

# Advanced Micro Devices (AMD.O/AMD US) Price as of Aug 2: US99.3

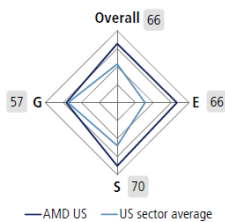
## Negatives mostly priced in; reshaped for long-term growth

### Trading data

Mkt cap (US\$bn)	160.9
Outstanding shares (mn)	1,621
Institutional ownership (%)	68.5
3M avg. daily trading (mn)	105.9
52-week trading range (US\$)	71.6-164.5

Performance	3M	6M	12M
Absolute (%)	9.0	(17.3)	(11.8)
Relative (%)	11.0	(8.7)	(4.3)

### ESG score card



Source: Refinitiv, KGI securities

### Event

AMD (US) 2Q22 EPS arrived in line with expectations, but 3Q22 EPS guidance missed consensus on lower-than-expected revenue and margin guidance. PC market softness is the main reason, as AMD trimmed the overall 2022 PC TAM again to about a 15% YoY decline (8-9% YoY decline estimated three months ago). That said, AMD still expects normal seasonality for the PC market in 4Q22, similar to Intel (US). Intel will raise pricing for PCs in 4Q22F. By end market, data center (23% of 2Q22 sales) and game consoles will outperform in 3Q22F, while PC (33%) and gaming GPU will underperform. Days of inventory was flat QoQ at 79 days.

### Impact

**Weak 3Q22 demand, but server outperforming on CPU market share gains.** Most weakness will be in the PC segment in 3Q22F. AMD expects only data center and game consoles to see sequential revenue growth in 3Q22, while data center, embedded, and PC will deliver sequential revenue growth in 4Q22F. For server, despite SK Hynix (KR), Samsung (KR), and Intel all guiding that server demand is weakening on potential inventory adjustments in 2H22, we estimate AMD will deliver over 25% HoH revenue growth in 2H22 (vs. Intel's 5-10% HoH decline). As AMD is more focused on hyperscalers and continues to see market share gains, we think its data center business will be less affected by potential project delays by corporations. We forecast AMD's server CPU (value) market share might reach around 25% in 4Q22, up from 20%+ in 2Q22.

**Genoa and RDNA 3 are on track to ramp up in 4Q22.** While Intel is suffering from internal quality issues for Sapphire Rapids and software issues for Arc products, AMD reiterates that its Genoa CPU and RDNA 3 GPU are on track to ramp up in 4Q22. We believe that concerns about potential pricing competition or AMD's loss of discrete GPU market share are limited as Intel's execution is still a question mark.

### Key financials and valuations

	Dec-19A	Dec-20A	Dec-21A	Dec-22F	Dec-23F
Revenue (US\$mn)	6,731	9,763	16,434	26,252	29,315
Gross profit (US\$mn)	2,874	4,353	7,934	14,140	16,172
Operating profit (US\$mn)	840	1,657	4,069	7,838	9,083
EBITDA (US\$mn)	1,062	1,969	4,476	8,268	9,585
Net profit (US\$mn)	756	1,575	3,435	6,685	7,756
EPS (US\$)	0.63	1.28	2.80	4.24	4.75
Revenue growth (%)	4.0	45.0	68.3	59.7	11.7
EPS growth (%)	41.7	105.1	118.0	51.6	12.1
Gross margin (%)	42.7	44.6	48.3	53.9	55.2
Operating margin (%)	12.5	17.0	24.8	29.9	31.0
EBITDA margin (%)	15.8	20.2	27.2	31.5	32.7
Net debt to equity (%)	Net Cash	Net Cash	Net Cash	Net Cash	Net Cash
Return on average equity (%)	16.7	57.5	46.8	23.4	13.0

Source: Company data, KGI Research estimates

**Figure 1: Breakdown of 2023 forecast revisions**

	2023F revisions	2023F previous	Diff. (%)
Revenue (US\$mn)	29,315	29,558	(0.8)
Gross profit (US\$mn)	16,172	16,309	(0.8)
Operating profit (US\$mn)	9,083	9,158	(0.8)
EBITDA (US\$mn)	9,585	9,775	(2.0)
Net profit (US\$mn)	7,756	7,786	(0.4)
EPS (US\$)	4.75	4.74	0.2
Revenue growth (%)	11.7	12.6	(93bps)
EPS growth (%)	12.1	12.3	(17bps)
Gross margin (%)	55.2	55.2	(1bps)
Operating margin (%)	31.0	31.0	(0bps)
EBITDA margin (%)	32.7	33.1	(38bps)
Net debt to equity (%)	Net Cash	Net Cash	-
Return on average equity (%)	13.0	13.1	(13bps)

