



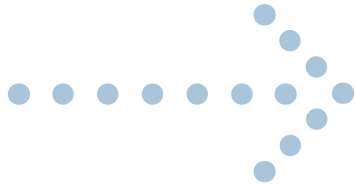
Clean Energy Council

Australian Renewable Energy Training and Workforce Strategy for 2020

Renewable Energy Jobs in 2009 and Forecasts to 2020



Ausra technology at Liddell Power Station



Foreword

In 2009, the Australian Government, through the Department of the Environment, Water, Heritage and the Arts (DEWHA), approved a grant to the Clean Energy Council, under the Low Emissions Technology Abatement (LETA) – Renewables program, to develop an Australian Renewable Energy Training and Workforce Strategy (RETWS).

The Clean Energy Council, as the project manager, engaged two consultancy firms, Global Sustainable Energy Solutions Pty Ltd and IT Power Australia, to undertake the detailed research and develop the project documents in consultation with the Council and its members.

This work seeks to provide guidance and strategies to ensure that the skills and workforce requirements of the renewable energy industry can be met from now to 2020.

The RETWS consists of three reports which draw attention to the workforce and training gaps within each state of Australia and recommends possible solutions to ensure a strong and sustainable renewable energy workforce.

The Clean Energy Council acknowledges the work of the project consultants who have undertaken detailed research, analysis and consultation with industry, the tertiary sector and other stakeholders to develop the reports. It also acknowledges the assistance of a number of its members and other industry stakeholders who have provided in-kind participation and contributions to this project.



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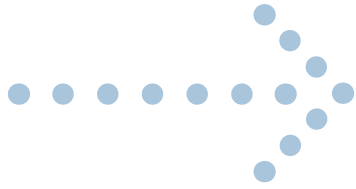
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Australian Renewable Energy Training and Workforce Strategy for 2020
Renewable Energy Jobs in 2009 and Forecasts to 2020

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Contents

Overview	4
Summary of research findings.....	4
REWTS reports	5
Renewable Energy Jobs 2009 and Forecasts to 2020	6
Development of the database	9
Survey summary	10
Renewable energy industry (Survey 1).....	11
Installer/solar water heater (Survey 2)	13
Prediction of renewable energy jobs in 2020	15
Annex A. List of companies	17
Clean Energy Council members list.....	17
Other companies	17
Accredited installers – SPS and grid-connect	23
Accredited installers – SPS only.....	26
Accredited installers – grid-connect only	26
Database Yellow Pages.....	32
Annex B. Renewable Energy Survey 1 — Questions	44
Annex C. Renewable Energy Survey 2 — Questions	47
Annex D. Data and extrapolated data from Survey 1	50
Annex E. Data and extrapolated data from Survey 2.....	70
Annex F. Assumptions used for job projections	77



Overview

In October 2007, Kevin Rudd announced that if Labor were to be elected it would commit to a renewable energy (RE) target of 20% by the year 2020. For the Labor Government to fulfil this commitment, Australia needs to grow its renewable energy industry.

Renewable energy is an essential part of Australia's low emissions energy mix and is integral to reducing the country's greenhouse gas emissions. Although Australia's renewable energy industry is rapidly expanding in line with the government's commitment of 20% by 2020, it needs to be able to sustain this growth. Sustained and continuous growth can only be achieved with the support of a skilled workforce.

In March this year, the Clean Energy Council, with the support of funding from the Department of the Environment, Water, Heritage and the Arts (DEWHA), initiated a project to develop an **Australian Renewable Energy Training and Workforce Strategy (RETWS) for 2020**. The objective of this strategy is to ensure that the workforce requirements of Australia's renewable energy industry can be met now and into the future. Further, this strategy aims to influence the availability and accessibility of appropriate training to ensure Australia has the capacity to manage the renewable energy industry's future workforce needs.

As the Clean Energy Council represents all stationary energy, this project has focused on renewable resources contributing to electricity generation. The key sectors examined are:

- Grid-connected solar photovoltaics
- Off-grid solar photovoltaics
- Wind power
- Bioenergy
- Solar water heaters
- Solar thermal electric systems

The project has not considered transport fuel, generation of thermal energy or energy efficiency, unless there are overlapping applications.

The first step in developing the RETWS was to commission research into the Australian renewable energy sector to understand current employment figures, what training is available, and what training will be needed in future to build a skilled workforce.

Summary of research findings

In May this year, a comprehensive survey of renewable energy industries and system installers was conducted to ascertain the current skills base and the future training requirements of an expanding renewable energy industry.

Key messages from the survey included:

- Too few undergraduate courses that cover renewable energy technologies are currently available.
- There is a specific need for flexible or e-delivery of accredited courses through universities, such as distance education where course units can be used toward a diploma or Masters degree.
- Too few local TAFE colleges are currently offering courses on renewable energy.
- There is no management training for technical staff.
- More qualified trainers are needed.

Specific numbers show:

- 26 Technical and Further Education institutes (TAFEs) and private Registered Training Organisations (RTOs) currently offer or will soon offer accredited qualifications, courses or units of competency in renewable energy.
- 11 universities offer coursework-based degrees in renewable energy.
- 18 universities offer research degrees in renewable energy.
- There are currently an estimated 10,370 employees in the renewable energy industry.
- Conservative projections show that these employment numbers need to more than double over the next decade, with an estimated 24,000 to 30,000 jobs required by 2020. If the growth experienced by the industry over the last few years continues, the total number of people estimated to be employed by the industry in 2020 could be over 30,000.

Within the industry:

- Many companies are offering internal training and/or product training.
- Industry associations are offering professional development days.
- Some associations are conducting 'green' training which brands (or certifies) those undertaking the courses (e.g. EcoSmart Electricians and National Plumbers Association.)

RETWS reports

The strategy and the research supporting it have been documented in three reports.

Report 1: Renewable Energy Training in Australia 2009

This report documents and assesses the training courses currently available to the industry at universities, TAFEs, registered training organisations and within industry.

Report 2: Renewable Energy Jobs in 2009 and Forecasts to 2020

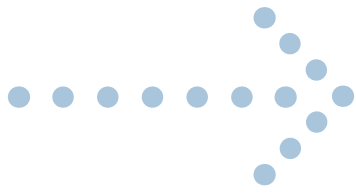
This report documents the results of the industry survey conducted to quantify employment numbers across the renewable energy industry. It also includes conservative estimates of employment demand of the industry to 2020.

Report 3: Strategies for Six Technologies – What we need to do today

This report combines the results of the industry survey with a review of renewable energy training offered throughout Australia. It provides an assessment of predicted growth to provide a summary of skills and training likely to be needed in the stationary renewable energy sector over the next decade. Specific training requirements are discussed in relation to the six technologies listed earlier. The report also identifies what training resources will be required, including trainers, teaching material and training facilities.

Note that Report 3 may not contain a complete list of the courses offered by education institutions, particularly where these cover a broader range of technologies than the six targeted. For more information regarding the full range of available courses and current employment, please refer to Reports 1 and 2 respectively.

There is a range of private training colleges that offer different aspects of renewable energy training. Their courses have not been included in these reports and their involvement in future training efforts has not been specifically discussed because they tend to offer courses on an opportunistic basis and do not have a long-term established workforce or curriculum structure. Nevertheless, the general recommendations regarding skills development and training needs would encompass their activities.



Renewable Energy Jobs 2009 and Forecasts for 2020

The report documents 1505 companies that are active within the renewable energy industry in 2009. The database has been compiled from the following sources:

- The Clean Energy Council’s membership list
- The Clean Energy Council’s Accredited Installers list
- The Yellow Pages Online
- Industry knowledge of companies not identified in any of the above sources

In creating the database, 1945 requests were sent to companies to complete the survey. Due to the diversity of the industry, two survey forms had to be developed:

1. Survey 1 for the larger renewable energy companies
2. Survey 2 for the retail/installers

Two hundred and forty-six companies responded to the survey – 78 responses for Survey 1 and 168 for Survey 2. Table 1 provides a breakdown of the number of companies and the respective number of staff employed for the larger companies.

Table 2 provides a breakdown of companies and staff employed by the installers of grid-connect, stand-alone power and solar hot water systems.

Table 1. Sector and staff employed

Renewable Energy Sector	Number of Companies	Number of Staff Employed
Wind	86	1546
Bioenergy	65	1155
Solar PV	121	1357
SWH	60	1296
Hydro	26	202
Geothermal	17	17
Consultancy	52	113
Other	52	490
Total No. of Companies Surveyed	250	
Total No. of Staff Employed		6176

Table 2. Number of renewable energy installer and SWH companies and staff employed

Renewable Energy Sector	Number of Companies	Number of Staff Employed
Solar PV on-grid systems only	424	791
RE off-grid systems only	16	54
including Solar PV only	8	28
including Solar PV + Wind	8	26
including Solar PV + Micro hydro	0	0
including Solar PV, Wind + Micro hydro	0	0
RE off-grid systems + Solar PV on-grid systems	354	722
Off-grid including Solar PV only	131	248
Off-grid including Solar PV + Wind	117	304
Off-grid including Solar PV + Micro hydro	83	16
Off-grid including Solar PV, Wind + Micro hydro	23	154
SWH only	75	81
SWH + Solar PV on-grid systems	282	887
SWH + RE off-grid systems	0	0
including Solar PV only	0	0
including Solar PV + Wind	0	0
including Solar PV + Micro hydro	0	0
including Solar PV, Wind + Micro hydro	0	0
SWH, Solar PV on-grid systems + RE off-grid systems	117	579
including Solar PV only	39	243
including Solar PV + Wind	47	231
including Solar PV + Micro hydro	0	0
including Solar PV, Wind + Micro hydro	31	105
Total No. of Companies	1268	
Total No. of Staff Employed		3114

Table 3 provides an estimate of the number of jobs in 2020 based on two methodologies:

1. Extrapolation of survey results, based on growth rates from 2003 to 2008–09
2. Calculation of jobs using international multipliers, based on technology breakdown estimates by McLennan Magasanik Associates (MMA) to reach the extended 20% Renewable Energy Target

This data is also displayed in Figure 1.

Table 3. Renewable energy industry employment (not including research institutions or government jobs)

	2008 Based on the Surveys	BAU Projection to 2020 Based on 2003–2008 Growth Rates*	Projections Based on MMA RET Breakdown
Solar PV	3940	16820	4845
SWH	1750	4725	4725
Wind	1600	2870	7600
Bioenergy	1170	2930	370
Post 1997 Hydro	210	280	400
Old Hydro	1570	1570	980
Solar Thermal Electric		315	315
Municipal Solid Waste	10	90	90
Landfill Gas	85	100	140
Geothermal	34	680	4750
Total	10370	29980	24210

*This is an estimation of people potentially working in the sectors but may not represent total full-time equivalent employment.

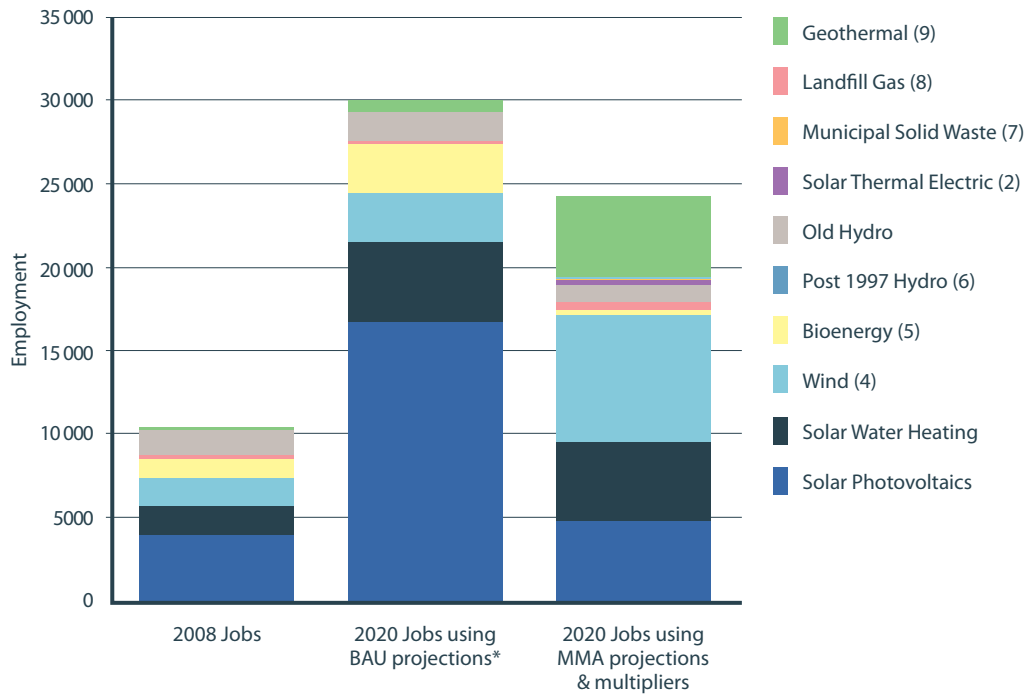
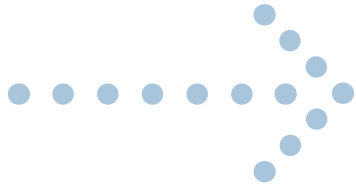


Figure 1. Renewable energy industry employment (not including research institutions or government jobs).

Note: The technology reference numbers refer to notes in Annex F.

**This bar represents an estimation of people potentially working in the sectors but may not represent total full-time equivalent employment.*



Development of the Database

Annex A contains the list of 1505 companies (compiled from the company database created for the purpose of this research) that are active within the renewable energy industry in 2009. The database has been compiled from the following sources:

- The Clean Energy Council's membership list
- The Clean Energy Council's Accredited Installers list
- The Yellow Pages Online
- Industry knowledge of companies not identified in any of the above sources

The dissemination of the survey included Bioenergy Australia member companies. However, due to privacy issues, those companies' names have not been included in the database.

The renewable energy industry database has been divided into the following categories:

- Wind
- Bioenergy
- Clean Energy Council Members and others unspecified

Within each of the categories, staff breakdown for these companies has been broken down into the following categories:

- Engineers/designers
- Scientists
- Technicians/installers
- Administration staff
- Management
- Customer Service Representatives
- Consultants

The renewable energy installers and solar hot water industry database has been divided into the following categories:

- Accredited Installers – with both grid-connect (GC) and stand-alone power system (SAP/SPS)
- Accredited Installers – SPS only
- Accredited Installers – GC only
- Yellow Pages – typically solar hot water and companies providing SPS and GC systems

Within each of these categories, jobs in these companies have been broken down into the following categories:

- Sell and Install RE systems
- Sell RE systems
- Install RE systems
- Manufacture SWH
- Sell and Install SWH
- Sell SWH
- Install SWH



Survey summary

The renewable energy industry is very diverse, ranging from large manufacturing companies; electrical utilities and project developers installing bioenergy plants and wind farms; solar water heater manufacturers; equipment manufacturers; retail outlets for renewable energy power equipment and solar hot water systems; system designers; to system installers and consultants.

Due to this diversity, two surveys forms were developed: Survey 1 for the larger renewable energy companies and Survey 2 for the retail/installers. Copies of these surveys are contained in Annexes B and C respectively. The surveys were located at a dedicated website to allow the industry to respond to the survey online. However, Word versions were available for those companies that preferred to respond using an electronic or hard copy. After initial feedback, slight modifications of the surveys were undertaken.

A total of 1945 notices requesting industry to complete the survey was sent out electronically to most companies and by direct mail to those companies listed in Yellow Pages Online. Different covering information was developed for each of the two surveys. This information provided a link to the respective websites for each of the surveys. Contact information was provided if further clarification was required.

The table below summarises the surveys sent out and their distribution bases.

Table 4. Distribution of survey notices

Survey Distribution	Numbers Distributed
CEC members	287
Accredited designers/installers	1015
Bioenergy stakeholders	79
Yellow Pages – letters	368
Yellow Pages – email	122
Bioenergy Australia members	74
Total	1945

A copy of Survey 1 and Survey 2 is provided in Annexes B and C respectively.

The industry was asked to respond to the surveys by 1 May 2009. At the first close the response was as follows:

Table 5. Initial response to survey

	Survey 1	Survey 2
Total Responses	78	168
Meaningful Responses	46	116
Blank or Duplicate Responses	32	52

The project team has extensive knowledge of the photovoltaics industry so during the survey period the project team attempted to make direct contact (by phone) with 15 companies from the wind industry and 32 companies from the bioenergy industry.

Following the initial response to the surveys, the project team contacted: 10 companies, which appeared to have anomalies to their responses; 55 companies, which had uncompleted surveys; and 43 larger companies who had not responded to the surveys.

The final number of companies that had responded to the surveys by 15 May is provided in Table 6.

Table 6. Final response to survey*

	Survey 1	Survey 2
Total Responses	78	168

The responses to the surveys form a part of this report and can be provided as separate files.* These figures include the results queried owing to perceived anomalies or being incomplete.

Renewable energy industry (Survey 1)

Based on the survey responses, Table 7 provides a breakdown of the number of companies in each sector and the number of staff employed by the larger companies. The total number of companies surveyed also consists of companies that have businesses in multiple renewable energy sectors.

Table 7. Sector and staff employed

Renewable Energy Sector	Number of Companies	Number of Staff Employed
Wind	86	1546
Bioenergy	65	1155
Solar PV	121	1357
SWH	60	1296
Hydro	26	202
Geothermal	17	17
Consultancy	52	113
Other	52	490
Total No. of Companies Surveyed	250	
Total No. of Staff Employed		6176

The extrapolation method used for the data received from the Renewable Energy Industry Survey is as follows:

Each company that responded was placed in a separate level based on their Clean Energy Council membership and the total surveyed number of staff within each level was calculated. The levels were:

- Level 1 = Sponsoring members
- Level 2 = Corporate members
- Level 3 = Associate members

The proportion of responses received for each membership level was then calculated using the following formulas:

- Proportion of Sponsoring Members' responses = (number of level 1 company responses)/(total number of Sponsoring Members)
- Proportion of Corporate Members' responses = (number of level 2 company responses)/(total number of Corporate Members)
- Proportion of Associate Members' responses = (number of level 3 company responses)/(total number of Associate members)

The total estimated number of staff for each level was then calculated by dividing the surveyed number of staff by the proportion of responses, as shown below:

- Total estimated number of level 1 staff = (total surveyed number of level 1 staff)/(proportion of Sponsoring Members' responses)
- Total estimated number of level 2 staff = (total surveyed number of level 2 staff)/(proportion of Corporate Members' responses)
- Total estimated number of level 3 staff = (total surveyed number of level 3 staff)/(proportion of Associate Members' responses)

Note: the surveyed value for FieldForce (a level 2 company) was not included in the calculation for total estimated staff in the same way as above as it was considered an outlier. Therefore, the total estimated number of level 2 staff was calculated using:

- Total estimated number of level 2 staff = (total surveyed number of level 2 staff) – (Number of FieldForce staff)/(Proportion of Corporate Members' responses) + (number of FieldForce staff)

The total estimated number of staff for all levels was then calculated by summing the number for each individual level. A multiplier was then calculated by dividing the total estimated staff by the total surveyed staff. This multiplier was then applied to staff numbers across all work categories and industries in order to obtain individual estimated values.

Table D1 in Annex D provides detailed information on the surveyed and estimated number of companies and number of staff employed for each renewable energy sector.

Table 8 provides a breakdown of job categories based on the responses to Survey 1.

