

# Expansion of the Energy Saver Incentive

Standby Power Controllers for business sector  
Discussion Paper - November 2011

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# 1. Introduction

As part of the expansion of the Energy Saver Incentive (ESI) to the business sector, the existing residential activities set out in the *Victorian Energy Efficiency Target Regulations 2008* (the Regulations) are being adapted for business and non-residential applications. This paper specifically addresses issues relating to adapting the existing residential standby power controller (SPC) activity to the business sector.

As described in the current Regulations, a SPC is a device that automatically reduces the standby energy consumption of the controlled appliances connected to it. Detailed minimum eligibility criteria required for an SPC to qualify under ESI are set out in Schedule 29 of the current Regulations.

SPCs are relatively new devices designed to achieve energy efficiency. They come in many different designs and operating regimes, and can be connected to many combinations of appliances. Under ESI, they may currently be installed to control IT equipment or Audio Visual equipment.

## Proposal

If the proposal described in this paper is adopted:

1. installation of SPCs under ESI will be permitted in business and non-residential premises (except premises listed under the Environment Protection Authority's Environment and Resource Efficiency Plans program);
2. the same minimum device eligibility criteria currently applying to the installation of SPCs in residential premises will apply except that SPCs will be required to be connected to **at least 3 controlled appliances<sup>1</sup>** at installation;
3. certificates for SPCs installed in business and non-residential premises will be limited to 'basic' IT and AV devices – ie no additional certificates will be awarded for devices with extra functionality; and
4. the abatement factors for SPCs installed in business or non-residential premises will be adjusted to:
  - 0.61 for IT SPCs
  - 0.65 for AV SPCs

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<sup>1</sup> Note – controlled appliances refers to computer peripherals like printers, modems, scanners and the like for IT SPCs, and DVD players, set top boxes, game consoles and the like for AV SPCs. Devices unrelated to the IT or AV environment such as mobile phone chargers should not be counted towards the number of 'controlled devices'.

## Submissions

DPI invites submissions on this Discussion Paper by 12 December 2011.

All submissions should be emailed to  [energysaverincentive@dpi.vic.gov.au](mailto:energysaverincentive@dpi.vic.gov.au) with email header "SPCs for businesses". Email submissions are preferred.

Submissions may also be made in writing to:

### Energy Saver Incentive

Energy Sector Development Division  
Department of Primary Industries  
GPO Box 4440  
MELBOURNE VIC 3001

# 2. Adaptation of SPCs to Business

## Translation from household to businesses

SPCs for use in households, as described in the Regulations, are categorised in the following table. Issues related to translating these devices to businesses are also listed in the right hand column.

SPC Type	Minimum Functionality	Issues Related to Translating SPCs to Businesses
Basic IT	Switch peripherals off/on when master computer off/on	Fewer peripherals connected to computer.
Advanced IT	Switch peripherals off/on when master computer off/asleep/on	Longer computer operating hours = less opportunity to switch off peripherals. Advanced IT SPCs may be able to switch off peripherals when the computer is in sleep mode.
Basic AV	Master/slave	Fewer peripherals connected to master television. Differing television operating hours.
Advanced AV	Beyond master slave - e.g. can switch off television when not required	Fewer peripherals connected to master television. Television unlikely to be left on unintentionally.

From the table above, there are two key issues with translating the residential SPC activity to businesses.

Firstly, the average number of connected peripherals connected to the SPC is likely to be lower than in the residential case, especially in the case of AV type SPCs. In larger businesses, IT peripherals such as printers, modems and scanners are unlikely to be connected to desktop computers, as these are typically network connected. There are also likely to be fewer AV peripherals connected to a television in businesses, such as set top box, games console, etc.

It may be possible to address this issue by requiring that SPCs for business and non-residential applications can only be installed and generate certificates where they are connected to at least 3 controlled appliances. Based on the data presented below, 3 controlled appliances is the minimum number that would be required to achieve enough emissions savings for the installation of a sole SPC to be entitled to create 1 VEEC. It is noted that the approach

proposed for SPCs in businesses departs from that adopted for residential SPC installations. In the residential context, the allocation of VEECs is based on the assumption that on average, 4 controlled appliances would be connected. A minimum threshold of 2 controlled appliances was permitted on the basis that this was the minimum number of controlled appliances needed to justify an entitlement to 1 VEEC in a residential context.

