

Nate Hegyi: Hey, Felix – have you seen all the ads lately for electric vehicles?

Felix Poon: Uh...I did see that Will Ferrell one from a superbowl a few years ago.

Will Ferrell: Did you know that Norway sells way more electric cars per capita than the US? Norway. Well I won't stand for it.

Nate Hegyi: I actually liked that commercial, I remember that from the superbowl.

Felix Poon: Yeah these commercials are basically everywhere now right?

Nate Hegyi: Right, like a bunch of new models are on the market

Commercial 1: Introducing the all-new all-electric Nissan Ariya

Nate Hegyi: And there are tons of ads for them on TV and on YouTube.

Commercial 2: The F-150 Lightning is up to the task

Felix Poon: Yeah, but I can tell you from personal experience that a surge of EV commercials is not the same thing as a surge of actual EVs.

Felix Poon: I was interested in checking out some EVs if you have any?

Dealer 1: Some TVs?

Felix Poon: EVs...electric vehicles?

Felix Poon: So last year I went to some dealerships to look at buying an EV.

Felix Poon: if it's possible maybe I could even test drive an EV?

Dealer 2: I don't have any...that's the problem

Felix Poon: And it kind of seemed like... nobody knew anything about electric vehicles.

Nate Hegyi: I think Will Ferrel would have been really disappointed.

Felix Poon: Do you, do you know what it, what it really means?

Dealer 3: Not off the top of my head, because again, these are, as newer to us as they are to you guys at the same time, so we're kind of learning as well.

[mux]

Felix Poon: For years now, climate experts have said to prevent the worst effects of climate change, we need to get off fossil fuels, and transition to electric cars.

AND we need to do it fast.

According to most models, the world needs to stop selling gas cars by the year 2035¹ if we're going to hit our climate goals.

Nate Hegyi: 2035?? Felix, that's less than 12 years away. I mean you're saying no more sales of internal combustion cars in 12 years.

Felix Poon: That's what I'm saying.

Nate Hegyi: Are we gonna make it?

Felix Poon: Well that's what we're gonna be talking about today...just how fast can this EV transition go?

[THEME MUX IN]

<<NUTGRAF>>

Nate Hegyi: This is Outside/In, a show about the natural world and how we use it. I'm Nate Hegyi.

And today, the first of a two-part special, *The race to net zero: will EVs get us there fast enough?*

Sara Baldwin: we've done big things before. We're now at an opportunity and a kind of a crossroads

What are the barriers to this EV transition?

¹ <https://www.2035report.com/transportation/wp-content/uploads/2020/05/2035Report2.0-1.pdf> model for 100% EV sales in the US by 2035
<https://www.bcg.com/publications/2021/why-evs-need-to-accelerate-their-market-penetration> says on current trajectory, EVs will be "dominant" by 2035
https://iea.blob.core.windows.net/assets/7eba81-74ed-412b-9c60-5cc32c8396e4/NetZeroby2050-ARoadmapfortheGlobalEnergySector-SummaryforPolicyMakers_CORR.pdf global car sales must reach 60% by 2030

Nora Naughton: Can I make it to the next charger without dying in the middle of the road?

From the charging infrastructure, to mining the metals that make batteries go.

Thea Riofrancos: The mining industry is globally. Notorious. For things like. Outright murder and. Violence towards communities that resist it.

In today's episode, we look at four barriers we need to overcome... if we're gonna electrify America's cars.

The race to net zero is under way.

[THEME MUX OUT]

<<FIRST HALF>>

Felix Poon: So I want to start this big conversation about the EV transition, with a little history lesson on seat belts.

Nate Hegyi: Safety first, even for podcasts.

Felix Poon: So the first law mandating that car companies include seatbelts in their cars was passed in 1971.

Felix Poon: But the first law that said you had to actually wear those seatbelts wasn't passed until 16 years later in [1984](#).

Nate Hegyi: Seriously? WTF?

Felix Poon: I mean, the average lifespan of a car in the US is around 12 to 15 years², so any change takes at least that long to take over.

