

Solar Farm Facts

May 2025



About OX2

OX2 is the leading developer of onshore wind in Europe. As an industry pioneer, we are active in eleven markets and offer fully customised renewable energy solutions involving several technologies, including wind and solar energy, in addition to hydrogen and energy storage projects.

We design and build sustainable projects and tailor them to meet our customers' needs. OX2 has a proven business model and in-house expertise at every step of the process – from project inception and financing to engineering and design, permitting, procurement, construction, and technical and commercial management.

Our mission is to accelerate access to renewable energy. We see ourselves becoming the leading provider of renewable energy solutions globally, thereby powering the great shift.

What is a solar farm

A solar farm consists of a large-scale solar photovoltaic (PV) generation facility, and associated infrastructure. It comprises the installation of solar PV panels, substation, inverters, power cabling, site offices and access tracks. A transmission line to connect the solar farm to existing electrical infrastructure may be required.

The solar panels are typically 1.2 meters (m) x 2.4 m in size and are arranged in rows. These rows of solar panels are spaced 5m to 7m apart. The height of a fully tilted solar panel is 3m to 4m above the ground.

How does solar generation work?

The PV solar panels comprising a solar farm absorb the energy from the sun and convert it into electricity.

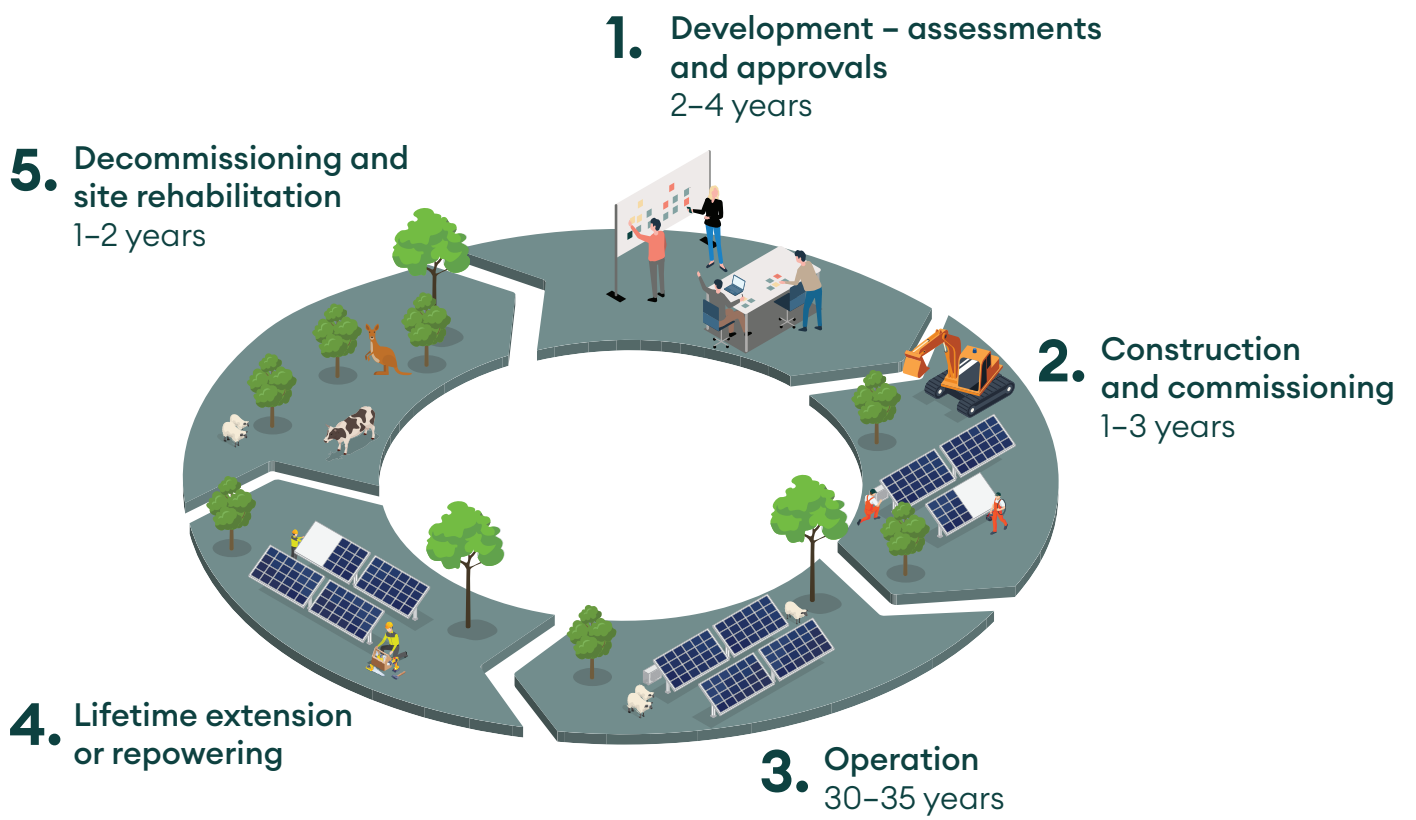
When light shines on a solar panel, the light's photons knock electrons free from the material within the solar panel, producing electricity. An inverter transforms the electricity generated from the solar

