Exhibit No.: _____
Issue(s): EV Subsidies/EV Charging Stations
Witness/Type of Exhibit: Marke/Rebuttal
Sponsoring Party: Public Counsel
Case No.: ET-2021-0151

REBUTTAL TESTIMONY

OF

GEOFF MARKE

Submitted on Behalf of the Office of the Public Counsel

EVERGY METRO, INC. D/B/A EVERGY MISSOURI METRO AND EVERGY WEST, INC D/B/A EVERGY MISSOURI WEST

CASE NO. ET-2021-0151

** **

Denotes Confidential Information that has been Redacted

August 16, 2021

PUBLIC

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Evergy Metro, Inc. d/b/a Evergy Missouri Metro and Evergy Missouri West, Inc. d/b/a Evergy Missouri West for Approval of a Transportation Electrification Portfolio	)	Case No. ET-2021-0151

AFFIDAVIT OF GEOFF MARKE

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

Geoff Marke, of lawful age and being first duly sworn, deposes and states:

1. My name is Geoff Marke. I am a Chief Economist for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

Geoff Marke
Chief Economist

Subscribed and sworn to me this 16th day of August 2021.

NOTARY PUBLIC NOTARY SEAL STATE OF MISSOURI

TIFFANY HILDEBRAND
My Commission Expires
August 8, 2023
Cole County
Commission #15637121

Tiffany Hildebrand
Notary Public

My Commission expires August 8, 2023.

TABLE OF CONTENTS

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CASE NO. ET-2021-0151

I. INTRODUCTION

Q. Please state your name, title, and business address.

A. Geoff Marke, PhD, Chief Economist, Office of the Public Counsel (OPC or Public Counsel), P.O. Box 2230, Jefferson City, Missouri 65102.

Q. What are your qualifications and experience?

A. I have been in my present position with OPC since 2014 where I am responsible for economic analysis and policy research in electric, gas, water, and sewer utility operations.

Q. Have you testified previously before the Missouri Public Service Commission?

A. Yes. A listing of the Commission cases in which I have previously filed testimony and/or comments is attached in Schedule GM-1.

Q. What is the purpose of your rebuttal testimony?

The purpose of this testimony is to respond to the direct testimony of Charles A. Caisley and the Evergy Transportation Electrification Portfolio Filing Report ("Report") regarding the Evergy Missouri Metro ("Metro" or collectively "Evergy") and Evergy Missouri West ("West" or collectively "Evergy") proposed tariff and program additions including the following:

- $1M ($650K Metro & $350K West) in rebates to encourage the installation of Level 2 ("L2") charging in existing EV driver homes;
- $87,500 ($31,250 Metro & $56,250 West) in rebates to housing developers to install 240V outlet installation in the construction of new homes;
- $10M ($6.5M Metro & $3.5M West) in rebates to incent installation of commercial EV charging infrastructure including: highway corridor stations, commercial public stations (e.g., stations at a Wal-Mart for customers), commercial employee stations

(e.g., stations at Hallmark headquarters for employees), commercial fleet stations (e.g., stations for company cars), multifamily complexes, and associated line extension costs;

- Optional electric rates that encourage off-peak transit and fleet EV charging;
- $1.6M ($1.1M Metro & $586K West) for customer marketing/education;
- $2.8M ($1.2M Metro & $1.6M West) in subsidies for additional charging stations to build out rate base including: 50 street light EV stations in downtown Kansas City; a speculative rideshare partnership (e.g., w/ Lyft or Uber); further highway corridor expansion in remote commercially unattractive locations; and decisional preapproval to build out an undefined amount of future charging stations moving forward; and
- Evergy requests discretion to divert the aforementioned requested funding amounts between categories.[1]

My silence regarding any issue should not be construed as an endorsement of, agreement with, or consent to Evergy's filed position.

Q. What is your position?

A. I recommend the Commission reject Evergy's proposal.

I believe that any request premised on the use of captive ratepayer funds that results in the needless build-out of rate base for nonessential service that have historically benefited a largely affluent minority of customers should give the Commission pause.

When you consider this application is actually in *addition* to the already sunk and increasingly likely stranded investment of 900+ ratepayer-funded EV charging station infrastructure (that have not produced meaningful EV adoption let alone covered its cost of service) the argument for even further cross-subsidies and build out of non-essential rate base is without merit.

