

FEASIBILITY STUDIES

DISCOVER DIFFERENT CONSTRUCTIVE SOLUTIONS IN AUSTRALIA

FEASIBILITY STUDY SYDNEY

HIDDEN PV IN WHITE COLOR

- INTENSE GREEN
100 W/M²
- WHITE
110 W/M²
- MARBLE BROWN
115 W/M²
- DEEP BLUE
160 W/M²

CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m ²)	110 Wp per m ²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	2.780 KWh per m ²
Kg of CO ₂ avoided	2.300 Kg per m ²
Kilometres driven in an electric car	16.000 Km per m ²
Light points fed	5,5 per m ² /day

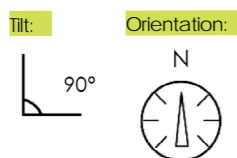
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	970€ per m ²
Return on investment	9 times
Internal rate of return (IRR)	24 %
Payback time	5 years
Building's value increase**	480 € per m ²

RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	2.916 KWh per m ²
Payback time (Melbourne)	4.7 years
Electricity generated (Perth)	3.400 KWh per m ²
Payback time (Perth)	7.4 years
Electricity generated (Hobart)	3.400 KWh per m ²
Payback time (Hobart)	7.4 years

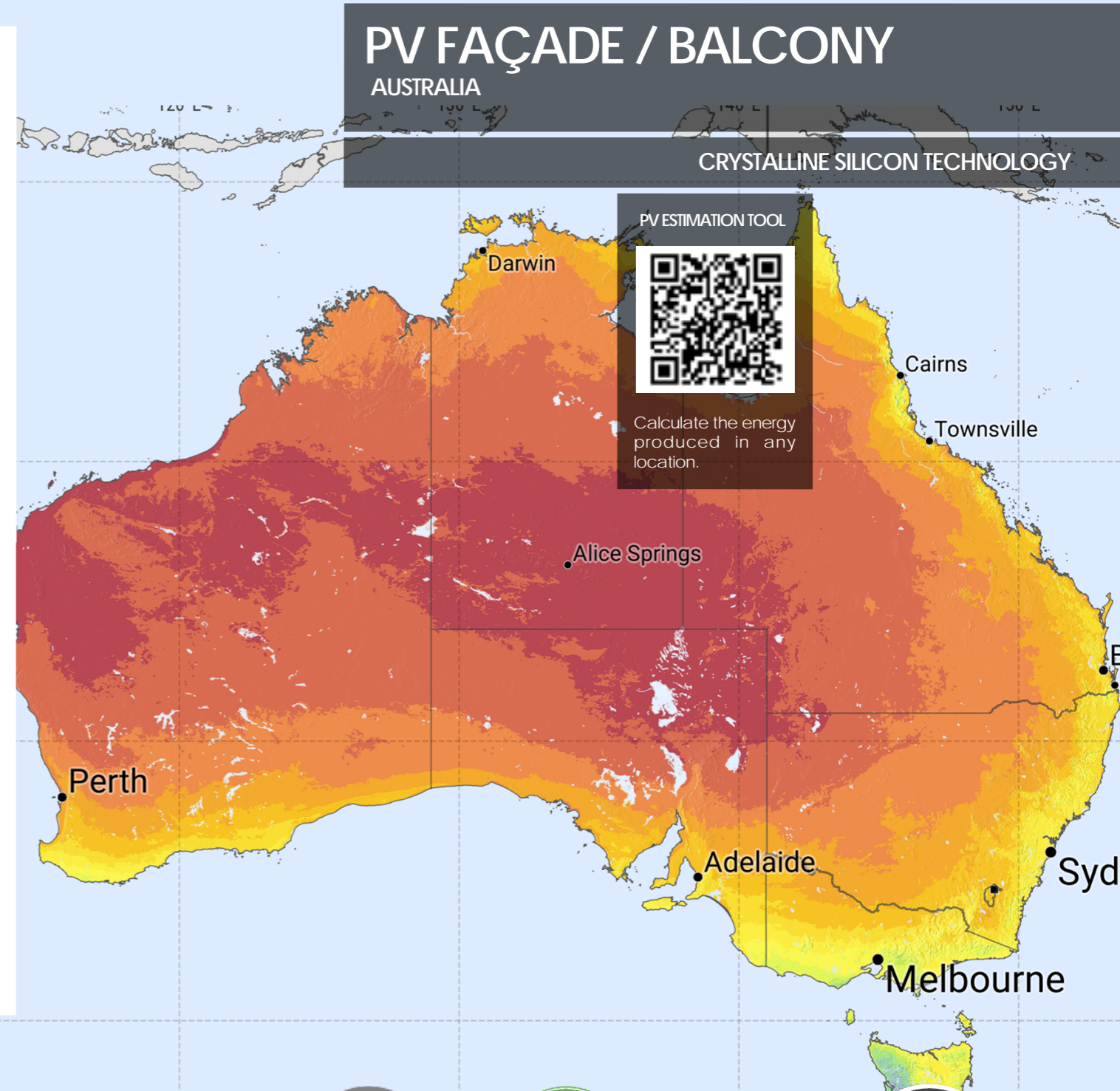
DATA CONSIDERED FOR CALCULATIONS



PV FAÇADE / BALCONY

AUSTRALIA

CRYSTALLINE SILICON TECHNOLOGY

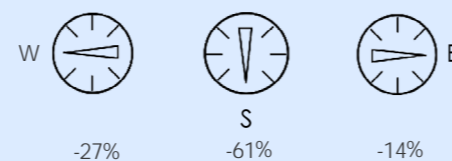


PV ESTIMATION TOOL



Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION



Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce.

FEASIBILITY STUDY SYDNEY

HIDDEN PV IN WHITE COLOR

	INTENSE GREEN 100 W/M ²
	WHITE 110 W/M ²
	MARBLE BROWN 115 W/M ²
	DEEP BLUE 160 W/M ²

CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m ²)	111 Wp per m ²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	2.940 KWh per m ²
Kg of CO ₂ avoided	40 Kg per m ²
Kilometres driven in an electric car	17.000 Km per m ²
Light points fed	5,8 per m ² /day

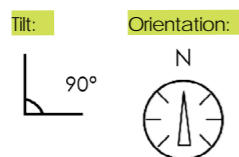
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	700 € per m ²
Return on investment	10,7 times
Internal rate of return (IRR)	28,3 %
Payback time	4 years
Building's value increase**	350 € per m ²

RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	3.084 KWh per m ²
Payback time (Melbourne)	3.8 years
Electricity generated (Perth)	3.400 KWh per m ²
Payback time (Perth)	7.4 years
Electricity generated (Hobart)	3.400 KWh per m ²
Payback time (Hobart)	7.4 years

