BURNS TRUST:

The Amazon *Unsustainability* Report

BY AMAZON EMPLOYEES FOR CLIMATE JUSTICE

Table of Contents

Originally published June 2024.
Updated October 2024.

“Executive” Summary

Or, the summary the executives aren’t giving you.

In 2018, Amazon had no comprehensive plan to address the climate crisis. It didn’t even release carbon footprint data. So a group of us tech workers came together and decided to change that.

We first tried to use our power as shareholders to file a resolution as a group, asking for Amazon to release a climate plan. We wrote and circulated an open letter, gathering over 8,700 worker signatures. Amazon responded with its first public climate commitment with a date, called Shipment Zero, and asked us to withdraw our resolution. Instead, we packed the annual shareholder meeting with concerned employees. Amazon’s Board led the charge in voting down our resolution, so we decided to organize our own walkout as part of the 2019 Global Climate Strike, gathering over 1,700 pledges from employees around the world to join us in walking out.

The night before our walkout, **Amazon finally did what its workers had been demanding: Jeff Bezos held a surprise press conference and announced the Climate Pledge**. The Climate Pledge commits Amazon, and any company who signs it, to net-zero emissions across all its operations by 2040. Amazon also reaffirmed its Shipment Zero goal (a commitment it would later cancel), and announced electric vehicle and reforestation initiatives. And it released its carbon footprint data for the first time, committing to report carbon emissions regularly.

The Climate Pledge was a massive victory for workers and for the planet. This was also the origin of our group: Amazon Employees for Climate Justice (AECJ).

But despite releasing a glowing sustainability report every year since then, **Amazon is failing to meet its goals.** So now it’s time for us, Amazon workers who care about the future of the planet, to step in and make sure the company gets back on the right track.

Here are some of our key findings that we're concerned about:

- **Amazon is moving in the wrong direction on its most important goal.** The company promised to reach net-zero emissions by 2040. But it doesn't have any interim reduction targets to get there, and its annual carbon emissions have grown by a whopping 34.5% since 2019. What Amazon emits in one year is equivalent to you or I deciding to take a long-haul plane flight every day for 94,000 years. In fact, Amazon emits more carbon pollution than the 71 lowest emitting countries combined. *How can Amazon be taking its responsibility seriously as a major carbon polluter, when its emissions have ballooned since The Climate Pledge? [read more]*

- **Amazon dramatically undercounts its carbon pollution.** For example, the company does not count the lifecycle emissions of all the products that it sells; it only counts the emissions of Amazon-branded products, which make up a paltry 1% of sales. *How can Amazon be a sustainability leader when it's behind other major retailers like Target and Walmart, who do count the emissions of third-party products? [read more]*

- **Instead of practicing transparency, Amazon quietly deleted a goal it wasn't on track to hit.** An investigative reporter discovered the company removed its Shipment Zero goal to make half of shipments net-zero by 2030 and deleted the original blog post announcing it. Amazon has also been removed from the Science Based Targets Initiative, which validates companies' evidence-based goals, after Amazon didn't follow through on its commitment to participate. *How can we trust the company to lead on sustainability if it won't be accountable to its own, much publicized commitments? [read more]*

- **Despite claims that the company has reached 100% renewable energy, the reality on the ground is that its data centers are driving up demand for fossil fuels.** Our research shows that Amazon is using creative accounting and an overreliance on low quality renewable energy credits (RECs). When we look at the locations in the US where Amazon actually operates its data centers, we estimate that Amazon only gets 22% renewable energy from the local utilities in those regions. And it is investing in data center expansion in locations heavily dependent on oil, gas, and coal — like Northern Virginia and Saudi Arabia. *How can Amazon claim that its operations are powered by 100% renewable energy when the renewable energy projects it is responsible for... don't actually power its operations? [read more]*

- **Amazon makes billions from selling tailored AI services to fossil fuel companies**, helping them extract more oil and gas. We project that by next year, Amazon Web Services (AWS) could be making $9.6 billion annually from the oil and gas industry alone — about 10% of AWS revenue. H*ow can Amazon become*

sustainable if its profits are tied to helping fossil fuel industries expand? [read more]

- **Amazon's current electric vehicle commitments likely won't even cover a third of the packages it's projected to deliver in 2030.** Amazon's existing deployments of electric delivery vehicles only handle portions of the trips for, at best, 9.7% of packages it delivered last year. *Is Amazon properly accounting for its planned growth when committing to sustainability, or will growth always trump the planet? [read more]*

- **Amazon's warehouses drive massive air pollution that largely affects surrounding communities of color.** In the US, 69% of Amazon warehouses have more people of color living in a mile radius than the rest of the region. The county of San Bernardino, an area full of Amazon warehouses because 40% of Amazon's global goods make their way through the Inland Empire, has been ranked as having the worst ozone pollution in the US, recently suffering an average of 175 days of unhealthy air each year. *How can Amazon claim to be responsible towards the environment and communities when its business activities spike the rates of asthma, heart disease, lung cancer, and premature death in surrounding communities? [read more]*

- **Amazon warehouse and delivery workers have suffered under extreme heat.** In response to worker concerns at a San Bernardino warehouse, the company asserted that temperatures at the facility had never exceeded 77 degrees Fahrenheit. Workers snuck thermometers in and recorded temperatures soaring to 89 degrees in the warehouse, 96 degrees inside cargo trucks, and 121 degrees on the tarmac, where workers spent much of their days unloading planes. Amazon Management handed out popsicles in Chicago instead of installing AC, refused to fix broken fans in the Seattle region, and even refused to turn on fans in Bessemer, Alabama. Extreme heat is a matter of life and death — workers in New Jersey have collapsed and died during heat waves. *How can Amazon claim that it strives to be "the Earth's safest place to work" while making workers beg for adequate conditions in extreme weather? [read more]*

- **Injury rates for low-wage logistics workers at Amazon are among the worst in the industry.** Amazon's injury rate was nearly triple the injury rate at Walmart. Over 40% of Amazon warehouse workers report being injured on the job. Meanwhile, Amazon expends considerable resources to suppress workers' attempts to come together and demand safer working conditions. It's even legally questioning the existence of the National Labor Relations Board, the US federal agency that enforces workers' rights to have a voice at work. *How can Amazon claim that it strives "to be Earth's Best Employer" while attempting to gut any recourse workers have when their rights are violated? [read more]*

So there you have it. This is the reason we're writing this report.

We are Amazon employees who imagine a different Amazon:

One that values all of its workers across the supply chain.
One that values the natural world and respects its limits.
One that values the communities where it operates its business.

Over the course of this report, we'll dive deep (maybe deeper than you wanted!) into where we think the company has gone in the wrong direction. But we won't leave you with solely a negative picture. We'll include improvements, suggestions, and visions for a more honest and sustainable plan going forward.

If you work at Amazon and share our concerns and our values, join us. Together we'll push the company to do better.

INTRO

What Is This & Who Are We?

Amazon Employees for Climate Justice (AECJ) is the group of Amazon workers who pushed Amazon to create The Climate Pledge. We strongly support Amazon's stated commitment to incorporate sustainability into its business practices. However, our research of publicly available information has us concerned that the company is moving in the wrong direction.

Every year since 2018, Amazon has released a Sustainability Report. That report touts the company's various programs and commitments, but doesn't offer an honest picture of the challenges it faces, where it is behind schedule, the negative impacts its practices have on workers or the community, or the controversies surrounding its reporting methodologies.

Therefore, AECJ has decided to release our own sustainability report. Our sources include news, journal articles, books, interviews with public figures and experts, and Amazon's own external communications. We will not be leaking any company information that has not already been publicly reported. We are only putting pieces together because Amazon is not sharing the full picture. It's possible that the company will respond to this document with new information; it may even correct our analysis. We welcome that.

We believe that public pressure, public policy, and nation-wide (even global) standards are more powerful tools to solve climate change than concentrated corporate power. But as the people who make Amazon run, we know we have our part to play and can do better. Our goal is to review where Amazon is in its journey to make the company sustainable, equitable, and transparent about its progress in an honest and readable document. We hope it's useful, and that it inspires you to act.

A quick note on what has changed since we first released this report: Amazon released its Sustainability Report for 2023. We have therefore replaced some figures where the company has given us more up-to-date numbers, and updated our analysis where necessary to be accurate. This includes, but is not limited to, Amazon's total carbon footprint numbers, numbers of electric vehicles deployed, the reach of its renewable energy projects, claims of reaching 100% renewable energy, and developments in shipping. In the interest of staying true to scope, we have chosen to limit our analysis of entirely new sections and material, except where we have strong concerns that Amazon's messaging is confusing or misleading.

PART ONE
The Big Numbers

Sometimes it feels like anything you write on climate has to start with how bad things are. And it's true that the stakes are high and the situation is urgent; no one should take it lightly. Still, we're going to keep this part short, because it's not doomsday when we can still do something. We want to give a quick picture of the urgency according to the best scientific consensus, and why that consensus demands bold action.

The Current State of the Climate

Already, the world is 1.1 degrees Celsius (2 Fahrenheit) hotter on average than it was before the rise of fossil fuel combustion in the 1800s. That warming means more extreme heat waves, wildfires, and floods. According to the Intergovernmental Panel on Climate Change (IPCC), continuing current policies and levels of emissions could result in warming the planet 3.2C by 2100, which will render many parts of the planet uninhabitable for humans, to say nothing of the catastrophic loss of life.

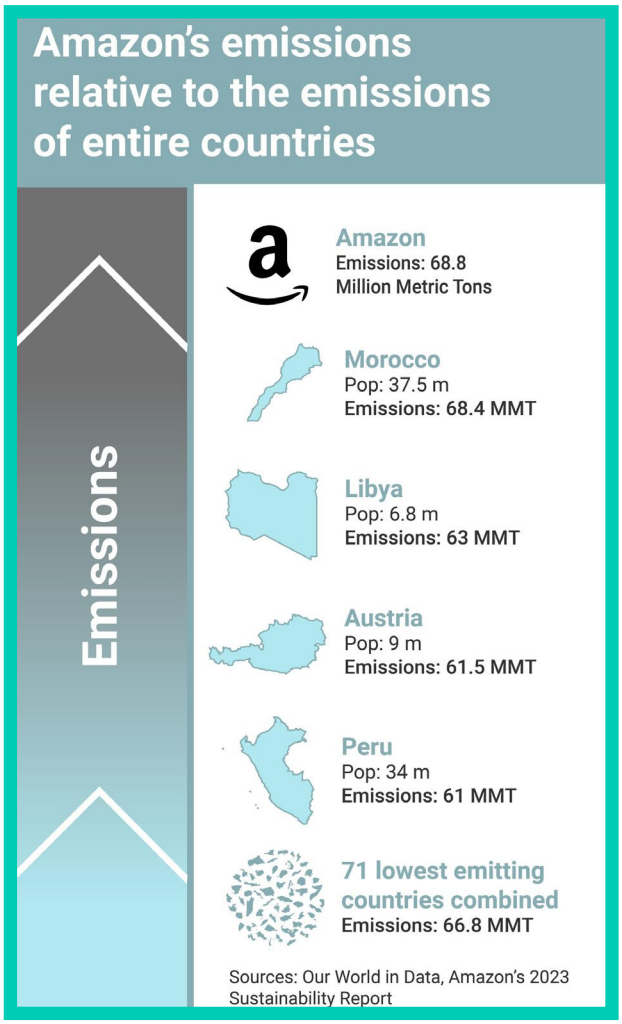
We're already locked into some degree of warming, at least temporarily, because any carbon or methane we emit now stays in the atmosphere, continuing to heat the planet for hundreds or even thousands of years. If decarbonization happens very aggressively, warming might be limited to not much beyond 1.5C.

But the emissions already committed from existing energy infrastructure — i.e. emissions from just keeping *current* fossil fuel-burning energy sources running for their projected useful lives — will already exceed the emissions threshold that would limit temperatures to a 1.5C increase, according to the IPCC's Climate Change 2023 Synthesis Report. To prevent catastrophic warming, therefore, *no new* fossil fuel infrastructure can be built, and *all existing* fossil fuel infrastructure must be rapidly decommissioned. **The focus needs to be on phasing out all fossil fuel usage, not further entrenching us with building new dirty infrastructure.** No new fossil fuel infrastructure means no new pipelines, no new oil wells or gas fracking, no new planes or diesel trucks.

Time is running out. The global average temperature from April 2023 to March 2024 was the hottest on record, *more* than 1.5C degrees hotter than the 1850-1900 average and 0.7C hotter than the 1991-2020 average. In fact, it's estimated that 2023 was the hottest year in at least 125,000 years, and that carbon dioxide (CO_2) levels haven't been this high in 14 million years. The IPCC noted in 2022 that global emissions must peak before 2025, in order to limit warming averages to 1.5C, and that global emissions must be reduced by 43% by 2030.

There is hope, of course. Global temperature can begin to stabilize when carbon dioxide emissions reach net zero. Unfortunately, the world is going in the opposite direction — carbon dioxide and related heat-trapping gasses in the atmosphere reached all-time highs in 2023, and we're now in the final year when global emissions must peak, according to the IPCC, and then start declining.

Amazon Emits Like a Country



Of course, the world is large, and the biggest changes of direction are likely to come from players who can operate at scale — countries, via international agreements like the Paris Agreement. So how does Amazon fit in?

Easily. If you're somebody who primarily worries over your personal carbon footprint when you think about climate change, **what Amazon emits in *one year* is equivalent to you or I deciding to take a long-haul plane flight every day for *94,000 years*.**

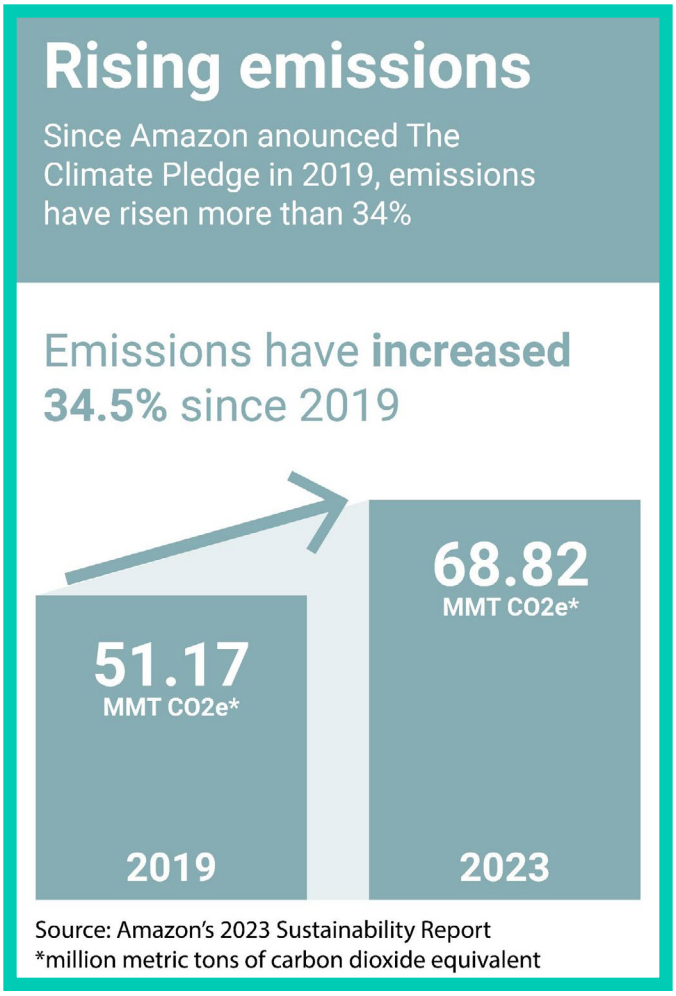
In fact, Amazon is operating at the scale of a country, and not a small country either. Amazon's 2023 emissions at 68.82 million metric tons CO2 equivalent (CO2e), by its own calculations, rank 49th, ahead of 166 countries' emissions in 2022 (last reported). Amazon's emissions surpass Morocco, for example, which has a population of 37.5 million people, as well as Libya, Austria, Peru, Greece, and Singapore. **In fact, Amazon emits more carbon pollution than the 71 lowest emitting countries *combined*.**

This means Amazon has similar obligations to a country. And for better or worse, the company has an advantage in meeting those obligations, because it has a stronger picture of all of its movements and resources than a country might, as well as networked influence on the global marketplace.

As Amazon leadership often reminds its employees through its leadership principles, Success and Scale Bring Broad Responsibility. So it's time to start acting like it.

Amazon's Rising Emissions

Fortunately, in 2019, thanks to escalating pressure from its own workers — that's us, AECJ! — Amazon did agree to be more responsible. Amazon created The Climate Pledge and outlined targets towards making the company a sustainable one. A year later, the company committed to submitting its goals to the Science Based Target



Initiative's (SBTi) verification process — a commitment it would later break. Every year since 2019, the company has released a "Sustainability Report" touting its progress.

The headlining goal of the Climate Pledge is to achieve net-zero emissions across operations by 2040. Net-zero refers to the point where emissions are generated at the same rate they're removed from the atmosphere, which in theory should be neutral for the climate. There are flaws with the concept and implementation of net-zero, which we'll get into. Still, having more companies with net-zero emissions should slow down the dangerously rapid rate of global heating.

Despite those commitments, **Amazon is moving in the wrong direction. In fact, the company's annual emissions have increased by 34.5% from 2019**. In the 2023 Sustainability Report, Amazon did announce a 2.7% decrease in emissions from 2022, but this tiny reduction is nowhere near what's necessary. Further, Amazon's scope 1 emissions, or those from the company's direct operations, increased by 7%. Scope 1 is the emissions category Amazon has total control over, and an increase in it paints a very different picture of the trend Amazon is on. According to one analysis, using the prior year's rate of decline, "it would take Amazon until 2378 to reach its stated 2040 target of net-zero emissions."

Missing Emissions

The 34.5% larger carbon footprint also doesn't include the emissions that Amazon has chosen to leave out.