Moreover, the Commission should not view this application in a vacuum but also factor in the following likely federal funding and ratepayer cost considerations in rejecting this proposal:

[1] The aforementioned cost and category breakdowns are my best attempt at what Evergy is proposing. The requested budgets and/or programs are not entirely clear between the proposed tariffs, the filed report, appendixes, and the subsequent supplemental filings. I will edit accordingly in surrebuttal testimony if necessary.

- The estimated $7.5 billion in funding specifically for EV charging infrastructure from the federal government as part of President Biden's infrastructure bill;[2]
- The approximate $8.9 billion (between 2019-2024 in Missouri and Kansas) in planned investment Evergy customers are going to be asked to shoulder in the near-term as a result of "updated" Plant-in-Service Accounting and Sustainability Transformation Plan investments for "essential" services;
- The more than $300 million in purchased fuel costs from Storm Uri for Evergy West; all the while
- Evergy Metro customers in arrearage struggle with an average mean arrearage amount of **[redacted]** (the highest in the state) and the total Evergy Metro residential arrearages amounts have increased by 46% year-over-year from the end of July **[redacted]**; and
- Evergy West customers in arrearage struggle with an average mean arrearage amount of **[redacted]** (the third highest in the state[3]) and the total Evergy West residential arrearage amounts have increased by 30% year-over-year from the end of July **[redacted]**

The combination of excess federal funding, billions in large planned capital investment, hundreds of millions in one-time excess fuel costs from Storm Uri and the large arrearage amounts of Evergy customers relative to every other utility in the state strongly suggests that the prudent and reasonable action for Evergy management would be to withdraw this proposal.

Q. Are you just opposed to EVs?

A. No.

That being said, I do believe that the rational case for accepting EVs has been undermined by unrealistic market forecasts, a disregard for the environmental effects involved in producing

[2] White House (2021) Fact Sheet: Historic Bipartisan Infrastructure Deal. https://www.whitehouse.gov/briefing-room/statements-releases/2021/07/28/fact-sheet-historic-bipartisan-infrastructure-deal/

[3] Average Mean residential arrearage amounts by order of largest arrearage to smallest arrearage by large electric, natural gas and water utility is as follows:* 1.) Evergy Metro $317.45; 2.) Empire District Electric $293.51 (May); 3.) Evergy West $268.28; 4.) Ameren Missouri $132.57; 5.)Spire $114.17; and 6.) Missouri American Water $109.38.*

and operating these vehicles, and the misguided belief that ratepayer subsidies for EV charging stations is anything but a regressive use of funding and an inappropriate response to a perceived market failure of a nonessential service.

Despite those positions, in the past, I have provided alternative recommendations in previous filings before this Commission based on a sharing of risks[4] and, more recently, on staggered deployment of supply (additional EV charging stations) based on actual increases in demand (charging station usage results).[5] Both alternative models at least attempted to maintain a degree of economic efficiency and minimize regulatory inefficiencies. Similar alternative recommendations cannot be made for this application because those recommendations were put forward under the premise that there was not already an existing 900+ EV charging station infrastructure in place.

Admittedly, Evergy's request is not solely about building out rate base with more EV charging stations. It is also about extending direct subsidies to existing EV owners and electricians, funding an ill-defined marketing/education campaign, and proposing "nudges" for optional Time-of-Use ("TOU") rates. All of which I also oppose for similar and additional reasons I will address later in my testimony.

Q. What will your testimony address?

A. My testimony will provide a contextual background on the inherent risks and economic inefficiencies associated with "swimming outside your lane" when it comes to a regulated natural monopoly engaging in non-essential services. I then highlight pending federal initiatives related to electrification of the transportation sector that further nullify the application. I also address Evergy's CCN impact to date, current data on Evergy ratepayer's arrearage amounts and recent regulatory filings that have or will drive up Evergy's cost of

[4] See Marke Rebuttal and supplemental rebuttal testimony in Case No: ET-2020-0390.
[5] To be addressed in an expected unanimous stipulation and agreement to be filed in Case No ET-2020-0259 by the end of the month of August or shortly thereafter.

service. Finally, my testimony will address each of the proposed programs and cost-benefit studies within the portfolio in turn.

