



## CleanLaw 81

### **Journey to the electrification of the transportation sector with Jody Freeman and Chet France — April 21, 2023**

Intro: Welcome to CleanLaw from the Environmental and Energy Law Program at Harvard Law School. In this episode, Harvard Law Professor and EELP's Founding Director Jody Freeman [who is also an independent director of ConocoPhillips] speaks with Chet France, who served as a senior executive at EPA and oversaw the first national greenhouse gas standards for cars and trucks in US history. Jody and Chet analyze EPA's most recent proposal to update greenhouse gas emission standards for light-duty and medium-duty vehicles and discuss how the implementation of those standards might be impacted by subsidies and incentives and the infrastructure bill and the Inflation Reduction Act and future litigation. We hope you enjoy this podcast.

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Jody: Chet, welcome to CleanLaw. I'm just delighted to have you back with us for another session on car standards. Welcome.

Chet: Well, thank you, Jody. I'm looking forward to this discussion. The last one was a lot of fun, and I'm excited to talk about cars with you again.

Jody: So just for listeners who may not have heard our first episode on car standards, let me just recommend that they go to the website and listen to that because it's a great primer on the EPA setting standards for light-duty vehicles going out to year 2026. And what Chet and I are talking about now is the new proposal for the later years starting in 2027 and going to 2032. So this is our update on the EPA's effort to set standards for the transportation sector, which is important, Chet, because this sector is the largest and growing share of our economy's greenhouse gas emissions, do I have that about right?

Chet: That's correct, Jody. The transportation sector in the US is roughly a third of the total greenhouse gas emissions and of course within this transportation sector, light-duty vehicles are the largest contributor, over 50%, approaching 60% of the inventory.

Jody: So that gives folks a sense of what we're going to talk about, but let me back up and make sure we know who you are. They know who I am, but I want to make sure listeners know your background, Chet. So just to review, first of all, how we know each other. You had a long career at EPA in the Office of Transportation and Air Quality, you were the director of the Assessment and Standards Division, which is responsible for setting these standards that we're going to talk about today among other standards to control pollution from cars and trucks. And you have a long and storied career of setting



these standards and being involved with the famous EPA car lab. And without us reviewing every aspect of your career again, because we've talked about it before, just remind us a little bit about the role you played and the importance of these standards in particular.

Chet: Well, yes, Jody, I will. Just very briefly, Jody, as you indicated, I had spent a whole career working for EPA until 2012 when I retired. Throughout essentially that whole career, I was involved in developing regulatory policy and setting standards for cars, trucks, fuels, anything in the transportation arena. And through 2012, just about essentially all those standards up until that point in time, I fortunately or unfortunately, I had my fingerprints on them. And as you mentioned, the last Phase 1 and Phase 2 greenhouse gas standards under the Obama administration was one of the capstones of my career before I retired. For the last eight years, I have been a senior strategic advisor for the Environmental Defense Fund really working on the same issues that I worked on when I was at EPA, but now for the last several years focused on climate issues.

Jody: And you and I know each other because back in the Obama administration, we worked together on setting those historic first fuel efficiency and greenhouse gas standards for cars and trucks, which was sort of the first generation of these standards. And I was doing the work out of the White House, and you were the lead at EPA along with others like Margo Oge and others, making sure to deliver this policy for the Obama team.

Chet: That's correct. And of course, what we're going to talk about today, Jody, is really the next chapter in that ongoing effort to address CO2 emissions from cars.

Jody: Yes. I think you and I are both quite proud that we were there at the beginning of this journey, and the journey is really a journey, I think, to electrification of the transport sector. So let's dive into that. EPA has announced here a proposal, it's not finished, but it's a proposal that would set standards for the cars and trucks we drive the passenger fleet that you see out on the road every day starting in model years 2027 to 2032. So there is some lead time before they take effect, and they are being written about in the press and touted as very ambitious standards and standards that will in theory begin the process of electrifying the fleet in a more significant way than ever before. Can you talk a little bit, Chet, about what these standards are designed to do and the different options that EPA has put in this proposal in terms of their stringency?

Chet: Yes, Jody. What EPA has done here is really, as we mentioned, the next step in addressing climate, and for that matter, criteria emissions, traditional pollutants like NOx and PM and hydrocarbons from automobiles. And what they have done is continue setting more stringent performance standards. They're not specifying a technology pathway that's up to the manufacturers to pursue, but of course, EPA has an obligation to demonstrate its feasibility, and of course, the next logical step is the continued evolution and deployment of zero-emitting vehicles. And of course, battery electric vehicles is one of the leading technologies that are being pursued by the industry.



