

Hawai'i Powered



GFM Resources Performances During HECO Grid Events

Li Yu, Ph.D.

Manager, Transmission Planning

Hawaiian Electric Company

Oct 29, 2025

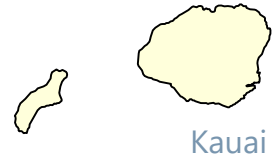


Hawaiian
Electric

Hawaiian Electric today

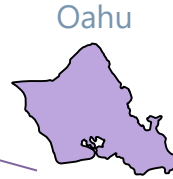
Serving the State of Hawaii for 133 years

Over 95% of state's population served by Hawaiian Electric and its subsidiaries



Kauai

Oahu
Customers: 308,721

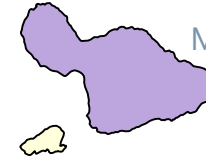


Oahu



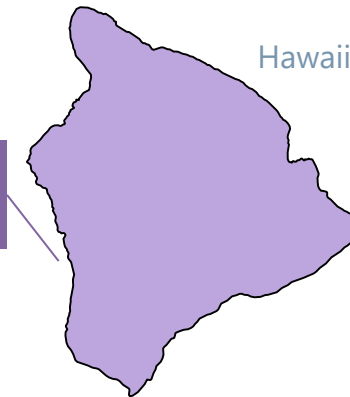
Molokai

Lanai



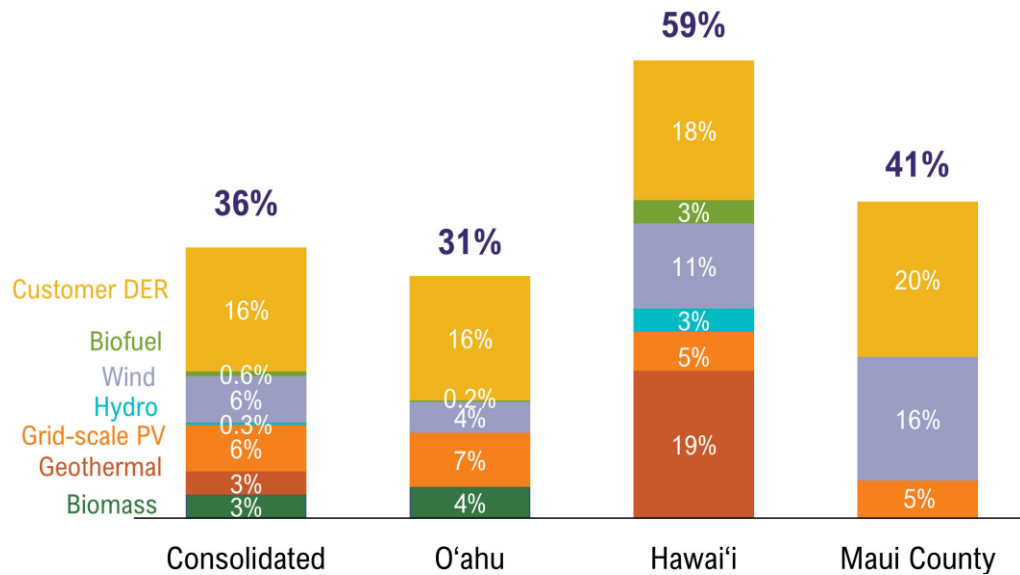
Maui

Maui County
Customers: 73,788



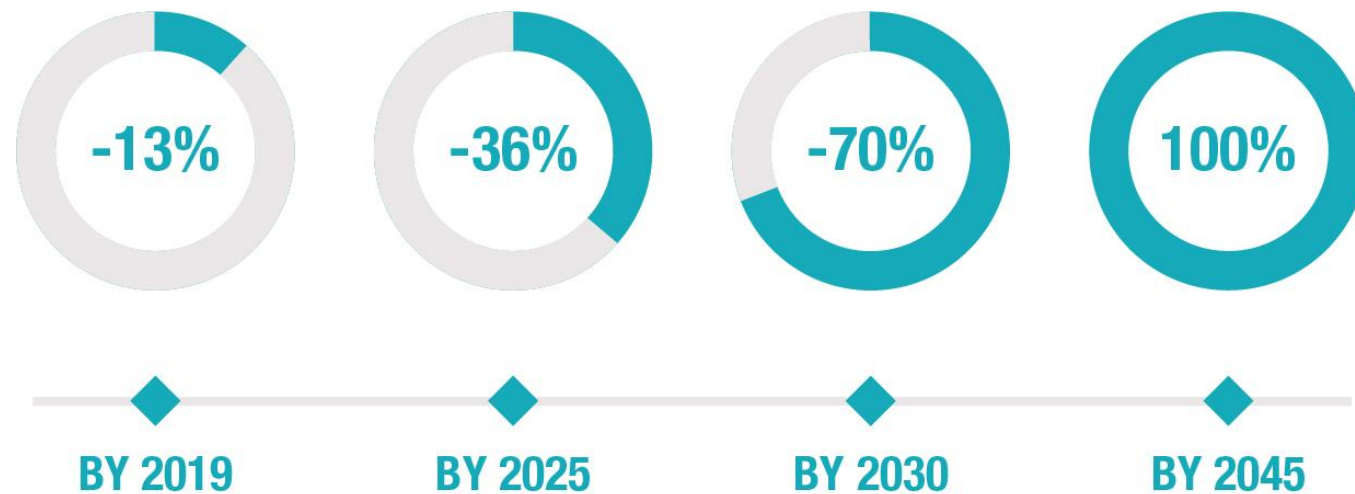
Hawaii

Hawai'i Island
Customers: 88,103



Note: All data as of 12/31/23 unless otherwise noted

2045 GOAL: Net Zero Carbon Emissions



Hawai'i has the most ambitious clean energy goals in the nation.

