

POWER ENGINEERING COMPETENCY FRAMEWORK

SKILLS MAP - Senior Engineer / Engineer (Construction & Commissioning)

Sector	Power Engineering in the Public Service		
Track	Construction & Commissioning		
Occupation	Electrical Engineer		
Job Role	Senior Engineer / Engineer (Construction & Commissioning)		
Job Role Description	<p>The Senior Engineer / Engineer (Construction & Commissioning) is responsible for developing and determining deviations in the construction and installation plans of electrical equipment, systems and networks to resolve potential risks. He/She conducts reviews of electrical design submittals. He develops reports of all commissioning activities.</p> <p>He investigates defects, deficiencies and abnormalities. He also collaborates with internal and external stakeholders and oversees contractors' performance to ensure compliance with technical standards and codes of practice. To prevent safety breaches in the workplace, he leads safety checks and monitors contractors on safe work practices. To drive decarbonisation, decentralisation and digitalisation initiatives, he recommends innovation initiatives and implements green initiatives. 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.</p> <p>He is innovative in developing electrical development plans. In addition, he has good problem-solving skills to resolve potential electrical risks in the development stage. Furthermore, he has leadership skills in leading safety checks on contractors to ensure safe work practices.</p>		
Critical Work Functions and Key Tasks / Performance Expectations	Critical Work Functions	Key Tasks	Performance Expectations (For legislated / regulated occupations)*
	Manage construction / installation	Develop construction sequence and installation plans 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
		Conduct space planning of electrical systems to optimise facilities efficiency	
		Determine deviations from design specifications and technical standards during electrical installation	
		Resolve construction related bottlenecks or issues and mitigate risks	
		Conduct audit tests on electrical equipment, systems and networks upon completion	
		Provide technical advisory support for installation of electrical equipment, systems and networks	
	Manage commissioning process	Define commissioning scope, schedule and budget	
		Develop testing process, procedures and acceptance criteria	
		Conduct review of electrical design submittals to ensure compliance with project requirements	
		Conduct commissioning checks and tests on electrical equipment, systems and networks	
		Investigate defects, deficiencies and abnormalities	
		Develop commissioning report documenting all commissioning activities and findings	
		Conduct pre-start-up safety review (PSSR) to ensure that all necessary pre-conditions for start-up are in place	
		Provide technical support during handover, initial start-up and ramp-up period	
	Manage key stakeholders / Manage contractors	Participate in inter-agency committees for technical matters, technology discussions and policy decisions	
		Collaborate with internal and external stakeholders	
		Formulate tender briefs and technical specifications for electrical and power installation services	
		Conduct technical evaluation of tender submissions for electrical and power installation services	
		Oversee electrical and power installation works done by contractors	
Scrutinise contractor performance and compliance with technical standards and codes of practice			
Manage health, safety and environment	Lead safety checks in the workplace		
	Monitor contractors on safe work practices		
	Monitor workplace adherence to relevant sector regulations and codes of practice		
	Monitor Permit-To-Work systems for electrical works		
	Ensure compliance with the agency's environmental sustainability practices, policies and procedures		
	Recommend innovation initiatives to leverage new electrical and power technologies		
	Conduct feasibility studies and assessments of new electrical and power technologies		

	Contribute to decarbonisation, decentralisation and digitalisation initiatives	Implement green initiatives for application of clean and renewable energy		
		Oversee initiatives for implementation of distributed power technologies		
		Analyse data for identification of operational and strategic insights		
Skills & Competencies	Technical Skills and Competencies		Critical Core Skills	
	Airfield Lighting Systems Management	Level 3	Problem Solving	Intermediate
	Battery Systems Management	Level 3	Communication	Intermediate
	Business Intelligence and Data Analytics	Level 3	Sense-Making	Intermediate
	Continuous Improvement Management	Level 4	Collaboration	Intermediate
	Contract and Contractor Management	Level 3	Creative Thinking	Intermediate
	Cybersecurity Framework Application	Level 3	Decision Making	Basic
	Distributed Energy Resources Implementation and Interconnection	Level 4	Developing People	Basic
	Electric Vehicle Charging Systems Management	Level 4	Digital Fluency	Intermediate
	Electrical Equipment and Systems Testing	Level 4	Transdisciplinary Thinking	Basic
	Emergency Response and Crisis Management	Level 4	Customer Orientation	Intermediate
	Energy Storage Systems Management	Level 4	Building Diversity	Basic
	Engineering Problem Solving	Level 4	Learning Agility	Basic
	Engineering Safety Standards Interpretation	Level 4	Adaptability	Intermediate
	Environmental Sustainability Management	Level 4	Influence	Intermediate
	Equipment and Systems Installation and Commissioning	Level 3	Self Management	Intermediate
	Fuel Cells Technologies Application	Level 4		
	Hybrid AC and DC Power Distribution and Utilisation	Level 4		
	Innovation Management	Level 4		
	Inter-agency Collaboration	Level 4		
	Internet of Things (IoT) Application	Level 4		
	Lifts and Escalators Systems Management	Level 3		
	Lighting Technologies Application	Level 4		
	Lightning Protection Systems Management	Level 3		
	Microgrids Implementation	Level 4		
	Modelling, Simulation and Visualisation	Level 3		
	Power Engineering Management	Level 4		
	Regulatory Compliance and Risk Management	Level 4		
	Relay and Protection Systems Management	Level 3		
	Renewable Energy Technologies Application	Level 4		
	Robotics and Automation Systems Application	Level 3		
	Smart Grid Implementation	Level 4		
	Solar Photovoltaic Systems Application	Level 4		
Solid-State Power System Apparatus Implementation	Level 4			
Stakeholder Management	Level 4			
Strategy Development	Level 4			
Substation Automation Systems Management	Level 4			
Substation Design Management	Level 3			
Technical Inspection	Level 3			

	Technology and Systems Application	Level 4	
	Traction Power Systems Management	Level 4	
	Uninterrupted Power Supply Management	Level 3	
	Workplace Safety and Health Framework Implementation	Level 4	
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.