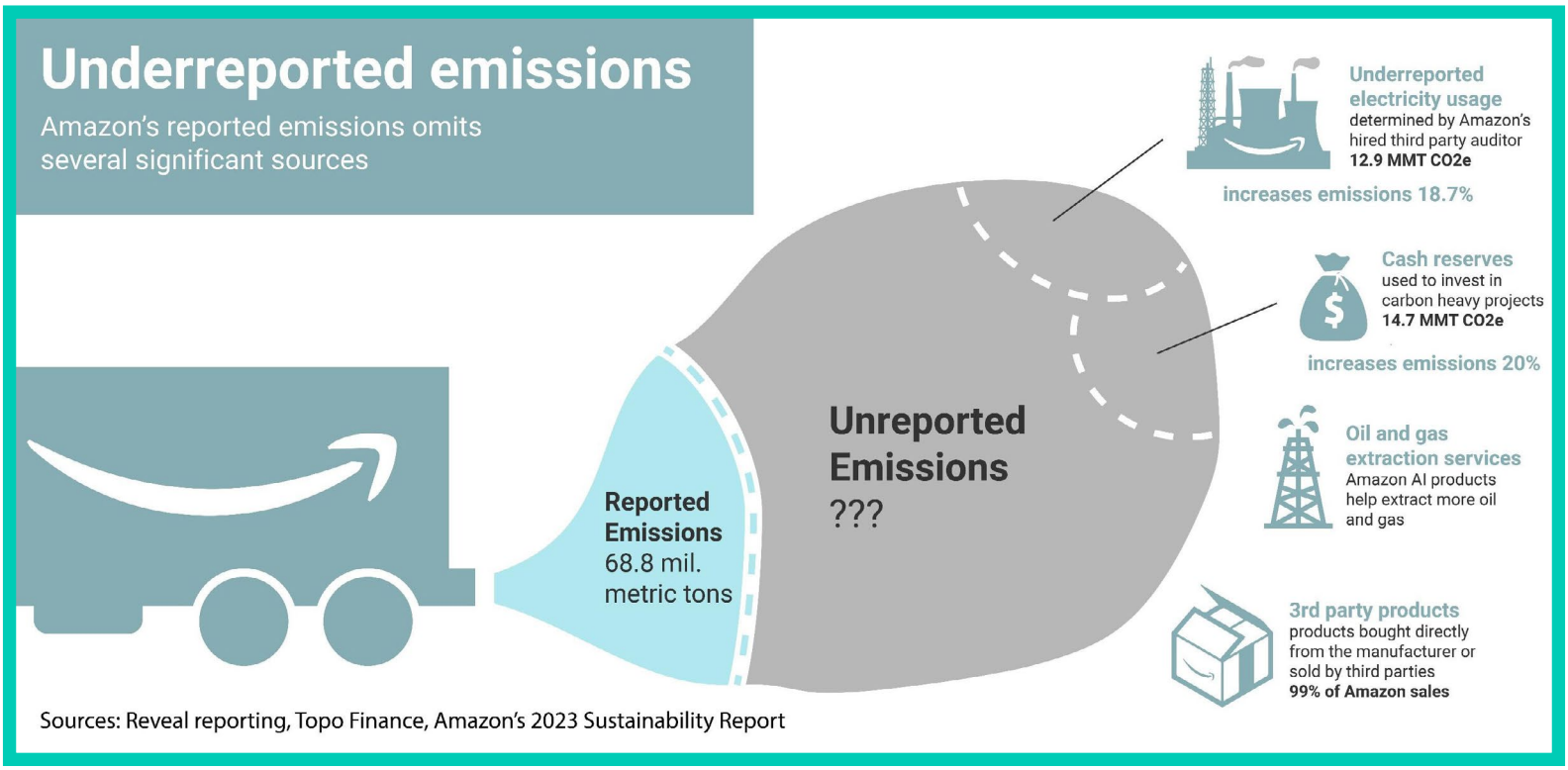
For example, Amazon does not count the emissions of 99% of the products sold in its marketplace. Unlike other large companies, such as Target and Walmart, it does *not* count emissions from the manufacture and use of products that it buys directly from the manufacturer and sells to the consumer (39% of its sales). Amazon also doesn't count emissions from products which are sold by third-parties on the Amazon website

(60% of its sales). Instead, **unlike other major companies, Amazon only counts the emissions from Amazon branded products, which account for about 1% of its sales**. This creative accounting has allowed Amazon to report 4 times the revenue of Target alongside 9% lower carbon emissions. So compared to its competitors, the company is dramatically undercounting its carbon footprint — even as it claims to be a leader in sustainability.

Additionally, on the investment side, Amazon stores both its own cash and employee retirement accounts in banks that can use this money to supply fossil fuel companies with loans. The Carbon Bankroll Report from March 2024 indicates that Amazon has $70,391 million cash holdings, and this is used by financial institutions to finance 14.7 million metric tons CO2e per year — equivalent to 21% of Amazon's 2023 emissions. For Amazon, this would be its third largest emissions source if it were reported.

Another way Amazon props up fossil fuel companies is by selling them services. Amazon Web Services (AWS) offers a suite of AI technologies for use by oil and gas companies to quickly discover and develop new fracking sites and oil wells. BPX (the US subsidiary of BP) presented a talk at the 2022 AWS Energy Symposium where they brag about how they use AWS to compute seismic data ten times faster in new oil fields. BP is the 14th most polluting company in the world. Amazon cannot claim to be a climate leader when the company continues to enable and support the growth of the largest polluters in the world.

Finally, Amazon uses an accepted but deeply flawed methodology for reporting renewable energy use, which effectively allows it to minimize the emissions from



powering its operations (more on this in the next section). The company's auditor calculated these emissions in a more literal, less creative way and found that that would bump up its total carbon footprint by about 18.7%. Eek!

Missing Goals, Shifting Baselines

This all means that Amazon is even farther behind in its primary goal of net-zero emissions than its public data shows. In fact, Amazon has since claimed it was too "difficult for us to submit" progress to the Science Based Target Initiative (SBTi) "in a meaningful or accurate way," and has been removed from SBTi's list of climate-conscious companies.

And Amazon has failed on other goals as well — or simply abandoned them. For example, the company announced a goal in 2019 called Shipment Zero to make half its shipments carbon neutral by the end of 2030. In 2023, it quietly deleted the goal from its website and released a statement saying that it "no longer made sense" alongside the plan to make *all* of its operations net zero… by 2040.

What we're left with is a massive goal set for more than a decade from now, with almost no public interim milestones. This requires a huge leap of faith — and gives Amazon a lot of room to exploit that faith.

There are other goals that have, on the surface, remained the same — but over the years, the specific language Amazon uses to describe them has shifted along with what seems to be a shifting baseline for success. For example, in its 2019 Climate Pledge, Amazon said it "made a long-term commitment to power its global infrastructure with 100% renewable energy." This was the same language used in its 2021 Sustainability Report — that it was "on a path to powering our operations with 100% renewable energy." But by the time the company announced it had met this goal — 7 years early, it claimed — the language had changed. Now it says, "in 2019, we set an ambitious goal to match 100% of the electricity we use with renewable energy by 2030." But is that actually the original goal? This word "match," as we'll see in our renewable energy section, is doing a lot of work here. And it certainly doesn't mean that Amazon literally powers 100% of its operations with renewable energy.

Another shifting baseline: the way that Amazon has calculated its actual carbon emissions has changed over time. Certainly, this may be because new considerations and methodologies are helping it become more accurate with its estimations, which is what the company claims. But given that Amazon doesn't always specify why they're adopting specific standards over others — such as the UK government's Defra standards over the EPA's for their energy emissions — and given that sometimes shifting standards can game emissions downwards to be more flattering to the company, we'd like to see more information and transparency here.

Case in point: the company explains that it recalculated its 2022 emissions with the updated methodology used for 2023, however it chose not to recalculate the years 2019 through 2021. And, it just so happens that the only years showing a decline in emissions are 2022 and 2023. So, how much of this decline is due to shifting methodology vs. real reductions in emissions? We just don't know without more transparency.

It's this kind of rhetorical gymnastics that allows the language of Amazon's Sustainability Report to be almost entirely positive every year. Sometimes that positivity is only possible through missing context, such as choosing absolute numbers that seem large (easy to do when you're contributing emissions at the scale of a country) instead of percentages.

For example, the Sustainability Report claims that 680 million packages in 2023 were delivered globally using electric vehicles. Sounds high! Except that Amazon Prime delivered *7 billion* packages globally with same or next day shipping in 2023. Amazon clearly delivers many more packages than that, but the company doesn't publish its total packages delivered. So, if we put the EV deliveries in context of this same or next day shipping number, that means the company is delivering an absolute maximum of 9.7% of packages with EVs. It's progress, but only a slice of the sheer number of packages delivered by the company.

How does the company intend to get to its net-zero goal then?

Amazon's answer is unclear. Some of its path *does* include investments in genuinely low-carbon technologies, such as solar and wind energy, as well as efficiency improvements. Which is great! But with Amazon's emissions 34.5% higher than just a few years ago (not counting all the omitted sources of carbon pollution) the plans don't seem to be adding up.

Net Zero, Offsets, and Buying Our Way Out

Amazon has no interim goals to bring down its total carbon pollution on path to zero by 2040 — or at least it won't share them with us, the public, or even the Science-Based Targets Initiative. Without a credible path that draws down emissions each year, on a glidepath to zero, how will Amazon ever reach its primary climate commitment? It can't wait till 2039 and wave a magic wand to erase all its carbon pollution. Or can it?

Remember that net zero goal? The "net" in that commitment allows Amazon to buy its way out of the problem. Whatever carbon pollution it chooses not to remove from its operations, Amazon can theoretically negate in the carbon accounting books by buying offsets.

Amazon's 2023 CDP Disclosure report says "we are driving actions outside of our

value chain, through nature-based and technological solutions, to enable a credible carbon market for companies that will need to neutralize remaining emissions." Plainly speaking, Amazon intends to buy offsets ("carbon market"), make that seem legitimate ("credible"), and claim emissions have been eliminated ("neutralize").

The "technological" and "nature-based" solutions that Amazon refers to are common methods of offsetting emissions. Both of these approaches are profoundly problematic.

Carbon offsets allow companies to pay certain amounts to finance projects that reduce greenhouse gas emissions elsewhere, and then strike the resulting estimated reduction in emissions from their own company totals. Offsets can include things like forest preservation, since trees absorb carbon, and carbon-storing agricultural practices.

They also include carbon capture technologies. According to the IPCC's Working Group III report, **carbon capture is one of the least-effective, most-expensive climate change mitigation options on Earth. Despite that, Amazon is pursuing carbon capture, as it could allow it to continue to pollute while claiming net-zero emissions.** However, the IPCC report shows that many options for tackling the climate crisis — from wind and solar power to greening cities with more biking, public transit and increased energy efficiency in existing buildings — are already cost effective, enjoy public support and would come with co-benefits for human health and nature.

Amazon also uses more "natural" carbon offsets. For example, the company helped create the Lowering Emissions by Accelerating Forest Finance (LEAF) Coalition, which is a group that aims to have the world's endangered forests serve as carbon sinks. This group, however, has a troubled history of issues with Indigenous communities local to the land it claims to protect. When governments sell land as forestry offsets to these large corporations, they often ignore the rights of the indigenous peoples who serve as stewards of these forests.

One example is the Kichwa people in Peru, who have fought the Peruvian government to reclaim rights to their land. The Peruvian government sold large tracts of their ancestral forest without any compensation for, or consultation with, the Kichwa. But when indigenous communities are given titles to the land, significantly less clearing and disturbance occurs. Not to mention the fact that sustainable indigenous practices have been and continue to be critical in the fight against the climate crisis.

Forestry offsets are also notoriously unreliable in the face of a changing climate. In Southern Oregon, the raging Bootleg Fire in July 2021 burned through 20% of the forests that were part of one of the Green Diamond timber company's climate offset projects. Microsoft had invested millions of dollars into this century-long project as part of its climate strategy, yet the trees burned, releasing 3.3 million metric tons of carbon dioxide. Furthermore, tree planting is functionally a form of greenwashing

because it does not address the immediacy of the problem. New forests take decades to become significant carbon sinks whereas the CO2 emitted today will stay in the atmosphere for 300 – 1,000 years. So, it's disingenuous, at best, to count the trees' future carbon removal potential — decades in the future — against the carbon emitted today.

There are also significant opportunities for fraud in the new industry surrounding offsets. Jim Hourdequin, a timber executive and one of the biggest sellers of offsets, came out with a critique about how offsets funnel money into protecting trees that weren't necessarily under threat, such as ones growing on steep, unharvestable slopes.

> *Carbon credits often, he said, amount to paying landowners to "not do what they were not going to do."*

When companies care more about the image of their sustainability practices than the actual environmental impact of their actions, there's no meaningful accountability. **Offsets are a band-aid on the widening wound of the climate crisis.** They may be useful at the margins, where certain aspects of industry emissions are most difficult to abate, but they cannot and should not be a major part of the plan.

So what exactly *is* Amazon's plan? And if it were failing, would Amazon leadership admit it?

We're not sure they would. So in this report, we'll go through key areas of Amazon's attempts at sustainability in different segments of its business — from the products it sells to the vehicles it ships in and beyond. We'll highlight points of concern, attempt to fill in the gaps in transparency, and articulate directions that we think the company must take to fulfill its responsibilities.

PART TWO

How Clean Is Amazon's Energy?

In March 2024, Amazon announced a plan to invest $5.3 billion into Saudi Arabia for the purpose of building new data centers by 2026, supporting Saudi Arabia's ambition of becoming a regional hub for artificial intelligence. As of 2022, Saudi Arabia's electricity was 100% powered by oil and gas.

This is interesting, to say the least, because one of Amazon's most important climate commitments is to achieve 100% renewable electricity. And according to the most recent sustainability report, the company is already claiming that it has met its goal to "match 100% of the electricity consumed by our global operations with renewable energy" — and that this is 7 years ahead of schedule for its original goal.

So how is it that Amazon can claim to be already at 100% renewable energy at the same time that it's investing billions into infrastructure that will rely on fossil fuels? How can it claim to be entirely powered by renewables in 2024, if by 2026 it'll have spent billions on new data centers powered entirely by oil and gas?

It turns out, the methodology that the company is using to claim it's hit this goal is a form of creative accounting, leaving a lot of room for fossil fuels to not only stay in the mix, but to grow.

Renewable Energy in the AI-Boom

One of the most urgent solutions for the climate crisis is to, as Saul Griffiths puts it, *electrify everything* — cars, stoves, heating, and, speaking for Amazon, delivery fleets, warehouses, and data centers, plus the processes to make all of those things. But the challenge doesn't stop there, because the *source* of all that electricity has to be green as well. An electric car might not emit greenhouse gases while you're driving it, but if the electricity it got from the charger was produced by burning coal, there's still a lot of emissions involved — not to mention the mining involved in extracting rare earth minerals to manufacture the battery in the first place (we'll go into more detail on this later). In fact, a whopping 34% of global human-caused emissions come from power generation for electricity and heat. And in the US, electricity generation alone contributes 25% of the nation's emissions.

Enter renewable energy. If all electricity could be sourced from solar, wind, hydroelectric, and other forms of emission-free energy, the loop could be closed without heating up the planet.

But the challenge to switch to renewables is enormous, because Amazon already uses a lot of electricity. In 2021 Amazon consumed 30,800 gigawatt-hours (GWh) of electricity. And that number keeps growing. In 2022 Amazon consumed 38,725 GWh of electricity — an increase of over 25% in one year! Amazon has not yet released this data for 2023, but with further expansion of data centers, we anticipate that total electricity consumed has continued to increase. Amazon's 2022 electricity consumption **is equivalent to 400% of the electricity consumption of the entire Seattle metro area in 2022, or 100% of Shanghai and Beijing's combined annual residential electricity consumption of over 44 million people.**

As companies rush to build data centers to meet increased demand for artificial intelligence, electricity demand is expected to be driven even higher. One peer-reviewed paper estimated that if current trends hold, NVIDIA will ship 1.5 million AI servers per year by 2027 — and that those servers will consume at least 85,400 GWh of electricity annually. Amazon won't necessarily be a prime customer of NVIDIA's, since it is heavily investing in its own AI-specialized chips for its servers, but we can use the estimated data about NVIDIA — the top global supplier currently — as a proxy, since Amazon doesn't share this data on its own AI chips. If we assume AWS's market share will remain similar through 2027, then Amazon could be deploying 465,000 new AI servers per year in the next few years. **That's a potential for at least 26,500 GWh of additional energy consumed by Amazon's AI servers per year, which is nearly 70% of Amazon's 2022 total electricity usage.**

Somehow, if Amazon is to keep its word, new renewable energy will need to be built at a rate that can supply the new energy demands from the AI-driven expansion. Even for the data centers in Saudi Arabia.

So is that actually happening?

Energy Accounting and RECs: A Primer

Amazon chooses to calculate its energy usage claims using a method that relies on Renewable Energy Credits (RECs). RECs are "certificates" or "credits" that track units of renewable energy that someone produces, and can be sold to others like Amazon to take "credit" for that amount of renewably-sourced electricity. RECs are different from general "offsets" because they are specific to renewable energy and can only be used to calculate emissions from electricity consumption. Companies will buy RECs to be able to tally zero emissions from the renewable energy of the REC *instead* of tallying the emissions associated with the electricity they purchase off of their local grids.

This is technical and difficult to understand intuitively, so instead, think of the energy mix in any electrical grid as the water in a reservoir. Different sources of electricity — renewables, gas, oil, coal — are like different pipelines dumping water into the reservoir. Some of the pipelines have clean water flowing through them (renewables), and some of them (gas, oil, coal) have only dirty water. But once it's all in the reservoir, it's impossible to tell which drop of water came from where. And unlike the atmosphere where we can account for carbon in one big bucket, there are many electrical grids with varying levels of connection to each other, which using our metaphor, means lots of separate reservoirs. Purchasing a REC is purchasing the right to say that a given bucket of water *a company used* from the local reservoir came from the *renewables pipeline*. This permits the company to say "*hey, we only buy non-dirty water!*"

RECs have been embraced on the grounds that they will promote private investment into *new* renewable energy generation. If we stick to the metaphor above, this means RECs are supposed to help fund *new* pipelines of clean water into the reservoir. New generation is important when the world is desperate to convert electricity generation from fossil fuels to renewable sources.

This is called the Market-Based Method of accounting, and it's one of the methods standardized and endorsed by the Greenhouse Gas Protocol (GHG Protocol). Under the Market-Based Method, the company can use RECs instead of calculating the actual emissions from the energy sources it uses to directly power its operations.

