

POWER ENGINEERING COMPETENCY FRAMEWORK			
SKILLS MAP - Senior Principal Engineer / Principal Engineer (Operations & Maintenance)			
Sector	Power Engineering in the Public Service		
Track	Operations & Maintenance		
Occupation	Electrical Engineer		
Job Role	Senior Principal Engineer / Principal Engineer (Operations & Maintenance)		
Job Role Description	<p>The Senior Principal Engineer / Principal Engineer (Operations &amp; Maintenance) is responsible for planning and managing preventive and corrective maintenance works including fault analysis, testing, investigation of power failures and fault repair for low voltage electrical equipment and systems. He/She provides technical leadership in the operations and maintenance of electrical equipment and systems. He implements obsolescence management and asset management plans and leads inspection of electrical equipment for all plants.</p> <p>He reviews the contract terms for the hiring of contractors and evaluates their work performance, while reviewing compliance with technical standards, codes of practice and safety standards. 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.</p> <p>He is detail-oriented and systematic in planning maintenance procedures, and has foresight in identifying trends and new solutions to adopt. Furthermore, he contributes to national energy and power policies, strategies and frameworks to balance economic competitiveness, environmental sustainability, energy security.</p>		
Critical Work Functions and Key Tasks / Performance Expectations	Critical Work Functions	Key Tasks	Performance Expectations (For legislated / regulated occupations)*
	Manage operations and maintenance	Plan preventive and corrective maintenance works on electrical equipment, systems and networks in accordance with maintenance schedule and procedures	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
		Lead complex fault analysis and testing, and technical recovery of electrical equipment, systems and networks	
		Review investigation reports to provide recommendations to restore power failures and electrical equipment performance	
		Provide technical guidance for complex fault repair work for electrical equipment and systems	
		Review inspection and maintenance documentation	
	Manage power assets	Lead inspection of electrical equipment to ensure compliance with organisation's Standard Operating Procedures (SOP) and requirements	
		Implement obsolescence management and asset renewal and replacement plans to ensure equipment reliability and availability	
		Monitor inventory levels of electrical equipment and components as per organisation's policies and procedures	
		Manage condition monitoring works on electrical equipment and systems	
	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 operations and maintenance services	
		Lead technical evaluation of tender submissions for electrical and power operations and maintenance services	
		Review electrical and power operations and maintenance works done by contractors	
		Evaluate contractor performance and compliance with technical standards and codes of practice	
	Manage safety, health 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 decarbonisation, decentralisation and digitalisation initiatives	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		
	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

Business Intelligence and Data Analytics	Level 4	Problem Solving	Advanced
Continuous Improvement Management	Level 5	Decision Making	Intermediate
Contract and Contractor Management	Level 4	Communication	Advanced
Corrective Maintenance Management	Level 4	Sense-Making	Advanced
Cybersecurity Framework Application	Level 4	Collaboration	Advanced
Demand Response Management	Level 5	Creative Thinking	Advanced
Distributed Energy Resources Implementation and Interconnection	Level 5	Developing People	Intermediate
Distributed Generation System Performance Monitoring	Level 4	Customer Orientation	Advanced
Electric Vehicle Charging Systems Management	Level 5	Transdisciplinary Thinking	Intermediate
Electrical Equipment and Systems Testing	Level 4	Building Diversity	Intermediate
Electrical Maintenance Management	Level 4	Digital Fluency	Advanced
Electricity Network Incident Management	Level 4	Learning Agility	Intermediate
Electricity Network Operations Management	Level 4	Adaptability	Intermediate
Electricity Network Performance Monitoring	Level 4	Influence	Intermediate
Emergency Response and Crisis Management	Level 5	Self Management	Intermediate
Energy Storage Systems Management	Level 5		
Engineering Asset Management	Level 4		
Engineering Problem Solving	Level 5		
Engineering Safety Standards Interpretation	Level 4		
Environmental Sustainability Management	Level 5		
Facilities Maintenance Management	Level 4		
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		
Lighting Technologies Application	Level 5		
Microgrids Implementation	Level 5		
Modelling, Simulation and Visualisation	Level 4		
Policy Development	Level 3		
Power Engineering Management	Level 5		
Power Plant Incident Investigation	Level 4		
Power Plant Inspection	Level 4		
Power Plant Operations Management	Level 5		
Power Quality Management	Level 5		
Predictive Maintenance Management	Level 4		
Preventive Maintenance Management	Level 4		
Public Health and Safety Management	Level 5		
Regulatory Compliance and Risk Management	Level 5		
Reliability Centred Maintenance 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	
	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	
<b>Programme Listing</b>	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.