Hawaiian Electric is committed to 100% reduction of carbon emissions by 2045.

Grid-Forming Resources in HECO Grids

- Oahu system
 - Kapolei Energy Storage project (138 kV, 135 MW/540 MWh with 50 MW/25 MWh FFR), developer: Plus Power, OEM: Tesla
 - Kūpono Solar project (46 kV, 42 MW AC-coupled PV/BESS (4Hr)), developer: Ameresco, GFM BESS OEM: Tesla

Commissioned in near future

- Oahu system
 - Mountain View Solar (46 kV, 7MW/35 MWh, DC-coupled PV/BESS), developer: AES, OEM: Hitachi
 - Waiawa Phase 2 Solar (46 kV, 30MW/240 MWh, DC-coupled PV/BESS), developer: AES, OEM: Hitachi
- Maui system
 - Waena BESS (69 kV, 40 MW/160 MWh, standalone BESS), developer: HECO, OEM: Tesla

Stage 3 RFP Awarded GFM Project

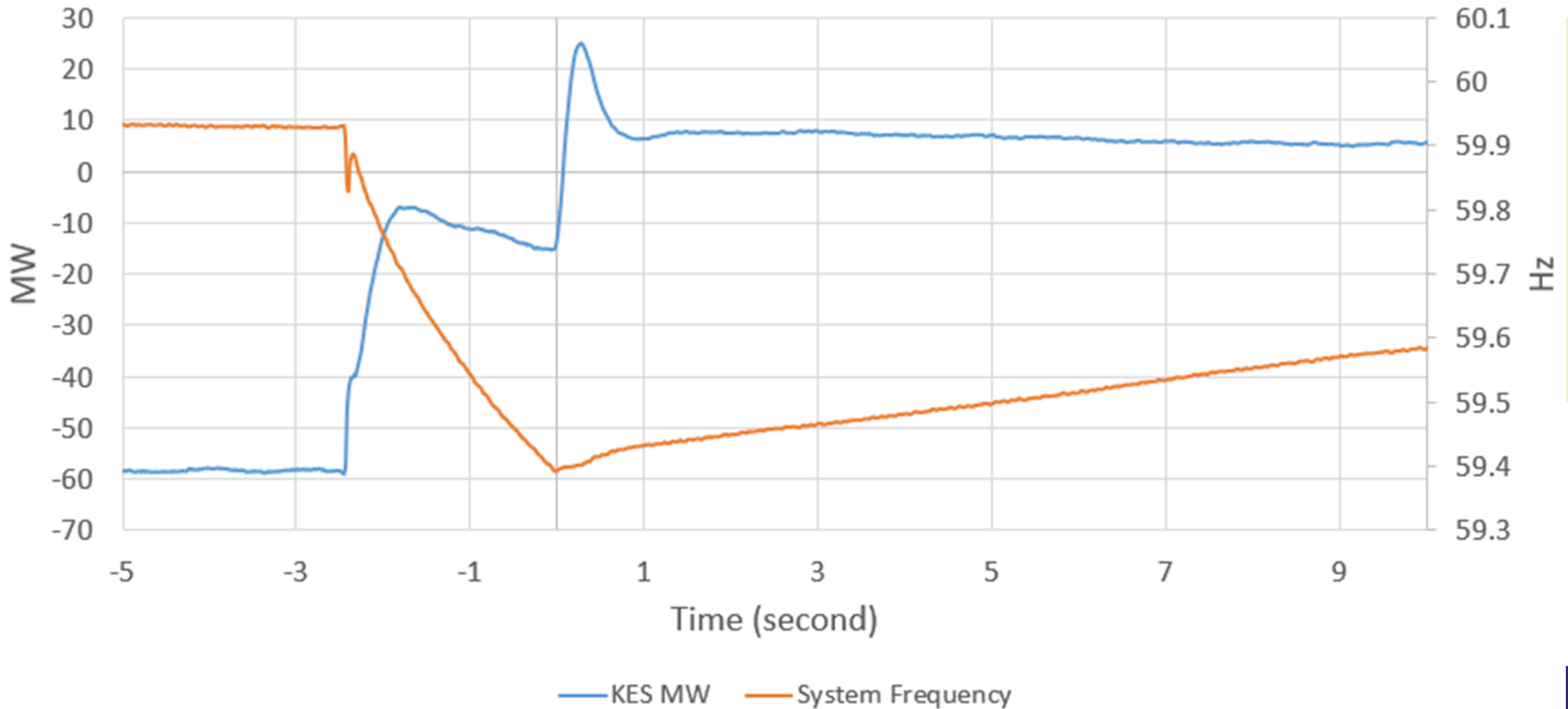
Oahu 126 MW, Maui 60 MW, Hawaii island 86 MW

IGP RFP GFM procurement target for stability purpose: Oahu 350 MW, Hawaii island 115 MW.

