Recent Progress:

1. AMQP solution completed for
   PY3 $\Leftrightarrow$ IPY $\Leftrightarrow$ PSLF communication.

   - Causes a slow down of 3-5 times compared to non-AMQP runs.
   - Current AMQP code runs at 2-3 times real time.

2. Code refactor seems complete.

3. Added ability to parse `.ltd` files.

   - ltd file $\triangleq$ a text file with LTD specific model parameters and perturbance settings. Similar to a dyd file, but different. (example on reverse)

4. Load Ramp Pertrubance agent created.

5. `matplotlib` plot functions created. (Ramp example on reverse)

6. β (area frequency response characteristic) calculation added to Area agent

7. GitHub updated:
   https://github.com/thadhaines/PSLTDSim/

Current Tasks:

1. Experiment with Python 3 ODE solver (i.e. `numpy` / `scipy` / `odeint`)

   - Make a tgov1 model compatible with LTD simulations
   - Use integrator for combined swing in AMQP code

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. Flow chart AMQP process to more clearly explain what's happening there.

3. Identify System Slack bus programmatically (currently assumes first slack if > 1)

   AND/OR calculate system slack error differently $\rightarrow$ 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? $\rightarrow$ 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?
   (Heredia paper data helpful for some wind ramp data context)

3. Any progress on Wecc single gen per bus system, and/or miniWecc Area definitions?

Generator Power Distriubtion

System Mean Frequency and P Load
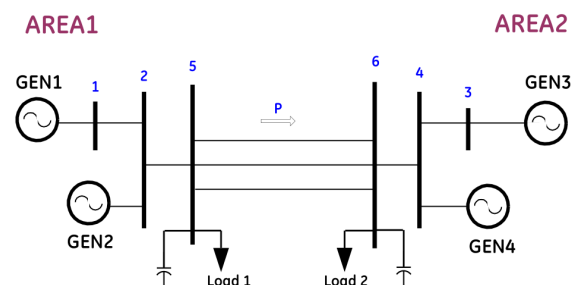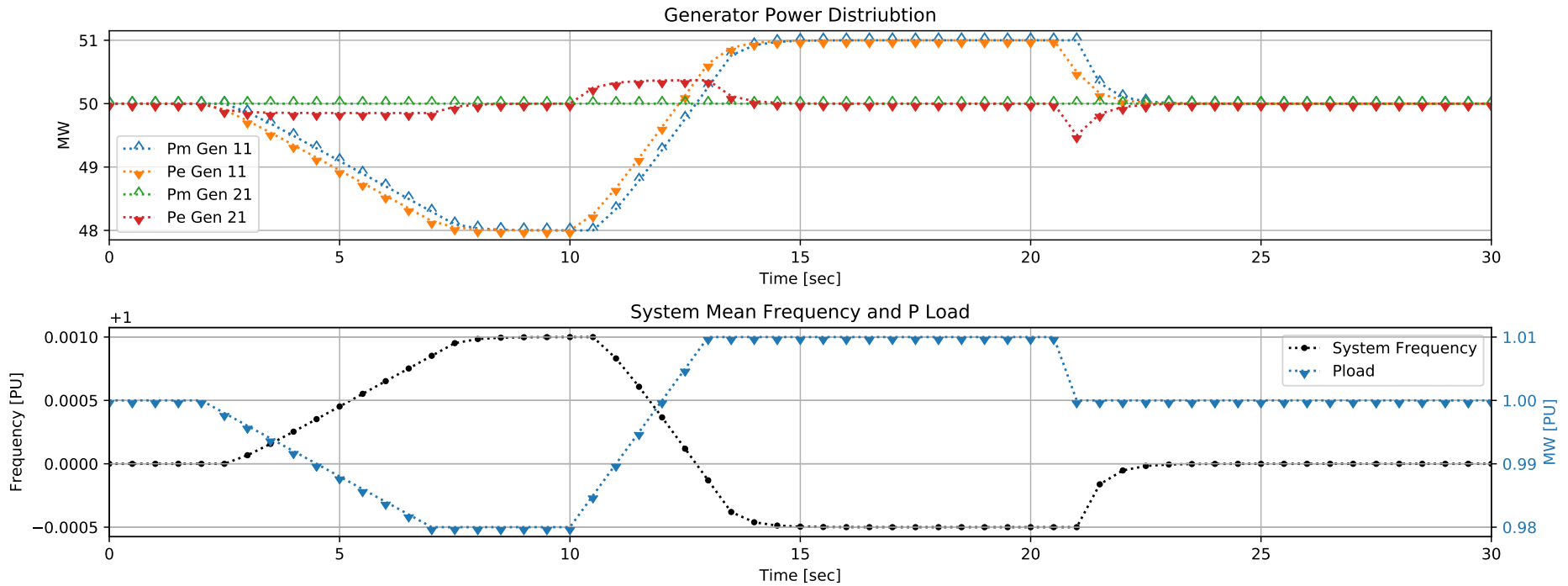
.ltd File Example:

```
# LTD simulation models / perturbances
# Commented and empty lines are ignored during parsing.
# Double quoted variable names in model parameters also ignored


# pgov1  busnum busnam basekv id : #9 mwcap droop k1
#pgov1   21 "21" 22.00 "1 " : #9 mwcap=100.0 "droop" 0.05 "k1" 1.0
pgov1   11 "11" 22.00 "1 " : #9 mwcap=100.0 0.05 1.0


# Perturbances
# target bus id(optional) : pertType attribute time val abs(optional)
load 3 : "pertType" step  "pertTarget" p "startTime" 21 "newVal" -1 rel
load 3 : "pertType" ramp "pertTarget" p "startTime" 2 "RAtime" 5 "RAval" -2 "holdtime" 3 "RBtime" 3 "RBval" 3
```