Nate Hegyi: I guess there's always resistance to change.

Felix Poon: Right. there was a lot of resistance...[people were reportedly cutting the seatbelts out of their cars in protest, they were challenging seatbelt laws in court](#)³. [Op eds across the country were saying freedom is more important than regulating safety.](#)⁴

Nate Hegyi: Sounds familiar doesn't it?

Felix Poon: So it took a lot of activism to get these seatbelt mandates passed.

[Eventually every state but one ended up passing seatbelt mandates.](#) Can you guess which state held out?

Nate Hegyi: I'm gonna guess a state, whose motto perhaps is "live free or die," New Hampshire.

Felix Poon: ding ding ding ding ding...you got it!

² The average age of cars in the US is 12 years. Articles, and Google, conflate this with the average lifespan of a car. Based on most estimates that cars last 200,000 miles, and the DOT says the average American drives 13,476 miles a year, then the average lifespan should be about 14.8 years.

³ <https://www.quora.com/Why-hasnt-the-seatbelt-law-ever-been-challenged-as-unconstitutional>
<https://www.cga.ct.gov/PS98/rpt/olr/html/98-R-1198.htm#:~:text=Seat%20belt%20laws%20have%20mainly.state's%20constitutionally%20granted%20police%20power>.

⁴ <https://www.chicagotribune.com/news/ct-xpm-1987-02-05-8701090791-story.html> and <https://www.nytimes.com/1986/02/26/opinion/l-seat-belt-laws-violate-your-civil-rights-671386.html> for example

[MUX SWELL]

Nate Hegyi: Okay if we learn anything from this decades-long saga of seatbelts...it's that change takes a long time.

Felix Poon: Yeah, and a lot of it depends on policy.

So back to EVs... The EPA just recently proposed a really strict set of emissions standards that would basically push the auto industry to hit 67% EV car sales by 2032.

Nate Hegyi: Which would basically put us on track to hitting our goal - but, you never know with these things, There could be appeals, lawsuits, delays...

Felix Poon: Yeah, so if we look at where we're at today in the shift to EVs? [only about 6% of all new cars sold in the US today are EVs.](#)

Nate Hegyi: So two questions... What's the holdup and how do we speed things up?

Felix Poon: So the first barrier I want to talk about is consumer education. Because buying a new car is a big deal. And like with any big purchasing decision, it's normal to have lots of questions.

Felix Poon: Where do you charge this thing...is this where you plug it in?

[fade under]

General Sales Manager: Yep, so you're gonna have, a charging port right here. You'll have a supercharging port as well.

Felix Poon: So when I was at this Ford dealership last year, the general sales manager showed me their Mustang Mach-E. And I asked him how long it takes to charge.

Felix Poon: I'm just wondering like, what's the charging like?

General Sales Manager: So with those superchargers, you can get it done in I think... you can get I know the first 80 percent of it you can get done in like...

[fade under]

le-, less than an...pretty sure like an hour, but I think for a full 100 percent charge it's about four hours.

Nate Hegyi: He doesn't sound super confident.

Felix Poon: No, and actually, he told me a lot of things that were wrong. Like, he said you can charge the Mach-E at Tesla superchargers? Not true.

[MUX IN]

Felix Poon: So based on secret shopper studies, where they send these "undercover" shoppers to ask all about EVs, this is kind of a common experience:

People are not getting great info about EVs at a lot of dealerships.

And it's a big deal, because recent consumer surveys say that about 35 percent of Americans are seriously considering an EV the next time they buy a car.

Nate Hegyi: thirty-five percent is actually a lot of people when you think about it.

Felix Poon: Yeah – but only if the people who are interested can actually learn about them, and buy one.

[MUX BEAT]

Craig Bentley: Good afternoon, welcome to EV Live, my name is Craig, I'll be your EV specialist for this call this afternoon. We are working with a one way camera here. So you can see into our studio, I cannot see you but I can hear you.