panels from direct current (DC) electricity to alternating current (AC) electricity. This AC electricity is transmitted to a substation through medium voltage underground cables where it is distributed to the grid via a transmission line (either new line or by connecting into existing lines).

Large-scale solar farms use similar technology to that used in residential solar photovoltaic installations, with the main difference being that solar farm panels are usually mounted on systems that track the sun through the sky. The amount of energy generated is determined by the intensity and angle of the light hitting the solar panels. This is why the solar farm uses a tracking system to optimise the angle of the panel to the sun throughout the day.



Solar Farm Lifecycle





Development

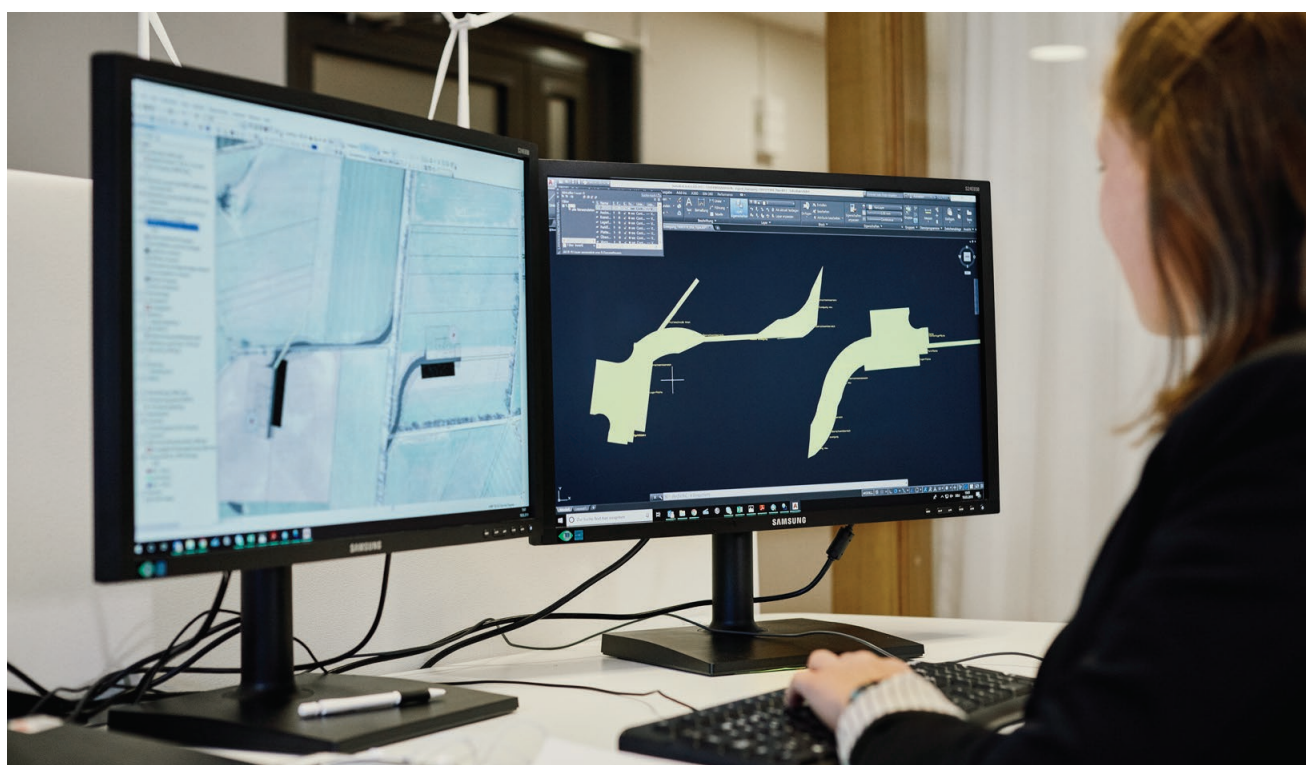
Key activities in solar farm development include:

- Site identification
- Engagement and agreements with landowners
- Grid connection studies
- Consultation with government, communities and industry
- Planning and environmental studies and approvals
- Detailed design
- Design of road upgrades and transport route planning
- Investment decision and raising equity to fund the project
- Procurement of contractors and key components

How is a solar farm designed?

A solar farm design evolves over time and is continuously refined as more information becomes available. Information is fed into the design as it emerges from site investigations, environmental assessments, community feedback and planning permit requirements. We consider a range of aspects:

- Local topography
- Geotechnical (ground) conditions
- Proximity and connectivity to the grid
- Safety
- Constructability
- Relevant standards, guidelines and legislation
- Stakeholder and community feedback
- Transport routes and access to the site
- Potential environmental and heritage impacts
- Operations and maintenance requirements
- Project cost and value for money



What is assessed during the planning and approval process?

Technical and environmental studies are undertaken by independent consultants who are experts in their field to identify baseline conditions and possible impacts. We use these studies to inform the project design, planning and construction and ongoing management.

The assessments undertaken for a solar farm typically include:

- Biodiversity Assessment
- Cultural Aboriginal and historic Heritage Assessment
- Agricultural Impact Assessment
- Noise Impact Assessment
- Traffic Impact Assessment
- Landscape and Visual Impact Assessment
- Hydrology Assessment
- Bushfire Risk Assessment
- Hazard Assessment
- Social Impact Assessment





Construction and Commissioning

A solar farm is a major project and like any major infrastructure project, construction can be disruptive at certain times. To minimise this, we work with the project landowners, neighbours, contractors, local councils and wider community to plan construction responsibly and manage any impacts effectively and efficiently. Some of the ways we do this include:

- Meeting requirements set out in planning permit conditions, legislation, industry standards and guidelines – this includes preparing and complying with construction environmental management plans and traffic management plans
- Implementing a responsive complaints management procedure
- Developing a workforce accommodation strategy
- Regular communication with neighbours and the community
- Listening to feedback about how impacts could be minimised
- Working during standard construction hours wherever possible
- Scheduling disruptive or noisy work at times when it will have the least impact
- Monitoring and actively managing construction activities
- Using well-maintained equipment and implementing procedures to reduce their noise emissions (for example, avoiding reversing and triggering the reverse alarm where possible)

Each stage of construction can pose different challenges, such as traffic movements during the initial road construction phase or over-dimensional vehicle movements as components are delivered to the site. Adequate stakeholder engagement and early planning will allow those movements to occur safely for the workforce and the community, with any planned disruptions communicated to relevant stakeholders (including the community).

Depending on the size of the project, construction can take several years. Management Plans are required to outline how potential impacts are managed, and that all management and mitigation measures are understood and followed by the project partners.