Table 8. Total number of staff employed per staff category

Job Category	Job Sub-Category	Number of Staff Employed
Engineers/Designers	Mechanical Engineers	205.4
	Civil Engineers	35.0
	Electrical Engineers	180.1
	Electronics Engineers	41.9
	Environmental Engineers	39.7
	Computer Software Engineers	19.3
	Other Engineering Staff	152.3
	Total	673.7
Scientists	Biochemists and Biophysicists	145.8
	Material Scientists	16.2
	Chemists	9.0
	Environmental Scientists and Specialists	25.7
	Other	6.6
	Total	203.3
Technicians/Installers	HVAC Mechanics and Installers	489.5
	Industrial Machinery Mechanics	39.8
	Other Mechanics	34.8
	Inspectors, Testers and Sorters	19.6
	Machinists	33.1
	Installation Staff	946.8
	Environmental Science Technicians	15.0
	Pipe-layers	34.8
	Pipe Fitters and Steam Fitters	0.0
	Sheet Metal Workers	0.0
	Welders and Solderers	6.2
	Fitters and Turners	31.3
	Certified/Registered Electricians	357.9
	Certified/Registered Plumbers	180.5
	Other	280.4
	Total	2469.8
Administration Staff	OH&S	71.0
	Accounts	204.0
	Payroll	81.0
	Purchasing Officers	54.0
	Book-keeping and Office	138.8
	IT	73.1
	Total	621.7

Management	Computer and IT Managers	28.8
	Engineering Managers	94.7
	Management Analysts	21.0
	Marketing Managers	62.6
	Total	207.1
Customer Service Representatives	Sales and Marketing	211.0
Consultants		287.3
Other	Legal	32.6
	Storepersons	79.3
	Training and Development Specialists	56.6
	Truck Drivers	15.8
	Other	1317.4
	Total	1501.8
Total for All Categories		6175.6

The above data have been broken down further into each of the following categories: wind, bioenergy, solar PV, SWH, hydro, geothermal, consultants and others.

This information is provided in tables D2 to D9 in Annex D.

Installer/solar water heater (Survey 2)

Table 9 provides a breakdown of the number of companies and staff employed for the installers of grid-connect, stand-alone power systems and solar hot water systems based on the response to Survey 2.

Table 9. Number of renewable energy installers and SWH companies and staff employed

Renewable Energy Sector	Number of Companies	Number of Staff Employed
Solar PV on-grid systems only	424	791
RE off-grid systems only	16	54
including Solar PV only	8	28
including Solar PV + Wind	8	26
including Solar PV + Micro hydro	0	0
including Solar PV, Wind + Micro hydro	0	0
RE off-grid systems + Solar PV on-grid systems	354	722
Off-grid including Solar PV only	131	248
Off-grid including Solar PV + Wind	117	304
Off-grid including Solar PV + Micro hydro	83	16
Off-grid including Solar PV, Wind + Micro hydro	23	154
SWH only	75	81
SWH + Solar PV on-grid systems	282	887
SWH + RE off-grid systems	0	0
including Solar PV only	0	0
including Solar PV + Wind	0	0
including Solar PV + Micro hydro	0	0
including Solar PV, Wind + Micro hydro	0	0
SWH, Solar PV on-grid systems + RE off-grid systems	117	579
including Solar PV only	39	243
including Solar PV + Wind	47	231
including Solar PV + Micro hydro	0	0
including Solar PV, Wind + Micro hydro	31	105
Total No. of Companies	1268	
Total No. of Staff Employed		3114

Table E1 in Annex E provides detailed information on the surveyed and estimated number of companies and number of staff employed for each renewable energy sector.

Table 10 provides a breakdown of job categories based on the responses to Survey 2.

Table 10. Staff categories (total)

Category	Sub-Category	Number of Staff Employed
Accredited Staff	Design/Install	374
	Design	116
	Install	105
	Licensed Electricians	255
	Engineers	95
Non-Accredited Staff	Total	668
	Licensed Electricians	236
	Engineers	114
Plumbers		211
Electricians		42
Sub-Contractors	Electricians	248
	Plumbers	266
Manufacturing Personnel	Designers	92
	Operations Officers	38
	Quality Control Personnel	49
	Maintenance Officers	58
Other Technical		94
Sales Staff		433
Administration Staff		380
Management		262
Storepersons		43
Other		151
Total		3114

The above data have been broken down further into each of the following categories: on-grid; off-grid and SPS; SWH, SWH and RE Power systems.

This information is provided in Annex E.

Extrapolation methodology: for Installer/SWH Data (Survey 2)

As the installer/SWH survey included two different types of companies (accredited installers and companies found in the Yellow Pages), two separate multipliers were used. Multiplier 1 was applied to all accredited installer companies and Multiplier 2 was applied to all other companies. However, as the staff numbers received from Beyond Building, Origin Energy, SolarPower, and Clear Solar were significantly higher than those for the remainder of the survey respondents, these values were treated as outliers and no multiplier was applied to them. The multipliers were calculated using the following formulas:

- Multiplier 1 = (total number of accredited companies)* 50% + (number of responses from accredited companies)/(number of responses from accredited companies)
- Multiplier 2 = (total number of other companies)* 50% + (number of responses from other companies)/(number of responses from other companies)

The reason that only 50% of the total number of companies was used in both of the above formulas is that it was assumed that those companies who did not reply to the survey are less active in the industry and therefore have lower staff numbers.



Prediction of renewable energy jobs in 2020

Table 11 provides an estimate of the number of jobs in the renewable industry in 2020 (not including research institutions or government) based on two methods:

1. Extrapolation of the survey results, based on growth rates from 2003 to 2008–09, with the addition of jobs not captured in old hydro and new solar thermal electric sectors and using an average of jobs based on installed capacity and jobs based on installation rate
2. Calculation of jobs using international multipliers, based on technology breakdown estimates by MMA, with the addition of 500 MW of solar thermal electricity and 500 MW of solar PV capacity, in line with budget announcements, and the business as usual (BAU) solar water heater jobs (not included in the MMA analysis) to reach the extended 20% Renewable Energy Target

This data is also displayed in Figure 2 and details of the multipliers used are provided in Annex F. The two scenarios provide an estimate of the possible range of job numbers and should not be interpreted as individual predictions. The key differences between the scenarios are:

- Solar PV: where projections based on current jobs, which are largely related to very small scale solar PV systems and a relatively immature supply chain, are much higher than the international averages. The growth from 2003 to 2008–09 may not continue over the next decade
- Wind: the MMA projections assume a higher installed capacity than the BAU projections
- Bioenergy: the current employment intensity is higher than the international averages, as for solar PV. Employment in this sector will also depend on the technology pathways followed and the percentage of local content in the equipment used. Also, the MMA projections do not include upstream jobs in feedstock production
- Geothermal: current levels of activity are largely exploration and R&D related and job numbers are probably not well reflected in the survey results. MMA assumes a significant contribution to energy supply from hot rock generation (10,000 GWh/yr = ~1500 MW). In the BAU scenario, only modest levels have been assumed by 2020 (40 MW).

Table 11. Current and projected renewable energy industry employment

	2008 Based on the Surveys	BAU Projection to 2020 Based on 2003–2008 Growth Rates*	Projections Based on MMA RET Breakdown
Solar PV	3940	16820	4845
SWH	1750	4725	4725
Wind	1600	2870	7600
Bioenergy	1170	2930	370
Post 1997 Hydro	210	280	400
Old Hydro	1570	1570	980
Solar Thermal Electric		315	315
Municipal Solid Waste	10	90	90
Landfill Gas	85	100	140
Geothermal	34	680	4750
Total	10370	29980	24210

*This is an estimation of people potentially working in the sectors but may not represent total full-time equivalent employment.

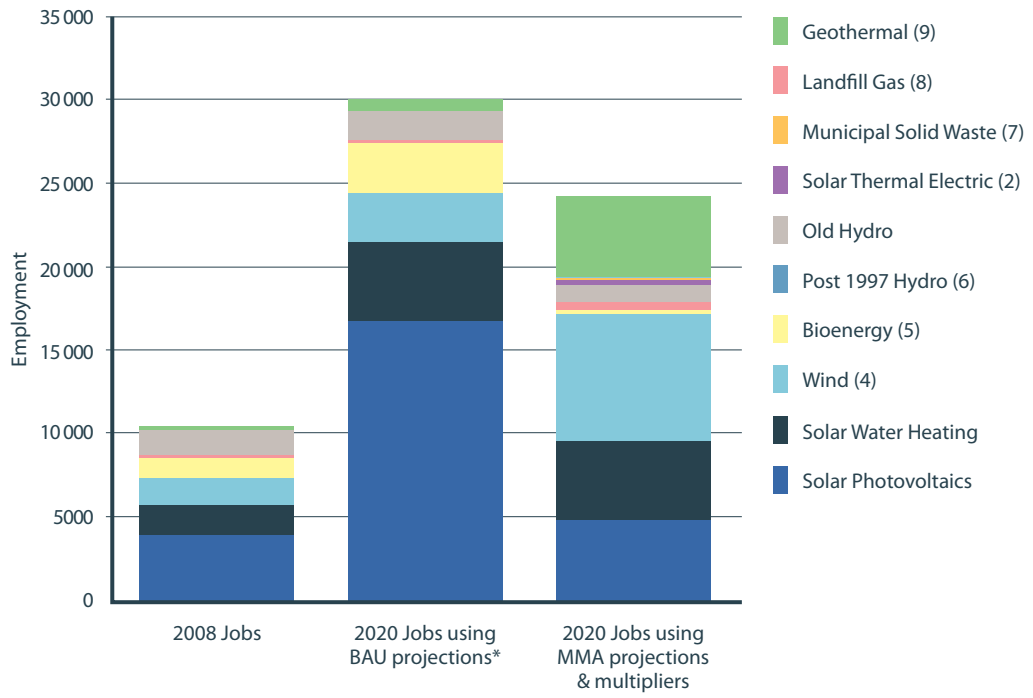


Figure 2. Renewable energy industry employment (not including research institutions or government jobs). The reference numbers refer to the notes in Annex F.

Note: the 2008 values for the Municipal Solid Waste, Landfill Gas and Geothermal categories have been derived from the Other category as listed in the survey.

**This bar represents an estimation of people potentially working in the sectors but may not represent total full-time equivalent employment.*



Annex A. List of companies

Clean Energy Council members list

	Name	Location	State
Wind companies	AGL Pty Ltd	St Leonards	NSW
	Babcock & Brown Wind Partners Limited	Melbourne	Vic
	Roaring 40s	Hobart	Tas
	Suzlon Energy Australia Pty Ltd	Melbourne	Vic
	Transfield Services Infrastructure Limited	North Sydney	NSW
	Vestas Australia	Melbourne	Vic
	Horizon Power	Bentley DC	WA
	Repower	Melbourne	Vic
	Transfield Holdings Pty Ltd	Sydney	NSW
	Wind Power Pty Ltd	Hawthorn	Vic
	Wind Prospect Pty Ltd	Christies Beach	SA
Hush Wind Power Limited	Mt Gravatt	Qld	
Bioenergy companies	Acciona Energy	South Melbourne	Vic
	CSR Ltd	Yarraville	Vic
	Energy Developments Limited	Eight Mile Plains	Qld
	RPG (SA) Pty Ltd	Kilburn North	SA
	Mackay Sugar Co-operative Association Limited	Mackay MC	Qld
	Gunns Ltd	Launceston	Tas
Hydro companies	Hydro Tasmania	Hobart	Tas
	Pacific Hydro Limited	Melbourne	Vic
	Snowy Hydro Limited	Sydney	NSW

Other companies

Company	Location	State
Adelaide Solar Systems	Brooklyn Pk	SA
Alco Battery Sales	East Keilor	Vic
Apricus Australia	Rozelle	NSW
Aquatec-Maxcon Pty Ltd	Leichhardt	Qld
Artemis Building Systems Pty Ltd	St Leonards	NSW
ATCO Power Australia Pty Ltd	Adelaide	SA
Austrian Energy & Environment (Australia) Pty Ltd	North Ryde	NSW
Babcock & Brown Wind Partners Limited	Melbourne	Vic
Baker & McKenzie Solicitors	Sydney	NSW
Bamboo Direct	Coffs Harbour	NSW
Battery Energy Power Solutions Pty Ltd	Fairfield	NSW
Bayside City Council	Sandringham	Vic

Other companies continued

Beyond Building Systems Pty Ltd	Byron Bay	NSW
Biogen Limited	Sydney	NSW
Biome 5 Pty Ltd	Atherton	Qld
Bluescope Water	Wollongong	NSW
BP Solar Pty Ltd	Sydney	NSW
Braemac Energy Pty Ltd	Notting Hill	Vic
Brisbane City Council	Brisbane	Qld
Bundaberg Sugar	Bundaberg	Qld
Capital Safety Group (Australia) Pty Ltd	Silverwater	NSW
Centre for Appropriate Technology/Bushlight	Cairns	Qld
Centre for Sustainable Energy Systems (ANU)	Canberra	ACT
Ceramic Fuel Cells Limited	Noble Park	Vic
Chromagen Australia	Braeside	Vic
City of Greater Bendigo	Bendigo	Vic
City of Onkaparinga	Noarlunga Centre	SA
City of Whittlesea	Bundoora MDC	Vic
Clarke Energy (Aust) Pty Ltd	Thebarton	SA
Clayton Utz	Sydney	NSW
Climate Managers	Port Melbourne	Vic
CO2 Australia Limited	South Melbourne	Vic
Cogent Energy	Richmond	Vic
Colley Consulting Pty Ltd	Stockton	NSW
Conergy Pty Ltd	Hallam	Vic
Conics	Fortitude Valley	Qld
Cool nrg International	Brunswick East	Vic
Country Energy	Queanbeyan	ACT
COzero Pty Ltd	Sydney	NSW
Creative Energy Solutions	Melbourne	Vic
CSE Uniserve Pty Ltd	Baulkham Hills BC	NSW
CSIRO – Weather and Environment Prediction (WEP)	Canberra	ACT
CVC Limited	Sydney	NSW
Daly International	Melbourne	Vic
Deacons	Melbourne	Vic
Delta Electricity	QVB	NSW
Department of Human Services	Elwood	Vic
Deugro Projects Australia Pty Ltd	Melbourne	Vic
Devonport Electrical Service Pty Ltd	Devonport	Tas
Diamond Energy	St Kilda	Vic
Distributed Power Pty Ltd	Patterson Lakes	Vic
Downer EDI Engineering	Cardiff	NSW
Drivetrain Power and Propulsion	North Rocks	NSW
Dux Manufacturing Limited	Moss Vale	NSW
Earth Utility	Surry Hills	NSW
EarthEnergy Australia Pty Ltd	Graceville	Qld
Econnect Australia Pty Ltd	Melbourne	Vic
Ecosave Pty Ltd	Castle Hill	NSW
Ecovation Water & Energy Solutions	Helensdale TC	Qld
ElectraNet Transmission Services	Adelaide	SA

Other companies continued

Electrosolution	Cranebrook	NSW
Elgas Limited	Sydney	NSW
Elliott Engineering	Kilsyth	Vic
Energex Limited	Brisbane	Qld
Energy Consult Pty Ltd	Jindivick	Vic
Energy Decisions	Carseldine	Qld
Energy Developments Limited	Eight Mile Plains	Qld
Energy Futures Australia Pty Ltd	Hornsby Heights	NSW
Energy Matters	South Melbourne	Vic
Energy Strategies	Manuka	ACT
EnergyAustralia	Sydney	NSW
Envirogen Pty Ltd	Bayview	NSW
EnviroSearchGlobal	Melbourne	Vic
Envirowatt Pty Ltd	Coorparoo	Qld
EPURON Pty Ltd	North Sydney	NSW
Ergon Energy	Brisbane	Qld
ERM Power	Royal Exchange	NSW
Ernst & Young	Sydney	NSW
Essential Services Commission	Melbourne	Vic
Eureka Funds Management Ltd	Sydney	NSW
Evolve Energy Pty Ltd	Cairns	Qld
Fastron Technologies	Rowville	Vic
Fieldforce Services Pty Ltd	Castlecrag	NSW
Finlaysons	Adelaide	SA
Fletcher Insulation	Glendenning	NSW
Frank Advice (International) Pty Ltd	Kew	Vic
Free Solar Pty Ltd	Wellington Point	Qld
Frontier Economics	Melbourne	Vic
Garrad Hassan Pacific Pty Ltd	Moonee Ponds	Vic
Geolyse Pty Ltd	Orange	NSW
Global Roam	Milton	Qld
Going Solar	Carlton	Vic
Gold Coast City Council	Gold Coast MC	Qld
Green Bank	Mitcham	Vic
Green Energy Capital	Hawthorn East	Vic
GreenPower Services Pty Ltd	Bathurst	NSW
Greenpower Technology Pty Ltd	Blackburn	Vic
Greensystems by Sealite Pty Ltd	Somerville	Vic
Hilary Chapman Pty Ltd	Port Melbourne	Vic
Hills Industries	Adelaide Airport	SA
HIX Group Pty Ltd	Penrith	NSW
Holmesglen Institute of TAFE	Holmesglen	Vic
Honda Australia Motorcycles and Power Equipment Pty. Ltd	Somerton	Vic
Honeywell Building Solutions	North Ryde	NSW
Horizon Power	Bentley DC	WA
Hornsby Shire Council	Hornsby	NSW
Howe Management Consulting Pty Ltd	Melbourne	Vic
HRL Developments Pty Ltd	Mulgrave	Vic

Other companies continued

IT Power Australia	O'Connor	ACT
Indemnity Corporation Pty Ltd	North Ryde	NSW
Infinity Solar Pty Ltd	Graceville	Qld
Ingenero	Toowong	Qld
Insulation Council of Australia and New Zealand (ICANZ)	Dandenong	Vic
Intelligent Energy Systems	Cooma	NSW
International Power	Rundle Mall	SA
Invenergy Pty Ltd	Rozelle	NSW
Investec Bank Australia Limited	Sydney	NSW
IT Power Australia	O'Connor	ACT
Jemena	Mount Waverley	Vic
Jord International	St Leonards	NSW
Keppel Prince Engineering Pty Ltd	Portland	Vic
Klueber Lubrication Australia Pty Ltd	Thomastown	Vic
Korea Trade Centre (KOTRA)	Sydney	NSW
KP Capital Pty Limited	Sydney	NSW
KPMG	Perth	WA
Kyocera Solar Pty Ltd	North Ryde	NSW
Latronics	Moffat Beach	Qld
Leighton Contractors Pty Ltd	Melbourne	Vic
Leonics Regen (T/A) Regen Power	Canning Vale	WA
Leslie Consulting	Acacia Ridge	Qld
Life Line Energy Pty Ltd	Preston	Vic
LMS Generation Pty Ltd	Woolloomooloo	NSW
Low Energy Supplies and Services	North Sydney	NSW
M&H Power Systems	Rowville	Vic
Macfarlane Generators	Clayton	Vic
Macquarie Generation	Lambton	NSW
Mainstream Renewable Power (Australia) Pty Ltd	Southbank	Vic
Mallesons Stephen Jaques	Sydney	NSW
MAN Ferrostaal AG	Dee Why West	NSW
Manildra Starches	Nowra	NSW
Manningham City Council	Doncaster	Vic
Maribyrnong City Council	Footscray	Vic
Martifer Renewables Pty Ltd	Sydney	NSW
Marubeni, Power Development Australia	Smithfield	NSW
McLennan Magasanik Associates Pty Ltd	South Melbourne	Vic
Measurement Engineering Australia Pty Ltd	Magill	SA
Middletons Lawyers	Royal Exchange	NSW
Modern Solar	Dry Creek	SA
Mono Pumps (Australia) Pty Ltd	Mordialloc	Vic
Moreland Energy Foundation (MEFL)	Brunswick	Vic
Morningstar Corporation	Washington Crossing	SA
MWM Energy Australia Pty Ltd	Mulgrave	Vic
N.P. Power Pty Ltd	Sydney	NSW
Neco Holdings Pty Ltd	Blackburn	Vic
NewEn Australia Pty Ltd	Collins Street East	Vic
Newtricity	Gladesville	NSW