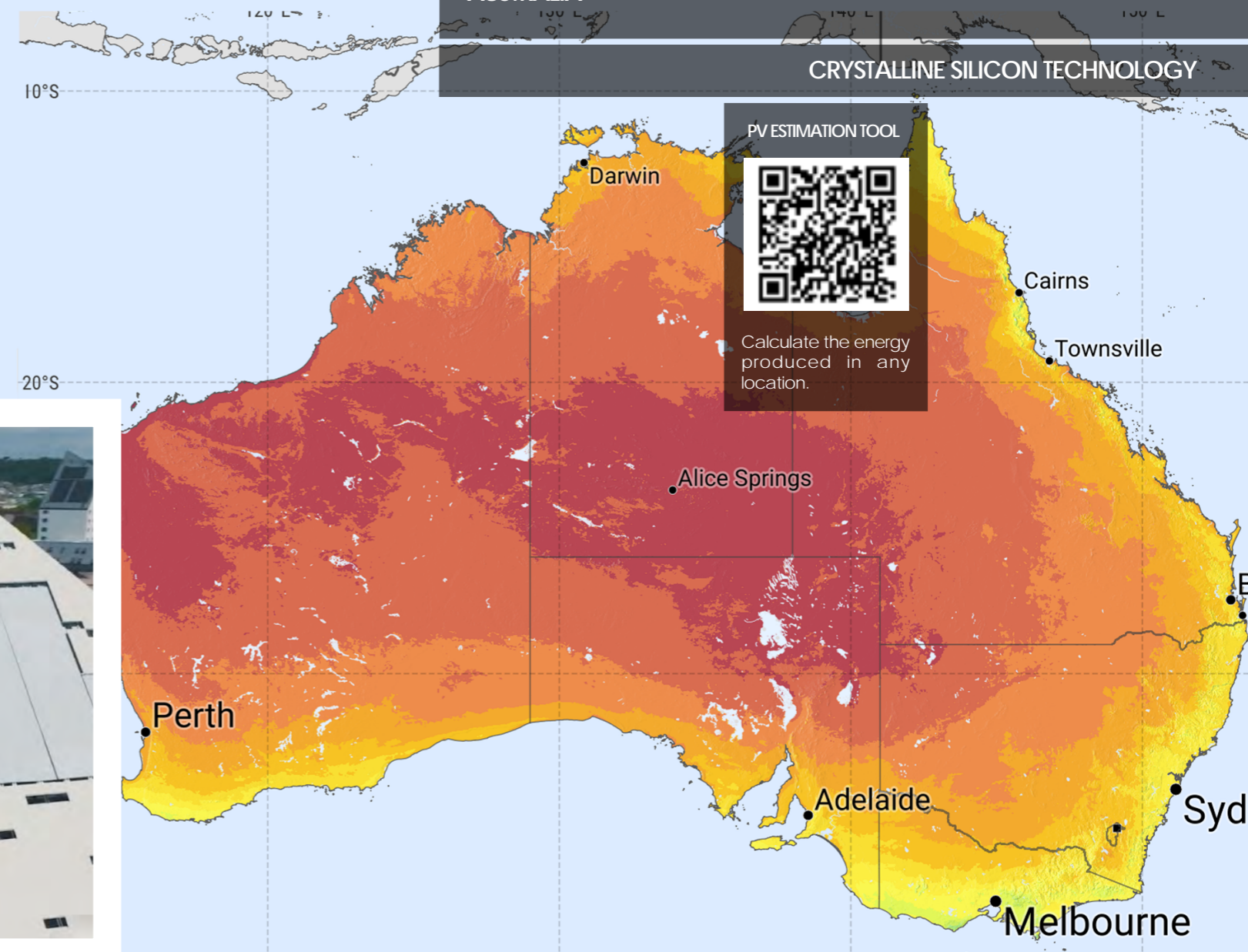
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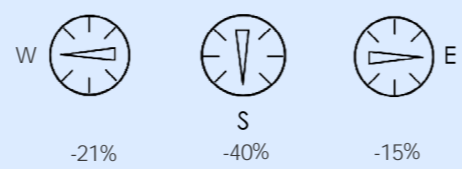
HIDDEN PV ROOF

AUSTRALIA

CRYSTALLINE SILICON TECHNOLOGY



ENERGY LOSSES PER ORIENTATION



Data Calculated for a 35-year useful life.

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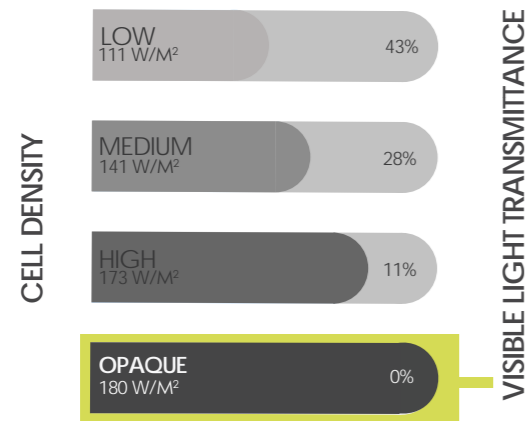
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FEASIBILITY STUDY SYDNEY

OPAQUE PV GLASS



CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m ²)	180 Wp per m ²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	4.550 KWh per m ²
Kg of CO ₂ avoided	3.775 Kg per m ²
Kilometres driven in an electric car	26.160 Km per m ²
Light points fed	9 per m ² /day

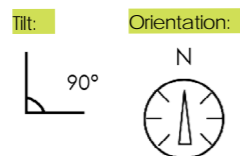
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	1.585 € per m ²
Return on investment	7,40 times
Internal rate of return (IRR)	19 %
Payback time	6 years
Building's value increase**	780 € per m ²

RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	4.770 KWh per m ²
Payback time (Melbourne)	5,7 years
Electricity generated (Perth)	3.400 KWh per m ²
Payback time (Perth)	7,4 years
Electricity generated (Hobart)	3.400 KWh per m ²
Payback time (Hobart)	7,4 years