Existing GFM Resource Performance

Generation Trip Event

- 103 MW of generation trip (15% system net load)
-

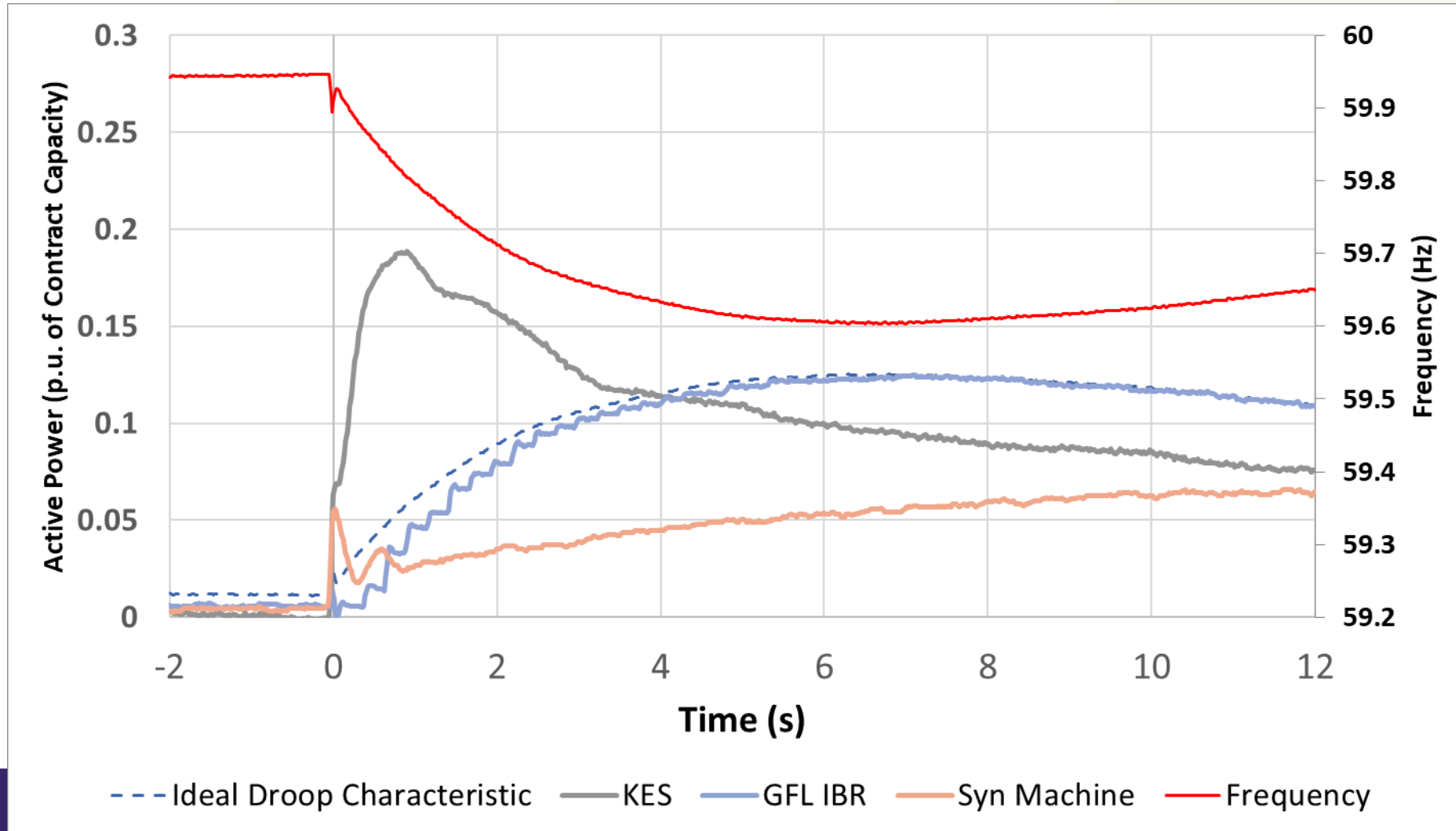


Existing GFM Resource Performance

Generation Trip Event]

- 58 MW generation trip (6% of system net load)