Other companies continued

Northern Melbourne Institute of TAFE (NMIT)	Preston	Vic
Novolta Pty Ltd	Darwin	NT
NSK Australia Pty Ltd	Ferntree Gully MDC	Vic
NU Energy	Carrum Downs	Vic
Oceanlinx Ltd	Botany	NSW
Office of the Renewable Energy Regulator	Canberra	ACT
Origin Energy Limited	Sydney	NSW
Pacific Energy Limited	Perth	WA
Parsons Brinckerhoff Australia	Sydney	NSW
Partners Energy Management	Alstonville	NSW
People Planet Profit	Underwood	Qld
Phoenix Solar Pty Ltd	Adelaide	SA
pitt&sherry	Hobart	Tas
Power Systems Australia Pty Ltd	Campellfield	Vic
Powercor Australia Ltd	Melbourne	Vic
Powersafe Pty Ltd	Wynnum	Qld
Quantum Energy Technologies Pty Ltd	Strawberry Hills	NSW
Rainbow Power Company	Nimbin	NSW
RedFlow Pty Ltd	Seventeen Mile Rocks	Qld
Renewable Energy Services	Mitcham	Vic
Renewable Energy Xchange	Canterbury	NSW
RES Australia	Crows Nest	NSW
RF Industries Pty Ltd	Banyo	Qld
Rheem Australia/Solahart	Rydalmere	NSW
Rigby Cooke Lawyers	Melbourne	Vic
Rinnai Australia	Braeside	Vic
RISE – Research Institute for Sustainable Energy	Murdoch	WA
Robert Bosch (Aust) Pty Ltd	Clayton South	Vic
RPG (SA) Pty Ltd	Kilburn North	SA
Schott Australia	Frenchs Forest DC	NSW
SDA Engineering Pty Ltd	Thebarton	SA
Selectronic Australia Pty Ltd	Mooroolbark	Vic
Seqwater	City East	Qld
SGS Australia Pty Ltd	Welshpool	WA
Sharp Corporation of Australia	Huntingwood	NSW
Siemens Limited	Bayswater	Vic
Sinclair Knight Merz Pty Ltd	Armadale	Vic
SKF Australia (SKF Reliability Systems)	Oakleigh	Vic
SMA Technology Australia Pty Ltd	Rosebery	NSW
Solar Energy Australia (SEA)	Mt Kuring-Gai	NSW
Solar Inception Pty Ltd	Stafford Heights	Qld
Solar Roof Tile Australia	Auckland	
Solar Systems	Elwood	Vic
Solar Technology Australia	Annandale	NSW
Solarco Albury	Albury	NSW
Solargain	Midvale	WA
Solaris Technology Pty Ltd	Kilburn	SA
Solco Ltd – Victoria	Eltham	Vic

Other companies continued

Stanwell Corporation Limited	Brisbane	Qld
Steensen Varming (Australia) Pty Ltd	Northbridge	NSW
Stiebel Eltron (Aust) Pty Ltd	Morningside	Qld
Storm Sustainability	South Yarra	Vic
SunPower Corporation Pty Ltd	Belmont	WA
Sunraysia Institute of TAFE	Mildura	Vic
Suntech Power Australia Pty Ltd	Silverwater	NSW
Sustainability Victoria	Melbourne	Vic
Sustainable Energy Centre, University of South Australia	Adelaide	SA
Sustainable Solutions	Brighton	Vic
Suzlon Energy Australia Pty Ltd	Melbourne	Vic
Sydney West Area Health Service	Penrith	NSW
Szencorp	South Melbourne	Vic
TAC Pacific Pty Ltd	Kent Town	SA
Tarac Technologies	Nuriootpa	SA
Tarong Energy Corporation Limited	Brisbane	Qld
Tenet Consulting	West Perth	WA
TFS Australia Pty L:td	Melbourne	Vic
Tianrun New Energy Investments Pty Ltd	Denistone West	NSW
Transfield Services Infrastructure Limited	North Sydney	NSW
TreeSmart Australia	Alexandra	Vic
TRUenergy	Melbourne	Vic
TrustPower Limited	Tauranga	
Tyco Tamar (Tyco Flow Control Pacific)	Exeter	Tas
UEA Electrical Pty Ltd	Hoxton Park	NSW
Union Fenosa Wind Australia Pty Ltd	Chatswood	NSW
University of Technology, Sydney	Broadway	NSW
University of Wollongong	Wollongong	NSW
Urban Energy	Dural	NSW
Urbis Pty Ltd	Melbourne	Vic
Utilacor Pty Ltd	Lilydale	Vic
Varispeed Electric Motors Pty Ltd	Smithfield	NSW
VEMTEC Pty Ltd	Mount Waverley	Vic
Verve Energy (formerly Western Power)	Perth	WA
Viridis Energy Capital Pty Ltd	Melbourne	Vic
Wacker Chemicals Australia	Mulgrave	Vic
Wartsila Australia Pty Ltd	Huntingwood	NSW
Wattstar Pty Ltd	Redcliffe	Qld
Webb Australia Group	Gordon	NSW
Willmott Forests Ltd	South Melbourne	Vic
Windlab Systems	Canberra	ACT
Winton Sustainable Research Strategies	Chatswood	NSW
Wiselaw Consulting	Kambah	ACT
WorleyParsons Projects Pty Ltd	North Sydney	NSW
WSN Environmental Solutions	Chatswood	NSW
YHI Power Pty Ltd	Braeside	Vic
Zektin Engineering Pty Ltd	Parkville	Vic
ZEN Technologies (Power and Energy) Pty Ltd	Norwood	SA

Accredited installers – SPS and grid-connect

Company Name	Location	Company Name	Location
12 Volt World	Albany	Curtis Islands Maintenance	Gladstone
A1 Solar	Capalaba	D & S Complete Solar Solutions	Lockwood
Able Solar	Healesville	D & S Solar Direct	Lancefield
Adelaide Hills Solar	Blackwood	David Bajjali	Hindmarsh
Advanced Wind Technology	Kuranda	Davy Industries	Barnawartha
All About Solar Installations	Bells Bridge	Delta Electrics	Winnellie
All Natural Energy	Richmond	E.M.D.O.W.	Hornsby
Alternate Power Systems Pty Ltd	Kinglake	EarthRise Renewables Pty Ltd	Karrinyup
Alternative Energy	Morgan	Eastland Energy	Lake Cathie
Alternative Energy Solutions Pty Ltd	Buderim	Eco Energy Australia Pty Ltd	Alice Spring
Andrew Grinde	Woodville Gardens	Eco Solar Energy	Cooloolabin
Andrew Watson Renewables	Margaret River	Ecofficient Living	Mt Helena
Andy Colvin Solar	Elands	Eco-Kinetics	East Staphylton
Apollo Energy Pty Ltd	Happy Valley	EcoSouth Solar Electricity	Marleston
ARK ENERGY Div. Atomic	Riverston	Ecosun Solar Systems	Port Arlington
ARTA Pty Ltd	Cooma	Ecovibe	Burleigh West
Ausolar	Deception Bay	Ecoworld	Maleny
Aussie Solar	Malaga	Electric Biz Pty Ltd	Stirling
Aussie Solar Installations	Winmalee	Electric Wiring Company Pty Ltd	Dromana
Australia Wide Solar	Peakhurst	Endless Energy Electrical	The Channon
Australian Natural Energy	Brisbane	Energy Conservation Systems	Pymble
Australian Solar Industries Pty Ltd	Laidley	Energy Consulting Australia Pty Ltd	Conondale
Australsun	Claremont	Energy from Nature Home Pty Ltd	Nimbin
Avant Solar	St James	Energy Systems Victoria	Warrandyte
Ballarat Solar Plumbing Pty Ltd	Ballarat	Energywise Living	Katoomba
Barker Electrical Wholesalers	Ulladulla	ENVais Solar	Beverley Park
Bathurst Solar Power	Bathurst	Enviro Electrical	Eltham
BF Industries Pty Ltd	Grafton	Environmental Power Solutions	Belmont
Biomedics	Denman	Enviro-Power Technology	Rockhampton
Blackmores Power & Water	Laura	Ergon Energy	Cairns
Blue Spark Enterprises	Croydon	Ethical Energy	Bathurst
Braemac Energy Pty Ltd	Notting Hill	Europacific Distributor	Bracken Ridge
Brett Carter Solar Energy	Cygnets	EVO's Electrical Service	Molong
Bunya Solar	Moruya	Forever Solar	Sippy Downs
C Browne Electrics & Refrigeration Pty Ltd	Ashwood	Forty Foot	Daylesford
Cairns Solar Equipment/Solahart	Cairns	Fullwood Electrics	Greenwood
Carbon Reduction Institute	St Leonards	Gecko Solar Pty Ltd	Brisbane
Cartwright Electrical	Warrandyte	Ged McCarthy Energy & Space Solutions	Toms Creek
Central Electrics	Rockhampton	Gee-Tek Pty Ltd	Newtown
Central TAFE	East Perth	Gippsland Energy Alternative	Newlands Arm
Central West Solar	Orange	Global Environmental Services	Green Point
Choice Electric Co Aust. Pty Ltd	Hamilton	Global Sustainable Energy Solutions	Ulladulla
Cilectric	Berrima	Go Solar	Noosa Heads
Combined Energies	Yarwun	Going Solar	Carlton
Cooloola Solar Systems	Cedar Pocket	GrahamTurner Electrical	Wishart
		Green Frog Solar	Weston
		Green Smart Electrical Pty Ltd	Wollongong

Accredited installers – SPS and grid-connect continued

Greenlight Energy	Maleny	Planetary Power	Herberton
Harmonic Industries Pty Ltd	Brunswick West	Planetary Power Solutions	Lynwood
Helensburgh Bushman Pty Ltd	Helensburgh	Platypus Power (North Qld. Solar)	Smithfield
Hellmut Heini Solar Installer	Lower Gellibrand	Positronic Electrical & Computers	Wavell Heights
Home Power Specialists	Eumundi	Power Harvest	Strathalbyn
Inland Solar	Tamworth	Powercom Systems Pty Ltd	Kingston
JP Energy Technology	Camp Hill	PPS Planetary Power Solutions	East Perth
Know How Technology Pty Ltd	Majors Creek	Pyramid Power	Pambula
KS Solar	Kyogle	Radiant Energy Systems	Belmont
Kyocera Solar Pty Ltd	North Ryde	Rainbow Power Company	Nimbin
Lateral Technology	Patterson Lakes	Raintree Electronics	Gunalda
Lee Point Electrical Service	Casuarina	RAPPS Systems	Toowoomba Mc
Lend Lease Design	Millers Point	Renewable Logic	Bayswater
LJW Solar Pty Ltd	Dural	Renewable Power Systems	Axedale
Lorinna Energy Systems	Sheffield	Renewable Resources Workshop	Colac
M&H Power Systems Pty Ltd	Dudley Park	Rescue The Future Pty Ltd	Redfern
Macfarlane Generators	Clayton	Residential Solar Systems	Taroona
Major Electrics	Smithfield	RF Industries Pty Ltd	North Rocks
Managed Industrial Networks (MIN)	Adelaide	Ridge Electrical Services Pty Ltd	Bracken Ridge
Mapstone Contractor	Caringbah	RJM Sunpower Pty Ltd	Greensborough
Maurie Morrisson Electrical	Cairns	RK Systems	Croydon Hills
Mega Data & Electrical Pty Ltd	Pascoe Vale	Rv& N Maher Electrical	Samford
MGF Consultants	Cairns	S K & C Stork Solar Power Consultants	Maryborough
Milestone Engineering Pty Ltd	Seddon	S.T.S Services Pty Ltd	Wootton
MKB Consulting Pty Ltd	Mt Isa	Saanda Solar	Altona East
Modern Solar	Parramatta	Saltwater Solar	Geelong
Nathan Ross Electronics	Tenterfield	Scott Gibbins Elect	Shoreham
Natural Technology Systems	Holden Hill	Self Sufficiency Supplies	Kempsey
NENSYS New Energy Systems	Raceview	Seymour Solar	Moss Vale
New England Solar Power Pty Ltd	Armidale	Seymour Solar Alternatives	Yea
NH & JM Trezise	Port Lincoln	Sharpe & Jephcott	Sandringham
Nicholson Group	Dromana	SMEC Australia Pty Ltd	North Sydney
Nickel Renewable Energy	Byron Bay	SOLAGIFT Technologies	Thornlands
Noble Solar	Narooma	Solar & Electrical Solutions	Armidale
North Central Energy Services	Bendigo	Solar Charge Pty Ltd	Oakleigh
North Coast Power Systems	Coffs Harbour	Solar Daily	Nymboida
Northern Solar Solutions	Clare	Solar Designs Pty Ltd	Port Kennedy
NQ Solar Pty Ltd	Cairns	Solar Distributors Pty Ltd	Toowoomba
NSW Department of Public Works	Sydney	Solar Earth Technologies	Narre Warren
Office of Energy Planning & Conservation	Hobart	Solar Easy	Research
Office of Public Works & Services	Sydney	Solar Electric	Annandale
Otway Solar Solutions	Gellibrand	Solar Gipsy	Gipsy Point
Outback Energy Supply	Kalgoorlie	Solar Inverters	Urunga
Passive Energy Systems	Beaconsfield	Solar Matrix	Canning Vale
Peninsula Solar Technology	Mount Eliza	Solar Panel Xpress	Caboolture
Perry Brothers	Alice Spring	Solar Power & Pumps	Capalaba
		Solar Power Electrics Pty Ltd	Paradise Point

Accredited installers – SPS and grid-connect continued

Solar Powered Solutions	Braidwood	Switched-On Electrical	Henley Brook
Solar Watts	Gunalda	Sydney Energy Co-Operative Limited	Waramanga
Solar Wind Systems	Woodville Park	Tambo Valley Electrics	Swifts Creek
Solar Works	Tarzali	Tannum Solar Construction	Tannum Sands
Solarco	Albury	Tasman Energy	Deloraine
Solarcom (Aust) Pty Ltd	Ilford	Telstra/MIN	Netley
Solargain	Midvale	TFA Solar Pty Ltd	Summertown
SolarGen	Preston	The Energy Shop	Goulburn
Solaris Technology Pty Ltd	Kilburn	The Environment Shop	Northcote
Solarphase	Merrijig	The Heat Shop	Belmont
Solartec Renewables Pty Ltd	Fyshwick	The Solar Bloke	Castlemaine
Solarwest	Nannup	The Solar Workshop	Stanthorpe
Solazone	Marcoola	Trentleek	Avonsleigh
Solco Ltd	Welshpool	Tridem Communications	Toowoomba Mail Centre
Solectrics	Kingsville	Upper Clarence District Trading Co-op	Tabulam
South West Sun and Wind Power	Busselton	Victorian Renewable Industries t/a Agnew	Alfredton
Southern Cross Solar	McKinnon	VK Electronics (Solar Tasmania)	Burnie
Southern Solar Electrical Services	Dover	WA Solar Supplies (Alternative Energy)	Osborne Park
Spark It Up Electric	Toorak	Wallis Solar & Electrical	Broome
Spokes & Co Pty Ltd	Wollongong	Wandilo Technologies	Mount Gambier
Springer Low Voltage Specialists	Tingalpa	Water & Energy Savers	Burwood
St Elmo's Fire Electrics	Tathra	Watts In Renewable Energy	Jenolan Caves
Starbright Lighting Pty Ltd	Preston	Willies Electrical & Solar power	Honiara
Stephen Cook Solar & Electrical Services	Glen Iris	Windpower Australia	Austral
Stowe Australia	Penrith	Windturner	Dargan
Stuart Watson & Associates	Bellangry	Wishart Industries	Seven Hills
Sun City Solar and Gen Safe Electrical	Geraldton	Yarra Energy	Healesville
Sun Empire Solar Systems	Caulfield South		
Sun Energy Systems	Burpengary		
Sun Power	Goulburn		
Sun Power Corporation Pty Ltd	Belmont		
Sun Power Mackay	Mackay MC		
Sun Real Renewable Energy Systems	Beechworth		
Sun Wind & Power	Hurstbridge		
Sunbeam Solar Systems	Kunghur		
Sundriven	Windsor		
Sunelec Pty Ltd	Clontarf		
Sungrid Pty Ltd	Fremantle		
SUNPLUS Electrical	Rock Valley		
Sunrise Electrical Services	Northcote		
Sunrise Solar	Copacabana		
Sunsparks Electrics	Kyogle		
Suntec Pty Ltd	Alice Spring		
Sustainable Electrotechnology	Albany		
Sustainable Energy Enterprises Pty Ltd	North Adelaide		
Sustainable Impact	Trafalgar		
Swan Energy Pty Ltd	Willetton		

Accredited installers – SPS only

Company Name	Location
A. B. Shorey Technologies	Ravenshoe
Ace Solar Electric	Henley Brook
Aurora Sustainable Development	Frankston
Beam Eco Energy	Woodend
Blackwood Valley Industries	Boyup Brook
Bonlec	Townsville
Bushlight	Alice Spring
CM Industries Pty Ltd	Broome
Energy Matters	Wonga Beach
Healey Engineering Pty Ltd	Victoria Park

Inland Electrical	Alice Springs
MCA Electrical	Atherton
N.F. Electrical	Nhulunbuy
OMNIPOWER Energy Solutions	Alice Spring
Powersafe Pty Ltd	Lytton
Remote Control	Borrooloola
Sam Martin	Bicton
Sunpower Solutions	Winnellie
Tweed Byron Solar	Pottsville
Tyco Tamar	Sandy Bay

Accredited installers – grid-connect only

Company Name	Location
1st Call Solar Service	Port Melbourne
A to Z Electrical	Logan Village
A Woman's Spark	Wanneroo
A.E. Electrical	Currimundi
A1 Battery Pro	Mackay
ABA Electrical Services	Belair
Absolute Electric Solutions	Annangrove
Accord Electrical	Moffat Beach
Acree Electrical	Gosford
Actewagl Energy Shop	Fyshwick
Active Heating & Cooling	Bayswater
Active Solar & Gas	Dubbo
Adam Cartwright Electrical	Myrtleford
ADC Electrics	Singleton
Adelaide Solar	Flinders Park
Affordable Eco Systems Pty Ltd	Moorebank
AG City Electrical Pty Ltd	Griffith
AGL Assist	Morningside
Alert Electrical	Airport West
All Solar & Electric	Moruya Heads
Alllect Pty Ltd	Canning Vale
Allister Neely Electrical	Wangaratta
Allpower Solutions	Wandandian
Allsorts Electrical	Darlington
Alpha Plant Locations & Solar	Springfield
Alternative Power Solutions	Braeside
AMAX Electrical	Windsor
Ample Energy	Lithgow
Ampman Electrics Pty Ltd	Kinross
Andrew Hanna Electrical Pty Ltd	Castle Hill
Andrew Young Engineering Service	Bathurst
Andrew's Electrics	Moolap
Angle Electrics	Tresco