And what EPA does in this rule is set a trajectory between 2027 and 2032, which continues the ongoing deployment of plug-in electric vehicles. And more specifically, they have laid out a number of alternatives that get to roughly the same endpoint by 2032, which is around 65% to 68% deployment of ZEVs. And a number of alternatives they lay out with respect to what's the trajectory, how fast do they get to that point between 2027 and 2032. And I think that's what is really going to be the hard issue that the agency will have to deal with is, is that deployment going to occur in the context of everything else that's going on with respect to manufacturer's commitments and investments.

Jody: So let's talk a little about that manufacturers' investments and commitments. But before we do, just to be clear with folks, when EPA sets these standards for cars, they're setting them as pollution standards, that is so many grams of pollution per mile, that's the methodology. And the idea there is the amount of pollution per mile driven should be dropping over time. It's as simple as that. And the question here is, how fast can you go? How fast will technology let you go to drop those grams of, as you say, greenhouse gases in this case and other conventional pollutants per mile driven? And I think I'm right to say the target of essentially around 67% or maybe 60% somewhere in that vicinity of electric vehicles or zero-emission vehicles can be achieved in a number of ways. The rule doesn't say, "Here's how you must do it." Is that fair enough, Chet?

Chet: That is absolutely correct, Jody. It's a good point to emphasize, EPA is really being consistent with every other rulemaking that they've ever undertaken on passenger cars and light-duty trucks. It is a performance standard. They historically have set Tier 1 and Tier 2 standards back a decade ago. This is really the Tier 4, which is the ongoing progression of addressing pollution from automobiles. And I will say, while EPA has an obligation to show what's the feasibility of attaining those standards, there are multiple ways, and the agency acknowledges this in their proposal, that manufacturers can achieve those performance goals. The 68%, 65% ZEV is just one pathway. We know companies like Toyota are pursuing other technologies like plug-in hybrids, which are already readily available in the market. There's other alternatives in terms of cleaning up internal combustion engines even further than they are, or a mix of all those. And you'll see in the marketplace, all those pathways being pursued, the battery electric vehicle pathway is laid out and supported by external experts and is the least expensive pathway. And that's why the agency points to that as the most cost-effective pathway.

Jody: So one way to understand these rules is that they're expected or anticipated to drive electrification because it may be the cheapest way to comply, but it's not as if the EPA is dictating any particular technology per se. And it's also true that even at the most ambitious level, that is the version of these options that EPA could choose that is the most ambitious, there's still a role for internal combustion engines, is that correct?

Chet: Oh, absolutely. They are going to be around for many, many years, which is why the agency continued to make progress in terms of cleaning up traditional pollutants



because they are going to be in the marketplace. And to the extent that manufacturers pursue plug-in hybrids, which is a battery electric vehicle along with an internal combustion engine, even though it's going to run a lot of time on electric off the battery, still, it's going to have an internal combustion engine, and those may be around for a very, very long time. So it's really, really important to address the pollution coming from those technologies.

Jody: I guess what I'm also trying to get at here is what the proposal doesn't do, because we've heard from say California, that there's an aspiration or an intent to so-called ban the internal combustion engine at a certain period of time. And you hear sometimes criticisms that EPA is trying to do something similar, but for the record, there's no ban here on the internal combustion engine. And in fact, even the most ambitious version of the proposal would expect about a third. Is that fair, Chet? About a third of the new cars and trucks on the road would still be traditional ICEs.

Chet: Yes, that's correct. And maybe more depending upon the pathway. This is not a ban, what EPA is doing in this rulemaking is really reflecting the trends in the marketplace and ensuring that those trends continue to address pollution concerns and climate concerns. This is not really stretching the analysis in any way, and in fact, I would say, and perhaps we can get into this in a little bit, what's different in this particular rulemaking instance is just the massive amount of progress being made on battery. Specifically on battery electric zero-emitting vehicle technologies, that they are in the market in massive quantities, these aren't in the laboratory.

Jody: So let me ask you about that. Let's be sure with our vocabulary that we make sure people understand what we're talking about. When you say battery electric, this is all-electric, this is a car that gets its juice by plugging it in, it's operated by a battery, an electric motor. And you've taught me all this, Chet, this is why I can say these words, and it does not have a traditional engine in it. That's what you're talking about is that these vehicles are around, they are being deployed and there are many more models than ever before.

Chet: Oh, absolutely. Just a couple examples. The market here in the United States is growing exponentially. Last year, the penetration of electric vehicles was around 4%. In 2022, it grew to over 8%. And I just read a few days ago, the market share in the first two months, this is coming from an auto association, is 10% and the penetration elsewhere in the world is even much greater. And I'll also say another important consideration is over the next three years, the number of models are going to more than double in terms of availability. Right now there's just slightly over 90 models by 2025. And these are based on firm commitments from the companies and announcements up to 190 some models that are going to be in the marketplace. And some of the models you're going to see over the next two or three years are going to be right at the heart of the market, really high volume, mass-produced vehicles that customers want.



