Thesis Schedule:

1. Revised thesis to Committee week of **Mar 9** (pre-spring break).
2. Thesis Defense week of **April 13**.
3. Final thesis and docs to Southergill week of **April 20**.
4. Other tasks:

   Complete other graduation forms

   Book room for defense

   Get EIT references

Recent Progress:

1. Thesis 'draft' sent to Southergill for format check. Apparently as long as the margins are 1", everything looks fine.
2. Thesis 'draft' sent to Donnelly
3. Software documentation created from sections of thesis.
4. Definite Time Controller (DTC) Agent created and tested.
5. Modifiable system H tested
6. 12 machine system created
7. Initial WECC step frequency results
8. GitHub updated: `https://github.com/thadhaines/` (includes draft thesis and software docs)

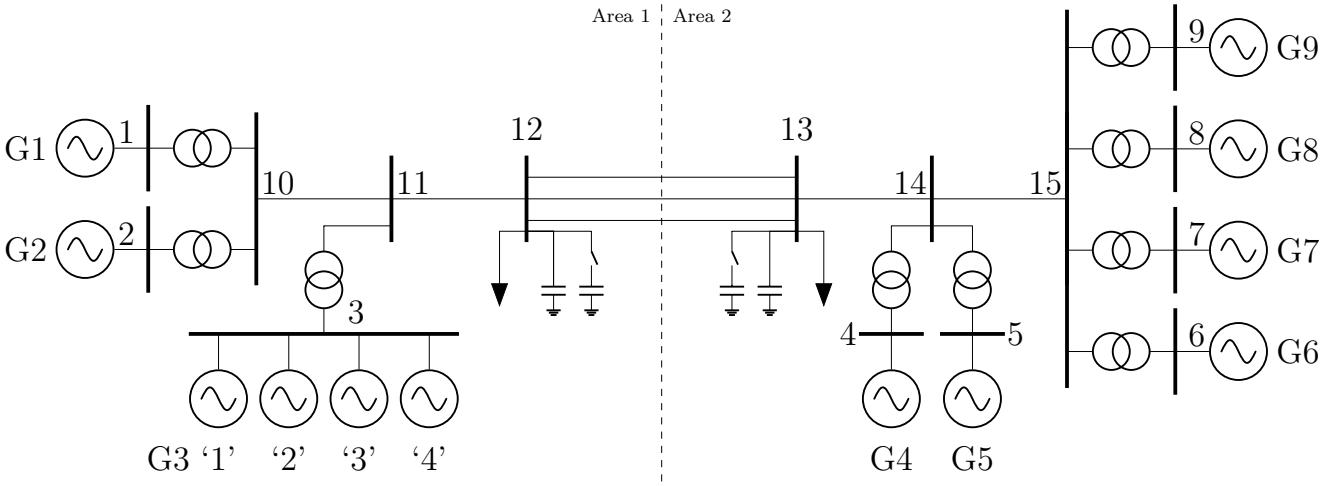
Current Tasks:

1. Test DTC capabilities with Governors
   - Given BPA issue is believed to be a step of governor Pref based on frequency deviation that occurs on a timer. i.e. $P_{ref} = P_{ref0} + \frac{\Delta\omega}{R} M_{base}$ every x seconds.
   - A simple six machine scenario is being built to show test this hypothesis.
2. Figure out how to do WECC data validation
   - .chf too big to load into MATLAB
   - Python .mat file has issues being imported into MATLAB (too many nested structures?)
3. Solidify test cases for engineering problem
4. Test 'soft trip' where $P = Q_{min} = Q_{max} = 0$.
5. Add ability to change Qmin/Qmax of PSLF system via PSLTDSim
6. Update Code flowchart and finalize code
7. Thesis work

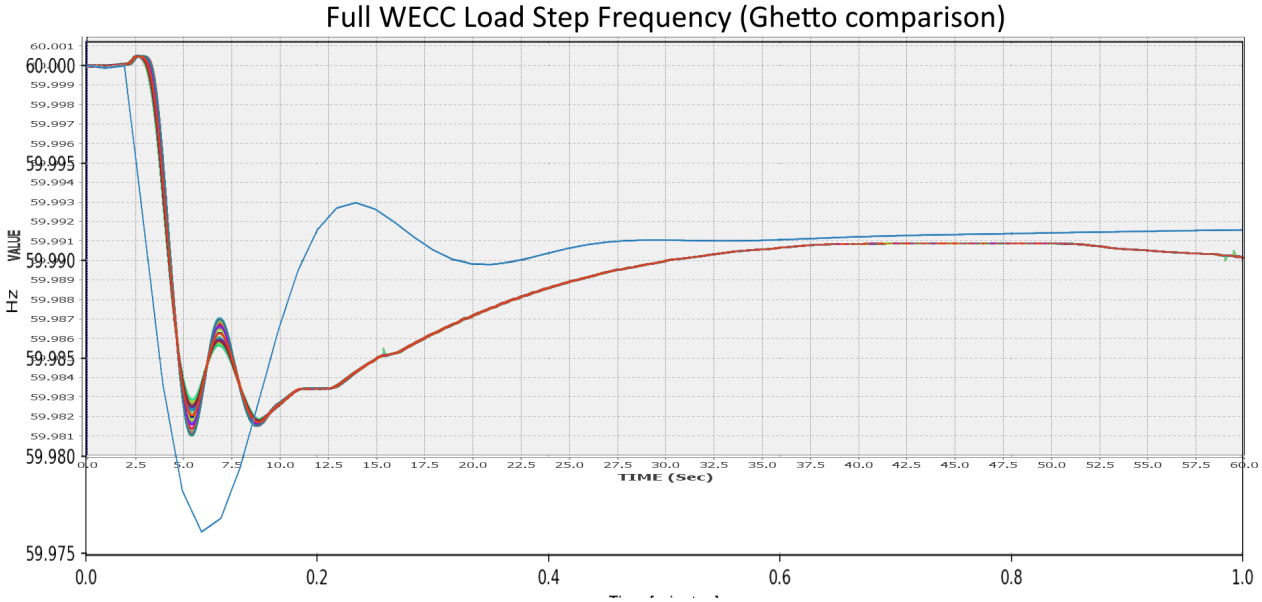
Current Questions:

