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| **Submission for the Creation of a New Activity or Amendment of an Existing Activity (Schedule 33) under the ESI Scheme.** |
| **Applicant details** |
| Date of submission | 11/12/15 |
| Company name(if applicable) | Fan Manufacturers Association of Australia & New Zealand Inc. |
| ABN/ACN(if applicable) | ABN: 98 423 802 066 |
| Address | PO Box 7622 Melbourne Vic 3004 |
| **Contact person details** |
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| **Summary of proposal** |
| **Category of proposed activity** | Existing category: **Schedule 33: Refrigeration fan replacement** only covers one application (refrigeration). The proposed or improved activity: Projects that improve the energy performance of fans in ***refrigeration systems***, and ***ventilation fans*** servicing commercial and industrial buildings and the common areas of residential buildings. These activities cover smaller fans below <125W as well as fans up to 185kW, and a much wider range of applications with greater abatement opportunities for the Scheme. |
| **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. | None  |
| **Briefly describe new or amended activity**Maximum 100 words. | Adoption of the *Carbon Credits (Carbon Farming Initiative—Refrigeration and Ventilation Fans) Methodology Determination 2015* (the Determination) which applies to projects that improve the energy performance of fans in ***refrigeration systems***, and ***ventilation fans*** servicing commercial and industrial buildings and the common areas of residential buildings. By improving the efficiency of fans, less electricity is consumed and emissions associated with the generation of electricity are reduced.The Determination relates to ***refrigeration and ventilation fan projects*** involving:* ***high efficiency fan installations*** servicing refrigeration or building ventilation systems; and
* ***small motor fan upgrades*** to replace inefficient shaded pole or permanent split capacitor fan motors servicing refrigeration or building ventilation systems with electronically commutated (EC) motors.

This method should apply to installations, modifications and replacements to be undertaken in multiple buildings or refrigeration systems under a single project. |
| **Estimate the average annual energy savings for an average installation of that activity** | In accordance with the above mentioned Determination, the reduction in energy consumption from high efficiency fan installations is estimated using equations that compare the power consumption of the installed fan with the power consumption of a fan with a market average level of efficiency. For small motor fan upgrades, a regression equation quantifies the difference in efficiency between the replaced shaded pole or permanent split capacitor motor of a driven fan and an electronically commutated motor. Default annual operating hours are used to determine a capacity factor which reflects the portion of the year in which the fan is operating. The Determination also specifies capacity factors for fans in refrigeration systems which account for cycling of compressors.For ventilation fans (excluding building space heating or space cooling fans), the Determination makes use of annual operating hours based on the building type. The building type relates to the Building Code of Australia building classifications and, where appropriate, the Australian and New Zealand Standard Industrial Classification of the primary business activity undertaken in the building in which the fan is installed. For fans providing space heating and cooling, the annual operating hours are based on the National Construction Code climate zone for the building location. Example 1: 10 kW Axial: Ventilation (Medium Car park)Assumptions:Emission factors (kg CO2e/kWh) = Victoria 1.18Electrical input power (kW) = 10.000Fan type: AxialMeasurement type (static/total): StaticOverall driven fan efficiency of the high efficiency fan unit = 50%, Tier 3 at 10 kW (N = 50)Baseline overall energy efficiency of fan unit = 38%, between Tier 1/2 at 10 kW (N = 38).Application type: Class 7a (Carpark)Abatement Each using the ERF algorithmEi = Reduction in energy consumption (MWh) = 18.49 (each p.a., allowable over 7 years)A = Nett abatement (t CO2e) = 21.82 (each p.a., allowable over 7 years) |
| **Demonstrate that the activity is likely to be additional to business as usual (BAU)** | An extensive analysis was undertaken by the Department of Environment Methodology Team in 2015 to assess BAU levels for all 6 types of fans covered under the technical standard. Please refer to Albert Dessi, Assistant Director, Energy Efficiency & Transport Sector Methods, Methodology Branch, ERF Taskforce Division for confirmation.The abatement is calculated based on the difference between the BAU efficiency grade and efficiency grade of the high efficiency fan as defined by AS NZS ISO 12759.In conclusion these activities are based on these calculations are additional to BAU efficiency grades.  |
| **List the key variables that should be considered to ensure the activity best represents the delivered energy savings** | *Variables may include fuel type, relative product efficiency against similar products, product life, climate zone, type of business activity, usage of products, or human behaviour.*The Determination specifies that high efficiency fan installations must have a motor input power greater than or equal to 0.125 kilowatts and less than or equal to 185 kilowatts. However, it does not specify the particular types of fans that must be installed as part of the project, providing flexibility for project proponents to determine which fans are most appropriate to use for a particular application. For small motor fan upgrades, the replaced and EC motor input power must be equal to or less than 0.175 kilowatt. These fans could be employed in a broad range of applications including ventilation systems servicing underground car parks and hospitals, and refrigeration systems such as refrigerated display cabinets and cold storage warehouses.The methodology allows an abatement for 7 years, no climate zone considerations are relevant and the technical standard defines 6 key fan types and algorithms for calculating efficiencies. |
| **List all existing product standards which support the claims for energy savings or related matters** | The determination uses AS NZS ISO 12759 for the determination of fan efficiency and ISO 5801 as the determination for the measurements. The determination specifies that all test systems within manufactures should be audited according to ISO9001 regulations. The determination does not recommend NATA approved laboratory testing as the product numbers are too large and an excessive commercial burden would be placed on the end user market. |
| **Ensuring savings are valid** | Refer to the existing ERF methodology that states that eligible products must be tested in accordance with the following requirements listed below (in addition photographic evidence would provide testimony of the installation).Requirement relating to testing for high efficiency fan installations(1) The model of each installed HE fan must be tested in accordance with this section to determine the parameters referred to in this section.Requirement relating to conduct of testing(2) The testing may be done by or on behalf of:(a) the manufacturer or supplier of the fan; or(b) the project proponent.(3) The testing must be done by:(a) a NATA equivalent testing laboratory in accordance with AS ISO 5801 2004; or(b) a testing laboratory with ISO 9001 certification for testing in accordance with AS ISO 5801 2004.Example: A testing laboratory that is certified under AS/NZS ISO 9001:2008 Quality Management systems – Requirements or ISO 9001:2015 Quality management systems – Requirements for testing in accordance with AS ISO 5801 2004. |
| **Protecting health and safety** | There are no health and safety standard requirements above that which is standard in the commercial electrical and mechanical engineering market. |
| **Other benefits and issues** | The existing methodology is very limited and has minimal use.This proposal is consistent with methodology under the Commonwealth Government’s emissions reduction fund, and has greater scope for abatement in terms of capacity (i.e. up to 185kW), and range of applications. |