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| **Submission for the Creation of a New Activity under the ESI Scheme** |
| **Applicant details** |
| Date of submission | 11/12/2015 |
| Company name(if applicable) | Heatermate Controllers |
| ABN/ACN(if applicable) | 95 723 279 362 |
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| **Summary of proposal** |
| **Category of proposed activity** | The present submission is directed at improving household energy efficiency, more specifically, the energy efficiency of electrical heaters used in Victorian households. A simple and inexpensive retrofit device – Heatermate Thermostat Plug - is proposed in this submission. |
| **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. | The submission is not confidential.  |
| **Briefly describe new or amended activity** | Every 1 degree C of uncontrolled Heating adds at least 10% in related electricity costs. Unfortunately, the majority of over a million electric heaters used in Victorian households are incapable to correctly sense and precisely control the actual room temperature. Instead, they are designed to control the heat output from the heater and thus are unable to stop heating when a certain room temperature is reached, which leads to room overheating and energy waste. This submission proposes to solve this problem by providing households with a simple plug-in device, Heatermate Thermostat.  |
| **Estimate the average annual energy savings for an average installation of that activity** | Please find the estimate below. The detailed measurements and calculations supporting this estimate can be found in the attached Heatermate White Paper. It should be noted that Heatermate does not save energy on its own, but it does provide the user with the controls needed to save energy. For example, if the user sets the room temperature on Heatermate at 26 degrees C in winter months, the energy savings will be much smaller (if any), than the above estimate. This emphasises the need to combine introduction of Heatermate with a basic consumer education in order to maximise its energy saving potential. |
| **Demonstrate that the activity is likely to be additional to business as usual (BAU)** | There are new models of electric heaters, which have a more accurate thermostat. Such heaters are typically quite expensive (>$200) and currently represent a relatively small portion of the overall electric heater stock used in Victorian households. The most popular bedroom heaters (especially for child rooms/nurseries) are oil heaters, but they do not lend themselves to any more accurate room temperature control than what is currently available due to features of their design. Therefore, “more accurate” versions of these most popular heaters do not exist and are not forthcoming.The deemed energy savings with Heatermate can be reduced by behavioural factors, such as when a user is trying to adjust their heater thermostat on a daily basis depending on the weather as a BAU scenario. In this instance the user is essentially providing a “human” thermostatic control for their heater, something that Heatermate does automatically. It is difficult to estimate the percentage of users who do such frequent manual adjustment of their heater thermostat. It is likely to be quite small given the fact that heater manuals suggest to leave thermostat in a constant position to achieve constant room temperature (which is misleading, to say the least!).Currently Heatermate is the only device of its type in Australia and as long as electric heaters will continue to be used in Victorian households, there does not seem to be any other alternatives to improve their energy efficiency.Some users plug their heaters into digital timers to avoid heating during the night time. This provides some energy savings over the BAU scenario, however, when the heater does come on (switched on by the timer) the same problem remains: there is nothing to stop it from heating over the desired temperature, e.g. 18 degrees C. In this instance Heatermate can be used in conjunction with a digital timer, to provide accurate temperature control when the heater becomes operational. |
| **List the key variables that should be considered to ensure the activity best represents the delivered energy savings** | The energy savings with Heatermate will be maximised in the following circumstances:* Better room insulation (draft stoppers, window seals etc)
* Lower setting of room temperature: 16-18 degrees C
* Heater power: > 1kW
* Continuous use of heater overnight or even during the day (e.g. in nursery)

