Welcome to the Future

Electric cars are bursting onto the U.S. market with astonishing speed, but meeting policy resistance as well. Dissecting some of the anti-EV arguments makes the case for why—and how—society needs to come together in a transportation reform movement

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FOUR YEARS AGO, this magazine published my article entitled "Are Electric Cars the Future?" The intervening years have answered this question pretty clearly. In the first quarter of this year, 7 percent of all new cars sold in the United States were electric—and in California it was 21.1 percent. In fact, California and a half dozen other states have now banned the sale of new gas and diesel cars after 2035. Dozens of other countries and several major automakers are following their lead. Meanwhile, we are seeing the rapid deployment of electric bicycles, school buses, transit buses, long-haul trucks, agricultural and mining equipment, planes, and boats. Everything that moves is going electric.

Electric vehicles, now popularly known as EVs, have many advantages, including lower maintenance costs for the consumer, zero tailpipe pollution and less noise for the environment, and greater national energy independence. Most notably, EVs dramatically reduce climate pollution. The Union of Concerned Scientists estimates that driving the average electric car in America is equivalent to driving a gasoline car that gets 96 miles per gallon—if such a vehicle existed. In areas with cleaner electricity—such as California, where 40 percent of electric cars currently operate—the environmental benefits are even greater.

The official U.S. climate inventory shows transportation is responsible for 29 percent of national greenhouse gas emissions, making it the single largest source. And these emissions are growing at a faster rate than any other source. So you might reasonably expect the growing popularity of electric vehicles would be seen as an exciting and positive development by everyone concerned about climate change.

Instead, there has been a chorus of arguments pushing back against EVs—particularly electric cars and trucks—from progressive environmental advocates and some media sources. It's clear that the oil industry is seeding some of these arguments with funding and misinformation, and conflict and contrarianism make for great clickbait. But there are deeper disagreements at work here that threaten our progress toward a sustainable, equitable transportation system. By dissecting some of the anti-EV arguments, I will make the case for why—and how—we need to come together as a transportation reform movement.

One of the first arguments made by environmental advocates is that electric cars are still cars—and electrifying them doesn't reduce impacts like traffic congestion, injuries and deaths in crashes, or urban sprawl. Publications such as *The Nation*, *The Hill*, and others regularly run headlines saying in effect that "EVs won't save us," where advocates argue we should focus instead on transit, walking, and biking. The problem with this argument is the word *instead*. In reality, virtually every study of the subject says we must do both. Even the bicycling-focused Institute for Transportation and Development Policy found that "for the urban transportation sector—one slice of the climate-change equation—the road to keeping below 1.5°C global warming involves both compact cities developed for

walking, cycling and public transit, as well as a rapid and strategic transition to electrified vehicles." For rural and suburban residents, of course, EVs are even more important.

Across the United States about 90 percent of all trips take place in a personal vehicle, and this figure has hardly budged in the past few decades. The *New York Times* recently profiled my home town of Portland, Oregon, noting it has "tried harder than most American cities to coax people out of their cars," yet about 80 percent of trips here are still made by auto. Less than 3 percent of Portlanders currently commute to work by bicycle; another 8 percent walk or take transit.

We absolutely need to change this extreme car dependency—but we also need to acknowledge the reality we currently face, which needs broad solutions that will appeal to and engage the public in saving carbon emissions throughout the economy, including the major single source, transportation.

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ADVOCATES have been working for decades to make it easier for Americans to walk, bike, and take transit. That struggle requires deep investments in light rail, buses, sidewalks, and bike lanes; substantial redevelopment of our urban areas; and changes to the way we price mobility (more on that later). That work is important and needs to continue. As with transitioning from gasoline to electricity, it will take decades to develop an infrastructure that will reduce our dependence on private vehicle use.

But let's be clear: that work has always been challenging in America. Nothing about moving to cleaner electric cars makes it any harder. Those headlines could just as easily say "bikes and transit won't save us." In the face of climate catastrophe, we need an all-of-the-above approach.