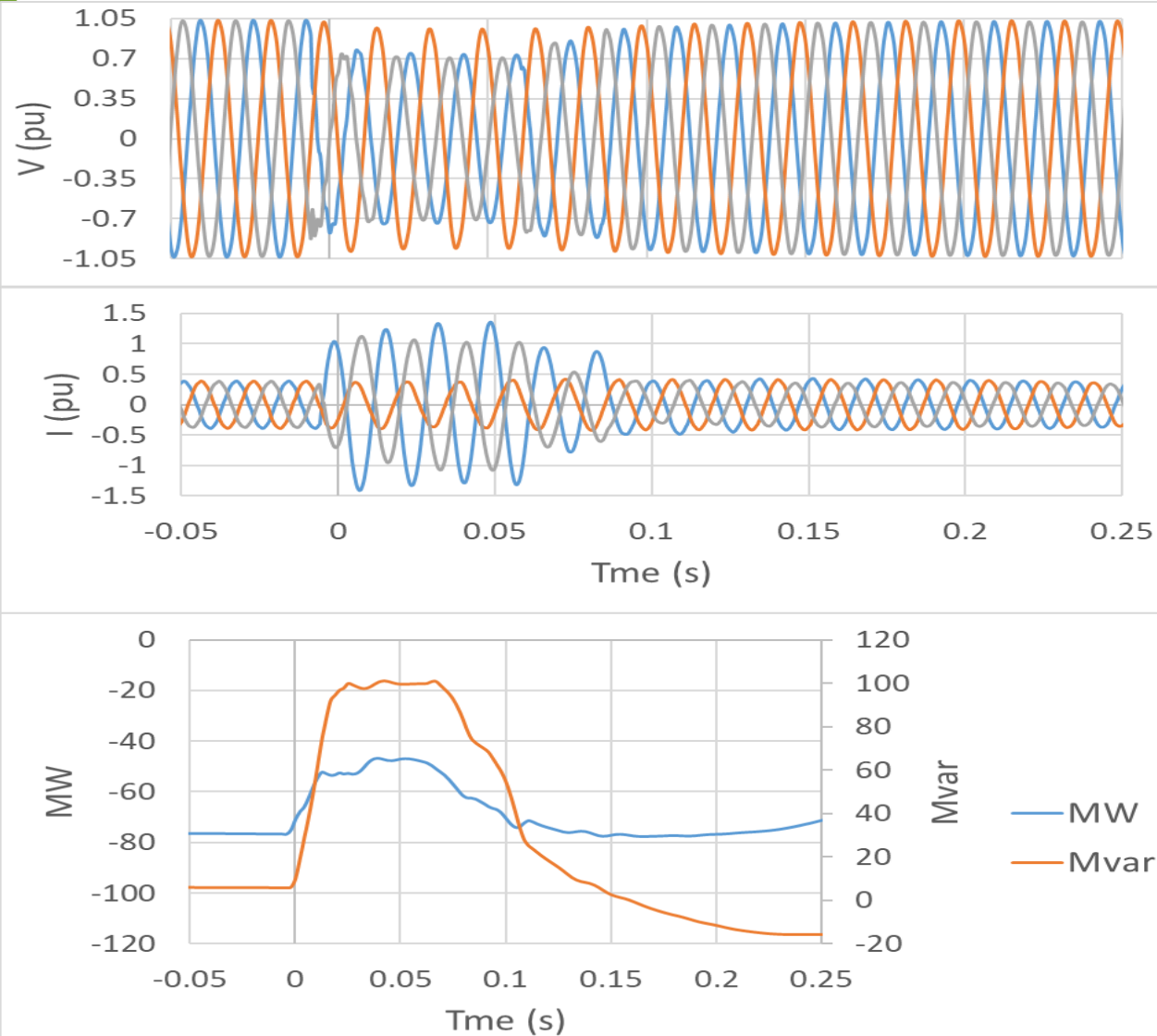
-



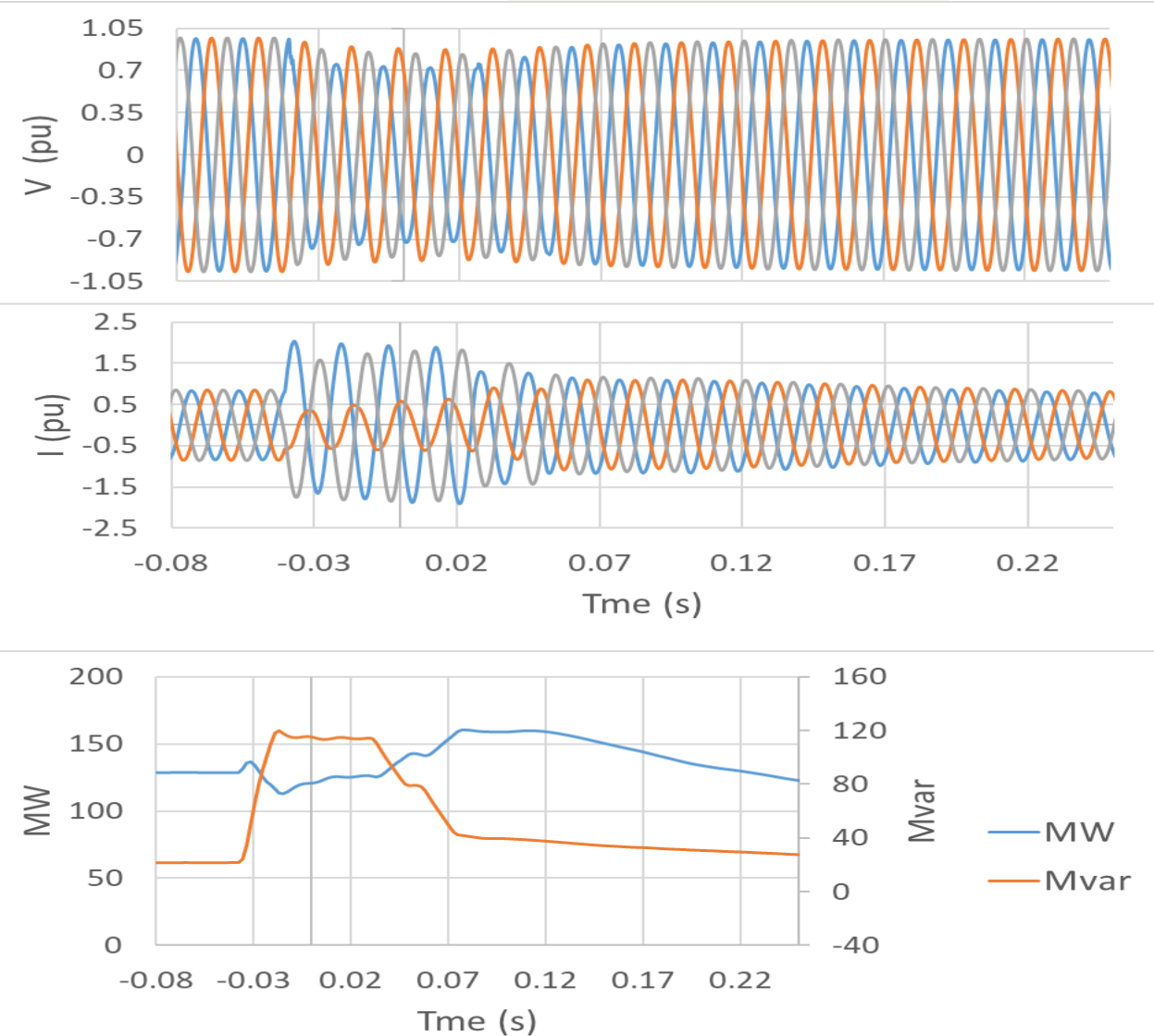
Existing GFM Resource Performance

A transmission line unbalanced fault happened on east side of Oahu island

GFM Resource (138 kV)