However, in practice, RECs may not be so effective. A study initiated by the GHG Protocol organization itself found that 42% of company commitments using RECs will

not achieve real-world mitigation of emissions, even if corporate reporting meets zero emissions using the Market-Based Method. This conclusion was based on evidence of REC purchases used in emission accounting that did not lead to construction of new renewable generation, which was the whole premise RECs are based on. In other words, no new clean water pipelines! Many other studies have reached similar conclusions (source, source, source).

Put simply, the risk is that a company like Amazon *could* use the Market-Based Method to report achieving 100% renewable energy via REC purchases, but not actually be contributing meaningfully to new renewable energy capacity. It could still be powering much of its operations with fossil fuels, or even investing in new fossil-fuel powered data centers and warehouses.

The leading alternative method of calculating emissions from electricity, also standardized by the GHG Protocol, is called the Location-Based Method. This method doesn't allow the use of RECs; it only calculates emissions using a company's yearly purchased energy consumption in each locality and the local electricity grid's emissions over that year.

So what if Amazon measured the emissions of its *actual* energy use? It turns out, its auditor did.

Using the Market-Based Method (that's the REC-friendly method), Amazon reported 2.79 million metric tons of CO2e for Scope 2 in 2023. **However, Amazon's auditor reported (in their footnotes) that according to the Location-Based Method (the method where RECs aren't used), Amazon's Scope 2 emissions were actually** 15.67 million metric tons of CO2e**.**

That's *five times* more emissions from electricity. And notably, emissions according to the Location-Based Method have jumped from 2022 by 23% — while the Market-Based ones have gone down marginally. No wonder Amazon is choosing the Market-Based Method — it's a lot more flattering.

This change alone easily eclipses the 3% reduction in carbon footprint that was reported in the 2023 sustainability report — reporting the Location-Based number rather than the Market-Based number increases Amazon's total reported emissions for 2023 by 18.7%!

This is a massive spike in emissions, and what this new number tells us is that Amazon must be using *a lot* of RECs to reach its renewable energy goal. Such dependence on this flawed method of reporting should raise alarms about *how* Amazon is using RECs. Because all RECs are not created equal. There are three major criteria that RECs can be judged on.

REC Criteria #1: Additionality

Does the REC purchase fund construction of new generation?

Additionality is the basic premise of what a REC should accomplish: launching *new*, clean and renewable electricity generation. Additionality can be simplified to "if Amazon didn't purchase the REC, would the renewable electricity still get generated?"

If the electricity still would have been generated, then the REC purchase didn't lead to new, "additional" renewable capacity. A common REC category that does not provide additionality is called "unbundled RECs," as they are certificates that are separated from the actual renewable energy that's been generated. Unbundled RECs are just trading around paper claims on electricity that other people already generated and consumed.

In our reservoir example, this is like Amazon approaching the owners of all the clean pipelines to the reservoir and saying "Amazon would like to pay you a little bit of money to tell everyone that it's your clean water the company uses when withdrawing from the reservoir." Sure! But RECs are cheap compared to the actual cost of energy production (as low as $0.35/MWh). So unless those pipeline owners use that money, and invest a lot more, to build *more clean water pipelines,* then this is just bragging rights. It doesn't make the water less dirty. Even though it's core to the premise of RECs, RECs used in GHG Protocol calculations are not actually required to provide additionality. It is up to companies, and those holding them accountable, to enforce that.

REC Criteria #2: Location

Can the purchased generation reach where the demand is (on a connected grid)?

According to current GHG Protocol rules, a REC can be used to offset electricity emissions from anywhere within the *standards jurisdiction* it was registered in. For instance, most RECs in North America and Europe can be applied to electricity consumed anywhere within each of those continents, regardless of whether the energy could ever possibly reach where it was consumed due to lack of grid connections (see US grid Interconnections) or lack of regional electricity market support. In reality, for at least some countries, including the US, the country's electricity grid is not one grid but multiple smaller grids — separate operations in each region that aim to balance supply and demand of electricity within their own region.

This means Amazon could be purchasing RECs somewhere in Canada, where hydroelectric power is abundant, or in Arizona where solar is abundant, and use them

to offset electricity emissions in Virginia, where fossil fuel power rules— despite the fact that that clean energy will never reach Virginia, and Virginia's regional grid will burn more fossil fuels to power Amazon's electricity demands. This type of accounting does not help transform the grid where the demand is; it instead lets Amazon evade responsibility by saddling local communities with the responsibility of burning more fossil fuels.

If we use our reservoir metaphor again, this means companies can buy rights to a clean water pipeline in one reservoir in order to use more dirty water from another reservoir a hundred miles away. Even if companies are using 100% dirty water — or even *building more* dirty water pipelines — they can still claim to be using 100% clean water. Creative accounting in action!

But in real life, location matters. Simply put, Amazon's Data Centers run on whatever percentage of renewable energy is available from the local utility. In the region that includes Northern Virginia's "data center alley," this is as poor as 7% renewable energy. **On average (weighting for the number of data centers in the various states and those states' local mix of energy sources), Amazon is using only 22% renewable energy across the US.** And yet the company claims it's met its goal of 100% renewable energy — a far cry from the reality on the ground.

REC Criteria #3: Time

Was the electricity generated when it was needed?

Current GHG Protocol rules only require companies to calculate emissions and account for RECs over the course of a year. This means a REC representing energy generated in March can be used to offset emissions for electricity consumed in October — or to claim that energy generated during the day was somehow used at night. It is not currently feasible for electricity to be stored in most of the world's grids for any length of time (although battery adoption is increasing), so even if renewable energy was generated during the day, it shouldn't be able to offset electricity used at night. In order to clean up the grid, there needs to be enough renewable energy available to meet demand around the clock.

To continue with our reservoir metaphor, imagine that during spring there's an abundance of clean water from snowmelt in the reservoir, but by fall, all that water's gone, and only dirty water pipelines provide cheap water. Does it make sense for a company like Amazon to use water in the fall, which came from 100% dirty sources, but still pay to claim that it used 100% clean snowmelt water that dried up months ago? Paying for clean water during a flood doesn't solve the problem of not having clean water during a drought. Amazon's RECs are used to subtract emissions across the whole year instead of at the time they are generated.

If a REC satisfies all three of these criteria — additionality, location, and time — only then can we be confident that it's meaningfully reducing emissions.

So how does Amazon perform against this bar?

It's somewhat hard to tell. For reasons Amazon is fully in control of, it does not disclose key information about the *quality* of RECs it uses, especially what *locations* or grids they are from, or *when* they are generated or used.

Here's what we can surmise.

Amazon's REC Problems

Additionality Problems

When it comes to quantity, Amazon is racking up the numbers. Amazon has over 500 renewable energy projects planned in its portfolio, of which 243 are wind or solar farms (i.e. utility scale projects), with launched generation capacity that has been almost doubling every year for the last few years. When fully operational, these projects are expected to produce 77,000 GWh.

These renewable energy projects span the globe, though as of mid-2024, utility scale projects are missing from many regions where Amazon operates, including Hong Kong, Switzerland, Bahrain, and the UAE. That said, the amount of renewables is genuinely impressive, and it sounds like Amazon *could* be providing good additionality.

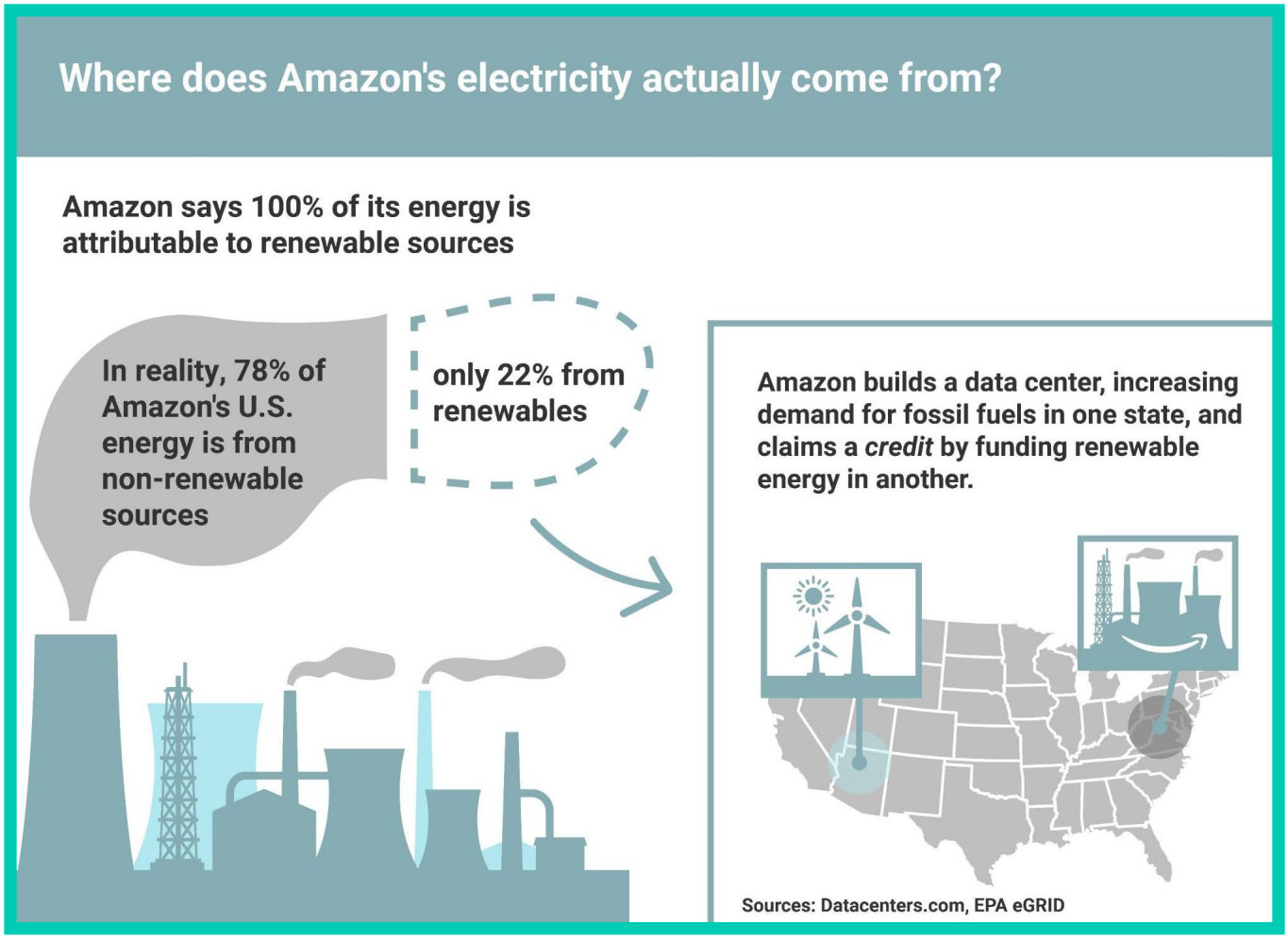
However, that's not what the company is reporting. In Amazon's 2023 CDP disclosure, it revealed that unbundled RECs make up 68% of the company's sources of renewable energy certificates. **This means that 68% of Amazon's renewable energy certificates do not fund any *new* renewable energy infrastructure.**

Location Problems

But wait! There's more! Amazon also fails at locating its renewable energy projects in the right places to use them. To investigate, AECJ conducted our own analysis of Amazon's renewable energy (RE) projects and data center locations, identifying which RE projects likely exist in a regional grid with a data center concentration. We overlapped data sets from July 2024 of Amazon's data center locations with its Amazon Web Services (AWS) renewable energy project locations, and then compared that map with the locations of regional electricity grids. We estimate that data centers which have renewable energy projects in the same regional grid are more likely to be able to use that energy; however, given that regional grid operations vary and span multiple local power utilities, the estimates may be optimistic.

In 2023, 14 of 33 operating AWS regions (42%) likely did not have any AWS renewable energy projects in the same regional grid. Even after accounting for renewable energy projects built or planned by July 2024, 7 AWS regions still have no AWS renewable energy projects in their regional grid. Of the renewable projects AWS was operating as of 2023, just over half of the energy generation (59%) was in the regional grid of an AWS data center. And when including the planned projects, that number only increases 2% to 61%. Looking solely at AWS's recent project announcements (from between November 2023 to July 2024), 79% of the generation has been in a regional grid with a data center hub. Still, much of the generation being built (39%) isn't co-located at all, but we hope that this more recent progress is a permanent trend and the company continues to increasingly invest in regions where it operates.

When Amazon's renewable energy projects are located far from its data centers, in separate regional electricity grids, the clean energy can't reach the data centers. So while a renewable energy project may be helping green the grid of one region, the energy demand of a data center in a different region can cause that region to increase its fossil fuels usage — which is exactly what's happening in key locations that we'll explore in the next section.



To say it again: location matters. Amazon's data centers *actually* run on whatever percentage of renewable energy is available from the local utility. The company claims it's matching 100% of electricity consumed across operations with renewable energy by buying RECs anywhere in the same continent.

However, when we look at the actual locations in the US where Amazon is operating its data centers — the largest source of energy consumption within its operations — **we estimate that Amazon only gets 22% renewable energy from the local utilities in those regions. This discrepancy sheds light on why Amazon's auditor found its total emissions are 18.7% higher** when using the Location-Based Method of accounting and removing RECs.

Time Problems

Lastly, we arrive at the criteria of time. Amazon accounts for RECs used over the course of a whole year, not by hour. Although Amazon has not released any data about how their generation might match their consumption at hourly time scales, Google's 24/7 carbon free energy plan can serve as an example. Google released the data below that shows how Google's data centers use significant carbon-based energy when looking at an hourly accounting of energy supplies, even if the company can report 100% renewable energy on the year (which Google already does).

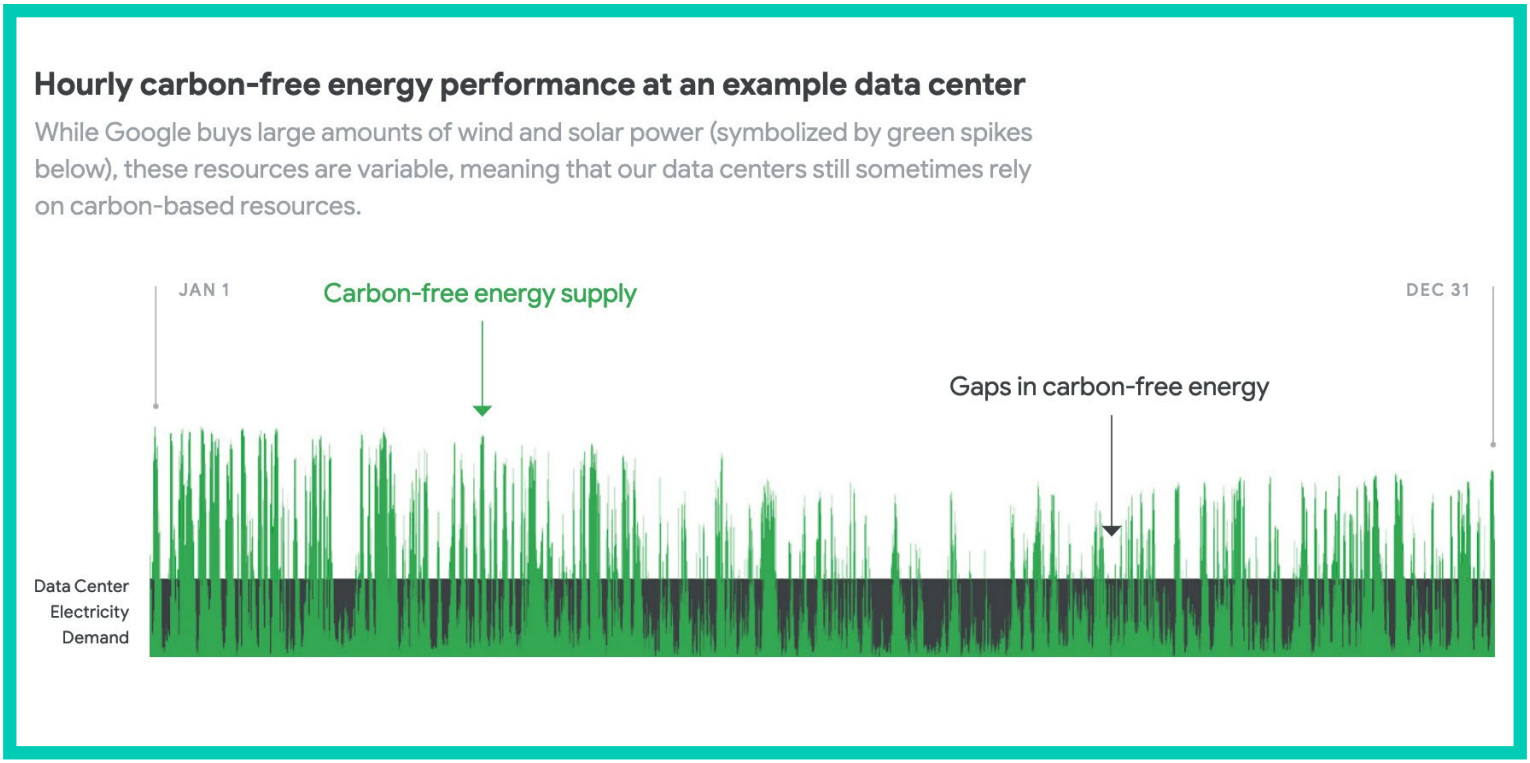


Figure from Google's 24/7 carbon-free energy plan on the impact of hourly accounting

In 2020, Google became the first company to adopt an hourly accounting goal to reach 24/7 carbon-free energy on every grid where it operates by 2030. **Amazon doesn't have any goals related to accounting for time in renewable energy matching, which raises the question: why not?** Is it because the company is not tracking the data, or because the data isn't flattering to a self-styled "climate leader"?

Amazon and the Grid

As we have talked about repeatedly, location matters. For a tangible depiction of Amazon's impact, let's consider three examples from the real world (moving on from reservoirs!): its lobbying in Oregon, its reliance on fossil fuel powered grids in Virginia, and the way it's hitting limits in Ireland.

Oregon

Amazon is one of the largest customers of Umatilla Electric Cooperative, a small utility company in Eastern Oregon. Local governments have given Amazon $100 million in tax breaks as an incentive to build its data centers in Eastern Oregon, and local counties in Oregon have promised other incentives worth more than $1 billion.