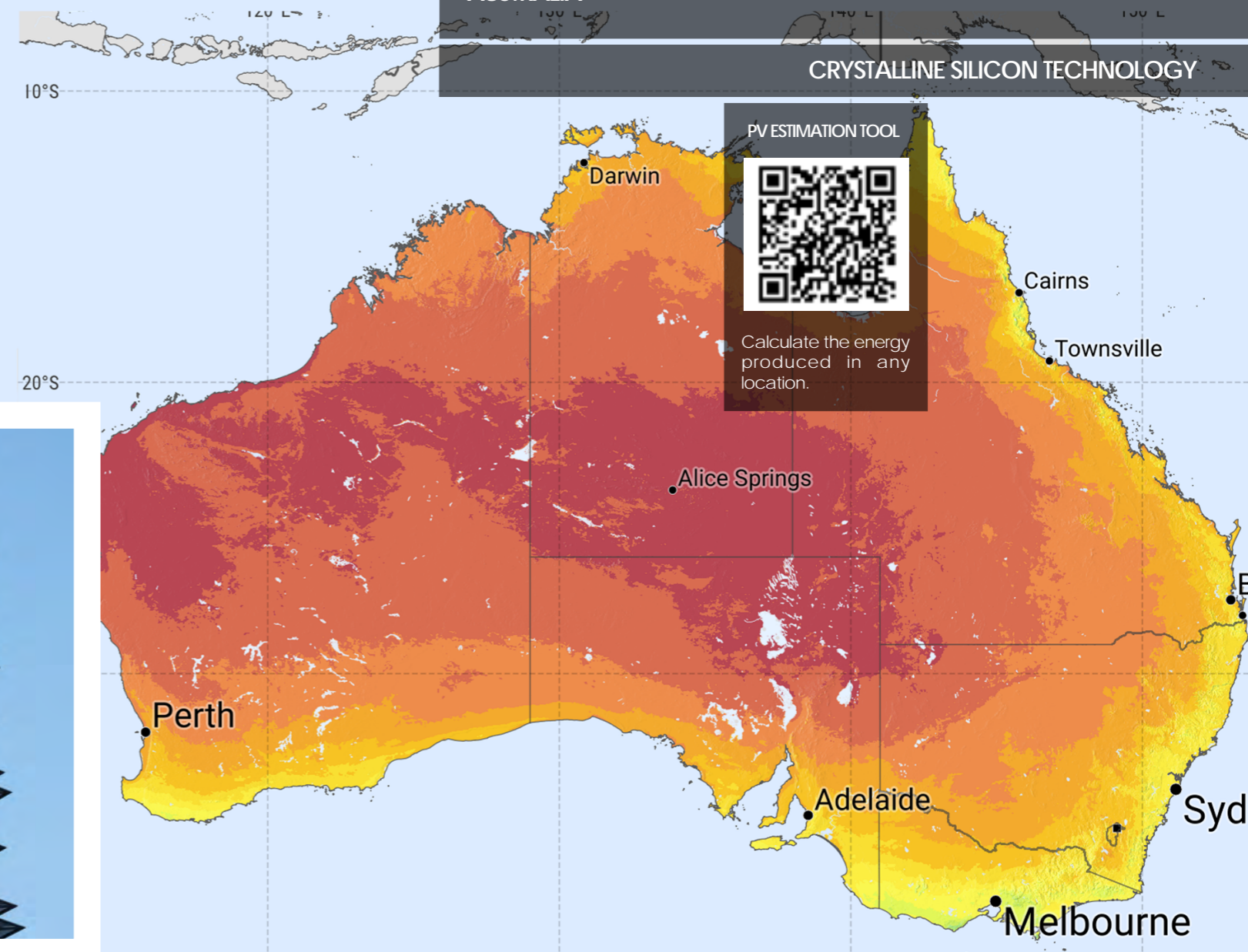
DATA CONSIDERED FOR CALCULATIONS



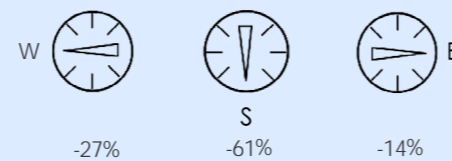
PV DOUBLE SKIN / SPANDREL

AUSTRALIA

CRYSTALLINE SILICON TECHNOLOGY



ENERGY LOSSES PER ORIENTATION



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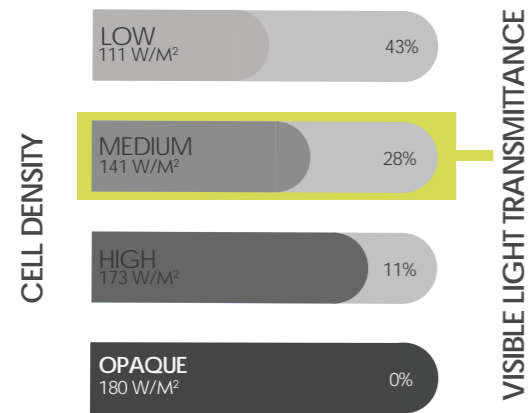


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FEASIBILITY STUDY SYDNEY

MEDIUM CELL DENSITY PV GLASS



CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m²)	141 Wp per m²
Visible light transmittance	28%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	3.560 KWh per m²
Kg of CO ₂ avoided	2.960 Kg per m²
Kilometres driven in an electric car	20.500 Km per m²
Light points fed	7 per m²/day

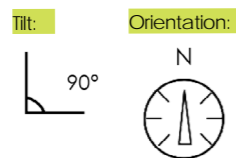
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	1.250 € per m²
Return on investment	5 times
Internal rate of return (IRR)	13,2 %
Payback time	8 years
Building's value increase**	610 € per m²

RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	3.735 KWh per m²
Payback time (Melbourne)	7,6 years
Electricity generated (Perth)	3.400 KWh per m²
Payback time (Perth)	7,4 years
Electricity generated (Hobart)	3.400 KWh per m²
Payback time (Hobart)	7,4 years

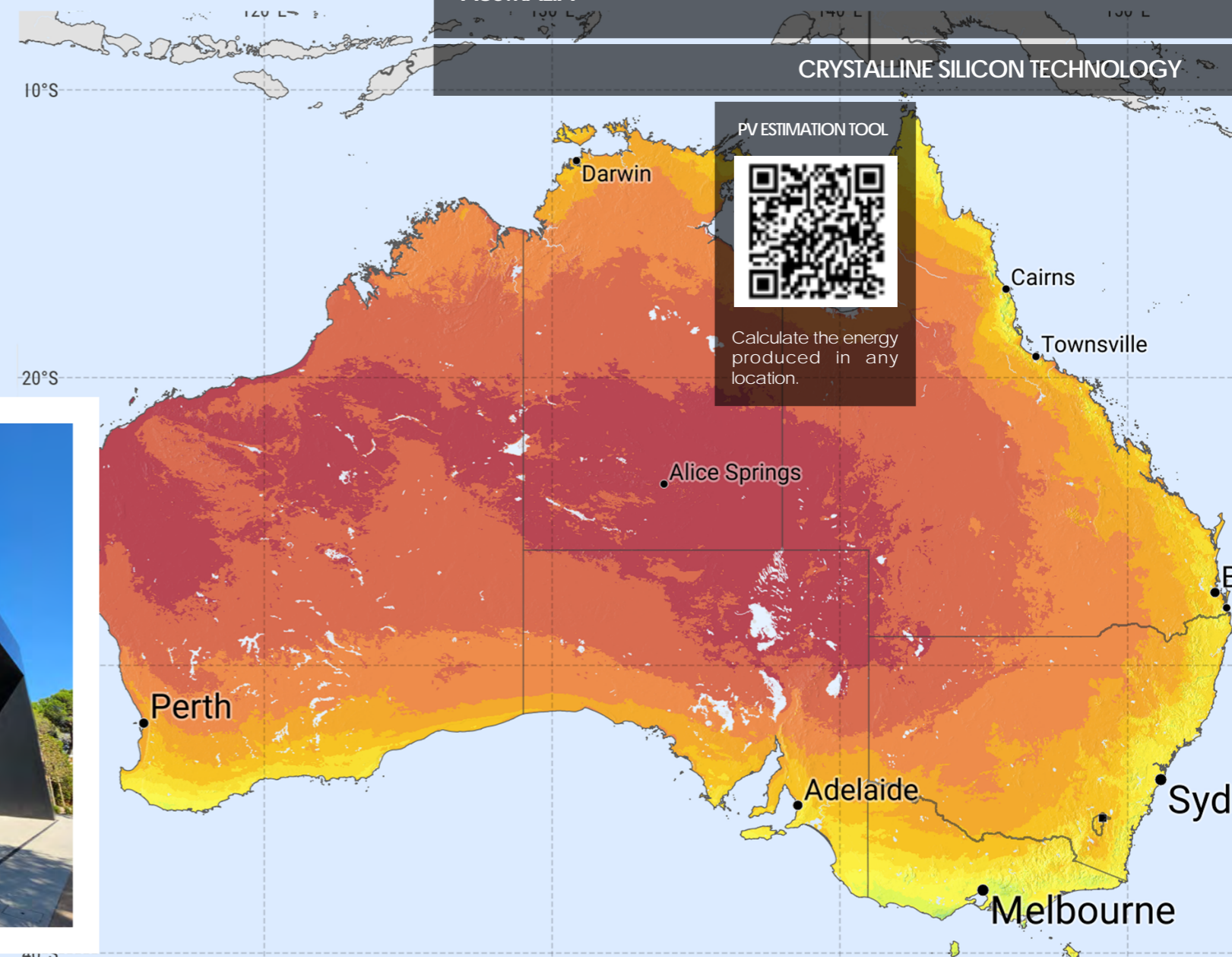
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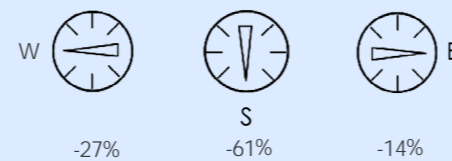
PV CURTAIN WALL

AUSTRALIA

CRYSTALLINE SILICON TECHNOLOGY



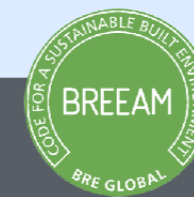
ENERGY LOSSES PER ORIENTATION



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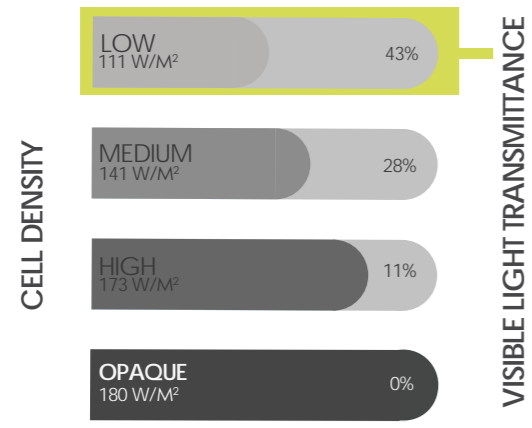
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FEASIBILITY STUDY SYDNEY

LOW CELL DENSITY PV GLASS



CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m²)	111 Wp per m²
Visible light transmittance	43%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	2.800 KWh per m²
Kg of CO ₂ avoided	2.330 Kg per m²
Kilometres driven in an electric car	16.130 Km per m²
Light points fed	5,5 per m²/day