Source: Company data; KGI Research

**Figure 3: Breakdown of 3Q22 guidance**

(US\$mn)	3Q22	QoQ (%)	YoY (%)	Consensus	Diff. (%)
Revenue	6,700	2.3	55.3	6,813	(1.7)
Gross profit	3,618	2.3	73.4	3,689	(1.9)
Gross margin (%)	54.0	(2bps)	561bps	54.2	(15bps)
Operating profit	1,977	(0.3)	87.3	2,051	(3.6)
Operating margin (%)	29.5	(76bps)	504bps	30.1	(61bps)
Net income	1,707	(0.0)	91.1	1,774	(3.8)
Net margin (%)	25.5	1,274bps	477bps	26.0	(56bps)
Diluted EPS (US\$)	1.05	0.1	44.2	1.10	(5.0)

Source: Company data; Bloomberg; KGI Research

**Figure 5: Revenue by business segment**

(US\$mn)	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22
Data Center	610	813	1,108	1,163	1,293	1,486
Embedded	42	54	79	71	595	1,257
Clients	1,638	1,728	1,692	1,829	2,124	2,152
Gaming	1,155	1,255	1,434	1,763	1,875	1,655
<b>Weighting (%)</b>						
Data Center	18	21	26	24	22	23
Embedded	1	1	2	1	10	19
Clients	48	45	39	38	36	33
Gaming	34	33	33	37	32	25
<b>YoY (%)</b>						
Data Center					112	83
Embedded					1,317	2,228
Clients					30	25
Gaming					62	32

Source: Company data; KGI Research

**Figure 2: Breakdown of 2Q22 results vs. guidance & consensus**

(US\$mn)	2022	QoQ (%)	YoY (%)	Guidance	Consensus	Diff. (%)
Revenue	6,550	11.3	70.1	6,500	6,527	0.4
Gross profit	3,538	14.1	93.1	3,510	3,517	0.6
Gross margin (%)	54.0	136bps	643bps	54.0	53.9	13bps
Operating profit	1,982	7.9	114.5	1,950	1,970	0.6
Operating margin (%)	30.3	(94bps)	626bps	30.0	30.2	8bps
Net profit	1,707	7.4	119.4	1,462	1,685	1.3
Net margin (%)	26.1	(93bps)	585bps	22.5	25.8	24bps
Diluted EPS (US\$)	1.05	(7.2)	65.6		1.05	(0.0)

Source: Company data; Bloomberg; KGI Research

**Figure 4: Breakdown of 2022 guidance**

(US\$bn)	2022	YoY (%)	Revised (%)	Consensus	Diff. (%)
Revenue	26.3	60.0	0.0	26.3	0.2
Gross profit	14.2	79.0	0.0	14.1	0.4
Gross margin (%)	54.0	572bps	0bps	53.9	13bps
Operating profit	7.9	93.9	0.0	7.8	0.7
Operating margin (%)	30.0	524bps	0bps	29.9	14bps
Net income	6.9	99.8	0.0	6.7	2.7
Net margin (%)	26.1	520bps	0bps	25.5	64bps
Diluted EPS (US\$)	4.37	56.4	0.7	4.37	0.2

Source: Company data; Bloomberg; KGI Research

**Figure 6: Operating profit by business segment**

(US\$mn)	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22
Data Center	110	204	308	369	427	472
Embedded	(3)	6	23	18	277	641
Clients	530	538	490	530	692	676
Gaming	121	175	231	407	358	187
All others	(96)	(92)	(104)	(117)	(803)	(1,450)
<b>Operating margin (%)</b>						
Data Center	18	25	28	32	33	32
Embedded	(7)	11	29	25	47	51
Clients	32	31	29	29	33	31
Gaming	10	14	16	23	19	11
All others						
<b>Weighting (%)</b>						
Data Center	17	25	32	31	45	90
Embedded	(0)	1	2	1	29	122
Clients	80	65	52	44	73	129
Gaming	18	21	24	34	38	36
All others	(15)	(11)	(11)	(10)	(84)	(276)
<b>YoY (%)</b>						
Data Center					288	131
Embedded					(9,333)	10,583
Clients					31	26
Gaming					196	7
All others					736	1,476