Felix Poon: So one company trying to overcome the consumer education barrier is GM – they have this resource called EV Live, and Nate, you and I tried this out...

Nate Hegyi: Yeah, it's like this virtual showroom where you talk to someone on a video call.

Felix Poon: And right off the bat, the first question you had was about charging.

Nate Hegyi: Very basically, I have no idea how charging works. Can you help me understand how charging works?

Craig Bentley: Sure are you interested in charging at home or charging on the go?

[fade under]

Nate Hegyi: Both. I've looked at EVs. I've. I've gotten excited about them. And then I've realized I'm like, I know how to fill a gas tank, but I have no idea how to charge to charge a vehicle.

Nate Hegyi: I liked that Craig wasn't sitting at a desk, he was walking around, like, pointing his camera at things.

So we have some charging devices I'm showing you here. Most of our vehicles come standard with the dual level cord set you're seeing up here on the pedestal.

Nate Hegyi: We talked about charging, about acceleration, and about how maintenance is less expensive but sometimes harder to find...

Craig Bentley: Just because your average repair shop right now they aren't as well-versed in EV technology.

Felix Poon: But the gap EV Live is filling...it's not just for us consumers. GM dealerships are calling up EV Live to train their staff.

Plus, if someone comes into their showroom and stumps them with their questions? They can just call EV Live right there to answer their questions.⁵ So

⁵ According to interview with GM's Caley Hill

hopefully the experience I had shopping for EVs won't be as common anymore.

[MUX IN]

Felix Poon: This has been great Craig. Thank you so much for talking to us.

Craig Bentley: Thank you Felix, thanks Nate. Appreciate it.

Nate Hegyi: Yeah, thank you.

[MUX BEAT]

Felix Poon: So Nate, do you feel like that was helpful? From a sheer education perspective?

Nate Hegyi: Yeah I feel like I know more about EVs. But at the same time like, I don't know if I actually want an EV anymore. There seems like a lot of challenges.

Like, where I live, where I'm driving through a lot of rural Montana, if my car breaks down 200 miles away from home, I need to get that car towed all the way back home to Missoula versus just going to a small town mechanic and being like hey, can you fix this?

Felix Poon: Right like your local mom and pop mechanic.

Nate Hegyi: Yeah, what about you? I mean you live in Boston, it's gotta be different for you.

Felix Poon: Yeah, I mean like the thing is, it's all street parking here, and so what am I gonna do, fish an extension cord like through the window of my apartment building and plug it into an outlet, like what if someone yanks out the extension cord? Or what if they like actually plug my cord into their EV. And like, steal electricity from me.

Nate Hegyi: Oh yeah, I never even thought of that. We should've asked Craig about that! Maybe he could've given us an answer.

[MUX OUT]

Felix Poon: So the second barrier to the EV transition we're talking about today is the lack of good charging infrastructure. And to give us a better idea of that, let me introduce you to Nora Naughton.

Nora Naughton: I grew up here in Detroit, so I grew up around this industry.

Nora's a reporter who covers the automotive industry, and back in 2019 when she worked for the Wall Street Journal, they did this experiment where a bunch of their reporters were given EVs for a couple months.

Felix Poon: Nora was given a Chevy Bolt, and she loved it.

Nora Naughton: the zippy ness, the instant torque, like EVs are super fun to drive. You can do a hot lap and you'll have the time of your life.

Plus she didn't have to go to the gas station anymore.

Nora Naughton: It's awesome to not think about fueling your car every day....again this was pre-pandemic before we all stopped commuting, but getting that time back during the week, again, was huge.

Nate: So the city experience: two thumbs up. But what about outside the city?

Felix: Well so, she took her Chevy Bolt on what would normally be a six hour drive to northern Michigan with her wife.

And halfway they stopped to visit Nora's brother at his college.

Nora Naughton: and I figured, you know, we're on a college campus. There's definitely going to be a charger somewhere. And there was I was like, All right, cool. I'm going to plug this in while we eat and I should get back a ton of range.