What should I be aware of during construction?

Safety

To reduce and manage risk, Health and Safety Management Plans are developed to ensure safe construction practices and potential risks are identified, mitigated and communicated to workers. All staff and contractors undertake mandatory training in safety and emergency procedures before starting work on-site.

Fire Safety

The relevant fire safety authorities are consulted during the development stage of the project to ensure that the design of the solar farm meets fire safety requirements and that management and mitigation measures are accounted for. As access tracks and fire breaks are constructed within the solar farm site, fire safety within the site and the surrounding area will increase.

Firefighting infrastructure will be made available on-site during the construction and operation of the solar farm, and safe access for emergency responders in and around the facility will be provided. The infrastructure will be provided in consultation with the relevant fire safety authorities and to comply with agreed fire safety and emergency response management measures. Vegetation will be managed so as to avoid increased bushfire and grassfire risk.

Fire safety regulations will be complied with during construction. For example, no hot works will be undertaken during total fire ban days.

Traffic and roads

The construction of a solar farm generates traffic when materials, machinery and components are being delivered to the site. Prior to the commencement of construction, a Traffic Management Plan (TMP) is developed in consultation with road authorities and local councils to ensure that construction traffic is appropriately managed and adheres to the use of approved roads only. School bus routes are taken into account.

Local roads may be upgraded before works begin so they are suitable for the loads from trucks and oversize vehicles. We work closely with our contractors and councils to plan deliveries, coordinate with other road users and provide advance notice of any disruption. Any road construction works (including upgrades) required to facilitate the construction of the solar farm will be undertaken at our cost.

Working hours

Standard construction hours are outlined by The Environment Protection Authority (EPA) in each state. The hours are approximately 7am to 6pm, Monday to Friday, and 8am to 1pm on Saturdays.

On occasions we may need to work outside these standard hours. If this is required, we will provide

as much advance notice as possible and put measures in place to minimise any disruption. Any required approvals to work outside of the standard construction hours would be sought.

Noise

Construction noise limits are regulated by the EPA and in some cases, local councils. If construction activities on one of our projects are expected to exceed the noise targets at any time, we notify the local Council and we put mitigation measures in place to limit the impact on local residents as much as possible.

Dust

Spraying water is the most effective way to reduce dust during construction. Water trucks are used to wet down work areas and unsealed roads when required.

Historic and Aboriginal cultural heritage

Prior to the commencement of construction, our contractors will be inducted on any measures required to be complied with to manage and protect historic and Aboriginal cultural heritage. Any culturally significant places will be identified during the development stage of the project and the requirement management measures will be agreed on with the relevant authorities and local Aboriginal groups.

Social and economic

During construction, employees and contractors will be present in the local town and on the roads. Temporary accommodation such as motels and pubs may be busier than normal. We develop workforce accommodation strategies in consultation with councils and work with local communities and our contractors to reduce any inconvenience caused. We seek to ensure local towns and the local economy benefit from additional spending on accommodation, food and local goods and services.

We will seek to create local employment opportunities and advertise them to benefit the local workforce.

Complaints Management Procedure

OX2 will manage and respond to complaints during construction in accordance with our grievance mechanism. The mechanism to submit complaints and follow up on them will be communicated to the local council and the community; it will also be made available on the project website.

Read more about the [grievance and complaint investigation process](#). Your privacy is very important to us, and your personal information will be kept confidential in line with our [privacy policy](#). These documents are available on the OX2 Australia website www.ox2.com/australia



Construction and Commissioning

1. Site Induction

Contractors undertake health and safety inductions in addition to environmental and cultural management inductions.



2. Site Prep

Access tracks, intersection upgrades, cable trenches.



3. Pile driving

The installation of foundation supports for solar panel mounting structures. The process consists of driving steel, concrete, or wooden piles into the ground to provide a stable base for the solar panel racking system.



4. Tracker installation

These systems allow solar panels to follow the sun's movement, optimizing energy generation by increasing exposure to sunlight throughout the day.