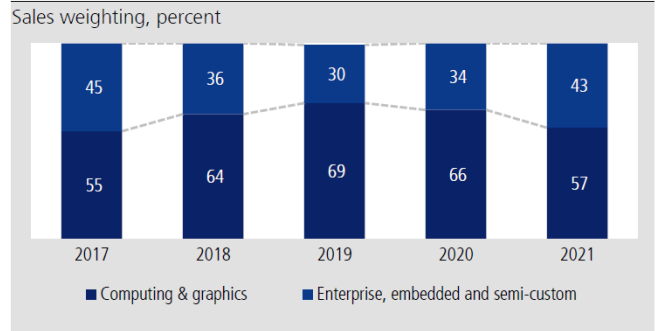
Source: Company data; KGI Research

**Figure 7: Company profile**

Founded in 1969, Advanced Micro Devices (AMD) is a global fabless semiconductor company that designs and sells integrated circuit (IC) products (CPUs and GPUs) for PCs, servers, and game consoles (Microsoft Xbox and Sony PlayStation). AMD has been gaining market share from Intel (INTC; US) in the PC and server CPU markets. In 2020, AMD had a respective 19% and 6% unit market share in the PC and server CPU markets, up from 9% and 0% in 2015.

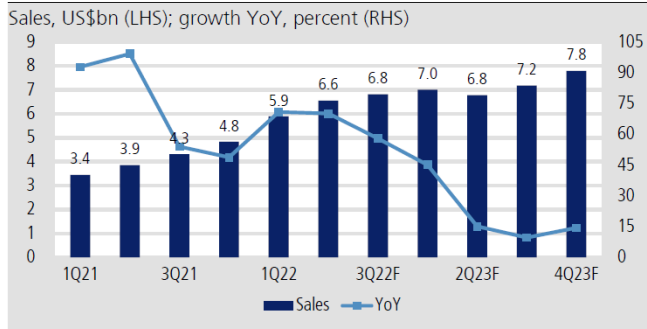
Source: Company data; KGI Research

**Figure 8: Revenue by end market**



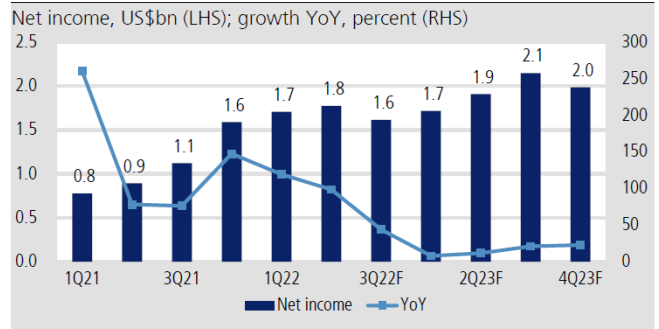
Source: Company data; KGI Research

**Figure 9: Sales & YoY**



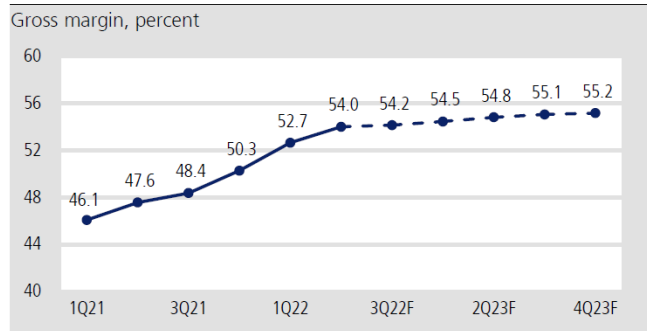
Source: Company data; KGI Research

**Figure 10: Net income & YoY**



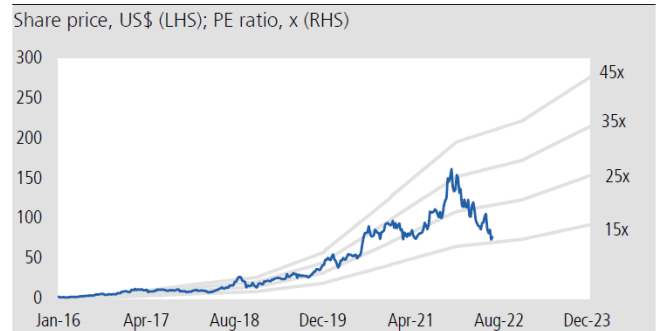
Source: Company data; KGI Research

**Figure 11: Gross margin**



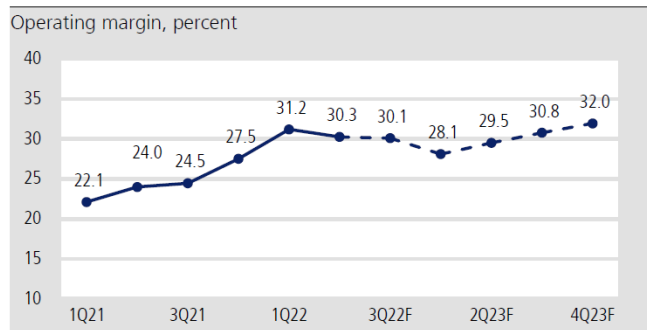
Source: Company data; KGI Research

**Figure 12: 12M forward PE band**



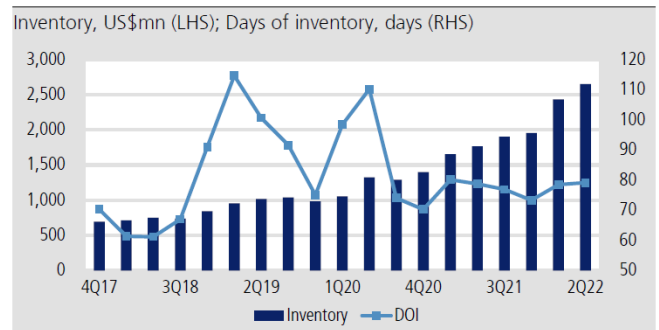
Source: Bloomberg; KGI Research

**Figure 13: Operating margin**



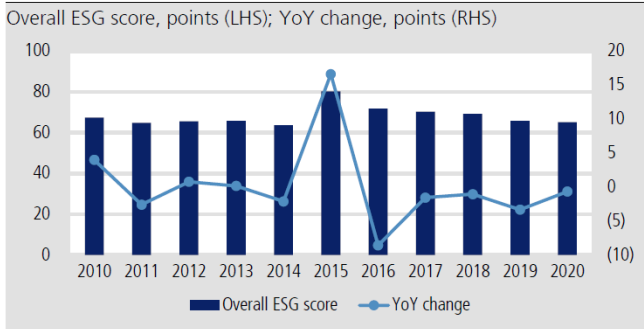
Source: Company data; KGI Research

**Figure 14: Inventory & DOI**



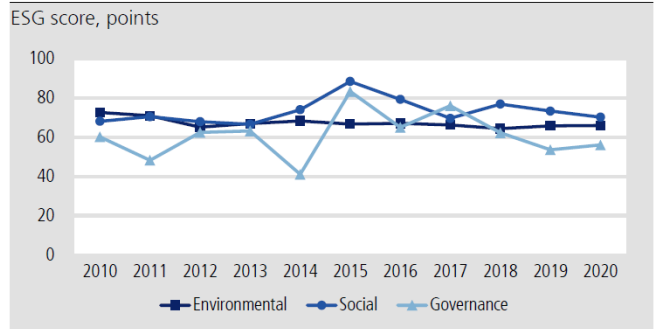
Source: Company data; KGI Research

**Figure 16: AMD – Overall ESG score**



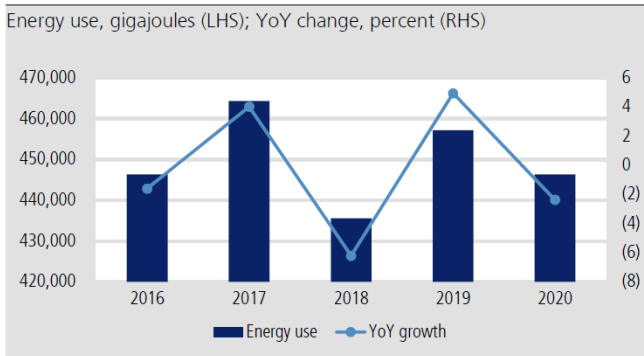
Source: Refinitiv; Company data

**Figure 17: AMD – ESG score by category**



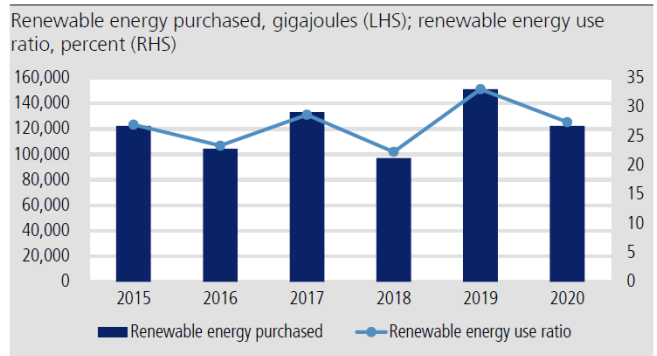
Source: Refinitiv; Company data

**Figure 18: AMD – Energy use**



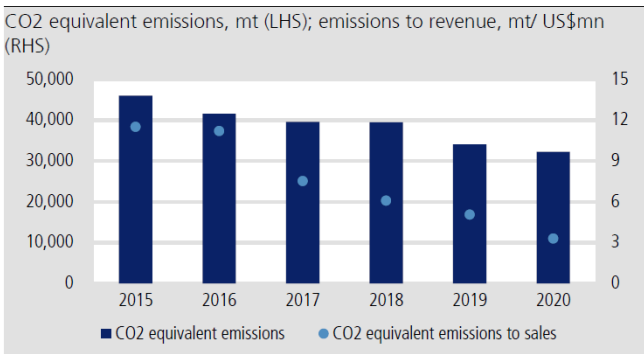
Source: Refinitiv; Company data

**Figure 19: AMD – Renewable energy**



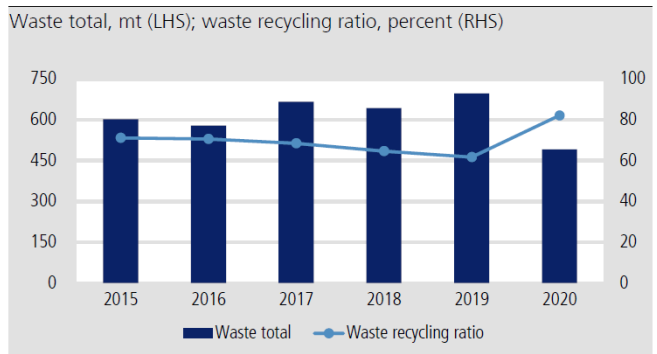