[MUX]

Felix Poon: They had dinner with her brother at a local pub

Nora Naughton: we were eating dinner for over an hour.

Felix Poon: and then Nora and her wife got back in their car, and they looked at the range.

I think I got back like 20 miles of range, it was insignificant.

Uh, so that uh...

that was when the anxiety really started and it was like, Oh my God, okay.

[A quick explainer if you're not familiar with the levels of charging](#), there's level 1 charging, which basically takes FOR-EVER.

Nate Hegyi: And that's just like, when you plug into a regular wall socket, right?

Felix Poon: Yeah, then there's level 2 which is what Nora was using on her brother's college campus. It's good for charging overnight, but it's not good for recharging on a long road trip, because it takes several hours for a full charge.

What you want instead is Level 3 or DC fast charging which can get you a full charge in 20, 30 minutes give or take.

And Nora basically blew by all of the available fast chargers when she drove out of the greater Detroit area...which, she didn't realize at the time.

So, back to Nora's trip, they're driving through more than a hundred miles of woods.

I wasn't even thinking about my destination anymore.

Felix Poon: It's the middle of the night

I was thinking about, like, can. Can I make it to the next charger without dying in the middle of the road?

Felix Poon: And it's the middle of winter. Nora's wife spent most of the trip in the backseat covered in blankets

Nora Naughton: trying to stay warm because we had to conserve battery by turning off the heat. That was the only way that we could make it from charger to charger.

Nora Naughton: She was not super pleased.

Felix Poon: Nora says the trip back was even worse – they just went from slow charger to slow charger.

Nora Naughton: We got through an entire season of Awkward on Netflix. That was great... on my phone that I couldn't charge off the car because I would take up too much battery.

Nate Hegyi: Oh my god this sounds like the worst commercial for electric cars ever, this is the one they're not gonna show on the superbowl.

Felix Poon: This is the gas lobby is gonna pay for this one.

[MUX SWELL]

Nate Hegyi: So who's to blame for this?

Felix Poon: So, Nora blames herself first for not finding a fast charger for that first half of the trip.

Nate Hegyi: Well, to be fair it's kind of a new thing to have to think about. Like, sometimes you worry about running out of gas, but you can pretty much count on finding a station when you need it - plus they all sell the same kinds of gas.

Felix Poon: Right, so the second thing she blames is the charging infrastructure. When you compare the number of charging stations to the number of gas stations in the US, it really can't compare. Like, for every 25 gas stations, there's only 1 public fast charging station.

Nate Hegyi: Oh wow, yeah that's not a lot. And I imagine they're probably not evenly distributed?

Felix Poon: Yeah, there's service gaps in low-income urban neighborhoods, and rural areas

Nate Hegyi: Unfortunately not a big surprise to me. So that's a big barrier... how is the U.S. gonna cross it?

Felix Poon: Well there's private, and there's public investments to build up the charging infrastructure.

In the private sector, companies like Mercedes-Benz, GM, and Rivian...[they're all building their own charging networks](#). Plus Tesla [has just promised to open up parts of their network to non-Tesla EVs for the first time starting next year](#).

Felix Poon: Then on the public side, there's two federal bills – The Infrastructure Investment and Jobs Act that passed in 2021, and the Inflation Reduction Act in 2022.

Between them, 7 and a half billion dollars are going toward states to [install chargers along interstate highways](#) and in rural and low income areas, and more money is going to individuals and private companies in the form of tax credits.

Sara Baldwin: this incentive for EV charging is really, I think, going to unlock huge private investment creating the gas station model for EVs.

This is Sara Baldwin, Electrification Director at the think tank Energy Innovation

Sara says this is all a big deal because it'll give people the confidence to drive through these areas and not get stuck.

Felix Poon: And it creates a virtuous cycle – the more chargers there are, the more people buying EVs. And the more people buying EVs, the more profitable charging stations are, so more charging stations get built... and so on.

Nate Hegyi: And so on and so on and so on...that's like, that's where we all tip toward EVs.

