

Final Draft Version 1.0 EPA Game Console Performance Requirements and Test Method
Comment Summary and Response

Topic	Subtopic	Stakeholder Comment Summary	EPA Response
General		<p>One stakeholder commented that the game console industry supports reasonable energy efficiency policy, and to that end all three console makers have agreed to take several substantial steps to make consoles do more with less energy, including: a robust auto-power down regime, a commitment to reduce the energy expenditure for secondary functions, power caps for next generation consoles that are approximately half of what the current generation Xbox 360 and PlayStation 3 used at their launch, and a commitment to explore power-scaling technologies.</p>	<p>EPA appreciates the comment and support from industry to explore energy saving technologies and techniques.</p>
Auto Power Down	General	<p>Stakeholders agree that auto-power down has significant energy savings potential. However, one stakeholder provided existing examples of use interface language that may be conducive to users disabling auto-power down. The stakeholder cited a 2010 plug load study in Minnesota homes that found 80 percent of desktop computers did not have sleep/hibernate enabled, despite all major computer manufacturers had been shipping new computers with power management enabled for over three years reflecting a high rate of user disabling of APD on computers. Rather than establish prescriptive language that does not offer flexibility to the manufacturer, the stakeholder thus recommends that EPA include APD implementation guidance and establish a pre-approval process for new use interface language regarding APD.</p>	<p>Continued on next page.</p>

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Auto Power Down	Implementation Guidance	<p>To encourage the use of APD, one stakeholder suggested EPA include the following implementation guidance:</p> <p><u>Initial/Out-Of-The-Box Setup:</u> 1. The initial set up menu shall not provide the user the opportunity to disable APD. 2. The initial setup menu shall not contain warning language about loss of progress in the game that might scare users into disabling APD. Such language can be included in the systems setting menu at the time when the user makes a conscious choice to adjust APD settings.</p> <p><u>System Settings:</u> Any user warnings about the risks of losing some of the progress they've made in the game due to APD should communicate the risk in a balanced manner, including the auto-save strategies by most games. If a user selects to disable Auto Power Down, a second selection process shall be prompted to confirm this selection. Manufacturers are encouraged to offer alternatives to disabling APD such as increasing the APD timer.</p> <p><u>Warning Before APD:</u> User warning of impending APD may offer the user the chance to avoid APD, but shall not propose to permanently disable APD or provide a prompt/link to do so.</p> <p><u>Resume from APD:</u> 1. If manufacturers choose to remind users of APD events, they should do it in a discrete, non-obtrusive manner which does not require systematic user action, so as not to cause users to disable APD. 2. The manufacturer may not provide a user prompt during the resume event that provides an opportunity to disable APD.</p>	<p>EPA agrees that APD provides a significant energy savings opportunity. EPA also recognizes that a combination of shipping products enabled with this functionality, ensuring the function is delivered in a way that is unobtrusive to the user, and educating the consumer about the feature and the associated benefit offers the greatest potential for success. As such, EPA has included consumer education requirements but believes it has provided manufactures with flexibility in meeting this requirement.</p>
Auto Power Down	Period of Use Inactivity	<p>One stakeholder commented that the period of inactivity for "Active Video Stream Pause" (1-hour) before APD should be the same as "Active Video Stream Play" (4-hours) to minimize the risk of consumer confusion that may arise where the user recalls the "4-hour" window for watching a streamed program but is puzzled why the console powered down before that time period ended. The stakeholder argued that once a user starts streaming a video program, the user should have four hours to finish it regardless of whether he or she chooses to pause the movie at some point. Similarly, they recommended changing Section 6.5.D from "65" to "240" minutes.</p>	<p>EPA understands the concern. However, a period of 4 hours of inactivity during Active Video Stream Play is likely to rarely be used as the longest of feature films are typically capped at 3 hours. The main function of the 1 hour requirement for Active Video Stream Pause captures a great deal more savings for the consumer and is not likely to be disruptive. For these reasons, EPA will continue to support a 1-hour time period of inactivity before APD is activated during Active Video Stream Pause.</p>