Source: Refinitiv; Company data

**Figure 20: AMD – CO2 equivalent emissions**



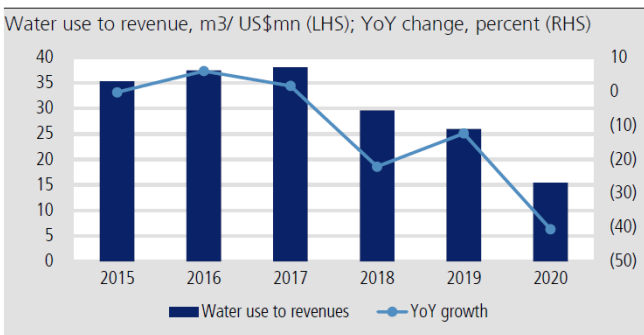
Source: Refinitiv; Company data

**Figure 21: AMD – Waste total**



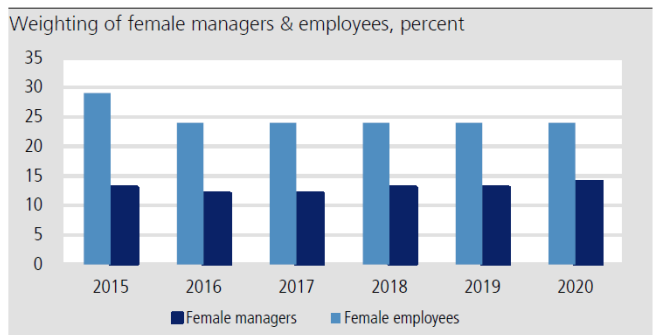
Source: Refinitiv; Company data

**Figure 22: AMD – Water use to revenue**



Source: Refinitiv; Company data

**Figure 23: AMD – Gender diversification**



Source: Refinitiv; Company data

Item	Definition
Energy use	Total direct and indirect energy consumption in gigajoules. - the total amount of energy that has been consumed within the boundaries of the company's operations - total energy use = total direct energy consumption + indirect energy consumption - purchased energy and produced energy are included in total energy use - for utilities, transmission/ grid loss as part of its business activities is considered as total energy consumed and data does not consider electricity produced to answer energy use (utility company produces to sell) - for utilities, raw materials such as coal, gas or nuclear used in the production of energy are not considered under 'total energy use'
Renewable energy purchased	Total primary renewable energy purchased in gigajoules. - energy consumed by the company from various sources and among the purchased energy, how much energy is renewable in nature (solar, wind, hydro, biomass, geothermal) are in scope - if there is no evidence that renewable energy is produced by the company, then we consider the reported energy figure as renewable energy purchased
Renewable energy use ratio	Renewable energy to total energy used
