POWER ENGINEERING COMPETENCY FRAMEWORK			
SKILLS MAP - Senior Principal Engineer / Principal Engineer (Construction & Commissioning)			
Sector	Power Engineering in the Public Service		
Track	Construction & Commissioning		
Occupation	Electrical Engineer		
Job Role	**Senior Principal Engineer / Principal Engineer (Construction & Commissioning)**		
Job Role Description	The Senior Principal Engineer / Principal Engineer (Construction & Commissioning) is responsible for establishing and resolving deviations in the construction and installation plans of electrical equipment, systems and networks through providing appropriate solutions. He/She leads reviews of electrical design submittals. He reviews reports of all commissioning activities. He formulates rectification of defects, deficiencies and abnormalities. He also manages relationships with internal and external stakeholders and evaluates contractors' performance to ensure compliance with technical standards and codes of practice. To prevent future safety breaches in the workplace, he recommends action plans and implements safe work practices. In addition, he leads innovation and green initiatives to drive decarbonisation, decentralisation and digitalisation. He should be authorised as a trained person by a licensed electrical worker to carry out the job duties or be a Professional Engineer or Licensed Electrical Worker. He possesses good interpersonal skills to manage relations with stakeholders. In addition, he has good problem-solving skills to formulate solutions and action plans for safer work practices. Furthermore, he has good sense-making to analyse data for improved initiatives.		
Critical Work Functions and Key Tasks / Performance Expectations	**Critical Work Functions**	**Key Tasks**	**Performance Expectations (For legislated / regulated occupations)***
	Manage construction / installation	Establish construction/installation strategy and methods for electrical equipment, systems and networks	In accordance with: - Electricity Act including subsidiary legislations - Energy Market Authority of Singapore Act - International Electrotechnical Commission (IEC) Standards - International Organization for Standardisation (ISO) Standards - Singapore Standards for Electrical and Power sector - Workplace Safety and Health (WSH) Act * Performance Expectations are non-exhaustive and subject to prevailing regulations and industry standards
		Improve space planning of electrical systems to optimise facilities efficiency	
		Resolve incidences of deviations from design specifications and technical standards using appropriate change plans	
		Provide appropriate solutions for managing construction related issues and mitigating risks	
		Review audit test results on electrical equipment, systems and networks upon completion	
		Lead technical advisory support for installation of electrical equipment, systems and networks	
	Manage commissioning process	Review commissioning scope, schedule and budget	
		Review testing process, procedures and acceptance criteria	
		Lead review of electrical design submittals to ensure compliance with project requirements	
		Lead commissioning checks and tests on installed electrical equipment, systems and networks	
		Formulate actions for rectification of defects, deficiencies and abnormalities	
		Review commissioning report documenting all commissioning activities and findings	
		Recommend systemic solutions to be implemented prior to start-up based on pre start-up safety review (PSSR) findings	
		Lead technical support during handover, initial start-up and ramp-up period	
	Manage key stakeholders / Manage contractors	Represent the agency in inter-agency committees for technical matters, technology discussions and policy decisions	
		Manage relationships with internal and external stakeholders	
		Review tender briefs and technical specifications for electrical and power installation services	
		Lead technical evaluation of tender submissions for electrical and power installation services	
		Review electrical and power installation works done by contractors	
		Evaluate contractor performance and compliance with technical standards and codes of practice	
	Manage health, safety and environment	Recommend action plans to prevent future safety breaches	
		Implement safe work practices for contractors to ensure compliance with statutory requirements and procedures	
		Ensure workplace adherence to relevant sector regulations and codes of practice	
		Manage Permit-To-Work systems for electrical works	
		Review the agency's environmental sustainability practices, policies and procedures	
		Contribute to national energy and power policies, strategies and frameworks to balance economic competitiveness, environmental sustainability, energy security	
		Lead innovation initiatives to leverage new electrical and power technologies	

	Contribute to decarbonisation, decentralisation and digitalisation initiatives	Review feasibility studies and assessments of new electrical and power technologies	
		Lead implementation of green initiatives for application of clean and renewable energy	
		Devise strategies for implementation of distributed power technologies	
		Leverage data analytics to enhance operational and strategic decision-making	

Skills & Competencies	Technical Skills and Competencies		Critical Core Skills	
	Airfield Lighting Systems Management	Level 4	Problem Solving	Advanced
	Battery Systems Management	Level 4	Communication	Advanced
	Business Intelligence and Data Analytics	Level 4	Decision Making	Intermediate
	Continuous Improvement Management	Level 5	Sense-Making	Advanced
	Contract and Contractor Management	Level 4	Collaboration	Advanced
	Cybersecurity Framework Application	Level 4	Developing People	Intermediate
	Distributed Energy Resources Implementation and Interconnection	Level 5	Transdisciplinary Thinking	Intermediate
	Electric Vehicle Charging Systems Management	Level 5	Creative Thinking	Advanced
	Electrical Equipment and Systems Testing	Level 4	Building Diversity	Intermediate
	Emergency Response and Crisis Management	Level 5	Customer Orientation	Advanced
	Energy Storage Systems Management	Level 5	Digital Fluency	Advanced
	Engineering Problem Solving	Level 5	Learning Agility	Intermediate
	Engineering Safety Standards Interpretation	Level 4	Adaptability	Intermediate
	Environmental Sustainability Management	Level 5	Influence	Intermediate
	Equipment and Systems Installation and Commissioning	Level 4	Self Management	Intermediate
	Fuel Cells Technologies Application	Level 5		
	Hybrid AC and DC Power Distribution and Utilisation	Level 5		
	Innovation Management	Level 5		
	Inter-agency Collaboration	Level 5		
	Internet of Things (IoT) Application	Level 5		
	Lifts and Escalators Systems Management	Level 4		
	Lighting Technologies Application	Level 5		
	Lightning Protection Systems Management	Level 4		
	Microgrids Implementation	Level 5		
	Modelling, Simulation and Visualisation	Level 4		
	Policy Development	Level 3		
	Power Engineering Management	Level 5		
	Public Health and Safety Management	Level 5		
	Regulatory Compliance and Risk Management	Level 5		
	Relay and Protection Systems Management	Level 4		
	Renewable Energy Technologies Application	Level 5		
	Robotics and Automation Systems Application	Level 4		
	Smart Grid Implementation	Level 5		
	Solar Photovoltaic Systems Application	Level 5		
	Solid-State Power System Apparatus Implementation	Level 5		
	Stakeholder Management	Level 5		
	Strategy Development	Level 5		

	Substation Automation Systems Management	Level 5	
	Substation Design Management	Level 4	
	Technical Inspection	Level 4	
	Technology Road Mapping	Level 5	
	Traction Power Systems Management	Level 5	
	Uninterrupted Power Supply Management	Level 4	
	Workplace Safety and Health Framework Implementation	Level 5	
Programme Listing	For a list of training programmes available for the Power Engineers in the Public Service, please refer to separate document on training courses.		

The information contained in this document serves as a guide.