5. Panel installation

Securely mounting photovoltaic (PV) panels onto the tracking system, ensuring they are properly aligned, connected, and optimised for maximum sunlight exposure.



6. Electrical connections

Underground or overhead electrical and fibre optic cables are installed to connect the solar panels and carry electricity and data to the substation.



7. Commissioning

After the solar farm has been tested through a number of stages, called Hold Points, they can begin to supply electricity.

Any temporary construction buildings are removed and the ground is rehabilitated.



Operation

Solar farms have an operational life of approximately 30-35 years. A small team of electrical engineers based on site or at a central point for a number of projects, will undertake regular maintenance and monitoring. At the end of the life of the solar farm, OX2 may seek to extend the life of the solar farm or to repower the facility with newer technologies. Should this be the case, relevant assessments will be undertaken and approvals sought.

Do solar panels generate glare?

Photovoltaic panels are designed to reflect as little light as possible (generally around 2%)¹ to maximise their efficiency. The more energy is absorbed from the sun, the more efficient the solar farm is. Solar farms are not considered reflective and have been installed at or near several airports around the world, including Melbourne airport.

Do solar farms have a visual impact on landscape amenity?

Solar farms can have an impact on the visual amenity of the immediate area. We aim to work with stakeholders to ensure that the impact is mitigated as far as possible.

How are views screened?

If required, landscape screening can be a measure taken to reduce the visual impact. Vegetation can be planted to screen the view of the solar farm from viewpoints. Vegetation screening may be able to be planted on the perimeter of the site should the footprint and fire risk considerations allow. Off-site landscape screening may sometimes be required by authorities, particularly where visual impacts cannot be mitigated on site.

Who is responsible for the screening?

The site owner is responsible for implementing and maintaining any landscape screening requirements agreed on with the planning authorities.

Are solar farms noisy?

There is some noise generated on-site during the construction stage – from the construction traffic and from the pile driving the frame that supports the solar panels into the ground. Once built, there is low-level noise from the site that would only occur during daylight hours.

Some solar farm facilities include a battery energy storage system (BESS) which is typically the highest noise emitting infrastructure within the facility.

Most states require predictive noise assessments to be undertaken for solar energy facilities and BESS to determine if the project is likely to comply with regulated noise limits. This assessment is undertaken during the development stage of a project at which point noise mitigation measures are identified, if required.

The design and siting of a solar farm and its ancillary infrastructure (including BESS) could also mitigate noise impacts from sensitive receptors.

Do solar panels work when the sun's not shining?

Solar panels produce power from daylight so can work even when the weather is overcast. Solar energy facilities often include a BESS which stores solar energy when it is not consumed and releases it when required.

¹ Research and Analysis Demonstrate the Lack of Impacts of Glare from Photovoltaic Modules | State, Local, and Tribal Governments | NREL

How is any potential fire risk from a solar farm managed?

There is a very minimal fire risk associated with photovoltaic panels or solar farms. There is also a cleared vegetation zone around the edges of the solar farms to prevent fire spreading. This is complemented by a strict vegetation management plan. The emergency procedures for a Solar Farm are typically developed in conjunction with the relevant fire authority and outlined in an Emergency Management Plan. Most fire authorities require firefighting infrastructure to be present on site, including water tanks.

Do solar panels contain toxic chemicals?

The materials used to make solar panels are sealed and contained so they do not negatively affect the surrounding area. Many myths regarding harmful chemicals stem from a different type of solar cell made from cadmium, which is no longer manufactured and is not proposed for OX2's solar farms. The solar panels proposed do not contain lead, arsenic or other toxic metals.

Will the solar panel leach chemicals into the environment in the rain/storm/hail?

Solar panels contain a variety of materials, including non-toxic silicon (the same material as sand) and different types of metals such as copper and tin. All components are laminated and enclosed to prevent external factors damaging the functionality of the system. The panels are engineered to withstand hail, storms, and strong winds.

Do solar farms affect farm/domestic animals?