CO2 equivalent emissions	Direct CO2 and CO2 equivalent emissions in metric tons. - direct emissions from sources that are owned or controlled by the company (scope 1 emissions) - following gases are relevant: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorinated compound (PFCS), sulfur hexafluoride (SF6), nitrogen trifluoride (NF3)
CO2 equivalent emissions to sales	Direct CO2 and CO2 equivalent emissions (metric tons) to sales (NT\$m) - direct emissions from sources that are owned or controlled by the company (scope 1 emissions) - following gases are relevant: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorinated compound (PFCS), sulfur hexafluoride (SF6), nitrogen trifluoride (NF3)
Waste total	Total amount of waste produced in metric tons. - total waste = non-hazardous waste + hazardous waste - only solid waste is taken into consideration, exceptionally if liquid waste is reported in metric tons, then we do the summation to derive total including liquid waste - for sectors like mining, oil & gas, waste generation like tailings, waste rock, coal and fly ash are also considered
Waste recycling ratio	The waste recycling ratio as reported by the company. - waste recycling ratio = waste recycled/total waste*100 - waste to energy or waste incinerated with energy recovery are considered as waste recycled - waste recovered via composting is considered as recycled waste
Water withdrawal total	Total water withdrawal in cubic meters. - the total volume of water withdrawn from any water source that was either withdrawn directly by the reporting organization or through intermediaries such as water utilities - different sources of water like wells, town/utility/municipal water, river water, and surface water are considered
Environmental expenditures	Total amount of environmental expenditures. - all environmental investment & expenditures for environmental protection or to prevent, reduce, control environmental aspects, impacts, and hazards. It also includes disposal, treatment, sanitation, and clean-up expenditures
Turnover of employees	Percentage of employee turnover. - includes employees who left the company for any reason (voluntary or involuntary), such as resignations, retirement, natural departure/death, medical incapacitation, redundancy, layoffs, restructuring, dismissal, retrenchment or end of a fixed-term contract - employees turnover rate = (employees leaving/average number of employees)*100 - where the average number of employees = (employees at the end of the current year + employees at the end of the previous year)/2 - employees at the end of the current fiscal year = employees at the end of the previous fiscal year + new employees - employees leaving
Women managers	Percentage of women managers. - percentage of women managers among total managers of the company - if there is a breakdown by category in percentage, such as top, senior, middle, and junior management, then we consider the percentage of middle women managers - percentage of women managers = number of women managers/total number of managers*100
Women employees	Percentage of women employees. - percentage of women employees to the total number of employees of the company - percentage of women employees = number of women/total number of employees*100
Training hours total	Total training hours performed by all employees. - consider only employee training hours - includes all types of training given to general employees (such as health & safety, environmental, emergency response, skills & career development training) - if the value is given in days, multiply by 8, assuming that 1 day = 8 hours worked
Training hours per employee	Training hours per employee per year

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