



# Battery Storage Facilities – Guidance for Local Government

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## Purpose

The Queensland Government is committed to a clean, reliable and affordable energy system to provide power for generations. This system must include a range of energy storage infrastructure, including battery storage facilities.

This guidance will help to ensure local planning schemes are drafted to appropriately regulate battery storage facilities in Queensland.

## Queensland's energy policy

The Queensland Government released the *Queensland Energy and Jobs Plan* (the Plan) in September 2022. The Plan charts a path for the transformation of Queensland's energy system from a reliance on fossil fuel to renewable generation to achieve Queensland's 80 per cent renewable energy target by 2035.

A key part of this transformation is the provision of energy storage for times when the wind isn't blowing, and the sun isn't shining. Modelling undertaken for the Plan indicates a requirement for at least 6,000 megawatts of long-duration energy storage complemented by up to 3,000 megawatts of grid-scale energy storage. This grid-scale energy storage is anticipated to be largely comprised of battery storage facilities which is a relatively new development type in Queensland.

Battery storage facilities store excess electricity generated from co-located generation sources or the wider electricity grid and distribute it back into the network during times of peak demand and higher electricity prices. This is a concept known as arbitrage and relies on fluctuations in energy supply and demand. Batteries can improve the efficiency of the energy system and keep prices low by better integrating variable renewable infrastructure. These facilities primarily provide energy system reliability and technological advances are improving their ability to provide system security.

The Queensland Government is developing an Energy Storage Strategy for release in 2024 under action 1.3 of the Plan. This strategy will outline Queensland's storage and firming infrastructure needs and encourage private sector investment in storage and firming capacity to maintain a reliable and resilient electricity system through the energy transformation. This strategy will focus on how much storage the energy system needs, including consideration of energy storage targets.

## Queensland's land use planning framework

Queensland has a land use planning framework under the *Planning Act 2016* that is designed to be fair, balanced, transparent, and accountable whilst balancing the need to be efficient and effective for proponents and the broader community.

In light of the release of the Plan and to ensure Queensland's planning framework remains contemporary, recent changes to the Planning Regulation 2017 (Planning Regulation) have been made to provide for the development of battery storage facilities.

This guidance is intended to assist local governments to ensure local planning schemes are drafted to appropriately regulate battery storage facilities in Queensland.

# About battery storage facilities

Batteries can store excess electricity generated from renewable sources during daylight hours and distribute it back into the network during the peak demand periods. Batteries provide economic benefits right across Queensland and support energy security and reliability. Battery energy storage technologies include:

- Lead-acid batteries
- Flow batteries
- Lithium-ion batteries

Battery storage facilities can take many different forms, varying in size, technology type and capacity, ranging from small systems for households, small businesses or communities; large battery storage devices used for larger businesses and industry, through to grid-scale systems operated by electricity generators and network providers as part of the transmission grid or distribution network. In some cases, they are co-located with substation infrastructure.

Battery storage facilities as a modular development type have relatively few site-based limitations. Proximity to grid locations and/or energy supply sources do however improve development commerciality. The development footprint depends on the amount of planned storage, measured in megawatts (MW). Because they are modular, batteries can be designed to a range of different scales and land use configurations. For example, at the time of construction the 100 MW Hornsdale battery storage facility in South Australia had a development footprint of about a hectare – equivalent to around 100m<sup>2</sup>/MW. Due to their modular nature construction times are also generally short (often around 12 months).<sup>1</sup>

As a land use, battery storage facilities are comparable to the energy storage infrastructure of existing substations and utility installations. Development for battery storage facilities generally has the following characteristics:

- flat, mostly cleared land (i.e. concrete or gravel pad)
- low building height (generally less than a single storey dwelling)
- proximate to transmission grid or distribution network connections
- well graded, wide vehicular access.

Examples of battery storage facilities include:



**Figure 1:** A pad mounted battery storage facility,  
Source: Yarra Energy Foundation, Sydney



**Figure 2:** A pad mounted battery storage facility,  
Source: Ausgrid, Sydney

<sup>1</sup> GHD (2018), AEMO cost and technical parameter review, Report Final Rev 4, p. 71. Available at: [https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning\\_and\\_Forecasting/Inputs-Assumptions-Methodologies/2019/9110715-REP-A-Cost-and-Technical-Parameter-Review---Rev-4-Final.pdf](https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/Inputs-Assumptions-Methodologies/2019/9110715-REP-A-Cost-and-Technical-Parameter-Review---Rev-4-Final.pdf)



**Figure 3:** Battery storage facility involving a premises for the operation of more than one battery storage device.



**Figure 4:** A pole mounted battery storage facility,  
Source: Energy Queensland

# Planning regulatory framework

## Planning Act 2016

The development of 'battery storage facilities' advances the purpose of the Planning Act under section 5 (c) and (h):

- (c) promoting the sustainable use of renewable and non-renewable natural resources, including biological, **energy**, extractive, land and water resources that contribute to economic development through employment creation and wealth generation
- (h) supplying infrastructure in a coordinated, efficient, and orderly way.