Sometimes critics allow that electric vehicles might be helpful—but argue that electric bikes, electric transit buses, or perhaps shared electric cars are better for the planet and communities than privately owned electric cars, and we should focus on them instead. *Outside* magazine's headline "Why You Should Buy an E-bike Instead of an Electric Vehicle" is typical of this genre. Here again, binary, either-or thinking is the main problem—paired with a misplaced assumption that these strategies are easier than moving to electric cars.

Forth's recent report "Electric Micromobility in Oregon" notes that electric bikes are an extremely promising way to get more Americans riding more often, especially for the roughly half of all trips that are less than three miles long. For example, Denver's electric bike incentives of up to $1,400 for income-qualified residents have been an extremely effective tool to increase riding, reduce carbon pollution, and save money for commuters. However, expanding the use of electric bikes will require more robust public outreach and education about the technology; better bike lanes and other facilities, especially in historically underserved communities; incentives to lower the cost of purchasing e-bikes; and improved access to charging, especially for residents who live in apartments without elevators.

Similarly, shared electric cars can provide a valuable service, particularly for those without the ability to purchase a vehicle of their own. Forth operates such electric carshare services in over a dozen locations. However, there is not yet a sustainable financial model to support these services and, for most people, a privately owned vehicle is still a necessity for the demands of daily life. Likewise, electric transit buses are a great option—but they won't solve the underlying challenges of fixed-route transit systems. Long-haul trucks are going electric, too—but building out their high-power charging network will be challenging.

In short: none of these policy ideas is mutually exclusive, which is good news—but implementing them will still not be easy. We need to electrify everything that moves, and we need to support more and better electric transportation options. We can and must do both at the same time.

Another argument focuses on the negative environmental and social impacts of mining the materials needed in electric vehicles, especially for batteries. There's no question that the mining industry has always had a heavy environmental and social footprint. The patchwork of laws that governs mining in the United States hasn't been substantially updated since the General Mining Act of 1872, thanks to strong opposition from the mining, oil, and gas industries. All too often, mining operations

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SIDEBAR

Oregon's All-In Approach to Electrification

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"In the first quarter of 2023, we were third in the United States for the share of new cars, trucks and SUVs sold that are electric"

Climate change is affecting every corner of the planet. In Oregon, that means that extreme weather—wildfires, high heat, floods, and landslides—are growing more frequent and destructive. These disastrous events aren't cheap. Every five years, we're spending $20 million more to respond to extreme weather around the state, and we're barely keeping up.

Not only does extreme weather cost the agency money, it's also harming our communities. These dangerous events can close or damage roads, which disrupts the movement of goods and services and blocks lifeline routes critical for evacuation and recovery.

We must address the impacts of climate change and the single largest source of their cause: greenhouse gas emissions from transportation. Oregon's plan for reducing emissions from transportation is multifaceted: cleaner vehicles and fuels; expanded and improved low-emission travel options (biking, walking/rolling, and transit); supportive land use changes; increased system efficiencies; and pricing. Our efforts in those areas over the past decade have paid off: by 2050, we project emissions will be 60 percent lower than they were in 1990.

Most of our progress results from regulations and investments in cleaner vehicles and fuels. But we also need to reduce people's dependence on driving and increase use of low-emission options. Our recently adopted Oregon Transportation Plan includes bold policies around reducing passenger vehicle miles traveled, with a target of a 20 percent reduction by 2050.

That will not be easy. It will take coordination between local and state agencies, plus buy-in from the public. However, recently adopted regulations in Oregon ensure that local government plans and transportation project lists actually result in reductions to miles traveled.

The state Department of Transportation is making similar commitments and is examining roadway pricing strategies that better reflect the true cost and impact of driving, in support of transitioning to lower-emission options. But many people will still need to drive some or all of the time. For those trips, our goal is to make every mile driven clean.