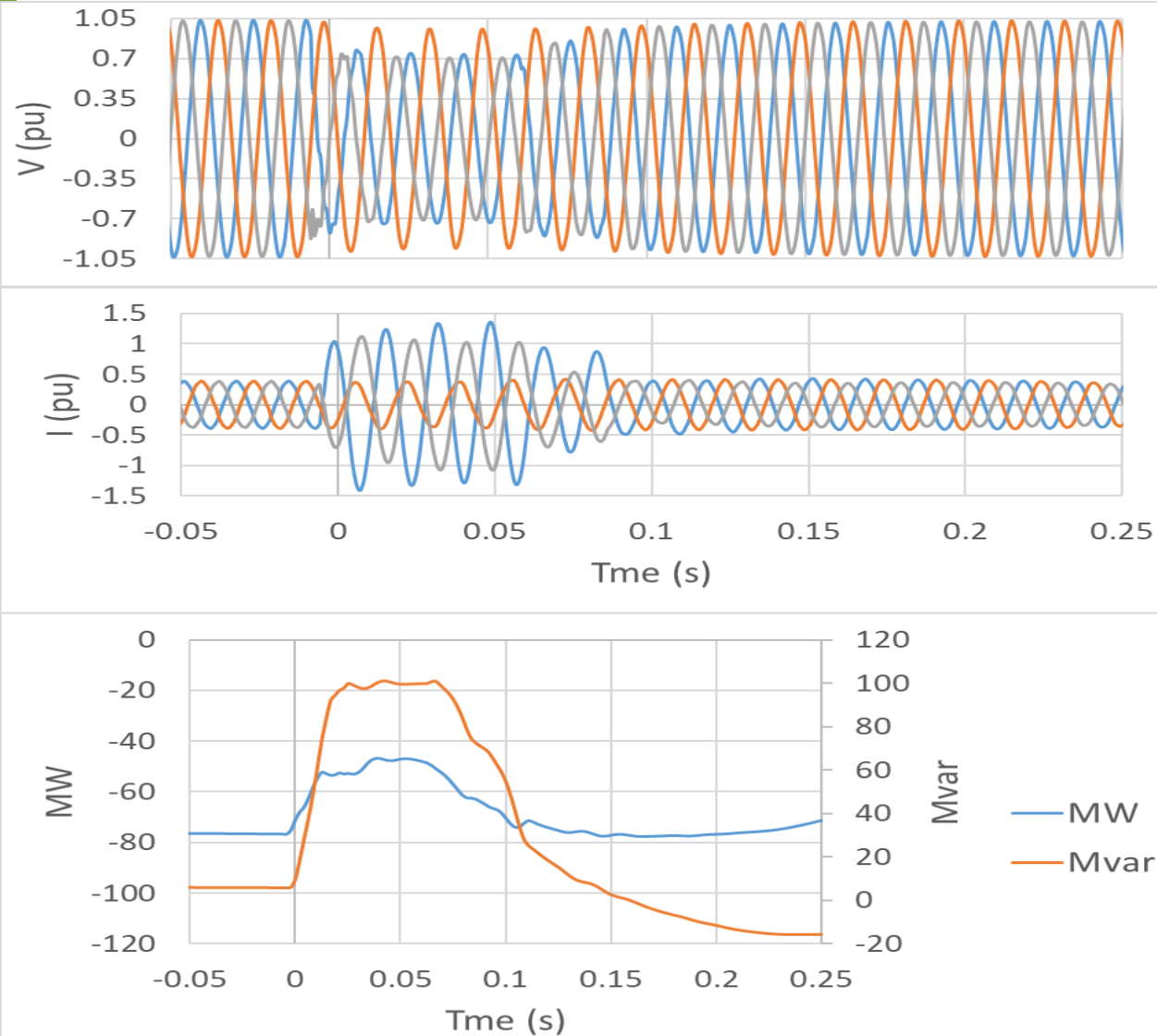
Syn. Machine



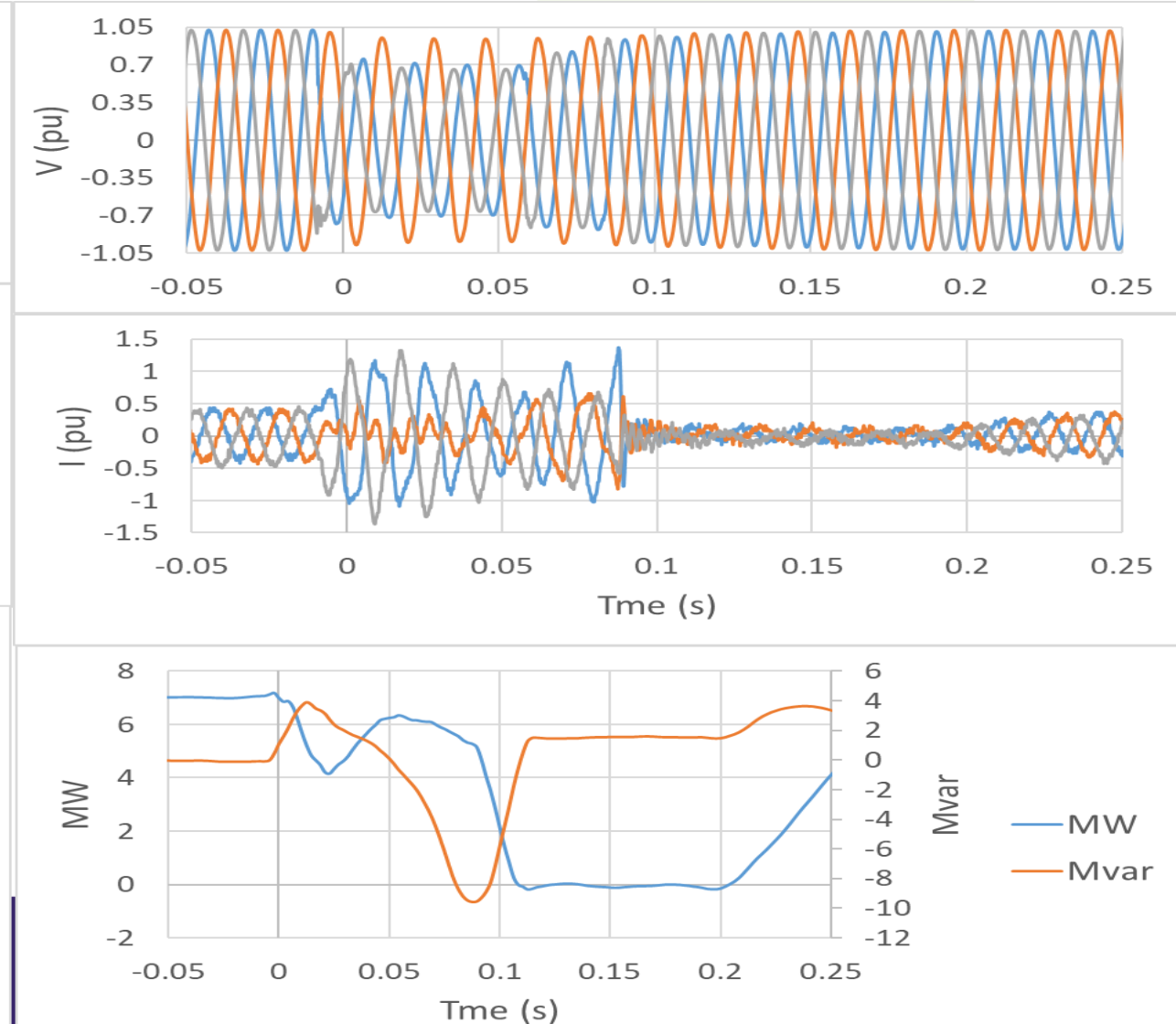
Existing GFM Resource Performance

