

Games Consoles Self-Regulatory Initiative Consultation Forum Meeting

December 9, 2020



Presentation outline

1. Response to key EC and stakeholder requests
2. Games Consoles industry updates
 1. Launch of next generation consoles
 2. 2020 Review of the SRI
 3. Energy savings
 4. Timeline
3. Conclusions
4. Next steps

1. Response to key EC and stakeholder requests

- ✓ Requirements for next-generation consoles are included in the SRI revision
 - ✓ Next-generation consoles will meet the same power limits as the current consoles
- ✓ Material efficiency requirements are now closely referencing other Lots (Lot 5, etc)
- ✓ Non-proprietary key components will be made available

2. Games Consoles industry updates

1. Launch of next generation consoles
2. 2020 Review of the SRI
3. Energy savings
4. Timeline

2.1. Launch of next generation consoles

Sony PlayStation®5

- 10.3 TFLOPS, 4K up to 120 FPS, 8K HDR, ray tracing - four times the resolution of PS4 Pro
- Disc version and digital version (without 4K Blu-ray drive)

Faster utilising SSD
PS5 up to 100x
faster loading games

Microsoft Xbox Series X|S

- Xbox Series X: 12 TFLOPS, 4K up to 120 FPS, 8K HDR, ray tracing - four times the resolution of the Xbox One X
- Xbox Series S: 4 TFLOPS, 1440p gaming with upscaling to 4K, streaming at 4K

Higher performance
Series X two times
performance of One X

2.2. 2020 Review of the SRI

- Outline energy and resource efficiency commitments
- Review of consoles energy savings

2.2.1. Energy efficiency commitments

- New power caps for 8K-capable consoles - same as UHD consoles!

8K-capable consoles will **not increase** the power caps as set for UHD gaming capable consoles for navigation and media mode at HD and UHD resolutions, despite having **four times the resolution**

First time industry has achieved this when releasing a new generation!

Mode	Power cap (W)	Resolution
Navigation	70 W	HD
	70 W	UHD
Media	70 W	HD
	110 W	UHD

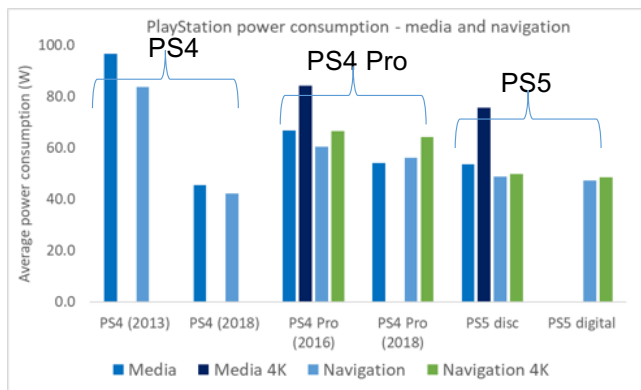
UHD Gaming Capable Consoles
70 W*
110 W*

2.2.2. Resource efficiency commitments

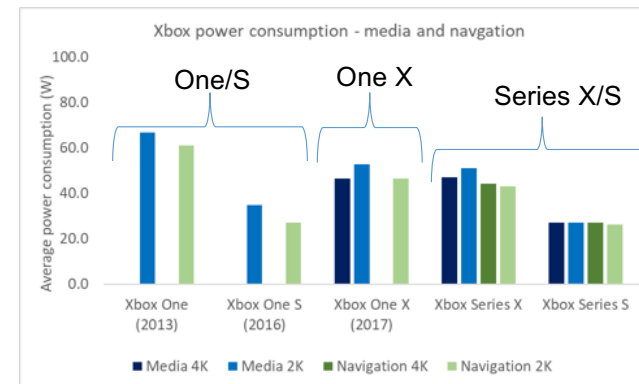
Stakeholder recommendations	Status
Make hard disk drives and external power supply's available to independent repairers and consumers	From 1st Jan 2022, for a period of 2 years after placing the last unit of the model on the market
Flame retardant content information requirement concerning external enclosure parts is extended to halogenated flame retardants	Information provision thus far has been limited to BFRs
External plastic enclosure >25 g parts shall not contain halogenated flame retardants <1000 ppm	From 1st Jan 2022, to improve recyclability, the enclosure parts will have an HFR content limit of <1000 ppm