Many solar farms have sheep grazing underneath the solar panels. They happily use the shade in the summer. In March 2021, The Clean Energy Council published the "Australian Guide to Agrisolar for Large-Scale Solar".² This shares the learnings of the solar grazing experience to date and aims to improve the understanding of the opportunities it presents.



² Australian-guide-to-agrisolar-for-large-scale-solar.pdf (cleanenergycouncil.org.au)

Does a solar farm propose a flood risk?

As part of the development process a Hydrology Impact Assessment Report may be prepared by a specialist consultant. This involves mapping and avoiding flood-prone areas and modelling flood scenarios. Modelling and design of the project will ensure that the local flood regime is unchanged and no flood impacts on the wider community are anticipated as a result of the solar farm.

Do solar panels require more energy to make than they produce?

PV systems can produce the equivalent amount of energy that was used to manufacture the systems within 1 to 4 years.^{3,4,5}

Does electricity from solar farms cost more than other sources?

Renewable energy is the cheapest form of new electricity generation. The CSIRO GenCost Report 2023-2024, published in May 2024, confirms the past years' findings that wind and solar are the cheapest source of electricity generation and storage in Australia, even when considering additional integration costs arising due to the variable output of renewables, such as energy storage and transmission.⁶

Do solar farms require Government subsidies to be built?

OX2 does not require government subsidies to finance its projects. Projects are financed through a combination of equity and long-term bank loans. However, we may enter into agreements to sell the power produced by the projects, such as a Power Purchase Agreement (PPA).

Are there any health risks associated with a solar farm?

Solar panels are placed on more than 30% of Australian homes and have been on homes across the world for the past 15 years⁷. There is no evidence to suggest there are health issues associated with solar panels.

Do large-scale renewable energy projects affect nearby property values?

Studies show that impacts of large-scale renewable energy projects are small and temporary, generally limited to the construction phase. Any negative effects typically recover within 3–5 years after project operation begins and some areas even see increased property values due to improved local infrastructure and economic growth.

Will a clean energy project near my home impact my ability to get public liability insurance?

The Insurance Council of Australia (ICA) has stated that insurers do not have specific concerns related to neighbouring clean energy infrastructure. At the time of writing, the ICA is not aware of any instances where its members have been unable to provide insurance, or have increased premiums as a result of a farm (or a neighbouring property) hosting energy infrastructure.

Will a clean energy project increase my insurance premiums?

Increases to premiums are unlikely to be related to clean energy projects. Wherever you live in Australia – whether you're directly exposed to extreme weather impacts or not – insurance premiums are rising because of the escalating costs of natural disasters, increasing value of homes and vehicles, inflation pushing up building and vehicle repair costs and the increasing cost of doing business for insurers.

³ <https://www.eia.gov/energyexplained/solar/solar-energy-and-the-environment.php#:~:text=Studies%20conducted%20by%20a%20number,to%2030%20years%20or%20more>

⁴ <https://www.nrel.gov/docs/fy04osti/35489.pdf>

⁵ ReNew: Technology for a Sustainable Future, No. 109 (October–December 2009), pp. 46-49, Published By: Alternative Technology Association

⁶ GenCost: cost of building Australia's future electricity needs – CSIRO

⁷ Solar Energy Systems on households have more than doubled since 2018 – now at nearly a third of all households (32.3%) – Roy Morgan Research

Decommissioning and Rehabilitation

When a solar farm is no longer running efficiently, it can be decommissioned, restoring the impacted area to its original condition. To decommission a solar farm, it is required to:

- Dismantle the components
- Remove any related infrastructure, such as buildings and overhead power lines
- Rehabilitate the land
- Reinstate and revegetate roads and foundations

Landowners may request that certain aspects remain in situ for their continued farming practices, such as certain buildings or access tracks.

The solar farm owner is responsible for decommissioning and rehabilitation and all requirements are outlined in agreements with landowners and as part of the planning approval.

An alternative which is occurring currently on some projects overseas is re-powering. This is where the equipment is upgraded and replaced (typically with newer technology) to allow the project to continue to operate. This would require additional environmental assessments and approvals.