The second issue in translating the residential SPC activity to the business sector is that businesses will have different appliance operating patterns to households. Computers operate for longer hours in businesses and thus are switched off (and asleep) for fewer hours – this will decrease the time that peripherals would be switched off by a standard SPC which switches off controlled peripherals only when the computer is switched off. However, in business applications computers are likely to spend a greater proportion of their time in sleep mode, meaning that advanced SPCs may be able to achieve a greater level of savings compared to standard SPCs.

Televisions in businesses however will typically operate for fewer hours than in households, the exception being televisions in waiting rooms and the like. However most business televisions are unlikely to be left on unintentionally (one exception being a television in a staff meal room). This serves to illustrate the increased uncertainty in the potential for AV SPCs to reduce energy consumption in business settings.

In addition, connecting an advanced AV SPC to a television which is required to be on at all times (e.g. in a waiting room) may become a nuisance – undermining the opportunity for advanced AV SPCs to deliver higher emissions savings<sup>2</sup>.

<sup>2</sup> Note: AV SPCs should not be used to switch off data projectors, as these typically rely on extended cool-down cycles to prevent overheating and damage to the projector

## Emissions abatement level for basic SPCs

### For a basic IT SPC installation

The requirement to connect the SPC to at least 3 peripherals may skew installation to smaller businesses whose IT setup better resembles those of households. Thus it is considered appropriate to use the same peripheral standby power levels as was used for household SPCs, but to adjust the operating hours to better reflect business operation, as well as adjusting peripheral ownership levels.

Computer operating hours were adjusted from the residential SPC calculation (2.4 hours per day) to 5.7 hours per day (8 hours per weekday).

From Table 1 (see Appendix), a weighted mean standby energy consumption of 29 kWh p.a. for IT peripherals was calculated. Given doubts about the number of appliances that can be connected to IT SPCs in businesses, on the basis that 3 peripherals are connected and 90% of their standby energy is eliminated, a potential SPC saving of 78 kWh p.a. is estimated, which is 0.78 MWh over 10 years. Regulatory programs to reduce standby energy consumption are predicted to result in a net reduction to this 10-year figure of around 19%, resulting in a reduction to 0.63 MWh saved. Applying the ESI scheme's greenhouse gas coefficients, this results in an abatement factor of 0.61 tonnes of carbon dioxide equivalent of greenhouse gas emissions for basic IT SPCs in a business or non-residential setting.

### For a basic AV SPC installation

The requirement to connect the SPC to at least 3 peripherals may skew installation to smaller businesses, whose AV setup better resembles those of households. Thus it is considered appropriate to use the same peripheral standby power levels as was used for household SPCs, but to adjust the operating hours to better reflect estimated business operation, as well as adjusting peripheral ownership levels.

From Table 2 (see Appendix), a weighted mean standby energy consumption of 31 kWh p.a. for AV peripherals was calculated. Given doubts about the number of appliances that can be connected to AV SPCs in businesses, on the basis that 3 peripherals are connected as discussed above, and 90% of their standby energy is eliminated, a potential SPC saving of 84 kWh p.a. is estimated, which is 0.84 MWh over 10 years. Regulatory programs to reduce standby energy consumption are predicted to result in a net reduction to this 10-year figure of around 19%, resulting in a reduction to 0.68 MWh. Applying the ESI scheme's greenhouse gas coefficients, this results in an abatement factor of 0.65

tonnes of carbon dioxide equivalent of greenhouse gas emissions for basic AV SPCs in a business or non-residential setting.

## Emissions abatement level for Advanced SPCs

For residential advanced IT and AV SPCs, a field trial is required in order to substantiate claims for higher emissions savings.

Two possible approaches are available to determine the abatement for advanced SPCs in business and non-residential applications.

