WHAT DOES AI ACTUALLY COST?

Energy, Water & What Educators Should Know

ALIGNMENT

≠ NOT ALL AI TASKS ARE EQUAL

Energy per single interaction (watt-hours):

Google Search
0.03 Wh Baseline

AI Text Query (standard)
0.3 Wh ~10x a search

AI Text (reasoning/CoT)
1-2.9 Wh ~100x a search

AI Image Generation
1.6-2.9 Wh Partial phone charge (60%)

Deep Research / Agent
40–50 Wh Using a laptop for 1 hour

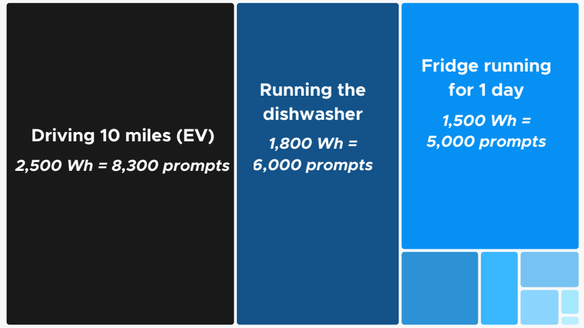
Coding Agent (1 session)
~41 Wh ~130x a text query

AI Video (5 seconds)
90 Wh LED TV for ~1 hour

Data Source: Google Cloud Blog (2025), Epoch AI, Luccioni et al. arXiv (2023), CNET (2025), Couch (2026)

DAILY LIFE IN AI PROMPTS

How many standard AI text queries (0.3 Wh) equal common everyday energy uses?



- Playing PS5 for 1 hour *200 Wh = 670 prompts*
- Boiling a kettle (1L) *100 Wh = 330 prompts*
- Streaming Netflix for 1 hour *77 Wh = 260 prompts*
- Using a laptop for 1 hour *50 Wh = 170 prompts*
- Charging your iPhone *17 Wh = 57 prompts*
- LED bulb on for 1 hour *6 Wh = 20 prompts*

Data Source: Epoch AI, EcoFlow, IEA, Masley (2025), Couch (2026)

WATER — WHAT THE DATA SAYS

Two types of water use in AI data centers:

SCOPE 1: Direct
Water evaporated onsite to cool servers

SCOPE 2: Indirect
Water used at power plants to generate electricity

Per AI text prompt:

- ~0.3 ml onsite (a few drops)
- ~2 ml total (incl. power generation)

To equal one of these, you'd need:

- 1 sec of showering = 63 prompts (~126 ml)
- Heating a kettle of water = 500 prompts (1 L)
- Making a t-shirt = 1.3M prompts (~2,700 L)
- Making a smartphone = 6.4M prompts (~12,800 L)
- Making jeans = 5.4M prompts (~10,800 L)

Data Source: Masley (2025); citing watercalculator.org; Google Cloud Blog (2025)

WHAT EDUCATORS SHOULD KNOW

1 Match the tool to the task
Using a frontier model for a simple question is like driving a truck to the corner shop. Smaller models use a fraction of the energy.
— Luccioni et al. (2023)

2 Energy source matters most
A query powered by renewables is fundamentally different from one powered by coal. The grid mix matters more than individual use.
— Couch (2026); Hank Green

3 AI can also save resources
AI leak detection saved billions of gallons of water. AI irrigation tools saved 19B gallons in 2 years across Latin America.
— Masley (2025)

4 Be critical of headlines
The "bottle of water per query" stat conflates different water types and worst-case assumptions. Interrogating claims = AI literacy.
— Li et al. (2023); Masley (2025)

5 Systemic change > individual guilt
Supporting green energy transition is more impactful than avoiding AI. Be an informed, intentional user.
— Couch (2026); Ritchie (2025)

Reference

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Created for educators | Data as of early 2026 | Numbers represent best available estimates and vary by model, provider, and location