- Jody: So we're sort of moving away from the niche vehicles, the Teslas and the Chevy Volt and the cars that sort of began this shift. I think what you're saying is we're now about to see mass-market vehicles for people at different price points.
- Chet: Absolutely. General Motors, for example, has announced that later this year, the introduction of the Equinox, I think I read it's in the \$30,000 price point, electric vehicle, the Blazer. These are mainstream SUVs for companies like General Motors and other companies are doing the same thing.
- Jody: We've talked about this a bit before and in our last podcast we spent a little bit of time on what the industry was committing to what GM and others, Ford and the other OEMs were saying was their aspiration. Can you catch us up, Chet? Has anything new happened? I think for most of the companies, they were setting aspirations or targets or goals of having half the fleet or so of new vehicles be zero-emission or all-electric by something like 2030. Am I in the ballpark of what they had originally committed to?
- Chet: Yes. And I would say, and of course, let me just backtrack here a little bit. This is not being done in a vacuum. These companies compete in other worldwide markets, which are going much faster towards electrification. But all the major companies, essentially every company that's in the market, has made really, really ambitious targets for 2030 and for that matter, 2035. And many major automobile companies, including GM and others, have committed to 100% zero-emitting vehicles by 2035. And if you remember, a year and a half ago the major auto companies in the United States stood up with the President and supported the 50% target for 2030. So, EPA's rules are not in a vacuum. You could quibble about the details and the trajectory, but it's consistent with what's happening in the marketplace, it's consistent with the investments, it's consistent with what the manufacturers are committing to.
- Jody: So just to be clear, the Biden administration had set a goal. The President come out and said he wants to see half of all new vehicles sold in 2030 be zero-emission vehicles. And you're saying the industry stood up and said, we're with you.
- Chet: Yes.
- Jody: And all of that is important because this is a key pillar to the US fulfilling its commitment to the Paris Agreement to cut emissions between 50 to 52% compared to 2005 levels by 2030. So just to put this in context, and you can correct me here, Chet, just to put this in context, getting transportation sector emissions down by reducing the emissions from cars and trucks is a key deliverable for the United States to make good on its commitment to the Paris Agreement.
- Chet: Oh, absolutely. You can't get there unless this degree of progress is made in reducing climate pollution from automobiles. It is a pillar of that strategy.



- Jody: And of course, the other thing to just create more context, make sure people understand, this, of course, will reduce demand for oil because in theory here if these standards succeed, and we're not at the finish line yet, but one of or more of these options, some combination or some version of these options, will be in the final rule and the end result will be to drive lower emissions, perhaps to drive greater electrification, if that's the least cost pathway, which of course reduces demand for oil.
- Chet: Of course that's going to happen, but it's not going to happen overnight. Jody, the requirements that EPA is pursuing only affect new vehicles and it takes a decade or more for the fleet to turn over. So we're going to see ICE engine tech in the fleet for another decade and a half, two decades. So sure gasoline demand is going to go down, but it's not going to be overnight, it's going to be gradual. And I'm sure the major oil companies are anticipating this and planning accordingly.
- Jody: This is an evolution, would you say? Some people talk about it as a revolution, some people talk in the language of transformational. How would you describe what these standards will be accomplishing?
- Chet: For background purposes, EPA has set standards many times, when I was at the agency where the technology only existed in the laboratory and we demonstrated the feasibility of the technology and allowed sufficient lead time for that technology to develop in the marketplace and be deployed by the manufacturers. And if you look back at EPA's history in doing that, they're batting 1,000. So it has never failed. The EPA has a proven track record in terms of driving technology in a way that companies thrive. And they're doing the same thing here but what's different, I really have to stress this, EPA is not setting their standards in a vacuum. What's different in this go around is, really, like we talked a little bit earlier, is the manufacturer investments, their deployment of these technologies in the marketplace, they're there in very large volumes and you have government policies that are supporting the deployment, if not encouraging the deployment through economic incentives to deploy these technologies. And you have industry, in general, supporting the direction that EPA is going.
- They're going to quibble for sure on some of the regulatory details, and that's normal at this stage of the rulemaking process. That will get sorted out. But my expectation at the end of the day that this is going to be a really good news story for the country, for the consumer, and for the automobile industry.
- Jody: So let's talk a little bit about each of the things you mentioned there about the policies that are supporting this, but I also want to make sure to emphasize something you said about this rulemaking being different in a sense from the past, in the sense that the technology's out there. So you talked about EPA's role in technology-forcing. Basing standards on technology that's only demonstrated in the lab, that sort of might strike a newcomer to this process as a little odd. I mean, how can an agency require the auto manufacturers historically to have met pollution standards based on stuff that's only in



a lab? I mean, that sounds like a huge power that an agency has and I think the answer is the Clean Air Act. Am I right about that?

