

Powering the Future for Singapore's Energy Transition

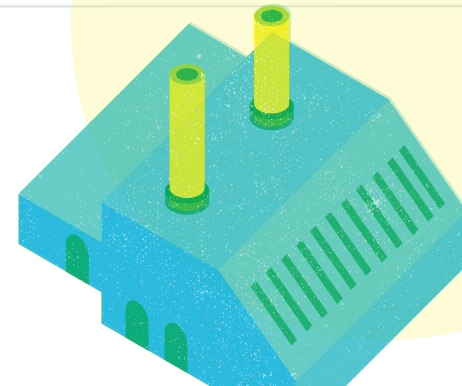
Singapore's energy sector is transforming rapidly as the nation powers towards a sustainable, digital and resilient future. The refreshed Clean Energy Jobs-Skills Insight spotlights emerging areas of work, jobs and skills across energy sub sectors showcasing how new technologies are redefining roles and unlocking new career opportunities for the workforce.



Power Generation

Beyond Conventional Thermal Generation

The **Power Generation sub sector** is evolving towards the potential adoption of low-carbon alternatives for electricity generation. Potential new capabilities are needed for **harnessing and handling these alternative energies, operations & maintenance, and safety.**



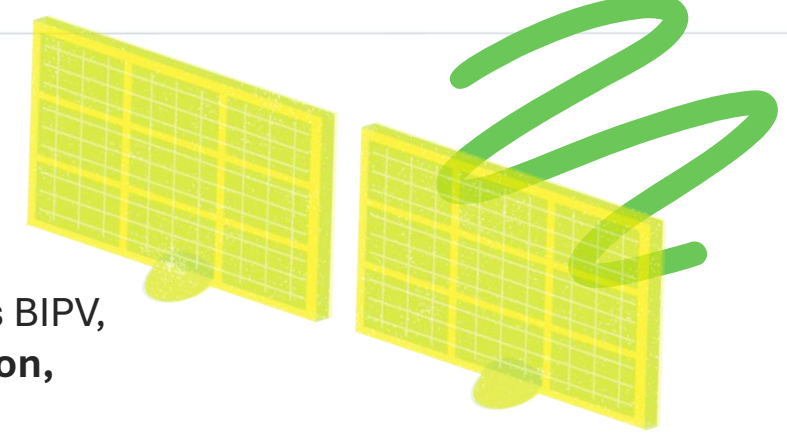
Emerging Areas of Work*	Potential Skills	Potential Job Roles
 Geothermal Assess geothermal resources and develop and operate geothermal energy systems	• Geothermal Energy Research & Development, Extraction, Transportation & Storage • Plant Installation, Operation & Maintenance	Geothermal Drilling Engineer Geothermal Engineer Geothermal Plant Technician
 Biomethane Support biomethane handling, integration and use in existing gas and power systems	• Anaerobic digestion & biogas production • Gas upgrading & purification • Operations, maintenance & safety • Feedstock management & logistics • Gas infrastructure & power systems integration	Anaerobic Digestion / Waste-to-Energy Engineer Gas Upgrading / Processing Engineer Biomethane Plant Operations Technician Feedstock & Waste Supply Chain Specialist
 Hydrogen Engineering Safely manage hydrogen & maintain auxiliary equipment for hydrogen-ready plants	• Hydrogen System Maintenance & Inspection • Hydrogen Handling • Hydrogen Plant Safety	In Multi-Utility Operations: Team Leader, Engineer, Senior/Technical Officer, Technician In Engineering and Maintenance: Manager, Principal/Engineer, Senior/ Technical Officer, Technician

* Studies are underway to explore the feasibility and integration of low-carbon fuels and technologies.

