DELL Technologies

Life Cycle Assessment (LCA) Report

Report produced September 2025

Life Cycle Assessment of Dell Monitor P2425H

From design to end-of-life and everything in between, we work to reduce the environmental impact of the products you purchase. A **lifecycle assessment (LCA)** is a standardized method for measuring those impacts across every phase of a product's journey—**raw material extraction, manufacturing, transport, use, and end-of-life**. By estimating impacts at each stage, we gain a complete picture of a product's footprint and identify opportunities for meaningful improvement.

The products selected for this LCA is Dell Pro 24" Plus Monitor P2425H and represents a standard display product. The key assumptions and product typical market configuration is summarized in Table below.

Assumptions	
Lifetime of product	6 Years
Use location	EU & USA & CN
System Boundaries	Cradle-to-grave
LCIA Methodology	EF 3.1 (Environmental Footprint v3.1)
Software & Database	LCA FE 10.9.1.10 and CUP2024.2 database by Sphera
P2425H Market Configuration	
Diagonal Viewing Size	60,45 cm (23,8 inches)
Maximum Preset Resolution	1920 x 1080 Pixel at 60 Hz
Brightness	250 cd/m^2
Color Support	Color Gamut: 99% sRGB
Panel Type	In-Plane Switching Technology
Backlight Technology	LED
Connectors	1x main power connection 1x HDMI 1x stand lock 1x DisplayPort 1.2 1x VGA 1x USB 3.2 Gen 1 Type-B upstream 1x USB 3.2 Gen 1 Type-A downstream connections 1x slots for sound bar 1x USB 3.2 Gen 1 Type-A 1xUSB 3.2 Gen 1 Type-C

Results Summary

In the EMEA scenario, the manufacturing phase is the largest contributor to the product's Global Warming Potential (GWP), accounting for approximately 51.4% of the total impact. This is primarily due to the energy-intensive production of electronic components such as printed wiring boards (PWBs), panels, and peripherals. Although these components represent only a small portion of the product's weight, they contribute disproportionately to environmental impacts.

The use phase contributes around 49.7% of the total GWP in EMEA, which is lower than in the US and China scenarios due to the relatively cleaner European electricity grid. The distribution phase has a minor impact, and end-of-life recycling with recovery provides environmental credits that help offset some of the lifecycle emissions.

Dell Monitor P2425H

Key Findings:

- **Electronics, panel, and electromechanics together account for approximately 79% of manufacturing GWP, while representing only 24% of the product's total weight.**
- **Recycling with recovery reduces GWP by ~14.7 kg CO_2 eq.**
- **Use phase contributes up to 75.6% of total GWP in China scenario.**
- **The total GWP of P2425H for USA and China are 24% and 71% higher than EMEA.**
- **Packaging has low environmental impact despite significant weight.**
- **Circular design should focus on electronics and printed wiring boards (PWBs).**
- **Supplier engagement for renewable energy use can reduce manufacturing impacts.**
- **User guidance (e.g., unplugging, brightness settings) can reduce use-phase energy consumption.**
- **End-of-life recycling with recovery provides environmental credits, especially for metals.**
- **Sensitivity analysis shows renewable energy use can significantly lower GWP.**

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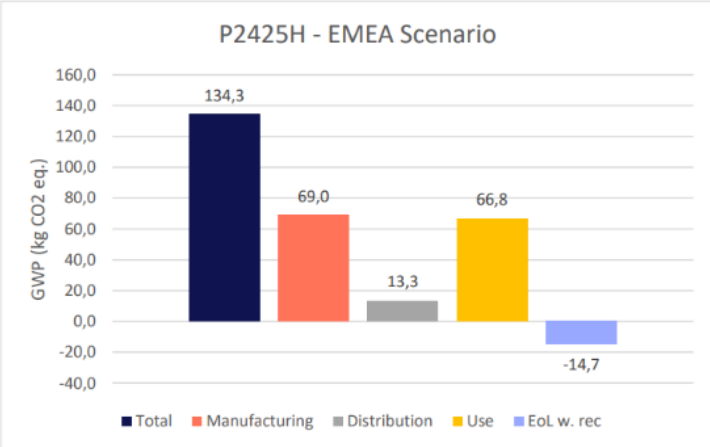

Figure 4-2: Contribution of the different stages of the life cycle to the global warming potential (GWP) of the P2425H display distributed by ship and used in EMEA in an EoL scenario with recovery

In addition to GWP, other impact categories such as acidification, eutrophication, photochemical ozone formation, resource use, and water use were assessed in detail for the EMEA scenario.