Therefore, Oregon is all-in on transportation electrification. We're already on a promising trajectory: In the first quarter of 2023, we were third in the United States for the share of new cars, trucks and SUVs sold that are electric. We average about 1,000 new EV registrations per month.

The public is clearly responding to the electrified future, and we're responding with substantial investments in EV charging infrastructure. ODOT's initial investment will be over $100 million, funded from the federal National Electric Vehicle Infrastructure program and state dollars. While the NEVI funds create a charging network along major highways and interstates, we are also focusing on areas that the private sector may not initially see as profitable, like rural regions and disadvantaged communities.

Our new Community Charging Rebates Program aims to close charging gaps in those neighborhoods. The program reimburses most of the cost of Level 2 charging projects at multifamily homes and publicly accessible parking areas. Seventy percent of funding is reserved for projects in rural and disadvantaged communities. We launched the rebate program in June, and within two days we received requests equaling about half of the available funding for the first round. We plan to hold future rounds in 2024 and beyond.

These investments are a strong start, but our studies show that we need to double the amount of charging infrastructure each year to accommodate demand by 2035. That will require a huge investment, in the billions of dollars range, from both the private and public sectors.

Targeted and continued investments, policies, and programs are needed to reduce emissions from transportation, whether it's cleaning up each mile driven, or reducing how far and how often people drive. Climate change threatens all of us, and it will take all of us to push back against it.

inflict lasting harm on vulnerable ecosystems and communities.

The mining industry is also trying to take advantage of the growth in electric vehicles and other clean technologies to argue that it should be allowed to dramatically increase U.S. mining production with minimal regulations and little concern for local residents and communities. This cynical strategy seeks to capitalize on a scarcity mindset to force false tradeoffs. In reality, however, the clean energy transformation underway represents a tremendous opportunity to reduce the overall need for mining and drilling, especially for oil and gas. In fact, a recent article by Michael Thomas in the Distilled substack estimates a fossil fuel economy requires 535 times more mining than a clean energy economy.

The EV transition is an opportunity to develop more responsible practices, reduce reliance on imports from nations with even more lax regulations than the United States, and dramatically expand recycling of key minerals. The Bipartisan Infrastructure Law and Inflation Reduction Act are investing billions of dollars in domestic battery producing and recycling initiatives. As we create new supply chains for electric vehicles, we can and should seize the opportunity to create higher environmental and social expectations. However, it hardly seems reasonable to expect electrification to immediately fix centuries of failed mining policy.

Some have argued we should make raw materials go further by "convincing" people to buy smaller vehicles with shorter-range batteries. A recent study by researchers associated with UC Davis pointed out the obvious—that smaller batteries and fewer cars would reduce lithium demand—leading to a *Wired* article claiming "The Earth Is Begging You to Accept Smaller EV Batteries." Actually, what the Earth is begging for—if not demanding—is that we stop burning fossil fuels.

Advocates should keep working to close regulatory loopholes and incentives that encourage production of large vehicles, and keep working to promote smaller and more affordable options

IF THERE IS one thing we have learned in the past decade in transportation electrification, it's that Americans have a lot of anxiety about vehicle range and charging. Even though the average American drives about 50 miles a day, consumer research consistently shows they want 200-300 miles of range in an EV. It's not rational. But few things about consumer behavior are purely rational, especially when it comes to cars. It's clear that today's longer-range electric cars are much more popular with consumers than the first-generation cars we had a decade ago, with ranges of only about 100 miles. Yes, today's increased range makes cars more expensive—and yes, it also increases the natural resources needed to produce them. However, in the real world the alternative is not smaller EVs—it is equally large gas cars.