2.3. Maximising performance and energy efficiency

Media and navigation – lower than launch models, no increase in current caps



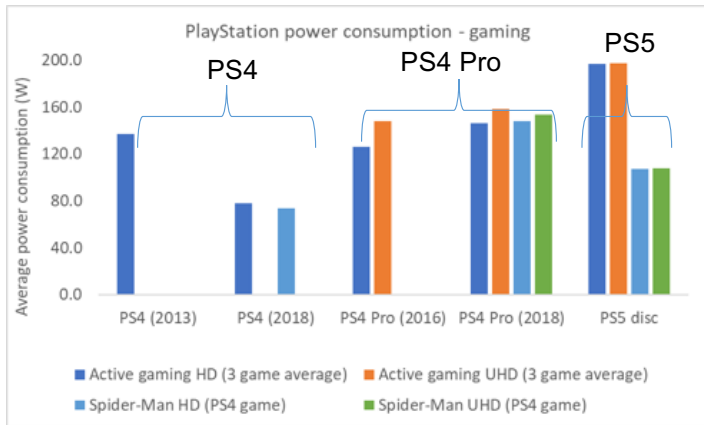
- Lower than current PS4 Pro
- Only slightly higher than current PS4 (increased performance)
- Lower than PS4 and PS4 Pro at launch



- Power consumption has dropped from the Xbox One, to the Xbox One X to the Xbox Series X, each the high-performance Xbox at launch.
- Power has dropped from the Xbox One S to the Xbox Series S, the economy Xbox console.

2.3. Maximising performance and energy efficiency

Gameplay – backward compatibility can use less power than previous consoles

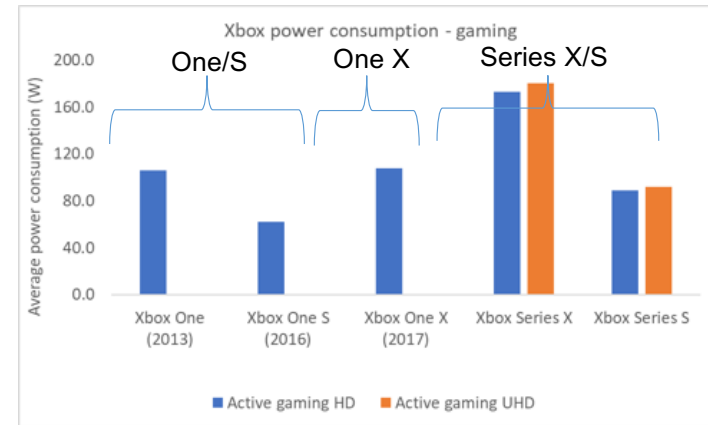


PlayStation notes:

Average of five samples per model
 Active gaming HD/UHD: average of Spider-Man: Miles Morales, Sackboy and Demon's Souls

Models (left to right): CUH-1016A, CUH2216A, CUH-7016B, CUH-7216B, CFI-1016A

CFI-1016B – pending test results



- Some increase in power for higher performance gaming
- First backward compatibility for PS4 disc games
- PS5 can use less power than PS4 Pro when playing PS4 games

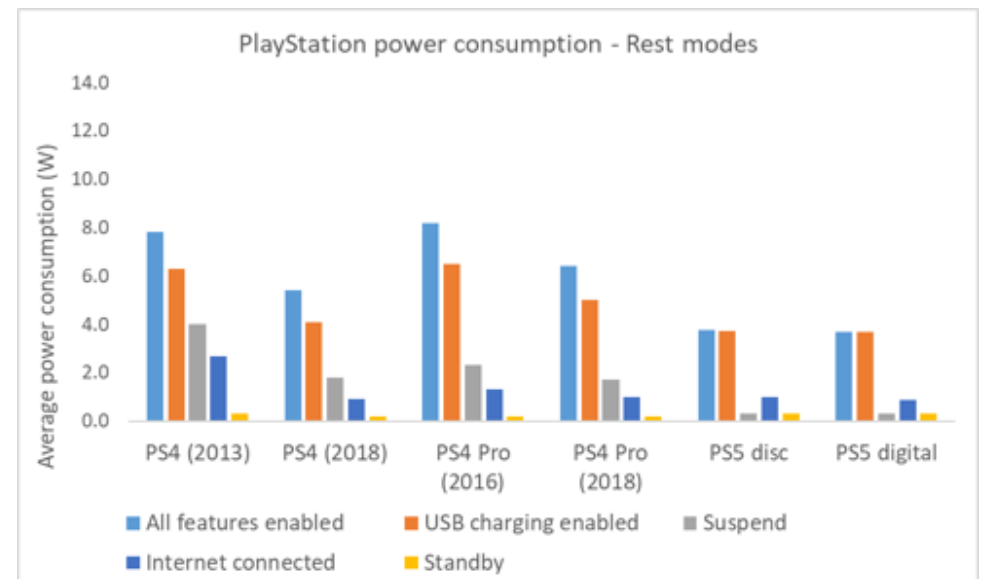
- Xbox Series S has lower power consumption than Xbox One and Xbox One X for gaming
- Xbox Series X and S also have low power consumption when playing backward compatible previous gen games