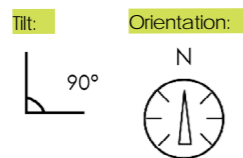
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	980 € per m²
Return on investment	4,7 times
Internal rate of return (IRR)	13 %
Payback time	9 years
Building's value increase**	480 € per m²

RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	2.930 KWh per m²
Payback time (Melbourne)	8,5 years
Electricity generated (Perth)	3.400 KWh per m²
Payback time (Perth)	7,4 years
Electricity generated (Hobart)	3.400 KWh per m²
Payback time (Hobart)	7,4 years

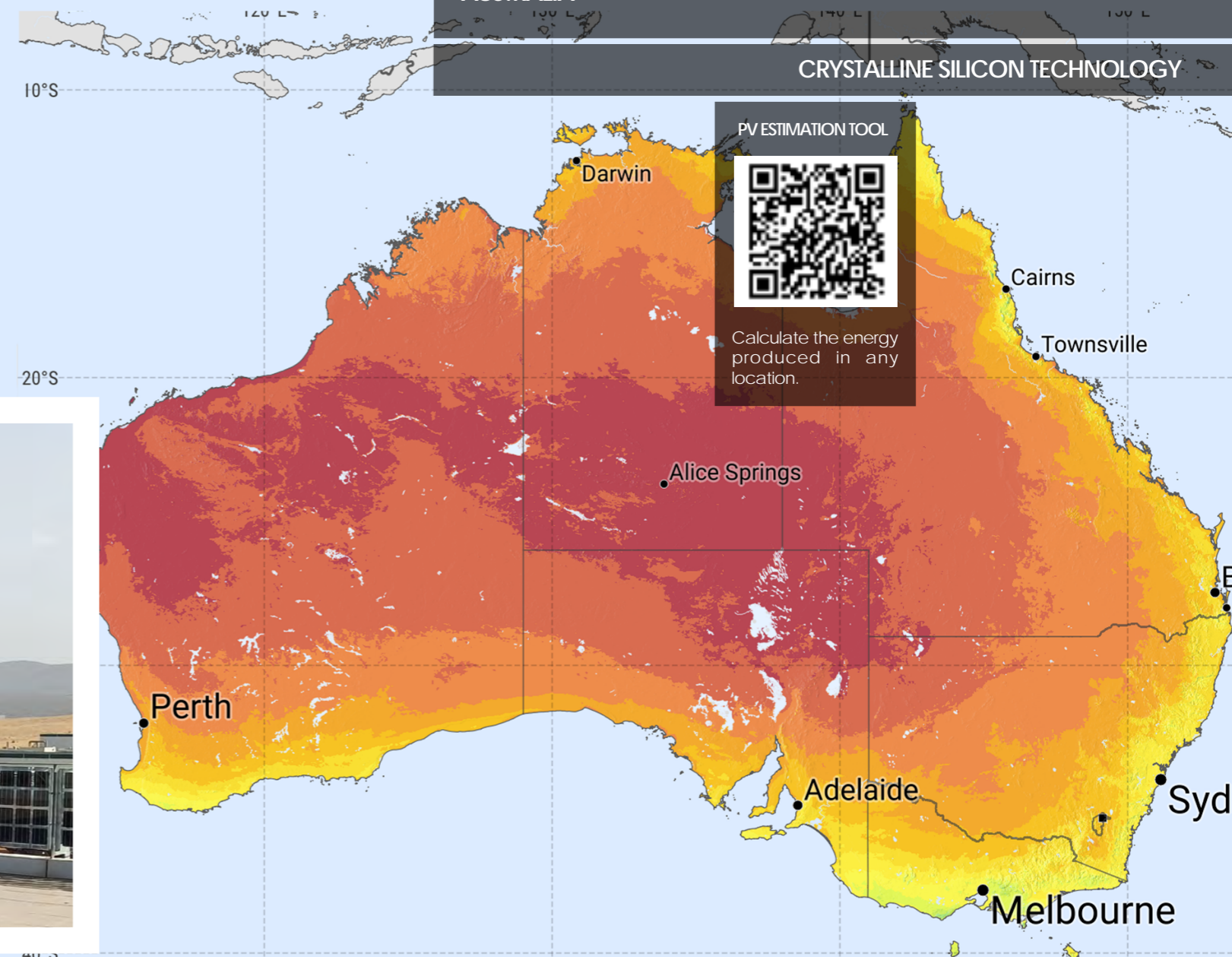
DATA CONSIDERED FOR CALCULATIONS



PV BALUSTRADE / BALCONY

AUSTRALIA

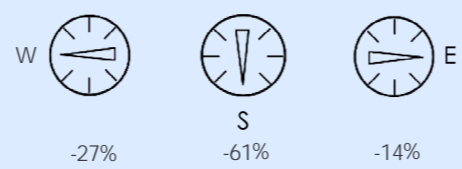
CRYSTALLINE SILICON TECHNOLOGY



PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION



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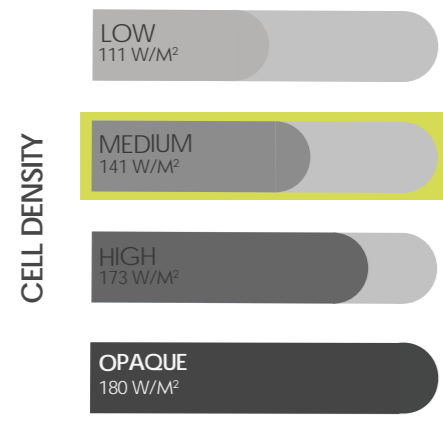
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FEASIBILITY STUDY SYDNEY

OPAQUE PV GLASS



CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m²)	140 Wp per m²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	5.100 KWh per m²
Kg of CO ₂ avoided	4.250 Kg per m²
Kilometres driven in an electric car	29.500 Km per m²
Light points fed	10 per m²/day

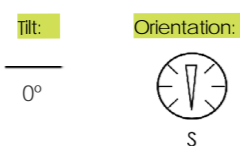
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	1.790 € per m²
Return on investment	5,5 times
Internal rate of return (IRR)	14,3 %
Payback time	8 years
Building's value increase**	890 € per m²

RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	5.350 KWh per m²
Payback time (Melbourne)	7,6 years
Electricity generated (Perth)	3.400 KWh per m²
Payback time (Perth)	7,4 years
Electricity generated (Hobart)	3.400 KWh per m²
Payback time (Hobart)	7,4 years