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Auto Power Down	Secondary Screen	<p>To be consistent with the mode specific APD options described in Section 3.1.1.iii. and minimize the use of “disable APD for all modes,” one stakeholder recommended the following revision to Section 3.1.1 ii: “From the secondary APD screen, the user shall have the option to disable Game Play mode APD only, or disable APD for all modes, or disable APD for one or more other modes....”</p> <p>The same stakeholder is OK with the second selection process on initial console setup but does not support extending the second selection process to APD preferences activated after initial setup when the user is immersed in a game or other media entertainment and where further interruptions may be highly disruptive of the experience and conducive to disabling APD across the board. If, however, EPA determines to extend the second selection process to post-setup activity, then the stakeholder recommended the requirement be revised to be consistent with Section 3.1.1.iii: “If a user selects to disable Auto Power Down, a second selection process shall be prompted to confirm this selection, except under the “limited circumstances” described in Section 3.1.1.iii.”</p>	<p>EPA does not prescribe the method of notifying customers of options in this way. EPA relies on the processes of the manufacturer to deliver the information in the best possible way to their customers. EPA only requires that they do so with the shipped item.</p>
Consumer Paypack Period		<p>One stakeholder commented that it would take years (over 16) for the consumer to “earn back” the cost of a dedicated chipset in the form of energy saved by the reduced power consumption using the annual savings rate per unit of \$3.79 calculated by the EPA.</p>	<p>Currently, 49% of U.S. households own a dedicated game console, or 57 million U.S. households. With media being played 2 hours per day, consuming 33 kWh per year would provide double the savings of what is currently proposed by industry, which would amount to over 1.8 million MWh per year and a national savings of \$216.5 million dollars in electricity bill savings. The electricity savings equates to over 1.3 million metric tons of CO2 emissions prevented, equivalent to the emissions from over 250,000 cars.</p>
Merge Power Limits		<p>One stakeholder urged EPA to harmonize the power limits for Navigation and Media Streaming since from the manufacturer’s experience there is not appreciable difference in energy consumption characteristics between the two modes.</p>	<p>EPA appreciates the comment and recognizes the concern. Navigation mode was found to consume less power than Active Video Stream Play. For this reason, it makes sense to allot an extra amount of power for Video Stream Play. If power consumption trends change in the future, EPA is open to reviewing these future developments.</p>

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Power Caps	Eligible Products	<p>One stakeholder noted that Final Draft power limits are not achievable for two of the three console makers and, under some circumstances, only partially achievable by the Nintendo WiiU since game title customizes its navigation menus slightly differently, with some opting for a simple, utilitarian appearance while others choose to incorporate splashy graphics, sound, and background animations, which require more power over 40W. Another stakeholder in support of the Final Draft power limits reported that the new Wii U launch model (8 GB model) purchased in November 2012, draws 28-29 watts in Video Stream Play mode, and 31-32 watts in Navigation Menu function per their own tests. This stakeholder argued that the significant margins by which the Wii U (a HD graphics game console with the same resolution and comparable gaming experience to the Sony PlayStation3 and Microsoft Xbox 360) meets EPA's proposed levels demonstrate that these levels are not only technologically feasible but also economically viable for high volume video game consoles.</p> <p>The first stakeholder conversely argued that even assuming the Nintendo Wii U could meet proposed power limits, there are strong disincentives to committing to these caps over the long term. The stakeholder emphasized that the qualification of any subsequent Wii consoles will likely be even more problematic. Just as the power consumption of the Wii U increased compared to the Wii, in order to obtain a more capable console, it is highly likely that the power consumption of the next generation Nintendo console (post-Wii U) also will have to increase relative to the Wii U. The power limits could limit the ability of tomorrow's consoles to offer future innovations in game play, such as Ultra HD graphics or the ability to present richly differentiated user experiences to multiple players simultaneously.</p>	<p>EPA understands the concern. EPA game console recognition is based on as shipped, as tested configuration. Any changes made by the end user are beyond the scope of the performance requirements. EPA is keen to revisit the test method and performance requirements again in the future as the market changes, more technologies are utilized, and the user experience evolves. As it is true that the performance requirements of today could influence future console development, EPA is committed to working with stakeholders to ensure that the game console EPA program is not a static process but a dynamic one that changes with the game consoles market over time.</p>

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Power Scaling and Standalone Media Equipment Complexity and Cost	<p>One stakeholder commented that power scaling does not have infinite elasticity and that in order for the manufacturer to “hit” a certain downscaled number for media streaming, the manufacturer may have to opt for a chip that has an energy ceiling below that which is optimal for other, non-scaled functions, like game play. Alternatively, there may exist a subset of chips that could handle both extremes (e.g., a chip designed for high-end ultra books) but at an exorbitant cost relative to what is an affordable option for a device priced at several hundred dollars. It also noted that redesigning consoles’ motherboards to accommodate scalable architecture is an incredibly complicated and expensive process and even if the next generation was updated it may require more processing power.</p> <p>The stakeholder further stated that console manufacturers can only meet the Streaming Media power limit by embedding into the console a separate chipset and associated circuitry optimized for video streaming which is technically complex, prohibitively expensive, and could introduce latency issues when switching between systems. The stakeholder cited an unofficial estimate of an Apple TV (2nd Generation) cost of \$64.5 compared to the launch year prices for the most economical versions of the current generation game consoles were \$299 (Xbox 360), \$499 (PS3), and \$299 (Wii U). In light of the industry’s business model, adding an additional \$64 in parts to devices at these price points when they are often sold at a loss is not sustainable financially. The stakeholder also commented that it does not make sense to compare dedicated media steaming boxes to game consoles because the consoles are optimized for different function.</p>	<p>State-of-the-Art game, what game consoles have always been about, is, in essence, not covered by power requirements in this program. Instead, game play is being allowed to continue uninhibited. However, game consoles that are increasingly dedicating themselves to providing non-gaming services such as media play should be held to similar standards as devices providing these same services. Devices such as set-top boxes can use as low as 4W (though more typically 10-20W) in Active Streaming Media. For these reasons, a requirement of 50W is achievable. The game console recognition program recognizes those manufacturers that are able to produce a console that pushes the limits of current efficiency within the industry.</p>	
USB Charging in Standby	<p>One stakeholder suggested a small adder (of the order of 0.1-0.3 watts) to enable USB charging from Standby, which would minimize the reasons why some users disable auto-power down (APD).</p>	<p>EPA recognizes the value in having extra watts in Standby for the purpose of charging. However, at this time, EPA continues to support Standby at 0.5W. EPA will continue to monitor the industry and make adjustments in the future if there is a larger demand for such adjustments.</p>	
Networked Standby	<p>One stakeholder commented that Networked Standby is one of the highest energy consumptive modes in game consoles from an annual energy use perspective, drawing as much or in some cases more annual energy than Game Play or Media Play when enabled. Due to the voluntary nature of ENERGY STAR and the specific capabilities of game consoles, the stakeholder encouraged EPA to set more stringent levels than the EU network standby regulation which is a horizontal standard that covers a wide range of products, and may therefore not be as stringent as it could be for game consoles alone.</p>	<p>EPA is aware of the energy consumption of consoles while in Networked Standby, however, because the mode is near regulatory completion in the EU, it is the desire of EPA to wait until this point. When this process is complete, EPA will analyze the benefit of adding Networked Standby into the program as an amendment to the recognition agreement.</p>	