Chet: Yeah, it's rare authority that's been in the Act since its inception, which allows the agency to, as you said, to set technology-forcing standards. And it's proven that it's a way of advancing technological developments. And the car of today with computer, after treatment, advanced fuel systems, you name it, even hybrids and other types of technologies that are widespread are a result of that technology-forcing standards that have taken place over the last four decades, federally and in California. And it has been done in a way that the consumer is getting a much better product, better performance, better reliability, and the environment is benefiting dramatically. The emissions from today's cars are dramatically reduced over what they were four decades ago, well over 95% reduction in emissions.

Jody: That's a stunning figure. And when you talk about emissions reduction, just to make it real for people, that's public health right there. I mean you talk about pollution dropping from vehicles, you're talking about real public health impacts in terms of morbidity and mortality from exposure to these pollutants. And now we have climate change that's a major, major urgent concern. And that's why in the last, at least 10 years or so, the EPA has been regulating greenhouse gases from vehicles as well as the traditional pollutants. And the most vivid example of what you're talking about, the history you're talking about that I always like to bring up is the catalytic converter, which is something people understand that in the past the standards that EPA set drove widespread adoption of the catalytic converter. So there's this long history, if I'm right about it Chet, of the standards pushing manufacturers, giving them lead time so they can plan their models so they can ramp up to meet those standards. But there's a very long history of doing this and it results in the technological development and deployment that you've just described.

Chet: That is exactly correct. And it is done in a very, very careful way by the agency in terms of looking at the feasibility, looking at the cost. And again, it's a proven track record and again, it extends to the rule that we're talking about today in terms of putting in place standards that allow the companies to thrive. The agency's not in the business of trying to hurt the industry. It is a way of reconciling the environment with the automobile in a way that enhances consumer value and allows companies to continue thriving in the marketplace.

Jody: And just so people who may not be legally so savvy understand this, all of the standard-setting decision-making is governed by the Clean Air Act, which very specifically says that the agency must take cost into account and must provide lead time. And so the agency's not making this up as it goes along, it's in the Clean Air Act how it must set these standards, right Chet?



Chet: Absolutely. And lead time is a really, really critical component of setting standards. And again, it depends upon the specific rulemaking. In this case, the agency's giving 5 to 8 years or more, 10 years, nearly 10 years lead time. These standards don't go into effect overnight. And you're going to continue, in the case of this rulemaking they can continue a deployment of electric vehicles. So, there's not going to be an abrupt cliff where these standards all of a sudden put dramatic new requirements on the automobile sector. And as I mentioned earlier, part of the concern I think will be central in the rulemaking will be not necessarily arguments over the endpoint, it's going to be what does that trajectory look like in the context of how electric vehicles, zero-emitting vehicles, are being deployed in the marketplace between now and 2027.

Jody: So to get really nerdy for just a moment, and we can't help it, we have to get nerdy in these conversations. Just to give people a feeling for what is it the industry will sort of be pressing and prodding and fighting about between this time and the final rule. The kinds of things they're in there arguing for and against, would be? Give me an example.

Chet: Well, and a lot of this you can find in their public statements around the recent proposal, and I'll allude to those. But my takeaway is really, again, to emphasize what does that trajectory look like in 2027 through 2030? For example, going from 2026, the existing standards, to 2027, how big of a jump is that?

Another thing will be, and Jody you know this, there's another agency in the government that regulates fuel economy, which is NHTSA, and they set CAFE standards. In the phase one, phase two rule you know that under the Obama administration those programs were coordinated in a way that allowed the companies to produce one fleet nationwide.

Jody: Yes. We worked very hard to have everybody row in the same direction because just to jump in, NHTSA sets fuel efficiency standards. They're not pollution standards, they're miles-per-gallon standards. And we had to reconcile that to make sure the companies had, as you say, one single target to meet. And why is it different now, Chet?

Chet: Well, EPA has gone ahead and issued its proposal and the anticipation is that DOT and NHTSA specifically will be issuing theirs in the next couple months. And the auto companies are concerned that how much coordination is there going to be between EPA and NHTSA? And I think the administration has to address that, there's no question about that. And I think it's an absolutely fair concern that these programs don't conflict. And so that's going to be a major issue. Another one will be how fast is the infrastructure being developed and deployed to support the numbers that EPAs contemplating.

Jody: So EV charging infrastructure, and the support needed from the grid, et cetera.

Chet: Yep.