A transmission line unbalanced fault happened on east side of Oahu island

GFM Resource (138 kV)



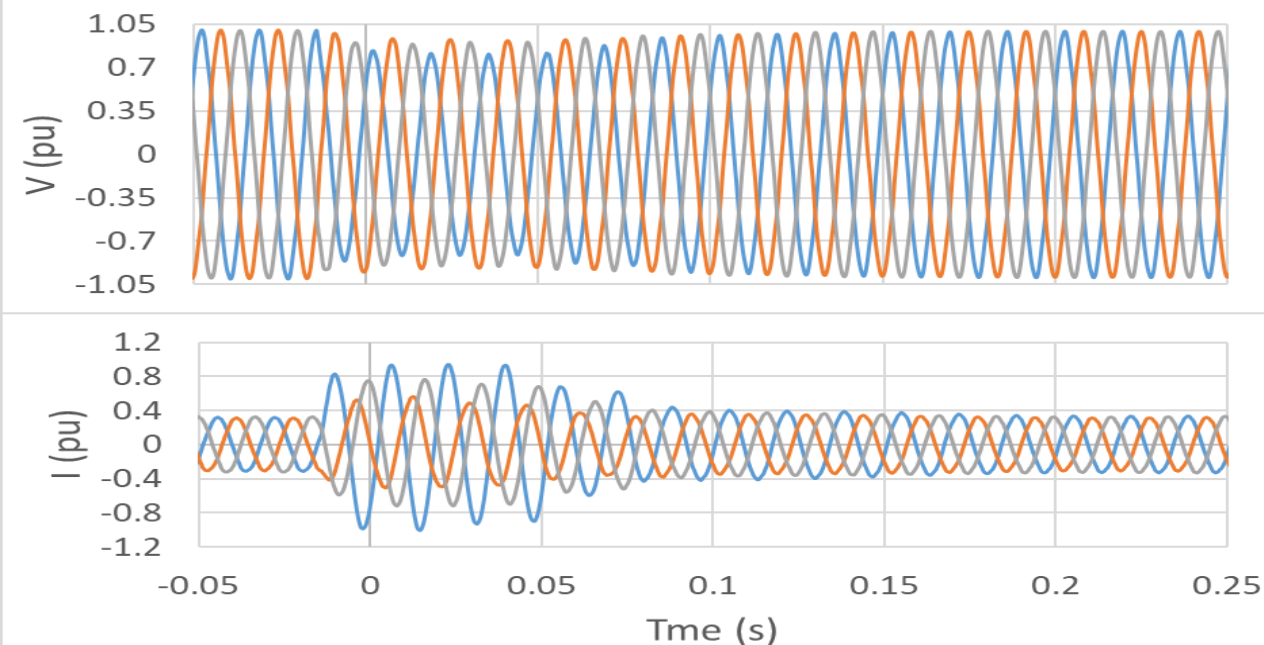
GFL Resource (138 kV)



