

**Recent Progress:**

1. AMQP Agent 'reworked' → speed up:
  - ts = 0.5 sec → 6.9 x real time
  - ts = 1.0 sec → 13.6 x real time
  - ts = 2.0 sec → 25.4 x real time
2. Python ODE solver utilized for system frequency calculation (runge kutta 45)
  - Takes multiple steps per time step
3. tgov1 model created and validated via steps and ramps of PSLF ee544 system.
  - lsim only solves next given time step
4. Full WECC models received.
  - Case summaries compiled for comparison (attached)
  - WECC dyd parsed for model type information (attached)
5. 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: Shunt, SVD, Branch, Transformer, ...
3. Define Agent actions for AGC/LFC (i.e. ACE calculations)
4. Formulate an experiment utilizing a multi-area model that can be validated with PSLF.
5. 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. Flow chart AMQP process to more clearly explain what's happening there/ find possible speed improvements.
4. Identify System Slack bus programmatically (currently assumes first slack if > 1)
  - AND/OR calculate system slack error differently → An average of slack errors?
5. Matt request: Enable multiple dyd files to overwrite / replace previously defined agents/parameters

**Current Questions:**

1. Speed Goal?
  - Faster than, similar to, or reasonably near the speed of PSDS for same simulation case and length.
2. Overview of planned PSLF scenarios?
  - Similar to Heredia paper but on Wecc/MiniWecc Scale? Yes.
3. 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?
4. Any progress / continued interest in miniWecc Area definitions?
5. Any progress on Wecc single gen per bus system?
  - Will this actually matter? PSLF handles distribution of Pe in power flow solution per bus, and LTD code distributes electrical power per generator... Voltage issues maybe, but power should be okay.

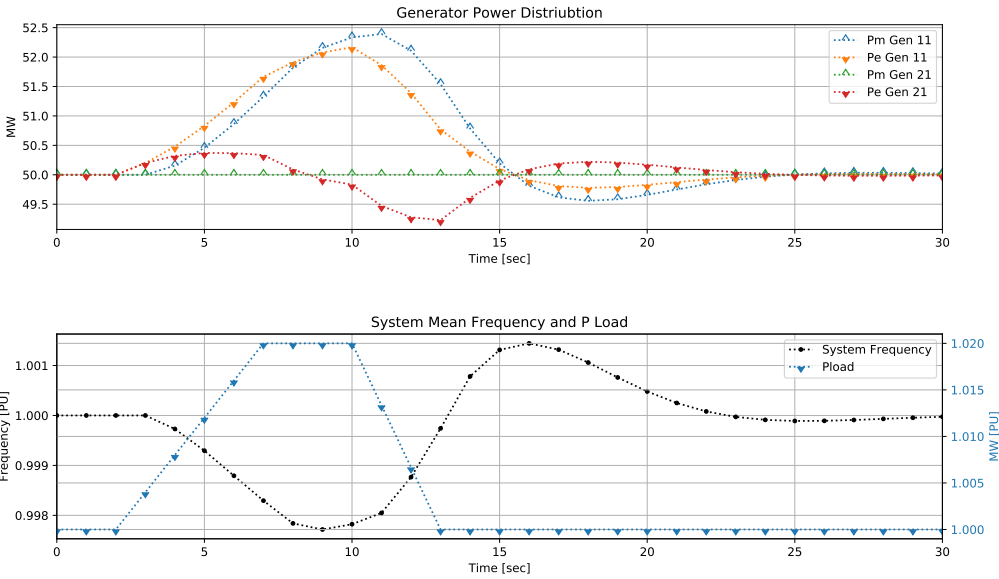


Figure 1: Python Ramp Simulation Single tgov1 Output - 1.0 second time step

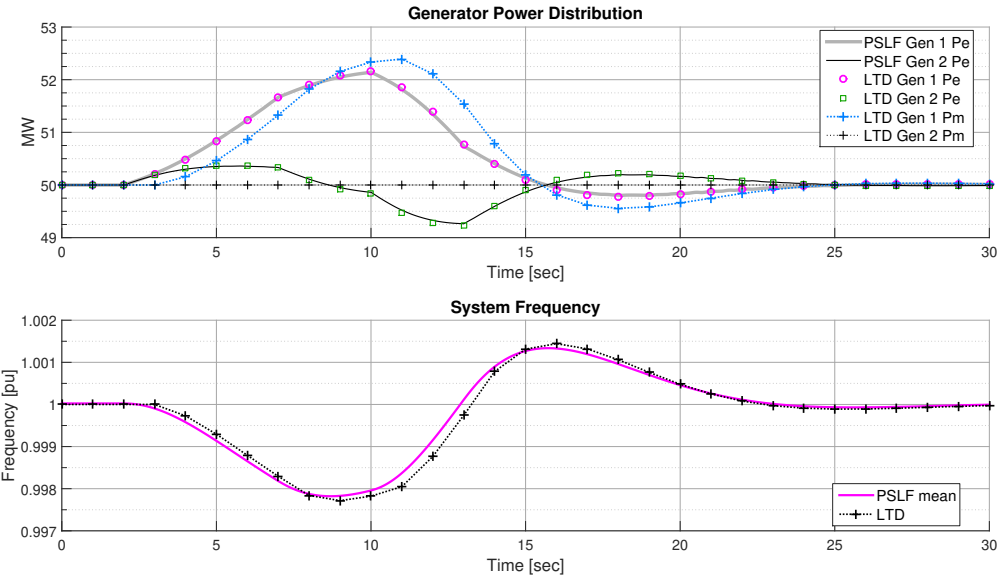


Figure 2: Ramp Simulation Comparison - Single Governor - 1.0 second time step

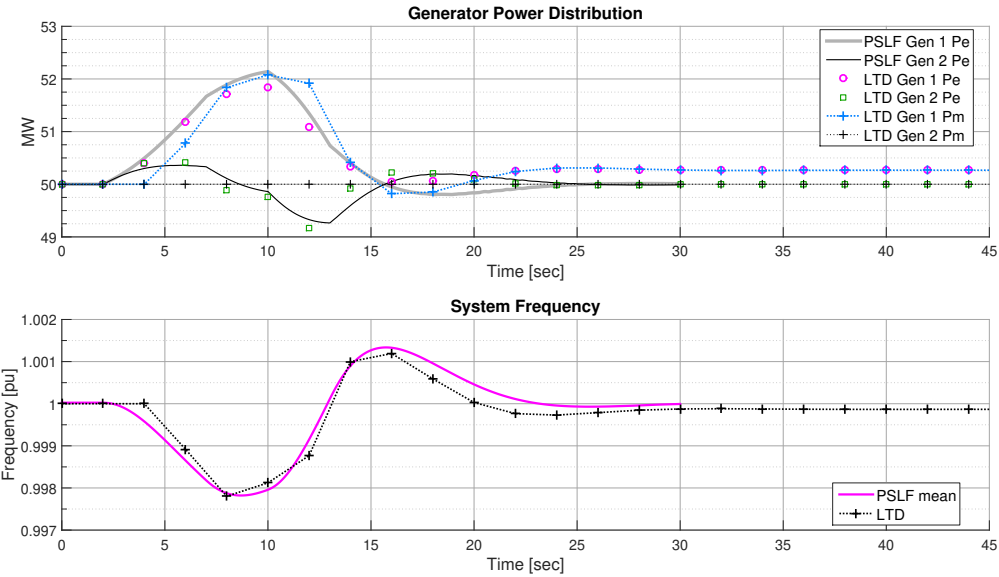


Figure 3: Ramp Simulation Comparison - Single Governor - 2.0 second time step