Notes for solar panel arrays: 14.1 to 14.4

There are four separate exemptions for solar panel arrays – two for ground-mounted and two for roof-mounted. You will need to check if an engineer is required according to the descriptions.

1. Ground-mounted solar panel arrays outside rural zones not exceeding 20 square metres in size or in rural zones with no size limitation.
2. Ground-mounted solar panel arrays exceeding 20, but not exceeding 40, square metres in size outside rural zones. Ground-mounted solar panel arrays not exceeding 40 square metres in size can be built when the design is carried out or reviewed by a Chartered Professional Engineer.
3. Roof-mounted solar panel arrays of less than 40 square metres and where design wind speeds do not exceed 44 metres per second.
4. Roof-mounted solar panel arrays of more than 40 square metres or where design wind speeds exceed 44 metres per second. Roof-mounted solar panel arrays exceeding 40 square metres or in a wind zone exceeding high can be installed without a building consent when the structural fixtures are designed or reviewed by a Chartered Professional Engineer. This could include using pre-engineered kitsets with a unified signoff from a Chartered Professional Engineer.

Before you begin your project, consider the following

District planning

Always check with your regional council to make sure your proposed building work does not have any district planning implications taking consideration of maximum site coverage, yard or setback requirements, daylight access planes or permitted activities. A resource consent may be required and it is important that this is obtained before starting any building work.

Refer to Daylight recession planes

Electrical regulations

It is important to make sure all solar panel arrays comply with the relevant electrical regulations and standards.

Further to local council regulations, if an owner wants to connect the solar panel arrays to the power grid they must comply with any requirements of local line companies. Your local council will look at certain installation and electrical safety requirements, as solar power systems might overload the power grid and the relevant authorities make sure this does not occur.

The typical weight of solar panel arrays is assumed to be less than 30 kilograms/square metre (approximately 15 to 20 kilograms/square metre). The solar panel arrays are comprised of individual panels with different length, width, and thickness.

SNZ PAS 6014:2025 Residential solar photovoltaics (PV) and battery storage systems guideline — standards.govt.nz

Location

Three of the solar panel exemptions can only be used where the design wind speed at the location for the solar panel array does not exceed 44 metres per second or alternatively, the wind zone must not exceed the “high” wind zone per the Building Code provisions. An owner can find all the information about the design wind speeds or wind zones in NZS 3604 and AS/NZS 1170.2, which are both referenced in B1/VM1 or B1/AS1. Most councils also have generic wind zone information for their jurisdictions.

NZS 3604 Timber-framed buildings — standards.govt.nz

AS/NZS 1170.2 Structural design actions, Part 2: Wind actions — standards.govt.nz

If you are planning on adding a roof-mounted solar panel array in a very high or greater wind zone, you will need to meet the conditions for exemption 48A (section 14.4 of this document)

Ground-mounted solar panel arrays

To qualify for these exemptions, the ground-mounted solar panel arrays are required to be supported by multiple connections on multiple posts or columns. Single post or column construction is considered to put adjacent property and people at a higher risk of harm in the event of failure.

This exemption allows solar panel arrays to be located as close as five metres from a residential building (dwelling). However, when determining the position of the panels, consideration needs to be given to:

- ensuring there is a reasonable separation distance if the residential building (or solar panel arrays) experiences structural instability, such as during an earthquake, strong wind, or fire
- ensuring that escape routes from an existing residential building are not compromised.

Roof-mounted solar panel arrays

The two exemptions for roof-mounted solar panel arrays apply to building work in connection with one or more solar panel arrays mounted on a roof that are each supported by a frame or structure attached to the roof with structural fixings.

Arrays that are more than 40 square metres in size or are mounted in a wind zone greater than high must have the fixings designed or reviewed by a Chartered Professional Engineer. This could include using pre-engineered kitsets with a unified signoff from a Chartered Professional Engineer.

14.1 Ground-mounted solar panel arrays



This exemption applies to solar panel arrays located outside rural zones, with each array limited to a maximum area of 20 square metres. You may install multiple arrays under this exemption, provided that no individual array exceeds the 20 square metre limit.

On this page:

- What the law says
- How it works
- What is exempt
- What needs consent

What the law says

Schedule 1 of the Building Act 2004

Exemption 28C. Ground-mounted solar panel arrays

1. Building work in connection with a ground-mounted solar panel array if:

(a) the array, if outside a rural zone, does not exceed 20 square metres in size; and

(b) the array is supported by a frame or structure that is on the ground; and

(c) the frame or structure is attached to the ground by more than a single post; and

(d) the distance from the top of the array to the ground does not exceed four metres; and

(e) the array is at least five metres from any residential building, public road, railway, or legal boundary; and

(f) either:

(iv) the design wind speeds do not exceed 44 metres per second (calculated using Verification Method B1/VM1); or

(v) the array is located in a wind zone no greater than high (as defined in Acceptable Solution B1/AS1).