## Planning Regulation 2017

### Definitions

The Planning Regulation sets out the only land use terms that may be adopted in local planning schemes in Schedule 3. These are complemented by the use terms definitions in Schedule 24 of the Planning Regulation.

Schedule 3 includes the use term 'battery storage facility'.

Schedule 24 includes the following definitions:

**Battery storage facility** means the use of premises for the operation of 1 or more battery storage devices.

**Battery storage device** —

- a) means plant that —
  - i. converts electricity into stored energy; and
  - ii. releases stored energy as electricity; and
- b) includes any equipment necessary for the operation of the plant.

### Batteries as an ancillary use

Battery storage facilities may be incorporated into other uses (such as renewable energy facilities, industrial uses, residential uses and retail uses) as an ancillary use which are not separately regulated by this definition. Examples of an ancillary battery storage facility may include:

- household batteries where stored energy is to be used mainly on the premises
- batteries associated with a commercial, industrial or other use where stored energy is to be used mainly on the premises.

A battery storage facility that is ancillary to another use is not precluded from exporting surplus stored energy to the grid.

Determining whether the battery storage facility is an ancillary use should be reasonably determined on a case-by-case basis. Some key features of an ancillary use are:

- The ancillary use must be related to the primary use. For example, where an existing renewable energy facility seeks to use a battery storage facility to store excess energy that is generated, then it may be considered ancillary.
- The ancillary use must have a functional relationship to the principal use. For example, where the owner of a residential dwelling seeks to use a battery storage facility as a way to store solar power generated by the dwelling for use at a later time.
- The portion of the use determined to be an ancillary use is subordinate to the primary use both in terms of its scale and land use impact. Some questions that may assist to determine this are:

- What proportion of the property is used for the ancillary use?
- What are the impacts associated with the ancillary use compared to the primary use?

Although not intended to be regulated by this land use definition the installation and operation of batteries continues to be regulated under other relevant laws or standards including for example, electrical safety, or workplace health and safety.

## Development assessment

Schedule 6 of the Planning Regulation prescribes development that local categorising instruments are prohibited from stating is assessable development.

Schedule 6, section 26, Item 6 includes:

(6) Development for a battery storage facility if —

- a) the facility is for a pad mounted battery storage device only and the total area of the premises covered by the facility is no more than 15m<sup>2</sup>; or
- b) the facility is for a pole mounted battery storage device only and the total volume of the device is no more than 2m<sup>3</sup>.

The effect of this provision is that certain small battery storage facilities that meet the above requirements cannot be categorised as assessable development by a local planning instrument. It does not negate the need to comply with all other relevant laws or standards including for example, electrical safety, or workplace health and safety.

## State Planning Policy

The State Planning Policy identifies seventeen state interests which are required to be integrated into new or amended local government planning instruments. Relevant state interests for battery storage facilities are:

- Energy and water supply – the timely, safe, affordable and reliable provision and operation of electricity and water supply infrastructure is supported, and renewable energy development is enabled.
- Infrastructure integration – the benefits of past and ongoing investment in infrastructure and facilities are maximised through integrated land use planning.

The [State Planning Policy](#) and the supporting guidance documents include information to assist a local government to integrate these matters into local planning schemes which is a requirement for new and amended planning schemes under the Planning Act.

The [State Planning Policy Integrate Mapping System](#) layer for the Infrastructure – Energy and water supply state interest also provides valuable spatial information for local governments to utilise in plan-making activities.

## Regional Plans

Regional plans may have policies that are relevant to battery storage facilities. This will depend on the relevant regional plan for each local government area.

For example, the *South East Queensland (SEQ) Regional Plan*, also known as *ShapingSEQ*, sets the planning direction for sustainable growth, global economic competitiveness and high-quality living by setting out a 50-year vision for SEQ.

There are five key themes under this 50-year vision. Battery storage is recognised under Theme 3 – ‘Connect’.

## THEME 3 – CONNECT

*“Our communities will have secure, high-quality food and water supplies as key elements of the region’s sustainability, and will maximise technological advances in energy production, including renewable production and **battery storage**.”*

Source: South East Queensland Regional Plan – *ShapingSEQ*

The North Queensland Regional Plan (NQRP) identifies Renewable Energy Investigation Areas (REIAs) as locations that are considered most suitable for new commercial-scale solar and wind farms. The REIAs provide guidance on suitable locations for large scale solar or wind farms. These types of activities may also be associated with ancillary battery storage facilities for use on site or export into the electricity network.