- Jody: So let's talk a little bit about that. Now that we sort of have a sense of what the proposal is and the options EPA has included. We've talked about a range of standards, it might be something 60 to 67% expectation of zero-emission vehicles is sort of the end-point target there, they'll land somewhere in that range. There'll be sort of a landing place for how quickly they ramp up and all the things you've described. There might be some compliance flexibilities. Can you give us just a sense, before I move on, of that? What might EPA be able to offer the companies to make it a bit easier to comply in the earlier years? Give me sort of a sense of what they could do there.
- Chet: Well, there's a lot of precedent for giving manufacturers compliance flexibility in terms of complying with the standards and that there's a lot of mechanisms in the rule. This is going to get into the weeds, but they allow companies to average across their fleet and-
- Jody: Maybe trade credits.
- Chet: Trade credits among companies. Exactly. Exactly. So there's a number of these. And the other thing too, what they do, I mentioned that they're also controlling setting standards, tighter standards for criteria points. They phase those in the fleet over three or four years. And those are all ... We'll get comments on EPA. We'll weigh those comments and make necessary adjustments, but there's always a lot of creativity exercised in terms of managing the transition.
- Jody: And EPA has historically tried to make this as achievable at lowest cost possible. I think what I'm getting at is these compliance flexibilities are all about helping the companies, whatever fleets those particular companies produce, whatever balance and mix of vehicles that particular company makes, EPA tries to work with each company to make it possible for them to comply given the products they make. Is that a fair statement?
- Chet: That's exactly right. An example of that is embedded in the program. This is not new to this specific rule. It's a carryover from the previous rules, is they set standards based upon the size of the vehicle, the footprint of the vehicle, how big the vehicle is. So for example, a full-size pickup truck has a little bit of a more relaxed standard compared to a small automobile. So embedded in the rule and the design of the rule is not to penalize companies that happen to have different product mixes and allows them to have a level playing field in terms of their competition.
- Jody: So when you sometimes hear people say, "Oh, these EPA standards are trying to drive us all into small little cars," it's actually not true at all.
- Chet: No, no, no. And in fact, I will say if you look at what's happening in the marketplace, where are some of these zero-emitting technologies being deployed first? The Ford full-size pickup truck, the Lightning, ...they're getting more demand than they can make on these vehicles.



Jody: The Cadillac LYRIQ, I think we've talked about before.

Chet: LYRIQ.

Jody: Yeah.

Chet: And then you have other companies, GM and Stellantis racing to get these full-size vehicles electrified. And that's because there's demand for them. So yeah, it's a market opportunity for these companies.

Jody: Yep. Two things I want to make sure to get in the conversation. One is how fast other countries are moving and where we sit compared to them. I want to put this in a little global context because we're so focused on the Environmental Protection Agency standards, we're so focused on the US and what it's doing in this sector, transportation sector, but we often forget that there are many countries that are ahead of us, and in some sense we've been a laggard. Can you speak a little bit to that?

Chet: Oh, of course. We alluded to this earlier in the conversation, that the marketplace is driving electrification. Take Europe for example, they're far ahead of deploying electric vehicles. The companies that participate, the Ford and Daimler and other companies, Stellantis, that compete in those worldwide markets are making the same commitments in Europe. Europe, I think at this point, is around 17, 18% electrified vehicles in the marketplace. They're aggressively moving ahead to electrify their fleets. And if you look at countries like Norway, two-thirds of their fleet are already electric vehicles. So progress is really moving. The progress towards electrifying is moving rapidly and I would say more rapidly in other markets like Europe.

Jody: And can you say something about China and how it's moving on this front?

Chet: Yeah, very similar trend. One of the challenges is a lot of the battery components and batteries themselves are produced in China. Part of the policies that Congress has implemented is to change that trend and to build those battery plants in the United States and manufacturing plants for electric vehicles in the United States. So yeah, I would say China is probably right now the center of production for some of these critical components.

Jody: So that's a perfect segue to a topic that I do want us to get to, which is, first of all, what are the subsidies and incentives that Congress has passed to help spur this transition to zero-emission vehicles? And what has Congress done in the Infrastructure Bill from 2021 and the Inflation Reduction Act? Both of those pieces of legislation have incentives and subsidies that are really important to spur this transition. Can you speak a little bit to those measures?