Roughly 80 percent of all new vehicles sold in the United States are trucks and SUVs, not sedans or coupes. Until recently, the lack of electric options in those classes has been a major barrier to wider EV adoption. In the past two years, we have finally seen electric SUVs and trucks offered for sale, and EV demand has surged in response. Most notably, the Ford F150, America's best-selling vehicle, recently gained an electric version—which immediately had a one-year waiting list. Many of us see this as exciting good news—even pickup trucks are going electric! Unfortunately, some critics want to blame electrification for consumers' preference for trucks and SUVs. *The Atlantic* went so far as to argue "Electric Vehicles Are Bringing Out the Worst in Us."

The trend toward larger vehicles certainly creates safety concerns for pedestrians, cyclists, and anyone else not riding in one. That has been true for decades. Advocates should keep working to close regulatory loopholes and incentives that encourage production of large vehicles, and should keep working to promote smaller and more affordable options. They should continue that work in parallel with electrification efforts—but they should not expect electrification advocates to solve that problem for them. Nor can the planet wait while we try to radically reshape consumer preferences.

Lastly, advocates often assert that electric cars are not equitable. The simplest form of this argument points out that the average electric vehicle cost $54,000 in 2022, and then assumes this is far too expensive for most people, and therefore only rich people buy EVs. There are a number of problems with this argument. The average new fossil fuel-powered vehicle cost $44,400 in 2022, so electric cars are only about $10,000 more—a difference outweighed by govern-

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SIDEBAR

Don't Let Big Oil Stop Clean Transportation

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"The industry's disinformation campaign is so egregious that a House of Representatives investigation found big oil has played a leading role in causing the climate crisis and impeding efforts to find solutions"

One of the military theorist Sun-tzu's tactics set out in his classic *The Art of War* is to "divide and conquer." That is exactly what some opponents of electric vehicles are doing. Every year the oil industry can delay the shift to EVs translates into hundreds of billions of dollars of extra profits.

According to the Natural Resources Defense Council, the six largest oil and gas companies with U.S. operations raked in a record-breaking $168 billion in profits in 2022—in just 12 months equaling about half of the 10-year investment in last year's Inflation Reduction Act aimed at speeding the transition to clean energy.

Unfortunately, there is ample evidence that big oil's efforts to stoke the fires of division are increasing. The industry's disinformation campaign is so egregious that a House of Representatives investigation found big oil has misled the public about its central role in causing the climate crisis and has impeded efforts to find solutions.

A *New York Times* article published in 2018 clearly exposed the successful stealth campaign financed by oil companies to roll back federal regulations reducing greenhouse gas pollution from cars, including paying for Facebook ads and websites. With the Biden administration reversing that rollback and proposing even tougher standards, it's no surprise that ExxonMobil recently launched a new advertising campaign to discredit electric vehicles.

The oil industry has political allies. Conservative attorneys general, with the oil-rich state of Texas in a prominent leadership role, have filed lawsuits hoping that the Supreme Court will strike down the decades-long authority of California and the U.S. Environmental Protection Agency to require the sales of EVs and other cleaner cars. We can expect EVs to become a wedge issue in the 2024 election season, with conservative media likely to call it a "ban" on gasoline car sales.

I have spent most of my three-decade career working for science-based environmental organizations advocating for cleaner transportation, first at the Union of Concerned Scientists and then at the Natural Resources Defense Council. I have served on two National Academy of Sciences committees to review EV and other clean car technologies.

Much of my time was spent on refuting specious criticism. I've debunked arguments that EVs are simply "elsewhere emitting vehicles"—not if they are charging using renewable electricity. And that the battery-manufacturing emissions take back any tailpipe pollution benefits over the vehicle's lifetime—shown to be based on poor data on early pilot production of batteries. Or that the price of batteries would never come down to a reasonable level—Tesla and other car manufacturers have crushed that argument.

To be clear, there are legitimate criticisms of transportation electrification. Comments offered in the spirit of getting it right are necessary, and serve an important role in the public policy debate.