Can the solar panels be recycled?

Victoria, South Australia and the ACT have banned solar panels from landfill. They are required to be taken to e-waste drop off points to be recycled.

Waste from end-of-life solar panels presents opportunities to recover valuable materials and create jobs through recycling.

Solar panels have an aluminium frame, glass, copper wire, polymer layers and a backsheet, silicon solar cells, and a plastic junction box. The polymer layers seal the panel from exposure to weather but can make recycling and panel disassembling

difficult, as high temperatures are often required to loosen the adhesive.

Many of these components can be recycled. Glass composes most of the weight of a solar panel (about 75 percent), and glass recycling is already a well-established industry. Other materials that are easily recyclable include the aluminium frame, copper wire, and plastic junction box.¹

There are different methods to recycle solar panels, which can include some or all the following three steps:

- 1. Removal of the frame and junction box**
- 2. Separation of the glass and the silicon wafer through thermal, mechanical or chemical processes; and/or**
- 3. Separation and purification of the silicon cells and specialty metals (e.g., silver, tin, copper) through chemical and electrical techniques.**

The industry is new and still growing, with researchers examining how to commercialise recycling to economically recover most of the components of a solar panel. Elements of this recycling process can be found in Australia, but it is not yet happening on a large scale as most solar PV systems are still a long way from end of life.

A number of companies have solar panel recycling facilities throughout Australia such as Ecodesome and Solar Recovery Corporation (SRC).

¹ <https://www.epa.gov/hw/solar-panel-recycling>

Employment

Do solar farms create employment during construction?

During construction a solar farm creates hundreds of direct jobs on the solar farm site. These may include:

- Health and safety officers
- Environmental compliance officers
- Electricians
- Apprentices/ Trades assistants
- Semi Skilled Labourers
- Unskilled Labourers
- Machine operators
- Transport operators
- Crane operators
- Civil and Electrical Supervisors
- Water truck drivers
- Catering
- Cleaning

In addition, hundreds of jobs may be created in businesses that supply the project. These include:

- Quarry suppliers
- Material suppliers
- Concrete businesses
- Electrical equipment suppliers

Construction can also provide a boost for regional communities by increasing demand for local goods and services, such as accommodation, hotels, grocers, restaurants and cafes.

Do solar farms create employment during operation?

The level of employment depends on the size and location of the solar farm. A small team will be based on-site or in the region to manage the site and provide regular maintenance.

How can I find employment or my business benefit from the solar farm?

To register your interest in employment on a solar farm project or supply local goods and services, please contact us via the project website or using the details in this document. One of our team will be in touch with further information.





Working with communities

It is crucial for us to involve and respect those who live and work where we establish renewable energy projects. The local knowledge about the culture and nature of the area is a great input in planning the layout of the solar farm.

What benefits can a solar farm create for the local community?

Local community benefits can include:

- Boost to the local and regional economy and local businesses
- Jobs during construction and operation
- Training, skills development and education programs
- Creation of community funds for local initiatives including for local Aboriginal communities
- Direct payments to landowners
- Provision of a drought-proof and post-retirement income stream for farmers.

How do you involve and share benefits with local communities?

OX2 has a clear ambition to provide local jobs wherever possible. Maintaining a close dialogue with local communities is therefore important, not just for anchoring the project but also for engaging the services of local businesses for accommodation, catering, cleaning, earthmoving, transportation and haulage and similar activities.

We may develop a community engagement and benefit sharing plan for each project in consultation with local Council and continue to evolve it as we receive feedback from the community.

How do you keep people informed about development and construction activities?

Depending on the solar farm location, community and community preferences, we use a range of different tools to keep people up to date. These include:

- Phone calls, emails and/or letters to anyone directly affected
- Meetings with direct neighbours

- Website
- Email updates
- Regular newsletters
- Information displays in nearby towns
- Presentations to community groups and organisations
- Through the local Council.