How it works

The size of solar panels must be measured according to the actual size of the array installed.

In rural zones the likelihood of encountering an existing infrastructure and people is significantly lower than in urban zones. For this reason, as long as all conditions in this exemption are met, there is no restriction on the size of ground-mounted solar panel arrays in rural zones.

Before you begin, please read the Notes for solar panel arrays: 14.1. to 14.4.

What is exempt

1. An urban dwelling owner intends to erect 15 square metres of ground-mounted solar panel arrays on their land. The council's wind maps classify the location as 'high'. The panels will be fixed to the ground with multiple posts or columns and will be located seven metres from the boundary.
2. A rural dwelling owner intends to erect ground-mounted solar panel arrays with total surface area of 50 square metres on their property. Council maps indicate the owner's property is in a medium wind zone. The panels will be fixed to the ground with multiple support points and located 10 metres from the boundary. As the property is rural, the 20 square metre limit per array does not apply.
3. An urban dwelling owner intends to erect two 18 square metre ground-mounted solar panel arrays on their property. The wind zone for the location is high, the panels will be fixed to the ground with multiple support points and located seven metres from the boundary. As the arrays are under 20 square metres each, a building consent is not required.

What needs consent

1. An urban-based owner of a dwelling intends to erect a single ground-mounted solar panel array measuring 30 square metres on their land. The council maps classify the location of the owner's property as a low wind zone. A building consent is

required because the size of the solar panel array exceeds 20 square metres outside of a rural zone.

2. An urban-based owner of a dwelling intends to install 15 square metres of ground-mounted solar panel arrays on their land. The council maps classify the location of the owner's property as a low wind zone. The site plan shows that panels are placed within two metres from the residential dwelling. A building consent is required because the panels are located less than five metres from a residential building.

3. A rural-based owner of a dwelling intends to erect ground-mounted solar panel arrays on their land. Council maps classify the proposed location as an "extra-high" wind zone. A building consent is required as the wind zone exceeds a high level.

4. A farm owner decides to install ground-mounted solar panel arrays on their farm. The owner wants to support the bank of panels with a single post to minimise the disruption on their land due to required excavation. A building consent is required because the owner has opted for a single post or column to support the solar panel arrays.

5. A rural-based owner of a dwelling intends to erect 40 square metres of ground mounted solar panel arrays on their land. Council maps classify the location of the owner's property as a low wind zone, and the panels are to be fixed to the ground with the multiple support points and located with at least 10 metres distance from any boundary. However, the drawings show that the maximum distance from the top of the panels to the ground is five metres. A building consent is required because the maximum height of panels from the ground exceeds four metres.

14.2 Ground-mounted solar panel between 20 and 40 sqm in size (outside rural zones)



The size of the solar panel arrays must be between 20 and 40 square metres. Multiple arrays can be installed as long as each array does not exceed the size limit.

On this page:

- What the law says
- How it works
- What is exempt
- What needs consent

Legally required professional: Chartered Professional Engineer.

What the law says

Schedule 1 of the Building Act 2004

Exemption 48. Ground-mounted solar panel arrays exceeding 20, but not exceeding 40 square metres in size (outside rural zones)

Building work in connection with a ground-mounted solar panel array outside a rural zone if:

(a) the array is supported by a frame or structure that is on the ground; and

(b) the frame or structure is attached to the ground by more than a single post; and

(c) the distance from the top of the array to the ground does not exceed 4 metres; and

(d) the array exceeds 20 square metres in size, but does not exceed 40 square metres; and

(e) the array is at least 5 metres from any residential building, public road, railway, or legal boundary; and

(f) either:

(i) the design wind speeds do not exceed 44 metres per second (calculated using Verification Method B1/VM1); or

(ii) the array is located in a wind zone no greater than high (as defined in Acceptable Solution B1/AS1).

How it works

The size of solar panels must be measured according to the actual size of panels installed.

Before you begin, please read the Notes for solar panel arrays: 14.1. to 14.4. section.

If using this exemption, a homeowner must engage a Chartered Professional Engineer to carry out or review the design of any building work, for example designing the necessary fixings to support the solar panel arrays greater than 20 square metres and not exceeding 40 square metres and subsequently, the work must be carried out in accordance with that design. Some suppliers and manufacturers of proprietary products have pre-engineered kitsets with a unified sign-off from a Chartered Professional Engineer.