Both consoles demonstrate high power scaling abilities

2.3. Maximising performance and energy efficiency

Low power modes – PlayStation 5

- Multiple low power mode features enable energy savings as console does not need to be left on
- Suspend around 80% less than current PS4 and PS4 Pro
- USB charging with internet 28-39% less than current PS4 and PS4 Pro
- All low power modes under 4 W



2.3. Maximising performance and energy efficiency

Low power

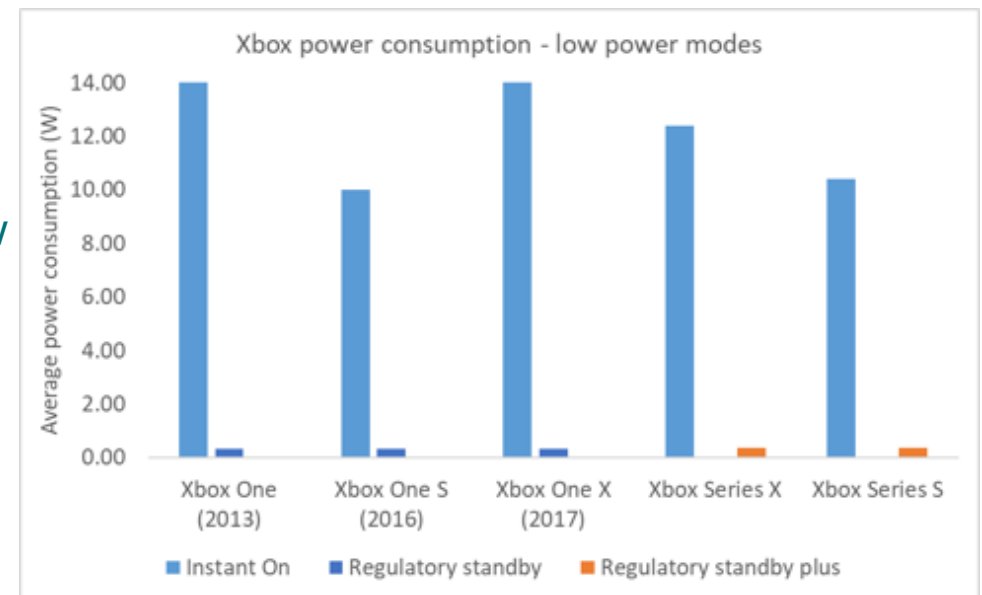
- Multiple low power savings as compared to PS4 Pro
- Suspend around 1.8W PS4 Pro
- USB charging current PS4 Pro
- All low power modes



