Department of Planning, Housing and Infrastructure

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Overview of the Renewable Energy Planning Framework

A framework for assessing state significant renewable energy development and infrastructure in NSW

Acknowledgement of Country

The Department of Planning, Housing and Infrastructure acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and we show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Glossary of terms

Term	Explanation
Applicant	A person seeking consent for a development or modification application for a State significant development project under the *Environmental Planning and Assessment Act 1979*
Battery energy storage systems	Grid-scale rechargeable batteries that can store energy from different sources and discharge it into the electricity grid when needed
Benefit sharing	Approaches and mechanisms that aim to distribute the financial and other benefits of a project between the applicant and the host community
Critical state significant infrastructure	Infrastructure development that the Minister for Planning has declared to be essential to the State for economic, environmental or social reasons
Decommissioning	The removal of a large-scale renewable project and its associated ancillary infrastructure
Impact	Any noise, visual, air quality or other potential impact that results from a development
Landscape	A holistic area comprising of its various parts including landform, vegetation, buildings, villages, towns, cities and infrastructure
Large-scale renewable energy project	A development that includes a solar farm, a wind farm, and/or a battery energy storage system, and that is State significant development or critical State significant infrastructure
Large-scale solar energy development	Works, infrastructure and buildings for generating electricity using ground-mounted photovoltaic panels that are State significant development
Passive recreation areas	For the purpose of this document, it includes designated walking trails, picnic areas and scenic lookouts but does not include other parts of National Parks

Term	Explanation
Proponent	A person seeking consent for a development or modification application for a State significant infrastructure project
Rehabilitation	The restoration of land disturbed by the development to a good condition to ensure it is safe, stable and non-polluting
Renewable energy zone	A designated area to support renewable energy development as declared in the *Electricity Infrastructure Investment Act 2020*
State significant development	A development declared under the *Environmental Planning & Assessment Act 1979* to have state significance due to its size, economic value or potential impacts
State significant infrastructure	Infrastructure development declared to have state significance due to its size, economic value or potential impacts
Transmission infrastructure	Works, infrastructure and buildings for transmitting electricity that are state-significant infrastructure activities, critical state-significant infrastructure activities or both
Transmission network	The high-voltage network of power lines and associated infrastructure that carries electricity over long distances from power generation facilities to distribution networks
Visual impact	The impact on views from private and public places
Wind energy development	Works, infrastructure and buildings for generating electricity using wind turbines

Introduction

The NSW Government has created the Renewable Energy Planning Framework to help achieve the transition to renewable energy, support our legislated net zero targets and secure an affordable supply of electricity for the people of NSW.

The framework provides a suite of policies that will guide the planning and assessment process for renewable energy development and infrastructure.

These will support the NSW Government in making faster and more consistent decisions, provide industry with greater investment certainty and give communities more transparency on how we will assess and manage the impacts of the transition.

The framework will also ensure that communities benefit from renewable energy projects. We estimate at least $414 million in benefits will be generated for host communities over 25 years.

The Energy Transition

By 2035, 3 out of 4 of our state's coal-fired power stations, which generate approximately 65% of NSW's electricity, will reach the end of their scheduled working lives. Renewables are now the lowest-cost form of electricity and the cheapest way to replace the energy we get from coal-fired power stations. To connect these renewables to the energy grid and deliver electricity to homes and businesses around the state, we need to build new transmission lines. Our transmission lines don't have spare capacity and aren't located in the places where we have the best renewable energy resources.

The NSW Government's Electricity Infrastructure Roadmap sets out a 20-year plan to deliver this infrastructure. The roadmap supports the delivery of at least 12 gigawatts (GW) of new renewable energy generation and 2 GW of long-duration storage.

The NSW Government is accelerating investment in renewable energy by building 5 renewable energy zones across the state. Each zone will capture high volumes of wind and solar power, storing it within new 'mega batteries' and delivering it with new transmission lines.