Table E-1: All impact categories - P2425H

	Manufacturing	Distribution (China to US)	Distribution (China to EMEA)	Distribution (China domestically)	Use (Average US)	Use (Average EMEA)	Use (Average China)	EoL w. rec.
EF 3.1 Acidification [Mole of H+ eq.]	3,08E-01	3,59E-02	5,57E-02	2,95E-03	1,38E-01	1,28E-01	6,16E-01	-1,86E-01
EF 3.1 Climate Change - total [kg CO2 eq.]	6,90E+01	9,88E+00	1,33E+01	1,99E+00	1,02E+02	6,68E+01	1,74E+02	-1,47E+01
EF 3.1 Ecotoxicity, freshwater - total [CTUe]	2,58E+02	9,51E+01	1,29E+02	1,85E+01	3,79E+02	4,02E+02	2,57E+02	-8,91E+01
EF 3.1 Eutrophication, freshwater [kg P eq.]	3,85E-04	1,20E-05	8,98E-06	8,10E-06	6,14E-05	2,74E-04	8,88E-05	-1,92E-05
EF 3.1 Eutrophication, marine [kg N eq.]	7,57E-02	1,42E-02	2,17E-02	1,12E-03	3,11E-02	3,19E-02	1,33E-01	-1,86E-02
EF 3.1 Eutrophication, terrestrial [Mole of N eq.]	7,85E-01	1,56E-01	2,39E-01	1,32E-02	3,38E-01	3,34E-01	1,45E+00	-2,01E-01
EF 3.1 Human toxicity, cancer - total [CTUh]	7,55E-08	1,76E-09	2,35E-09	3,74E-10	1,41E-08	2,26E-08	3,53E-08	-1,28E-08
EF 3.1 Human toxicity, non-cancer - total [CTUh]	5,54E-07	6,20E-08	7,79E-08	1,68E-08	2,32E-07	3,46E-07	5,92E-07	-1,58E-07
EF 3.1 Ionising radiation, human health [kBq U235 eq.]	2,80E+00	1,96E-02	2,30E-02	6,60E-03	1,46E+01	3,65E+01	2,84E+00	-6,59E-01
EF 3.1 Land Use [Pt]	2,25E+02	1,64E+01	1,06E+01	1,23E+01	1,69E+02	5,84E+02	2,67E+02	-2,41E+01
EF 3.1 Ozone depletion [kg CFC-11 eq.]	5,57E-09	8,16E-13	9,53E-13	2,79E-13	6,26E-10	1,50E-09	8,61E-10	-5,50E-11
EF 3.1 Particulate matter [Disease incidences]	3,59E-06	2,81E-07	4,44E-07	3,21E-08	1,26E-06	1,07E-06	8,37E-06	-1,88E-06
EF 3.1 Photochemical ozone formation, human health [kg NMVOC eq.]	2,31E-01	4,07E-02	6,20E-02	2,92E-03	9,10E-02	8,44E-02	3,95E-01	-6,08E-02
EF 3.1 Resource use, fossils [MJ]	6,57E+02	1,28E+02	1,73E+02	2,50E+01	1,73E+03	1,39E+03	1,86E+03	-2,29E+02
EF 3.1 Resource use, mineral and metals [kg Sb eq.]	6,33E-03	3,93E-07	4,19E-07	1,65E-07	1,06E-05	1,24E-05	8,32E-06	-6,09E-03
EF 3.1 Water use [m³ world equiv.]	8,78E+00	5,00E-02	4,27E-02	2,94E-02	2,34E+01	1,83E+01	5,60E+01	-3,35E+00

Conclusion

The life cycle assessment of the Dell P2425H monitor reveals significant environmental differences across regions and life cycle stages.

The use phase has a major impact on environmental outcomes across all regions due to variations in electricity grids. Manufacturing impacts are consistent, with electronics and panel components contributing disproportionately to global warming potential (GWP) despite their relatively small weight. Distribution impacts are relatively minor, with ship transport being more environmentally efficient than air or truck transport. At the end of the product's life, recycling—particularly the recovery of precious metals and copper—provides substantial environmental benefits.

Overall, the study emphasizes the importance of design strategies that focus on electronics, improve energy efficiency during use, and encourage recycling with material recovery to reduce life cycle impacts.

How does Dell use the LCA Results?

- Support EPEAT standard regulations.
- Determine environmental hotspots over the product's life cycle which can be used to support the development of more environmentally sustainable products.
- Provide answers to customer inquiries.