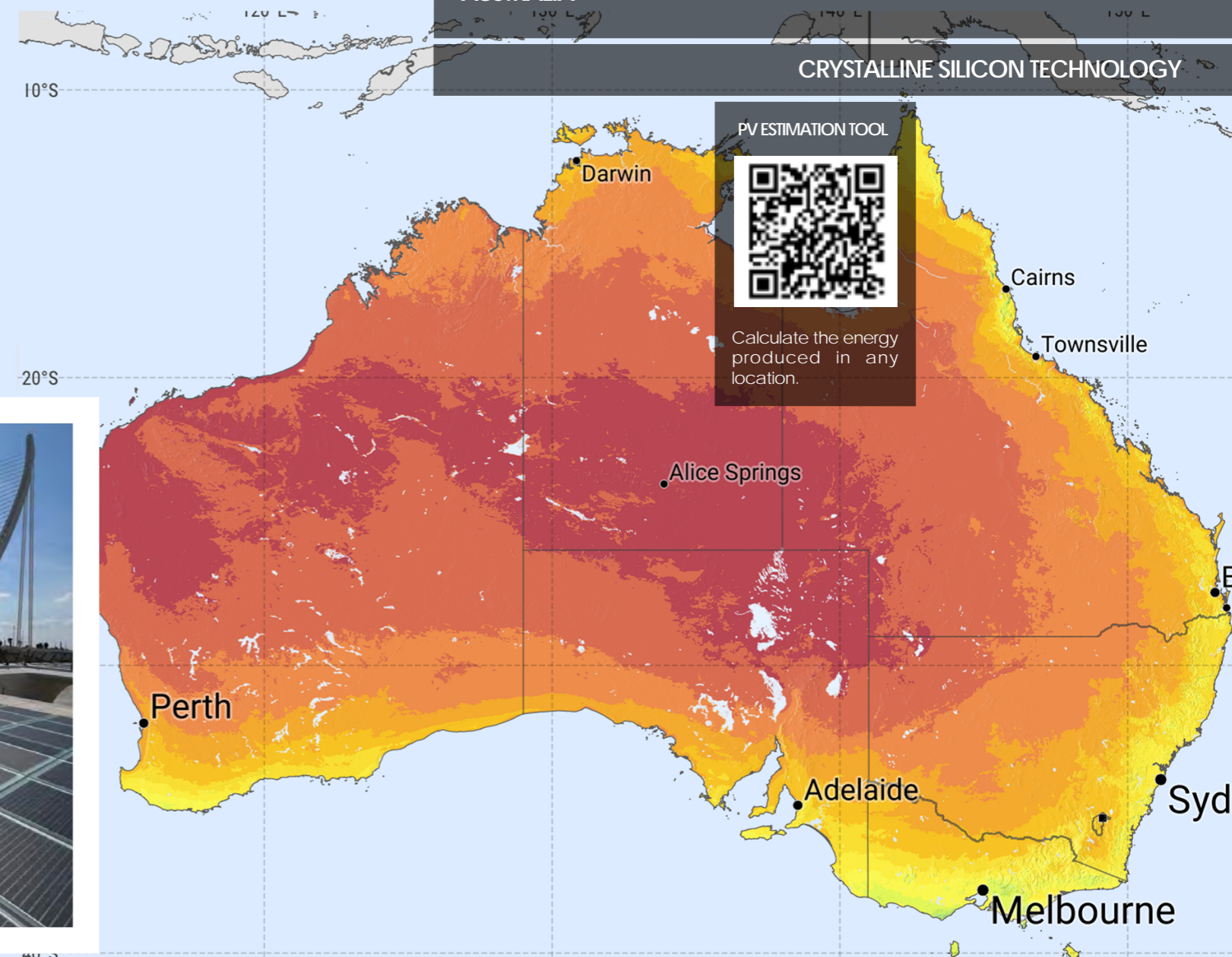
DATA CONSIDERED FOR CALCULATIONS



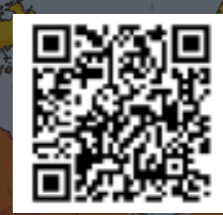
WALKABLE PV FLOOR

AUSTRALIA

CRYSTALLINE SILICON TECHNOLOGY



PV ESTIMATION TOOL



Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION



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Data Calculated for a 35-year useful life.

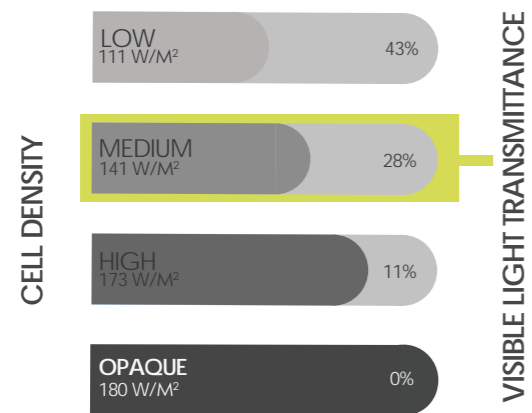
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FEASIBILITY STUDY SYDNEY

MEDIUM CELL DENSITY PV GLASS



CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m ²)	141 Wp per m ²
Visible light transmittance	28%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	5.800 KWh per m ²
Kg of CO ₂ avoided	4.800 Kg per m ²
Kilometres driven in an electric car	33.300 Km per m ²
Light points fed	11,4 per m ² /day

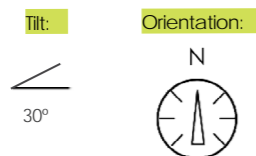
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	2.000 € per m ²
Return on investment	10,79 times
Internal rate of return (IRR)	27,6%
Payback time	4 years
Building's value increase**	1.000 € per m ²

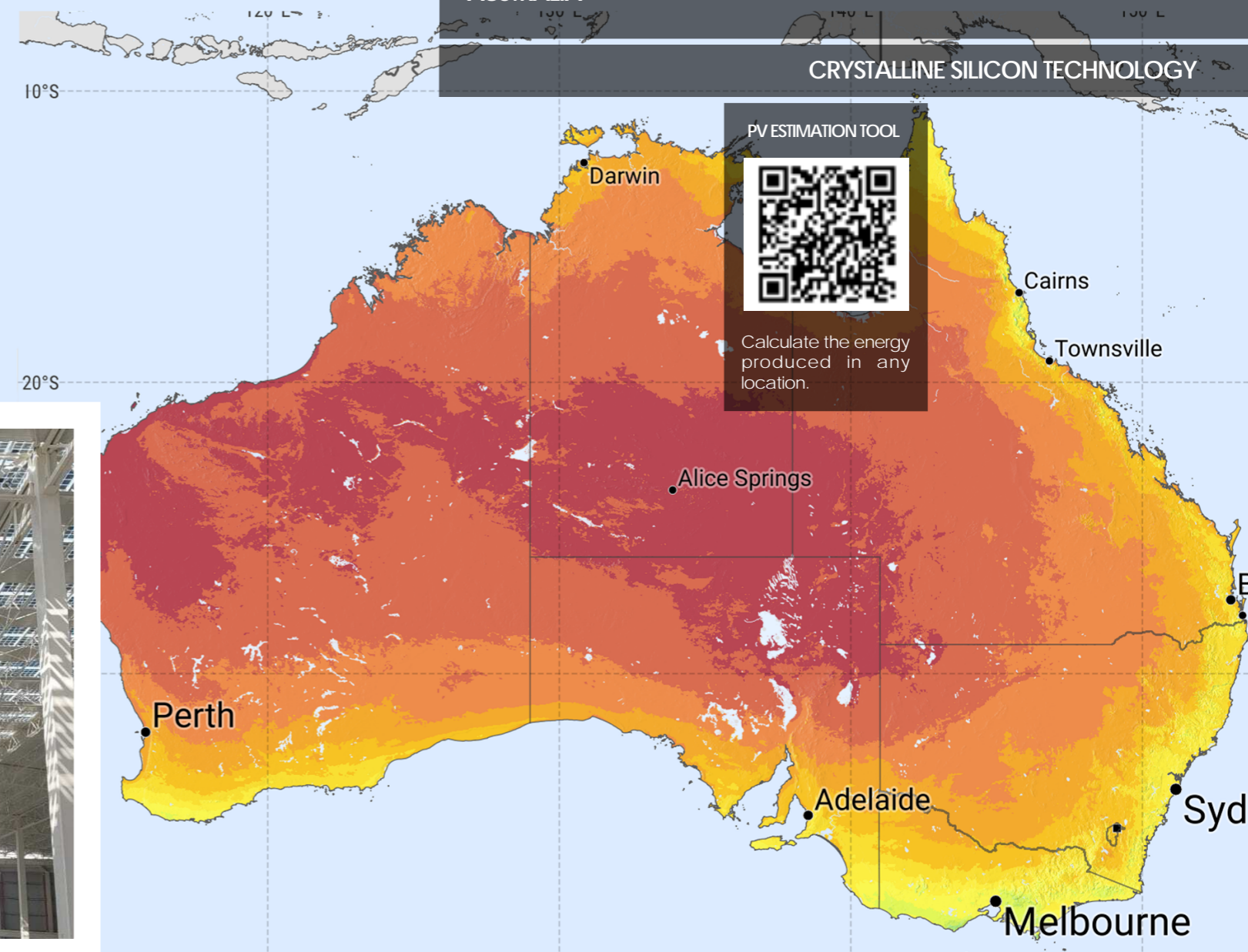
RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	6.085 KWh per m ²
Payback time (Melbourne)	3,8 years
Electricity generated (Perth)	3.400 KWh per m ²
Payback time (Perth)	7,4 years
Electricity generated (Hobart)	3.400 KWh per m ²
Payback time (Hobart)	7,4 years