Anywhere Electrical	Mt Barker
Appleyard Holdings Pty Ltd	Illawong
Appliances & Air Conditioning Pty Ltd	West Footscray
Armada Solar	Kingston
Auka Pty Ltd	Carramar
Auselec Pty Ltd	Cobram
Ausfront Pty Ltd T/A Modern solar	Wangara DC
Australian Solar Qld Pty Ltd	Redbank Plain
Auzion Pty Ltd	Sippy Downs
AWA Electrics	Spearwood
B & G Air & Electrical Pty Ltd	Cronulla
Baden Napier Electrical	Kadina
Baker Renewable Energy	Numurkah
Bam Building & Electrical Pty Ltd	Fairview Park
Barry J. MacDonald Pty Ltd	Mornington
Baslec	Blackmans Bay
Beacon Lighting Installations	Derrimut
Bellingen Solar	Emerald Beach
Beyond Building	Byron Bay
Black Panther Electrical Pty Ltd	Glen Waverley
Bli Bli Electrics Pty Ltd	Woombye
Blue Planet Electrics	Bittern
Blue Reef Electrics	Rye
Blue Sky Solar & Electrical	Belmont North
Blue Tech Electrical	Chandler
Blue Wave Electrical	Joondalup
Bondy's Contractors	Horsham
Bone Electrical Pty Ltd	Ivanhoe
BP Solar Pty Ltd	Sydney Olympic Park
Brendan Kelly Electrical Pty Ltd	Swan Hill
Briggs Electrical Service	Hervey Bay
Bright & District Electrical Services	Bright
Broady Electrical	Golden Square

Accredited Installers – grid-connect only continued

Budget Solar Pty Ltd	Mount Warren	Devonport Electrical Service Pty Ltd	Devonport
Burbank Electrical & Maintenance Pty Ltd	Altona	DK Project Engineers	Frenchville
Byron Solar	Suffolk Park	Donegan Home Cinema	Sedgwick
C & G Marshall Pty Ltd	Castlemaine	Donovan Electrical Services Pty Ltd	Rydalmere
Cable Express	Marmion	Down South Solar Power	Burekup
Callan Electric	Sorrell	Downer EDI Engineering Electric	Taylor's Lake
Cambridge Electric Co.	Macaga	Driftwind Electrical	Coopers Plains
Cape Automation	Dunsborough	Duncan Kerr Electrical	Whitebridge
Carbon Management Solutions	Lawson	Durack's Solar Solutions	Leederville
CB & M Design Solutions	Launceston	E & H Electrical	Brunswick
CEC Hopper and Sons	Horsham	Earth Pulse Solar	Gin Gin
Chromagen Solar Australia	Braeside	Eco Electrical Solutions	Blackwood
Clean Green Energy	Adamstown Heights	Eco Green Electrical	Eden Hills
Clear Solar (Clear Security Pty Ltd)	Vermont	Eco Power Electrical Services	Blackburn South
Clear View Solar	Craigieburn	Ecolec Pty Ltd	Frankston
Click Control Systems Pty Ltd	Bendigo DC	Ecolectrix	Clayton
Climate Care Electric	Rockhampton	Ecosmart	Fremantle
Colin Docking Electrics	Rosebud	Ecosolar Australia	Lillico
Collins Electrics	Portarlington	Ecotronics	Mudgee
Commpower Pty Ltd	Hoppers Crossing	ECS Perth	Bunbury
Complete Power	Goulburn	Edenpower	Eastwood
Conergy Pty Ltd	Hallam	Edes Maintenance Pty Ltd	Frankston
Confac Electrical Services	South Hobart	Elecraft	Altona Nth
Connected Solar & Electrical	Mornington	Electrical & Communication	South Guildford
Coopelec Pty Ltd	Buninyong	Electrical Action	North Ryde
Corsa Electrics	Apollo Bay	Electrical Design & Construct Pty Ltd	Hallam
Cortek Electrica	Prospect	Electrical Fault Correction	Ashfield
CPS National	Thebarton	Electrize Pty Ltd	Parkdale
Craig Burmeister Electrical	Koorinal	Electrocom Solutions Pty Ltd	Eltham
Craig Malic Electrical	Mildura	Electrosolution	Cranebrook
Creative Edge Design	Marysville	Element Energy	Cannonvale
Crofts Manufacturing	Kenmore Hill	Elliott's Electrical/Laser	Swan Hill
Crosswired Cabling	Innaloo City	Energy Applications Pty Ltd	Broome
CT Electrics (VIC) Pty Ltd	Moonee Ponds	Energy Options	Meringo
Custom Solutions Australia	Brendale	Energy Rich Pty Ltd	Burnett Head
D.A.R. Electrics	Essendon	Energy Superstore	Carringbah
Damjanoski Electrics	Reservoir	Energy Superstore	Carringbah
Dave Pugh Electrical	Cromer	Enviro Energy	Hillcrest
David Blyzno Electrical Contractor	Banksia Park	E-Smart Electrical Services	Winmalee
David Ross Elect & Air Conditioning	South Tweed	Essential Cabling	Jandakot
David's Electrical Service	Highett	Ettis Energy	Tuart Hill
Daylime Pty Ltd	Kippa-Ring	Evarth Pty Ltd	Noble Park
De Vent Electrical Pty Ltd	Moe	Evolution Power	McLaren Vale
Dean Wallace Electrical Contractor	Colbinabbin	Excel Power	Toowoomba
Denahy Electrics	East Keilor	Expert Wiring Pty Ltd	Bentleigh
Department of Works & Services	Sydney	Eyotec	Malvern
		Farley Electrical	Townsville
		Flashman Electrical	Henley Beach

Accredited Installers – grid-connect only continued

Flex Electrical	Rosebud	Henry Beams	Swan Bay
Fred Kreutz Electrical Service	Yalyalup	Hesline Electrics	Riddells Creek
Free Solar	Wellington Point	Hills and Beyond Solar & Electrical	Chidlow
Freeman Electrical Services Pty Ltd	Smiths Gully	Hi-West Electrical services	Woodford
Fuse Design	Berowra	Mactec Electrical	Maylands
Fusion Electrical	Broadway Ned	Main Guy Electrics	Narre Warren
G & A Martin Electrical Contractors	Dunbogan	Maine Lighting Pty Ltd	Willoughby
G & G South Eastern Electrical	Narre Warren	Maintronics	Alstonville
G J & K Robinson Pty Ltd	Mildura	Mannix Solar	Salisbury Plain
Gabler Electrical Services	Mawson	Margaret River Information Technology	Margaret River
Gary Thomas – Solutions	Kangaroo Valley	Mark Edmondson Electrical Service	Craigie
Geelong Solar (Buckby Electrical)	East Geelong	Mark the Spark	Snug
Get Connected	Norfolk Island	MARWIN Electric – Green Electrical	Doveton
Gippsland V.G. Electrical & Solar	Glenmaggie	Max Fox Electrical/Inland Solar	Tamworth
Glin Martin Engineering & Electrical	Arcadia	Max Power Electrical Vic Pty Ltd	Hurstbridge
GLN Electrical Services	Bangor	McFarlane Systems	Inverell
Glow Electrical	Parkes	Mekah Electrical	Temora
Glynncorp Electrical	Wodonga	MFY Solar Electrical	Hurstville Grove
Go Green Australia Pty Ltd	Woodcroft	Michael Richardson Electrical	Paradise Point
Go Green Generation	Empire Vale	Midwest Solar & Electrical	Cowra
Gold Coast Energy	Mudgeeraba	Mike Gillies Electrical	Goolwa Nth
Gold Coast Solar Power Solutions	Elanora	Mildura Solar Contractors Pty Ltd	Mildura
Golden Globe Electrics	Bundall	Millenium Elect Services	Alexander Heads
Good Day Solar	Narrabeen	Miller Electrical and Communication	Cairns
Goodhew Electrical	Alexandra Hills	MJ Mullins Electrical	Airport West
Gordon McKay Pty Ltd	South Geelong	Mode Electrical	St Leonards
GR & W Higgins Pty Ltd	Kyneton	Modern Power Pty Ltd	Lara
Graydon's Company Pty Ltd	Callala Bay	Modern Roof Restoration T/A	Baulkham Hills
Great White Spark	Cranbourne	Monsec Pty Ltd	Hervey Bay
Green Energy Australia	Coburg	Moonbi Solar	Moonbi
Green Energy Solutions	Thorntlands	Moran & Bamford Electrical Pty Ltd	Colac
Green Grid Power Margaret River	Malaga	Mossfiel Electrical & Safety Management	Hoppers Crossing
Green Phase Services	East Bentleigh	MPA Solar Solutions	Brendale
Green Solar Group	Waverley	Mr Solar	Dingley Village
Greener Electricity Management	Chidlow	MSV Property Services Pty Ltd	Box Hill North
Greenway Energy Pty Ltd	Camberwell	Murphy Electrical & Air Conditioning	Hawthorne
Grid-connect Solar	Grabben Gully	Myers Electrical Services	Balnarring South
Griffith Green Electrics	Willetton	Nagel Electrics	Ballan
GS & BD Electrics	Griffith	National Solar and	Burwood
Gunbower Electrical	Gunbower	Neal Electrics	O'Halloran Hill
GWM Engineering Pty Ltd	Roseville Chase	Neco Holdings Pty Ltd	Blackburn
H & J Lewis	Tooradin	New Generation Solar	Ocean Grove
Haines Contracting (Qld) Pty Ltd	Redbank Plains	Newcastle Bright Sparks	Gateshead
Haralec	Port Macquarie	Next Connection Australia	Scullin
Harvest Solar	Mornington	Nicholls Solar	Seven Hills
HCB Electric	Boolaroo		
Heath Smith Electrical	Deans Marsh		

Accredited Installers – grid-connect only continued

Nick Oakes Electrical Services	Croydon	Rainey Electrical Service	Yangebup
Norfolk Electrical	Norfolk Island	Rawson's Electrical	Plympton
Norfolk Inland Administration	Norfolk Island	Regional Solar Systems	Wagga Wagga
Norfolk Island Electricity	Norfolk Island	Renew Electrical	Suffolk Park
Norlec Contracting	Bamawm	Renewable Energy Technology	South Melbourne
Norris Solar	Fisher	Renewable Future	Mornington
North East Electrical	Wodonga	Right Phase Electrical Services	Calwell
Northcote Solar	Northcote	Ripper Electrical	Ferntree Gully
Northern Rivers Renewable Energy	Nymboida	RISE – Research Institute for	Murdoch
Northern Solar	Murwillumbah	Rising Sun Electrics	Eltham
Nu Energy	Moonah	Riverina Solar Power	Temora
O'Dea Electrical	Plympton	RMX Enterprises Pty Ltd	Cobram
O'Donnell Griffin	Kilkenny	Rob Edwards Electrical Pty Ltd	Mt Kuringai
Ogden Electrical	Alice Springs	Rob Lucarelli Electrical Services	Campbelltown
Origin Energy	Melbourne	Robert Lamb Electrical	Coffs Harbour
Oss (Renewables) Pty Ltd	Findon	Robert Spreadboroug Electrical	Uralla
Oz Solar	Wandin North	Robson& Sons Electrical	Joondalup DC
Ozone Design	Seaford	Rodney Wilson Electrical	Corowa
Ozone Energy	Mindarie	Roger Zitzen Electrics	Caulfield South
Ozzie Electrical & Co	Nerang	Rogers Air	Elanora
P & N Rogers Electrical Cont. Pty Ltd	Narellan	Roy All Electrical	Unley
Pacific Services Group	North Melbourne	RTM Electrics	Heathcote
Parsons Electrical	Port Kennedy	Rural Solar	Dalwallinu
Paskin Solar	Moorooduc	S & S Bird	Newtown
Paul Kennedy Electrical	Smithfield	S + S Mountford Electrical	Lysterfield
PBC Solar Power	Warnbro	Sackett Services	Derwent Park
Peter Young	Rouse Hill	Samaritan Maintenance Services	Uriarra
Phazer	Warragul	Same Day Electrical	St Leonards
Philip Hand Electrical Contractors Pty Ltd	Red Cliffs	Sammon Electrical Pty Ltd	Lake Boga
Pilbara Energy Solutions	Karratha	SAS Electrical Industries	Narre Warren
Planetec Electrical Ltd	Caringbah	SEAC Electrical Division	Pakenham
Platinum Appliance Services Pty Ltd	Albion	Securelec Services Pty Ltd	Keperra
Power Up Solar Pty Ltd	Watsonia	Servco Pty Ltd	Ringwood
Powersmart NZ Ltd	Paihia	Servoc Pty Ltd	Bayswater
Powervpsolar	Malvern	Setting Sun Solar Solutions	Rye
Preferred Electrical	Bonegin	SGL Solutions Pty Ltd	Carindale
Prima Electrical	Tea Tree Gully	Sharco Enterprises Pty Ltd	Mackay
Pritchett Electrical	Grovedale	Sharp Corporation	Huntingwood
PV Solar Energy (Australia)	St Peters	Sharper Electrics	Moe
QA Electrical Pty Ltd	Geelong	Shoreham Electrics	Shoreham
Quantum Electrical and Data	Coopers Plains	SHSA Pty Ltd	Hampstead Gardens
Quantum Electrical Services	Melton West	Silcar Telepower Design &	Tingalpa DC
Queensland Electrical Training	Coopers Plains	Simmark Pty Ltd	Nowra North
Queensland Solar Protection	Peregian Beach	Simon Barclay Solar Energy	Busselton
R & M Airconditioning	Buddina	SJ Electric	Arndell Park
R & MA De'Athe	Wamberal	Skeet's Electrical	Northam
Radi Services	St Andrews		

Accredited Installers – grid-connect only continued

Sky Power Australia	Hoppers Crossing	Stephen Breheny	Castlemaine
Smart Water and Energy	Dundurrabin	Steve Benko Electric	Oak Flats
Smartwire Electrical	Kunyang	Steve Hopwood Electrical	Orange
Snowy Solar Service	Tumut	Storm Sustainability Pty Ltd	South Yarra
Solaire Electrical	Port Melbourne	Structured Electrical	Coburg
Solar by Nova	Redland Bay	Sugar Mountain Electrical Services	Nannup
Solar Collect	Mandurah	Sun State Solar	Grange
Solar Centre Brisbane	Darra	Sun Wise Electrics	Bunbury
Solar Electricity	Greensborough	Sunlight Power Systems Pty Ltd	Kelmscott
Solar Electrics	Capel	Sunpath Solar	Cook
Solar Energy Direct	Ranelagh	Sunraysia Solar	Cabarita
Solar Grid-connect	Adelaide	Sunrise Energy	Exmouth
Solar Horizon	Marrickville	Sunscape Electrical	Pakenham
Solar IQ	Mildura	Sunwatt Aust Pty Ltd	Thomastown
Solar Kings	Wilson	Sunwise Solar	Kingscote, Kangaroo Island
Solar Man	O'Halloran	Sustainable Plant.com.au	Beaumaris
Solar Newcastle	Newcastle	Sustainable Power Systems	Lilydale
Solar Panel Company	Wood Park	Swan Energy Pty Ltd	Willetton
Solar Plus	Macedon	Sydney Solar Electricity	Frenchs Forest
Solar Powered Homes	Moonee Beach	Synectic Engineering Pty Ltd	Mount Kuringai
Solar Quip	Carlton	T D & M Richmond Electrical	Coffs Harbour
Solar SA	Glynde	T J Matthews	Denmark
Solar Shane	Hallam	Tamworth Satellite & Elect. Services	Tamworth
Solar Shop Australia	Crows Nest	Tasman Electrical	Redfern
Solar Technology Australia	Annandale	Tekpoint Electrical	Secret Harbour
Solar Unlimited (Villanor Pty Ltd)	Marangaroo	Templeton & Hellmrich A/C Pty Ltd	Wisemans Ferry
Solar Woman	Bundoorra	Tesko Electrics	Hillside
Solar4power	Bundoorra	The Green Power Company	St Kilda
Solarconnect Electrical	Blackburn	Think Solar Energy	Shepparton
Solarelec Services	The Basin	Tom Pieper Electric & Communications	Moonee Beach
Solarpower Pty Ltd	Coorparoo	Top of the Hill Electrical	Mount Martha
SolarQuip	Healesville	Totally Amped Electrical Services	Torquay
Solarsave	Randwick	Troy Markey Electric Pty Ltd	Drayton North
Solarsmith Pty Ltd	Ourimbah	True Drive Pty Ltd	Mildura
Solarwind Electrical	Urangan	Tryjohn Electrics	Esperance
Solgen Systems	Mount Eliza	TW Carlson Electronics	North Rocks
Solier Electrical Solutions	Diamond Creek	Vic Electrical Pty Ltd	Carnegie
Sora Electrics Pty Ltd	Dianella	Voltmaster Electrical Contracting	Coolum Beach
South Coast Solar	Barrack Heights	Voots Electrical	Buchan South
South Western Technologies	St Marys	VR Electrical Services Pty Ltd	Upper Ferntree Gully
Sovereign	Springwood	Wayne Ragless Electrical	Seaford
Spark Electrical Pty Ltd	Oberon	Waysea Pty Ltd	South West Rocks
Sparky Joe Electrical Pty Ltd	Karratha	Whisk Electrical Services Pty Ltd	Pakenham
Spiden Electrical Services	Silvan	White Horse Antenna & Electrical Pty Ltd	Jarrahdale
St George Elements	Caringbah	Wide Bay Solar	Hervey Bay
Stand-Alone Power Supplies	Peregian Beach		
Static Electrical Contractors	Lalor		

Accredited Installers – grid-connect only continued

Widecom Pty Ltd	West Pennant
Wilco Electrical	Melville
Worner Electrical Industries	Caboolture
ZEN Home Energy Systems	Norwood

Database Yellow Pages

The following companies would typically be solar water heater retail/install and/or small RE power companies (design, install). This database was created from the Yellow Pages Online.