But Umatilla Electric, which used to supply its rural clientele mostly through hydroelectric power, is unable to service Amazon's power needs with renewable sources. Though Amazon has announced one deal to purchase power from and add efficiency to a nearby wind farm, the power it will receive is likely as little as 4% of Amazon's current usage in Oregon. The new data centers in the area will therefore mostly be powered by gas — with new pipelines to connect the data centers to the Gas Transmission Northwest (GTN) pipeline.

The pipeline's parent company, TC Energy, has used Amazon's data center expansion as justification to build a capacity expansion to push more gas through this pipeline. And Umatilla Electric's emissions per megawatt-hour are now 543% higher than a decade ago because of data center electricity demand. Amazon even aggressively lobbied against and helped to kill a bill in Oregon's state legislature in an effort to make sure data centers were exempt from the state's clean energy requirements.

Amazon will almost certainly be "compensating" for these dirty energy data centers in Oregon by purchasing RECs in other regions. Meanwhile, Amazon's planned use of gas at these Oregon data centers is driving justification for the GTN gas pipeline expansion. **The RECs don't matter if Amazon is still driving up demand for *new* fossil fuel expansions, precisely at the time fossil fuels must be phased out!**

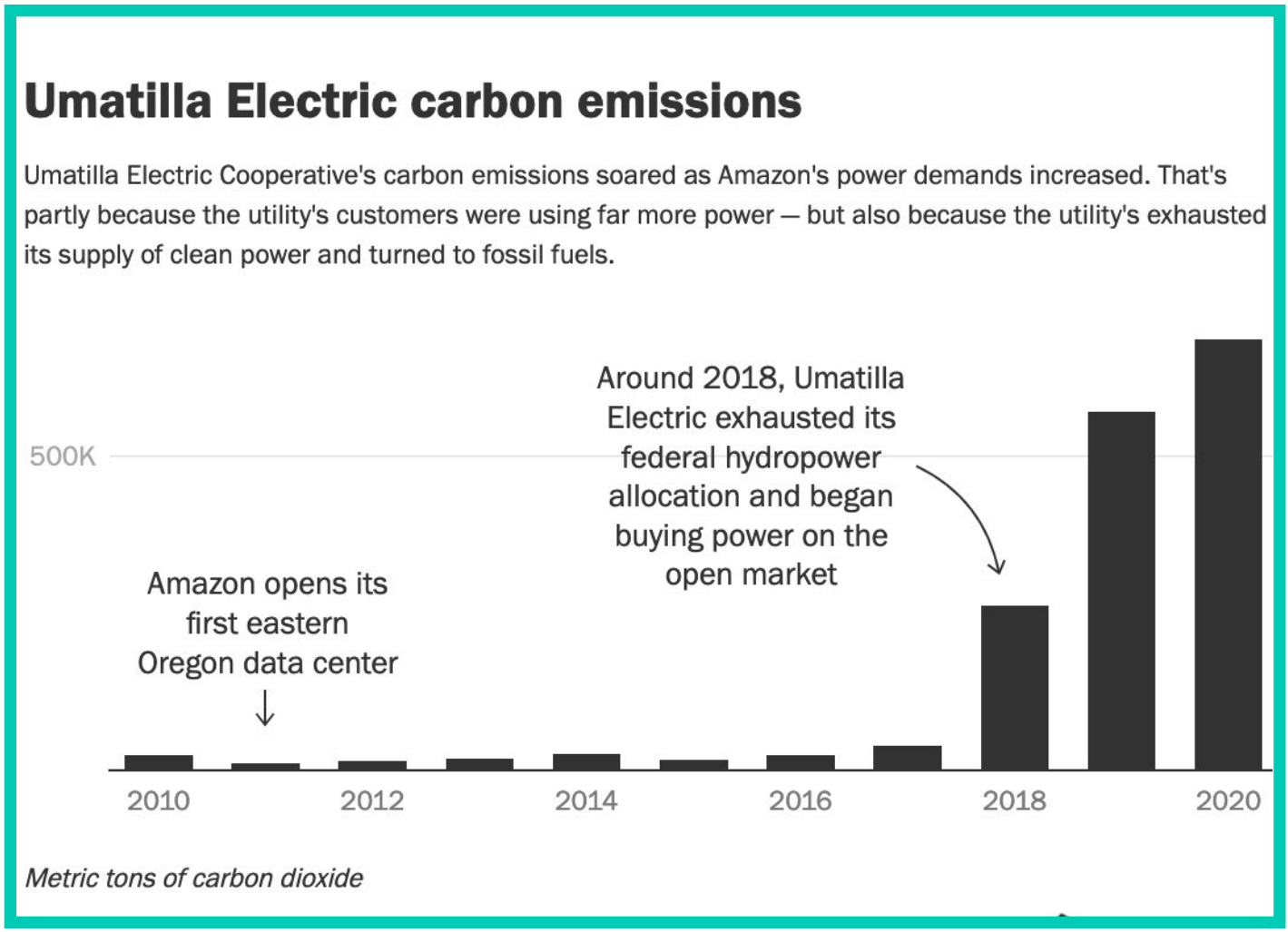


Image source: "As Amazon expands in eastern Oregon, regional carbon emissions soar" By Mike Rogoway, OregonLive.com

Virginia

Amazon's largest data center location is in what's known as "Data Center Alley." Loudoun County, Virginia is home to the largest market for datacenter operations in the world. Amazon has more than 65 data centers in operation or development in Loudoun County alone as of 2022, representing 57% of the around 115 datacenters in the county at that time. From 2006 to 2023, Amazon invested $35B in Northern Virginia data centers, and now Amazon has announced an additional $35B expansion to its data center investments in the area through 2040, thanks to a new tax incentive program passed by the Virginia legislature to further data center growth in the region.

As you would expect, this many data centers draw a lot of power. Dominion Energy, which services much of Loudoun County, plans for data center energy demand to explode in its service area +330% in the next 15 years, adding an additional ~75,000 GWh of demand by 2038 to its existing *total* demand of ~93,000 GWh in 2022 (an increase of close to 90%). Amazon is driving the majority of this demand with its

growth of data centers in this area.

So with such high demand and growth, how is the grid keeping up? Is it able to grow sustainably? In 2023 60% of Dominion's energy generation was fossil fuel fed, mostly consisting of gas, and only 1.5% was from renewables (the remaining difference being mostly nuclear energy). But Virginia's government passed legislation mandating Dominion retire all *existing* fossil fuel generation by 2045, produce electricity from 100% renewable sources, and set targets for new renewable energy (RE) generation. Unfortunately, the legislation allows Dominion a couple of very large loopholes.

These loopholes can be seen in action in a recent resource planning document that Dominion published, which lays out several possible strategies for meeting both the forecasted energy demands and the requirements of the new legislation. The strategies range from high carbon-emitting plans to plans that rely solely on renewables.

The first loophole allows Dominion to miss the target of 100% renewable generation if it either pays a premium to a special-purpose government fund or acquires RECs to cover the carbon-emitting generation. And — surprise, surprise — the legislation has some lax standards for the quality of the RECs; most significantly it doesn't require new, additional renewable energy. The document also states that "when there is an excess of RECs, the credits are banked for the next year's compliance," or even up to five years. Think criteria #3: Time! In Dominion's high carbon-emission plans it expects to purchase 40,000 GWh of RECs a year by 2048. Yet that won't be enough to meet the 100% RE legislation requirements; Dominion plans instead to pay the premiums for the remaining 20,000 – 40,000 GWh instead of sourcing new renewable energy.

If that loophole isn't big enough, the utility can wholly circumvent the retirement of fossil fuel infrastructure if "the retirement of a particular unit would threaten grid reliability and security." Guess what language we see in its discussions of low-carbon plans? In Dominion's 2023 resource plan, it writes "The Company has system reliability concerns under the build plan shown in Plan D [and E] due to the retirement of all carbon-emitting units." Indeed, flying in the face of what the legislation appears to promise, we also see that Dominion will be constructing between 970 and 9,300 megawatts (MW) of *new* gas plants in *all* plan scenarios because, as you may have spotted above, the legislation only requires *existing* fossil fuel generation to be retired.

This situation is having ripple effects too. **Across state lines, another utility is delaying the retirement of coal plants so it can supply this dirty energy to the Northern Virginia Data Center Alley** and help balance out peak demand of energy in the region — demand that is going up due to Amazon's data center expansion. So, **communities in West Virginia are dealing with toxic coal pollution longer, and paying higher utility rates, because of Amazon's data centers in another state.**

Lets recap what we know here:

- Data center energy demand is going to grow by 330% to make up about 56% of Dominion's total demand by 2038
- Amazon owns the majority (~57%) of the data centers within Dominion's territory and is growing with more than $35B of new investment in the northern Virginia area.
- Dominion cannot reach true 100% renewable energy under any of the current high-growth demand forecasts due to reliability concerns, and in many of its plans it's using low-quality RECs and loopholes in the law to circumvent the problem.
- The rapid increase in data center energy demand means that existing coal plants are staying around longer and Dominion is building new gas power plants.

It seems both Amazon and Virginia regulators and politicians are under the impression that they can achieve climate goals while also incentivizing and obtaining explosive growth. This contradicts what's actually possible, and Dominion's entire range of plans makes that clear. Without stronger requirements supporting climate goals, and without empowering local politicians to demand that companies clean up their act, it is clear which priority will trump the other.

True climate leadership would mean allowing the climate to lead, making growth conditional on responsible, renewable, realistic energy sourcing.

Ireland

Moving across the Atlantic, the windy, green hills of Ireland face a similar threat. Northern Ireland's grid and the Republic of Ireland's grid, although managed by two different organizations (from two different countries), actually collaborate and integrate very closely. The 7 million people who call the island home depend on this integrated grid being mostly self-sufficient, as only two lines exist to import electricity across the sea from other European neighbors (two additional lines are under construction). Although the electricity market is much smaller than Dominion's, this makes the impact of Amazon's level of growth even more stark.

There are at least 82 data centers in the Republic of Ireland, most of them concentrated in or near Dublin. Amazon is estimated to own at least 26 of these (32%). Across the country 30 total new data centers are in the planning stage (a 37% increase) — Amazon itself plans to add 3 in the next couple of years.

In 2022 the Republic of Ireland consumed 33,300 GWh of electricity. Of that, data centers and other large technology consumers ate up 18% (~6,000 GWh), up from 14% the year before and 5% in 2005. By 2032, Ireland's grid operator EirGrid estimates that

30% of demand will be for data centers (+66% relative increase).

In 2022, the Republic of Ireland's energy mix was 39% renewable. Both Northern Ireland and the Republic of Ireland have set 80% renewable energy generation goals by 2030, but achieving this in less than a decade is a tall order. EirGrid's estimates show plans to achieve this by harnessing the island's abundant wind energy with a nearly 10 GW buildout of wind generation, none of which has been contracted yet and much of which is expected to be built after 2028. A quintupling of solar capacity (from 467 MW to 2.37 GW) and a tripling of grid storage (from 223 MW to 680 MW) are also in the works.

But given that the grid is small and isolated, concerns have grown within Ireland about energy security and reliability during this transition. The boom in data center growth has been the leading driver of increased energy demand, and there is clear division over the right public policy to achieve both economic growth and environmental goals.

To improve the system's reliability, EirGrid has instituted new rules for data centers seeking new connections to the grid, stipulating that new data centers must be able to run fully under the power of their own on-site generators in the event of an emergency shortage or be cut off. This means even more fossil fuel generators running on backup for a while. EirGrid expects this energy shortage could extend into 2032 as it sorts out other problems, including canceled build contracts and poor generator performance. For now though, new data centers will not be officially connected to the grid in the Dublin area possibly until 2028 as concerns are sorted out and new generation is built.

While Amazon and other tech companies' insatiable need for more and more power are driving instability in the grid, the Irish government and EirGrid seems to at least be putting some back-pressure on them by restricting their growth and placing requirements on when they can use the grid**.** In response, there has been backlash and threats of a 'techxit' from companies as Equinix (a partner of AWS) and others have been denied new data centers.

Though more can and must be done, Ireland's response to tech companies' growth in the country can be seen as one way to enforce that data center growth doesn't outpace renewable energy infrastructure, and to keep the priority on phasing out fossil fuels.

Shifting Standards

In 2025, the GHG Protocol is expected to release updated reporting standards for electricity emissions. All three of our criteria for RECs are on the table — additionality, co-location, and 24/7 time matching.

Mandating more rigorous requirements for RECs would be a massive win for pushing the world to a zero-emission future. This would incentivize companies to create stronger renewable energy plans that transform the grids *where* they operate. If the standards get looser instead, for example allowing RECs to be counted from anywhere in the world, it'll encourage more behavior like Amazon's.

That said, Amazon and the Bezos Earth Fund are two of ten current funders of the GHG Protocol. This raises a potential conflict of interest similar to those threatening other climate institutions that rely on independence but get funding from the Earth Fund or Amazon. And though the Earth Fund claims it's not interested in using its money to influence the GHG Protocol, the Protocol *is* up for review currently, and Amazon co-founded a group called Emissions First that is advocating for more flexibility in the use of RECs and "no restrictions at all on geographical origin." This would basically be throwing "location" and "time" out the window — companies would no longer even have to purchase RECs from the same continent.

This will have ripple effects down the line. The US Securities and Exchange Commission (SEC) and the state of California have enacted emission reporting requirements for large companies like Amazon that follow the GHG Protocol. Failure to accurately disclose emissions under the new guidelines could open companies to financial penalties, creating a meaningful incentive to report honestly. This raises the stakes for the GHG Protocol updates — if it loosens or strengthens the standards, that has legal and financial impact. Stronger standards have the potential to hold companies like Amazon much more accountable in the clean energy transition.

Improvements

So what can Amazon do instead of relying on the creative accounting, political lobbying, and industry influencing that it's doing now?

Here's what we'd like to see Amazon leadership prioritize to make our company a significant part of the solution, on the ground, in building the clean energy systems we need:

- Increase transparency of RECs and electricity usage. Include in annual sustainability reporting the details on how much total energy the company used, how many RECs were purchased, where the RECs were used, when they were used, and whether their purchase funded additional renewable energy capacity to the grid ("additionality").
- Require all RECs used in both carbon-emission and renewable energy accounting to provide additionality.
- Require all RECs used in accounting to match electricity usage by the hour.
- Require all RECs used in accounting to match electricity usage within the same local electrical grid.
- Invest in new wind and solar, grid storage, and the transmission lines to connect them, in the *same* regions where data centers are projected to grow. Do not claim to be 100% powered by renewables until the company's *actual* operations are powered by 100% renewables.
- Increase resource efficiency within its control by tracking and optimizing on quality carbon metrics within all business units.
- Restrict data center growth until investments in local renewable energy and stable grids catch up and provide room for sustainable growth.
- Stop pressuring the GHG Protocol to loosen restrictions on how RECs are counted for scope 2 emissions. GHG Protocol should be the strongest possible framework that prioritizes additionality, co-location, and 24/7 time in the counting of RECs; Amazon needs to stop advocating for the opposite direction of removing these quality criteria on RECs.

Amazon has the potential to be not only the biggest corporate renewable energy buyer, but the gold standard for excellence in reporting and procuring its energy. This can't happen until Amazon makes some serious changes. We hope Amazon chooses to lead in this space.

PART THREE
Shipping

In 2023, investigative reporter Will Evans noticed something surprising: one of Amazon's major goals for sustainability had disappeared from its website. Indeed, that year Amazon quietly eliminated "Shipment Zero," its goal to make half of all deliveries carbon neutral by 2030. Shipment Zero was the company's only pre-2040 goal for delivery fleets and one of the concessions Amazon made following AECJ's shareholder resolution.

Amazon claims it removed Shipment Zero to focus on the broader Climate Pledge goals for 2040. While we at AECJ understand that sometimes priorities change to fit a bigger goal, we also know two things. One: getting rid of a major goal without proactive communication burns trust that the company will report honestly about its sustainability progress. Two: delaying all major sustainability shipping milestones until 2040 allows Amazon to continue polluting for longer, with relative impunity. In other words, credible plans must include interim goals, and Amazon just hit "delete" on one of its only ones.

And as we'll see, Amazon's role in shipping in particular is enormous and important.

In 2022, US emissions were roughly 6,343 million metric tons of CO2 equivalent (CO2e). What is the largest source of emissions in the US? Transportation. And what is the largest delivery business in the US? Amazon, which surpassed FedEx in 2020 and UPS in 2022. If US emissions are to fall, and to fall as fast as they need to, it's clear that Amazon will need to play a meaningful role.

So let's dive into how products make it from where they are produced to the doorsteps they're delivered to, and examine how Amazon can do a better job reducing pollution along the way.

Scale and Impact

Amazon is a logistics behemoth. It operates in 130 countries and regions. In 2021, it shipped an estimated 7.7 billion packages globally. That number is likely much larger now. Amazon's Scope 1 Emissions in 2023 increased by 7% from 2022, which it says is largely due to transportation fuels, business growth, and an increase in packages shipped by Amazon Logistics.

A given package is likely to have flown in a plane or sailed on a ship, ridden in a semi, and hitched a ride in a van before it reaches a doorstep. Each of these steps presents its own carbon pollution issues. We'll go over them briefly below, alongside Amazon's plans to eliminate pollution.

Air

Air transit is a major, growing component of Amazon's shipping. By the end of 2022, Amazon had 110 of its own Amazon Air planes, up from 73 in August of 2021. In 2022, those planes averaged 187 flights per day. As of 2024, the US fleet alone is 78 planes. The size of this fleet makes Amazon Air the third-largest all-cargo US airline, based on Amazon's latest fleet numbers.

Air transit also happens to have the worst record for carbon emissions, generating 47 times more greenhouse gases than sea (for every ton-mile).

Amazon's approach to decarbonizing air transit is to invest in a new type of aviation fuel that blends biofuel with standard (diesel) fuel to reduce emissions by 20%. But so far the company has only committed to buying 6 million gallons of this aviation fuel for package delivery. That's the amount needed to fill the tanks of about 95 Boeing 747s once.

It has also invested in Beta Technologies' electric plane development, and this company has begun test flights of its prototype. These planes are only intended to handle flights of up to 150 miles and carry 1,250 pounds of cargo — similar in range to EV cargo vans but with less capacity. This is unlikely to replace large long distance flights on the 2040 timeline. Neither of these investments, therefore, have the capacity to drop air shipping's emissions to anywhere near zero in a short time frame.

Sea

Amazon is prioritizing sea freight more than air, which is good, but still carbon intensive: the company produced 223K metric tons of CO2 through sea freight in 2021.

