

***Please provide more details on your project activity (location of your project activity, the project status, the number of devices installed by the project activity, a product catalogue or some additional information for the device, the type of AV or PC devices to be controlled by the project devices, etc);***

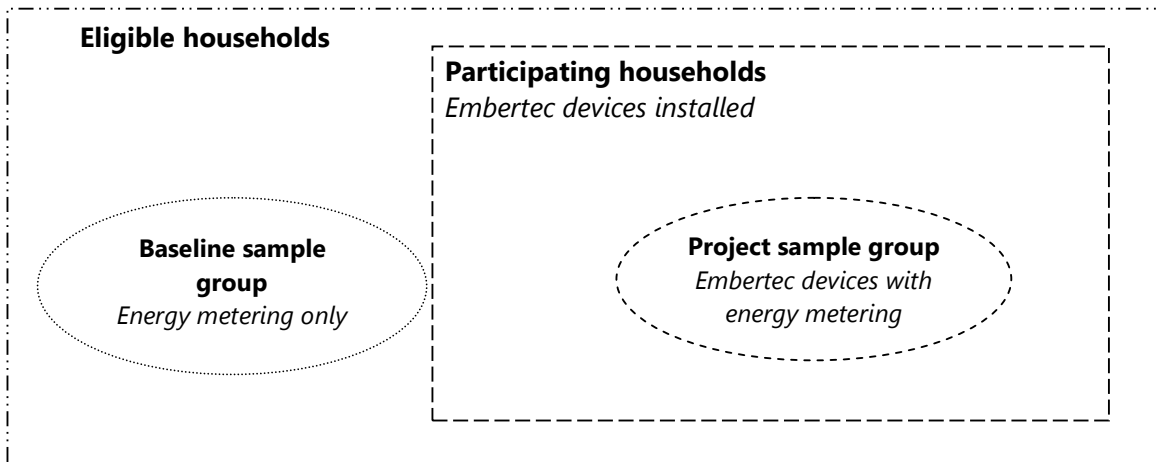
Sigma Global and Embertec are conducting early stage pre-feasibility work on potential projects using the Embertec technology in a number of locations, including South Africa and India. It is envisaged that these projects will be small scale projects under AMS-II.C. The number of households involved in each project will be determined by a number of factors, including the small scale project size limit, typical AV and PC device ownership and usage in the household demographics targeted, number of Embertec devices per household, electricity grid emission factors, grid loss factors etc. Typical household numbers in each project are estimated to be in the range 30,000 to 50,000.

Brochures for the AV and PC Embertec devices have been attached. Typical devices that are controlled by the AV device include: televisions, VCRs, digital set-top boxes, stereos, amplifiers, tuners, DVD players, gaming consoles etc. Typical devices that are controlled by the PC device include: printers, scanners, multi-function devices, powered speakers, monitors, desk lamps etc.

***Please elaborate how it is proposed to determine baseline energy consumption for ex-ante;***

The monitoring methodology for the proposed projects is still under development, but it is envisaged that the baseline energy consumption in year  $y$  ( $BE_y$ ) (used for calculating emission reductions in year  $y$ ) will be determined ex-post through data recorded by a sample of specially modified Embertec devices distributed to a random sample of households eligible to participate in the project (the baseline sample group). These modified devices will have the capability for real time monitoring and recording of energy consumption of the controlled AV or PC devices. However, these devices will be intentionally configured to not turn off the controlled devices, and will therefore act as energy meters only.

In addition, the project energy consumption in year  $y$  ( $PE_y$ ) will also be determined ex-post through data recorded by a sample of specially modified Embertec devices distributed to a random sample of households participating in the project (the project sample group). These modified devices will have the capability for real time monitoring and recording of energy consumption of the controlled AV or PC devices. These devices will monitor the actual energy consumption of the AV and PC devices as they are being controlled by the Embertec device.



The baseline energy consumption and project energy consumption will also be estimated ex-ante for the purposes of preparing emission reduction estimates for the Project Design Document. This will be achieved by following the same monitoring methodology proposed for the project to conduct a fixed duration trial in an area similar to the proposed project location or in the actual project location.

***Please provide your preliminary calculation of emission reductions, using an actual example. What % of energy use of the appliances would you expect to save?***

Estimates of baseline energy consumption and project energy consumption are not yet available for the proposed project locations. Data from monitoring in Australia has determined that average annual savings for the AV and PC Embertec devices are in the order of 737 kWh/yr and 352 kWh/yr respectively, representing savings of 54% and 41% of energy consumption of the controlled devices.

If the same level of energy savings as the Australian case was assumed, a preliminary calculation of emission reductions for a project in year  $y$  would be as follows:

Baseline emissions are calculated as;

$$E_{BL,y} = \sum_i (n_i * \rho_i * o_i) / (1 - l_y)$$

$n_i = 88,000$ , assuming 44,000 households, each to be supplied with one AV Embertec device and one PC Embertec device.

$\rho_i * o_i = \frac{1370 + 853}{2} \text{ kWh}$ , as an average energy use of the controlled AV and PC devices in the baseline scenario.

$$l_y = 0.1$$

$$E_{BL,y} = 108,680 \text{ MWh}$$

$$BE_y = E_{BL,y} * EF_{CO2,ELEC,y}$$

$$EF_{CO2,ELEC,y} = 0.8 \text{ tCO}_2\text{e/MWh}$$

$$BE_y = 86,944 \text{ tCO}_2\text{e}$$

$$E_{PJ,y} = \sum_i (n_i * \rho_i * o_i) / (1 - l_y)$$

$n_i = 88,000$ , assuming 44,000 households, each with one AV Embertec device and one PC Embertec device installed.

$\rho_i * o_i = \frac{633 + 501}{2} \text{ kWh}$ , as an average energy use of the controlled AV and PC devices in the project scenario.

$$l_y = 0.1$$

$$E_{PJ,y} = 55,440 \text{ MWh}$$

$$PE_y = EP_{PJ,y} * EF_{CO2,y}$$

$$PE_y = 44,352 \text{ tCO}_2\text{e}$$

$$ER_y = (BE_y - PE_y) - LE_y$$

If leakage emissions are assumed to be 5% for the purposes of this calculation, then:

$$ER_y = 40,462 \text{ tCO}_2\text{e}$$

**Please explain how often devices are switched off anyway. Does having the device affect behaviour? For example, people may switch off the TV/stereo anyway in the baseline, but knowing that the device will do it for them anyway, they would not do it anymore in the project scenario. This would affect the measurements done as part of the project monitoring;**

The number of times that the devices are switched off and on will vary depending on user behaviour. Devices are switched off when the Embertec device determines that they are all in standby mode, and when the Embertec device determines that they have been left on but are no longer being used. The user is able to set the default period of time that is used by the Embertec device in determining when the devices are no longer being used.

It is possible that the presence of the device could alter user behaviour in encouraging users to utilise the energy savings features of the device and result in reduced energy savings. However, this behaviour would also be undertaken by households in the project sample group, and result in increased project energy use, and therefore lower emission reductions.

***Please elaborate how it is proposed to monitor and store the energy use data in the project activity.***

The Embertec devices used in the sample groups will have internal memory for automatic storage of the energy use data. This will be collected by project participants through either automatic wireless transmission (e.g. using GPRS technology), or through data download during household survey visits.