Paul Tuson
Energy Sector Director
Tetra Tech

Paul Tuson is an MSc graduated electrical engineer with over 35 years' experience in power systems and power transmission systems in South Africa and globally. Paul has worked with USAID, USEA, USTDA, MCC and other funders and has worked with regulator, utilities, governments, developers and private clients all over the world.

Paul utilizes power system software such as PyPSA, DigSilent and PSSE to undertake static and dynamic system studies especially in high-penetration Renewable Energy (RE) systems and is proficient in the specification and design of EHV and HV HVAC and HVDC transmission systems.

Paul excels in assessing power systems and finding innovative solutions to constraints and challenges. Some of these solutions include the following:

1. High temp conductors, where servitudes are difficult to secure
2. Probabilistic line ratings, to "sweat" or optimally utilize existing transmission assets
3. SCOs for inertia, fault level and dynamic reactive power support, especially as inverter based systems (IBSs) and RE and storage systems increase
4. Modern weather forecasting systems to preempt weather changes and assist system operators to mitigate these changes
5. Incorporating climate resilience plans and designs as extreme weather events increase
6. Upgrading National Control Centre (NCC) automatic dispatch systems (ADSs) and Area Control Error (ACE) systems and power plant ADSs and Automatic Generator Control (AGC) systems6)
7. Use of Phasor measurement units (PMUs) for system stability management
8. Applying multiple circuits on existing line routes where servitudes, wayleaves and Right of Ways (RoWs) are difficult to obtain
9. Use of underground EHV and HV cables where Rights of Way (RoWs) are difficult to secure and where visual intrusion of power lines need to be reduced
10. Facilitating private transmission where national or utility balance sheets are constrained
11. Geographical dispersion of RE and storage for weather diversity and Climate Change mitigation
12. Transmission islanding systems during or after severe climate change events to keep parts of the system whole to be re-synchronised after the emergency
13. Optimising the interchange between Renewable Energy (RE) in the southern part of the Southern African Power Pool (SAPP) and hydro energy in the Central and Northern parts of the SAPP and the East African Power Pool (EAPP) – thus enabling the reservoir hydro generation power plants to act like large batteries
14. Studying and optimizing transmission and distribution systems to incorporate the inevitable rapid growth in Electric Vehicles (EVs) and Electric Mobility
15. Incorporation of new load categories in transmission planning such as hydrogen (H2) electrolysis, data centres and EVs