2.3. Maximising performance and energy efficiency

Low power modes – Xbox Series X/S

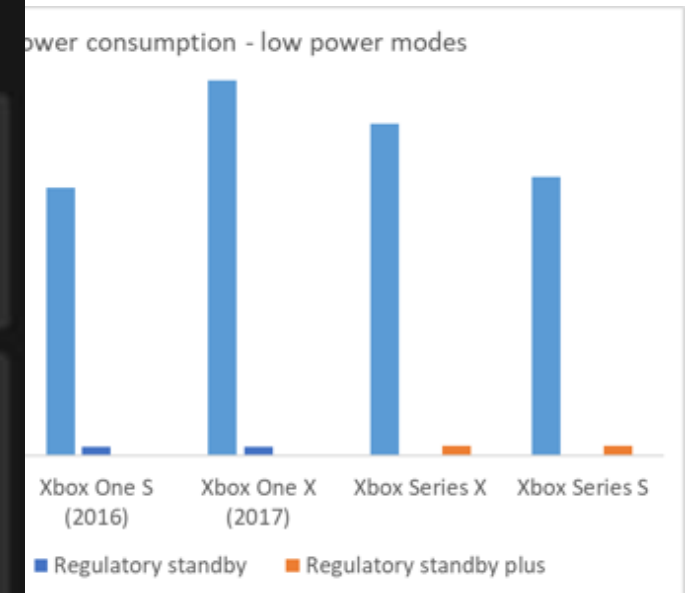
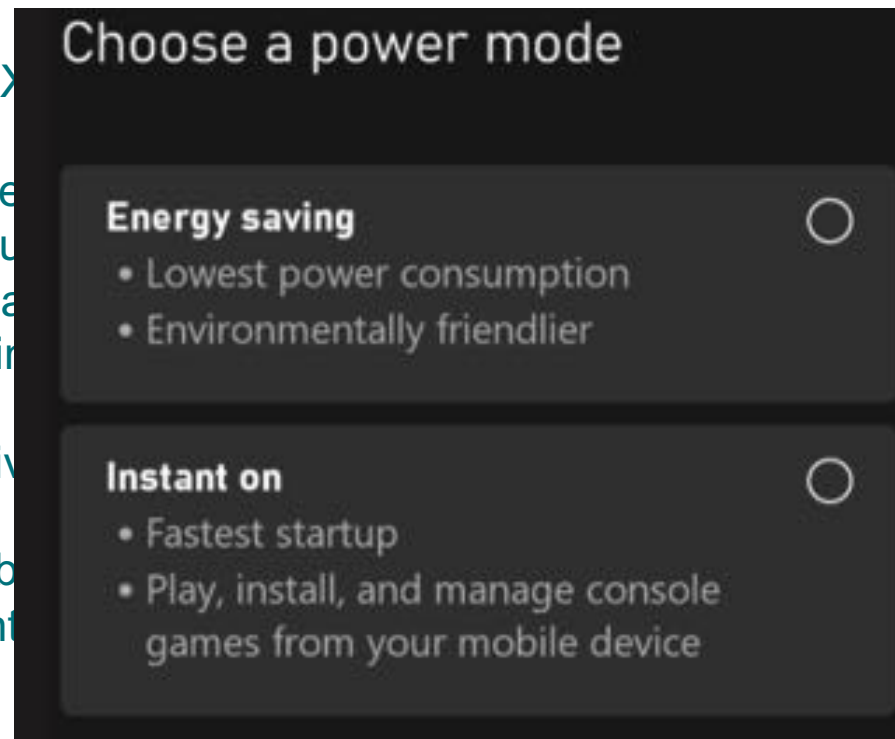
- Microsoft has developed a new low power mode called “Regulatory Standby Plus”
- This mode keeps average standby power below 0.5 W while allowing periodic game and OS updates
- The solid-state drive allows fast resumption of operation
- Regulatory Standby Plus provides more of the features of “Instant On” at a fraction of the power



2.3. Maximising performance and energy efficiency

Low power modes – X

- Microsoft has developed a low power mode called “Regulatory Standby”
- This mode keeps a console in a low power state of 0.5 W while allowing for system updates
- The solid-state drive (SSD) allows for faster operation
- Regulatory Standby mode is a key feature of “Instant On” power



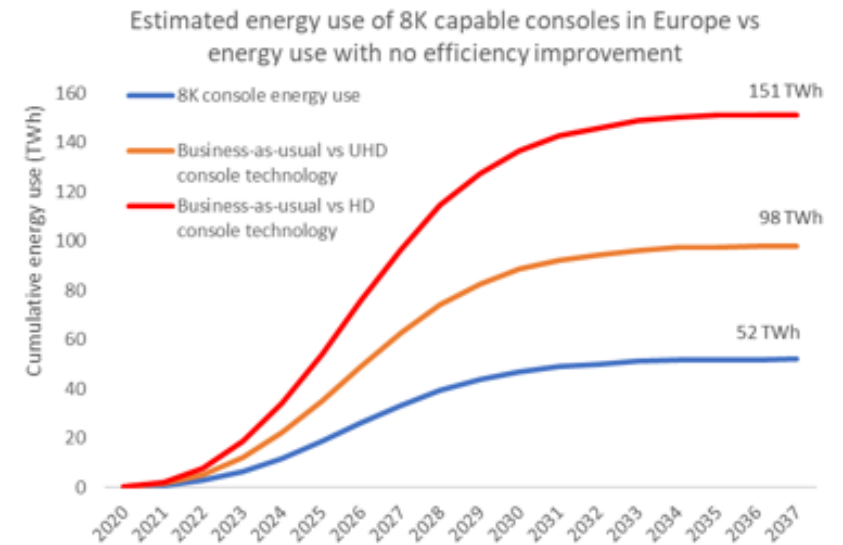
2.3. 8K consoles - 46 TWh estimated savings