1. BPA response to GDACs info request?

12 Machine System is essentially the six machine system with twice as many generators.



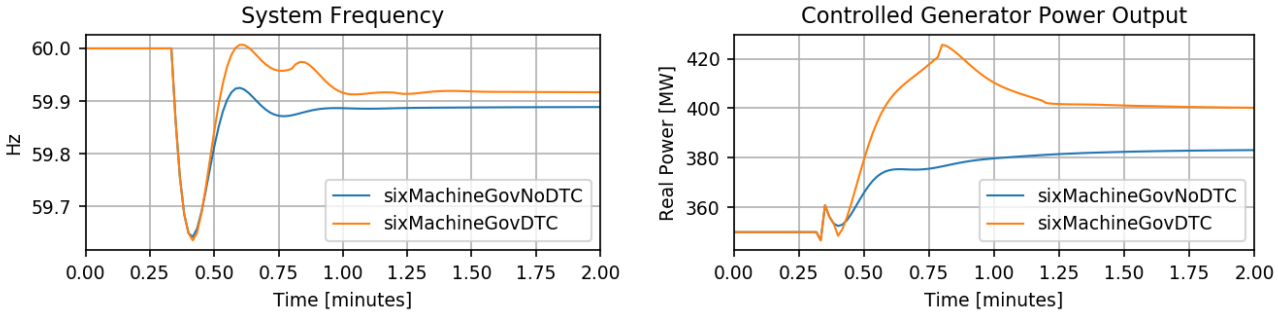
WECC step Results Due to data issues, a more 'get er done' approach was taken to depict the frequency output from PSDS and LTD on top of each other.

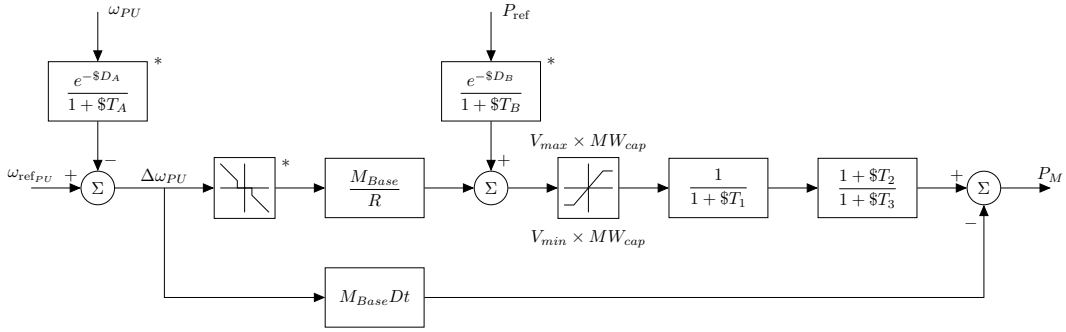


The LTD software models only 20 tgov1 models with time constants from the dyd out the total 2,243 governors present (i.e. less than 1% of LTD governors have the same time constants as PSDS).

From the frequency response, it is assumed that there are many more governors with hydro characteristics in the WECC dyd than are cast in the LTD simulation.

Initial DTC BPA results Attempt at recreating GDACS control phenomena via given machine output. Six machine system used, results show that method used not exactly correct. Initial thought is that $\Delta\omega$ applied 'twice' to Pref.






```python
# Perturbances
mirror.sysPerturbances = [
    'gen 5 : step Pm 20 -100 rel', # Step generator down
    ]

# Definite Time Controller Definitions
mirror.DTCdict = {
    'bpaTest' : {
        'RefAgents' : {
            'ra1' : 'mirror : f',
            'ra2' : 'gen 2 1 : R',
            'ra3' : 'gen 2 1 : Pref0',
            'ra4' : 'gen 2 1 : Mbase',
            },# end Referenc Agents
        'TarAgents' : {
            'tar1' : 'gen 2 1 : Pref',
            }, # end Target Agents
        'Timers' : {
            'set' :{ # set Pref
                'logic' : "(ra1 > 0)", # should always eval as true
                'actTime' : 24, # seconds of true logic before act
                'act' : "tar1 = ra3 + (1-ra1)/(ra2) * ra4  ", # step
                #'act' : "tar1 +=  (1-ra1)/ra2 * ra4 ", # step
            },# end set
            'reset' :{ # not used
                'logic' : "0",
                'actTime' : 30, # seconds of true logic before act
                'act' : "0", # set any target On target = 0
            },# end reset
            'hold' : 0, # minimum time between actions
            }, # end timers
        },# end bpaTest
    }# end DTCdict
```