To help mitigate maritime shipping emissions, Amazon is working with a company called Maersk to use green methanol and biofuel based ships. These methods, much like the new blends of aviation fuel, attempt to use existing infrastructure while making progress towards lower emissions. In 2023, Amazon claims it transported 10% of ocean cargo on low-emission ships. The company does have some ambitious goals in this area, but improvement will need to be very steep to reach them. It has committed to an interim goal of shipping 10% of ALL international goods — not just ocean cargo — with zero-carbon, which goes beyond currently available low-emission-fueled ships. By 2040, it has set a goal for 100% of ocean cargo to be through zero-emission ships.

Land: Trains, Semis, and Trucks

Goods from ships and planes transfer to trains and semi-trucks, which are a major source of carbon emissions in the US — medium and heavy duty trucks make up nearly a quarter (23%) of all transportation emissions. Heavy trucks alone account for 25% of global road emissions while accounting for only 1% of vehicles, and remain a challenge to electrify.

In a bid to avoid the greater emissions from heavy trucks, Amazon shared that it increased use of rail in Europe, India, and the US in 2023, claiming that this in part reduced the company's demand for truck-based shipping in Europe. It remains ambiguous whether this led to any net emission reductions, given growth in total package delivery. Prioritizing rail aggressively so it actually reduces heavy truck usage would be a good step, but while trains produce fewer emissions than trucks and planes, many trains are still diesel powered.

For its trucks, Amazon is working with a company called Infinium to mitigate the impact of diesel fuel. Infinium creates "electrofuels" (or "e-fuels") by combining captured CO2 with hydrogen that's sourced from renewable electricity. These fuels can be dropped into existing engines without modification, which makes them less of a headache to roll out. Infinium claims that their fuels emit 95% less than conventional fuel, which would be a huge improvement on diesel; however, those claims are controversial. Since these "e-fuels" use captured CO2 from smokestacks, it's only temporarily delaying when that carbon pollution is released, not eliminating that pollution. When the e-fuels combust, they release carbon pollution the same as conventional fuel.

There are also significant efficiency drawbacks to e-fuels. According to a 2020 report from the International Council on Clean Transportation, e-fuels convert "at best half of the energy in the electricity into liquid or gaseous fuels" and are "four times [less] efficient" than electric vehicles.

Amazon is also making additional investments in a variety of fuels: the company has

already piloted hydrogen fuel cell vehicles (FCVs) in Europe and Japan, is relying on "renewable" diesel made from waste fats in California and Oregon, and is using several thousand compressed natural gas (CNG) vehicles globally. FCVs produce only water and heat as emissions, though they are expensive to produce and the hydrogen fuel needs enormous amounts of electricity to be created, which comes from fossil fuels 95% of the time, as Amazon itself found. Meanwhile, renewable diesel and CNG can reduce emissions, but do not reach zero.

AECJ certainly encourages risk-taking in the hopes that new technologies will follow the falling price trajectories of breakthrough tech like solar power and batteries, but we recommend proceeding along this path with caution. Deluding ourselves into an inefficient solution could mean delays in building the crucial green infrastructure that we know works: the infrastructure around EVs.

Electric Vehicles

The most visible investment in EV usage has been for last mile deliveries, the stage of shipping where goods are sorted at a fulfillment facility and loaded onto delivery vehicles to reach your doorstep. As of 2023, Amazon had more than 24,000 electric vehicles running globally and more vehicles on order. In July 2024, Amazon shared that it has reached more than 15,000 EV vans in the US. Amazon still has a ways to go to cover its total fleet, which in the US *alone* includes at least 30,000 Amazon branded vans and 20,000 trailers, and the company isn't sharing its total global fleet size. Amazon claims it is also replacing last mile vehicles with e-cargo bike and foot delivery where feasible. In 2023, Amazon delivered more than 125 million packages globally this way from small delivery stations in densely populated areas such as Brooklyn.

In the 2023 Sustainability Report, Amazon announced that the company has delivered 680 million packages by EVs. This sounds like a big number, except Amazon doesn't share its overall package delivery numbers, so it's hard to put it in a real-world context. Given that the company has shared that it delivered over 7 billion packages with same or next day shipping alone in 2023, we estimate that **the company's currently deployed electric vehicles handle, at best, only 9.7% of deliveries.** Amazon does claim that it will reach 100,000 EVs on the road by 2030, but the key company contracted to build them, Rivian, has struggled dramatically and faced delays; Amazon is now attempting to pivot to rely on multiple manufacturers.

For the middle mile, the leg of the fulfillment network that takes goods from manufacturers or ports to fulfillment centers, Amazon has been increasing sea and rail shipping where possible, which reduces emissions but does not eliminate them. Still, there has been some limited rollout of middle mile delivery EVs. For example, Amazon has begun usage of electric heavy duty trucks. In Europe, it launched 5 electric heavy trucks at the start of 2022, and 20 by the end of 2022. As of May 2024, Amazon

has deployed 35 electric heavy trucks in Southern California in the US. This is a very tiny start, making up a small fraction of the estimated 40,000 heavy trucks in Amazon's fleet; we hope this effort continues to ramp up.

Progress and Gaps

AECJ applauds Amazon's investments into green technologies and infrastructure for shipping. While there are systemic changes needed beyond Amazon to support these changes, the company has significant influence and can drive change. We've seen this in the boost Amazon has given to new companies in signing deals for electric vehicles, electrofuels, and sustainable aviation fuel. We are proud that Amazon is a founding member of the First Movers Coalition, which combines the purchasing power of major companies to scale green tech in hard-to-abate sectors, such as shipping and aviation. This coalition has set a goal of zero-emissions shipping for 10% of deep-sea shipping by 2030.

The trajectory needs to be steep, however, which is why the removal of Shipment Zero is disturbing. Reaching the goal on the last day will have little impact if emissions continue up to that day at the same rate. Reducing quickly up front is necessary, and it needs to outpace the growth of the shipping sector itself.

We also need to be honest about the impact of growth and speed. Making products from anywhere in the world available in hours for any customer is an accomplishment, but not at the expense of the health and well-being of lives and the environment globally. This need for speed can contribute to higher emissions on its own. Rush delivery, especially in rural areas, can result in fewer goods per vehicle, which wastes more resources compared to a full truck. Therefore, we think Amazon should prioritize grouping goods together into fewer shipments instead of shortening shipping times, returning shipments to economies of scale. We are glad they are making this an option through the Amazon Day delivery program, allowing Prime customers to group packages into a weekly slot. However, this program only reduced packages by 200 million in 2023 out of the many billions of packages the company delivers, so we encourage them to find more ways to lean into this and incentivize the choice.

It is also crucial to note that shipping will continue to expand as business expands, and one report predicts parcel volume across e-commerce companies could more than double the current volume by 2030. This report, called "Cost of CO_2nvenience," warns that **"all of Amazon's existing zero-emission vehicle pledges are not even enough to account for their projected increase in annual deliveries... [and] appear to be enough to account for only 20-30% of their projected parcel deliveries in 2030."**

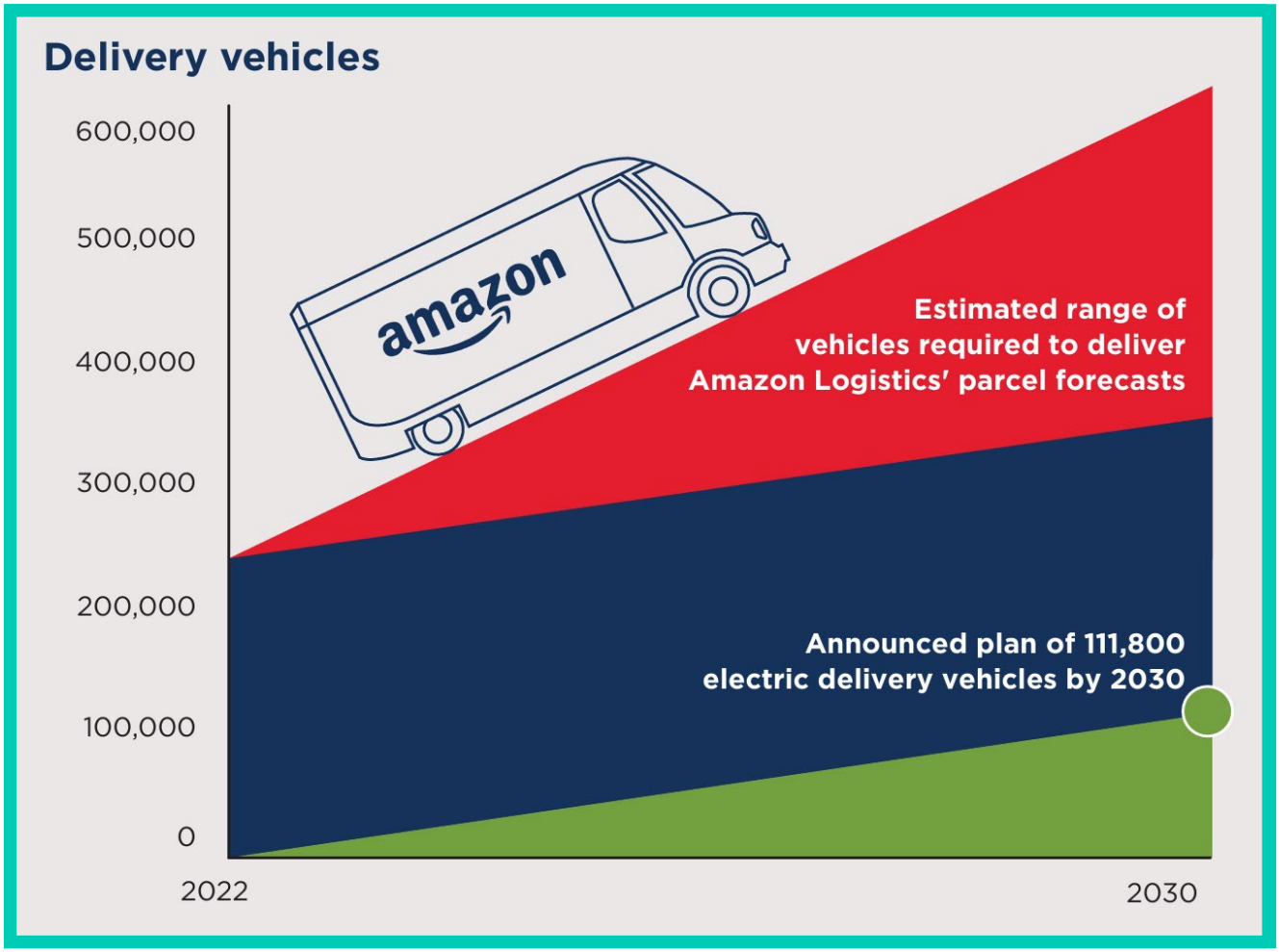


Image source: “Cost of CO_2nvenience” By Clean Mobility Collective and Stand.earth Research Group.

Improvements

As it continues to progress, Amazon must track not just business impact but climate impact as well, and prioritize emissions reduction as much as growth and profit.

To recap, these are some solutions AECJ would like to see Amazon focus on:

- Optimize fulfillment operations with decarbonization as a primary objective. Prioritize the lowest-carbon routes possible in all cases, starting immediately. That means sometimes trading off the faster shipping of planes for rail and trucks in addition to improving truck fill rates and optimizing routes to support the transition to EVs. Progress here has been made through regionalization, which localizes the shipping network into sub-regions and sea and train prioritization in Europe. We'd like to see more of this.

- Publish both absolute numbers and percentages when reporting sustainability metrics in shipping, including total number of packages shipped globally every year.

- Ensure that investments in lower-emission fuels (e.g. biofuels or e-fuels) don't distract from major investments in zero-emission deliveries in all areas of freight transportation, especially expanding use of battery electric trucks and electric cargo bikes. We want to see more major investments in electrifying medium and heavy duty trucking, building charging infrastructure, and working with government agencies to collaborate on new transport systems and charging infrastructure that serve both Amazon and the public.

- Ensure that shipping growth doesn't eclipse sustainability investments, and that Amazon's climate commitments track with changes in sector size. Metrics on carbon pollution elimination need to be at the same priority as business finances, so that making a high-carbon transportation decision has consequences and brings accountability (see later section on growth and Internal Carbon Pricing).

Of course, shipping is all in service of the products Amazon delivers, which brings us to our next topic.

PART FOUR
The Actual Cargo

It's easy to forget that Amazon started out, not so long ago, as a small online bookseller. According to author Brad Stone, the company was so tiny that bells in the office would ring every time a book was ordered, and employees would gather around the computer to see if they knew the customer personally. Of course, we all know what happened next. Not only did Amazon eclipse other booksellers, it quickly moved on to what Stone named his 2013 book on the company: The Everything Store.

More than ten years later, Amazon may have grown into a multinational, multi-industry hydra, but a key part of its business remains a massive online marketplace that sells physical goods.

The company does not do a good job accounting for the climate impact of the vast majority of these products, leading to what is a huge undercount of its emissions.

Amazon-Branded Products

Amazon likes to tout its own products as evidence of increased sustainability efforts, with Amazon branded devices getting most of the attention in the Sustainability Report. Devices like the Amazon Echo line are pushed as climate friendly because of the use of recycled material. The 2023 Sustainability report claims that the company "had various products made from majority- or all-recycled content, including those containing 75% recycled plastic." Instead of reporting the percent of products that use recycled plastic, Amazon vaguely claims "various" products are made with it.

While these efforts are a step in the right direction, they're another example of the company trying to showcase environmental wins while hiding the whole truth. What's addressed here is only a part of the issues with Amazon's branded products.

Amazon also maintains a number of other in-house brands, many of which are below standards for responsible sourcing, green manufacturing, and labor practices. Amazon Essentials, a private label brand owned and operated by Amazon that offers a wide variety of products, is notorious for its opaque labor practices. The Hulu Garment Co. Ltd., a sewing facility that has produced Amazon-branded clothing, was identified in a 2021 report by the Worker Rights Consortium that found garment workers in 9 countries were denied severance pay they legally earned after being fired. This wage theft impacted nearly 38,000 workers, stealing an average of more than $1,000 each.

Amazon itself has not released any data on the number of factories that produce its private label products or the conditions in them.

The refusal to share data also carries over to environmental efforts for Amazon Essentials products. Amazon doesn't address the growing problem of microplastics pollution from clothing, but looking at a study from the International Union for Conservation of Nature and Natural Resources (IUCN), we can see it's a weighty problem. That study found that 35% of microplastics that flow into the ocean come from synthetic textiles, which translates to roughly 0.5 million tons (1.1 billion pounds) of microplastics annually globally. With the US at 20.2% of the global apparel market, and Amazon being the largest US clothing retailer with 14.6% of the U.S. market, **we estimate that Amazon could be responsible for at least 32.5 million pounds of microplastics** flowing into the ocean from its clothing every year.

That amount of microplastic pollution from clothing would be equivalent in weight to Amazon dumping 1.2 billion empty plastic water bottles into the ocean every year.

Amazon did launch a new, more climate friendly brand in 2022, called "Amazon Aware,"

which drafts off its “Climate Pledge Friendly” label. We have not seen reports yet of the size of Amazon Aware versus larger private brands like Amazon Essentials and Amazon Basics.

The Missing 99%

While there are plenty of issues with Amazon-branded products, they do only make up about 1% of the products sold on the platform. 99% of sales on Amazon are either products Amazon buys directly from manufacturers and sells directly to the consumer (39%), or products that are sold on Amazon by third-party vendors who use the site as a marketplace (60%). **The full lifecycle emissions of those products — again, 99% of what Amazon sells — are not counted in Amazon’s carbon footprint.** It only includes its branded products: the 1%.

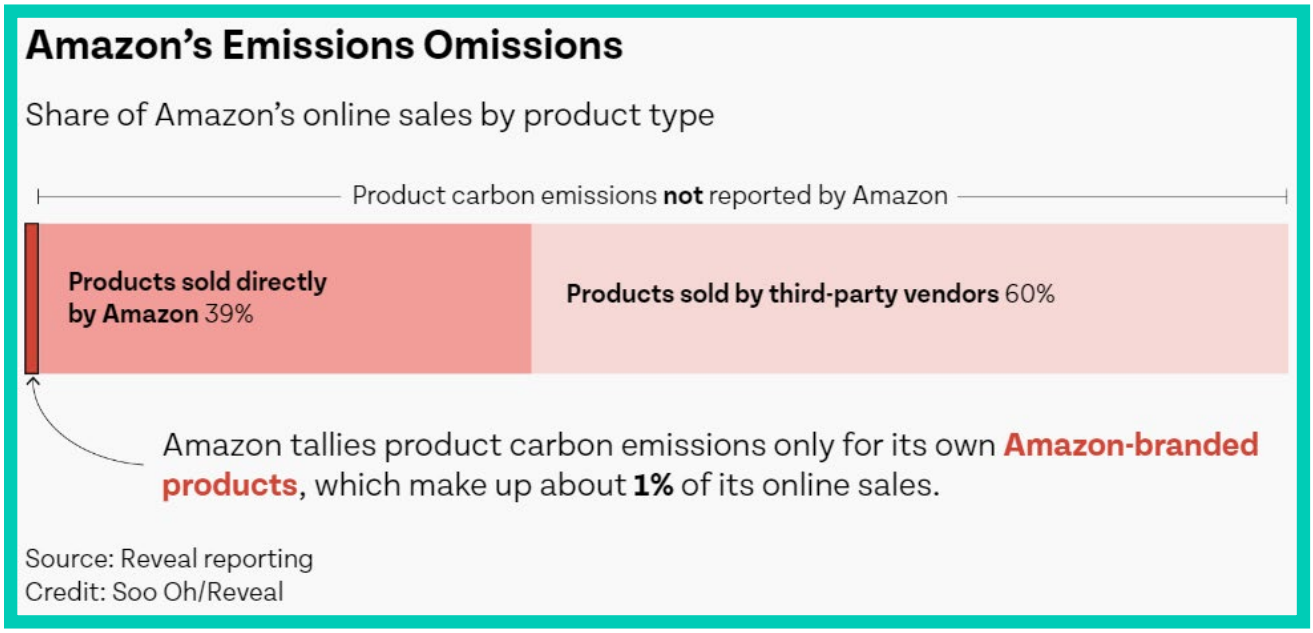


Image source: “Private Report Shows How Amazon Drastically Undercounts Its Carbon Footprint” By Will Evans, RevealNews.org.