New efficient technologies adopted to reduce energy use:

- 7 nm node System-on-a-Chip (SoC) architecture
- Power efficient AMD Zen 2 and RDNA 2 based architectures
- Custom Solid State Drive
- Sophisticated custom heat sink and cooling technology
- Energy savings achieved in low power modes

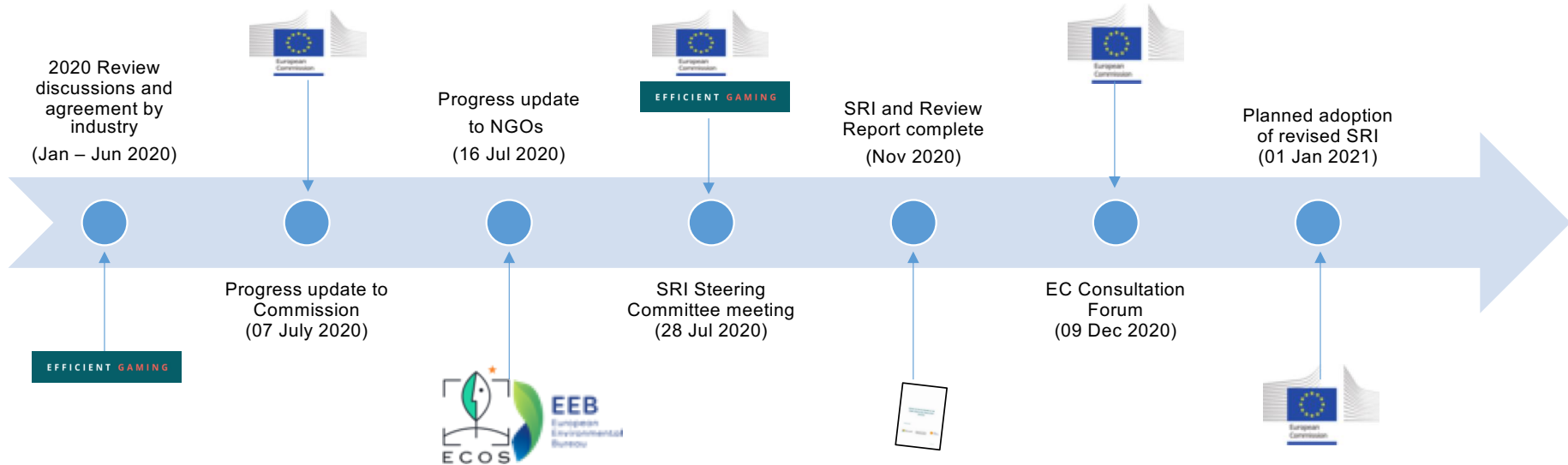
Estimated avoided energy use compared to UHD console technology is 46 TWh over the lifetime of 8K consoles.

Savings estimated at 99 TWh when comparing all efficiency improvements made since HD consoles



Preliminary estimate based on average historical sales
 Estimates to be updated when power testing of consoles is completed
 PlayStation 5 TEC based on gaming usage split of 25% PS4 games and 75% PS5

2.4. SRI Review timeline



3. Conclusions

- Additional (2020) review triggered by launch of the 8K capable consoles
- Despite the significant increase in performance and functionality, the new consoles **did not** significantly increase their power consumption
- Aligned with the latest resource efficiency expectations and requirements for ErP

4. Next steps

- Console manufacturers will respond to CF comments to the latest revisions of the SRI submitted during the comments period (TBD by the Commission)
- Pending approval by the Commission, the updated SRI will be effective from 1 January 2021

END OF PRESENTATION