In order to avert the worst impacts of climate change, climate advocates must join forces with equity and mobility advocates to push for building fewer car-dependent communities, fully funding mass transit, and developing more vibrant mobility ecosystems—all important components of a sustainable transportation strategy that rapidly transitions to clean energy.

Another area that needs urgent attention involves critical minerals like lithium and cobalt: ensuring responsible mining practices are adopted before the industry is fully locked into poor practices defined by the lowest common denominator. What is needed is a race to the top to create consumer demand for a supply chain that respects human rights, communities, and the environment.

However trite it may sound, we must not let the perfect be the enemy of good. We must not forget about the frontline communities across the world who are suffering the impacts of pollution and corruption caused by one of the largest, dirtiest industries on the planet. Let's not let the oil industry win by dividing communities at this critical moment in our efforts to create a zero-emitting, equitable, and fossil-fuel-free transportation future.

ment purchasing incentives and EVs' much lower fuel and maintenance costs.

Further, in the United States, used vehicles outsell new ones by a three-to-one ratio. Because EVs are quite new, there is not yet a deep pool of used electric cars available. Once there is, that will enhance EV uptake by lower-income drivers. But it is not true that only rich people buy new cars. Hedges & Company reports that over 30 percent of new vehicles are purchased by households with incomes under $50,000.

There is strong evidence that low-income drivers and people of color are quite interested in EVs. A survey by *Consumer Reports* recently found that while 33 percent of White respondents said they would definitely or seriously consider purchasing or leasing an electric vehicle, that figure rises to 38 percent for Black respondents, 43 percent for Latinos, and 52 percent for Asian Americans. So the fact that these populations are currently less likely to buy EVs is more likely because of the many other barriers they face to purchase them. For example, *Consumer Reports* found that roughly 80 percent of Americans have never driven an electric car. Historically, opportunities to experience these cars—and even advertising for them—have been less prevalent in low-income communities of color. Such communities are also more likely to live in apartments, which makes charging at home difficult. The National Consumer Law Center and others have documented that car financing is another major barrier: Black consumers pay more for cars, have more trouble qualifying for loans, and pay higher interest rates compared to White consumers.

Our collective work to promote a more equitable transportation system needs to be grounded in the lived experience of community members and designed to address real needs and barriers

Our collective work to promote a more equitable transportation system needs to be grounded in the lived experience of community members and designed to address real needs and barriers like the above—not based on assumptions or stereotypes or wishful thinking.

OF ALL PEOPLE, environmentalists should understand the importance of biodiversity in any ecosystem. The mobility ecosystem is no different. We need a wide variety of clean mobility options to meet the needs of diverse communities. It will take a range of policy interventions to ensure those options are able to flourish, and that historically underserved communities truly have access to them. Here are a few strategies that could help us move us towards that vision together.

First, we need more networks and opportunities to bring together electric mobility advocates and other transportation reform advocates. We generally come from different backgrounds, have different training, move in different professional and social networks, and speak different languages. Forth is inviting more "traditional" transportation advocates and planners to our Roadmap Conference, and seeking out opportunities to speak at their events. We need more of that cross-fertilization. We also need to invest in coalitions that bring us together to find common ground, such as CHARGE—the Coalition Helping America Rebuild and Go Electric.

Second, advocates should find common ground around the need to ensure historic federal funding in the Inflation Reduction Act and the infrastructure law that supports a full range of strategies to reduce carbon pollution from transportation. Both statutes provide billions of dollars that could help drive transportation electrification and help reduce our dependence on cars. However, many of these programs are extremely broad and flexible—their actual impact will depend heavily on how the programs are implemented at the federal level, and how they are used at the state and local levels. For example, EPA will award $5 billion in Climate Pollution Reduction Grants and $20 billion in a Greenhouse Gas Reduction Fund, and it's possible that none of this money will support transportation programming. Worse yet, analysis by the Georgetown Climate Center suggests that federal funds could actually fuel business-as-usual investments like freeway expansion that actually increase climate pollution.