The government commissioned the Electricity Supply and Reliability Check-Up to review the progress and policy settings against the roadmap. The review identified the need to enhance the planning system by standardising how key issues are assessed and providing clearer assessment guidelines.

The Renewable Energy Planning Framework addresses recommendations from the Check-Up and emerging issues raised by communities and the industry.

The NSW planning system

Planning is a decision-making process that determines how we use land – whether it be in a city or on a rural property.

The *Environmental Planning and Assessment Act 1979* (the Act) is the state's primary planning legislation. Amongst other things, the Act set outs the importance of community participation in planning decisions, different types of strategic planning including how land is zoned, and planning pathways that govern the assessment and approval of development and infrastructure.

Land use zoning dictates what type of development is allowed on each plot of land. Renewable energy infrastructure is generally permitted on all land zoned for rural purposes. This makes up about 78% of the state.

This provides flexibility so developers can find sites that balance a range of commercial, environmental and social factors and have access to good solar and wind resources and transmission infrastructure. It also helps avoid land use conflicts with conservation, residential and commercial land uses.

Some developments have major impacts, while others have very little. As a result, there are different ways of assessing and approving them. Those with greater impact undergo a thorough assessment by planning authorities.

Most renewable energy projects are considered state significant due to their size, economic value (e.g. a capital investment value of more than $30 million) or potential impact. Large infrastructure projects, like transmission lines, are typically identified as Critical State Significant Infrastructure. Other forms of development including wind energy, solar energy and battery energy storage systems are usually State Significant Development.

This means, they must undergo a rigorous development assessment process that is coordinated by the Department of Planning, Housing and Infrastructure. This assessment includes extensive community consultation and a detailed consideration of any environmental, social and economic impacts.

The planning system can prescribe policies, controls and guidelines to help guide the assessment and decision-making process.

The Renewable Energy Planning Framework includes guidelines for wind energy, solar energy, transmission infrastructure, hydrogen and battery energy storage systems for this purpose.

These support the development assessment process by providing more transparency about how the impacts of energy infrastructure will be assessed and managed, including conflicts with other land uses.

More information on the planning system is available in our Community Guide to Planning.

Renewable Energy Planning Framework

The framework provides a suite of policies that will guide the planning and assessment process for renewable energy infrastructure and development. These are summarised in Figure 1 and are described in further detail throughout this document. The framework is designed to:

- provide clearer, more transparent assessment to ensure the level of assessment matches the level of risk and to help speed up assessments
- help the industry make informed investment decisions by providing more objective development standards
- make sure that development is guided by meaningful consultation with affected communities
- introduce clear setbacks and visual impact criteria to allow communities to anticipate change
- provide more transparency about the likely costs of decommissioning solar and wind energy development so the industry and landowners can make more informed investment decisions
- provide greater support to applicants and landowners entering into agreements to host infrastructure or manage the impacts of development
- make sure the benefits of energy development are directly realised by the localities and regions that host the infrastructure

Through these measures, we expect the framework to accelerate the delivery of infrastructure and deliver benefits to host communities.