- Chet: Yes, I can, Jody. To me, there's really two broad categories of incentives. One is the consumer incentives, which are really, really important and the magnitude is substantial up to \$7,500 per vehicle. I'll get into that in a second. And then there's a whole suite of manufacturing incentives in terms of building battery plants, battery components, electric vehicles in the United States and those who are incentivized the deployment of manufacturing facilities in the United States. All of it is intended to try to have more domestic content in zero-emissions vehicles that are produced in the United States. And in fact, if you look at the consumer credits, the \$7,500, it's tied to where the battery is, the components are sourced, where they're made, where the electric vehicle is made. In order to get the full credit, it's got to be sourced in North America.
- Jody: So isn't that a potential obstacle here, Chet? Again, to get nerdy for just a minute, isn't it difficult if Congress has said, "Okay, consumer, you can get X amount of credit, \$7,500 to buy one of these vehicles, but only if it can be shown by the manufacturer that a certain percentage threshold of the battery components or the critical minerals are sourced in the US or friendly free trade countries," which I think is how the provision is written. That's a constraint, right? Because wouldn't some of the auto manufacturers say, "Well, look, we don't currently have the capacity to make all those components here. We are getting our critical minerals from countries, not all of which are free trade nations with us, don't have agreements with us." So isn't this a potential problem or obstacle to actually getting these credits out to many, many millions of consumers?
- Chet: Yes. There's some tension in terms of how Treasury is implementing those regulations. In the underlying statute, those credits, they allow a phase-in.
- Jody: So this is the Inflation Reduction Act set this up. And because their tax credits, it's Treasury, the tax agency, that's writing the rules just to clarify.
- Chet: Right. And their rules will make it clear which vehicles and which vehicles won't qualify, and of course the companies. The tension there is companies want more vehicles. And so there's some tension there in terms of which vehicles qualify. But I will say that this is important, Jody, is that this is a transitional issue. If you look at what's happening in the United States in terms of investments in manufacturing EVs and batteries, it is growing substantially.
- A couple key statistics by — and this is based on manufacturer announcements. So these are firm announcements by the companies — by 2026, there's going to be enough capacity to build over 4 million electric vehicles in the United States. In terms of battery capacity by 2026, there's going to be enough production capacity to support supplying over 11 million vehicles. So we have to differentiate too during what we're seeing in the marketplace today in terms of vehicles qualifying for incentives versus what's going to happen in 2025 and 2026. The bottom line is what's happening in the marketplace is exactly what the IRA was intended to incentivize, which would be investment in US manufacturing. And that is exactly what's happening.



- Jody: What do you think about critical minerals? We hear a lot of people say, "Look, the countries with the most, like lithium, cobalt, et cetera that go into these batteries are not necessarily countries that have free trade agreements with the United States. What are we going to do? We won't have enough critical minerals." What's the answer to that objection.
- Chet: It is a real issue. I will say just a few things. One, it's reported every day the companies are trying to get ... this is number one, one of the top issues on their priority list. They would not be building these factories in the United States to the tune of investments over \$120 billion between now and 2026. It was just unprecedented, unless they saw a pathway to procure these critical mineral rules. Now, is it going to be when will the markets reach stability? That may take a few years, but the companies are actively trying to deal with that.
- I just came across an article, that General Motors announced an investment partner in terms of mining. So you're going to see different business models and different avenues for procuring these critical minerals. But I think most experts in the area, by the timeframe that EPA, you know, the 2030 timeframe, the markets will be stabilizing. The other thing too is these batteries, these critical minerals are really ideal for recycling. So in the long run, there's other market pressures that will help stabilize the markets.
- Jody: So it sounds like you're saying, "Look, there may be some bumps along the road, if you will. There are some things to be worked out like how will these tax credits operate? What cars will qualify? And in addition, there will be some timing issues around how to secure enough critical minerals." But I think what I'm hearing you say is over the medium term and in time to meet these standards, certainly these things should work themselves out.
- Chet: Yeah. And it's not slowing down. I will say the proof is in the pudding. I mean, if you look, EPA's standards don't go into effect until 2027.
- Jody: Right.
- Chet: Assuming they finalize as proposed. But if you look at the market trends and what the companies are saying, it's not slowing down their deployment and offering of models, their production plans. So we don't have access to the details of how they're procuring these critical minerals. But it's got to be at the top of the list of every one of these companies. And if you look at what's happening in the marketplace, I have high confidence that this is going to sort out.
- Jody: You also said to me once privately when we were nerding out just between you and me, that there are new battery chemistries that may actually be developed and reduced the need for these minerals, which is quite exciting.



Chet: Yeah, I assure you, every company that's a major company that's playing in this space is looking at ways to reduce critical mineral content and looking at technologies that reduce the need for these critical minerals. And there's other technologies on the horizon such as solid-state batteries that have the potential to really reduce the reliance on these critical minerals. So yeah, there's a lot of things that are coming together that will address this. There's nothing like the marketplace to sort these sort of things out.

Jody: Yeah, I mean, I think as EPA rules in this space always have done, presupposes ingenuity on the part of the companies and has faith that they will work out how to meet these standards and make great cars. I mean, I think that's always been the working presumption of the agency and the industry's always made it, right?

Chet: Yeah. And Jody, we did not mention explicitly, but these vehicles, the reason there's such growth in the market is they're a really great economic proposition for the consumer. You're going to save money in terms of fuel, they pay for themselves. The prices that these vehicles are coming down, they're going to be cost competitive very, very soon with their ICE counterparts. Everyone is predicting cost parity in the timeframe that EPA rules are being deployed. And last but not least, during this interim period, you have massive amounts of government incentives and consumer incentives that make the economic proposition just a no-brainer.