Distributed Generation

Advancing Solar Innovation

As **solar PV deployment** expands beyond conventional rooftops to applications such as BIPV, specialised capabilities are emerging in **system design, asset performance optimisation, and AI-enabled monitoring.**



Emerging Areas of Work



Solar PV Design & Engineering

Design solar PV systems, including innovative deployments beyond conventional rooftop installation



Solar PV Asset Performance Engineering

Optimise solar PV performance through data-driven maintenance and analytics

Skills in Demand

- Solar Photovoltaic Systems Design
- **NEW** Glare Analysis
- **NEW** Materials Science & Engineering

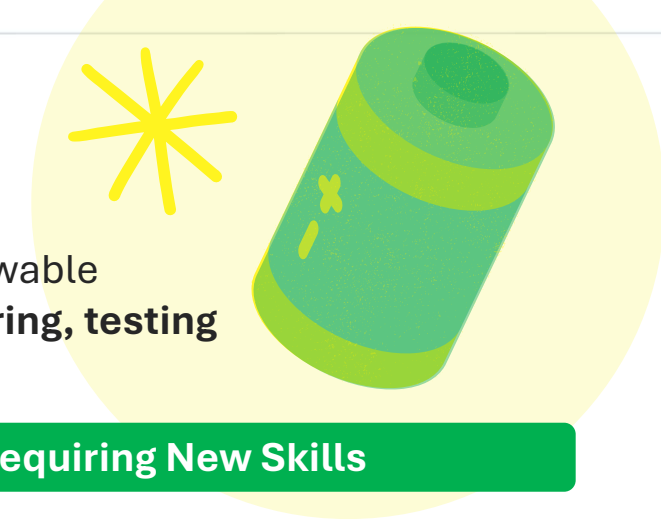
- Asset Management & Monitoring of Distributed Generation Systems
- AI Application
- Solar Photovoltaic Systems Design

Job Roles Requiring New Skills

NEW Solar PV Design Engineer

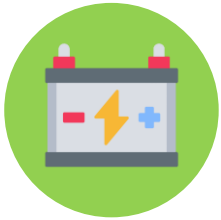
Solar PV Asset Performance Engineer

Distributed Generation Scaling Energy Storage System Deployment



As **Battery Energy Storage Systems (BESS)** become increasingly important for supporting renewable energy penetration, niche jobs and skills will emerge in the areas of **asset performance monitoring, testing and diagnostics, and battery technology development.**

Emerging Areas of Work



BESS Asset Performance & Monitoring

Monitor system performance, detect faults early and optimise asset reliability



Battery Testing, Inspection & Certification

Test, inspect and certify BESS fit for utilisation



Battery Technology and R&D

Develop and evaluate advanced battery technologies, materials and applications

Skills in Demand

- Asset Management & Monitoring of Distributed Generation Systems

- Battery & Energy Storage System Testing & Diagnostic

- **NEW** Materials Science & Engineering (BESS)

Job Roles Requiring New Skills

BESS Specialist*

BESS Engineer

BESS Quality Assurance & Certification Engineer

BESS Test & Commissioning Engineer

BESS Engineer

BESS BMS R&D Engineer

BESS Electrochemistry R&D Engineer

BESS Mechanical & Materials R&D Engineer

* The BESS Specialist role may encompass the BESS Engineer, Testing & Commissioning, and QA & Certification functions.

Electricity Transmission & Distribution

Electricity Imports

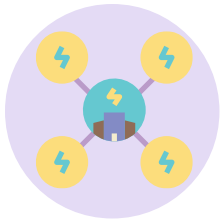
To support **cross-border electricity imports**, new capabilities are emerging in **project technical assessment**, **power system integration**, **sub-sea cable engineering**, and **commercial functions**.

