

Report to the CIGRE Australian Technical Council

Study Committee SC 1 and Australian Panel AU C1 Activities



Christian Schaefer
Convenor CIGRE AU C1
AU C1 Report 2025
christian.schaefer@ghd.com



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For power system expertise

C1

Power system
development and
economics



Energy Demand



SC C1 Overview

Study Committee Scope

The scope of Study Committee C1 is to study economic and system analysis methods important for the development of power systems and to assist utilities to find the best solutions in various evolving, competitive and unbundled conditions in the context of the overall energy supply system and with social and environmental considerations.

Specific Areas of interest for SC C1 :

- Methods and tools for power system analysis
- New approaches to power system planning
- Capacity expansion using risk-based assessment
- Impact of pricing for transmission services on system development
- Asset management strategies
- Long distance transmission and international interconnection
- System planning issues in developing networks
- New generation and DSM solutions and technologies

Australian Panel C1

- 24 Members from transmission and distribution businesses, System Operators, Engineering consultancies, and NGN
- Both Australian & NZ representation.

SC C1 Overview

Four Study Areas

- **Grid Planning & System Development**
- **Business & Economics**
- **Interconnections & Sector Integration**
- **Asset Management**

Ref.	Title	Convenor/ Lead
C1. SAG	Strategy Discuss, propose and fine-tune SC strategy. Coordinate all WGs for the C1 strategic goals.	Antonio Iliceto (Italy)
	• System Planning Grid planning and power system development	Ronald Marais (South Africa)
	• Asset Management Maintenance philosophies, asset planning, securisation and optimisation of asset management	Graeme Ancell (New Zealand)
	• Business & Economics Projects assessment, business environment + its impact on investment in the power system	Chongqing Kang (China)
	• Interconnections – Horizontal, Vertical Spanning from macro grids (HV large scale interconnections) to micro grids, TSO-DSO integrated and smart grid planning; sector coupling	Juan Carlos Araneda (Chile)
	• Education and Tutorials Organisation of tutorials as required.	Keith Bell (UK)

SC C1 2026 Proposed Preferential subjects

PS1: Holistic Planning of an Integrated Energy System for the Energy Transition

*Interconnections &
System Integration*

- Sustainable scenarios encompassing Gases, Heat, Mobility, IT (Data Centers) as loads and as flexibility resources.
- Planning methodologies and modelling targeting Net Zero while ensuring adequacy of resources and increased resilience.
- Prioritisation of Asset Management Plan and allocation of capital, including role of private investments in Transmission Networks.

PS2: Strategic investment decisions in the context of the energy transition

*Grid Planning &
System Development*

- Optimal portfolio mix of transmission, generation, storage, and non-wire solutions for ensuring adequacy, resilience and flexibility, and relevant governance framework.
- Investment economics and Risk Analysis in the New Energy Landscape.
- Sustainable Asset Management Practices, especially for aging infrastructures.

PS3: Planning in the Cyber-Physical System

*Asset Management &
Economics*

- Impact of digitalisation of Power System Planning: role of Artificial Intelligence, digital twins, big data.
- Integration of Physical, Cyber, and Electrical security with Asset Management techniques.
- Case studies of successful applications of modelling and digital tools in power system planning.

C1 2025 Publications and activities

Record number of WG underway!

- C1.33: Interface and allocation issues in multi-party and/or cross-jurisdiction power infrastructure projects
- C1/C6.42: Planning tools and methods for systems facing high levels of distributed resourcing
- C1.45: Harmonized metrics and consistent methodology for benefits assessment in Cost Benefit Analysis of electric interconnection projects
- C1/C4.46: Optimizing power system resilience
- C1.49: Offshore transmission planning
- C1.50: Global sustainable energy systems coupling electricity and hydrogen
- C1.52: Virtual Large Power Plants: role and deployment in large power systems' operation and planning
- C1/C5.53: Demand Forecast
- C1.54: Assessment of system reserves and flexibility needs in power systems of the future
- C1.55 Survey on Asset Management practices
- C1.56: Benchmarking the use of asset investment planning practices/systems
- C1.57: EV charging infrastructure impact on grids
- C1.58: VSC-HCDC transmission system planning
- [Draft TOR] C1.59: Power-heat sector integration
- C1.60: Multi-domain Co-optimisation of flexible resources for High-RES systems
- B2/C1.86: Approach for Asset Management of Overhead Transmission Lines