The NQRP also includes a specific regional policy, Regional policy 1.5.4, which is illustrated below.

### Renewable Energy Investigation Areas

Facilitating investment in new commercial-scale renewable energy facilities is an economic priority for the region and areas have been identified where these activities will be encouraged. Renewable Energy Investigation Areas (REIAs) are those locations considered most suitable for the establishment of new commercial-scale solar and wind farms. Factors considered in their determination include solar suitability indices, proximity to substations and high voltage transmission lines, slope, environmental and landscape constraints and fragmentation of good quality agriculture land. These areas are shown on Map 2.

#### Regional policy 1.5.4

Plan for and support the establishment and on-going operation of emerging renewable energy and allied technologies, such as hydrogen energy and battery storage projects in suitable locations.

Source: North Queensland Regional Plan

# Considering battery storage facilities in planning schemes

Each local government in Queensland should consider how their local planning scheme regulates battery storage facilities, including incorporating levels of assessment and assessment benchmarks specific to the battery storage facility land use that are appropriate and in line with community expectations.

The key areas in the planning scheme where battery storage can be supported are set out in this section.

For general guidance on drafting a planning scheme refer to the department's [Guidance for drafting a local planning scheme](#).

## Strategic outcomes

- The local government should consider whether the planning scheme supports the policy direction for the establishment of battery storage facilities. For example:
- Does the planning scheme support the transition to a low-carbon energy system and/or include outcomes related to climate change adaptation, mitigation, and resilience measures?
- Does the planning scheme support energy security and reliability including community resilience through improved energy security and independence?
- Are the economic opportunities of battery storage facility development, and more broadly renewable energy development explicitly expressed in the planning scheme?
- Does the planning scheme consider the separation of uses from sensitive land uses?

## Zoning

- While considering zones for battery storage facilities in the planning scheme, including overall outcomes, code provisions and assessment benchmarks, local government should consider the following:
- Do existing zones support the local government's policy direction for the establishment of battery storage facilities and/or renewable energy development, and do they address any specific battery storage facility requirements?
- Are additional overall outcomes required?
  - For example, an overall outcome in a community facilities zone may say 'development supports the establishment of battery storage facilities of 'x' size, where providing a community benefit'.
- Are suitable zones, areas or locations in the local government area identified in which battery storage facilities of various sizes are supported?
  - For example, industrial zones, community facilities zone, mixed use zone, etc
- Is the policy intent for battery storage facilities carried consistently through the planning scheme by identifying and setting appropriate categories of development and assessment aligned with community expectations?
- Given the characteristics of the local government area, is there an identified need to differentiate between the different sizes and forms of battery storage facilities?

## Use term

The use term for battery storage facilities in local planning instruments must be consistent with the use term prescribed in the Planning Regulation, Schedule 3, and the definition in Schedule 24.

The use term for battery storage facilities does not remove the need to comply with all other relevant laws or standards including for example, electrical safety, or workplace health and safety legislation, nor does it remove the

requirement to obtain building approvals or comply with requirements under other legislation, such as in relation to fire safety.

## Categories of development and assessment

The use term for battery storage facilities in the Planning Regulation enables a local government to incorporate the new term into their planning scheme. Each local government may consider the appropriate category of development and assessment benchmarks for battery storage facilities, in a way that responds to the local circumstances.

Matters to consider include:

- Where the local government has a strategic policy that supports battery storage facilities, is the category of development and assessment reflective of this?
- If assessable development, is the community likely to want to have their say at the development assessment stage (i.e., Impact assessable development)?
- Has the size, type and location of the battery been considered in determining the appropriate category of development and assessment?
- Could provisions be included to allow for a lower category of development or assessment in certain circumstances? For example:
  - Development that is code assessable has a total use area of between 'x' m<sup>2</sup> to 'x' m<sup>2</sup> in size
  - Accepted development if in a rural zone where a battery storage facility is less likely to conflict with identified or protected agricultural land practices.
- Where the use may occur in a zone that also includes a sensitive land use such as a dwelling house, childcare centre or a community care centre, will this require specific setbacks relative to the size of the battery storage facility?
- Where the use may occur in a zone that is subject to hazards, is a higher level of assessment required?

## Assessment benchmarks

The department's [Good plan-drafting – guidance for local governments](#) provides advice on setting appropriate assessment benchmarks.

Where a local planning scheme seeks to make battery storage facilities assessable development, appropriate assessment benchmarks must be set.