How do I report a concern about the solar farm or OX2?

Our grievance mechanism is targeted towards individuals, communities and companies who have feedback or concerns regarding our projects.

OX2 takes all complaints seriously and aims to acknowledge and resolve complaints promptly. A complaint is a formal expression of dissatisfaction made to or about OX2, related to its project development, construction, operation, or a staff member.

We acknowledge that anyone has a right to lodge a complaint and we will ensure that all the complaints we receive will be managed respectfully, objectively, and efficiently.

To lodge a complaint please contact us directly or complete the Grievance Mechanism form on our website.

Read more about [the grievance and complaint investigation process](#). Your privacy is very important to us, and your personal information will be kept confidential in line with our [privacy policy](#). These documents are available on the OX2 Australia website www.ox2.com/australia

Transmission line

A transmission line is essential for an energy generation project such as solar farm as it transports the electricity generated to where it is needed. Electricity is generated, used in each region and traded across regions.

High voltage transmission lines transport electricity from generators to electricity distributors, who deliver it to homes and businesses on lower voltage 'poles and wires'.

How is the new transmission line developed and designed?

There are many factors which are required to be considered when designing a transmission line for a solar farm. While a project is being developed a number of different transmission line routes may be assessed. Each option will be considered against potential impacts and other requirements.

These include:

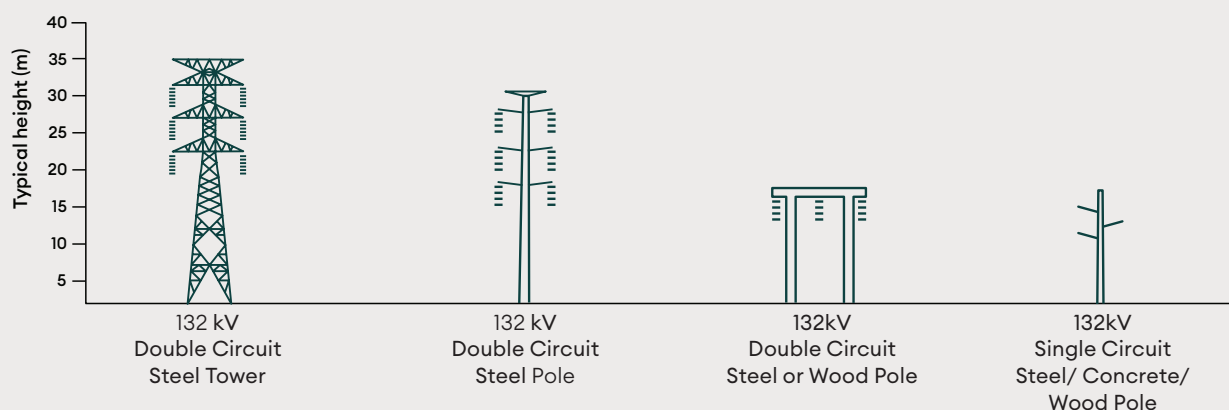
- Voltage (e.g. 66kV, 132kV, 220kV)
- Existing easements
- Line length, spans between poles, changes in direction of the line
- Topography

- Structural loads due to the weight, wind, earthquake risk, groundwater and other environmental factors
- Electrical safety requirements
- Communication and earthing requirements
- Temperature limits and fluctuations
- Existing infrastructure constraints
- Land ownership and access (both public and private)
- Native vegetation
- Planning requirements
- Areas of cultural historic and Aboriginal heritage significance
- Property configurations and dwelling locations
- Road and traffic safety
- Drainage
- Fire safety.

What do the transmission towers and power poles look like?

The type and size of the structure used depend on the voltage being used. Transmission towers are large steel structures (lattice or monopoles) used to carry high-voltage power lines. Power poles are single steel-reinforced concrete or wooden poles used to carry lower-voltage power lines.

Indicative image of transmission lines can be seen below



In Victoria, AusNet provide some additional information on their website at:
www.ausnetservices.com.au/electricity/transmission-network



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