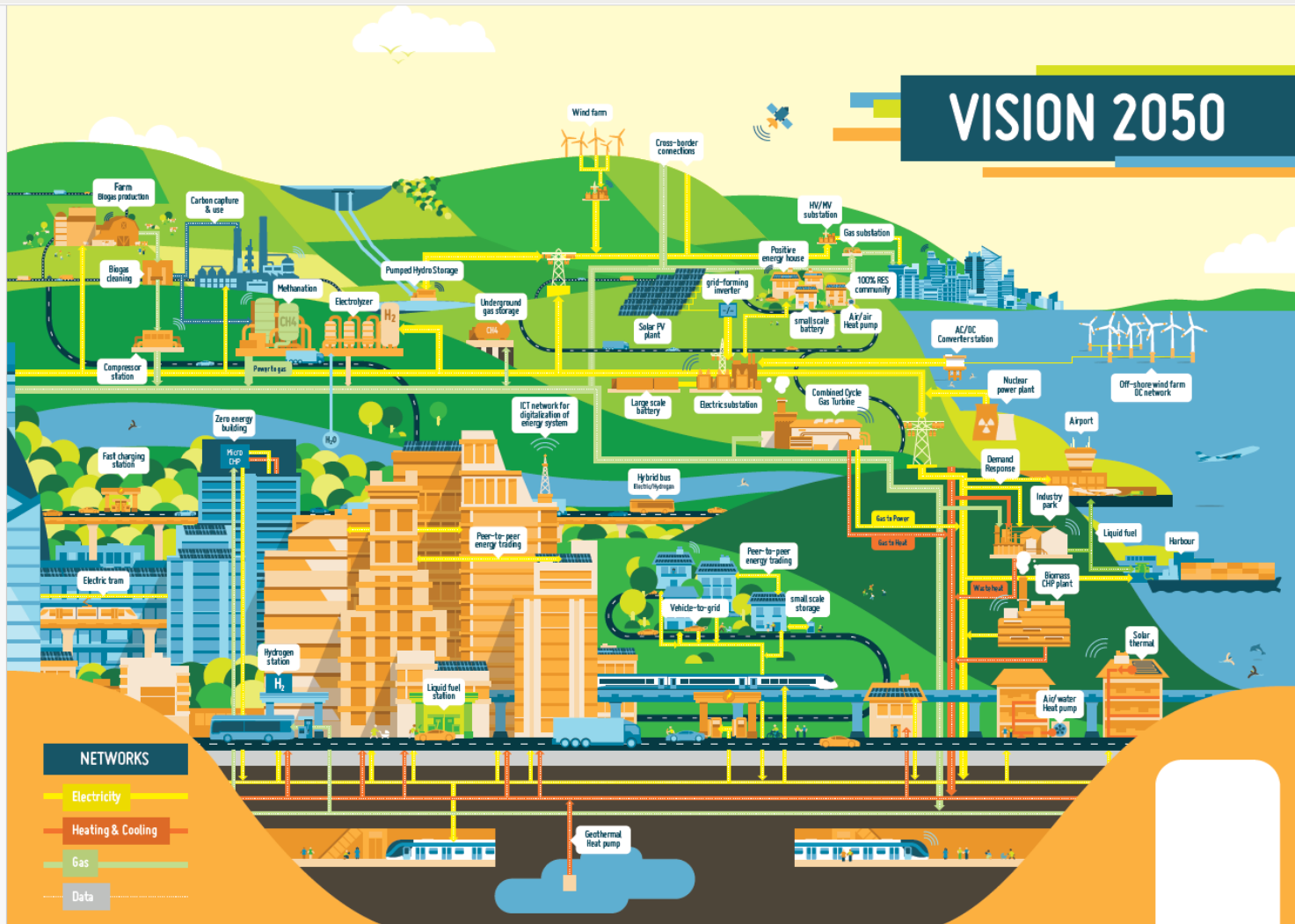
Publications in 2025

- C1.23: Transmission investment decision points and trees
- C1.44: Global Interconnected and sustainable electricity system – effects of storage, demand response and trading rules
- C1.48: Role of green hydrogen in energy transition
- C1.51: The potential roles of energy storage in electric power systems

In process of publication for 2025/26

- C1.47: Energy Sectors Integration and impact on power grids

C1 reimaged



- C1 recognises the interconnectivity of our energy ecosystem
- The source of our future energy will likely be as diverse as our end uses from the physical to the cybersocial.
- Success starts with a plan, a plan that is adaptable and flexible, recognising uncertainty as well as opportunity.
- C1 is here for the long haul!

The year gone and looking ahead

- AU C1 held three virtual meetings in 2025, as well as a face-to-face gathering in March 2025 at Transgrid's head offices in Sydney – despite cyclone Alfred's best efforts to ground flights! The March event was topped off by a visit to TransGrid's 330 kV underground substation with our own Kevin Hinkley providing the AU C1 committee with a guided tour.
- Group activities focused on discussions and review of key planning topics from an Australian perspective, including:
 - Planning under uncertainty
 - Planning standards
 - Social licensing and its impact on network development
 - Impact of new technologies on the planning process
 - Role of planning in managing the energy transition
 - Electrification and its impact on the power system
 - Carbon quantification in early energy infrastructure planning and decision making



The year ahead!

AU C1 FOCUS IN 2026:

- Handover of AU C1 chair to incoming convener Mark Parker
- Development of a summary paper of an Australian reflection of planning related topics such:
social licencing, integrated planning, impact of new technologies, electrification, role of planning in energy transition, planning standards, carbon quantification
- Expand the membership and develop paper contributions ahead of the Paris 2026 event.
- Encourage increased Australian representation in commencing C1 WGs
- AU C1 members to reconnect for whole day engagement at next face to face meeting in mid-2026

THANK YOU



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