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

TSC Category	Electrical and Power Engineering Fundamentals					
TSC Title	Power Engineering Management					
TSC Description	Manage the design, technical specification, commissioning, operations, maintenance of equipment, systems and networks for the generation, transmission and distribution of electric power					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
			<Insert TSC Code>	**<Insert TSC Code>**	**<Insert TSC Code>**	
			Interpret designs, technical specifications and maintenance procedures to provide power engineering discipline support	Enable the development and implementation of designs, technical specifications and maintenance procedures to manage power engineering discipline support	Evaluate designs, technical specifications and maintenance procedures to drive high standards of power engineering discipline support	
Knowledge			• Electrical and power system designs and modification methods • Electrical protection and control methods • Principles governing the operation of power circuits • Simple sequential logic circuits including flip-flops and mono-stables • Systems and designs of electrical and power systems • Electrical installation, testing and commissioning requirements • Principles, characteristics and applications of various types of protective relays • Standard requirements for effective delivery of electrical energy through transmission and distribution networks to various types of consumers	• Principles of generation, transmission and distribution of electric power • Physical quantities of voltage and current, circuit principles, power and energy, and operations of op amps • Load flow, circulation and sizing of the generators and protection systems • Operation of modern electricity network operating under balanced steady-state and fault conditions • Engineering challenges of renewable energy production • Single phase induction machines, basic high voltage generation and measurement techniques • Direct current (DC) motor drives, induction motor drives,	• Business and management techniques relevant to engineering • Industrial drive systems, power flow modelling and control of various commonly industrial drives • Energy storage devices used in power systems and various smart grid technologies • Power system operation and planning, including forecasting, generation scheduling, generation planning and transmission planning • Electrical installation, testing and commissioning best practices • Project management and processes of innovation and entrepreneurship • Relevant regulations, industry standards,	

			• Relevant regulations, industry standards, codes of practice and safety procedures	synchronous motor drives and servo-motor drives • Electrical installation, testing and commissioning best practices • Relevant regulations, industry standards, codes of practice and safety procedures	codes of practice and safety procedures	
Abilities			• Review design for simple combinational circuits using commercial small-scale integration (SSI) and medium-scale integration (MSI) integrated circuits • Apply operational amplifiers • Analyse and design electrical systems based on the relevant codes of practices • Apply emerging technologies in electrical installation • Test and troubleshoot electrical installation circuits • Oversee installation, maintenance and testing of power systems with good engineering practices • Review compliance with industry standards, regulatory and project requirements	• Solve complex problems in power engineering • Propose engineering solutions with due consideration to local and global issues in business, ethics, society, community and environment • Evaluate application of semiconductor devices, protection aspects and power conversion schemes to the industry works • Apply generalised theory of electrical machines to direct current (DC), synchronous machines, and links to steady state per phase model • Develop circuit models from DC machine and synchronous machine routs • Analyse and synthesise power electronic circuits utilising modern power electronic devices • Review compliance with industry standards, regulatory and project	• Adapt to challenging demands of modern power industries • Advise on use of power electronic converters and inverters in controlling modern drive systems • Lead research and development on advanced power technologies • Provide efficient and environmentally friendly power solutions to improve energy efficiency and reduce energy consumption • Resolve issues in power system planning and operation functions • Model and analyse power networks, generating units and loads • Contribute to long-term market competitiveness of businesses by planning scopes and objectives of projects • Recommend procedures to drive compliance with industry standards,	

				requirements	regulatory and project requirements	