Felix Poon: that's the tipping point.

[MUX BEAT]

Nate Hegyi: we're like, breaking down barriers like the Kool-Aid man breaks through walls.

Felix Poon: Yeah, although maybe breaking down walls isn't the right metaphor here. Like, we're building up infrastructure more than we're tearing things down. And that's true for the next barrier we're talking about too: the grid

Anchor: we're being told you better not charge your electric car because the power grid might not be able to take it, what's going on here?

Nate Hegyi: That's gonna be right after the break, but first...we put out a survey last year asking you, our listeners for your thoughts on EVs. And we got hundreds of responses. Many of you love your EVs.

Tristan from Toronto Canada loves his 2017 Chevy Bolt.

I feel like it's a completely different driving experience...It looks like a souped up golf cart but it drives like a Porsche. Very fast. And I also love the fact that the maintenance is next to nothing. I was always bad at changing the oil, and changing my brakes, And with using regenerative braking, I hardly ever use my brakes on my EV, and there is no oil to change. I'm hooked.

Nate Hegyi: And many of you touted other... societal benefits to EVs... like reducing noise pollution, fewer kids with asthma, and fewer wars fought over oil.

Nate Hegyi: on the other hand, not everybody is financially ready to make the switch.

What are your thoughts about EVs? You can email us at outsidein@nhpr.org. We might include your message in our newsletter, or in a future episode.

Alright, we'll be back, after this break.

<<MID-ROLL BREAK>>

Nate Hegyi: This is Outside/In, I'm Nate Hegyi here today with producer Felix Poon, and we're talking all about the electric vehicle transition.

In some ways, it feels like it's happening fast, from all the TV commercials, and even president Biden test driving an electric Ford F-150.

Reporter: Mr. President

Joe Biden: This sucker's quick!

Reporter: Mr. President would you buy one of these?

Joe Biden: I would.

Nate Hegyi: And a Hummer EV.

Joe Biden: This sucker is something else

Nate Hegyi: That's a lot of suckers

Felix Poon: Biden really likes that word for some reason. Anyways! But is it happening fast enough to decarbonize the transportation sector, and to keep global warming to just 1.5 C by 2050?

Nate Hegyi: And one of the big barriers, as we said earlier, is the grid. And when I think about whether our grid can handle EVs, I think back to last fall when California had a heat wave.

<https://www.youtube.com/watch?v=yrGKgDplJ9o>

News anchor: This week's dangerous heatwave is already putting stress on the state's power grid

<https://youtu.be/bOZ-VLLiTE?t=6>

News anchor: prompting state officials to ask electric vehicle owners to refrain from charging their cars in hopes of avoiding power outages.

Nate Hegyi: Fox news pundits had a field day with it.

https://youtu.be/ujZTNLb_i3M?t=91

Sean Hannity: Because the state's power grid is totally collapsing. This from a state that just banned the sale of gas-powered cars by 2035. Good luck with that plan.

Nate Hegyi: So are these concerns warranted?

Felix Poon: Well, sensationalism aside, I have to point out that CA officials were not saying don't charge, like, ever during this [10-day heatwave](#). They were saying [do your best not to charge between 4 and 9pm](#).

Because that's when people are blasting their air conditioning, and sucking up tons of power from the grid.

But it is true, demand for energy is increasing.

Nate Hegyi: Right, and it's not just because we're using more air conditioning. It's also because the path to net zero we're taking is to electrify everything: from heat pumps, to kitchen stoves, to obviously EVs.

Felix Poon: Right. And to understand the grid, let's break it down real easy here.

Sara Baldwin: So we've got to maintain a really constant state of balance between supply... and demand,

Felix Poon: This is Sara Baldwin again, she's the Electrification Director of the think tank Energy Innovation.

And Sara says in order for supply to keep up with demand, we need to do two things – first, we need to increase energy generation by a hundred gigawatts every year, that's more than 10 percent of all the energy we're producing now, – I mean we're talking huge amounts of energy, not to mention more battery storage.