The energy savings with Heatermate will be minimised in the following circumstances:* Poor room insulation
* Higher setting of room temperature: 22-24 degrees C
* Low wattage heater (e.g. Eco-heater @400W)
* Only short periods of heater use (e.g. just to warm up a room once and then switch it off).
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| **List all existing product standards which support the claims for energy savings or related matters** | Heatermate has been extensively electrical safety and performance tested and complies with all relevant Australian Standards.Heatermate was first introduced in 2012 and there are currently over 20,000 Heatermate thermostats used in Australian households.Heatermate is distributed through The Good Guys retail chain which has around 150 stores nationwide.In Victoria, Heatermate thermostats were used as one of the retrofit devices by Environment Victoria in their Future Powered Families Project under the LIEEP program. |
| **Ensuring savings are valid** | It is important to distribute Heatermate to those households which regularly use electric heaters and this should be done on individual basis, either by home visits during general energy efficiency assessments or by soliciting requests from the customers willing to use Heatermate with their existing heaters. Heatermate Controllers will be happy to provide technical support to these customers.From our experience, once a customer has tried to use their heater with Heatermate, they would never to go back to using their heater on its own again (due to peace of mind and comfort that Heatermate provides), and we believe that the number of instances of Heatermate being delivered by not used will be small. |
| **Protecting health and safety** | With Heatermate/heater combination, as with any other high current device, a care has to be taken to ensure that the plugs are fully inserted into the respective sockets and that the wall sockets are in good order. Any bad connection in the path of 10Amp current can result in the contact heating up, regardless whether the heater is used with or without Heatermate.From another aspect of the health and safety, Heatermate provides a stable and safe environment for infants, which is very important as it has been established that room overheating can lead to IDS (Infant Death Syndrome).Furthermore, by providing a constant comfortable bedroom temperature for Victorians during cold months, Heatermate can also reduce the occurrence of common colds and respiratory deceases. |
| **Other benefits and issues** | Heatermate can be provided to ESI Scheme at a cost of 25 AUD + GST (if applicable).Depending to the method of delivery of other possible retrofit devices under the Scheme (e.g. home visits), Heatermate stock can either be delivered to the home energy assessors or, alternatively, can be sent directly by Heatermate Controllers Warehouse to the registered customers of ESI. The latter may be a more cost effective arrangement, if no home visits are envisaged. Heatermate is very easy to install, and this can be done by the customers themselves. Heatermate Controllers will be responsible for the technical support for all ESI customers.Given a large number of Victorian households who use electric heaters (>1million) and who could potentially benefit from Heatermate retrofit, the number of devices that can be installed annually could be quite substantial - 50,000-100,000 units. If Heatermate is accepted as a new activity, Heatermate Controllers will be happy to work with ESI to help identify customers who will benefit from Heatermate retrofit the most in terms of energy savings based on their existing heater types, individual circumstances and user habits. These customers will then form the first group of recipients of Heatermate devices. Such approach could maximise the energy savings per $ of ESI investment into Heatermate retrofits. |

| **Estimate of the annual and lifetime savings for an average Victorian household** |
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| **from retrofit of Heatermate Thermostat** |
| Input Data/Assumptions |  |
| Av. number of electric heater per Victorian household | 0.6 |
| Av. Power of electric Heater (kW) | 1.7 |
| Number of days per year a heater is used | 90 |
| Av. Hours per day heater is used | 9 |
| % of time heater is ON when controlled by its own thermostat (as per Ausgrid) | 70 |
| Average daily electricity consumption by one heater 1.7x9x0.7 = (kWh) | 10.7 |
| Heatermate set temperature (degrees C) | 18 |
| Average daily electricity consumption with Heatermate (kWh) (as per Heatermate White Paper) | 3.0 |
| Daily energy saving from one Heatermate retrofit (kWh) | 7.7 |
| Assumed life of the saving (Yrs) | 7 |
| Discount factor (to take into account (i) uptake of new, more accurate heaters, (ii) some households using set T >18 degrees C and (iii) some households manually adjusting heater thermostat on daily basis as BAU. | 70% |

Estimated annual energy savings per Victorian household:

0.6x7.7x90=415.8kWh

Estimate lifetime savings per Victorian household:

415.8x7=2,911kWh

Estimate lifetime savings per Victorian household taking into account the discount factor:

2,911x0.7=2,038kWh

Estimated lifetime greenhouse abatement per Victorian household:

2,911kWh = 2,911kg=2.911Tonnes

Estimated lifetime greenhouse abatement per Victorian household taking into account the discount factor:

2.911x0.7=2,038Tonnes