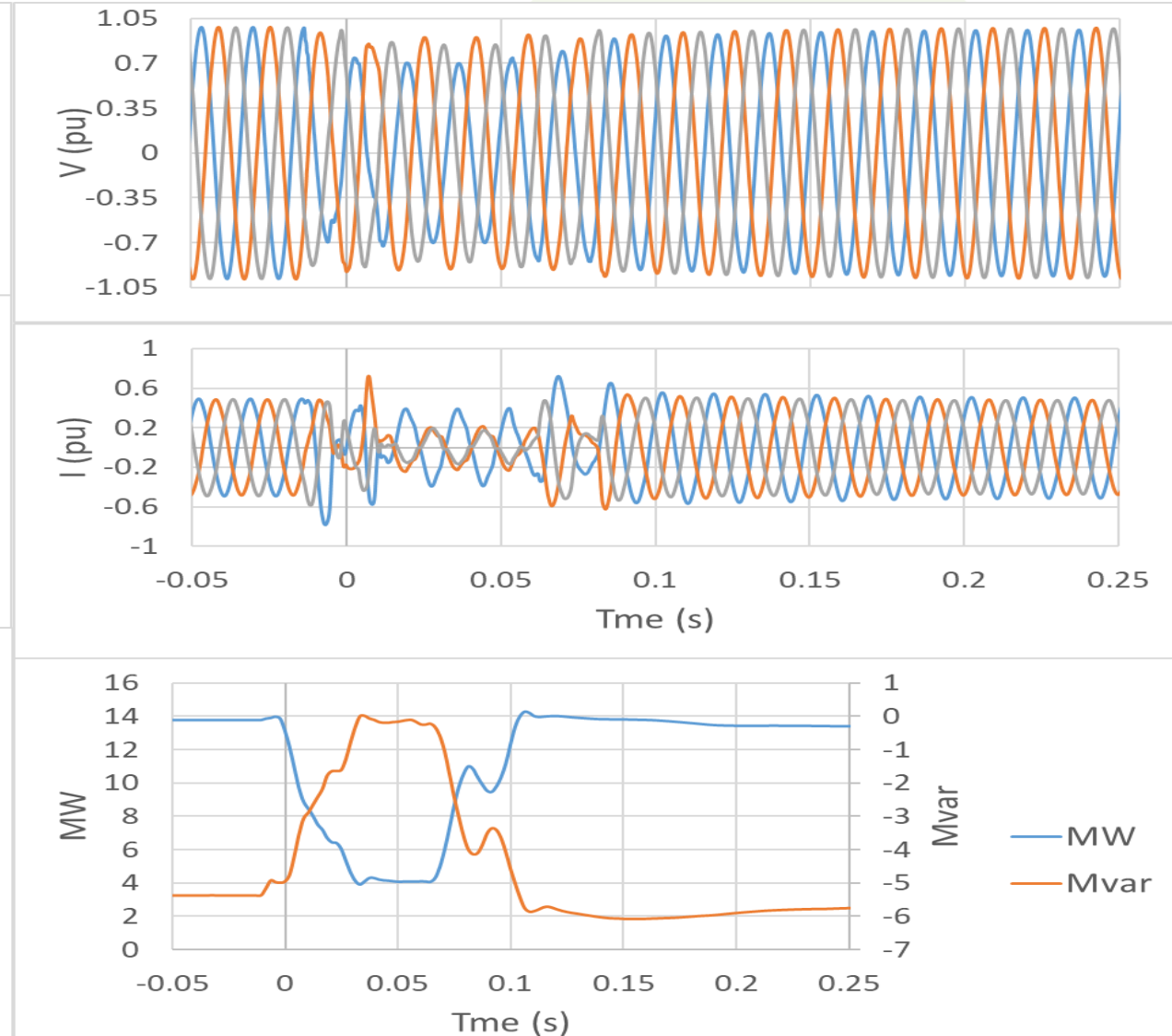
Existing GFM Resource Performance

A transmission line unbalanced fault happened on east side of Oahu island

GFM Resource (46 kV)

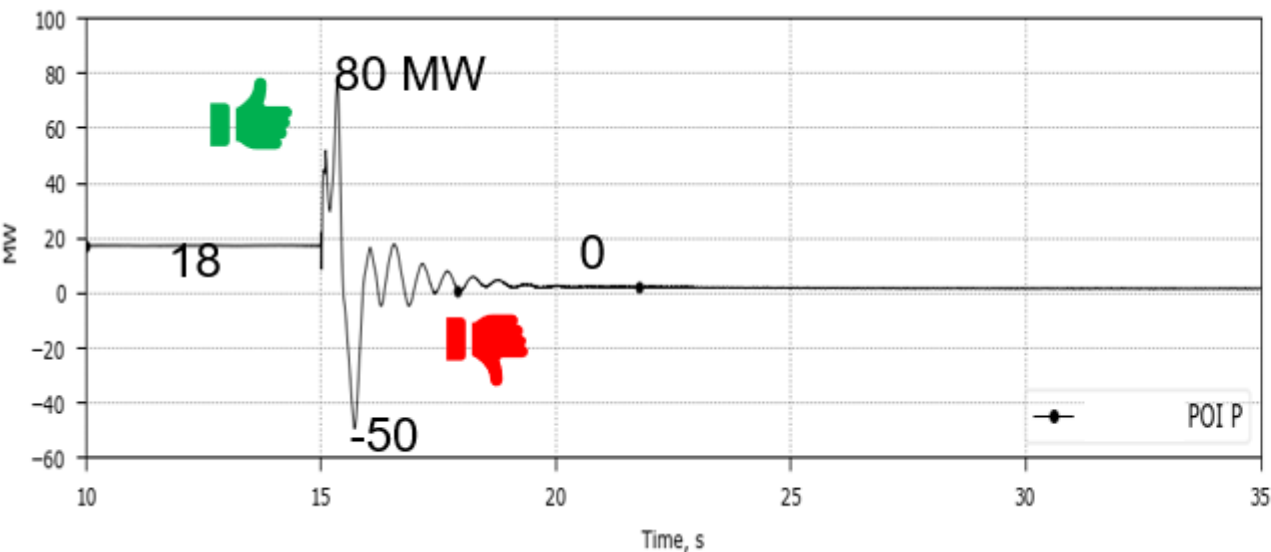
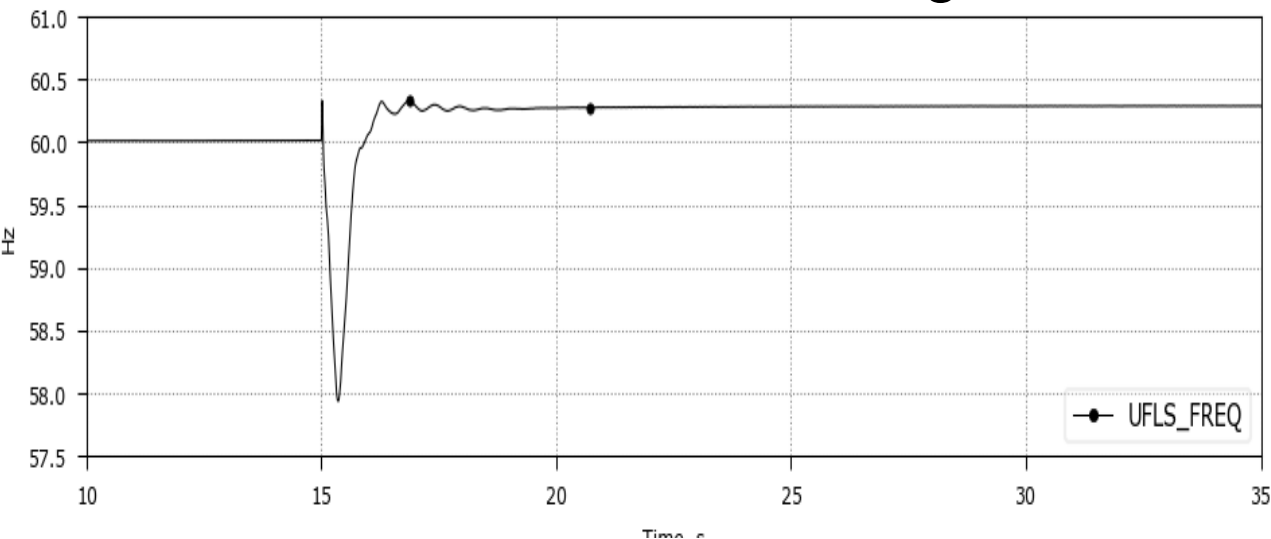


