

POWER ENGINEERING COMPETENCY FRAMEWORK			
SKILLS MAP - Senior Engineer / Engineer (Design)			
Sector	Power Engineering in the Public Service		
Track	Design		
Occupation	Electrical Engineer		
Job Role	Senior Engineer / Engineer (Design)		
Job Role Description	<p>The Senior Engineer / Engineer (Design) is responsible for developing design briefs specifying scope of work, electrical and power requirements and engineering standards and conceptual design for equipment, systems and networks. He/She conducts site surveys, investigations, feasibility reviews and simulations and identifies foreseeable risks during design and planning phase. He conducts design reviews and ensures conformance to agency standards and industry regulations. He also conducts constructability, maintainability and safety reviews for electrical designs. He provides technical guidance to close design and engineering gaps to improve quality and efficiency of electrical systems.</p> <p>He also formulates tender briefs and technical specifications for design services and conduct technical evaluation of tender submissions. He scrutinises contractor performance and compliance. In addition, he conducts Design for Safety (DfS) review meetings with stakeholders and ensures compliance with the agency's environmental sustainability 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 possesses design-thinking, problem-solving and critical-thinking skills. He is well versed with agency and industry standards, and participates in inter-agency committees for technical matters, technology discussions and policy decisions.</p>		
Critical Work Functions and Key Tasks / Performance Expectations	Critical Work Functions	Key Tasks	Performance Expectations (For legislated / regulated occupations)*
	Design electrical equipment, systems and networks	Develop design brief specifying scope of work, electrical and power requirements and engineering standards	<ul style="list-style-type: none"> 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
		Update engineering standards for electrical designs	
		Conduct site surveys, investigations, feasibility reviews and simulations prior to conceptual design	
		Develop conceptual design of electrical equipment, systems and networks	
		Provide inputs for detailed design including schematics, technical specifications, test plans, and material requisition	
		Provide technical advice and guidance for electrical systems development	
		Identify and eliminate foreseeable risks during design and planning phase	
	Conduct design reviews for electrical equipment, systems and networks	Conduct reviews of conceptual and detailed design for electrical equipment, systems and networks	<ul style="list-style-type: none"> * Performance Expectations are non-exhaustive and subject to prevailing regulations and industry standards
		Review electrical designs to ensure fulfilment of agency standards, objectives and requirements	
		Review conformance of electrical designs to industry regulations, codes of practice and safety standards	
		Conduct constructability, maintainability and safety reviews for electrical designs	
		Highlight design and engineering gaps to improve quality and efficiency of electrical equipment, systems and networks	
	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 design services	
		Conduct technical evaluation of tender submissions for electrical and power design services	
		Oversee electrical and power design works done by contractors	
		Scrutinise contractor performance and compliance with technical standards and codes of practice	
	Manage health, safety and environment	Conduct Design for Safety (DfS) review meetings with stakeholders	
		Monitor contractors on safe work practices	
		Monitor workplace adherence to relevant sector regulations and codes of practice	
		Ensure compliance with the agency's environmental sustainability practices, policies and procedures	
	Contribute to decarbonisation, decentralisation and digitalisation initiatives	Keep abreast of national energy and power policies, strategies and frameworks	
		Recommend innovation initiatives to leverage new electrical and power technologies	
		Conduct feasibility studies and assessments of new electrical and power technologies	
		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	Sense-Making	Intermediate
Battery Systems Management	Level 3	Problem Solving	Intermediate	
Business Intelligence and Data Analytics	Level 3	Collaboration	Intermediate	
Continuous Improvement Management	Level 4	Communication	Intermediate	
Contract and Contractor Management	Level 3	Decision Making	Basic	
Cybersecurity Framework Application	Level 3	Creative Thinking	Intermediate	
Distributed Energy Resources Implementation and Interconnection	Level 4	Transdisciplinary Thinking	Basic	
Electric Vehicle Charging Systems Management	Level 4	Customer Orientation	Intermediate	
Electrical Equipment and Systems Testing	Level 4	Digital Fluency	Intermediate	
Electrical Systems Design	Level 3	Developing People	Basic	
Electricity Network Planning	Level 3	Building Diversity	Basic	
Emergency Response and Crisis Management	Level 4	Learning Agility	Basic	
Energy Storage Systems Management	Level 4	Adaptability	Intermediate	
Engineering Asset Management	Level 3	Influence	Intermediate	
Engineering Problem Solving	Level 4	Self Management	Intermediate	
Engineering Safety Standards Interpretation	Level 4			
Environmental Sustainability Management	Level 4			
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			
Predictive Maintenance Management	Level 3			
Regulatory Compliance and Risk Management	Level 4			
Relay and Protection Systems Management	Level 3			
Reliability Centred Maintenance 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			

	Technology and Systems Application	Level 4	
	Traction Power Systems Management	Level 4	
	Uninterrupted Power Supply Management	Level 3	
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.