

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

<b>TSC Category</b>	Decarbonisation					
<b>TSC Title</b>	Electric Vehicle Charging Systems Management					
<b>TSC Description</b>	Manage charging systems for electric vehicles with a good understanding of the technical, safety, operational and maintenance issues					
<b>TSC Proficiency Description</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>	<b>Level 6</b>
				<b>&lt;Insert TSC Code&gt;</b>	<b>&lt;Insert TSC Code&gt;</b>	<b>&lt;Insert TSC Code&gt;</b>
				Apply knowledge of power engineering in tender specification and project management for electric vehicle charging systems	Evaluate electric vehicle charging system technologies taking into consideration technical, safety, economic and operational issues	Review procedures and performance standards for electric vehicle charging systems, with a long-term overview of Singapore's energy policy and power infrastructure
<b>Knowledge</b>				<ul style="list-style-type: none"> <li>• Low voltage power distribution system</li> <li>• Power electronic AC/DC and DC/AC conversion circuits</li> <li>• Alternate-current (AC) charging, DC fast charging (DCFC)</li> <li>• Vehicle on-board charger</li> <li>• Types of charging stations and their maintenance</li> <li>• Grid-to-vehicle (G2V) power flow converter configuration</li> <li>• Technical requirements of G2V power flow charging stations</li> <li>• Testing and commissioning requirements for electric vehicle charging infrastructure</li> <li>• Types of battery systems and their performance</li> <li>• Relevant regulations, industry standards,</li> </ul>	<ul style="list-style-type: none"> <li>• Low voltage power distribution system</li> <li>• Power electronic conversion circuits and interaction with power grids</li> <li>• Types of battery systems</li> <li>• Charging and discharging cycles on battery life</li> <li>• Considerations for site planning of charging stations</li> <li>• Best-in-class charging systems that are scalable, safe and simple to use</li> <li>• Simulation studies testing and commissioning of electric vehicle charging infrastructure</li> <li>• Smart metering</li> <li>• Interoperability of charging systems for different types of electric vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Low voltage power distribution system</li> <li>• Government incentives to promote electric vehicles and their infrastructure</li> <li>• Operation and maintenance of electric vehicle charging infrastructure</li> <li>• Trends and best practices in battery systems</li> <li>• Trends and best practices in electric vehicle charging infrastructure</li> <li>• Integrating electric vehicle infrastructure with distributed generation</li> <li>• Relevant regulations, industry standards, codes of practice and safety procedures</li> </ul>

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				codes of practice and safety procedures	<ul style="list-style-type: none"> <li>Relevant regulations, industry standards, codes of practice and safety procedures</li> </ul>	
<b>Abilities</b>				<ul style="list-style-type: none"> <li>Supervise building of electric vehicle charging infrastructure</li> <li>Inspect contractor projects for compliance with regulatory requirements and safety standards</li> <li>Witness testing and measurement on electric vehicle installations</li> <li>Interpret testing and measurement data for compliance with performance requirements of G2V energy flow metering</li> <li>Oversee electric vehicle charging stations</li> <li>Review regulatory requirements of vehicle electrification infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate and choose suitable electric vehicle charging technologies for projects</li> <li>Evaluate and adopt best-in-class charging systems that are scalable, safe and simple to use</li> <li>Evaluate and approve contractor proposals for electric vehicle charging stations</li> <li>Review simulation studies on charging station designs</li> <li>Review system configuration designs of charging stations</li> <li>Analyse impacts of electric vehicle charging infrastructure on power supply quality and reliability</li> <li>Identify challenges and provide optimal solution</li> </ul>	<ul style="list-style-type: none"> <li>Monitor and evaluate trends in electric vehicle adoption</li> <li>Identify government incentives to promote electric vehicles</li> <li>Identify technical requirements and performance standards for electric vehicle charging infrastructure</li> <li>Collaborate with stakeholders to build electric vehicle charging infrastructure to drive increased adoption</li> <li>Plan optimum locations for public charging stations</li> <li>Manage the operation and maintenance of charging stations</li> <li>Coordinate electric vehicle charging infrastructure with Singapore's energy policy and power grid infrastructure</li> </ul>