Company	Location	State
12 Volt Shop	Welshpool	WA
A AAction Now Hot Water	Kincumber	NSW
A And S Yandina Electrical	Cooloolabin	Qld
A Better Hot Water & Energy	Port Macquarie	NSW
A.C.T. Pool Doctor	Jerrabomberra	NSW
A1 Solars 'R' Us		
AAA Solar Power design	Thomastown	Vic
AAC RKC & Sons Electrical Pty Ltd	Camira	Qld
AAE Solar	Carrum Downs	Vic
AAE Solar Hot Water	Tilba Tilba	NSW
Abava Solar Technology	Mt Waverley	Vic
ABC All Solar Panels & Equipment	Preston	Vic
ABC Sunsmart Solar Solutions Pty Ltd	Browns Plains	Qld
Accent Water & Energy	Allambie Heights	NSW
Access Heating & Airconditioning	Fyshwick	ACT
Ace Solar Panels & Accessories	-	-
ACS Plumbing	Tamworth	NSW
Active Solar & Gas	Osborne Park	WA
Active Solar Hot Water	Kippax	ACT
Adapt2 Eco	-	-
Adelaide Solar Systems	Flinders Park	SA
AdtechEco	Wickham	NSW
Advanced Energy Solutions	Tweed Heads	NSW
Advanced Irrigation	Currajong	Qld
Affordable Solar, Wind Power	Elimbah	Qld
AGL Energy Shop	Camperdown	NSW
Agnew Electrics	Alfredton	Vic
Air Care Australia	Mornington	Vic
Air Solar Australia	Maryborough	Qld
Air-Rite	Nambour	Qld
Albury - Wodonga Solar Solutions	Wodonga	Vic
Alco Batteries	-	-
Alice Springs Water Shed	Alice Springs	NT
All About 12 Volt	Auburn	NSW
All About 12 Volt Pty Ltd	Somerton	Vic
All About Solar	Pillar Valley	NSW
All Australian Hot Water	Sutherland	NSW
All Energy Efficient Systems	Port Macquarie	NSW
All Natural Energy	Richmond	NSW
All Seasons Solar	Baulkham Hills	NSW
All Solar Systems Australia Pty Ltd	Braeside	Vic
Allsafe Energy Efficient Products	Molendinar	Qld
All-Safe Logan	Bethania	Qld
Alluvial Gold Pacific	Reservoir	Vic
Allvolts Power Solutions	Broome	WA

Database Yellow Pages continued

Alsafe Insulation & Solar Warehouse	West End	Qld
Alternate Energy Solutions	Bathurst	NSW
Amphour Pty Ltd	Slacks Creek	Qld
AMR Hydromatt Pty Ltd	Hallam	Vic
Anything Solar	Bethanga	Vic
Apricus	–	–
Apricus Australia	Kunda Park	Qld
Aqua Pumping & Solar	–	–
Aqua Solar Pacific Pty Ltd	Leeming	WA
Aquaheat Australasia Pty Ltd	Northmead	NSW
Argyle Batteries & Solar	Tailem Bend	SA
Ark Energy Pty Ltd	Riverstone	NSW
Asunco Solar	Meadowbrook	Qld
ATP Environmental	Coolum Beach	Qld
Aussie Pool Heating	Sylvania Heights	NSW
Aussie Swimming Pool Solar Heating	Geebung	Qld
Aust Energy Research Lab Pty Ltd	Kellyville	NSW
Austral Solar Company Pty Ltd	Bendigo	Vic
Australia Energy System	Springwood	Qld
Australia Solartec	New Gisborne	Vic
Australian Eco Shop	Warners Bay	NSW
Australian Energy Systems Pty Ltd	Brisbane	Qld
Australian Hot Water	Caringbah	NSW
Australian Hot Water – East	Alexandria	NSW
Australian Hot Water (Campbelltown)	Leumeah	NSW
Australian Solar & Air	Port Macquarie	NSW
Australian Sun Power	Balcatta	WA
Autumn Solar	Williamstown	Vic
Autumn Solar Installations Pty Ltd	Ulladulla	NSW
Autumn Solar Queensland	Ormeau	Qld
Autumn Solar Sydney	Dural	NSW
Avant Electrical Services	St James	WA
Axiom Electrical	Clontarf	Qld
Azure Energy	Sutherland	NSW
B & N Batteries	Bundaberg North	Qld
B & W Quality Solar Pool Heating Pty Ltd	Keysborough	Vic
B F Geebung	Grafton	NSW
Bairnsdale Origin Energy Shop	Bairnsdale	Vic
Ballina Hot Water Specialists	Ballina	NSW
Barnetts Deniliquin Pty Ltd	Deniliquin	NSW
Barraba Solar	Barraba	NSW
Batteries Charges Solar	Tuncurry	NSW
Battery & Solar Now	Morningside	Qld
Battery Central	Miami	Qld
Battery Now Solar Now	Toowoomba	Qld
Battery Solutions	Invermay	Tas
Battery Stop	Campbellfield	Vic
Battery Traders Superstore	Slacks Creek	Qld

Database Yellow Pages continued

Battery World Hobart	Hobart	Tas
Battery World Tamworth	Tamworth	NSW
Beasley Pool Heating	Enfield	SA
Better Building Innovations	Wagga Wagga	NSW
Bfa Solar	Darra	Qld
Boat & Caravan Fridge & Solar	Labrador	Qld
Bonlec Wind & Solar	Garbutt	Qld
Brandy Creek Plumbing	Warragul	Vic
Brendan Kelly Electrical	Swan Hill	Vic
Brisbane Solar	Lawnton	Qld
Budget Solars	Willetton	WA
Buffalo Solar	Glendale	NSW
Byron Street Auto Electrics	Inverell	NSW
Caboolture Solar & Hot Water	Caboolture	Qld
Cairns Battery Factory	Portsmith	Qld
Camec	Archerfield	Qld
Canberra Hot Water Service	Page	ACT
Caravan Solar Systems	Beckenham	WA
Cavana Plumbing Pty Ltd	–	–
Central West Solar	Orange	NSW
Challenge Batteries WA		
Choice Electric Co. Aust. Pty Ltd		
Cilectric Pty Ltd		
Clear Solar		
Click Control Systems Pty Ltd		
Climatecare Electrical		
Climax Solar		
CLS Custom Lifestyle Solutions	Hendon	SA
Coastal Solar Wise Fraser Coast	–	–
Colac To Coast Solar Energy	Colac	Vic
Cooloola Solar Systems	–	–
Cosmos Solar Pty Ltd	Carole Park	Qld
Cummins Auto Electrical	Cummins	SA
Custom Solutions Australia	–	–
D & S Construction Services Pty Ltd	Flagstaff Hill	SA
David Seligmann	Bentleigh	Vic
Demand Solar	Chatswood	NSW
DNA Electrical Pty Ltd	Tuggerah	NSW
Dubbo Powerhouse	Dubbo	NSW
Dyesol Ltd	Queanbeyan	NSW
Dynamic Solar Solutions	Moffat Beach	Qld
Earth Pulse Solar	Gin Gin	Qld
Earth Utility Pty Ltd	–	–
Earthsave	Geebung	Qld
East Coast Green Energy	Stratford	Vic
Eastwide Building Products	North Perth	WA
Easy Energy	Campsie	NSW
Eco Heat Pumps & Solar	Maroochydore	Qld

Database Yellow Pages continued

Eco Living Centre	Gladesville	NSW
Eco Plumber	Waratah	NSW
Eco-Logic Power Systems	Natimuk	Vic
Eco-Options	Ballina	NSW
Eco-Ultimate Pty Ltd	Hallam	Vic
Electricians Shed	North Hobart	Tas
Energy Auditors	Maleny	Qld
Energy House SA	Oaklands Park	SA
Energy Matters	South Melbourne	Vic
Energy Options	Meringo	NSW
Energy Victoria Pty Ltd	Preston	Vic
Energypak	Jarrahdale	WA
Enviro Friendly Products	Phillip	ACT
Enviroflo Solar	Nambour	Qld
Environment Shop	Thornbury	Vic
Environmental Care Specialists	Cairns	Qld
Enviropoint	Kirrawee	NSW
Enviro-Power Technology	Yeppoon	Qld
Envirosmart Solutions	Maroochydore	Qld
Envirowatt Pty Ltd	Coorparoo	Qld
E-Solar Australia	-	-
Fairy Meadow Appliance Centre	Fairy Meadow	NSW
Forbes Batteries	Toowoomba	Qld
Go Green Technologies	Thuringowa Central	Qld
Going Eco Pty Ltd	Thornleigh	NSW
Grafton City Batteries	-	-
Grampians Solar	Stawell	Vic
Green Energy Superstore	Cleveland	Qld
Green Source		
Harmonic Energy		
Hastings Solar Plus		
Heliocol Victoria		
Home Power Specialists	Sippy Downs	Qld
Hutchins Solar Power		
Hydromatt		
Insolar Pty Ltd		
Jessups Retravisoin	Launceston	Tas
Kalang Solar Trackers	Kalang	NSW
Korries Solar	Wollongong	NSW
Ladder Technology	Shanes Park	NSW
Lake Macquarie Communications	Gateshead	NSW
Laser Electrical Lismore	Lismore	NSW
Laser Plumbing	South Lismore	NSW
Laurence Port	Taroona	Tas
Leading Edge Electronics	Forster	NSW
Lifelink Communications & Electronics Pty Ltd	Thursday Island	Qld
Liquid Sustainable Directions	North Perth	WA
Live Designs	Tilba Tilba	NSW

Database Yellow Pages continued

Living Clean	Woongarra	NSW
Living Power	–	–
Living Wise	Dandenong	Vic
Lloyd Hooper Plumbing	–	–
LR Plumbing	Moonah	Tas
M Guru Solar Pool Heating	Salisbury East	SA
Mackay Pumping & Irrigation Pty Ltd	Mackay	Qld
Mackie's	Taree	NSW
MACS Maintenance & Contracting Services	South Perth	WA
Mandurah Home Heating & Cooling	Mandurah	WA
Mannix Solar	Parafield	SA
Maroochy Gas & Solar	Maroochydore	Qld
Mastel Broadcast Services Pty Ltd	Orange	NSW
Mastergurad Heating & Cooling	Gawler Belt	SA
McCracken's Water Services	Morayfield	Qld
Mech D & C	Cairns	Qld
Mega Electrical	Murray Bridge	SA
Megasun Solar Energy Systems	Bibra Lake	WA
Metal Dynamics	–	–
Micro Energy Systems	Burswood	WA
Mildura Solar	Mildura	Vic
Mobile Pool Solutions Pty Ltd	Asquith	NSW
Modern Solar	–	–
Modern Solar the Modern Group	Lambton	NSW
Mr Solar	Braeside	Vic
Mr Stoves Pool World	Albury	NSW
Multipowered Products Pty Ltd	Balgowlah	NSW
Murray Bridge Caravan & Outdoor Centre	Murray Bridge	SA
Murray River Plumbing Service	Echuca	Vic
Myers Electrical Services	Balnarring	Vic
Nambucca Plumbing Supplies	Nambucca Heads	NSW
Narellan Pools Eastcoast	Belmont	NSW
Narellan Pools Western Plains	Dubbo	NSW
Narooma Picture Framing	Narooma	NSW
Nathan Ross Electronics	Tenterfield	NSW
National Solar Systems	Toongabbie	NSW
Natural Energy Centre	Lismore East	NSW
Natural Energy Concepts Pty Ltd	Bemboka	NSW
Neumann	Currumbin	Qld
New Energy Systems	Raceview	Qld
Newcastle Solar Pool Heating	Elermore Vale	NSW
Next Connection	Scullin	ACT
Nexus Project	Queanbeyan	NSW
North Australian	Garbutt	Qld
North Central Energy	Strathdale	Vic
North Coast Power & Water	Coffs Harbour	NSW
North Coast Solar	Kariong	NSW
North East Heating & Airconditioning Pty Ltd	Beechworth	Vic

Database Yellow Pages continued

North Qld Batteries (Att: David)	Townsville	Qld
North West Heating & Cooling	Tamworth	NSW
North West Solar	Inverall	NSW
Northern Plumbing Maintenance	Prospect	SA
Northern Rivers Renewable Energy	Lower Kangaroo Creek	NSW
Northern Rivers Solar	Lismore	NSW
Northern Solar Pool Heating	Currumbine	WA
NRG Home Energy Solutions	Stafford	Qld
Nu-Lok Roofing Systems	Forestville	NSW
O R & J C Ost	Toowoomba	Qld
Ogden Electrical Pty Ltd	Alice Springs	NT
Olympic Batteries	Greystanes	NSW
O'Meara Plumbing	Ocean Grove	Vic
One Earth Outlet	Balcatta	WA
One Stop Water Shop	–	–
Ontrak Services	Ballarat	Vic
Orana Energy Systems	Dubbo	NSW
Outback Energy Supply	West Kalgoorlie	WA
Outback Energy Supply	Malaga	WA
Outback Solar & Wind	Mareeba	Qld
Outlook Alternatives	Wangaratta	Vic
Ozmist	Wangaratta	Vic
Pecan Engineering	Dry Creek	SA
Perth Solar Panels	Cottesloe	WA
Photocomm Pty Ltd	Stafford	Qld
Planet Green Pty Ltd	Broadmeadows	Vic
Portasol Trackers Pty Ltd	Crows Nest	Qld
Power Partners	North Rocks	NSW
Power Plus	Derwent Park	Tas
Prime Sunbather Group	Baulkham Hills BC	NSW
Prosolar Pty Ltd	Wantirna South	Vic
PV Solar Tiles	Tempe	NSW
Q Solar Pty Ltd	Carina	Qld
Quantum Energy Pty Ltd	Brisbane	Qld
R.C. Solar Pty Ltd	Quakers Hill	NSW
Rain Water Wizard Plumbing Services	San Remo	NSW
Rainman Tanks & Solar Installations	Gold Coast Mail Centre	Qld
Reilly PA & WM	–	–
Renewable Energy Superstores	Bibra Lake	WA
Renewable Power Systems	–	–
Renewablelogic	Bayswater	WA
Research Institute for Sustainable Energy (RISE)	Murdoch	WA
RF Analysis	Dorrigo	NSW
Rich Electric Co.	Wyong	NSW
Rinnai Solar Hot Water	Regency Park	SA
Rivers Electrical	Macarthur Square	NSW
Roofsolver	Forestville	NSW
S J Moore Plumbing	Wantabadgery	NSW

Database Yellow Pages continued

S.E. Battery Service Pty Ltd	Mt Gambier	SA
S.T.S. Services Pty Ltd	Wootton	NSW
SA Pool and Solar	–	–
Sahara Pool & Solar	Salisbury South	SA
Same Day Hot Water	Midvale	WA
Sandford Electronics and Solar	Dapto	NSW
Saxon Solar Star	Zillmere	Qld
Sealite Pty Ltd	Somerville	Vic
Second Hand Solar Man	Willetton	WA
SEMCO Sales Pty Ltd	Bundaberg	Qld
Shane Inwood Plumbing, Drainage & Gas Fitting	Gladstone	Qld
Shepparton Solar Centre	Bunbartha	Vic
Shoalhaven Emergency Hotwater & Electrical	Bomaderry	NSW
Shoalhaven Gas Hotwater & Elements	Nowra	NSW
Shoreham Solar	Shoreham	Vic
Shurflo Solar Pumps	Hendra	Qld
Silicon Power	Mt Ommaney	Qld
Simmark Pty Ltd	Nowra North	NSW
Skyline Energy	Heidelberg	Vic
Skyshades Skypower	–	–
Smalls Solar	Bayswater	WA
Smart Options	Wendouree	Vic
Smart Roof Australia Pty Ltd	Melbourne	Vic
Smart Water & Energy	Gunnedah	NSW
Smartlite Leds Australasia Pty Ltd	Bundall	Qld
Smiths Solar Pool Heating	Mermaid Beach	Qld
Sola Direct	Canning Vale	WA
Sola Energy Australia	Warners Bay	NSW
Sola Part	Morley	WA
Sola Ray	–	–
Sola Revival	Duncraig	WA
Sola Swim Pty Ltd	Osborne Park	WA
Sola World	Morley	WA
Solacare	Northgate	Qld
Solahart	Rydalmere	NSW
Solaheat Australia	Bibra Lake Private Boxes	WA
Sola-Kleen	Bayswater	WA
Solamagic	Osborne Park	WA
SolaOptions	Coffs Harbour	NSW
Solapool Covers	Kardinya	WA
Solar Action Pty Ltd	–	–
Solar Advantage Pty Ltd	Mundaring	WA
Solar Alternatives	Yea	Vic
Solar Attraction	Asquith	NSW
Solar Australis	–	–
Solar Bargains	Broke	NSW
Solar Brokers	Seaview Downs	SA
Solar Call	–	–

Database Yellow Pages continued

Solar Centre	Toowoomba	Qld
Solar Choice SA	Somerton Park	SA
Solar City – Renewable Energy Systems	Rutherford	NSW
Solar Co Central West	Orange	NSW
Solar Co Margaret River	Margaret River	WA
Solar Crew	Burwood	Vic
Solar Depot	Lonsdale	SA
Solar Doctor	Balcatta	WA
Solar Electric Installations	–	–
Solar Electrical Systems	Lewiston	SA
Solar Energy Equipment	Cairns	Qld
Solar Energy Goolwa	Goolwa	SA
Solar Equip	Boyup Brook	WA
Solar Freedom Pool Heating System	Kenwick	WA
Solar G	Burpengary	Qld
Solar Generation	Buderim	Qld
Solar Green	East Stapylton	Qld
Solar Grid-connect Installations	–	–
Solar Harness	Booragoon	WA
Solar Harvest Australia	Banyo	Qld
Solar Home Australia	Corinda	Qld
Solar Horizon	Harbord	NSW
Solar Hot Water Advisory Service	Beaconsfield	WA
Solar House	Wittenoom	WA
Solar Is Us	Picton	NSW
Solar Lifeline	Canning Vale	WA
Solar Made Easy	Pitt Town	NSW
Solar Maintenance	Maroochydore	Qld
Solar Mesh	Archerfield	Qld
Solar Motion	Lismore	NSW
Solar MyWorld	Kalamunda	WA
Solar N Sat	Gin Gin	Qld
Solar One	Langwarrin South	Vic
Solar Online Australia	Warners Bay	NSW
Solar Options	Australind	WA
Solar Pacific Technologies Pty Ltd	Beenleigh	Qld
Solar Pak	Gold Coast MC	Qld
Solar Plumbing Solutions	–	–
Solar Pool Heating	Oak Flats	NSW
Solar Pool Heating SA	Morphettville	SA
Solar Pool Systems	Joondalup	WA
Solar Pool Systems SA	Lonsdale	SA
Solar Pools	Upwey	Vic
Solar Pools Heating	Albion	Qld
Solar Power Design	–	–
Solar Pumping Solutions	Mudgee	NSW
Solar PV	Malaga	WA
Solar Queensland	Burpengary	Qld

Database Yellow Pages continued

Solar R.V.	Slacks Creek	Qld
Solar Repairs	Warwick	WA
Solar Schools Australia	Brompton	SA
Solar Services	Morisset	NSW
Solar Shield W.A.	Warnbro	WA
Solar Solutions	Cumberland Park	SA
Solar Solutions Mid North Coast	Raleigh	NSW
Solar Solutions Pty Ltd	Wangara	WA
Solar Sun Power	Sumner Park	Qld
Solar Systems Ballarat	Ballarat	Vic
Solar Tasmania	Wivenhoe	Tas
Solar Temp	Tomago	NSW
Solar West	Bathurst	NSW
Solar Wholesalers	Brompton	SA
Solar Winds Australia	Wingfield	SA
Solar Wise Solutions Pty Ltd	Kingston	Qld
Solar World Australia	Toowoomba	Qld
Solar Xpress	Caboolture	Qld
Solarain	Rockhampton	Qld
Solarcity	–	–
Solarcity Auto Electrical	Maryborough	Qld
Solarco	Fyshwick	ACT
Solarcorp	Mornington	Vic
SolarGen	Heidelberg West	Vic
Solargreen	Stapylton	Qld
Solarite Energy Pty Ltd	Logan Central	Qld
Solarlife Pty Ltd	Howard	Qld
Solarmend	Ryde	NSW
Solaroll WA	Osborne Park	WA
SolarSat	Cooks Gap	NSW
Solartech Energy Solutions	North Rockhampton	Qld
Solartech Genius	Yennora	NSW
Solartech Pool Heating	Seven Hills	NSW
Solartek	Narrabri	NSW
SolaSys Sunshine Coast	–	–
Solectair	Willetton	WA
Solenergy Pty Ltd	Reservoir	Vic
Solitaire	–	–
Solitaire Townsville	Garbutt	Qld
Solnology	Brighton	Tas
Sontech Solar	Hastings	Vic
South Coast Batteries & Solar	Nowra South	NSW
South West Solar Services	–	–
South West Sun & Wind Power	Chapman Hill	WA
Southern Cross Darwin	Pinelands	NT
Southern Plumbing Pty Ltd	Mornington	Tas
Southwest Solar Hot Water Repairs	Bunbury	WA
Sovereign Electrical Services	Springwood	NSW