Third, we can also work together to increase the amount of philanthropic investment supporting sustainable transportation of all kinds. Charitable foundations and donors can play critical roles in increasing the impact of governmental and NGO programs, but they have not yet matched their giving to the scale of the transportation reform challenge. Research by ClimateWorks Foundation found that less than 2 percent of global philanthropic giving in 2020 was for climate change and

less than 4 percent of that global climate change funding was focused on the transportation sector. In the United States, it is estimated that less than 10 percent of philanthropic climate funding goes to transportation. Dozens of transit advocates recently issued an open letter calling for U.S. philanthropy to invest an additional $200 million in their work over the next five years, and the global Drive Electric Campaign is working to mobilize $1 billion worldwide to support transportation electrification. These efforts represent a good down payment, but spending on sustainable transportation needs to be at least an order of magnitude greater.

Fourth, we should all agree on the need to center equity in our work. Transportation policies and investments have a long and ugly history of injustice, often grounded in race. Redlining and race-based lending practices forced communities of color into particular neighborhoods; urban planning and renewal policies forced freeways through these neighborhoods; investments in transit, walking, and biking were made elsewhere; and where progressive transportation investments have come to historically underserved communities, they have often accelerated gentrification without benefit to local residents.

Communities of color and historically underserved communities suffer the most, both economically and environmentally, in our current transportation system. They bear the brunt of air pollution from those roads punched through their neighborhoods, They spend a higher percentage of their income on transportation and tend to rely more on unreliable and polluting vehicles that are expensive to maintain—or on transit systems that are rarely funded well enough to be as convenient as a private car. The most affordable housing is usually furthest from jobs—a Harvard study found that low commute time is the single greatest predictor of escaping poverty.

Transportation advocates of all kinds should be working together to address these injustices, and we should be following the lead of these communities as we do so. That will generally require an all-of-the-above" strategy that helps people where they are (for example, by helping them access cleaner and more affordable electric cars) while also helping transform larger systems (by, for example, expanding transit.)

Finally, we should be working together to change the way transportation is funded. The United States spends the vast majority of its transportation funds on road expansion, while investing very little in transit, bike lanes, pedestrian facilities, or charging infrastructure. Registration fees, fuel taxes, and other funding mechanisms generally collect revenue; planners, engineers, and politicians then decide how to spend that money. Those spending decisions disproportionately tilt towards building new road capacity—even though, as social critic Lewis Mumford said way back in the 1950s, "Adding highway lanes to deal with traffic congestion is like loosening your belt to cure obesity."

In addition to changing spending priorities, it's also important to change how transportation funds are raised. We need road pricing that varies based on congestion and pollution, so that drivers have an incentive to shift to other modes or other times of day. Pricing to manage demand is well established in the electric utility industry and has helped save billions of dollars by avoiding the construction of unnecessary power plants. Managing demand through pricing should play a more central role in transportation as well.

The oil industry has been pushing punitive EV registration fees in many states—including a proposed $1,000 annual fee in Illinois that would have been several times as much as the average driver pays in gas taxes. We need to fight these bad policies, but the transition to a post-petroleum future also gives us an opportunity to develop a better system for funding transportation. We should be working together for a system that manages demand through pricing, encourages investment in a variety of transportation modes, is fairer and more equitable, and better reflects environmental impacts.

Cleaning up transportation at the pace required to address the climate crisis—and in a way that begins to undo a long history of racial, economic, and social injustices—will be the challenge of a lifetime

Transportation is a large and complex system with impacts throughout the economy and overall society and of course the environment. Cleaning up transportation at the pace required to address the climate crisis—and in a way that begins to undo a long history of racial, economic, and social injustices—will be the challenge of a lifetime. It will take years of effort by an incredibly diverse coalition of partners. The first step is to stop attacking one another, and focus on working together to address the immense challenge in front of us.