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Power Supply Efficiency Requirements	<p>One stakeholder commented that EPA should reinstate power supply efficiency requirements to ensure that manufacturers design their products to use efficient power supplies, particularly in modes that are not covered by power limits such as Game Play. It noted that EPA's argument that individual component efficiencies are already covered through modal power limits does not hold true for Game Play, which could in the future use much higher power levels than capped modes. It urged EPA to include power supply efficiency requirements focused on Game Play operating ranges set at the International Efficiency Marking Protocol Level V for covered external power supplies covered, and equivalent levels for multi-voltage and internal power supplies which are currently not covered.</p>	<p>EPA promotes the best in class efficiency by recognizing manufacturers using the technological advances that they believe will increase the efficiency of products in a manner most cost effective. The current test procedure will penalize products with lower efficiency power supplies and rewards products with higher power supply efficiencies at standard operating loads. This appears to be an adequate incentive system for individual component efficiencies.</p>	
Game Play Power Measurement and Reporting	<p>One stakeholder disagreed with EPA's argument that a Game Play test would not be sufficiently repeatable for the purpose of monitoring, as demonstrated in the straw man Game Play test method included in its Draft 2 comments. The stakeholder encouraged EPA to include a "test and list" requirement for Game Play as soon as possible that will allow EPA and interested consumers to track the relative changes in game play power levels over time as new products enter the market.</p>	<p>At this time, EPA & DOE believe a Game Play test would not be sufficiently repeatable nor would it yield results that are appropriate for comparison between devices as different games draw different power. Due to these variations, any power measurement would not necessarily be representative of typical use. Therefore, EPA & DOE will not include an active game play test in the Version 1.0 Test Method.</p>	
Test Procedure	Section 6.1.A.	<p>One stakeholder commented that console makers view hardware specs for game consoles as confidential information, and therefore it would be problematic for manufacturers to disclose this information. Unlike PCs consoles have a stable configuration that is tied to a specific model (e.g., Xbox 360, PlayStation 3) and any changes to CPU or volatile memory would involve launch of a new model. The core parameters (e.g., CPU, GPU, and RAM) do not change within the life of that console model. Thus the stakeholder noted that the model number should be sufficient to differentiate the test candidate from other devices.</p>	<p>EPA & DOE agree with the comment, and the reporting requirements provided in Section 6.1.A of the Final Draft Test Method have not been included in the Final Test Method. These reporting requirements were not directly related to testing and are not included in ENERGY STAR test methods for similar products. However, certain information regarding the Unit Under Test (UUT) shall be reported on the Test Reporting Form. This information includes Manufacturer, Model Name, Model Number, and Software/Firmware Version.</p>

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Test Procedure	Section 6.1.F.	One stakeholder commented that Item #4 should clarify that any peripherals with integral batteries should not be left connected once the batteries are fully charged prior to testing.	EPA & DOE believe that the current language in 6.1.F is clear in stating which devices should and should not be left connected during testing. Sections 6.1.F)1), 6.1.F)2), and 6.1.F)3) of the Final Draft Test Method provide guidance on how peripherals should be connected during testing. All peripherals shipped with the game console that are required for operation must be connected during testing, and only one standard controller is connected during testing. The controller must be connected wirelessly if it is capable of wireless connectivity with the game consoles. Section 6.1.F)4) requires that all wireless peripherals and controllers that use integral batteries must be fully charged prior to testing.