Database Yellow Pages continued

Sovereign Energy	Ormeau	Qld
Sovereign Hills Solar	Port Macquarie	NSW
Spark Solar	–	–
Splash's Pools Sales & Service	Leumeah	NSW
Stanbury Scarf & Lord Pty Ltd	Seven Hills	NSW
Statewide Industries Pty Ltd	Mackay	Qld
Statewide Solar	Avoca Beach	NSW
Sun Connect	Fremantle	WA
Sun Hot Pty Ltd	Bunbury	WA
Sun Power Solartech Australia	–	–
Sun Ray Solar Solutions	Landsborough	Qld
Sun Real	Wangaratta	Vic
Sun Solar Pool Heating	Eltham North	Vic
Sun State Solar	Grange	Qld
Sunbather Pty Ltd	Hastings	Vic
Sunco Solar	Meadowbank	Qld
Sundial Solar	Marsfield	NSW
Sundream Homes	Kippa-ring	Qld
Sunergy Australia	Milton	Qld
Sunflow Systems	Lane Cove	NSW
Sungen Pty Ltd	Pambula South	NSW
Sunkit International	–	–
Sun-kit Solar Pool Heating	Beenleigh	Qld
Sunlight Power Systems	Kelmscott	WA
Sunlover Heating	Bayswater	Vic
Sunpak Eco Hot Water	–	–
Sunpak Heat Pumps Pty Ltd	Maroochydore	Qld
Sunplus CPC Solar	–	–
Sunraz Solar Equipment	Echuca	Vic
Sunsational Solar Heating	Mooroolbark	Vic
Sunscape Electrical Pty Ltd	Pakenham	Vic
Sunshine Coast Solar Systems	Yumundi	Qld
Sunshine Electrical Service	Clontarf	Qld
Sunshine Solar	Sunshine	Vic
Sunsmart Solar Pty Ltd	Mt Annan	NSW
Sunspark	Goulburn	NSW
Sunspot Solar	Dry Creek	SA
SunTechnics Energy Systems Pty Ltd	Waterloo	NSW
Superior Solar	Morrisset	NSW
Supreme Heating	Smeaton Grange	NSW
Supreme Solar	Thomastown	Vic
Surveyor Renewable	Belconnen	ACT
Sustainable Man	Morningside	Qld
Sustainable Stuff	–	–
Swift Environmental Solutions Pty Ltd	Quakers Hill	NSW
Swim Solar	North Parramatta	NSW
Swimming Pool Solar Heating	Kings Park	SA
Swim-more Pool Heating	Bayswater	Vic

Database Yellow Pages continued

T3 Energy Pty Ltd	Wentworth Falls	NSW
Tasman Energy	Deloraine	Tas
Tasman Solar	Ingleburn	NSW
Tassie Pools and Spas Pty Ltd	Invermay	Tas
TDM Solar	Tatura	Vic
Technical Electrical	Kirrawee	NSW
Tecto Research	Swanbourne	WA
That Pool Guy	Wetherill Park	NSW
The 12 Volt Shop	Welshpool	WA
The 12 Volt Solar Shop	Hervey Bay	Qld
The 12 Volt World	Albany	WA
The Green Power Company	–	–
The Heat Shop	Yarraville	Vic
The Modern Group	Wollongong	NSW
The Natural Energy Shop	Derwent Park	Tas
The Solar Bloke	Castlemaine	Vic
The Solar Energy Shop	Bundamba	Qld
The Solar Pump Co	Bentleigh East	Vic
Therese Plumbing	Berwick	Vic
Thermalair Pty Ltd	Orange	NSW
Thermotube	Hornsby	NSW
Think Solar Energy	Shepparton	Vic
TODAE	Glebe	NSW
Todd's Plumbing and Hot Water	Ashmore	Qld
Tom Pieper Footprint Electrical	Moonee Beach	NSW
Totally Green Plumbing	Tuggerah	NSW
Townsville Pool Supplies Mobile Pool Service	Kirwan	Qld
Trading Post Disposals Pty Ltd	O'Halloran Hill	SA
Tri-Dek Lighting & Electrical	Bundaberg	Qld
Ultimate Hot Water	Mornington	Vic
Ultra Green Sun	Perth	Tas
UniSolar	Welshpool	WA
United Skilled Contractors	Magill	SA
Unity Electrical Contracting	–	–
Urban Ecoliving	Robina	Qld
Vergola WA	Bibra Lake	WA
VIP Fraser Coast Pools Pty Ltd	Hervey Bay	Qld
Virotech	–	–
Wagga Hot Water	Wagga Wagga	NSW
Walkers Auto Electrics	Brookvale	NSW
Waterlinx Australia	Asquith	NSW
Watervation	Rockhampton	Qld
Watts2C	Warana	Qld
Wayne Kaufline	–	–
Waynes Power Company	Grafton	NSW
WD Moore & Co	O'Connor	WA
Western Solar Energy	Ballarat	Vic
Western Solar Ventilation Systems	Wangara	WA

Database Yellow Pages continued

WideCom	West Pennant Hills	NSW
Wigley Plumbing	Yorketown	SA
Wildwood Wind and Solar	–	–
Wind Energy Australia	Mt Eliza	Vic
World of Solar	Bundall	Qld
Yager Electronics Optional Power Pty Ltd	–	–
Yellow Rock Green Power	Unanderra	NSW
YHI Power Pty Ltd	Archerfield	Qld
Zane Solar Centre	–	–
Zolar Group	Cowandilla	SA
ZTS Solar & Pool	Niddrie	Vic



Annex B. Renewable Energy Survey 1— Questions

Survey of Renewable Energy (RE) Industry

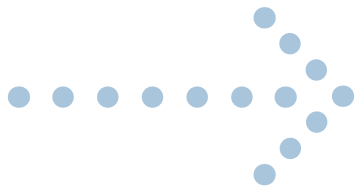
This information is being collected for the purposes of developing a database on renewable energy industry workforce and training needs. The data collected will only be released publicly in aggregate form in a way that does not enable the identification of surveyed individuals or companies. The information is being collated by consultants engaged by the Clean Energy Council, on behalf of the Commonwealth Government. All consultants have signed an agreement binding them to confidentiality and the requirements of information privacy. Once collated, the data will be transferred to the Commonwealth Government where it will be used in aggregate form for the purposes of promoting and supporting the renewable energy industry and will otherwise be held in confidence.

- 1) **What percentage of your business is in renewable energy and energy efficiency?**
- 2) **For the renewable energy portion of your business, what percentage comprises:**
 - a. Wind
 - b. Solar PV
 - c. Solar Hot Water
 - d. Bioenergy
 - e. Hydro – small and large
 - f. Geothermal
 - g. Energy Efficiency
 - h. Other:
 - i. Consultancy
- 3) **What are your current staffing levels in the following categories: (*full-time equivalent*)**
 - a. *Engineers (including designers)*
 - i. Mechanical Engineers
 - ii. Civil Engineers
 - iii. Electrical Engineers
 - iv. Electronics Engineers
 - v. Environmental Engineers
 - vi. Computer Software Engineers
 - vii. Other Engineering staff
 - b. *Scientists*
 - i. Biochemists and Biophysicists
 - ii. Materials Scientists
 - iii. Chemists
 - iv. Environmental Scientists and Specialists
 - v. Other:

- c. Technicians (*including installers*)
 - i. HVAC Mechanics and Installers
 - ii. Industrial Machinery Mechanics
 - iii. Other Mechanics
 - iv. Inspectors, Testers, and Sorters
 - v. Machinists
 - vi. Installation Staff
 - vii. Environmental Science Technicians
 - viii. Pipe-layers
 - ix. Pipefitters and Steamfitters
 - x. Sheet Metal Workers
 - xi. Welders and Solderers
 - xii. Fitters and Turners
 - xiii. Certified/Registered Electricians
 - xiv. Certified/Registered Plumbers
 - xv. Other:
 - d. Administration staff
 - xvi. OH&S
 - xvii. Accounts
 - xviii. Payroll
 - xix. Purchasing Officers
 - xx. Book-keeping and Office
 - xxi. IT
 - e. Management
 - xxii. Computer and IT Managers
 - xxiii. Engineering Managers
 - xxiv. Management Analysts
 - xxv. Marketing Managers
 - f. Customer Service Representatives
 - xxvi. Sales & Marketing
 - g. Consultants
 - h. Other
 - xxvii. Legal
 - xxviii. Storepersons
 - xxix. Training and Development Specialists
 - xxx. Truck Drivers
- 4) **How many staff did you have in:**
- a. 2000
 - b. 2005
 - c. 2008
- 5) **If your staff numbers have increased, in what staffing categories has there been an increase?**
- 6) **If demand for your business's renewable energy services were to increase by 50%**
- a. What effect would this have on staffing levels? Increase Stay the same
 - b. What categories of staff do you think will grow? (*a to h from Q3*)

- 7) **If demand for your business's renewable energy services were to increase by 100%**
- What effect would this have on staffing levels? Increase Stay the same
 - What categories of staff do you think will grow? (a to h from Q3)
- 8) **What changes are needed at industry/energy sector level to drive a 50% or 100% increase?**
- 9) **What policy mechanisms at government level do you feel are needed to drive a 50% or 100% increase?**
- 10) **Is there a current skills gap in the area that you work in?** Yes No
- 11) **If so, where is this skills gap? (a to h from Q3)**
- 12) **Do you offer in-house training for any RE technology-related work?** Yes No
- 13) **What in-house or external training is undertaken by existing staff to undertake current work levels?**
- In-house short courses
 - External short courses
 - Support for longer term external training
 - Other:
- 14) **What additional training would be required to meet business increases as above?**
- 15) **Can staff obtain the current training required by the standard service providers, such as universities and technical colleges?** Yes No Unsure
- 16) **Would you see that additional training required for new staffing could be met by similar means?** Yes No Unsure
- 17) **Do you find that suitably trained staff are readily available to carry out RE technology-related work?** Yes No
- 18) **Do you find it necessary to recruit staff from outside Australia in order to obtain the required expertise?** Yes No
- 19) **Are you losing staff to other industries?** Yes No
- 20) **What gaps do you see in current renewable energy training in Australia? You can differentiate between training required for your current RE staff and what you anticipate would be required if business demand increased by 50% or 100%.**

Thank you for your time.



Annex C. Renewable Energy Survey 2— Questions

Survey of Renewable Energy Industry

This information is being collected for the purposes of developing a database on the renewable energy industry workforce and training needs. The data collected will only be released publicly in aggregate form in a way that does not enable the identification of surveyed individuals or companies. The information is being collated by consultants engaged by the Clean Energy Council, on behalf of the Commonwealth Government. All consultants have signed an agreement binding them to confidentiality and the requirements of information privacy. Once collated, the data will be transferred to the Commonwealth Government where it will be used in aggregate form for the purposes of promoting and supporting the renewable energy industry and will otherwise be held in confidence.

Company Name

Contact Person

Phone Number

Email

Part A: Training Requirements — *to be completed by all participants*

- 1) **How many staff did you have as at 30 June in:**
 - a. 2000
 - b. 2005
 - c. 2008
- 2) **If your staff numbers have increased, in what staffing categories has there been an increase?**
- 3) **If demand for your business's renewable energy services were to increase by 50%**
 - a. What effect would this have on staffing levels? Increase Stay the same
 - b. What categories of staff do you think will grow?
- 4) **If demand for your business's renewable energy services were to increase by 100%**
 - a. What effect would this have on staffing levels? Increase Stay the same
 - b. What categories of staff do you think will grow?
- 5) **What changes are needed at industry/energy-sector level to drive a 50% or 100% increase?**
- 6) **What policy mechanisms at government level do you feel are needed to drive a 50% or 100% increase?**
- 7) **Is there a current skills gap in the area that you work in?** Yes No
- 8) **If so, where is this skills gap?**
- 9) **Do you offer in-house training for any RE technology-related work?** Yes No

- 10) **What in-house or external training is undertaken by existing staff to undertake current work levels?**
 - a. In-house short courses
 - b. External short courses
 - c. Support for longer term external training
 - d. Other:
- 11) **What additional training would be required to meet business increases as above?**
- 12) **Can staff obtain the current training required by the standard service providers, such as universities and technical colleges?** Yes No Unsure
- 13) **Would you see that additional training required for new staffing could be met by similar means?** Yes No Unsure
- 14) **Do you find that suitably trained staff are readily available to carry out RE technology-related work?** Yes No
- 15) **Do you find it necessary to recruit staff from outside Australia in order to obtain the required expertise?** Yes No
- 16) **Are you losing staff to other industries?** Yes No
- 17) **What gaps do you see in current renewable energy training in Australia? You can differentiate between training required for your current RE staff and what you anticipate would be required if business demand increased by 50% or 100%.**

Part B — complete if your business SELLS/INSTALLS RENEWABLE ENERGY (RE) SYSTEMS

- 1) **What percentage of your business is selling and/or installing RE power systems?**
- 2) **If you are accredited for stand-alone power systems and grid-connect solar PV systems, what percentage of your total business do these two categories represent?**
 - a. Stand-alone power systems (%)
 - b. Grid-connected solar PV systems (%)
- 3) **If you are accredited for stand-alone power systems what percentage of your systems supplied include:-**
 - a. Solar PV (%)
 - b. Wind (%)
 - c. Hydro-micro (%)
- 4) **Do you undertake any work in the area of energy efficiency? If so what percentage of your business is in this area?**
- 5) **Do you or your business:**
 - a. sell and install RE power systems
 - b. sell RE systems/equipment only
 - c. install RE systems only
- 6) **What are your current staffing levels in the following categories:**
 - a. Accredited staff — Total number:
 - i. Designers and Installers
 - ii. Designers only
 - iii. Installers only
 - iv. How many of the above are licensed electrical people?

How many of the above are engineers?

- b. Non-accredited installers: Total number:
 - v. How many of the above are licensed electrical people?
 - vi. How many of the above are engineers?
- c. Do you sub-contract electricians to do installations?
 - vii. If so, how many different contractors would be contracted per year?
- d. Other technical people (please list categories and numbers)
- e. Sales staff (if not same people as above)
- f. Administration staff (if not same people as above)
- g. Management (if not same people as above)
- h. Storepersons

Part B — Complete if your business SELLS/INSTALLS SOLAR HOT WATER (SWH) SYSTEMS

- 1) **What percentage of your business is selling and/or installing solar hot water systems?**
- 2) **Do you:**
 - a. sell and install SWH systems
 - b. sell SWH systems only
 - c. install SWH systems only
- 3) **What are your current staffing levels in the following categories:**
 - a. Plumbers
 - i. inhouse
 - ii. sub-contract
 - b. Electricians
 - i. inhouse
 - ii. sub-contract
 - c. Other technical people (please list categories and numbers):
 - d. Sales staff (if not same people as above)
 - e. Administration staff (if not same people as above)
 - f. Management (if not same people as above)
 - g. Storepersons

Thank you for your time.



Annex D. Data and extrapolated data from Survey 1

Table D1. Sector and staff employed

Renewable Energy Sector	Number of Companies		Number of Staff Employed	
	Surveyed	Estimated	Surveyed	Estimated
Wind	Surveyed	20	Surveyed	444.5
	Estimated	86	Estimated	1545.9
Bioenergy	Surveyed	15	Surveyed	332.1
	Estimated	65	Estimated	1155.0
Solar PV	Surveyed	28	Surveyed	390.3
	Estimated	121	Estimated	1357.4
SWH	Surveyed	14	Surveyed	372.7
	Estimated	60	Estimated	1296.0
Hydro	Surveyed	6	Surveyed	58.0
	Estimated	26	Estimated	201.6
Geothermal	Surveyed	4	Surveyed	4.8
	Estimated	17	Estimated	16.8
Consultancy	Surveyed	12	Surveyed	32.5
	Estimated	52	Estimated	113.1
Other	Surveyed	12	Surveyed	140.8
	Estimated	52	Estimated	489.8
Total No. of Companies	Surveyed	58		
	Estimated	250		
Total No. of Staff Employed			Surveyed	1775.8
			Estimated	6175.6

Table D2. Total number of staff employed per staff category in wind industry

Job Category	Job Sub-Category	Number of Staff Employed	
Engineers/Designers	Mechanical Engineers	Surveyed	35.9
		Estimated	124.9
	Civil Engineers	Surveyed	8.5
		Estimated	29.5
	Electrical Engineers	Surveyed	32.6
		Estimated	113.3
	Electronics Engineers	Surveyed	0.8
		Estimated	2.9
	Environmental Engineers	Surveyed	3.5
		Estimated	12.1
	Computer Software Engineers	Surveyed	1.3
		Estimated	4.6
	Other Engineering Staff	Surveyed	23.6
		Estimated	82.0
	Total	Surveyed	106.2
		Estimated	369.4
Scientists	Biochemists and Biophysicists	Surveyed	0.0
		Estimated	0.0
	Material Scientists	Surveyed	0.0
		Estimated	0.0
	Chemists	Surveyed	0.0
		Estimated	0.0
	Environmental Scientists and Specialists	Surveyed	3.2
		Estimated	11.2
	Other	Surveyed	0.0
		Estimated	0.0
Total	Surveyed	3.2	
	Estimated	11.2	

Technicians/Installers	HVAC Mechanics and Installers	Surveyed	0.0
		Estimated	0.0
	Industrial Machinery Mechanics	Surveyed	10.0
		Estimated	34.8
	Other Mechanics	Surveyed	0.0
		Estimated	0.0
	Inspectors, Testers and Sorters	Surveyed	0.3
		Estimated	1.1
	Machinists	Surveyed	0.0
		Estimated	0.0
	Installation Staff	Surveyed	68.6
		Estimated	238.7
	Environmental Science Technicians	Surveyed	0.0
		Estimated	0.0
	Pipe-layers	Surveyed	0.0
		Estimated	0.0
	Pipe Fitters and Steam Fitters	Surveyed	0.0
		Estimated	0.0
	Sheet Metal Workers	Surveyed	0.0
		Estimated	0.0
	Welders and Solderers	Surveyed	0.1
		Estimated	0.3
	Fitters and Turners	Surveyed	0.0
		Estimated	0.0
	Certified/Registered Electricians	Surveyed	13.7
		Estimated	47.5
	Certified/Registered Plumbers	Surveyed	0.0
		Estimated	0.0
	Other	Surveyed	29.6
		Estimated	102.8
Total	Surveyed	122.3	
	Estimated	425.3	
Administration Staff	OH&S	Surveyed	9.4
		Estimated	32.7
	Accounts	Surveyed	12.8
		Estimated	44.5
	Payroll	Surveyed	2.5
		Estimated	8.7
	Purchasing Officers	Surveyed	7.4
		Estimated	25.8
	Book-keeping and Office	Surveyed	25.7
		Estimated	89.4
	IT	Surveyed	4.8
		Estimated	16.8
	Total	Surveyed	62.6
		Estimated	217.8

Management	Computer and IT Managers	Surveyed	3.7
		Estimated	12.9
	Engineering Managers	Surveyed	10.2
		Estimated	35.6
	Management Analysts	Surveyed	2.8
		Estimated	9.7
	Marketing Managers	Surveyed	6.6
		Estimated	23.0
Total	Surveyed	23.4	
	Estimated	81.3	
Customer Service Representatives	Sales and Marketing	Surveyed	6.9
		Estimated	24.1
Consultants		Surveyed	49.5
		Estimated	172.2
Other	Legal	Surveyed	2.7
		Estimated	9.5
	Storepersons	Surveyed	7.5
		Estimated	26.1
	Training and Development Specialists	Surveyed	3.3
		Estimated	11.5
	Truck Drivers	Surveyed	0.3
		Estimated	1.1
	Other	Surveyed	56.5
		Estimated	196.4
Total	Surveyed	70.3	
	Estimated	244.6	
Total for All Categories		Surveyed	444.5
		Estimated	1545.9

Table D3. Total number of staff employed per staff category in bioenergy industry

Job Category	Job Sub-Category	Number of Staff Employed	
Engineers/Designers	Mechanical Engineers	Surveyed	8.2
		Estimated	28.6
	Civil Engineers	Surveyed	0.2
		Estimated	0.8
	Electrical Engineers	Surveyed	5.6
		Estimated	19.5
	Electronics Engineers	Surveyed	2.0
		Estimated	7.0
	Environmental Engineers	Surveyed	1.2
		Estimated	4.2
	Computer Software Engineers	Surveyed	0.4
		Estimated	1.5
	Other Engineering Staff	Surveyed	9.2
		Estimated	31.8
	Total	Surveyed	26.9
		Estimated	93.5

