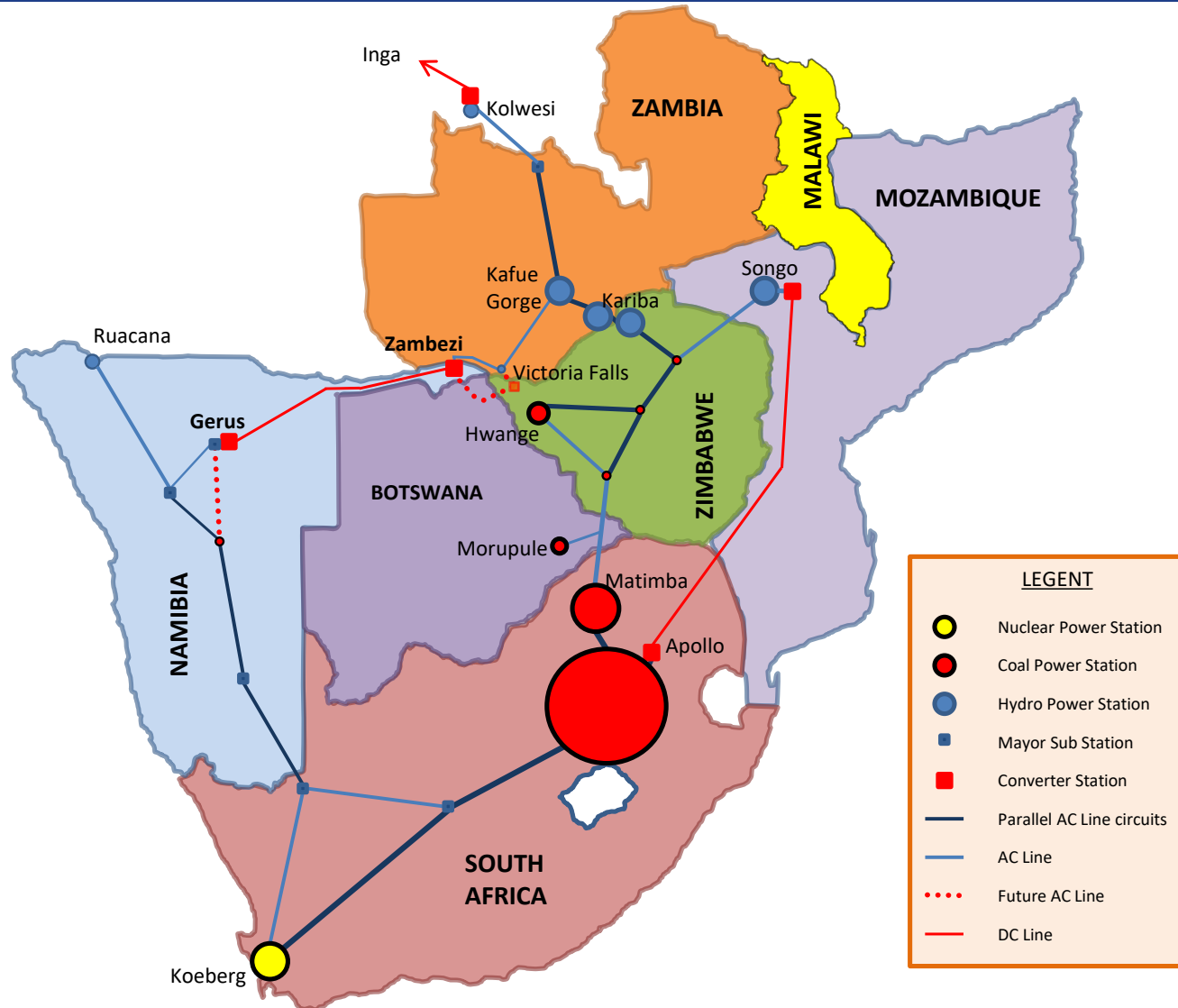


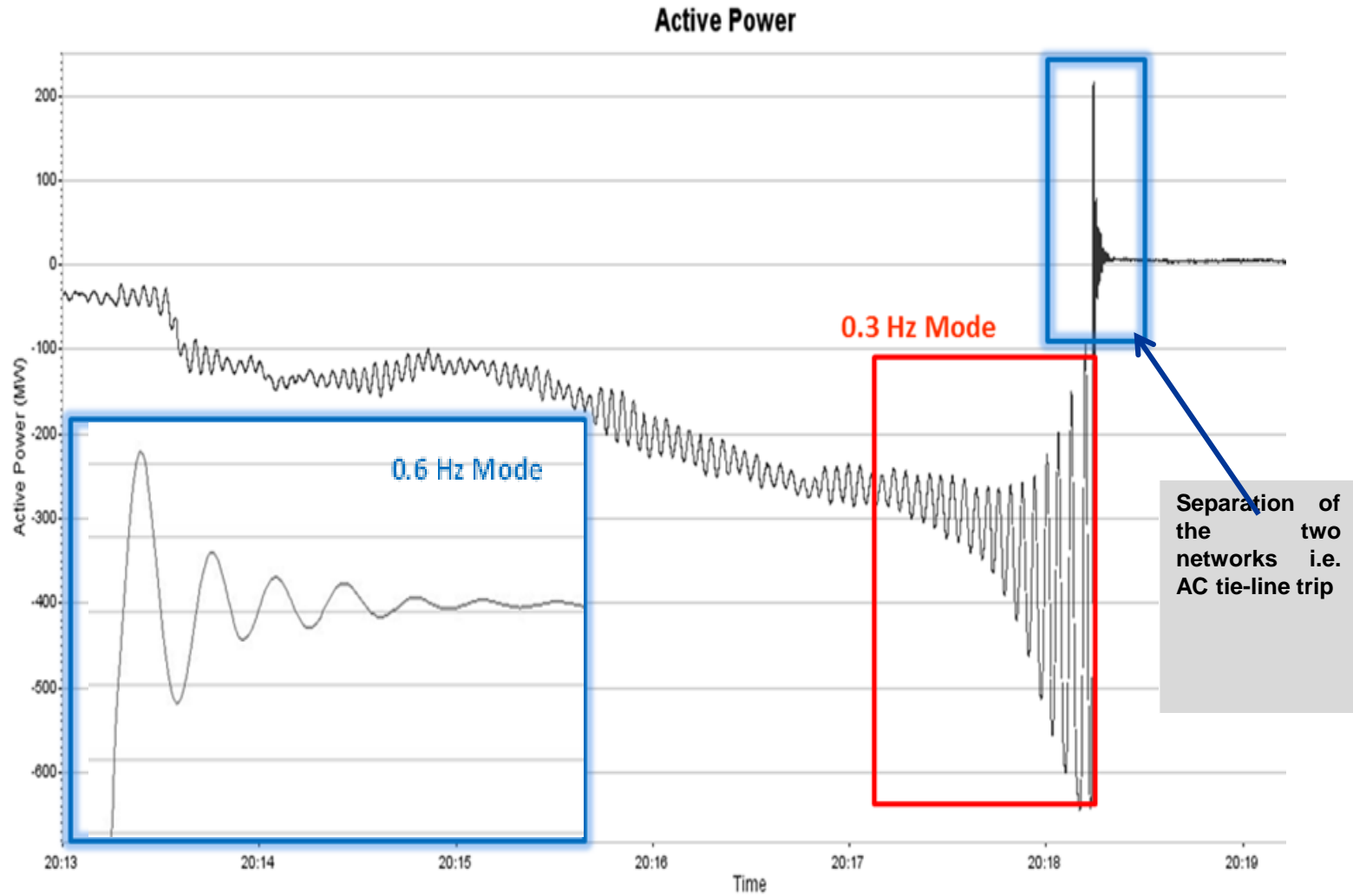
The Advantages of PMU Data Analytics in Power Systems with High Renewable Energy Penetration

