

Recent Progress:

1. An AMQP only 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 perturbation settings. Similar to a dyd file, but different. (example on reverse)
4. matplotlib plot functions created
5. Load Ramp Perturbation agent created.
6. β (area frequency response characteristic) calculation added to Area agent
7. GitHub updated:
<https://github.com/thadhaines/PSLTDSim/>

Current Tasks:

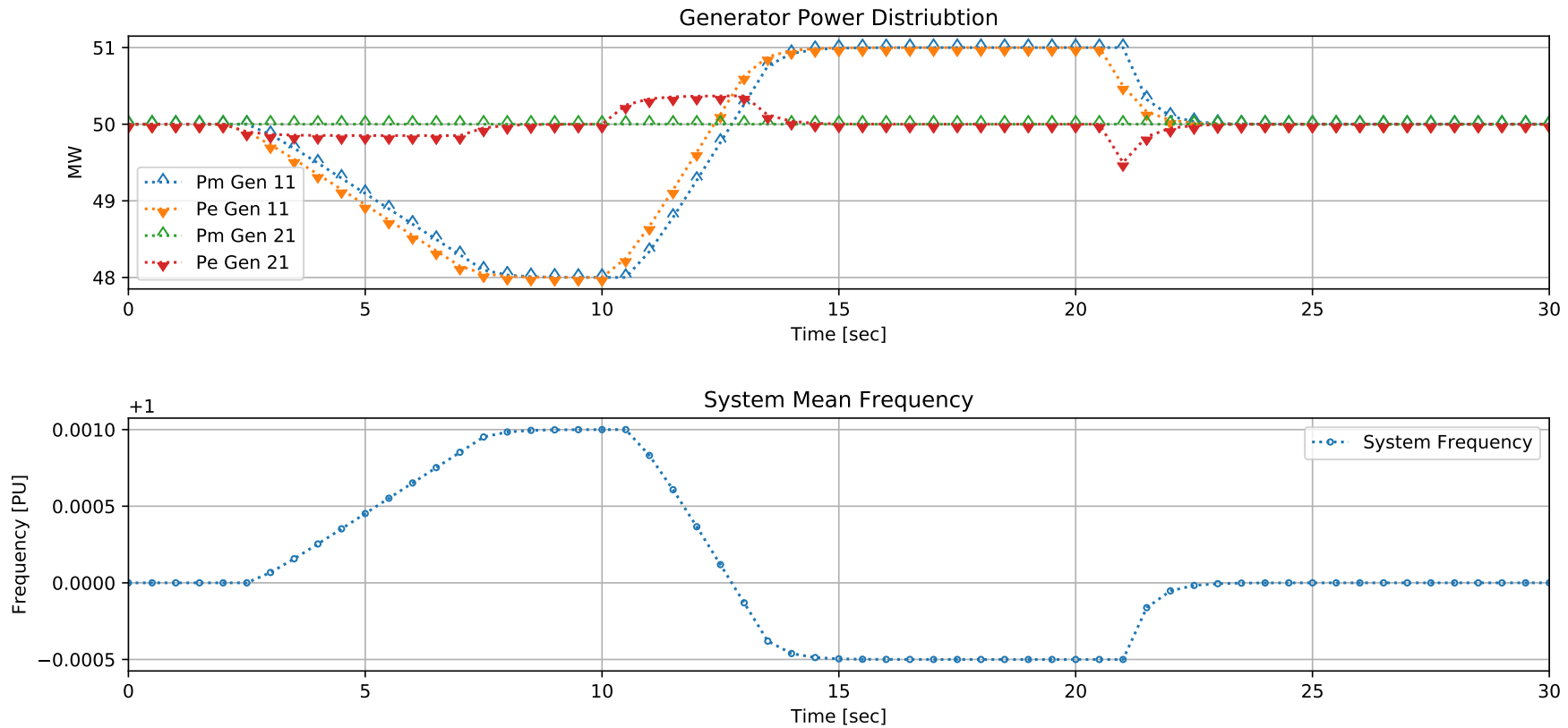
1. Experiment with ODE solver in numpy / scipy odeint in Python 3
 - Make a tgov1 model compatible with LTD simulations using Python 3 ODE solver
 - Use integrator for combined swing in AMQP code
 - Investigate Python 3 (scipy) integration methods and parameters
2. Create an agent for every object: Shunt, 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 verified in PSLF.
5. Investigate line current data

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
2. Flow chart AMQP process to more clearly explain what's happening.
3. Identify System Slack bus programmatically (maybe just assume in first area?)
OR calculate system slack error differently... An average of slack error?
4. Enable multiple dyd files to overwrite / replace previously defined agents/parameters

Current Questions:

1. Overview of planned PSLF scenarios? \rightarrow Similar to Heredia 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?



```
# 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
```