The local government may wish to consider the following:

- Are setbacks to any other land uses required that are not already captured? For example, will the battery storage facilities have a minimum setback to sensitive land uses?
- Have a range of matters including effects of noise, traffic/access, site design, visual amenity, and safety matters on nearby land use been considered? More specifically:
  - Visual amenity impacts, where located in a residential area
  - Noise attenuation impacts, where located in a residential area
  - Natural hazards mitigation, where located in a natural hazard area
- Have safety considerations based on size, type, or location of the battery storage facility in relation to fire and explosion risk been accounted for? More specifically ensuring, where relevant:
  - integration and installation of battery storage facilities near existing buildings does not compromise the safety of building occupants
  - installation of battery storage facilities proposed near protected vegetation areas or biodiversity areas does not pose an unacceptable risk to flora and fauna

- the safety hazards presented by different battery technologies are addressed with evidence-based mitigation and fire intervention measures
  - elevated ambient temperatures are considered when locating a battery storage system close to other land uses
  - any firefighting and emergency services considerations, including asset protection zones and safety of first responders, have been accounted for.
- Have specific provisions related to the end-of-life disposal/remediation measures for battery storage facilities been considered?

## Key Resources

Source	Summary
<b><i>Electrical Safety Act 2002</i></b>	Electrical safety matters, including licensing of electrical workers and contractors, duties of persons in control of electrical equipment necessary for the operation of the plant and duties of a person conducting a business or undertaking who manufactures, designs, imports or supplies electrical equipment, are dealt with under the <i>Electrical Safety Act 2002</i> and are administered by the Electrical Safety Office.
<b><i>Work Health and Safety Act 2011</i></b>	The <i>Work Health and Safety Act 2011</i> sets out requirements and standards for building healthy and safe workplaces. It outlines what you must do to protect the health, safety and welfare of workers and other people in a place of work. It also outlines related legal obligations, or duties.
<b><u>Battery Safety Guide</u></b>	<p>This guide will assist in understanding potential risks arising from lithium-based batteries to be mitigated towards providing a minimum level of electrical safety for lithium-based battery storage facilities.</p> <p>Products that are covered in this guide include battery storage equipment with a rated capacity of equal to or greater than 1kWh and up to and including 200kWh of energy storage capacity when measured at 0.1C.</p> <p>The guide includes suggested safety requirements for:</p> <ul style="list-style-type: none"> <li>• battery modules (BM) - one or more cells linked together for use in other equipment</li> <li>• pre-assembled battery systems (BS) - a complete package for connection to a DC bus or DC input of power conversion equipment (PCE)</li> <li>• pre-assembled integrated battery energy storage systems (BESS) - a complete package that has AC output for connection to the electrical installation</li> </ul> <p>The guide includes details of what should be supplied with the equipment including:</p> <ul style="list-style-type: none"> <li>• declaration of compliance or certification</li> <li>• technical datasheets and safety data sheets</li> <li>• installation, operating and maintenance instructions</li> </ul> <p>The guide does not cover electrical installation requirements for batteries. Installation of battery storage equipment referred to in the guide should still follow appropriate safety standards. Installation safety practices should include undertaking a suitable risk assessment and adherence to the manufacturer's instructions, industry accepted guides, the Wiring Rules AS/NZS 3000 and the battery system installation standard AS/NZS 5139.</p>

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<b><u>Battery Storage Safety Checklist</u></b>	Battery storage safe installation and maintenance checklist
<b><u>Responsible Recycling of Energy Storage Batteries</u></b>	<p>A guide to responsible recycling of battery storage systems.</p> <p>This guide provides you an overview of the issues that need to be considered for the safe disposal and environmentally responsible management of used battery storage systems.</p>
<b><u>AS/NZS 3000 2018 (Wiring Rules)</u></b>	Australian Standard that contains the minimum installation requirements for batteries storage facilities
<b><u>AS 4777.1 2016 Inverter Energy Systems Requirements</u></b>	<ul style="list-style-type: none"><li>• Grid connection of energy systems via inverters – Installation requirements</li></ul> <p>Sets out minimum labelling for grid-connected inverter systems, including requirements for battery storage</p>
<b><u>AS/NZS 5139 Electrical installations</u></b>	<p>Australian Standard for renewable energy battery storage installations - Safety of battery systems for use with power conversion equipment outlines safety requirements for installation of renewable energy battery storage equipment. This includes:</p> <ul style="list-style-type: none"><li>• Signage for grid-connected battery storage facilities</li><li>• Signs for stand-alone power systems incorporating battery storage facilities</li><li>• Requirements for suitable locations where battery storage facilities may be installed</li><li>• Explosion risks from lead-acid batteries and other battery types</li></ul>
<b><u>IEC TS 62933-5-1:2017: Electrical energy storage systems</u></b>	<p>Australian Standard that specifies safety considerations (e.g., hazards identification, risk assessment, risk mitigation) applicable to Electrical energy storage systems integrated with the electrical grid.</p> <p>This document provides criteria to foster the safe application and use of electric energy storage systems of any type or size intended for grid-integrated applications</p>

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