What is exempt

1. The owner of urban-based dwelling intends to build 35 square metres of ground-mounted solar panel arrays on their land. Council maps indicate the location of the owner's property is in a high wind zone. The owner will engage a Chartered Professional Engineer to design the structural supports, connections, fixings and foundation and the subsequent building work will also be carried out in accordance with that design.

2. An owner of a dwelling in an urban zone wishes to erect two ground mounted solar panel arrays (measuring 20 and 25 square metres) totalling 45 square metres on their land. A building consent is not required because neither of the solar panel arrays exceed 40 square metres in size.

What needs consent

1. An owner of a dwelling in an urban zone wishes to erect a single ground mounted solar array measuring 45 square metres on their land. A building consent is required because the size of the solar panel array exceeds 40 square metres.
2. An owner in an urban area intends to erect 35 square metres of ground- mounted solar panel arrays on their land. The council wind maps indicate that the owner's property is in an extra high wind zone. A building consent is required because the wind speed zone exceeds a "high" rating.

14.3 Roof-mounted solar panel arrays of less than 40 square metres in size

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A building consent is not required for the installation of a roof-mounted solar panel array that measure less than 40 square metres.

On this page:

- What the law says
- How it works
- What is exempt
- What needs consent

Multiple arrays can be installed as long as each array does not exceed the size limit and is mounted on an independent roof structure.

What the law says

Schedule 1 of the Building Act 2004

Exemption 28D. Roof-mounted solar panel arrays of less than 40 square metres.

Building work in connection with a ground-mounted solar panel array outside a rural zone if:

(a) the array does not, or, if there is more than 1 array mounted on the roof, the arrays in total area do not, exceed 40 square metres; and

(b) the array is, or, if there is more than 1 array mounted on the roof, the arrays are each, supported by a frame or structure; and

(c) the frame or structure is attached to the roof with structural fixings; and (d) either:

(i) the design wind speeds do not exceed 44 metres per second (calculated using Verification Method B1/VM1); or

(ii) the array is located in a wind zone no greater than high (as defined in Acceptable Solution B1/AS1)

How it works

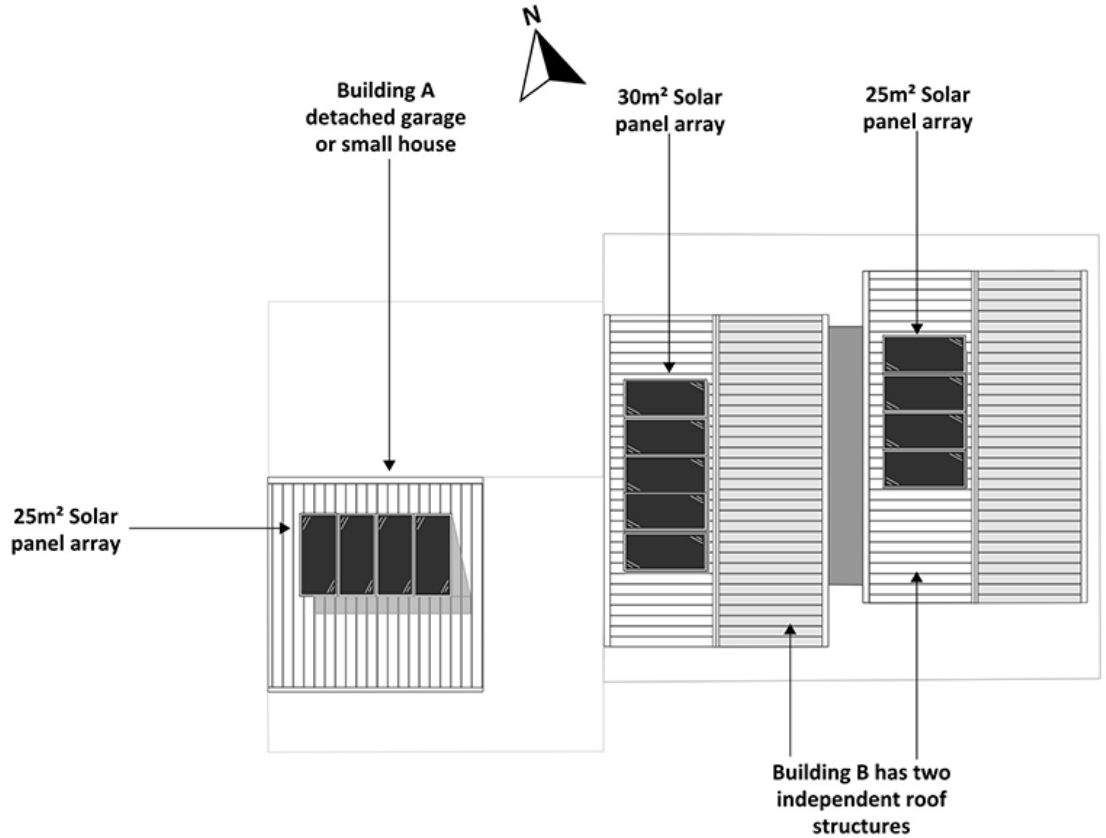
The size of solar panels must be measured according to the actual area of the array(s) installed.