This lack of accounting puts Amazon behind its industry peers. Other retailers, like Target and Walmart, count the lifecycle emissions of all the products they sell directly as part of their carbon footprints. These lifecycle emissions track not just the emissions released while manufacturing the product, but also the emissions created by their use. It’s unclear whether Target counts all third-party products sold in its stores in addition to what it buys and sells directly from the manufacturer. Walmart says it counts both categories. Amazon counts neither.

Thus Target, a company making a quarter the revenue of Amazon in 2020, reported a larger carbon footprint that year.

Walmart has also created a program called Project Gigaton to incentivize sellers to reduce their own emissions. The project is an effort to help suppliers reduce or avoid the carbon emissions of items across the product cycle by one gigaton in time for 2030. Walmart reports that Project Gigaton has reduced, sequestered, or avoided 1 billion metric tons of emissions so far, which is over ten times Amazon's emissions in 2022 of 71.27 million metric tons.

Amazon does not yet have an equivalent to Project Gigaton. The company *has* recently said that starting in 2024, it will require suppliers to track their carbon emissions and set reduction goals, but it hasn't said it plans to publish those emissions as part of its own footprint. It is also unclear (to us) who is included as a supplier — whether this means only suppliers to Amazon branded products (the 1%), or whether it might mean the suppliers it buys from and sells on its platform (the 39%), or — and, we doubt it, but we hope for it — it includes third-party sellers as well (the 60%).

Until it counts at *least* the 39%, Amazon will be behind other industry players, and can hardly be considered to be a climate leader in this sector.

Amazon does have some programs across its marketplace related to product sustainability, which include the Climate Pledge Friendly tag, the Amazon Renewed program, Amazon Day Delivery, and the Ships in Product Packaging program. The Climate Pledge Friendly label is an umbrella term for certifications that are made by various governmental agencies, nonprofits, and laboratories. Amazon contradicts itself about how many certifications there are (the 2023 Sustainability Report claims 55 labels whereas Amazon's website lists 52 with 4 of those 52 listed as "coming soon"), which doesn't exactly inspire confidence. Nevertheless, customers on Amazon can use the Climate Pledge Friendly tag as a search filter, and the corresponding label appears on certain products. While the certifications involved in this label are each meaningful, such as Oeko-Tex certified textiles, only a few of them mean something in terms of emissions reductions. Further, a product qualifies for the label if it has any one of the many certifications, diluting the significance of the label. For example, "U.S. EPA Design for the Environment" and "U.S. EPA Safer Choice" are certifications placed on products based on their safety for human and environmental health. These are great requirements, but they don't require that the seller report the carbon emissions that result from the creation, use, and disposal of the product.

The Climate Pledge Friendly Label is also undermined by Amazon's issues with sustainability in fashion. Amazon consistently performs poorly in the Fashion Transparency Index and the Fashion Accountability Report. Amazon slipped 5 percentage points in the 2023 Fashion Transparency Index, receiving a score of 26% based on the level of visibility offered in social and environmental concerns within their supply chain. In the Fashion Accountability Report, Amazon ranked 11th last among 52 major companies in 2023. Shockingly, Amazon's score dropped from 7/150 in

2022 to 5/150 in 2023. Looking deeper into the scoring, Amazon received 2 points out of 20 in the Raw Materials section. When third-party reports call out Amazon's poor performance year after year, is the Climate Pledge Friendly label really living up to its name?

In the 2023 Sustainability report, Amazon emphasized their new Sustainability Solutions Hub, a resource for incentivizing sellers to join Amazon sustainability programs like the Climate Pledge Friendly Label. But despite claims of combating poor practices, Amazon has also made fee cuts aimed at Fast Fashion suppliers. Analysts have said this is a sign that Amazon is gearing towards competing with Shein and Temu, and becoming more involved in the Fast Fashion industry.

Compared to these programs, the Ships in Product Packaging program seems to be more significant. This program has led to an average 43% reduction in outbound package weight per shipment since 2015. We hope to see more programs like this from Amazon.

Improvements

The main improvement we want in this sector is for Amazon to measure (and publish) the full lifecycle carbon impact, from manufacture to disposal, of the products it sells on its website. As Amazon workers, we know we can't improve something we don't measure. So Amazon: don't stop at measuring the emissions of just 1% of products sold — count the 99% too! As long as Amazon does not do so, it will be avoiding tackling a huge proportion of its impact on the environment, and it will have very little incentive to push its vendors to reduce carbon emissions.

AECJ also thinks that:

- Amazon should release data about the location, working conditions, and environmental practices of the factories where it makes its branded products.
- Amazon should require all suppliers and vendors, including third-party vendors who sell on Amazon, to track and reduce their carbon emissions. Amazon should then include the total emissions as part of its Sustainability Report.
- Amazon should make its Climate Pledge Friendly label more granular and transparent, perhaps by adopting a grading system that rewards products that actually reduce emissions.
- Going beyond emissions, Amazon should be transparent about how its products contribute to plastic and microplastic pollution, and commit to an aggressive plan to clean up its act.

PART FIVE

Undermining Efforts

In addition to all the areas Amazon *does* cover in its sustainability report, we need to look at the things it *doesn't* mention at all. Specifically, how the company aids fossil fuel companies in expanding the world's dependence on oil, gas, and coal. Even if Amazon makes major progress on eliminating carbon pollution with the improvements we've recommended so far, and it reaches net-zero, it can't credibly claim to have no carbon emissions when the company sells products that are central to the expansion of oil and gas production. Amazon may be a profit-driven company, but if it wants to declare itself a climate leader, it should reconsider who it sells its services to as well.

As we covered in Part One of this report, the climate science in the latest IPCC report shows that existing fossil fuel energy sources already exceed what we can burn in order to avoid catastrophic heating. So, it's imperative that we stop all new fossil fuel expansion while rapidly phasing out existing fossil fuels. Yet, Amazon is helping companies do the exact opposite.

AI for Fossil Fuels

While Amazon touts its leadership in the climate space, Amazon Web Services (AWS) pursues and lands contracts with oil and gas companies. A 2019 Gizmodo article revealed that AWS's current and targeted clients include some of the largest contributors to the climate crisis, with ExxonMobil, Chevron, and Aramco numbering among them. Amazon provides not only general cloud computing services, but also tailored AI and machine learning-based services to fossil fuel companies. These services include finding and recovering more oil and gas, and reducing the cost per barrel for oil.

Image source: "Amazon Is Aggressively Pursuing Big Oil as It Stalls Out on Clean Energy" By Brian Merchant, Gizmodo.com. Taken as a screenshot from AWS Website at the time of the article, April 8, 2019.

In CEO Andy Jassy's own words at an energy conference,

> *"the goal ultimately [is] to be able to use machine learning and AI 100% to target which [oil and gas] wells to go pursue. That is heady stuff. That is a very different model than has existed in the past. That is a game changer."*

AWS forms direct contracts with oil and gas companies — an example being Baker Hughes, one of the largest oil field services companies. In February 2023 the two signed a collaboration agreement to create a cloud-based tool, the Leucipa automated field production solution, to manage and extract more oil from existing wells. While the press releases from both companies focus on emissions reductions resulting from the partnership, the fact is that this tool was created to help maximize oil extraction (and thus emissions).

The efficiency factor touted by the two companies has a darker side — increasing efficiency in oil extraction simply means more oil can be retrieved in less time, directly leading to more emissions. Baker Hughes even praises the tool as being the height of "automation and scalability, helping our customers deliver on their production targets." AWS is directly contributing to an increase in extraction, and therefore emissions, in its contract with Baker Hughes.

Rajeev Sonthalia, a president for oil services company Schlumberger Ltd, summarized it well:

> *"As long as you keep cutting the cost of production, you access more barrels... It becomes a growth vehicle."*

That's right: Amazon, a self-proclaimed sustainability leader, is selling oil companies ways to make oil cheaper and more abundant.

AWS also offers off-the-shelf digital products for any oil and gas company to buy. These are part of the OSDU Data Platform on AWS, a suite of technologies used by oil and gas companies to quickly discover and develop new fracking sites and oil wells through smart data ingestion. Enabling the development of new reserves to extract new pockets of fossil fuels ultimately leads to more emissions.

Oil and gas companies also make up part of the AWS partner program, connecting tech companies with oil and gas ones. The goal with the program is to create an ecosystem of companies relying on AWS for their operations, tapping a lucrative market regardless of the ecological harm it causes. One AWS partner, Ambyint, uses AWS services to optimize production and make oil extraction more efficient.

Amazon has continued to affirm its interest in the space, even sponsoring conferences in the industry. The company served as a "Foundational Partner" for CERAweek 2024, an energy conference, and also sponsored the 2023 Digitalization on Oil & Gas Conference.

Oil and gas companies, after all, continue to be incredibly profitable for Amazon. For the period of 2020 to 2024, based on a 2020 Barclays report, we estimate that Amazon has made *at least* $5 billion from the oil and gas industry (assuming the total market valuation was flat for those years and that AWS's general market share applies to the oil and gas market specifically, both of which are likely underestimates). Based on the same report, **in 2025, AWS could be making $9.6 billion *annually* from the oil and gas industry alone, which would represent more than 10% of AWS's current revenue.** Amazon, just like these oil and gas companies, is profiting off of climate destruction.

Lobbying

Amazon doesn't stop at selling fossil fuel companies tech that helps extract more. It also has an active lobbying program, which often lobbies on the opposite side than you'd think for a company with a self branded "Climate Pledge Arena" — a central event space in downtown Seattle.

Amazon has a history of selectively opposing laws that support its climate goals but are expensive to the company. A bill proposed in Oregon would have required data centers to shift to 80% clean energy by 2030, and 100% by 2040. Amazon campaigned against it, claiming the bill was ambiguous in the pathway to meet its goal and didn't account for the challenges of lacking transmission infrastructure. Yet the bill did have an opt-out clause in case these challenges blocked the goals, and could have been used to drive resolution of those problems.

In California, the California Trucking Association has sued to block enforcement of Advanced Clean Fleets regulation, which requires carriers to transition to zero-emission vehicles starting next year. The American Trucking Associations has expressed its support for the lawsuit. Amazon is a member of the California Trucking Association and is a sponsor of the American Trucking Associations. Regardless of the potential challenges associated with meeting these regulations, they ultimately support the goals Amazon claims to pursue on a similar timeline. Passing the regulations would draw attention to the difficulties faced by the industry in complying, which could

likewise be driven to resolution with additional legislation and investment. Without these regulations, companies can continue postponing pursuit of zero emissions and continue entrenching reliance on fossil fuels.

Improvements

Our request here is simple: we call upon AWS to halt all partnerships with oil and gas companies and all lobbying efforts on the side of continued fossil fuel dependence.

If Amazon is a forward-looking company, then it should divest from oil and gas companies to help achieve a sustainable future for its workers and the planet. Other corporations, from ad agencies to banks, as well as similar tech giants, like Google, have already made steps to cut off certain fossil fuel companies. Amazon must follow suit.

PART SIX

Amazon and the People

On a 2024 “toxic tour” through the city of San Bernardino led by The People’s Collective for Environment Justice, community organizer MaCarmen Gonzalez casually referred to the Amazon Climate Pledge as a “PR effort,” implying that her experience has given her no reason to think the company is serious about mitigating its negative impacts on the environment or the community.

But Amazon does devote considerable space in its sustainability report to community impact and employee welfare, linking environmental causes to justice and well-being. It has also announced new community and worker-focused leadership principles in recent years — “Success and Scale Bring Broad Responsibility” and “Strive to be Earth’s Best Employer.”

So what’s real?

PR in the Inland Empire

There's plenty of reason to be concerned that Amazon's community involvement is far closer to PR than it is to real care. And because it's nearly impossible to tackle Amazon's *worldwide* community involvement in a single report, we're going to take a closer look at its impact on the community in the Inland Empire, where San Bernardino is located. This area is crucial to Amazon's business, because a whopping *40%* of Amazon's global goods pass through the ports of Long Beach and LA and through the Inland Empire. And we think it can serve as a microcosm of how Amazon approaches the community when it has a lot of business in an area.

We have unique insight for this area in particular due to an internal memo leaked in 2023, which describes Amazon's past efforts and future plans at "community engagement" in the Inland Empire area.

It's not a flattering portrait; the memo details a comprehensive, but shallow, plan to curry public favor toward Amazon.

Some of this is through grants to local nonprofits — grants that, not coincidentally, come with strings: mandated publicity plans and TV partnerships in order to generate as many "positive media mentions" as possible. These grants can therefore be understood as PR efforts, especially given that the report also states that Amazon will *not* continue to support organizations that did not result in "measurable positive impacts" on Amazon's "brand and reputation." One casualty is the Cheech Marin Center for Chicano Art. The Cheech displayed a local college student's screenprints of an Amazon warehouse on fire in one of its exhibits, and so Amazon suspended all donations.

The PR machine doesn't stop at grants. The memo also proposes cultivating Amazon-friendly politicians through strategic donations and relationship building, and registers concern that some politicians are being discouraged from accepting donations from Amazon due to the potential conflict of interest. Of course, there are *many* potential conflicts of interest, because Amazon is a major political force in the Inland Empire region.

The writers of the memo single out one politician, for example, who has supported both warehouse moratoriums *and* environmental legislation that would be "detrimental to Amazon's interests." But the memo writers *do* show support for a single use plastic ban, because it highlights Amazon's own sustainability efforts without placing meaningful limits on Amazon, which of course, a warehouse moratorium would absolutely do.

Blocking the warehouse moratorium is a priority for the memo writers. They register concern about "perceived" stories that warehouse locations are usually built in low income communities of color, where the increased vehicle traffic and industrial activity negatively affect the health of residents.

Except those stories are not just "perceived." They're true. They're true in the Inland Empire, and they're true more broadly as well.

Environmental Racism

In the US, 69% of Amazon warehouses have more people of color living in a mile radius than the median neighborhood in their metro area, and 57% are in neighborhoods with more low-income residents. The opposite is true of Amazon's retail stores such as Whole Foods, which are in wealthier, whiter neighborhoods. This is largely taking advantage of cheaper industrial zoning, which is a legacy of racist policy, and continues to perpetuate racial disparities with truck pollution concentrated in communities of color.

Image source: "When Amazon Expands, These Communities Pay the Price" By Kaveh Waddell et al., data visualizations by Andy Bergmann, ConsumerReports.org

These are also the communities doing the least online shopping: Sierra Club data shows coastal cities with the best air quality have the highest rates of sales per household, while communities like San Bernardino (where Amazon is a primary employer) have the lowest sales out of the 40 largest cities in the LA area. When warehouses are planned, they are often given code names, and even city council members may not know Amazon is building in their area until construction is underway. Hub areas like the Inland Empire lack diverse opportunities for locals. Amazon even sponsors Amazon-specific career tracks such as the "Amazon Logistics and Business Management Pathway" in a San Bernardino public high school. Other schools in the area (not affiliated with Amazon) teach truck maintenance; the nearest jobs are in warehouses. Ivette Torres of Moreno Valley says, "if you want to work in something else, you feel forced to leave."

Tax breaks are also a frequent driver of warehouse placement, which takes away public resources that should benefit the community, reducing the economic benefits that Amazon claims. **To date, Amazon has received at least $1.5 million of subsidies in the Inland Empire; it has received upwards of $6.7 billion local and state subsidies nationwide.** In and around Chicago, Amazon won at least $741 million in taxpayer-funded incentives to build 36 new warehouses, but the vast majority of those deals for public funds ($640 million, or 86%) were from majority Black and Latinx communities.

In Chicago, a community lost a petition to place a community center in an abandoned building, which was instead leveled and replaced by an Amazon site, while their proposed amenities were incorporated closer to an affluent neighborhood.

> *"We could've done so many great things here—things that could've helped the community," Alfredo Romo, executive director of Neighbors for Environmental Justice, said. "Instead, we get this warehouse that's going to bring all this pollution, increased traffic, more damage to our roads, to our housing. It's just not worth it. We could do better."*

The presence of Amazon warehouses does have a significant impact on surrounding communities. Half of US air pollution is from vehicles, and this pollution is linked to diverse health impacts, including development of asthma, heart disease, birth defects, infertility, lung cancer, stroke, and even bone weakness. **The air pollution from heavy-duty diesel trucks is particularly harmful to developing children, stunting their lung development and causing asthma and respiratory illnesses that will impact them for**

the rest of their lives. Imagine your loved ones growing up in an environment where breathing makes them sick.

And operating warehouses involve a *lot* of vehicles: one pair of warehouses in Fontana, CA — also in San Bernardino County — was estimated to facilitate 6,000 trips per day, with 2,300 from diesel trucks. Across the Inland Empire, there are *4,000* warehouses operated by Amazon, UPS, FedEx and others. The county of San Bernardino, home to more than 3,000 warehouses, has been ranked as having the worst ozone pollution in the US, recently suffering an average of 175 days of unhealthy air each year.

Besides the direct health impact, the constant noise, shaking, and traffic also take a toll. Brian Kolde lives with his family in Fontana, and explains that after an Amazon warehouse opened nearby, his family began to sleep with air conditioning on just to drown out the noise, and his children had trouble sleeping because they were afraid of the sounds. Later, he found cracks in the stucco walls of his house, which city inspectors explained were caused by shaking from the traffic. He and his daughter have had frequent nosebleeds and his son sneezes constantly.

> *"It's a great home, a good community—but for how long?" Kolde says. "It all comes down to the health of my kids. If they're getting sick, why live here?"*

From asthma to cancer to noise pollution to draining public funds, Amazon takes a toll on the communities where it places warehouses. **And these burdens fall disproportionately on communities of color in the US, who see the highest concentrations of warehouses close to their schools and homes.**

Amazon warehouse workers and drivers are themselves members of these communities where Amazon's concentrated truck pollution harms health and quality of life.

These are our colleagues in the logistics side of the company. When they go into work, Amazon also takes a toll on their bodies. While we're working in corporate offices, what are they facing in warehouses?

Back-Breaking Work for Low Pay

To learn about health impacts on the job, researchers at the University of Illinois asked the workers themselves. They conducted the largest nationwide survey of Amazon warehouse workers, at least publicly — Amazon surely conducts its own surveys of its warehouse workers as it does of us corporate workers, but we don't have access to that data.