The first, consistent with the approach to residential SPCs, is to require a new business sector specific field trial to be completed.

A second, alternative approach could rely on data from a household field trial that was adjusted in order to estimate the abatement from advanced SPCs in businesses. Once SPC functionality has been confirmed from the residential trial, data about the operating hours for IT and AV appliances in businesses could be applied to a theoretical model in order to simulate business operation.

Taking this approach, would require the following data to be obtained:

1. operating principles of the SPC (proven in the field) - i.e. under what circumstances does it turn appliances on and off?;
2. type, number and power characteristics of the appliances connected to the SPC; and
3. operating patterns of the appliances connected to the SPC.

The difficulty with both of these approaches is the lack of data on the operation of SPCs in business environments, the differences between those environments and households noted above, the considerable variation amongst businesses and non-residential premises that would be eligible to participate in ESI. This variation creates significant difficulty in devising a suitable normalization methodology that could be reasonably applied to either of the approaches described above.

On this basis, despite noting earlier that there may be potential for advanced IT SPCs to achieve higher savings, it is proposed that no additional emissions abatement is attributed to installing advanced IT and AV SPCs in business and non-residential premises.

## Other Devices

It is recognized that other devices exist or could be developed, outside the current ESI SPC scope, to reduce standby energy consumption in businesses.

Unlike households, that have unpredictable usage patterns for computers and AV equipment, most businesses operate 9am-5pm, Monday to Friday. Thus, to some extent, the use of a master appliance (or other sensor) to sense operation is somewhat redundant. For example, a programmable timer could eliminate standby energy consumption outside of business hours. This could potentially be connected to a range of equipment, outside of IT/AV peripherals, such as chargers, photocopiers, printers, etc. A limited over-ride feature would also be useful to allow out-of hours use.

Proposals for the inclusion of other devices outside the current ESI SPC scope may be made into the “New Activity Categories” round of submissions open until 9 January 2012. Further details are available on the ESI website <http://www.dpi.vic.gov.au/energy/environment-and-community/energy-efficiency/energy-saver-incentive-scheme#stage3>

# Acknowledgement

This discussion paper was prepared with the assistance of Beletich Associates.

# Appendix

Peripheral	Consumption in each mode (W)			Estimated Av Hours per day			Standby Energy (kWh/Yr)
	Active	Passive	Off	Active	Passive	Off	
Inkjet Printer	4.6	0	1.9	11.0	0.0	5.5	22.2
CRT Monitor	61.7	8.2	1.9	0.6	10.4	5.5	48.5
Computer speakers	4.1	6	2.2	10.3	0.7	5.5	21.3
Modem	5.9	4.4	2.4	15.4	0.2	0.9	34.2
LCD Monitor	0	2.6	1	0.0	11.0	5.5	12.4
Hub	5	0	0	15.5	0.0	0.9	28.4
Scanner	8.3	0	0.9	11.0	0.0	5.5	35.0
Multifunction device	11.2	0	5.5	11.0	0.0	5.5	55.9
Laser Printer	12.9	15.9	0.1	9.7	1.3	5.5	53.3

Table 1. Standby energy savings for IT appliances – Beletich Associates, prepared for Department of Primary Industries, 2011.

Peripheral	Consumption in each mode (W)			Estimated Av Hours per day			Standby Energy (kWh/Yr)
	Active	Passive	Off	Active	Passive	Off	
VCR	10.5	5.1	1.7	3.4	16.9	0.5	44.6
DVD Player	9	2.6	0	1.7	13.3	5.8	18.1
Game Console	26.7	1.9	1.4	0.0	1.2	17.3	9.6
Set Top Box	13.3	10.7	0	6.1	5.4	0.0	50.7
DVD/VCR Players	14.8	3.5	0	3.6	16.6	0.5	40.9
AV Receiver	65.3	3.1	0.3	2.1	11.7	4.6	63.5
DVD Recorder	26.5	4.9	0	0.0	20.2	0.5	36.2

Table 2. Standby energy savings for AV appliances – Beletich Associates, prepared for Department of Primary Industries, 2011