Before you begin, please read the Notes for solar panel arrays: 14.1. to 14.4. section.

Under this exemption you are able to install multiple solar panel arrays as long as the total area of the arrays mounted on each independent roof structure is no more than 40 square metres. If the total combined array area will measure more than 40 square metres, or if the wind speed is greater than “high”, refer to section 14.4 Roof-mounted solar panel arrays of more than 40 square metres or where the design wind speeds exceed 44 metres per second (exemption 48A).

For non-rectangular buildings, an independent structure can be described as independent parts of the roof that are supported by separate structures (load bearing walls etc).

Your solar panel arrays should be installed at least 600 mm away from roof edges and gutters, and must not extend beyond the roofline.



Building A has a single roof structure, and so under this exemption could only support up to 40 square metres without a Chartered Professional Engineer's design or a building consent.

Building B has two independent roof structures, and so under this exemption the building could support multiple solar arrays without a Chartered Professional Engineer's design or a building consent as long as the total area of the arrays mounted on each independent roof structure is no more than 40 square metres.

What is exempt

1. A homeowner decides to install a 35 square metre solar array panel to the roof of their house. Council maps indicate that the property is in a high wind zone (i.e. wind speeds less than 44 metres per second). A building consent is not required due to the size of the array and the wind zone.
2. A school intends to add multiple roof-mounted solar panel arrays to classrooms that face north. Each array will measure less than 40 square metres and the wind zone is high. A building consent is not required if each array will be mounted on an independent structure.

What needs consent

1. The owner intends to install a single solar panel array on the roof of their house, measuring 30 square metres. The wind zone is greater than high, which means that the structural fixings attaching the array to the roof will need to be designed or approved by a chartered professional engineer. However, the owner does not want to use pre-engineered fixings that have been signed off by a Chartered Professional Engineer, nor do they intend to engage an Engineer to design the fixings. A building consent is required.
2. For any roof-mounted solar panel installation that does not meet the conditions for this exemption, refer to Section 14.4 Roof-mounted solar panel arrays of more than 40 square metres or where the design wind speeds exceed 44 metres per second (exemption 48A).

14.4 Roof-mounted solar panel arrays of more than 40 square metres in size



A building consent is not required for roof-mounted solar panel arrays exceeding 40 square metres, or where the wind speed is greater than high, if a Chartered Professional Engineer has carried out or reviewed the design of any structural fittings.

On this page:

- What the law says
- How it works
- What is exempt
- What needs consent

Legally required professional: Chartered Professional Engineer.

What the law says

Schedule 1 of the Building Act 2004

Exemption 48A. Roof-mounted solar panel arrays of more than 40 square metres or where design wind speeds exceed 44 metres per second

Building work in connection with 1 or more solar panel arrays mounted on a roof if:

(a) the array is, or, if there is more than 1 array mounted on the roof, the arrays are each, supported by a frame or structure; and

(b) the frame or structure is attached to the roof with structural fixings; and

(c) either:

(i) the array exceeds, or, if there is more than 1 array mounted on the roof, the arrays in total area exceed, 40 square metres; or

(ii) the design wind speeds exceed 44 metres per second (calculated using Verification Method B1/VM1).

How it works

Before you begin, please read the Notes for solar panel arrays: 14.1. to 14.4. section.

If using this exemption, a building owner must either:

- have a Chartered Professional Engineer carry out or review the design of the structural fixings and subsequently, the work must be carried out in accordance with that design, or
- use pre-engineered kitsets with a unified signoff from a Chartered Professional Engineer.

What is exempt

1. An owner of an office block intends to install a single array measuring 65 square metres on their building. The solar installer will engage a Chartered Professional Engineer to design the structural fixings and the subsequent building work will also be carried out in accordance with that design. A building consent is not required.
2. A homeowner plans to install a roof-mounted solar panel array measuring 35 square metres on their house. The wind zone of the property is greater than high (i.e. over 44 metres per second). The installer uses a pre-engineered kitset with a unified signoff from a Chartered Professional Engineer, so a building consent is not required.

What needs consent

1. The owner intends to install multiple solar panel arrays on the roof of their warehouse, measuring 150 square metres in total. The wind zone is greater than high. The owner does not want to use pre-engineered fixings that have been signed off by a Chartered Professional Engineer, nor do they intend to engage an Engineer to design the fixings. A building consent is required.