` used for python data storage (instead of `pickle`)
7. GitHub updated: `https://github.com/thadhaines/PSLTDSim/`

Current Tasks:

1. Formulate feasible plan of action for casting WECC governors to LTD governors. Something like:
   (a) Parse models of interest from dyd
   (b) Perform system test to generate LTD equivalent model (automate)
   (c) Export altered dyd for LTD simulation. (PSDS would still use original the dyd, though 'could' use modified)
2. Create an agent for every object: SVD, Transformer, ...
3. Add logging to Shunt and Branch
4. Add perturbance agents for Generator, Shunt, Branch...
5. Define Agent actions for AGC/LFC (i.e. ACE calculations)
6. Formulate an experiment utilizing a multi-area model that can be validated with PSDS.
7. Investigate line current data and ULTC action in PSLF.

Future Tasks: (Little to No Progress since last time / Things coming down the pipe)

1. Think about Shunt Control / Generic Agent control based on system state(s)
2. Add import mirror / bypass mirror init sequence option. Will prevent repeated WECC mirror creations.
3. Identify System Slack bus programmatically (currently assumes first slack if > 1)
   AND/OR calculate system slack error differently → An average of slack errors?
4. Matt request: Enable multiple dyd files to overwrite / replace previously defined agents/parameters

Current Questions:

1. Overview of planned PSLF scenarios? → Similar to Heredia paper but on Wecc/MiniWecc Scale?
2. Is there more available/relevant event data that may help us to verify simulations of specific instances (wind ramps or other behavior) that novel research will focus on?
3. Any progress / continued interest in miniWecc Area definitions?

'Goals':

1. Speed⟶ Order of Magnitude faster than PSDS

Time step resolution: Changing the time step affects accuracy, size of data collected, and simulation run time. The following data was collected from a 90 second simulation. LTD uses rk45 integration and 0.5 MW slack tolerance — it is also run from the command line.The PSDS system has exciters and PSS included in dyd file.

	Time step	Simulation Time [sec]	Data File Size [KB]	Real time Speed up	PSDS Speed up	Reduction of file size	Steady State f varience [Hz]
PSDS	4.167 ms	56.12	35,070	1.60	1	1	0
LTD	2 sec	13.79	238	6.53	4.07	147.35	NA
LTD	1 sec	27.22	479	3.31	2.06	73.21	9.50E-4
LTD	0.5 sec	53.56	871	1.68	1.05	40.26	9.71E-4
LTD	0.25 sec	104.76	1,655	0.86	0.54	21.19	9.77E-4