Scientists	Biochemists and Biophysicists	Surveyed	8.5
		Estimated	29.5
	Material Scientists	Surveyed	0.4
		Estimated	1.4
	Chemists	Surveyed	2.1
		Estimated	7.3
	Environmental Scientists and Specialists	Surveyed	1.8
		Estimated	6.3
	Other	Surveyed	1.4
		Estimated	4.9
Total	Surveyed	14.2	
	Estimated	49.4	
Technicians/Installers	HVAC Mechanics and Installers	Surveyed	112.0
		Estimated	389.5
	Industrial Machinery Mechanics	Surveyed	0.4
		Estimated	1.5
	Other Mechanics	Surveyed	10.0
		Estimated	34.8
	Inspectors, Testers and Sorters	Surveyed	1.7
		Estimated	5.7
	Machinists	Surveyed	0.0
		Estimated	0.1
	Installation Staff	Surveyed	2.0
		Estimated	7.1
	Environmental Science Technicians	Surveyed	1.2
		Estimated	4.2
	Pipe-layers	Surveyed	10.0
		Estimated	34.8
	Pipe Fitters and Steam Fitters	Surveyed	0.0
		Estimated	0.0
	Sheet Metal Workers	Surveyed	0.0
		Estimated	0.0
	Welders and Solderers	Surveyed	0.4
		Estimated	1.3
	Fitters and Turners	Surveyed	0.3
		Estimated	1.1
	Certified/Registered Electricians	Surveyed	10.2
		Estimated	35.5
	Certified/Registered Plumbers	Surveyed	0.0
		Estimated	0.1
	Other	Surveyed	7.5
		Estimated	26.1
	Total	Surveyed	155.8
		Estimated	541.7

Administration Staff	OH&S	Surveyed	1.9	
		Estimated	6.7	
	Accounts	Surveyed	22.4	
		Estimated	77.8	
	Payroll	Surveyed	11.2	
		Estimated	38.9	
	Purchasing Officers	Surveyed	0.1	
		Estimated	0.3	
	Book-keeping and Office	Surveyed	0.4	
		Estimated	1.5	
	IT	Surveyed	1.1	
		Estimated	3.8	
	Total	Surveyed	37.1	
		Estimated	129.1	
Management	Computer and IT Managers	Surveyed	1.3	
		Estimated	4.5	
	Engineering Managers	Surveyed	6.6	
		Estimated	23.0	
	Management Analysts	Surveyed	1.3	
		Estimated	4.5	
	Marketing Managers	Surveyed	2.4	
		Estimated	8.5	
	Total	Surveyed	11.6	
		Estimated	40.4	
Customer Service Representatives	Sales and Marketing	Surveyed	1.5	
		Estimated	5.4	
Consultants		Surveyed	7.3	
		Estimated	25.3	
Other	Legal	Surveyed	2.4	
		Estimated	8.3	
	Storepersons	Surveyed	1.5	
		Estimated	5.4	
	Training and Development Specialists	Surveyed	0.1	
		Estimated	0.3	
	Truck Drivers	Surveyed	1.8	
		Estimated	6.2	
	Other	Surveyed	71.9	
		Estimated	250.1	
	Total	Surveyed	77.7	
		Estimated	270.4	
	Total for All Categories		Surveyed	332.1
			Estimated	1155.0

Table D4. Total number of staff employed per staff category in solar Solar PV industry

Job Category	Job Sub-Category	Number of Staff Employed	
Engineers/Designers	Mechanical Engineers	Surveyed	3.5
		Estimated	12.0
	Civil Engineers	Surveyed	0.9
		Estimated	3.1
	Electrical Engineers	Surveyed	3.9
		Estimated	13.5
	Electronics Engineers	Surveyed	7.8
		Estimated	27.1
	Environmental Engineers	Surveyed	4.8
		Estimated	16.9
	Computer Software Engineers	Surveyed	1.0
		Estimated	3.5
	Other Engineering Staff	Surveyed	4.1
		Estimated	14.2
	Total	Surveyed	26.0
		Estimated	90.3
Scientists	Biochemists and Biophysicists	Surveyed	0.0
		Estimated	0.0
	Material Scientists	Surveyed	0.0
		Estimated	0.0
	Chemists	Surveyed	0.0
		Estimated	0.0
	Environmental Scientists and Specialists	Surveyed	0.3
		Estimated	1.1
	Other	Surveyed	0.0
		Estimated	0.0
Total	Surveyed	0.3	
	Estimated	1.1	

Technicians/Installers	HVAC Mechanics and Installers	Surveyed	14.7
		Estimated	51.2
	Industrial Machinery Mechanics	Surveyed	0.0
		Estimated	0.1
	Other Mechanics	Surveyed	0.0
		Estimated	0.0
	Inspectors, Testers and Sorters	Surveyed	0.1
		Estimated	0.2
	Machinists	Surveyed	0.0
		Estimated	0.0
	Installation Staff	Surveyed	42.1
		Estimated	146.3
	Environmental Science Technicians	Surveyed	2.0
		Estimated	7.0
	Pipe-layers	Surveyed	0.0
		Estimated	0.0
	Pipe Fitters and Steam Fitters	Surveyed	0.0
		Estimated	0.0
	Sheet Metal Workers	Surveyed	0.0
		Estimated	0.0
	Welders and Solderers	Surveyed	0.7
		Estimated	2.4
	Fitters and Turners	Surveyed	0.0
		Estimated	0.0
	Certified/Registered Electricians	Surveyed	19.9
		Estimated	69.3
	Certified/Registered Plumbers	Surveyed	7.2
		Estimated	25.1
	Other	Surveyed	36.1
		Estimated	125.7
Total	Surveyed	122.8	
	Estimated	427.2	
Administration Staff	OH&S	Surveyed	2.1
		Estimated	7.2
	Accounts	Surveyed	12.8
		Estimated	44.4
	Payroll	Surveyed	5.1
		Estimated	17.9
	Purchasing Officers	Surveyed	4.6
		Estimated	16.0
	Book-keeping and Office	Surveyed	7.2
		Estimated	25.1
	IT	Surveyed	5.6
		Estimated	19.6
	Total	Surveyed	37.4
		Estimated	130.1

Management	Computer and IT Managers	Surveyed	0.9
		Estimated	3.1
	Engineering Managers	Surveyed	4.7
		Estimated	16.5
	Management Analysts	Surveyed	0.9
		Estimated	3.1
	Marketing Managers	Surveyed	4.7
		Estimated	16.2
	Total	Surveyed	11.2
		Estimated	38.9
Customer Service Representatives	Sales and Marketing	Surveyed	33.6
		Estimated	116.7
Consultants		Surveyed	7.6
		Estimated	26.5
Other	Legal	Surveyed	1.2
		Estimated	4.3
	Storepersons	Surveyed	8.3
		Estimated	29.0
	Training and Development Specialists	Surveyed	9.6
		Estimated	33.5
	Truck Drivers	Surveyed	1.1
		Estimated	4.0
	Other	Surveyed	131.1
		Estimated	455.9
Total	Surveyed	151.4	
	Estimated	526.6	
Total for All Categories		Surveyed	390.3
		Estimated	1357.4

Table D5. Total number of staff employed per staff category in SWH industry

Job Category	Job Sub-Category	Number of Staff Employed	
Engineers/Designers	Mechanical Engineers	Surveyed	0.0
		Estimated	0.0
	Civil Engineers	Surveyed	0.1
		Estimated	0.3
	Electrical Engineers	Surveyed	1.1
		Estimated	3.9
	Electronics Engineers	Surveyed	0.1
		Estimated	0.4
	Environmental Engineers	Surveyed	0.5
		Estimated	1.6
	Computer Software Engineers	Surveyed	0.0
		Estimated	0.0
	Other Engineering Staff	Surveyed	0.0
		Estimated	0.0
	Total	Surveyed	1.8
		Estimated	6.3
Scientists	Biochemists and Biophysicists	Surveyed	32.6
		Estimated	113.3

	Material Scientists	Surveyed	0.0
		Estimated	0.0
	Chemists	Surveyed	0.0
		Estimated	0.0
	Environmental Scientists and Specialists	Surveyed	0.2
		Estimated	0.7
	Other	Surveyed	0.0
		Estimated	0.0
	Total	Surveyed	32.8
		Estimated	114.0
Technicians/Installers	HVAC Mechanics and Installers	Surveyed	0.0
		Estimated	0.0
	Industrial Machinery Mechanics	Surveyed	0.0
		Estimated	0.0
	Other Mechanics	Surveyed	0.0
		Estimated	0.0
	Inspectors, Testers and Sorters	Surveyed	0.0
		Estimated	0.0
	Machinists	Surveyed	0.0
		Estimated	0.0
	Installation Staff	Surveyed	122.7
		Estimated	426.7
	Environmental Science Technicians	Surveyed	0.0
		Estimated	0.0
	Pipe-layers	Surveyed	0.0
		Estimated	0.0
	Pipe Fitters and Steam Fitters	Surveyed	0.0
		Estimated	0.0
	Sheet Metal Workers	Surveyed	0.0
		Estimated	0.0
	Welders and Solderers	Surveyed	0.1
		Estimated	0.3
	Fitters and Turners	Surveyed	0.0
		Estimated	0.0
	Certified/Registered Electricians	Surveyed	42.5
		Estimated	147.7
	Certified/Registered Plumbers	Surveyed	35.7
		Estimated	124.1
Other	Surveyed	1.1	
	Estimated	3.8	
Total	Surveyed	202.0	
	Estimated	702.5	
Administration Staff	OH&S	Surveyed	4.6
		Estimated	16.1
	Accounts	Surveyed	4.6
		Estimated	16.0
	Payroll	Surveyed	1.7
		Estimated	6.1

	Purchasing Officers	Surveyed	2.7
		Estimated	9.6
	Book-keeping and Office	Surveyed	3.7
		Estimated	13.0
	IT	Surveyed	6.7
		Estimated	23.5
Total	Surveyed	24.2	
	Estimated	84.1	
Management	Computer and IT Managers	Surveyed	1.3
		Estimated	4.5
	Engineering Managers	Surveyed	1.1
		Estimated	3.9
	Management Analysts	Surveyed	0.5
		Estimated	1.6
	Marketing Managers	Surveyed	2.2
		Estimated	7.6
	Total	Surveyed	5.0
		Estimated	17.5
Customer Service Representatives	Sales and Marketing	Surveyed	12.7
		Estimated	44.2
Consultants		Surveyed	3.1
		Estimated	10.9
Other	Legal	Surveyed	2.6
		Estimated	9.0
	Storepersons	Surveyed	3.1
		Estimated	10.8
	Training and Development Specialists	Surveyed	2.5
		Estimated	8.9
	Truck Drivers	Surveyed	1.2
		Estimated	4.1
	Other	Surveyed	81.6
		Estimated	283.7
	Total	Surveyed	91.0
		Estimated	316.5
Total for All Categories		Surveyed	372.7
		Estimated	1296.0

Table D6. Total number of staff employed per staff category in hydro industry

Job Category	Job Sub-Category	Number of Staff Employed	
Engineers/Designers	Mechanical Engineers	Surveyed	6.4
		Estimated	22.3
	Civil Engineers	Surveyed	0.0
		Estimated	0.0
	Electrical Engineers	Surveyed	5.7
		Estimated	19.8
	Electronics Engineers	Surveyed	0.1
		Estimated	0.2
	Environmental Engineers	Surveyed	0.1
		Estimated	0.2

	Computer Software Engineers	Surveyed	0.0
		Estimated	0.0
	Other Engineering Staff	Surveyed	0.8
		Estimated	2.8
Total	Surveyed	13.1	
	Estimated	45.4	
Scientists	Biochemists and Biophysicists	Surveyed	0.0
		Estimated	0.0
	Material Scientists	Surveyed	0.0
		Estimated	0.0
	Chemists	Surveyed	0.0
		Estimated	0.0
	Environmental Scientists and Specialists	Surveyed	0.1
		Estimated	0.2
	Other	Surveyed	0.0
		Estimated	0.0
	Total	Surveyed	0.1
		Estimated	0.2
Technicians/Installers	HVAC Mechanics and Installers	Surveyed	0.0
		Estimated	0.0
	Industrial Machinery Mechanics	Surveyed	0.0
		Estimated	0.0
	Other Mechanics	Surveyed	0.0
		Estimated	0.0
	Inspectors, Testers and Sorters	Surveyed	1.6
		Estimated	5.6
	Machinists	Surveyed	8.0
		Estimated	27.8
	Installation Staff	Surveyed	4.2
		Estimated	14.8
	Environmental Science Technicians	Surveyed	0.0
		Estimated	0.0
	Pipe-layers	Surveyed	0.0
		Estimated	0.0
	Pipe Fitters and Steam Fitters	Surveyed	0.0
		Estimated	0.0
	Sheet Metal Workers	Surveyed	0.0
		Estimated	0.0
	Welders and Solderers	Surveyed	0.0
		Estimated	0.1
	Fitters and Turners	Surveyed	8.0
		Estimated	27.8
	Certified/Registered Electricians	Surveyed	5.0
		Estimated	17.4
	Certified/Registered Plumbers	Surveyed	0.0
		Estimated	0.0
	Other	Surveyed	4.4
		Estimated	15.5
	Total	Surveyed	31.4
		Estimated	109.1

Administration Staff	OH&S	Surveyed	0.1	
		Estimated	0.2	
	Accounts	Surveyed	1.0	
		Estimated	3.6	
	Payroll	Surveyed	0.9	
		Estimated	3.0	
	Purchasing Officers	Surveyed	0.1	
		Estimated	0.2	
	Book-keeping and Office	Surveyed	0.8	
		Estimated	2.9	
	IT	Surveyed	0.9	
		Estimated	3.1	
	Total	Surveyed	3.7	
		Estimated	12.9	
Management	Computer and IT Managers	Surveyed	0.1	
		Estimated	0.2	
	Engineering Managers	Surveyed	1.6	
		Estimated	5.7	
	Management Analysts	Surveyed	0.1	
		Estimated	0.2	
	Marketing Managers	Surveyed	0.9	
		Estimated	3.0	
	Total	Surveyed	2.6	
		Estimated	9.0	
Customer Service Representatives	Sales and Marketing	Surveyed	3.5	
		Estimated	12.3	
Consultants		Surveyed	0.4	
		Estimated	1.4	
Other	Legal	Surveyed	0.1	
		Estimated	0.2	
	Storepersons	Surveyed	1.7	
		Estimated	5.9	
	Training and Development Specialists	Surveyed	0.0	
		Estimated	0.0	
	Truck Drivers	Surveyed	0.0	
		Estimated	0.0	
	Other	Surveyed	1.5	
		Estimated	5.1	
	Total	Surveyed	3.3	
		Estimated	11.3	
	Total for All Categories		Surveyed	58.0
			Estimated	201.6

Note: does not include old (pre-1997) Hydro

Table D7. Total number of staff employed per staff category in geothermal industry

Job Category	Job Sub-Category	Number of Staff Employed		
Engineers/Designers	Mechanical Engineers	Surveyed	0.0	
		Estimated	0.0	
	Civil Engineers	Surveyed	0.0	
		Estimated	0.0	
	Electrical Engineers	Surveyed	0.0	
		Estimated	0.0	
	Electronics Engineers	Surveyed	0.0	
		Estimated	0.0	
	Environmental Engineers	Surveyed	0.0	
		Estimated	0.0	
	Computer Software Engineers	Surveyed	0.0	
		Estimated	0.0	
	Other Engineering Staff	Surveyed	0.0	
		Estimated	0.0	
	Total	Surveyed	0.0	
		Estimated	0.0	
	Scientists	Biochemists and Biophysicists	Surveyed	0.8
			Estimated	2.9
Material Scientists		Surveyed	0.0	
		Estimated	0.0	
Chemists		Surveyed	0.0	
		Estimated	0.0	
Environmental Scientists and Specialists		Surveyed	0.0	
		Estimated	0.0	
Other		Surveyed	0.0	
		Estimated	0.0	
Total		Surveyed	0.8	
		Estimated	2.9	
Technicians/Installers	HVAC Mechanics and Installers	Surveyed	0.0	
		Estimated	0.0	
	Industrial Machinery Mechanics	Surveyed	0.0	
		Estimated	0.0	
	Other Mechanics	Surveyed	0.0	
		Estimated	0.0	
	Inspectors, Testers and Sorters	Surveyed	0.0	
		Estimated	0.0	
	Machinists	Surveyed	0.0	
		Estimated	0.0	
	Installation Staff	Surveyed	0.0	
		Estimated	0.0	
	Environmental Science Technicians	Surveyed	0.0	
		Estimated	0.0	
	Pipe-layers	Surveyed	0.0	
		Estimated	0.0	

	Pipe Fitters and Steam Fitters	Surveyed	0.0
		Estimated	0.0
	Sheet Metal Workers	Surveyed	0.0
		Estimated	0.0
	Welders and Solderers	Surveyed	0.0
		Estimated	0.0
	Fitters and Turners	Surveyed	0.0
		Estimated	0.0
	Certified/Registered Electricians	Surveyed	0.0
		Estimated	0.0
	Certified/Registered Plumbers	Surveyed	0.0
		Estimated	0.0
	Other	Surveyed	0.0
		Estimated	0.0
	Total	Surveyed	0.0
		Estimated	0.0
Administration Staff	OH&S	Surveyed	0.0
		Estimated	0.0
	Accounts	Surveyed	0.0
		Estimated	0.0
	Payroll	Surveyed	0.0
		Estimated	0.0
	Purchasing Officers	Surveyed	0.0
		Estimated	0.0
	Book-keeping and Office	Surveyed	0.0
		Estimated	0.0
	IT	Surveyed	0.0
		Estimated	0.0
	Total	Surveyed	0.0
		Estimated	0.0
Management	Computer and IT Managers	Surveyed	0.0
		Estimated	0.0
	Engineering Managers	Surveyed	0.0
		Estimated	0.0
	Management Analysts	Surveyed	0.0
		Estimated	0.0
	Marketing Managers	Surveyed	0.0
		Estimated	0.0
	Total	Surveyed	0.0
		Estimated	0.0
Customer Service Representatives	Sales and Marketing	Surveyed	0.0
		Estimated	0.0
Consultants		Surveyed	0.2
		Estimated	0.8
Other	Legal	Surveyed	0.0
		Estimated	0.0
	Storepersons	Surveyed	0.0
		Estimated	0.0

Training and Development Specialists	Surveyed	0.0
	Estimated	0.0
Truck Drivers	Surveyed	0.0
	Estimated	0.0
Other	Surveyed	3.8
	Estimated	13.0
Total	Surveyed	3.8
	Estimated	13.0
Total for All Categories	Surveyed	4.8
	Estimated	16.8

Table D8. Total number of staff employed per staff category in consultancy industry

Job Category	Job Sub-Category	Number of Staff Employed	
Engineers/Designers	Mechanical Engineers	Surveyed	2.5
		Estimated	8.7
	Civil Engineers	Surveyed	0.3
		Estimated	1.1
	Electrical Engineers	Surveyed	1.2
		Estimated	4.1
	Electronics Engineers	Surveyed	0.1
		Estimated	0.5
	Environmental Engineers	Surveyed	1.2
		Estimated	4.0
	Computer Software Engineers	Surveyed	0.5
		Estimated	1.7
	Other Engineering Staff	Surveyed	2.6
		Estimated	9.0
Total	Surveyed	8.4	
	Estimated	29.2	
Scientists	Biochemists and Biophysicists	Surveyed	0.0
		Estimated	0.0
	Material Scientists	Surveyed	0.5
		Estimated	1.7
	Chemists	Surveyed	0.5
		Estimated	1.7
	Environmental Scientists and Specialists	Surveyed	0.8
		Estimated	2.6
	Other	Surveyed	0.5
		Estimated	1.7
	Total	Surveyed	2.3
		Estimated	7.8
Technicians/Installers	HVAC Mechanics and Installers	Surveyed	0.0
		Estimated	0.0
	Industrial Machinery Mechanics	Surveyed	0.5
		Estimated	1.7
	Other Mechanics	Surveyed	0.0
		Estimated	0.0
	Inspectors, Testers and Sorters	Surveyed	2.0
		Estimated	7.0