Presenter: Teboho Machabe

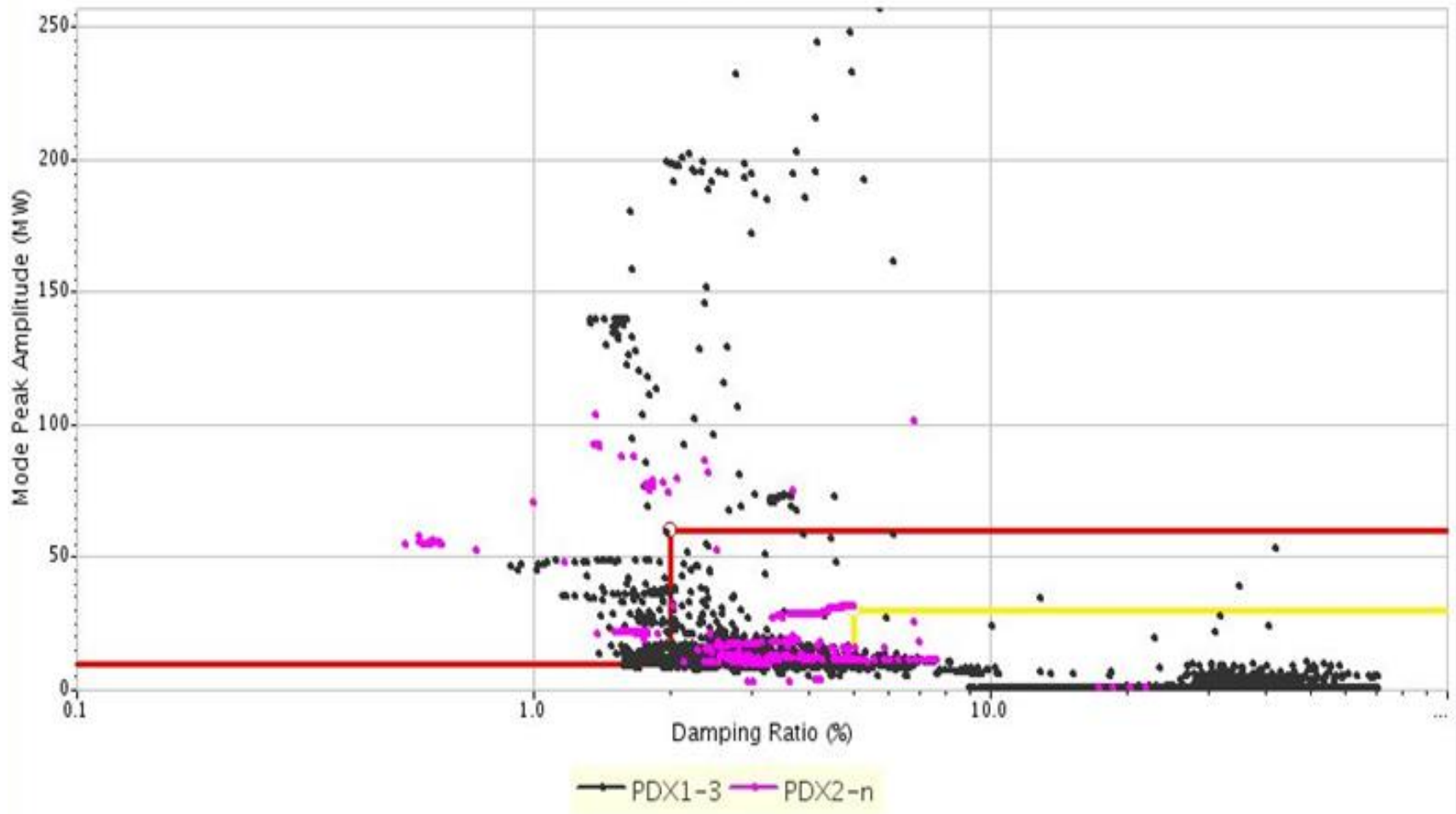
- System Operators are faced with challenges of operating the modern power system efficiently and reliably
- Insufficient real-time information resulting in conservative decision making which would comprise the efficient operation of the system
- The draft Integrated Resource Plan (IRP) released in August 2018 has indicated that the installed renewable energy could increase by to 20 GW in 2030.
- The change in the system inertia may result in an increase or decrease in the number of dominant modes of the power system.
- The frequency range of the oscillation may increase from the traditional known range of 0.2 Hz to 3 Hz.
- Situational awareness enhancement to improve power system reliability
- Wide Area Monitoring System (WAMS) using synchrophasor measurements

Geographical Layout of SAPP





Locus Plot



- WAMS allows the network operator to have wider view of the power system
- Data from WAMS can be used to validate power system models
- The data is useful for post event analysis
- WAMS can be used to synchronize grids which will allow for quick restoration of the power system in the event of system islanding