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| **Submission for the Creation of a New Activity or Amendment of an Existing Activity under the ESI Scheme** |
| **Applicant details** |
| Date of submission | 10/11/2015 |
| Company name(if applicable) | Australian Wind and Solar |
| ABN/ACN(if applicable) | ABN 28158638861 |
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| **Summary of proposal**The generation of VEEC’s upon the installation of a power diverter and 2kW of PV in order to provide the cheap and effective 0 emissions hot water. Credits should be granted when the solar system is designed to eliminate daytime peak demand and off peak hot water demand. As the focus on eliminating off peak hot water will result in the installation of greater PV capacity and therefore greater reductions in carbon emissions.  |
| **Category of proposed activity** | *Solar PV power diversion for cheap and efficient hot water.*  |
| **Confidentiality statementMUST BE COMPLETED**In lodging a submission, parties acknowledge the Department's right to engage consultants and contractors to assist in the assessment process, and to disclose information (that might otherwise be identified as confidential by a party) to such persons for those purposes.No information in this submission is confidential in nature and Australian Wind and Solar agree to allow all information included in this submission to be shared openly with the public.  | *The Department will list on its website (at minimum) the category of all activities submitted and the name of the submitting party.**If any part of this submission should be treated as confidential then please provide two versions of the submission, one with the confidential* *information* ***removed*** *for publication.**Clearly identify all confidential components of submission or state that the submission is not confidential.*  |
| **Briefly describe new or amended activity**The installation of a power diverter allows a home owner to produce hot water from the power that would otherwise be fed back to the grid from their PV array, increasing the economic incentives for large PV installations even when the owners are not at home. This will result in lar This unit will relieve strain placed on the power networks through PV system feeding power back to the gird. A power diverter allows the home owner’s hot water tank to function as a thermal battery making large PV installations economically viable even in situations when the home owner is at work during the day by reducing or removing the off peak demand on the home owner’s bill. |  |
| **Estimate the average annual energy savings for an average installation of that activity****A power diverter in conjunction with 2kW of PV will produce more hot water than a standard solar thermal hot water unit and will be more efficient during the winter months. This will provide 2482kWh of thermal energy savings over a year.** * *A Power diverter is a small box, roughly the size of a smart meter that can be installed in roughly 30 minutes.*
* *The installation of a Power diverter will reduce strain on the power network by limiting or removing feeding PV power back to the grid. .*
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| **Demonstrate that the activity is likely to be additional to business as usual (BAU)****Currently installing large PV arrays on homes or businesses that have only a small daytime energy demand is not cost effective as the differential between peak electricity rates and the feed in tariff is substantial therefore many home owners and business do not invest in PV. The installation of a power diverter allows for all excess PV generated power to be fed to the hot water system. Removing the hot water demand in many cases. This allows homes and businesses to invest in PV and store excess energy in the form of hot water. Removing the strain of large PV systems feeding back to the grid from the distribution network will allows distributors such as PowerCore and SP Ausnet to approve more PV systems in arias of high penetration and will therefore result in a greater uptake of the technology.**  |  |
| **List the key variables that should be considered to ensure the activity best represents the delivered energy savings****The key variables are, Peak and off peak electricity rates, The energy demand of the facility, the hot water demand of the facility and the size of the PV array. A home or business with a large PV array, small daytime peak demand in relation to the PV array and large hot water demand will benefit most from the installation of a power diverter. The quality of insulation on the piping and hot water tank will effect thermal losses to the environment.**  |  |
| There are currently no standards around power diversion in Australia. This technology has been used in the UK very successfully for many years, while this technology has only been deployed in Australia for perhaps two years. The success of this energy saving measure can easily be assessed by simply comparing a home or businesses off peak energy demand before the installation of the power diverter to that of the home or business after installation. | *Where defined standards do not exist, discuss how quality/performance expectations can be validated, e.g. provide a proposed outline of a standard approach for assessing the energy performance of the activity.* |
| **Again, assessment of the billing information will allow the VEET program to gain insight into the success of such an installation. As this is an electrical product, the installation must be carried out by an A grad electrician. If the power diverter is installed as part of a solar installation, this unit could be inspected by the electrical inspector as part of the PV inspection.**  | *Consider how installation of the activity can be verified and how a robust compliance regime can be assured, whilst minimising red tape and administrative burden.* |
| **Protecting health and safety****Power diverters attach to the electrical circuit of the home and must be installed by a licenced electrician. The unit must be installed in a well ventilated aria out of the rain and sun to avoid degradation of the unit. Any electrical failure will result in the circuit breaker opening, reducing possible fire or health risks. The power diverter also provides legionella heating mode every two weeks in order to kill bacteria or algae that may grow in a hot water unit. This will increase the water quality and reduce negative health impacts.**  |  |
| **Other benefits and issues****1****The SunMate power diverter retails for around $800 and can be installed by any licenced electrician in between 30 – 60 minutes. This unit will save the owner anywhere from $200 to $400 per year, providing a payback period of 3 to 4 years. Thus the installation of a power diverter will reduce the payback period of most PV installations allowing for greater investment in grid connected solar and greater installed PV capacity across the state.** **2****The use of power diverters reduced strain on the distribution network by reducing or eliminating solar systems feeding to the grid. This will allow for far greater PV penetration without the current stresses on the network, reducing preapproval issues. Again allowing for greater installed PV capacity across the state.****3****The installation of 2kw of PV, a power diverter and electric 3.6kW resistive hot water tank offers the cheapest form of hot water currently on the market with 0 carbon emissions.****4** **No moving part and long service life. The SunMate power diverter comes with a 5 year warranty with the option to upgrade for longer periods. PV installations come with expected life times of 25 years.** **5** **More people are currently employed in renewable energy than the coal industry. Solving the daytime storage issue will result in greater investment, more solar installations and far greater industry and job growth.** **6****2kw of PV and a power diverter will perform better than a solar thermal hot water unit without the need to be maintained or high cost of evacuated tubes. Solar thermal hot water is currently included in the VEET. It is only logical that a superior technology should also be included in the program.****7** **Including PV + power diversion in the VEET will help the technology gain acceptance, allowing for a fast transition toward a far lower carbon Victorian grid through promoting additional investment in PV to cover daytime peak demand and Off Peak hot water demand, rather than just peak daytime demand.** **8****All regional houses and many business stand to benefit from the installation of this technology. With any home with PV under the current 6c feed in tariff standing to benefit along with all non PV homes that have a hot water demand. It may even be cost effective to replace gas hot water or install an electric preheater tank in order to reduce gas demands.**  | *Evaluation will consider the demonstrated potential for significant uptake of the activity in Victoria and broader benefits. Supporting evidence of benefits should be provided such as:** *The uni*
* *The estimated total number of installations possible in Victoria annually.*
* *Potential for product or service innovation, or industry development, including likely investment or employment creation.*
* *Consistency with similar schemes in other jurisdictions*
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