And then, the second thing we need...

Sara Baldwin: We've got to also be very proactive about building out the distribution system

Felix Poon: Those are the wires and substations that are everywhere all around us.

SB: those lines and all the system that interconnects in our cities and towns and communities... all the way down to your home or building

And we also have to use this other tool in our toolbox.

Sara Baldwin: There's more and more emphasis now on what's being called non wires alternatives

Felix Poon: “non-wires” alternatives is a fancy way of saying, how can we use our energy in smarter ways so we don't need to produce and distribute as much.

Nate Hegyi: So the thing we were talking about in CA... not charging your car during a heat wave when everybody is using air conditioners at the same time. Is that a non-wire solution?

Felix Poon: It is, but sending an SOS to EV drivers like that is kind of your last resort. Under more normal circumstances the way this is done is through the market: basically make electricity cheaper when you use it during off-peak hours.

And traditionally what this might look like is say, a program that lets your utility have a teeny tiny amount of control over your AC unit, like, just to make sure not everyone's AC is turning on at the same time.

Felix Poon: But I think a more interesting example of something kinda like this is by Apple. They're programming our iPhones to charge at times when there's more sun and stronger winds.

Nate Hegyi: really?

Felix Poon: So these are non-wires solution, we're using the same amount of wires.

Nate Hegyi: But we're using electricity more efficiently.

Felix Poon: Exactly

[MUX IN]

Nate Hegyi: So to re-cap, we need more renewable energy generation, faster than we're building it now... but we also have to build out the distribution system, and use non-wires solutions to get us there too. Am I getting all that right?

Felix Poon: Yeah! And Sara says as long as that all happens, the EV transition won't cause a grid failure.

Nate Hegyi: Now is she actually optimistic about that?

Felix Poon: She is, and not just about expanding the grid, she's also optimistic about the transition to EVs as a whole

Sara Baldwin: We're not sitting around waiting for a miracle...that's going to save the day. We have

electric vehicles, we have batteries, ... We have now \$7.5 billion in infrastructure funding from the infrastructure investment and jobs act ... that's going to ... support the creation of a widespread national EV charging network.

[MUX SWELL AND OUT]

Nate Hegyi: I appreciate Sara's optimism, but I think we should really scrutinize something she said there...that "we have the EVs, we have the batteries," because... we only have those if we have the raw resources to make them.

Felix Poon: Right, and that's the fourth and final barrier we're talking about today – mining the metals for EVs. And there's one particular metal we're gonna look at: lithium

Thea Riofrancos: it is an. A mineral that's often considered essential or even quote unquote critical for. The energy transition.

Felix Poon: This is Thea Riofrancos, a researcher focusing on resource extraction and climate change. And lithium is a critical metal because, right now anyways, it can't be substituted.

Nate Hegyi: I mean, it is in literally the name, right? *lithium*-ion battery.

Felix Poon: Right. So lithium is pretty abundant, but very reactive, so it doesn't exist on its own in nature. It's always in other things. Like there's lots of it in the oceans, but...

Thea Riofrancos: It's not that helpful because it's very. Low concentration

Felix Poon: it's also in rocks, and you have to extract and crush and refine those rocks to get the lithium out. They're doing this in mines in western Australia.

And then they're in brine deposits

Thea Riofrancos: Brine. Is saltwater. It's much saltier than the ocean, actually. And there are brine deposits underneath the the surface of salt flats.

...you. Use what we might think. Of as an industrial straw and you suck. The lithium out, And you put it ... in large evaporation ponds and the water evaporates into the air. And what's left behind is a higher concentration. Solution of lithium.

Felix Poon: This mining process is mostly happening in Chile, Argentina, and China.

Plus there's something like hundreds of projects being proposed in lots of other countries, including here in the US in Nevada where there's brine deposits.

Nate Hegyi: So, of course, Felix, you know the question of the day: Are we mining lithium fast enough to hit net zero?

Felix Poon: Well Thea says there's basically two camps of thought. There's the overabundance camp that says there's plenty of lithium to go around, And

there's the supply crunch camp, that says we won't get to it fast enough.