Jody: Not to mention these cars are-

Chet: ... just a no-brainer.

Jody: Not to mention these cars are unbelievably fun to drive. I always say that to remind people, it's not a sacrifice. I mean, they're exciting and they're sexy and they're just a joy to drive. So I think you put all that together, affordability and the pleasure of driving them and the convenience and never having to go to a gas station and feeling proud that you don't have to consume oil. And I mean it's a win-win-win. You and I always say that it's a win-win-win all around. I wanted to get in though just on the topic of incentives and subsidies, policies that Congress has adopted to help. The incentives in the infrastructure bill are also really important and they have to do with charging infrastructure and what we need to see on the grid. So can you speak a little bit to what the infrastructure bill helped with?

Chet: Yes. And also IRA has some limited incentives on the infrastructure side too.

Jody: Right.

Chet: So what we're seeing is a dramatic build-out of the infrastructure needed to support battery electric vehicles. I should point out, just to digress here just for a second, a lot of the charging is going to occur at home and a lot of the companies, the charger is on the vehicle. You can just plug it in. Companies are helping, when you buy a car, some



companies are footing the bill for putting a charger in, a fast charger in your garage. So a lot of what the challenges that remain are going to be in terms of the fast-charging public network, which if you look at some of the existing map, it's across the United States. Is it sufficient to support a fleet of electric vehicles contemplated in later this decade? No, but it's being built out.

And I'll give you a couple examples of how dynamic the marketplace is. Just recently, Walmart announced that they're going to have chargers in every one of their stores, and I didn't know this, but 90% of the people live within 10 miles of a Walmart store. So thousands of stores are going to be getting chargers. GM announced a program with Pilot, who has refueling stations across the United States on the interstate network. They're going to have chargers across, several thousand chargers across the country. So, what we're seeing in real-time is massive build-out. And a lot of this is being incentivized by these underlying government policies that are in the infrastructure act and also the IRA too. So I'm personally optimistic that the infrastructure is going to sort itself out. There's a lot of players and a lot of incentive on the part of the companies to make this work.

Jody:

I was going to say, I think it's unique, and you and I have talked about this, it's unique to see the confluence of events here. The moment in which you have Congress passing really important incentives to drive this, spending the billions of dollars needed to help support and drive this change. At the same time as you have the industry making commitments for its own reasons because the business model has to move in that direction to be globally competitive and they have to make this change, at the same time as you have an administration, the Biden administration prepared to set standards as a backstop to help push this forward. And you've got policy, regulation, and market forces moving in the same direction. You and I have talked about that. It's quite stunning. And it's historic, is it not?

Chet:

Yeah. I liken it to three legs of a stool. You have the manufacturer investments, the manufacturer deployment of ZEVs, in that they're doing because the market's demanding them. You have government policies that are helping accelerate it, and you have EPA regulatory policy, which is consistent with those goals. So this is everyone pulling in the same direction. I'm an optimist and I have always been, I'm very optimistic this is going to going to play out in a way that's a win-win win. Is it challenging? Absolutely. But what's different here is that everyone's pulling in the same direction. And I should point out that this is being done in a way that is going to benefit workers, is creating jobs in the United States. So I'm personally optimistic that this is really, really going to be a good news story across the board. And most importantly, the consumer is going to benefit because they're going to get better choices in the marketplace and products that have a lot better or improved attributes in terms of acceleration and lower cost.



Jody: So two final topics before we close. One is politics and the other is legal challenges. The politics of this are quite interesting and you just alluded to it when you said, "This is going to be good for workers, this is going to create jobs," but it's also where these jobs will be created that matters. And I think it's important that the plants that are being planned and the battery manufacturing that's now growing is happening in particular in places that may historically not have been jurisdictions that are especially keen on climate policy. And yet those jurisdictions are going to be the home of new battery plants. Can you speak a little bit to that?

Chet: The EDF commissioned a recent study that looked at the amount of investments and where those investments are occurring. And a massive amount of those investments are happening in the Midwest, in red and blue states. You've got states, obviously Michigan ranks up there, Tennessee, Ohio, Illinois, Kentucky, massive amounts of investments in terms of manufacturing facilities. So regardless of whether it's a red or blue state, there's lots of jobs that are being created in these states as a result of this. And hopefully the politics catch up with that reality sooner than later.

Jody: So the net effect of all of this investment and market shift may be to build support for policies like this that are actually good for the environment and good for the consumer and good for labor.

Chet: Exactly. Exactly.