GFL Resource (46 kV)

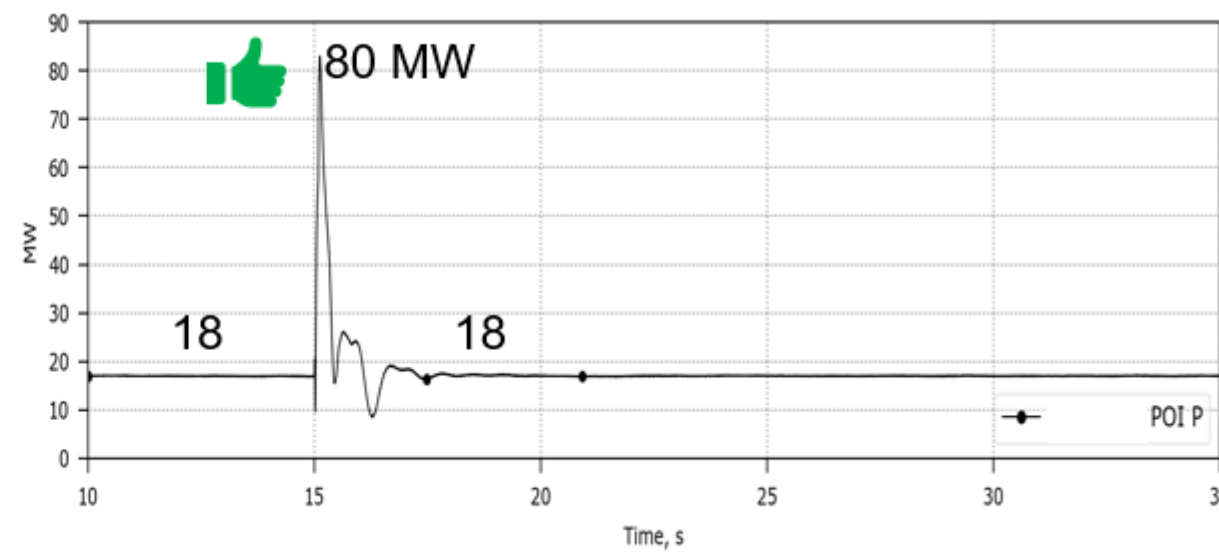
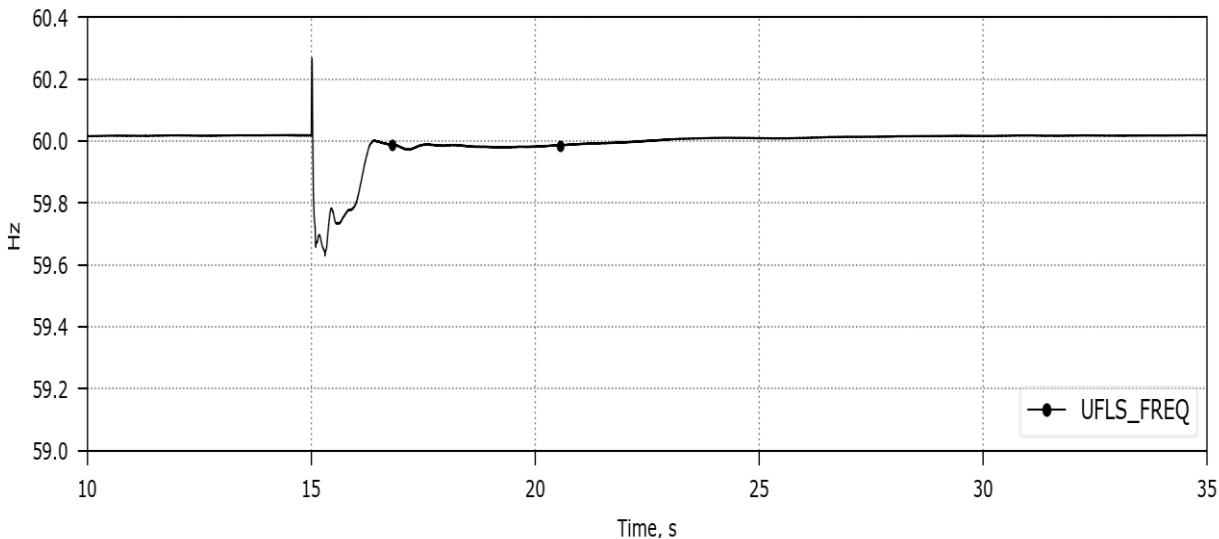


GFM Control Tuning

Before Control Tuning



After Control Tuning



Mahalo!

Contact:

Li Yu, c-lyu@hawaiianelectric.com