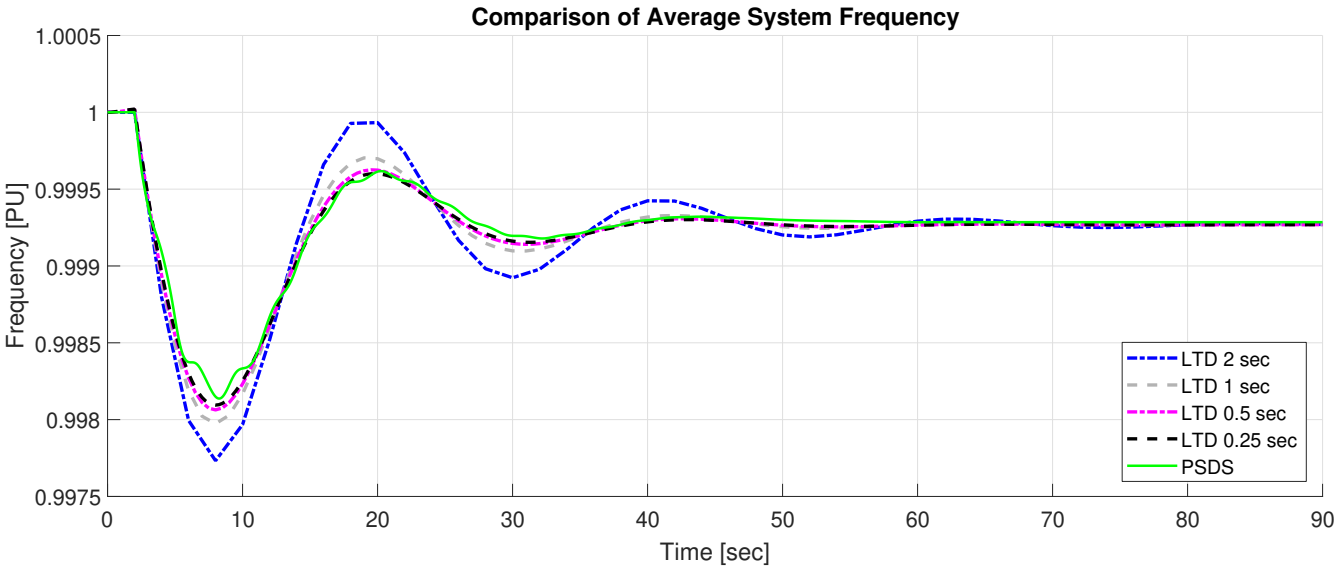

Figure 1: Comparison of system frequency among different time steps.

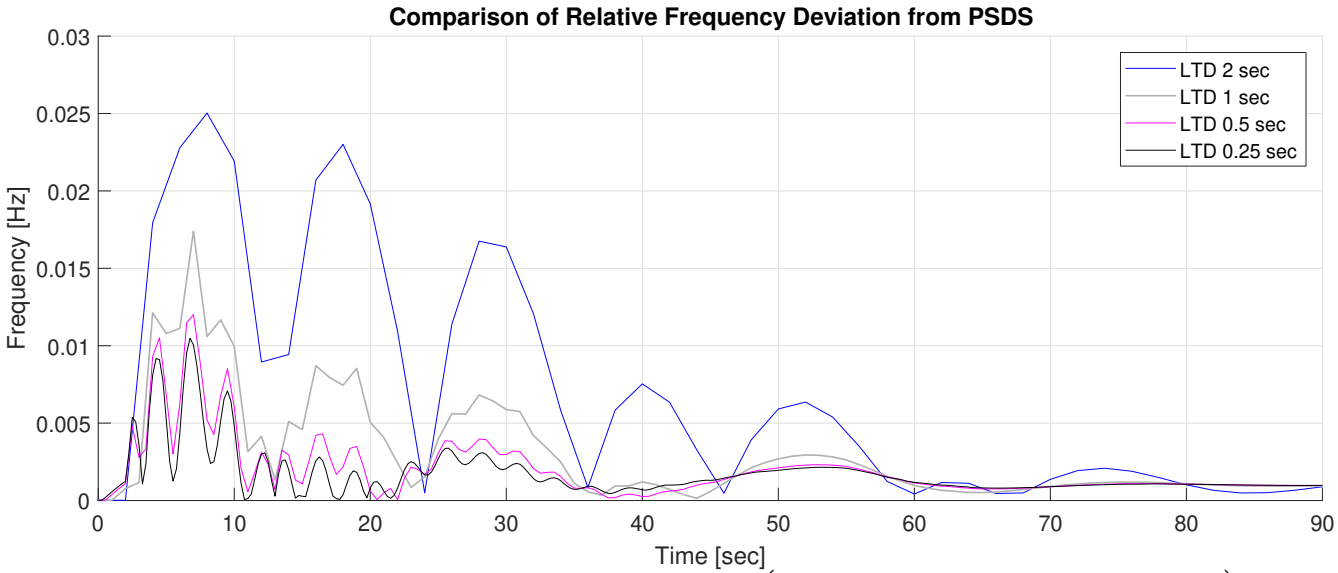

Figure 2: Relative Hz difference of PSDS - LTD $\left(\text{i.e. } \left|f_{PSDS}(t) - f_{LTD}(t)\right| \times 60\text{Hz}\right)$.