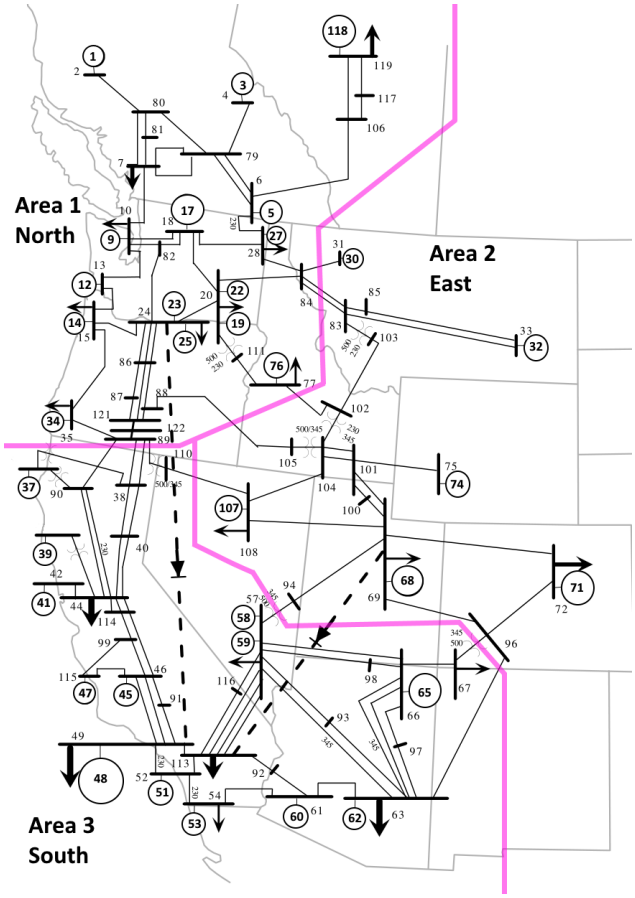
10 Minute AGC recovery of Mini WECC after generator trips

- Mini WECC system:
  - Buses: 122
  - Lines: 171
  - Loads: 88
  - Machines: 34
  - States: 623
- Events: Trip of Gen on Bus 1 at t= 5
  Trip of Gen on Bus 30 at t = 8
- Each area has identical conditional AGC that acts at t=40 and again when t=160, 280, 400, 520 (i.e. 2 minute action time).
- ODE solver tolerances:

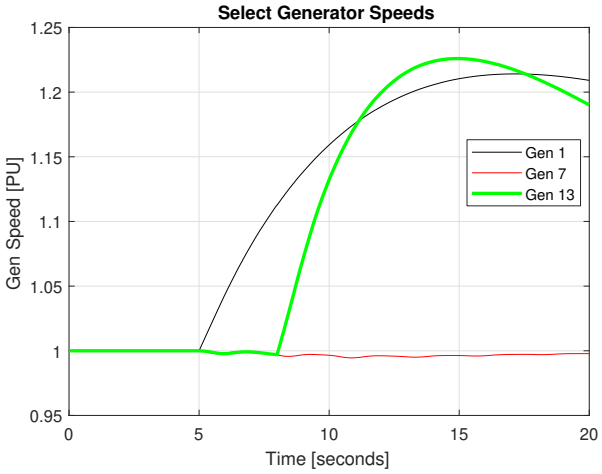
  Relative: 1e-5

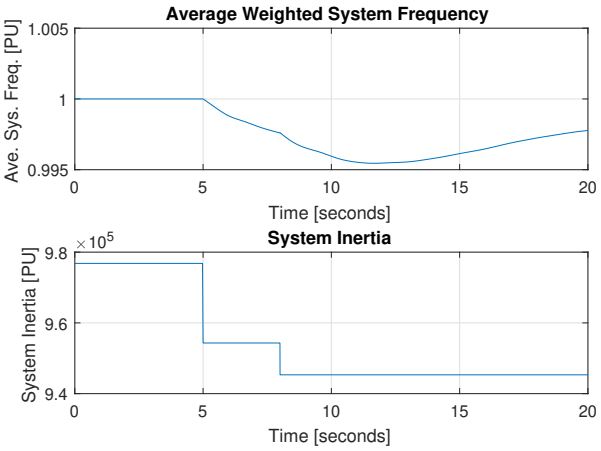
  Absolute: 1e-7



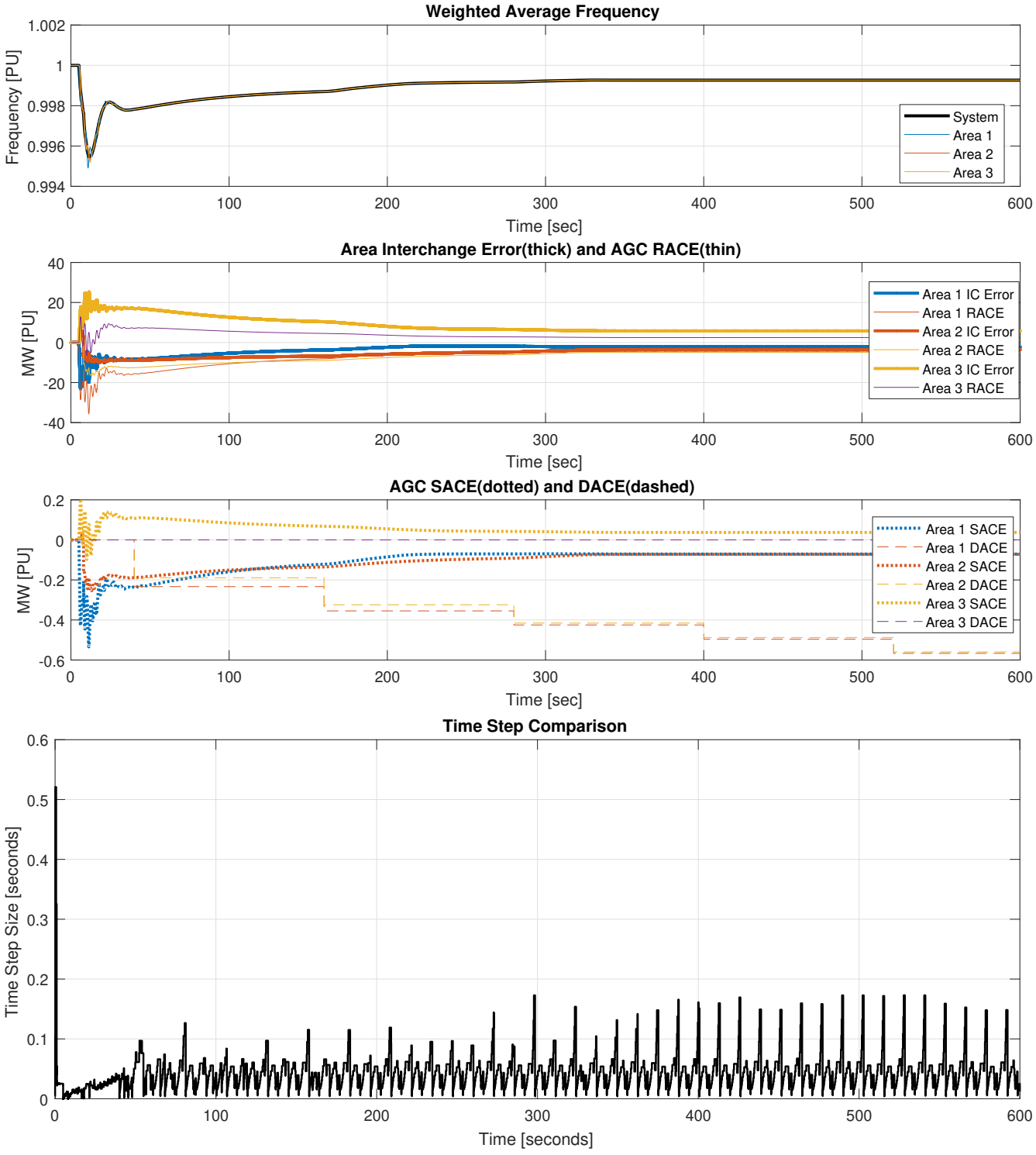
Result Summary:

- Generators trip successfully, average system frequency and system inertia calculated correctly.
- Case needs minor adjustment as AGC controlled machines hit generation limits.
- Tripped generator models are still calculated and effect size of time step.



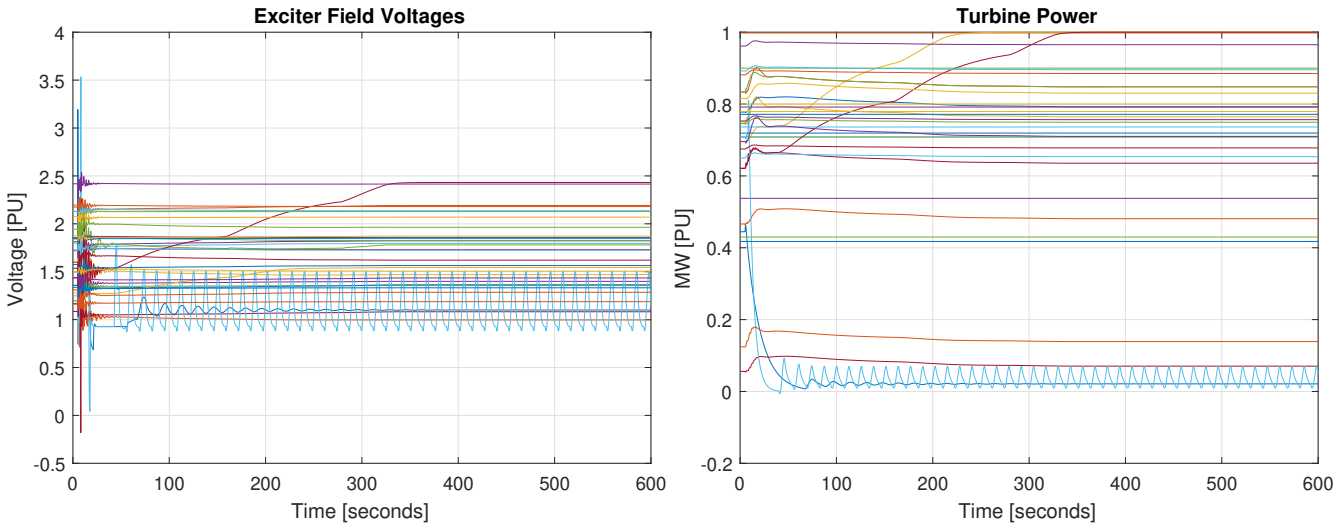


Select Comparisons: t = 0:600 (full simulation)



EFD and Mechanical Power

The oscillations of tripped generators affect the size of the variable time step.



A solution would be to zero out the associated derivatives of tripped machines.
Something along the lines of:

```
if ~all(~g.mac.mac_trip_flags)
        g.mac.dXXX1 = g.mac.dXXX1 .* ~g.mac.mac_trip_flags
        g.mac.dXXX2 = g.mac.dXXX2 .* ~g.mac.mac_trip_flags
        ...
end
```

Placed in the `handleStDx` function and called if the field is `mac`.
This would prevent any associated states from changing, which may be confusing to some during data analysis.