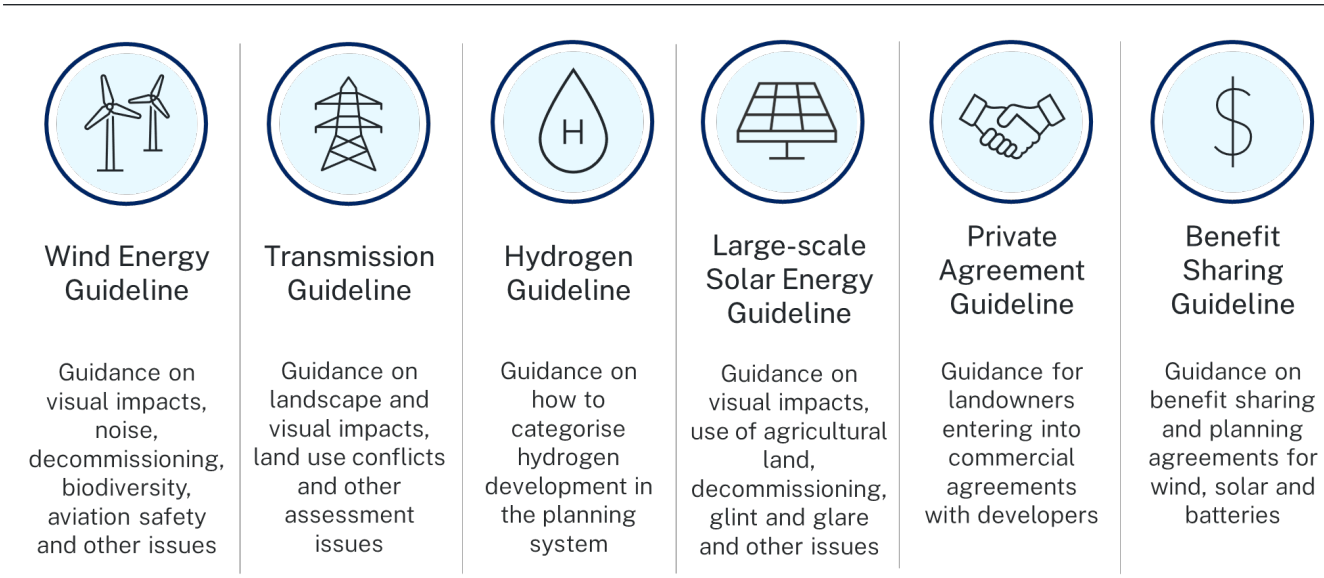


Figure 1. Key components of the framework

Relationship between documents and tools

A range of documents, guidelines and tools fit together to form the framework. Figure 2 shows the relationship of framework documents to different types of development.

	Primary Guidelines	Technical Supplements	Supporting Documents	Tools
Wind energy	Wind Energy Guideline	Wind Landscape & Visual Impact Assessment Noise Impact Assessment	Benefit Sharing Guideline Private Agreement Guideline	Wind Decommissioning Calculator Visual Impact Assessment Tools
Solar energy	Large-scale Solar Energy Guideline	Solar Landscape & Visual Impact Assessment	Benefit Sharing Guideline Private Agreement Guideline	Solar Decommissioning Calculator Visual Impact Assessment Tools
Transmission	Transmission Guideline	Transmission Landscape & Visual Impact Assessment	-	Visual Impact Assessment Tools
Hydrogen	Hydrogen Guideline	-	-	-
Battery Energy Storage Systems	-	-	Benefit Sharing Guideline	-

Figure 2. Relationship between elements of the Framework

Wind Energy Guideline

Wind turbines convert the wind's kinetic energy into mechanical power, which is then converted into electricity. The latest turbines can generate around 7 megawatts of electricity, enough to power 4,000 homes.

Australia has world-class wind energy resources, and it is the second largest contributor to the clean energy transition after rooftop and large-scale solar energy.

Noise

Our guideline makes sure that wind turbine noise does not exceed 35 d(B)A at people's homes in quiet rural areas. This is equivalent to sound levels in a quiet library and less than a household refrigerator.

Health

There is no consistent evidence to suggest that wind turbines cause adverse health effects. While wind turbines can produce low frequency noise (often referred to as infrasound), this is no different from many other forms of equipment and machinery including trucks, and agricultural equipment.

Visual impacts

Our guideline includes a visual setback to protect amenity at people's homes. This scales with turbine height and is equivalent to 1.5 km for a 240 m turbine. There are extra criteria to manage impacts from multiple turbines and developments.

Fire safety

Wind turbines do not pose a greater risk of starting a bushfire or impeding firefighting efforts that other types of similar infrastructure including communication towers and overhead powerlines.

Birds and bats

Birds and bats can be struck or affected by wind turbine blades. However, bird fatalities from turbines are incredibly low compared to other sources. Far more bird and bat deaths can be attributed to collisions with buildings, vehicles and power lines, as well as to predation by feral and domestic cats.