Emerging Areas of Work



Electricity Imports (EI) Project Development

Develop & manage import projects from project planning to commercial arrangements



Cross-Border Power System Integration

Assess & integrate new electricity import pathways into Singapore's power system



Sub-sea Interconnector Engineering

Design, deploy & maintain cable infrastructure that enables cross-border electricity imports

New Skills in Demand

- **NEW** Electricity Imports Markets & Regulatory Analysis
- **NEW** Electricity Imports Technical Feasibility Assessment

- **NEW** Cross-Border Power System Integration

- Sub-sea Engineering Management

Job Roles Requiring New Skills

Lead Engineer
Technical Feasibility Engineer
NEW Project Manager (EI)
NEW Commercial Manager (EI)

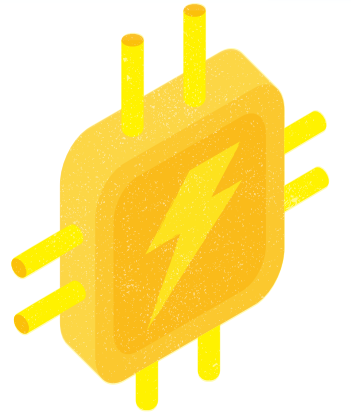
Lead Engineer
Technical Feasibility Engineer

Lead Engineer
NEW Cable Infrastructure Manager
NEW Sub-sea Power Cable Engineer

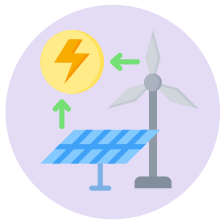
Electricity Transmission & Distribution

Traditional / Smart Grid

As the grid becomes smarter and more connected, new capabilities are needed to **monitor and control the network in real time, integrate distributed energy resources, and manage growing volumes of data securely.**



Emerging Areas of Work



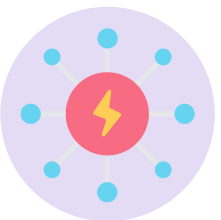
Smart Grid Design

Design architecture & develop grid-edge connectivity solutions for the smart grid



Real-Time Grid Monitoring & Control

Monitor, control & optimise the grid in real-time using automated & data-driven systems



Distributed Energy Resource (DER) Integration

Integrate, aggregate & control multi-site DERs while maintaining grid reliability & market participation

Skills in Demand

- **NEW** Smart Grid Systems Engineering
- Business Intelligence & Data Analytics
- Cyber Incident Management

- **NEW** SCADA Systems Engineering
- Business Intelligence & Data Analytics
- Cyber Incident Management

- **NEW** DER Integration & Management
- **NEW** Renewable Energy Grid Integration

Job Roles Requiring New Skills

NEW Smart Grid Architect

Smart Grid Edge Connectivity & Solution Engineer

NEW SCADA, EMS & ADMS Engineer

NEW Distributed Energy Resource Specialist

Emerging Roles Across Power Sector

Where Energy and Information Technology Intersect

Digitalisation and AI automation are creating **cross-sector roles in data, software, cybersecurity and solutions engineering** to improve performance, strengthen resilience and support more integrated energy systems.

Emerging Areas of Work



AI & Analytics

Use AI and advanced data to improve forecasting, optimisation and predictive maintenance



Digital Systems & Cybersecurity

Develop secure digital platforms & automated systems that support reliable energy operations



Integrated Energy Solutions

Design & integrate solutions across power systems, renewables & digital platforms

Skills in Demand

- AI Application
- **NEW** Advanced Data Engineering
- **NEW** AI Automation Engineering

- AI Application
- **NEW** AI-Enabled Validation
- **NEW** AI Automation Engineering
- Cyber Incident Management

- AI Application
- **NEW** Renewable Energy Grid Integration
- **NEW** DER Integration & Management

Emerging Jobs in Power Sector

NEW Data Analyst
NEW Digital Twin Specialist
Optimisation Engineer

NEW Software Engineer
NEW Cybersecurity Specialist

NEW Solutions Architect
Power System Engineer

Ready to Power your Career?

Singapore's energy transition presents emerging opportunities for career growth and professional development. Whether you're a recent graduate, experienced professional, or considering a career change, the energy sector offers diverse pathways to contribute to our nation's sustainable future.

Visit [Powering Lives](#) to discover:

- Sector overview and industry insights
- Networking events and professional development resources

Discover more about the sector:

- The [Skills Framework for Energy & Power](#) to identify in-demand skills and career opportunities
- [Training programmes and courses](#) that will help you upskill and stay future-ready