The University of Illinois researchers found in their survey that 41% of Amazon workers reported being injured while working at a warehouse. The longer workers stay at the job, the more likely they'll get injured — the rate rises to 51% of workers injured on the job after being at the company for 3+ years. The workers felt mental health impacts too; over half reported feeling burned out.

The federal agency OSHA, the Washington State Department of Labor, the New York Attorney General, and the Senate HELP Committee all have concerns, and are investigating Amazon for violating safety laws and misrepresenting injury-related data.

And the problem is worse at Amazon than anywhere in the industry. A new report from National Employment Law Project (NELP) found, using the latest OSHA data from 2023, that Amazon's warehouse worker injury rate was over 1.5 times the rate at TJX (of Marshalls fame), and in fact, **nearly triple the injury rate at Walmart.**

Injuries and unsafe working conditions aren't limited to warehouses; delivery drivers face injuries on their driving routes too, specifically from dog attacks — forums are full of gruesome photos of drivers' dog bites and other injuries from dog attacks along delivery routes. In its latest report, Amazon claims it's responding to this issue with a "dog distancing device," but the company doesn't share details about how effective the device is or if it's being offered at scale.

Amazon claims it's improving its "recordable incident rate" (the rate of injuries requiring more than basic first aid) and its "lost time incident rate" (the number of injuries that caused workers to miss work), and that its rates are better than other companies of its size. But it keeps quiet on the fact that the number of injured workers who get reassigned to "light duty" jobs is nearly double the national industry average. So, is Amazon reassigning injured workers to other work as a way to make its "lost time" metric look good? It seems likely, according to an investigation by the Strategic Organizing Center.

Down-to-the-second surveillance on workers, including tracked bathroom breaks, creates extreme pressure for speed and is a key factor in Amazon's jobs injuring workers at higher than average rates. This surveillance will only get more sophisticated as Amazon continues to develop AI technology. Techno-optimists in our industry often

dream big dreams about AI solving our problems — like the Bezos Earth Fund's recent announcement of the $100 million Grand Challenge on "AI for Climate and Nature." (Fun fact: Bezos announced his $10 billion Earth Fund after a year of our pressure on him and the company to enact a climate plan.) But, **what we're concerned about in our workplaces is how AI will actually be used to enhance banal evils — like increased surveillance of our warehouse worker colleagues and extending the injury crisis at work.**

All of this is taking a financial toll as well as physical and mental. The same University of Illinois survey found that 69% of Amazon warehouse workers reported that they had to take unpaid time off in the past month because of pain or exhaustion from the job. 34% had to take unpaid time off 3 or more days in the month. A second report from the same University of Illinois researchers found that 60% of Amazon workers who took unpaid leave due to job-related pain or exhaustion reported food insecurity.

Large numbers of warehouse workers are losing wages because of health reasons, some with injuries that need medical care, and that's on top of already low wages that leave workers financially precarious. The survey published this year also showed that 53% of Amazon warehouse workers experienced food insecurity over a period of several months; 48% faced housing instability including eviction and inability to pay mortgages or rent and 56% were unable to pay all their bills. About 33% of Amazon workers relied on public assistance, and 23% of workers used the US's food assistance program (a.k.a. SNAP).

In fact, Amazon's wages may even be dragging down average warehouse wages. Another report from NELP found that warehouse workers make between 12-18% less in counties where Amazon operates than in comparable counties without any Amazon warehouses. Bloomberg had previously found a similar trend in 2020, particularly in wealthier counties. For example, in a town in New Jersey, warehouse worker average wages dropped from $24 per hour in 2014 to $17.50 per hour five years later, after Amazon opened a giant warehouse. Correlation isn't causation, of course, but this is cause for concern.

Amazon has raised wages for workers in some places around the world, but some of those wage increases may only have been done in response to worker organizing — such as in San Bernardino. In another example, the Sustainability Report excitedly reports rising wages in the UK, where "by the end of 2023" Amazon paid a starting wage of 12 pounds to logistics workers. But it neglects to mention that the minimum wage for workers in the UK was raised to 11.44 pounds in 2024. 66 pence per hour more than what's legally mandated — heroism indeed!

Figure 3.

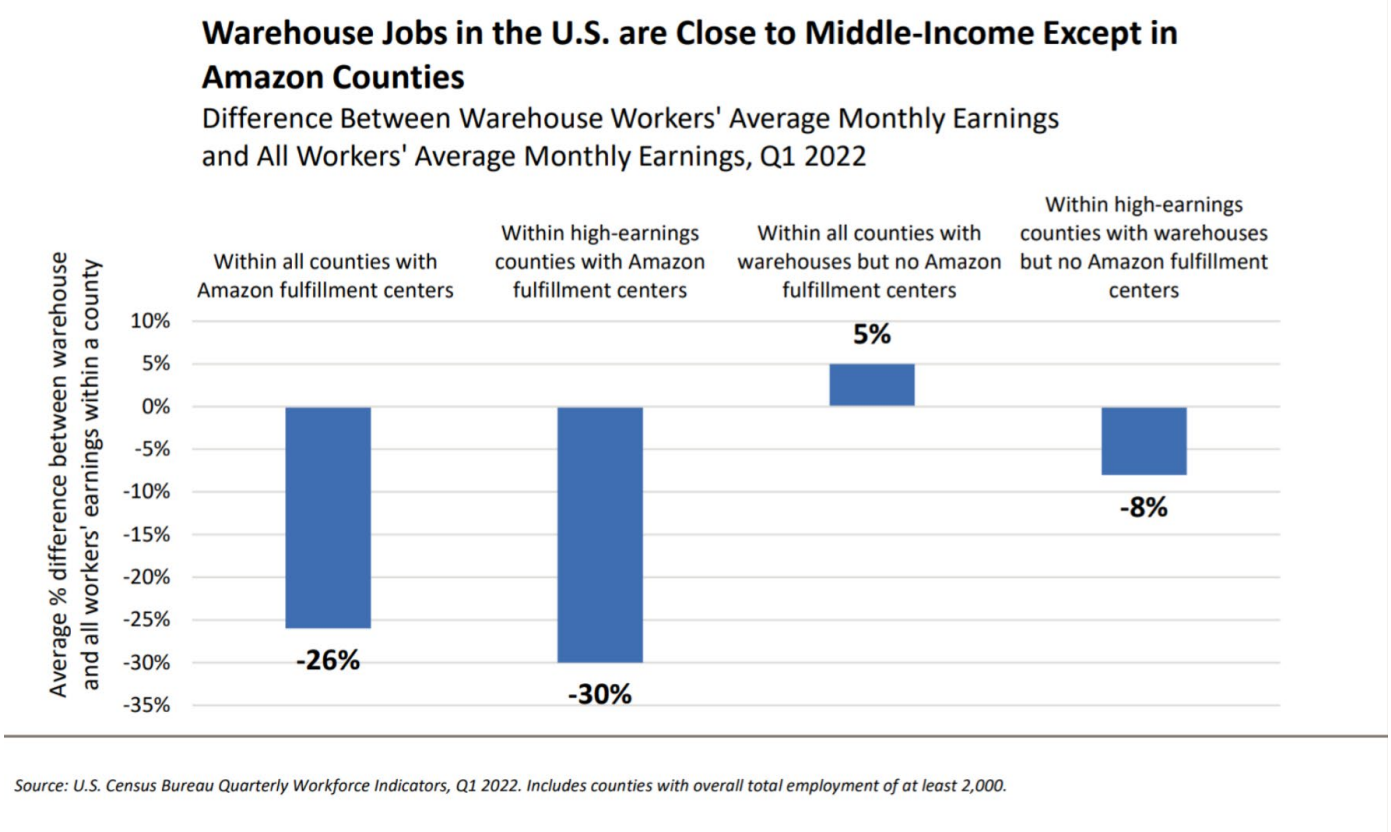


Image source: "A Good Living: Amazon Can and Must Make a Middle-Income Livelihood Possible for the People Who Work in Its Warehouses" By Irene Tung and Yannet Lathrop, NELP.org

It shouldn't be surprising, then, that workers are increasingly coming together to demand better pay and safer work — from San Bernardino, to the St Louis area, North Carolina, Philadelphia, Coventry in England, Germany, and Spain, all within the last year.

Working in Extreme Heat

Amazon may hate bad PR, but the company's biggest fear in the leaked Inland Empire memo is labor organizing. The authors describe it as "our most important public policy priority in Southern California."

The workers cited in the leaked memo work at an "air hub" in San Bernardino called KSBD that originally came together when Amazon suddenly announced 4 days of uncompensated warehouse closure over the December holidays. The lost work time threatened the workers' stability, since many warehouse employees live paycheck to paycheck. So the workers circulated a petition and handed it to management. Though their organizing never resulted in backpay, Amazon did limit closures to one day during future December holidays across all its air hubs — and for KSBD, there were expanded overtime hours.

Encouraged, the workers continued to organize. One of the major fights was around heat protections. When workers expressed concern about dangerously hot temperatures in the summer of 2022, an Amazon spokesperson claimed that its facility had never exceeded 77 degrees Fahrenheit. So the workers snuck thermometers onto the site and recorded temperatures soaring to 89° F in the warehouse, 96° F inside cargo trucks, and a stunning 121° F on the tarmac, where they spent much of their days unloading planes.

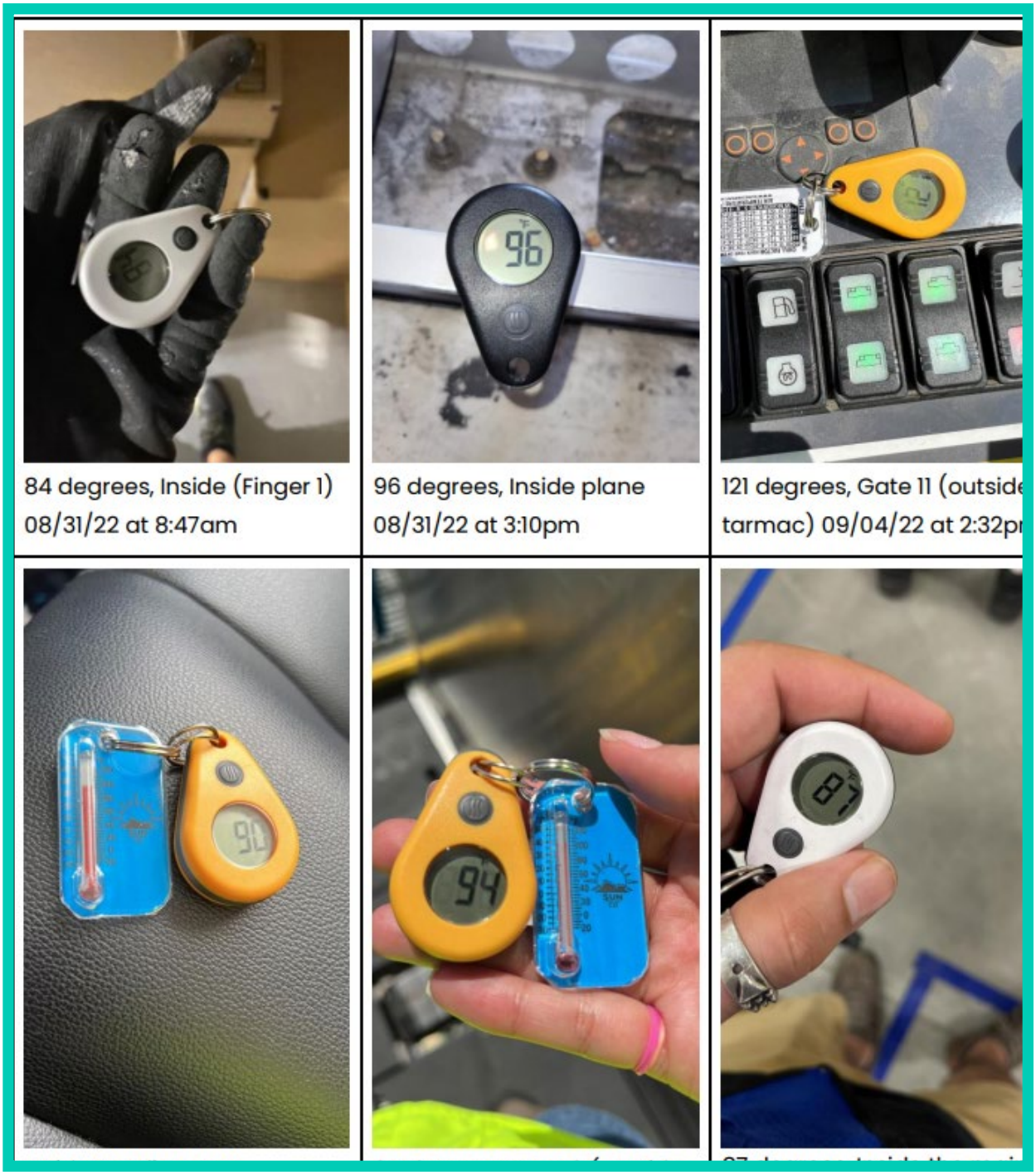


Image source: "Extreme Heat at Amazon Air" By Warehouse Worker Resource Center, warehouseworkers.org

At the time, the LA Times reported:

> *"Sara Fee, who works in an area of KSBD called the 'inbound dock,' said she thinks that by confronting managers at the onset of the heat wave, workers prevented heat-related hospitalizations. 'We saved lives,' she said."*

She's right. These conditions have real consequences for health. Studies have found that heatstroke can later lead to organ failure and neurological damage, and heat stress can magnify preexisting conditions such as asthma and heart disease. The stakes can be life or death.

In a Carteret, New Jersey, warehouse in 2022, a 42-year-old worker named Rafael Reynaldo Mota Frias died of what Amazon termed a "personal medical condition." The death was during a heat wave, and Frias was known to work in a particularly hot area of the facility. The same summer, **two other Amazon workers at other warehouses in New Jersey died related to heat exposure**, and the Occupational Safety and Health Administration (OSHA) opened an investigation.

Despite the lack of acknowledgement from Amazon, company management upgraded the Carteret warehouse's air conditioning and provided additional water a month later.

> *"Amazon is an agency that reacts to situations. They're not proactive," one employee said. "They wait till something happens and then they act like they're doing something."*

Without better working conditions and protections, the death toll for our colleagues in Amazon logistics is likely to rise. Heat is already the leading weather-related killer in the United States. Last year, an estimated 2,300 people died in the US from heat, triple the average from recent decades, and more than the number of deaths from hurricanes, tornadoes, and floods combined. Data from the US Environmental Protection Agency (EPA) indicates that we saw 2 heat waves per year in the 60s but 6 per year in the 2020s, and the heat wave season is 49 days longer.

There have been fights between workers and management over heat wave protections in Amazon warehouses all around the country, including Chicago, where a warehouse

had no AC during 90+ degree weather and management handed out popsicles in order to combat heat exhaustion; Kent, Washington, where workers in a near-90-degree-Fahrenheit warehouse with broken fans were pushed to work at maximum speed; and Bessemer, Alabama, where workers reported that management repeatedly refused to turn on fans during heat waves.

Workers at KSBD *have* reported improved heat protections this summer, which is great. But given that they have had a steady history of organizing around this very issue, the workers point out that this is a result of sustained worker pressure. It's not because the company is being proactive by choice.

After the KSBD air hub workers walked off the job over extreme heat issues and demands for wage increases, the company instituted hourly heat breaks and installed fans and more access to cold water. The company has also given KSBD workers a wage increase of $1.75 — 50 cents more than the average hourly wage increase at most facilities.

The dangers of working in extreme heat extend to our colleagues in delivery trucks and vans too. Drivers in Palmdale, California went on strike in 2023 in part over lack of protections for working in extreme heat. Amazon claims that it is working to retrofit its fleet with more insulation to protect against heat, and that all its branded vehicles have AC — but drivers have said that the AC doesn't reliably work.

Cecilia Porter, an Amazon Delivery driver, says

> *"In Palmdale, we deliver in the High Desert, and many of the Amazon vans don't have working air conditioning. It feels like walking into an oven when I climb into the back of the van. After a couple minutes looking for a package, I'm drenched in sweat, and I sometimes feel lightheaded and nauseous from the extreme heat. Between 2010 and 2017, 20 California workers died from heat-related illness. I don't want to be next."*

Raj Singh, another Palmdale driver who went on strike, said,

> *"The vans we have—it's a big metal container. In the extreme heat it can get upwards of 130, 135 degrees*

> *inside the van… You walk in, and it's sweltering, the wave of heat that hits you—the only comparison I can give you is like walking into an oven, because it's that nasty dry heat. You feel like you're just getting cooked back there. I go through 10–12 bottles of water a day, and I urinate once."*

No wonder the Amazon Community Engagement folks are so freaked out about workers organizing in the leaked Inland Empire memo. Workers are the ones actually engaging: winning better pay, safer conditions, and a better working environment.

Amazon vs. Its Workers

Amazon is notoriously hostile to labor movements, so this should not be a surprise. Even though the Sustainability Report claims that Amazon respects freedom of association, including the right to join or not join unions without "fear of reprisal," **the company reported spending $14.2 million in the US on union-busting consultants in 2022, dwarfing other companies' reported anti-union spending.** Starbucks was the previous top spender on anti-union consultants in 2021 at $4.3 million.

The Amazon Labor Union from Staten Island, New York, won formal union certification in April 2022, but Amazon still refuses to recognize their union and negotiate a contract. Workers at the Bessemer, Alabama, warehouse attempted to win union recognition, faced intense anti-union pressure from the company, and lost their election. In 2023, Amazon got in trouble with the National Labor Relations Board (NLRB) — the federal agency that enforces labor rights and runs union elections — when it blocked access to warehouses for off-duty workers in a way that the regional NLRB office described as "discriminatory", and which union organizers said was in response to union activity in breakrooms.

And when those same Palmdale drivers, working full time for Amazon through the "delivery service partner" Battle Tested Strategies, won their union election — the first Amazon drivers in the country to do so — Amazon canceled their contract.

In fact, Amazon heavily utilizes third-party companies as "delivery services partners" (DSPs). Drivers drive Amazon vans, deliver Amazon packages, and wear Amazon uniforms. But the DSP relationship allows Amazon to avoid paying benefits, externalize responsibility for workplace accidents, and cancel contracts when workers make demands — all while a top industry-wide tactic is claiming concern for the limited

resources of "small operators" whenever industry regulators push for clean truck regulations.