DATA CONSIDERED FOR CALCULATIONS



PV SKYLIGHT AUSTRALIA

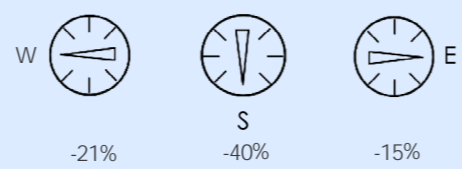


CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION



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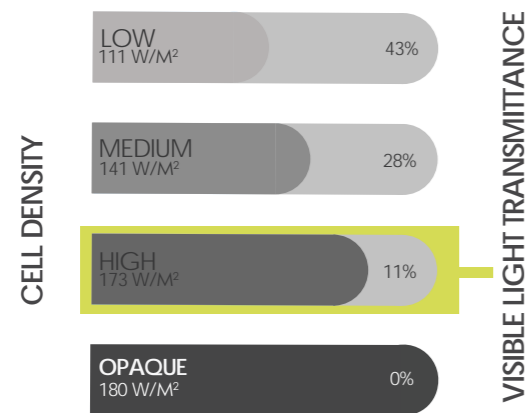
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FEASIBILITY STUDY SYDNEY

HIGH CELL DENSITY



CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m ²)	173 Wp per m ²
Visible light transmittance	11%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	6.300 KWh per m ²
Kg of CO ₂ avoided	5.200 Kg per m ²
Kilometres driven in an electric car	36.200 Km per m ²
Light points fed	12,3 per m ² /day

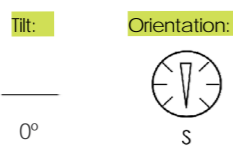
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	2.200 € per m ²
Return on investment	10,5 times
Internal rate of return (IRR)	27 %
Payback time	4 years
Building's value increase**	1.000 € per m ²

RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	6.610 KWh per m ²
Payback time (Melbourne)	3,8 years
Electricity generated (Perth)	3.400 KWh per m ²
Payback time (Perth)	7,4 years
Electricity generated (Hobart)	3.400 KWh per m ²
Payback time (Hobart)	7,4 years

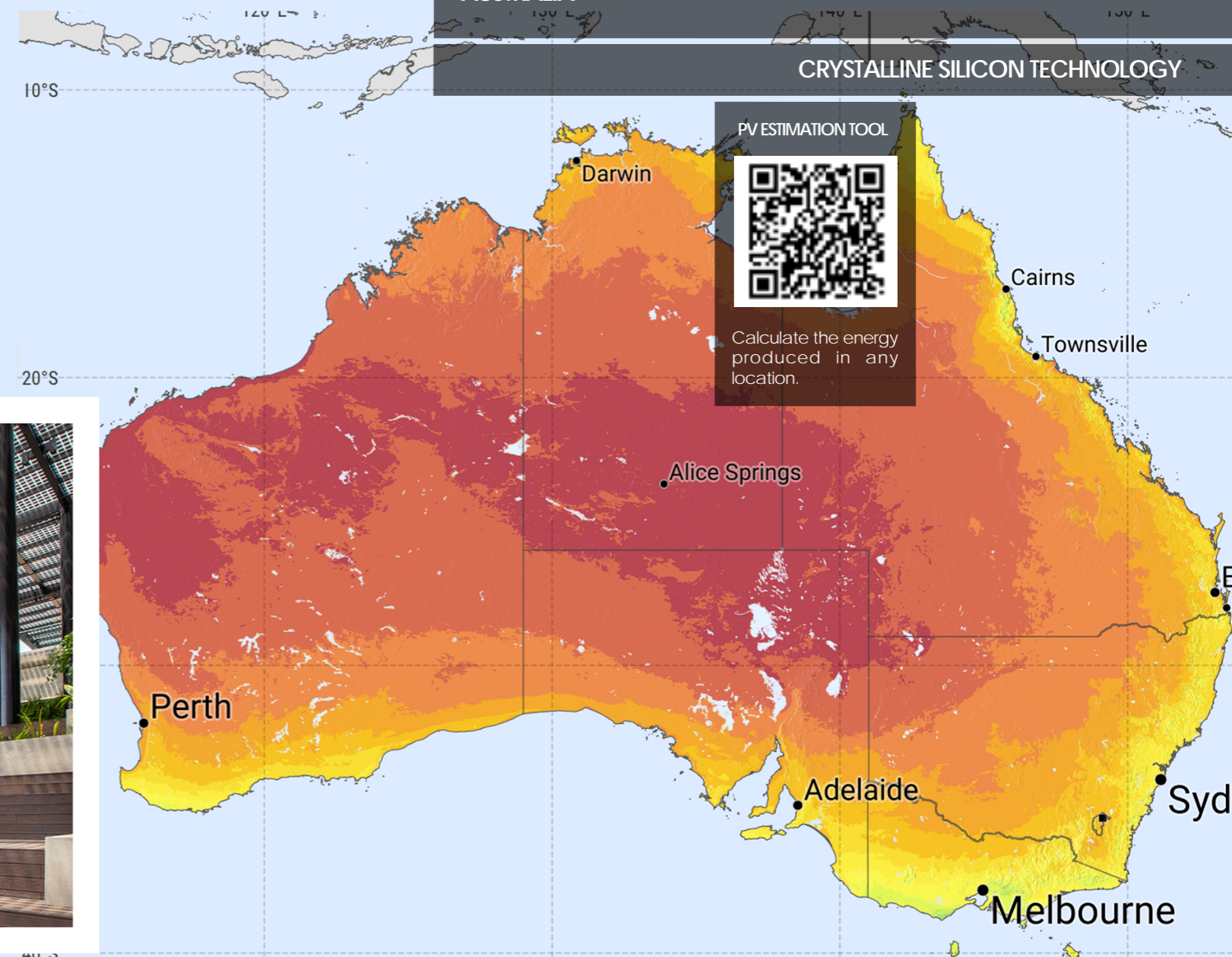
DATA CONSIDERED FOR CALCULATIONS



PV CANOPY

AUSTRALIA

CRYSTALLINE SILICON TECHNOLOGY



PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION



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Data Calculated for a 35-year useful life.

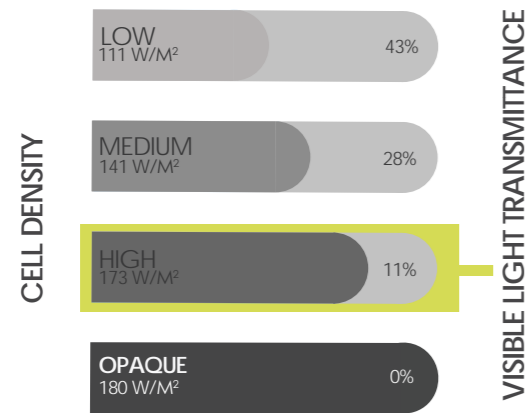
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FEASIBILITY STUDY SYDNEY

HIGH CELL DENSITY PV GLASS



CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m ²)	173 Wp per m ²
Visible light transmittance	11%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	7.100 KWh per m ²
Kg of CO ₂ avoided	5.900 Kg per m ²
Kilometres driven in an electric car	40.900 Km per m ²
Light points fed	14 per m ² /day