Decommissioning

We will impose conditions on all wind energy projects to make sure infrastructure is decommissioned.

Our decommissioning calculator helps landholders and developers estimate the likely costs of decommissioning so they can make informed investment decisions.

Traffic and transport

Our guideline makes sure the road network can accommodate the traffic from wind energy development, and if it can't, that upgrades are undertaken as part of the relevant project.

Any damage caused by the transportation of wind turbines and other large equipment must also be repaired.

The Wind Energy Guideline provides advice on the planning considerations relevant to wind energy development, including:

- information on where wind development is allowed to occur and the overall process for assessing development applications for wind energy development
- advice to assist the industry in selecting sites and designing projects to minimise impacts from the outset
- guidance on community engagement including the need for communities to be consulted early so they can inform the design of projects
- a detailed methodology for assessing landscape and visual impacts including guidance on when impacts should be avoided or mitigated
- a methodology and criteria for noise impacts to protect amenity at people's homes and passive recreation areas within National Parks
- guidance on turbine lighting requirements to address aviation safety risks while minimising the amenity impacts of night lighting
- advice on decommissioning including a calculator for estimating the potential costs of decommissioning to ensure landholders are well informed about the likely costs, and
- guidance on other issues including traffic and transport, waste management, bird and bat strike, and more.

Transmission Guideline

A significant amount of transmission infrastructure is needed to connect renewable energy sources to the electricity grid and to ensure NSW has the cleanest and most affordable energy into the future.

The existing transmission network is estimated to have a connection capacity of 16 gigawatts in areas with favourable renewable energy resources. This is much less than the 125 gigawatts of new grid-scale renewable energy required by 2050. Approximately 4,000km of new transmission infrastructure will need to be built over the next 2 decades to unlock the additional capacity required.

Undergrounding

Undergrounding can be expensive, lead to more vegetation clearing and the loss of agricultural productivity. Consequently, the benefits of undergrounding need to be weighed up against the environmental and economic costs.

Agriculture

Farmers can continue to use land adjacent to and underneath transmission lines for grazing and cropping. Consequently, the cumulative risks to agricultural land and productivity are very low.

Visual impacts

Our guideline includes a visual setback to protect amenity at people's homes. This scales with height of transmission towers and is equivalent to 380 m for an 80 m tower (in a rural setting). There are further criteria to manage impacts from multiple towers and infrastructure.