As Palmdale driver Cecilia Porter says,

> *"Amazon can hire and fire us and monitor us while we're on the job, but can then pass the buck when people ask for a raise or complain about working conditions — working conditions that Amazon sets."*

This distinction is so valuable to the company that a spokesperson recently asked if a journalist would change a headline from "Amazon Delivery Drivers Walk Out in First-Ever Driver Strike" to "Drivers Delivering for Amazon Walk Out in First-Ever Driver Strike." No one sends an email that embarrassing unless something crucial is on the line. Especially not to *Vice*.

This crucial point of Amazon's responsibility for its drivers now has federal oversight. National Labor Relations Board prosecutors recently determined that Amazon illegally refused to bargain with the unionized Palmdale drivers, and the company does in fact qualify as a joint employer of these workers. We don't expect Amazon to suddenly start acting as a responsible employer and respecting these drivers' rights, however, as the company is still denying all responsibility and waiting for the NLRB to bring it to court.

Squashing individual sites of workers organizing isn't enough for the company; Amazon recently argued in a legal filing that the National Labor Relations Board itself is unconstitutional — calling into question the existence of a core federal agency that has been enforcing labor rights since it was formed in 1935. Seth Goldstein, a union lawyer, said this could go all the way to the Supreme Court and could embolden other employers to refuse to bargain with unions under the assumption that the court could strip the NLRB of its enforcement powers.

So this is the "leadership" we can expect from Amazon in the community. Paying off politicians, making shallow charitable donations that require grantees to publicly praise Amazon, fighting policies that would limit business even at the expense of residents' health and well-being, and potentially upending the federal office responsible for ensuring workers' rights to organize.

Improvements

We often hear Amazon tout its leadership principles "Success and Scale Bring Broad Responsibility" and "Strive to be Earth's Best Employer." This is what AECJ wants to see to make those more than just PR:

- Meet warehouse worker demands for living wages and health and safety, including:
  - Extra safety measures during extreme weather, which would mean adequate break time that's extended during temperature spikes, abundant shade and cool work areas, cold water during heat waves, expanded paid sick leave, and paid time off for extreme weather.
  - Suspending the harsh system of worker surveillance, and ensuring AI development isn't used to further it. This system adds extreme pressure for speed and is a key factor in the injury crisis at Amazon's warehouses.
- Commit to transparency and accountability in the process of building new warehouses:
  - Communities should have access to information about new warehouse locations being considered or developed, including by warehouse developers that Amazon contracts with or leases from.
  - Amazon should not be adding warehouses in communities already overburdened by air pollution. Additionally, Amazon should stop building or entering lease agreements for warehouses that are located too close (e.g. within 1,000 feet) to sensitive locations where the truck pollution and traffic could harm children and community health, such as schools, parks and playgrounds, homes, places of worship, etc.
  - Amazon should also establish binding community benefits agreements for facilities in vulnerable communities where there is major impact on local residents, and where there are specific needs detailed by communities.
- Support and lobby for laws limiting the pollution allowed from all warehouses and accelerating the transition to zero emission fleets — for example, the NY state Clean Deliveries Act — and help to create new industry standards.

- Commit to working with local cities where Amazon currently operates to create development agreements, community benefits agreements, and/or ordinances that raise the environmental and labor standards of *all* warehouses in the area, which could include:
    - Disclosing direct emissions from the warehouse and delivery operations and measures to reduce pollution.
    - Public-private partnerships to help accelerate local community-owned renewable energy and climate resiliency projects.
- Commit to a fair process for workers to organize, free of intimidation and fear. Stop retaliating against workers who are organizing, and negotiate contracts in good faith when workers unionize.
- Stop making legal arguments that the National Labor Relations Board is unconstitutional.
- End misclassification of Flex drivers and hire them as employees with wages and full benefits.
- Stop hiding behind third-party contracting companies and delivery service partnerships (DSPs) as a way to deny workers rights and deny climate accountability. Respect the rights and benefits of these workers as Amazon workers.
- Establish programs with DSPs and Flex drivers to share the cost, procurement, and infrastructure building for the transition to electric delivery vehicles, rather than leaving the burden entirely on small businesses and individual workers.

PART SEVEN

The Growth Factor

Carbon Intensity

The 2023 Sustainability Report attempts to paint a positive picture of Amazon's progress, despite its carbon footprint (the parts it counts, anyway!) growing 34.5% since The Climate Pledge began, by emphasizing a metric it calls "carbon intensity." This metric measures "grams of carbon dioxide equivalent (CO_2e) per dollar of gross merchandise sales (GMS)." Amazon's carbon intensity has fallen since 2019, so it's no wonder it's the story the company prefers to tell.

But the goal is to build a "sustainable" Amazon, and focusing on lowering "carbon intensity" is a greenwashed success metric, at best, for two reasons.

The first is that "carbon intensity" will shrink as long as sales proportionally outpace Amazon's net carbon emissions. That means that Amazon's emissions can continue to grow, and as long as sales grow faster, it will appear to be becoming more sustainable. What this really means is that it's becoming more carbon efficient.

A heating planet cannot applaud the number of sales a given ton of carbon enables. It simply gets hotter.

Add the fact that Amazon does not count 99% of the products it's selling in its emissions reports, and the value of "carbon intensity" as a metric dims even further. Even if Amazon achieves carbon neutrality across all its operations, if those operations distribute a rapidly increasing and unaccounted-for volume of carbon-intensive goods, then this is akin to a worldwide arms trafficker who claims they're merely a pilot just because other people are making or firing the guns.

Green Extractivism

The second reason that carbon intensity is a deceptive metric is more complicated, and introduces an issue we have not truly touched on in this report. Reduced carbon emissions are not the only measure of a green economy; in fact, the *building* of a carbon-free economy requires the use of enormous tracts of land and sea. Professor Jesse Jenkins, who was instrumental in negotiating of the Green New Deal, has said that

> *the energy demands of a green US would, in the most cost-efficient scenario, require land the size of Illinois, Indiana, Ohio, Kentucky, and Tennessee combined for wind power alone. The necessary solar would require land area equal to Connecticut, Rhode Island, and Massachusetts.*

Point is, it would take a great deal of resources including land, water, and raw materials to power Amazon.

Expanding green electricity will require dramatic increases in mining for minerals like lithium and cobalt, which are crucial for building the batteries needed in the electrified world. In some cases, these minerals lie in otherwise pristine territories where the inhabitants have mixed feelings at best about the intrusion of mining infrastructure. In the Ring of Fire region of Canada, for example, First Nations people living in one of the largest continuous boreal forests left on Earth have thwarted mining interests for multiple decades, only to experience a renewed and notably aggressive push now that such extractive industries are for the "green future."

Other minerals necessary for electrification are found in high-conflict areas with poor human rights records. For example, nearly half the world's reserves of cobalt are found in the Democratic Republic of Congo, where competition over mining resources has brought decades of war and an industry rife with "child labor and human rights abuses." The EV industry will account for 47% of the total demand for cobalt by 2030, so the pressure on mining and the communities that surround it is likely to stick around.

In her essay "What Green Costs," Thea Riofrancos describes this as

> *"'green extractivism' — the subordination of human rights and ecosystems to endless extraction in the name of 'solving' climate change." She warns that this path risks building "a world not unlike our own, but powered by wind and sun."*

This is not an argument against building the infrastructure necessary for a carbon-free economy, which must be accomplished rapidly in order to counteract catastrophic warming. Amazon should continue to invest in doing so. But, in order to avoid doing further damage, in order to avoid engaging in "green extractivism," Amazon will need to seriously solicit and weigh the input of the people most affected by that infrastructure, and also consider the ecological harms beyond greenhouse gases.

This will help avoid, as much as possible, the creation of more "sacrifice zones" — a concept forwarded by Steve Lerner that Dayna Scott and Adrian Smith describe as

> *"low-income and racialized communities shouldering more than their fair share of environmental harms related to pollution, contamination, toxic waste and heavy industry."*

Seeking input, securing consent, and ensuring affected groups see the benefits of the new industry is essential. For example, in the Ring of Fire, some — though not all — First Nations tribes are open to mining on the condition that they lead the effort. No matter how marginalized the population is, consent and sharing in the benefits of new green infrastructure is crucial to justice and well-being.

Amazon, for its part, is not famous for building justice, reciprocity, and transparency into its operations. The South African High Court blocked Amazon from building its Africa Headquarters due to inadequate consultation and lack of consent from First Nations impacted by the development. And as we covered in the previous section, in 2022 alone, Amazon spent over $14 million on "labor consultants" to fight workers' attempts to organize, even as the employees in its increasingly hot warehouses pushed for fans and shade.

Reconsidering Growth

Regardless of how we go about it, one thing is certain. The building of carbon-free infrastructure (like the building of fossil fuel infrastructure before it) will come with costs that can and must be minimized but that cannot be eliminated — damage to land- and sea-scapes, the risk of toxic waste, and other ecological and social impacts to communities where mining takes place.

The 2023 Sustainability Report even acknowledges that as the company expands, scaling renewable energy will not be enough to power its needs — especially to power the rise of AI — and it will need to turn to more controversial carbon free energy sources, like nuclear power.

These costs necessitate a closer look at Amazon's growth. Perhaps it should stop growing, and focus on decarbonizing everything in its existing operations, in order to pay only as many of these costs as are necessary to power its current operations.

Perhaps it should reconsider *how* it grows. If it does not, if Amazon continues growing unchecked by natural limits or costs to the planet and communities, Amazon risks standing in contradiction to its own "Customer Obsession" and long-term thinking principles. As it accelerates, the climate crisis will have huge consequences for the company, its workers, and its customers. **As we said in AECJ's first open letter in 2019, "customer obsession requires climate obsession." There are no customers on a dead planet** — and there are few customers on a planet on which the basic life-support systems have come unspooled. For Amazon to thrive into the future, there must be a stable future for many people.

What would such a reconsideration of growth mean, and why would Amazon do it?

First of all, it must be accepted that pausing growth is possible. It is an often-repeated myth that corporations are bound to their shareholders to maximize profits. But as corporate law expert and Cornell Professor Lynn Stout used to say, this isn't true. Directors are bound to act in the best interest of the company, which can be formed for any purpose (and Amazon was). Even "maximizing shareholder value" is vague — while a company's stock going up may be valuable, it is undeniably more valuable to have breathable air and drinkable water. Of course, the details of what constitutes shareholder value have been debated for many years, and most corporations simply settle on maximizing price per share. This has to change.

And it *is* possible to think differently. Jeff Bezos has stated that Amazon is

> *"all about the long term" rather than "short-term profitability considerations."*

Though this statement was in a shareholder letter, it's clear his commitment to long-term thinking isn't limited to Amazon's position as a market leader in five years. The guy's installing a 10,000-year clock in a mountain on his private property after all.

So how could Amazon go about restraining growth in order to ensure an abundant future on a planet that can still support human life on Jeff's 10,000 year timescale, or even a hundred-year timescale?

Advocates for degrowth are often associated with a call to reign in "consumerism." So maybe the company should encourage people shopping on Amazon to shop less, or to shop only "green." This is a good start; certainly, everyone could do with not having a lot of meaningless stuff in their lives — just ask Marie Kondo or the thrift stores that were drowning in donations at the height of her show's popularity.

But much of the world lives in material austerity. Many people would benefit from *more* stuff (or at least *better quality* stuff), so in general, a "politics of less," as Matthew Huber calls it, isn't going to do much to inspire the average American, let alone the average person. For those of us not living in austerity (who are well represented in the Amazon corporate workforce as well as Prime's customer base), *Electrify* author Saul Griffith writes that just a few major changes to our consumption can make the vast majority of the difference to the climate: making the next car we buy electric (or, in urban areas, making it an e-bike), installing solar, buying a heat pump, and converting our appliances to energy-efficient electric models.

Buying fewer things that we don't need is a good thing, but unless it becomes a cultural norm, the effect is marginal, especially when individual changes are put in context of corporate changes at Amazon's scale. **Amazon needs to reduce its *own* wastefulness of destroying unsold and returned goods — workers in the UK report that they're instructed to destroy upwards of 200,000 items in a single week at a single warehouse.**

Other paths to that abundant future exist. Is it really unreasonable to insist that Amazon simply flip the order of priority, and state that it will grow only if it can do so in ways that are aligned with a stable and thriving planet? First it needs to get rid of or minimize "carbon intensity" as a metric, and instead place a hard cap on *absolute* carbon emissions, and then progressively (and aggressively) lower that cap to near zero. Any growth would have to take place underneath the cap. It could also add

meaningful consent and inclusion procedures to its green infrastructure efforts. This presents a meaningful challenge for the techno-optimists among us: **if technology can truly leverage us out of any constraint, then surely Amazon will be able to use technology and innovation to grow within the strict limits of a sustainable framework**, like an awe-inspiring espaliered fig tree.

Internal Carbon Price

As long as a stable planet is *secondary* to growth, Amazon's corporate messaging on this will always be misleading on what it's *really* doing. We think this is why the Amazon Sustainability Report disguises the deep challenges Amazon faces. For example:

- It touts high absolute numbers rather than the small percentages of business share that they represent, such as the thousands of EVs on the road instead of the small percentage of total deliveries made with EVs.

- It uses carbon intensity and net emissions as relative metrics instead of absolute carbon emissions. Does it really matter if the carbon intensity of selling a product has gone down, if the company is now selling and shipping three times as many of those products (perhaps because they are now more cheaply made)?

- It brands a motley collection of certifications, at least 4 of which are not even operational yet, as "Climate Pledge Friendly" on its website, while quietly deleting goals that it hasn't met instead of explaining why it hasn't met them — as was the case with Shipment Zero and Science Based Targets.

There is a concrete way that Amazon could create a system which puts the very real costs of carbon pollution literally on the books, closer to equal footing with other business and financial metrics. **And Microsoft already does it — along with over 850 other companies. It's called an Internal Carbon Price.**

The strongest version of an Internal Carbon Price system sets a price per tonne of carbon emissions (more precisely CO2e) within the company, and then each business unit pays a carbon fee into a sustainability fund based on the emissions it generates. In theory, this can hold business units accountable for high-carbon products and operations, because each business unit needs to include this carbon metric in its financial bottom-line. It can incentivize business decisions that factor in carbon pollution as well as cost, profit, and other core metrics.

For example, if the teams building the new Oregon data centers with gas were told to budget in the price of its carbon pollution, would the economics of the project have

encouraged decision makers to choose a sustainable energy source or a location with more renewable energy? If the team that determines when packages use planes vs. trucks had to account for a carbon fee alongside other cost and speed factors, would more packages be diverted from the high-carbon plane routes? We'd hope so!

In practice, there's a wide range of how rigorously companies implement Internal Carbon Prices. Of companies that report using a carbon fee across their business units, there's a big range — the median price is $18 per metric ton CO2e and the maximum $532 per metric ton. Microsoft doesn't disclose the price it uses, but it does share how the carbon fees are used to directly fund carbon reduction projects like renewable energy.

This metric could become another tool of greenwashing. To instead make it meaningful — an Internal Carbon Price that actually drives business decisions to eliminate carbon pollution — we'd want to see:

- A high carbon price per ton that reflects what it will actually take to eliminate Amazon's carbon pollution
- All of the carbon fees used to fund Amazon's carbon reduction efforts, including the improvements we cover in this report. However, these should be *additive* to funds the company commits to The Climate Pledge programs.
- Transparency in how it's implementing the Internal Carbon Price, including the price itself, how a carbon fee applies to business units, and how the funds are used.

Improvements

Even the most rigorous financial system can't address the very real harms to people and communities from Amazon's pollution — nor harms from the "green extractivism" behind batteries and other green tech that we need to slow global heating. Which is why an Internal Carbon Price can't become another way for Amazon to buy its way out of the problem.

The Internal Carbon Price must be used in ways that drive business decisions to prioritize eliminating pollution at the source — trucks, planes, gas-powered data centers and more. Its purpose is to **put sustainability on an equal footing with growth metrics, rather than let growth metrics run unchecked by the reality of our climate crisis**. And it must be paired with corporate policies that prioritize the well-being of communities most impacted by Amazon's growth.

We want to reconsider growth in a way true to Amazon's Think Big principle. This includes:

1. Adding meaningful consent and inclusion procedures to the company's expansion, including green infrastructure efforts — seeking input, securing consent, and ensuring affected groups share in the benefits.

2. Getting rid of or minimizing "carbon intensity" as a metric and focusing on actual or absolute carbon emissions.

3. Implementing an Internal Carbon Price, with rigorous practices discussed above, to not let growth outpace sustainability.

Whether it's through this Internal Carbon Price or other mechanisms, we hope Amazon will have the fortitude and imagination to prioritize sustainability over the disastrous path of growth over all else. But we know it won't unless it is pressured.

We think employees can and should do the pressuring. What if corporate workers banded together and demanded an Internal Carbon Price? What if delivery drivers had the power to cap their routes to a safe number for their own health and protection without a decrease in pay? What if workers organized to make the company actually honor OSHA's required heat breaks per shift? What if fulfillment center workers living in sacrifice zones collaborated to demand an end to diesel fueled trucks in their communities? What if tech workers resisted the return to office mandate, and thereby eliminated tons of carbon emissions per year?

After all, employee pressure led to the creation of The Climate Pledge in the first place! It could also push Amazon to actually honor that pledge.

PART EIGHT

Towards a New Path

If you've made it this far, thank you for reading. We hope that this report has helped you understand where Amazon truly is in terms of delivering on its sustainability goals. But more so, we hope you, fellow Amazon colleagues, feel inspired to push Amazon towards rapid decarbonization, better working conditions, and true care for the communities it operates in.

At AECJ, we have seen first hand the power of Amazon workers organizing to demand that the company do better and live up to its Leadership Principles. So come join us!

We're Amazon employees who want Amazon to use its scale and resources differently.

We know the company understands the importance of thinking big and taking ownership of hard problems, but so far Jeff Bezos, Andy Jassy, and our top executive leadership have used those principles to value profit recklessly over the climate, workers' health and safety, and community well-being. Amazon has the resources and scale to spark the world's imagination and redefine what is possible and necessary to address the climate crisis — **we're asking Amazon to pivot for a sustainable future.**

Our vision for a more sustainable Amazon is: A company that values all of its workers across the supply chain, values the natural world and respects its limits, and values the communities where it operates its business.

If you believe in this vision, or have ideas on how we can further improve it, we'd love to hear from you. Please get in touch and join us.

https://www.amazonclimatejustice.org/