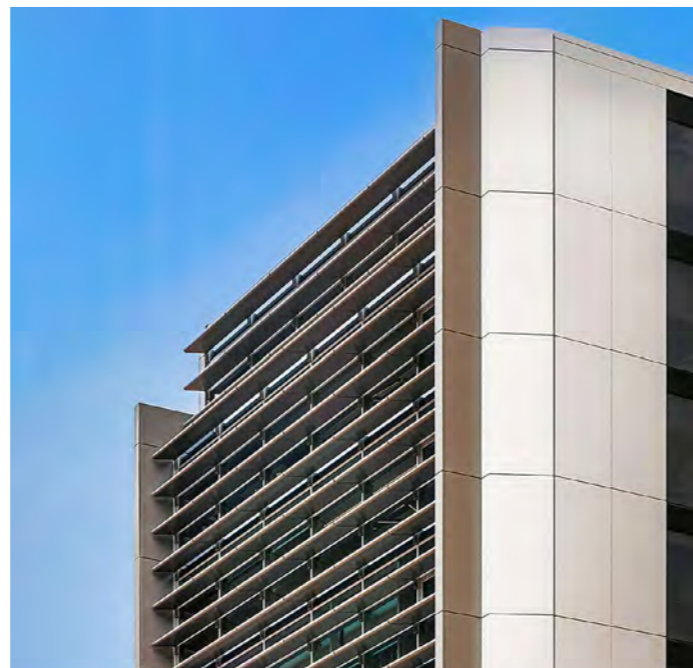
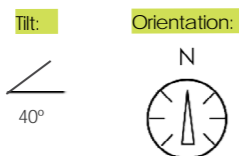
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	2.500 € per m ²
Return on investment	12 times
Internal rate of return (IRR)	30 %
Payback time	4 years
Building's value increase**	1.200 € per m ²

RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	7.205 KWh per m ²
Payback time (Melbourne)	3,8 years
Electricity generated (Perth)	7.836 KWh per m ²
Payback time (Perth)	7,4 years
Electricity generated (Hobart)	3.940 KWh per m ²
Payback time (Hobart)	7,4 years

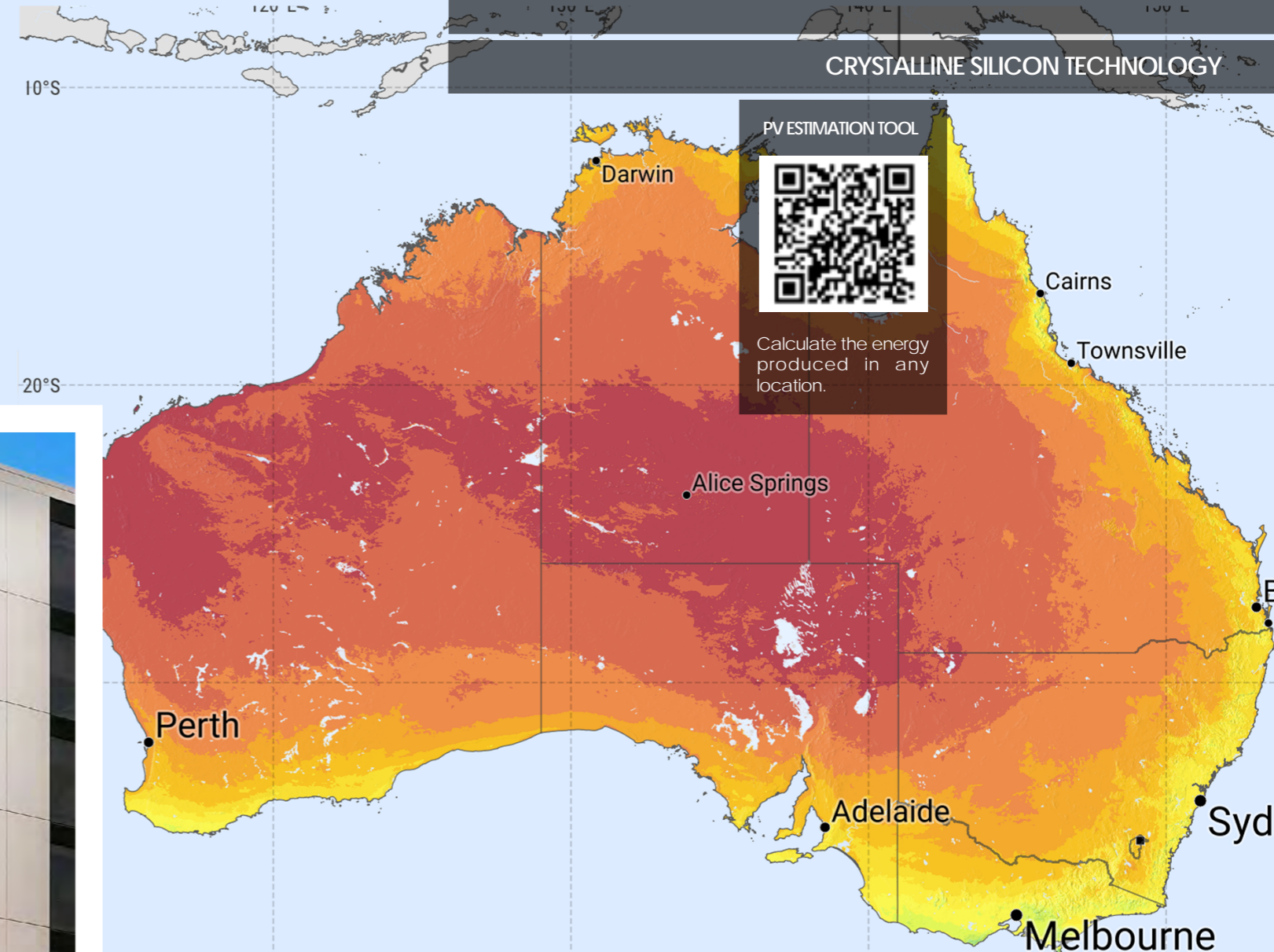
DATA CONSIDERED FOR CALCULATIONS



PV BRISE SOLEIL

AUSTRALIA

CRYSTALLINE SILICON TECHNOLOGY

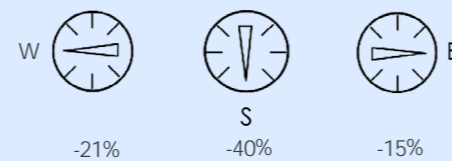


PV ESTIMATION TOOL



Calculate the energy produced in any location.

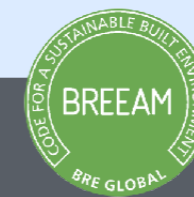
ENERGY LOSSES PER ORIENTATION



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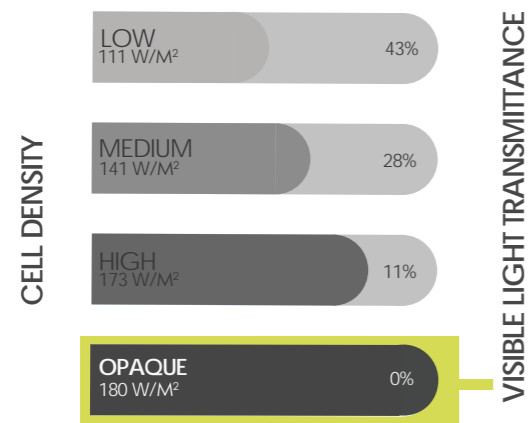


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FEASIBILITY STUDY SYDNEY

OPAQUE PV GLASS



CHARACTERISTICS OF THE INSTALLATION

Peak Power (Wp/m ²)	180 Wp per m ²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS SYDNEY

Electricity generated	4.500 KWh per m ²
Kg of CO ₂ avoided	3.775 Kg per m ²
Kilometres driven in an electric car	26.150 Km per m ²
Light points fed	9 per m ² /day

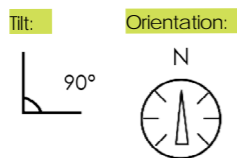
ECONOMIC BENEFITS SYDNEY*

Value of the electricity generated	1.585 € per m ²
Return on investment	6,8 times
Internal rate of return (IRR)	18 %
Payback time	6 years
Building's value increase**	780 € per m ²

RESULTS IN OTHER LOCATIONS OF AUSTRALIA

Electricity generated (Melbourne)	4.566 KWh per m ²
Payback time (Melbourne)	5,9 years
Electricity generated (Perth)	4.966 KWh per m ²
Payback time (Perth)	5,3 years
Electricity generated (Hobart)	4.533 KWh per m ²
Payback time (Hobart)	5,95 years

