Relative Hz difference of PSDS - LTD $\left(\text{i.e. } \left|f_{PSDS}(t) - f_{LTD}(t)\right| \times 60\text{Hz}\right)$

$\Delta\omega = 1 - \omega$ in $\dot{\omega} = \dfrac{1}{2H_{sys}}\left(\dfrac{P_{acc}}{\omega} - D_{sys}\Delta\omega\right)$

ACE Conventions: Positive ACE denotes over generation. B (the frequency bias) is negative.

$$\begin{aligned} \text{ACE}_{\text{tie line}} &= P_{gen} - P_{load} - P_{\text{sched interchange}} \\ \text{ACE}_{\text{frequency bias}} &= 10B(f_{\text{actual}} - f_{\text{sched}})f_{base} \\ \text{ACE} &= \text{ACE}_{\text{tie line}} - \text{ACE}_{\text{frequency bias}} \end{aligned}$$

One way to think of deviation plots is $\text{LTD}_{data} + \text{Deviation}_{data} = \text{PSDS}_{data}$.
(Assuming all time step issues are handled appropriately.)

The system has only 1 frequency and it is altered by the aggregate PU swing equation

$$\dot{f}_{sys} = \frac{1}{2H_{sys}}\left(\frac{P_{acc,sys}}{f_{sys}(t)} - D_{sys}\Delta fsys(t)\right)$$

$$P_{e,i}(t) = P_{e,i}(t-1) - \Delta P_{acc,sys}(t)\frac{H_i}{H_{sys}}$$

$$\dot{\omega}_{sys} = \frac{1}{2H_{sys}}\left(\frac{P_{acc,sys}}{\omega_{sys}(t)} - D_{sys}\Delta\omega_{sys}(t)\right)$$