Health

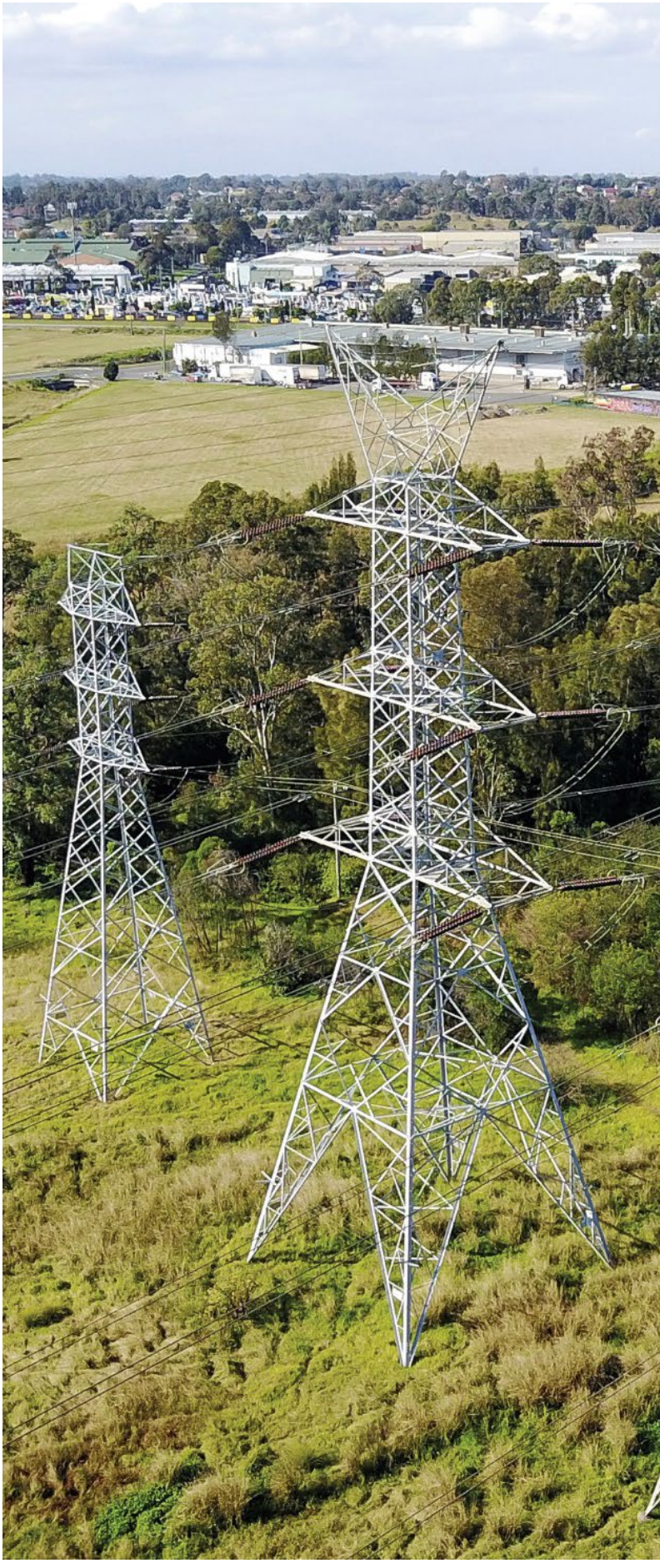
While transmission lines emit low magnetic fields, these are equivalent to those found in common household appliances like vacuum cleaners and do not pose a risk.

Fire safety

When maintained properly, high voltage transmission lines do not pose a risk of starting bushfires.

The Transmission Guideline supports major upgrades and expansions of the State's transmission network. It aims to provide communities, industry and regulators with clear and consistent information and guidance on the planning and development of this infrastructure. It provides:

- information on the overall process for assessing applications for transmission infrastructure
- guidance for proponents on the process of route selection, including the development of options (including a consideration of undergrounding) and the refinement of a project corridor
- guidance on community engagement including the need for communities to be consulted early so they can inform the design of projects
- a detailed methodology for assessing landscape and visual impacts including guidance on when impacts should be avoided or mitigated
- advice on a range of other issues including biodiversity impacts, agricultural impacts, bushfire risk and other issues.



Large-scale Solar Energy Guideline

Australia has the highest average solar radiation per square metre of any continent. NSW has abundant and excellent solar resources and established electricity infrastructure that, along with declining technology costs, makes it an attractive location for solar development.

Visual impacts

Our guideline provides tools to identify visual impacts on people's homes and our landscapes. It includes requirements to avoid circumstances that would significantly impact visual amenity.

Agriculture

Large-scale solar development is predicted to use only 0.06% of rural land in NSW by 2050. Consequently, the risks to productivity are extremely low. However, projects should seek to avoid the most productive agricultural land as far as possible.

Decommissioning

We will impose conditions on all solar projects to make sure infrastructure is decommissioned. Our decommissioning calculator helps landholders and developers estimate the likely costs of decommissioning so they can make informed investment decisions.

Glare

Glare from the reflective surfaces of solar panels is relatively uncommon. Panels are designed and oriented to absorb as much sunlight as possible. However, our guideline seeks to minimise glare to less than 10 minutes per day to minimise annoyance.