And Thea's in the supply crunch camp because she says opening new mines takes a really long time

[MUX OUT]

Thea Riofrancos: Mines can take kind of. On. Average, ten, 12 years from initially being. Prospected and then propose to regulators to get permits and that. Kind of thing to actually being in. Production. That is an extremely long time frame.

Felix Poon: Other estimates say it's more like 16 years.

Nate Hegyi: That definitely takes us way past 2035.

Felix Poon: Yeah.

Nate Hegyi: Ok, so maybe we can speed things up and just green light all of the pending mine proposals.... But the faster we go, the more environmental impacts there could be, particularly in countries with little regulation.

Felix Poon: Right – environmental impacts like ruining the soil, water shortages, and loss of biodiversity – but there's also the social impacts in the mining industry, at it's mildest there's a disregard for Indigenous sovereignty, at its worst there's violence against Indigenous communities.

We covered these issues in an episode we did a few years back called “The Lithium Gold Rush.”

Nate Hegyi: Listeners should check it out after they finish this episode.

Felix Poon: So because of these social and environmental harms, people are always asking Thea: how do we do mining in a less harmful way?

And her answer...

Thea Riofrancos: is the less we have. To mine. The less environmental. Damage and conflict will result.

Felix Poon: Is to mine less lithium.

So here’s what Thea says we need to do to mine less lithium.

First, small batteries. So that new EV Hummer?

The battery is massive – it’s two and a half times the size of a Tesla Model 3 battery.

Nate Hegyi: Wow.

Felix Poon: And it’s five times the size of a Nissan Leaf battery. FIVE TIMES.

Nate Hegyi: But then you have to give up your hummer. I don’t want to give up my hummer.

Felix Poon: Joe Biden would have to give up his hummer.

Nate Hegyi: Yeah he can't have that sucker anymore.

Felix Poon: He would hate that.

Nate Hegyi: Alright, so thing number one, smaller batteries.

Felix Poon: Tough sell for Biden.

Nate Hegyi: Yup.

Felix Poon: Thing number two: we're gonna need robust battery-recycling programs, so we're squeezing the most out of every ounce of lithium that we mine.

Nate Hegyi: That sounds like a good idea.

Felix Poon: Thea has actually done some modeling that says with the most ambitious policies, we could reduce the amount of lithium we need by 90 percent.

Nate Hegyi: And all we need is smaller batteries and better recycling.

Felix Poon: And one more big thing... we need to drive less.

Nate Hegyi: Oh, I thought that no hummers was a tough sell for Americans.

Felix Poon: But think about this entire conversation we've been having Nate: there are soooo many moving pieces that we have to get right here, to

overcome all those barriers we talked about, and transition to EVs in 12 years. Sure, it's theoretically possible.

But, would it actually be easier if we just stopped driving so much?

[MUX IN]

Like, what if replacing every single gas car in the world with an EV just isn't the easiest, or even the fastest route to decarbonizing transportation?

Thea Riofrancos: This is just the path of least. Resistance because Americans like cars and we already own them. And there's lots of. Highways, so you don't have to change as much. But there's other paths not taken thus far that actually would be better for climate and. For reducing mining.

Felix Poon: That's next time on Outside/In: The race to net zero: building a car-free future.

Phyllis Porter: people were still driving like it was a freeway. And so cars were running into people that were running into buildings.

Yes Segura: The car they're driving in? When you drive that, you can kill somebody

JFH: There are places in the US that are investing to build a more robust and a more complete transit system. We're not having those conversations. The conversation we're having is, you know, why does it keep getting worse, why is my train on fire?

Alex: It's just like hope...we're building hope, for people.

<<CREDITS>>

Nate Hegyi: This episode was produced by Felix Poon and edited by Taylor Quimby, with help from me, Nate Hegyi, Justine Paradis, Jessica Hunt, Mara Haplamazian, and our executive producer Rebecca Lavoie.

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