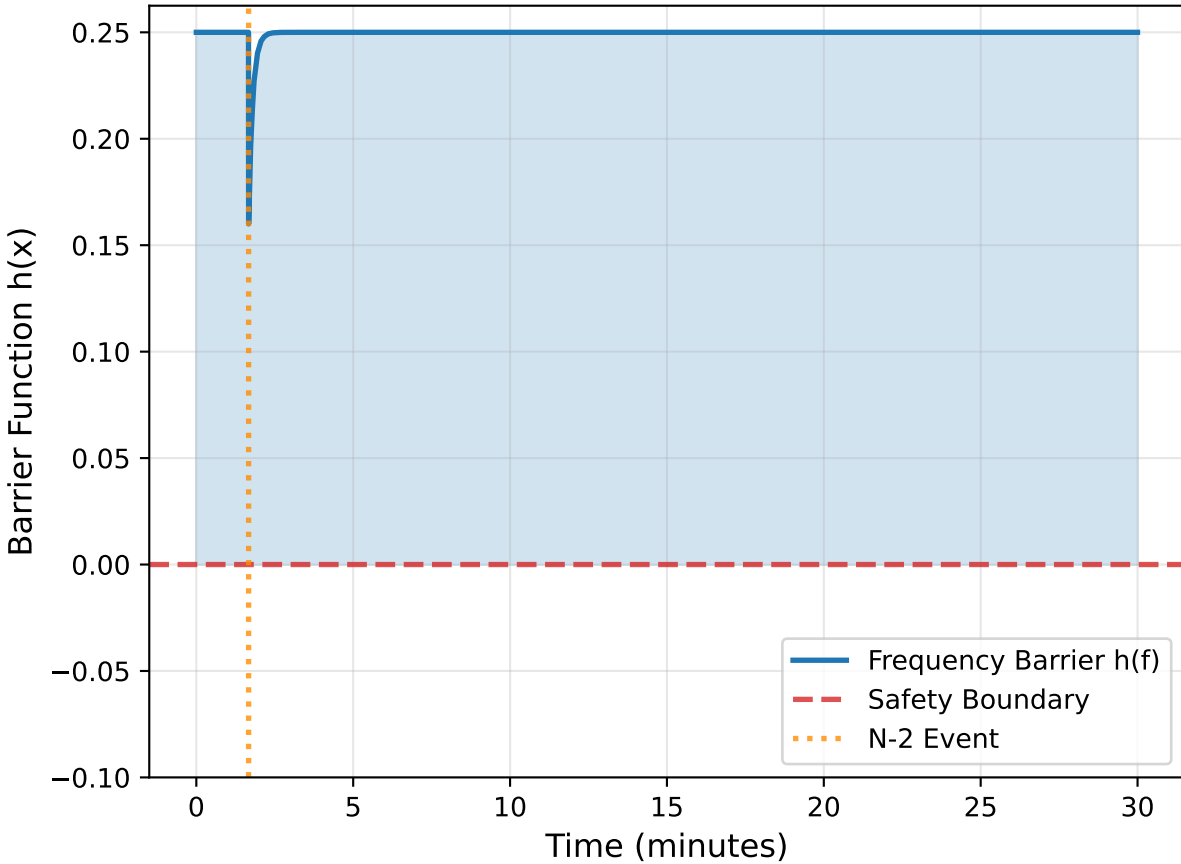


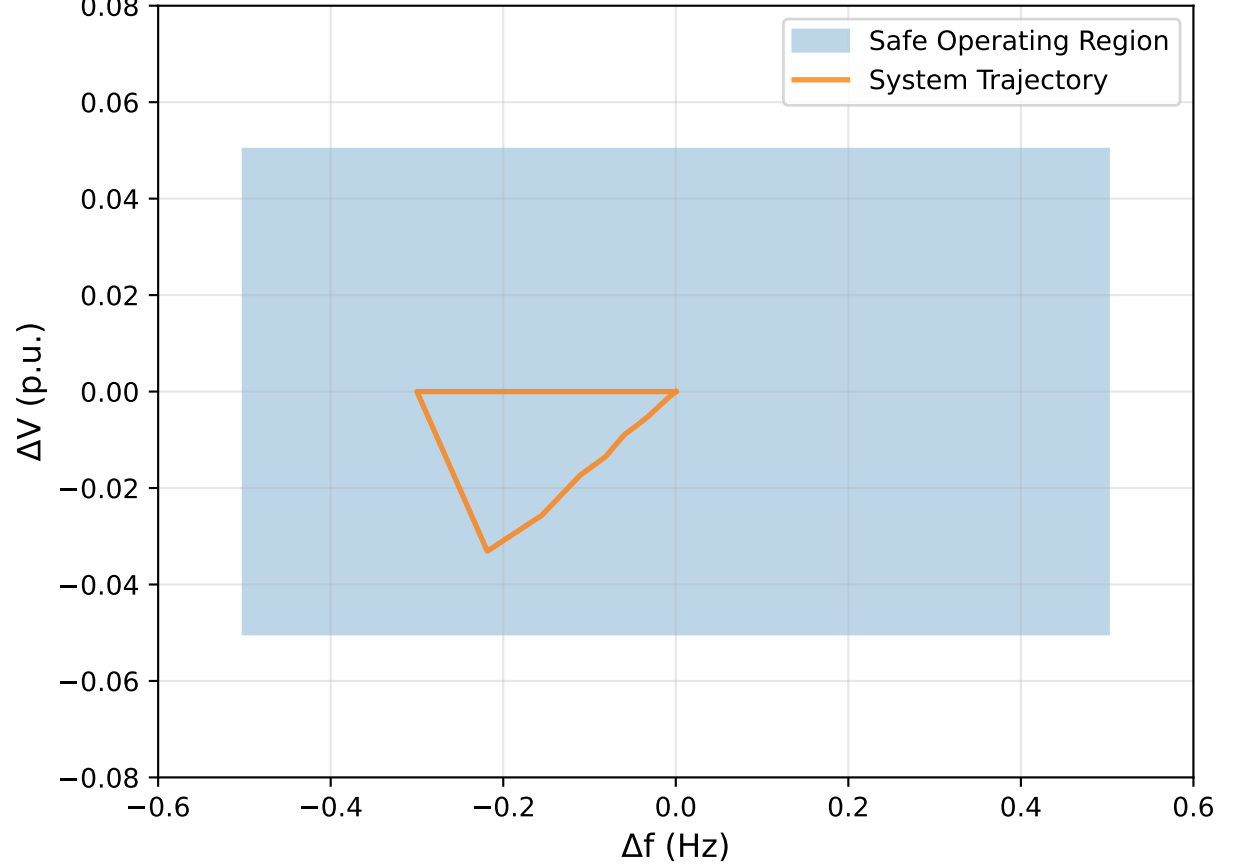
# Control Barrier Function Safety Verification - Realistic Simulation