The Large-scale Solar Energy Guideline provides advice on the planning considerations relevant to solar energy development, including:

- information on where large-scale solar energy development is allowed to occur and the overall process for assessing development applications
- advice to assist the industry in selecting sites and designing projects to minimise impacts from the outset
- guidance on community engagement including the need for communities to be consulted early so they can inform the design of projects
- a detailed methodology for assessing landscape and visual impacts including guidance on when impacts should be avoided or mitigated.
- requirements to assess impacts on agricultural capability, including a methodology that scales with the quality of land and potential risks.
- advice on glint and glare including criteria to minimise annoyance at people's homes
- advice on decommissioning including a calculator for estimating the potential costs of decommissioning to ensure host landowners are well informed about the likely costs, and
- guidance on other issues including traffic and transport and waste management

Benefit Sharing Guideline

The uptake of large-scale renewable energy provides significant benefits for the state, including reduced reliance on fossil fuels, reduced emissions and a secure and affordable power supply.

It also has a range of direct and indirect benefits for host communities, including temporary construction jobs, ongoing operational jobs and lease payments to landholders and neighbours. But our regional communities feel the most pressure and change from the renewable energy transition.

Benefit sharing is a general term used to describe different approaches and mechanisms that aim to distribute the financial and other benefits of a project between the applicant and the host community through mutually agreed opportunities.

In the context of large-scale renewable energy projects, arrangements with landholders, councils and local communities (including local Indigenous communities) provide opportunities for community members to directly share in the benefits of projects and for the applicant to enhance their social licence to build and operate their project.

The Benefit Sharing Guideline supports benefit sharing and set out principles to make sure it occurs as part of the planning system and that it is transparent, focussed on communities and delivers positive, tangible and long-term socio-economic benefits.

The Benefit Sharing Guidelines will help local communities be more resilient to change and will deliver estimated benefits of more than $414 million over 25-years

The guideline also includes case studies to illustrate how benefit sharing funds can be distributed, what they can be used for and who could be responsible for administering them.

The guideline prescribes rates for different types of development including wind ($1050 per megawatt per annum), solar ($850 per megawatt per annum), and stand-alone battery energy storage systems ($150 per megawatt hour).

Private Agreement Guideline

Renewable energy development is usually located or hosted on private land. To allow a project to proceed, applicants typically enter into private agreements with landholders to host project infrastructure.

Projects can also impact other land not directly hosting project infrastructure. Applicants can enter into agreements with neighbouring landholders when a project affects their land or the amenity of their property as a means of mitigating the impact.

This guideline contains general information and guidance about the role of private agreements and the issues that should be considered when entering them. It provides advice for applicants, landholders and neighbours.

The guideline includes model clauses that can be used as the basis for an agreement.

Independent legal advice

Applicants should pay for all reasonable costs to enable the landholder to obtain independent legal advice and understand the implications of any private agreement.

Participation

Landholders should have a right to participate in the planning process despite signing a private agreement.

Decommissioning

The owner or operators of a renewable energy development should be responsible for decommissioning and rehabilitation, and this should be reflected in a landholder agreement. The landholder may request financial assurances that the project is able to be decommissioned.

Hydrogen Guideline

Hydrogen is emerging as a viable renewable fuel, industrial feedstock and energy source with the potential to become a significant growth industry in NSW.

The development of hydrogen will create economic growth and jobs. It will help NSW decarbonise and transition away from fossil fuels.

The NSW Hydrogen Strategy identifies stretch targets of 110,000 tonnes of green hydrogen per annum from 700 MW of electrolyser capacity by 2030.

The Hydrogen Guideline assists the industry, regulators and community understand how hydrogen-related development operates within the planning framework.

It provides general advice on:

- how different components of the hydrogen supply chain may be characterised under environmental planning instruments
- the permissibility of those developments and the planning pathways available to applicants
- how hydrogen development interacts with the planning system in certain areas such as ports, special activation precincts and regional enterprise zones

processes for managing hazards and risks through site selection, hazard studies and cumulative impact assessments.