Jody: The final topic is really sort of my bucket, which is legal challenges. What could possibly go wrong is the question, what could possibly go wrong with this good news story? And already we know there will be legal challenges. In fact, there's a pending legal challenge, a case, the main argument of which is that the EPA's standards out to 2026. So the prior round of standard setting should be struck down for a variety of reasons. And one of the main themes is that EPA has gone too far, it's overreaching, it's trying to force electrification. And all of this operates under the banner of a legal doctrine called the major questions doctrine, which the Supreme Court recently announced in a case called West Virginia.

And without getting into all the detail of it, I'll just summarize it by saying Supreme Court has made it clear that if regulatory agencies like EPA try to do really big things of major social and economic and political importance, and especially when they look like they're doing something that is sort of out of their lane, transforming a sector into something else or overreaching in some way that looks very significant, the Court is prepared to knock that rule down and suggest that it will need explicit authority from Congress. That broad language in a statute is not enough to authorize these, in the Court's view, transformational policies.

I've simplified it just for us to talk about it. But that has invited a challenge already to EPA car standards, the last round saying, "Oh, they're transformational. Try to do too



much. Very significant. They don't have enough authority from Congress." So I'm fully anticipating a legal challenge to these standards, Chet, and if somebody, I know you're not ... between us, you're not the lawyer, but you've worked for a long time in the agency, you've helped fend off lots of these legal challenges. What would your reaction be to that kind of argument coming at this proposal?

Chet: Before I answer that directly, Jody, going back, I would, for those that are interested, should read the brief from the Alliance in that case you referenced on the existing standards. They intervene on behalf of the government.

Jody: This is the trade association for the auto industry.

Chet: The Alliance brief. Yeah. And it's a pretty important brief in the sense that they lay out a compelling arguments on how the agency got it right. And these are the folks that are getting regulated. So I think that's interesting reading, just as a touchpoint.

Jody: And by the way, if for folks who want to get these briefs, does EDF have all the briefs up on its website for easy access?

Chet: I think we do, and I can follow up.

Jody: I think they might. Anyway, sorry for the listener, I'm trying to give them a place to go to find these things. What we'll create a link to it, link to this podcast is what we'll do to make it easy.

Chet: To answer your direct question, Jody, I mean, first of all, this sort of circles back to the beginning of our conversation here. EPA has stayed in their lane on this rule. Everything they're doing is absolutely consistent with how they've set standards in the past. There's nothing new here. They're exercising their authority on the Clear Air Act in a way that is consistent with every rule they've ever done affecting automobiles. And I think if you look at the case that they've laid out in terms of feasibility and cost, it is a really, really compelling case.

It's not a final decision yet. We'll know what it looks like in the final rule, but the proposal is a really, really good proposal. They try to outline the key issues in terms of trajectory and things like that for comment, and I'm sure it's going to be a challenging, but a productive discussion that the agency have with all the parties. And last but not least, they have to anticipate litigation. But the EPA's track record on this in terms of getting litigated and prevailing, they have a really, really solid track record. So I'm personally optimistic.

Jody: Yeah, I would join your optimism there in the sense that the record, I expect of the final rule be very, very strong. The record in supporting the proposal is already really impressive, as you say. And also this, as you say, is right down the fairway. The agency's





doing what it's been doing for 40 years and it's been regulating greenhouse gas, using this Clean Air Act authority for over 10. This is all a progression from existing standards. I mean, there are very good arguments to defeat the kind of hysterical hyperbolic this is a transformation that is well beyond what can be accomplished. It's just not so.

And as you say, to the extent the industry actually supports the final set of standards, that can be a really powerful fact for reviewing courts, when the industry stands up on the side of EPA. So we'll see. It'll be a journey through the courts for sure, but we will stay tuned and we will be back maybe to comment on it as things unfold. So Chet, I so appreciate you coming again to be our guest. Nothing I like better than to talk cars with you. And the one thing I will say to stay tuned for is more on trucks, heavy-duty trucks, right? This is a big challenge in the transport sector. They're behind cars, right? It's a tough one. Just briefly, can you give us a little picture of trucks?

Chet: Yeah. EPA issued, on the same day, a proposal for trucks. That definitely a topic I'd be happy to continue discussing with you. That has a whole set of other unique challenges and in some sense, a completely different sector that it affects. Yeah, and this is a comprehensive strategy that the agency's pursuing in terms of addressing pollution from the transportation sector.

Jody: And again, just for folks to understand, it's crucial to make good on the US's commitment to address climate change, to get a handle on transportation sector emissions. There's the power sector too, right? Power plants, there's oil and gas, methane in particular, but transportation emissions are crucial, and this proposal is really getting at that. So we look forward to seeing how the rule develops. And Chet, you and I will be watching. Thank you so much for joining us. It was a real pleasure.

Chet: Oh, thank you, Jody. Again, it is complete my pleasure. I love these discussions and I like getting into details with you. So look forward to our ongoing dialogue on these issues.

Jody: Okay, that's it for CleanLaw. See you next time.