POWER ENGINEERING COMPETENCY FRAMEWORK FOR POWER ENGINEERING PROFESSIONALS IN PUBLIC SERVICE
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT

TSC Category	Installation, Testing and Commissioning					
TSC Title	Equipment and Systems Installation and Commissioning					
TSC Description	Manage the installation and commissioning of electrical equipment, systems and networks to determine readiness for start-up and handover					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
		<Insert TSC Code>	**<Insert TSC Code>**	**<Insert TSC Code>**	**<Insert TSC Code>**	
		Verify adherence of electrical installations to design specifications and project requirements	Review installation and commissioning of electrical equipment, systems and networks	Manage compliance and quality checks during installation and commissioning of electrical equipment, systems and networks	Provide acceptance for installation and commissioning of electrical equipment, systems and networks	
Knowledge		• Testing and commissioning set up parameters • Electrical equipment, networks and systems installation procedures • Electrical equipment, networks and systems commissioning principles and procedures • Relevant standard operating procedures (SOPs) • Electrical equipment, networks and systems specifications and requirements	• Electrical equipment, networks and systems commissioning principles and procedures • Electrical equipment, networks and systems installation procedures • Manufacturers' guidelines for various electrical equipment • Commissioning checklists • Troubleshooting procedures for electrical equipment, networks and systems • Relevant standard operating procedures (SOPs)	• Installation, testing and commissioning reports • Quality audit processes • Quality performance standards • Relevant regulations and guidelines on installation, testing and commissioning • Project plans and requirements • Relevant industry standards, codes of practice and safety procedures	• System interfacing principles • Latest trends and practices for installation, testing and commissioning • Complex testing and commissioning techniques • Legal and regulatory requirements and frameworks • Relevant industry standards, codes of practice and safety procedures	

Abilities		• Verify setup of electrical equipment, networks and systems required for testing and commissioning • Oversee procedures for installation, testing and commissioning • Supervise installation procedures for electrical equipment, networks and systems • Verify the testing and commissioning of electrical equipment, networks and systems • Ensure compliance with industry standards, regulatory and project requirements	• Review installation processes for electrical equipment, networks and systems • Validate installation and testing of the electrical equipment, networks and systems for adherence to design specifications • Perform commissioning of electrical equipment, networks and systems • Prepare relevant installation, testing and commissioning reports • Flag non-compliance cases and escalate to senior staff • Ensure safe working practices for all work processes • Review compliance with industry standards, regulatory and project requirements	• Manage installation processes for electrical equipment, networks and systems • Manage installation and testing of the electrical equipment, networks and systems for adherence to design specifications • Lead quality checks on installation, testing and commissioning • Review performed activities against regulations and requirements • Flag non-compliance cases and escalate any issues • Ensure safe working practices • Manage compliance with industry standards, regulatory and project requirements	• Provide technical guidance for complex issues in installation, testing and commissioning • Recommend improvements to current installation, testing and commissioning processes • Advocate use of new technologies and industry best practices in installation and commissioning • Provide acceptance for installation and commissioning of electrical equipment, systems and networks before commencement of work • Drive compliance with industry standards, regulatory and project requirements	
Range of Application		Range of application includes, but is not limited to: • Electrical installations and power systems in buildings, facilities and infrastructure, including but not limited to: Building electrical systems e.g. transformers, switchboards and wiring systems, battery systems, fire protection systems, security systems, uninterruptible power supply (UPS) systems, standby power generation, lighting systems, lightning protection systems, relay and protection systems, air-conditioning and mechanical ventilation systems, lightings, lifts and escalators, amusement rides, and building management systems • Electrical installations and power systems in water treatment plants and waste-to-energy plants, including but not limited to: Environmental compaction systems (ECS), conveyor belts, baghouse filters, high-tension power equipment including power transformers, switchgears, generators, distributed control system and field instruments, refuse crane system, motors and variable speed drives, pumps, air-conditioning system, fire alarm system, actuators, lightings, incinerator-boilers, turbo-generators and power distribution network, and control and monitoring systems • Electrical installations and power systems in railway and air traffic management systems, including but not limited to: High voltage power systems, railway traction power systems, aircraft ground power supply systems, AC/DC and DC/AC converters, and signalling, communication and control systems and equipment, airfield lighting systems, and public announcement systems • Renewable and distributed energy resources, including but not limited to: Solar photovoltaic installations, microgrids and energy storage systems • Systems used in transmission network system planning, control and management, including but not limited to: energy management systems, information technology (IT) and operational technology (OT) systems, substation remote control unit (RCU) systems, interruptible load monitoring system, distributed generator monitoring system, flexible AC transmission systems (FACTS), and supervisory control and data acquisition (SCADA) systems				