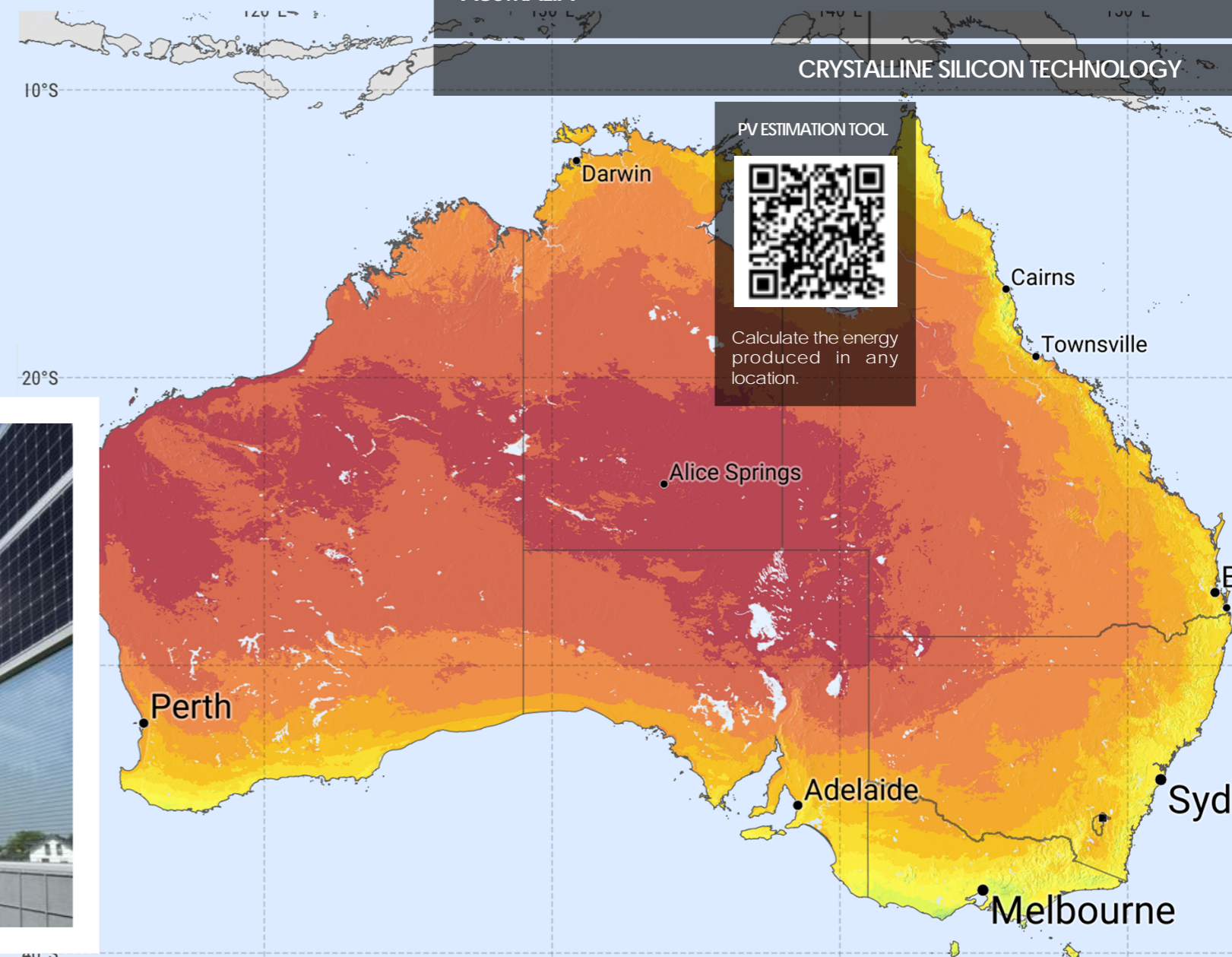
DATA CONSIDERED FOR CALCULATIONS



PV NOISE BARRIER

AUSTRALIA

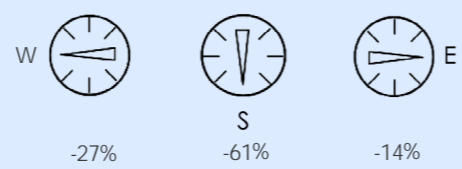
CRYSTALLINE SILICON TECHNOLOGY



PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION



Data Calculated for a 35-year useful life.

* The prices considered are merely indicative and may vary depending on the installed glass surface. The data provided in this feasibility study in no case involves a contractual obligation.
 ** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.



Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce.



HYPOTHESES & SOURCES

To study the economic and financial feasibility of the investment, our financial department has made calculations based in following hypotheses:

- The net investment to add photovoltaic properties to any construction solution refers to the price difference between solar PV glass and conventional glass, plus the cost of electrical installation. In this case, the costs for conventional glass and the electrical installation have been estimated as follows:

Hidden PV Façade: alternative building material cost of 300 €/sqm. Source: Krypton - Porcelanosa. Electrical installation cost of 0.97 AUD/Wp.

Hidden PV Roof: alternative building material cost of 300 €/sqm. Source: Krypton - Porcelanosa. Electrical installation cost of 1.61 AUD/Wp.

Double Skin/ Spandrel: conventional glass cost of 228.62 AUD/sqm. Electrical installation cost of 0.97 AUD/Wp.

Curtain Wall: conventional glass cost of 333.27 AUD/sqm. Electrical installation cost of 1.61 AUD/Wp.

Canopy: conventional glass cost of 228.62 AUD/sqm. Electrical installation cost of 0.97 AUD/Wp.

Skylight: conventional glass cost of 328.44 AUD/sqm. Electrical installation cost of 1.61 AUD/Wp.

Balustrade: conventional glass cost of 341.32 AUD/sqm. Electrical installation cost of 1.61 AUD/Wp.

Floor: conventional glass cost of 338.10 AUD/sqm.

Brise Soleil: conventional glass cost of 228.62 AUD/sqm. Electrical installation cost of 0.97 AUD/Wp.

Noise Barrier: conventional glass cost of 272.09 AUD/sqm. Electrical installation cost of 0.97 AUD/Wp.

The electrical installation cost is a provisional estimation that has been calculated considering different sources and does not imply any contractual obligation.

Light points fed = (electricity generated in the 1st year x 1,000)/12/4/365.

It has been estimated with energy efficiency 12 W light bulbs working 4 hours a day.

Kilometres in an electric car = electricity generated in 35 years x 5.75. Source: US Department of Energy.

<https://www.fueleconomy.gov/feg/pdfs/guides/FEG2019.pdf>

CO2 emissions avoided = electricity generated in 35 years x 0.83. Source: Australian Department of Environment and Energy.

<https://www.environment.gov.au/system/files/resources/5a169bfb-f417-4b00-9b70-6ba328ea8671/files/national-greenhouse-accounts-factors-july-2017.pdf>

Return on investment = (Value of the electricity generated in 35 years + incentives) / investment

Electricity price: 0.25 AUD/kWh. Source: Energy Australia.

<https://www.energyaustralia.com.au/business/electricity-and-gas/small-business/plans>

Incentives obtained: to be determined.

- Exchange rate(21/09/2021): 1€ = 1.61 AUD

- The exchange rate is orientative and does not mean any contractual obligation.

- 1 \$ of energy saved increases the value of the building up to 20 \$. Source: US Department of Energy & Environment: https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/Appraisals_LenderGuide_FINAL.pdf

The value of the electricity generated is just a preliminary estimate and does not imply any kind of guarantee. Factors such as surrounding shadows, self-shades, or other external aspects have not been taken into account. These factors might lead to a reduction in energy production. In addition, other potential losses due to BOS are also excluded from these calculations. The calculation has been done using PVWATTS and PVSYS in pre-design mode.

Onyx Solar Energy S.L. makes no representations about the accuracy of these estimates and does not warrant, or guarantee, whether express or implied, that the content in the report is accurate, complete, or up to date.



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