	Machinists	Surveyed	0.0
		Estimated	0.0
	Installation Staff	Surveyed	1.6
		Estimated	5.6
	Environmental Science Technicians	Surveyed	1.1
		Estimated	3.8
	Pipe-layers	Surveyed	0.0
		Estimated	0.0
	Pipe Fitters and Steam Fitters	Surveyed	0.0
		Estimated	0.0
	Sheet Metal Workers	Surveyed	0.0
		Estimated	0.0
	Welders and Solderers	Surveyed	0.2
		Estimated	0.7
	Fitters and Turners	Surveyed	0.2
		Estimated	0.7
	Certified/Registered Electricians	Surveyed	0.4
		Estimated	1.2
	Certified/Registered Plumbers	Surveyed	0.0
		Estimated	0.0
Other	Surveyed	0.0	
	Estimated	0.0	
Total	Surveyed	6.0	
	Estimated	20.7	
Administration Staff	OH&S	Surveyed	0.6
		Estimated	2.1
	Accounts	Surveyed	0.8
		Estimated	2.6
	Payroll	Surveyed	0.2
		Estimated	0.7
	Purchasing Officers	Surveyed	0.2
		Estimated	0.6
	Book-keeping and Office	Surveyed	0.5
		Estimated	1.7
	IT	Surveyed	0.7
		Estimated	2.6
	Total	Surveyed	3.0
		Estimated	10.3
Management	Computer and IT Managers	Surveyed	0.1
		Estimated	0.3
	Engineering Managers	Surveyed	1.1
		Estimated	3.8
	Management Analysts	Surveyed	0.4
		Estimated	1.2
	Marketing Managers	Surveyed	0.3
		Estimated	1.0
Total	Surveyed	1.8	
	Estimated	6.4	

Customer Service Representatives	Sales and Marketing	Surveyed	0.2
		Estimated	0.8
Consultants		Surveyed	10.8
		Estimated	37.4
Other	Legal	Surveyed	0.0
		Estimated	0.0
	Storepersons	Surveyed	0.0
		Estimated	0.1
	Training and Development Specialists	Surveyed	0.1
		Estimated	0.3
	Truck Drivers	Surveyed	0.0
		Estimated	0.1
	Other	Surveyed	0.0
		Estimated	0.0
Total	Surveyed	0.2	
	Estimated	0.6	
Total for All Categories		Surveyed	32.5
		Estimated	113.1

Table D9. Total number of staff employed per staff category in other industry

Job Category	Job Sub-Category	Number of Staff Employed	
Engineers/Designers	Mechanical Engineers	Surveyed	2.6
		Estimated	8.9
	Civil Engineers	Surveyed	0.1
		Estimated	0.2
	Electrical Engineers	Surveyed	1.7
		Estimated	5.8
	Electronics Engineers	Surveyed	1.1
		Estimated	3.8
	Environmental Engineers	Surveyed	0.2
		Estimated	0.8
	Computer Software Engineers	Surveyed	2.3
		Estimated	7.8
	Other Engineering Staff	Surveyed	3.5
		Estimated	12.3
Total	Surveyed	11.4	
	Estimated	39.6	
Scientists	Biochemists and Biophysicists	Surveyed	0.0
		Estimated	0.0
	Material Scientists	Surveyed	3.8
		Estimated	13.0
	Chemists	Surveyed	0.0
		Estimated	0.0
	Environmental Scientists and Specialists	Surveyed	1.0
		Estimated	3.6
	Other	Surveyed	0.0
		Estimated	0.0
Total	Surveyed	4.8	
	Estimated	16.7	

Technicians/Installers	HVAC Mechanics and Installers	Surveyed	14.0
		Estimated	48.7
	Industrial Machinery Mechanics	Surveyed	0.5
		Estimated	1.7
	Other Mechanics	Surveyed	0.0
		Estimated	0.0
	Inspectors, Testers and Sorters	Surveyed	0.0
		Estimated	0.0
	Machinists	Surveyed	1.5
		Estimated	5.2
	Installation Staff	Surveyed	31.0
		Estimated	107.7
	Environmental Science Technicians	Surveyed	0.0
		Estimated	0.0
	Pipe-layers	Surveyed	0.0
		Estimated	0.0
	Pipe Fitters and Steam Fitters	Surveyed	0.0
		Estimated	0.0
	Sheet Metal Workers	Surveyed	0.0
		Estimated	0.0
	Welders and Solderers	Surveyed	0.3
		Estimated	1.1
	Fitters and Turners	Surveyed	0.5
		Estimated	1.7
	Certified/Registered Electricians	Surveyed	11.3
		Estimated	39.3
	Certified/Registered Plumbers	Surveyed	9.0
		Estimated	31.3
	Other	Surveyed	1.9
		Estimated	6.6
Total	Surveyed	70.0	
	Estimated	243.4	
Administration Staff	OH&S	Surveyed	1.7
		Estimated	6.0
	Accounts	Surveyed	4.3
		Estimated	15.1
	Payroll	Surveyed	1.7
		Estimated	5.8
	Purchasing Officers	Surveyed	0.5
		Estimated	1.6
	Book-keeping and Office	Surveyed	1.5
		Estimated	5.3
	IT	Surveyed	1.1
		Estimated	3.7
	Total	Surveyed	10.8
		Estimated	37.4
Management	Computer and IT Managers	Surveyed	0.9
		Estimated	3.2

	Engineering Managers	Surveyed	1.8
		Estimated	6.3
	Management Analysts	Surveyed	0.2
		Estimated	0.7
	Marketing Managers	Surveyed	1.0
		Estimated	3.4
	Total	Surveyed	3.9
		Estimated	13.6
Customer Service Representatives	Sales and Marketing	Surveyed	2.2
		Estimated	7.5
Consultants		Surveyed	3.7
		Estimated	12.8
Other	Legal	Surveyed	0.4
		Estimated	1.2
	Storepersons	Surveyed	0.6
		Estimated	2.1
	Training and Development Specialists	Surveyed	0.6
		Estimated	1.9
	Truck Drivers	Surveyed	0.1
		Estimated	0.3
	Other	Surveyed	32.5
		Estimated	113.1
	Total	Surveyed	34.1
		Estimated	118.8
Total for All Categories		Surveyed	140.8
		Estimated	489.8



Annex E. Data and extrapolated data from Survey 2

Table E1. Results from installers/SWH – number of companies and staff employed

Renewable Energy Sector	Number of Companies		Number of Staff Employed	
Solar PV on-grid systems only	Surveyed	43	Surveyed	245
	Estimated	424	Estimated	791
RE off-grid systems only	Surveyed	2	Surveyed	12
	Estimated	16	Estimated	54
including Solar PV only	Surveyed	1	Surveyed	6
	Estimated	8	Estimated	28
including Solar PV + Wind	Surveyed	1	Surveyed	6
	Estimated	8	Estimated	26
including Solar PV + Micro hydro	Surveyed	0	Surveyed	0
	Estimated	0	Estimated	0
including Solar PV, Wind and Micro hydro	Surveyed	0	Surveyed	0
	Estimated	0	Estimated	0
RE off-grid systems and Solar PV on-grid systems	Surveyed	34	Surveyed	159
	Estimated	354	Estimated	722
Off-grid including Solar PV only	Surveyed	13	Surveyed	54
	Estimated	131	Estimated	248
Off-grid including Solar PV + Wind	Surveyed	15	Surveyed	69
	Estimated	117	Estimated	304
Off-grid including Solar PV + Micro hydro	Surveyed	3	Surveyed	2
	Estimated	83	Estimated	16
Off-grid including Solar PV, Wind and Micro hydro	Surveyed	3	Surveyed	35
	Estimated	23	Estimated	154
SWH only	Surveyed	2	Surveyed	4
	Estimated	75	Estimated	81
SWH and Solar PV on-grid systems	Surveyed	17	Surveyed	150
	Estimated	282	Estimated	887
SWH and RE off-grid systems	Surveyed	0	Surveyed	0
	Estimated	0	Estimated	0
including Solar PV only	Surveyed	0	Surveyed	0
	Estimated	0	Estimated	0
including Solar PV + Wind	Surveyed	0	Surveyed	0
	Estimated	0	Estimated	0
including Solar PV + Micro hydro	Surveyed	0	Surveyed	0
	Estimated	0	Estimated	0
including Solar PV, Wind and Micro hydro	Surveyed	0	Surveyed	0
	Estimated	0	Estimated	0

SWH, Solar PV on-grid systems and RE off-grid systems	Surveyed	15	Surveyed	168
	Estimated	117	Estimated	579
including Solar PV only	Surveyed	5	Surveyed	55
	Estimated	39	Estimated	243
including Solar PV + Wind	Surveyed	6	Surveyed	88
	Estimated	47	Estimated	231
including Solar PV + Micro hydro	Surveyed	0	Surveyed	0
	Estimated	0	Estimated	0
including Solar PV, Wind and Micro hydro	Surveyed	4	Surveyed	24
	Estimated	31	Estimated	105
Total No. of Companies	Surveyed	113		
	Estimated	1268		
Total No. of Staff Employed			Surveyed	738
			Estimated	3114

Table E2. Categories (total for off-grid systems)

Job Category	Sub-Category	Number of Staff Employed	
Accredited Staff	Design/Install	Surveyed	1.3
		Estimated	5.7
	Design	Surveyed	0.3
		Estimated	1.3
	Install	Surveyed	0.3
		Estimated	1.3
	Licensed Electricians	Surveyed	1.3
		Estimated	5.7
	Engineers	Surveyed	1.0
		Estimated	4.4
Non-accredited Staff	Total	Surveyed	4.0
		Estimated	17.6
	Licensed Electricians	Surveyed	1.2
		Estimated	5.3
	Engineers	Surveyed	0.3
Estimated		1.3	
Sub-Contractors	Electricians	Surveyed	2.3
		Estimated	10.1
Manufacturing Personnel	Designers	Surveyed	1.3
		Estimated	5.7
	Operations Officers	Surveyed	1.0
		Estimated	4.4
	Quality Control Personnel	Surveyed	1.3
		Estimated	5.7
	Maintenance Officers	Surveyed	1.0
		Estimated	4.4
Other Technical	Sales and Marketing	Surveyed	1.5
		Estimated	6.6
Sales Staff		Surveyed	0.0
		Estimated	0.0
Administration Staff		Surveyed	0.3
		Estimated	1.3

Management		Surveyed	0.0
		Estimated	0.0
Storepersons		Surveyed	0.0
		Estimated	0.0
Other		Surveyed	0.0
		Estimated	0.0

Table E3. Categories (total for on-grid systems)

Job Category	Sub-Category	Number of Staff Employed	
Accredited Staff	Design/Install	Surveyed	25.6
		Estimated	95.3
	Design	Surveyed	10.5
		Estimated	32.6
	Install	Surveyed	3.3
		Estimated	14.5
	Licensed Electricians	Surveyed	22.6
		Estimated	82.1
	Engineers	Surveyed	2.3
		Estimated	6.7
Non-accredited Staff	Total	Surveyed	83.2
		Estimated	263.4
	Licensed Electricians	Surveyed	29.6
		Estimated	112.9
	Engineers	Surveyed	18.7
		Estimated	75.4
Sub-Contractors	Electricians	Surveyed	170.5
		Estimated	251.5
Manufacturing Personnel	Designers	Surveyed	4.7
		Estimated	13.9
	Operations Officers	Surveyed	0.0
		Estimated	0.0
	Quality Control Personnel	Surveyed	2.7
		Estimated	11.9
	Maintenance Officers	Surveyed	2.7
		Estimated	11.9
Other Technical	Sales and Marketing	Surveyed	5.2
		Estimated	16.0
Sales Staff		Surveyed	38.7
		Estimated	99.9
Administration Staff		Surveyed	36.7
		Estimated	94.0
Management		Surveyed	21.7
		Estimated	72.0
Storepersons		Surveyed	3.1
		Estimated	6.7
Other		Surveyed	6.6
		Estimated	58.7

Table E3. Categories (total for on-grid systems)

Job Category	Sub-Category	Number of Staff Employed	
		Surveyed	Estimated
Accredited Staff	Design/Install	Surveyed	25.6
		Estimated	95.3
	Design	Surveyed	10.5
		Estimated	32.6
	Install	Surveyed	3.3
		Estimated	14.5
	Licensed Electricians	Surveyed	22.6
		Estimated	82.1
Engineers	Surveyed	2.3	
	Estimated	6.7	
Non-accredited Staff	Total	Surveyed	83.2
		Estimated	263.4
	Licensed Electricians	Surveyed	29.6
		Estimated	112.9
	Engineers	Surveyed	18.7
		Estimated	75.4
Sub-Contractors	Electricians	Surveyed	170.5
		Estimated	251.5
Manufacturing Personnel	Designers	Surveyed	4.7
		Estimated	13.9
	Operations Officers	Surveyed	0.0
		Estimated	0.0
	Quality Control Personnel	Surveyed	2.7
		Estimated	11.9
Maintenance Officers	Surveyed	2.7	
	Estimated	11.9	
Other Technical	Sales and Marketing	Surveyed	5.2
		Estimated	16.0
Sales Staff		Surveyed	38.7
		Estimated	99.9
Administration Staff		Surveyed	36.7
		Estimated	94.0
Management		Surveyed	21.7
		Estimated	72.0
Storepersons		Surveyed	3.1
		Estimated	6.7
Other		Surveyed	6.6
		Estimated	58.7

Table E4. Categories (total for off-grid and on-grid systems)

Job Category	Sub-Category	Number of Staff Employed	
Accredited Staff	Design/Install	Surveyed	36.8
		Estimated	161.3
	Design	Surveyed	7.5
		Estimated	32.9
	Install	Surveyed	8.7
		Estimated	38.2
	Licensed Electricians	Surveyed	19.6
		Estimated	85.8
	Engineers	Surveyed	10.0
		Estimated	43.9
Non-accredited Staff	Total	Surveyed	33.7
		Estimated	152.4
	Licensed Electricians	Surveyed	10.5
		Estimated	46.1
	Engineers	Surveyed	1.2
		Estimated	5.0
Sub-Contractors	Electricians	Surveyed	83.7
		Estimated	464.7
Manufacturing Personnel	Designers	Surveyed	5.8
		Estimated	25.5
	Operations Officers	Surveyed	2.8
		Estimated	12.3
	Quality Control Personnel	Surveyed	1.8
		Estimated	7.9
	Maintenance Officers	Surveyed	4.8
		Estimated	21.1
Other Technical		Surveyed	10.0
		Estimated	43.9
Sales Staff		Surveyed	14.8
		Estimated	73.7
Administration Staff		Surveyed	21.0
		Estimated	92.0
Management		Surveyed	6.3
		Estimated	27.4
Storepersons		Surveyed	2.2
		Estimated	9.4
Other		Surveyed	3.4
		Estimated	23.9

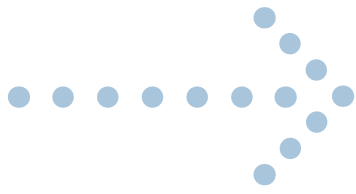
Table E5. Categories (total for SWH systems)

Job Category	Sub-Category	Number of Staff Employed	
Plumbers		Surveyed	1.5
		Estimated	29.0
Electricians		Surveyed	0.0
		Estimated	0.0
Sub-Contractors	Electricians	Surveyed	1.8
		Estimated	34.8
	Plumbers	Surveyed	0.9
		Estimated	17.4
Other Technical		Surveyed	0.0
		Estimated	0.0
Manufacturing Personnel	Designers	Surveyed	0.0
		Estimated	0.0
	Operations Officers	Surveyed	0.0
		Estimated	0.0
	Quality Control Personnel	Surveyed	0.0
		Estimated	0.0
	Maintenance Officers	Surveyed	0.0
		Estimated	0.0
Sales Staff		Surveyed	1.3
		Estimated	25.2
Administration Staff		Surveyed	0.9
		Estimated	17.4
Management		Surveyed	0.5
		Estimated	9.7
Storepersons		Surveyed	0.0
		Estimated	0.0
Other		Surveyed	0.0
		Estimated	0.0

Table E6. Categories (total for SWH + RE power systems)

Job Category	Sub-Category	Number of Staff Employed	
Accredited Staff	Design/Install	Surveyed	27.0
		Estimated	111.9
	Design	Surveyed	11.9
		Estimated	48.9
	Install	Surveyed	15.5
		Estimated	50.9
	Licensed Electricians	Surveyed	22.3
		Estimated	81.1
	Engineers	Surveyed	9.0
		Estimated	39.5
Non-accredited Staff	Total	Surveyed	85.7
		Estimated	234.1
	Licensed Electricians	Surveyed	14.8
		Estimated	72.2
	Engineers	Surveyed	7.0
		Estimated	32.1

Plumbers		Surveyed	15.5
		Estimated	181.7
Electricians		Surveyed	7.8
		Estimated	41.6
Sub-Contractors	Electricians	Surveyed	83.3
		Estimated	212.7
	Plumbers	Surveyed	154.1
		Estimated	248.7
Manufacturing Personnel	Designers	Surveyed	7.1
		Estimated	46.5
	Operations Officers	Surveyed	7.3
		Estimated	21.2
	Quality Control Personnel	Surveyed	7.4
		Estimated	23.5
	Maintenance Officers	Surveyed	4.8
		Estimated	20.9
Other Technical		Surveyed	6.2
		Estimated	27.2
Sales Staff		Surveyed	40.1
		Estimated	234.6
Administration Staff		Surveyed	32.8
		Estimated	175.0
Management		Surveyed	22.4
		Estimated	152.6
Storepersons		Surveyed	10.0
		Estimated	27.0
Other		Surveyed	16.4
		Estimated	68.7



Annex F. Assumptions used for job projections

2. Solar Thermal Electric	Assume 25% capacity factor. Jobs based on Navigant Consulting, Sept. 2008, <i>Economic Impacts of Extending Federal Solar Tax Credits</i>. Report for Solar Energy Research and Education Foundation			
Solar PV on-grid systems only RE off-grid systems only including Solar PV only	Construction and Manufacture		1.031	Direct Jobs/MW
			0.424	Indirect
		Total	1.455	
	Operation and Maintenance		0.05	Direct Jobs/MW
			0.016	Indirect
		Total	0.066	O&M Jobs/MW
4. Wind	30% capacity factor. Assume 30% local manufacture in 2020. Jobs based on European Wind Energy Association (EWEA), Jan. 2009, <i>Wind at Work</i>			
	Manufacturing		7.5	Direct
			5	Indirect
		Total	12.5	
	Installation		1.2	Direct
			1.3	Indirect
		Total	2.5	
O&M		0.4		
5. Bioenergy	85% capacity factor. Assume 50% local manufacture. Jobs Bioenergy Task 29, 2007, <i>Renewable Energy Jobs Calculator</i>			
	Manufacture		1.73	
	O&M		0.3	
6. Hydro	35% capacity factor. Jobs Bioenergy Task 29, 2007, <i>Renewable Energy Jobs Calculator</i>			
	Construction and Installation		2.1	
	O&M		0.3	
7. MSW	50% capacity factor. Jobs as for bioenergy			
8. Landfill Gas	50% capacity factor. Jobs Bioenergy Task 29, 2007, <i>Renewable Energy Jobs Calculator</i>			
	Construction and Installation		3	
	O&M		0.8	
9. Geothermal	75% capacity factor. Jobs Electric Power Research Institute, 2001, <i>Californian RE Technology Markets and Benefits Assessment for the CEC</i>.			
	Construction and Installation		4	
	O&M		1.7	
	For BAU assume 40 MW installed by 2020.			



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