Test Conditions: Delay = 150 ms (jitter 10-150 ms), Packet Loss = 20%, Event Dwell = 200 ms,  $h(f) = 0.25 - (\Delta f)^2$ ,  $dt = 0.1$  s

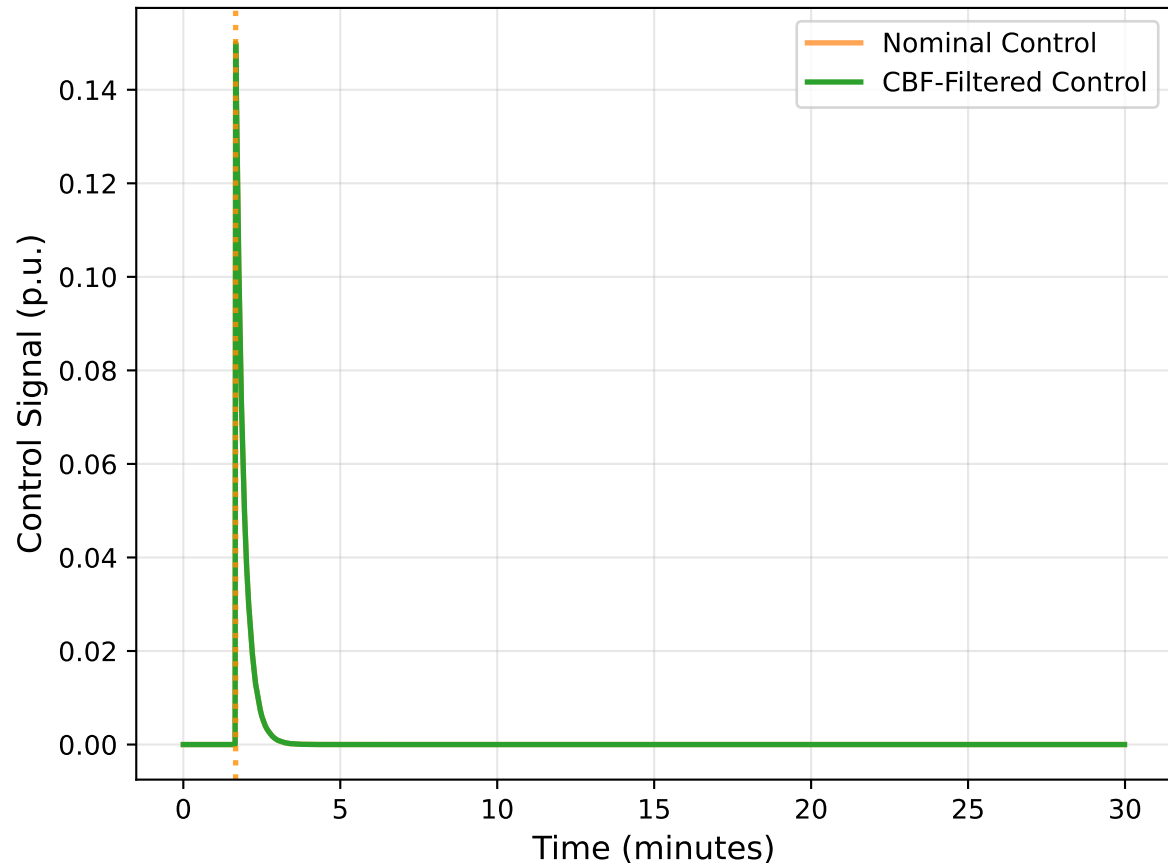
(a) Real Barrier Evolution



(b) Operating Envelope ( $|\Delta f| \leq 0.5$  Hz,  $|\Delta V| \leq 0.05$  p.u.)



(c) Control Modification



(d) N-2 Contingency Response