II. MARKET FAILURES & PUBLIC UTILITY REGULATION

Q. What is a market failure?

A. Market failure is an economic situation defined by an inefficient distribution of goods and services in the free market. In a market failure, the individual incentives for rational behavior do not lead to rational outcomes for the group. Commonly cited market failures include externalities, monopoly, information asymmetries, and factor immobility (difficult to move labor and capital between different areas of the economy).[6]

Q. Are natural monopolies like an electric utility a market failure?

A. Yes. Regulated electric utilities, or natural monopolies, represent a situation where multi-firm production is more costly than production by a single firm. Regulation occurs when the government believes that the operator, with no competition and left to his own devices, would behave in a way that is contrary to the public interest by operating in a captive market for a product few can refuse.[7]

For utilities, the state supplies the regulatory risk in the absence of market risk—regulation is a proxy for the market.

Q. Can there be regulatory failures?

A. Yes. If the costs of regulation exceed the benefits then the answer is to encourage competition.

Q. Have arguments been put forward that EVs represent a market failure and necessitate government intervention?

A. Yes. The argument for government intervention to promote EVs stems from the premise that EVs do not produce tailpipe emissions compared to the internal-combustion counterparts. The societal benefits associated with the lack of tailpipe emissions exceeds the benefit to the

[6] Boyle, M. (2020) Investopedia "Market Failure" https://www.investopedia.com/terms/m/marketfailure.asp
[7] There are additional arguments for and against natural monopolies including but not limited to economies of scale, lack of substitution, essential services, etc…

individual owner. Despite those societal benefits, consumers have not adopted EVs (roughly 98% internal-combustion to 2% EV sales). To address this issue, the federal government (and many individual state governments) have provided direct subsidies to incentivize the purchase of EVs. Primarily in the form of tax reductions.

Q. Is there an argument against government subsidies for EVs?

A. Yes. First, once subsides are approved they have proven to be difficult to end, which places a strain on finite public finances. Second, EV subsidies are historically regressive, as they have disproportionately gone to high income earning households as seen in Figure 1.

Figure 1: Distributional effects of selected Tax Credits[8]

Table 2: Distributional Effects of Selected Tax Credits

	Percent of Credit Received by Income Category (in thousands)						Concentration Index
	$0–$10	$10–$20	$20–$40	$40–$75	$75–$200	$200+	
Panel A. Clean Energy Tax Credits							
Residential Energy Credits	0%	1%	10%	28%	48%	14%	0.606
Alternative Motor Vehicle Credit	0%	1%	9%	32%	47%	11%	0.584
Plug-in Electric Drive Vehicle Credit	0%	0%	1%	10%	54%	35%	0.801
Panel B. Other Major Tax Credits							
Earned Income Tax Credit	18%	49%	32%	1%	0%	0%	–0.415
Making Work Pay Credit	7%	14%	25%	28%	26%	0%	0.163
Child Tax Credit	2%	13%	31%	31%	23%	0%	0.185
First-time Home Buyer Credit	7%	6%	23%	40%	24%	1%	0.222
Foreign Tax Credit	0%	0%	1%	2%	9%	88%	0.954

Note: This table was constructed by the authors using U.S. Department of the Treasury, Internal Revenue Service, "Statistics of Income, Individual Tax Returns," 2005–2012. The first five income categories are approximate quintiles (18%, 17%, 24%, 21%, 18%), and 3% of tax returns fall in the last category. Residential energy credits includes both the NEPC and the REEPC. The Earned Income Tax Credit, Making Work Pay Credit, Child Tax Credit, and the First-Time Home Buyer Credit are all refundable, while the Foreign Tax Credit is not. See Appendix A for details.

[8] Borenstein, Severin and Davis, Lucas "The Distributional Effects of U.S. Clean Energy Tax Credits" (July 2015) (Published in NBER Tax Policy and the Economy, University of Chicago Press, 30(1): 191-234, 2016) | WP-262 https://haas.berkeley.edu/wp-content/uploads/WP262.pdf

Third, the positive externalities associated with the net reduction in tailpipe emissions needs to be offset by the increased environmental consequences associated with increased emissions from charging with fossil fuel generation, as well as the greater use of toxicity from heavy metals in the both the extraction and disposal process.[9] The point being, we cannot simply imagine ideal, pollution-free machines and then will them into existence or selectively chose what pollution to count and what not to count if environmental benefits are to be quantified. Fourth, roughly two-thirds of the world's cobalt, an essential supply for EV batteries, comes from mining from the Democratic Republic of Congo in which Amnesty International estimates there are more than 40,000 children working.[10] The lack of land and labor markets for cobalt and the conditions surrounding the extraction process in the Congo could at least be considered a market inefficiency.

For our purposes, Evergy is not proposing direct subsidies for EV purchases but much of the rationale for ratepayer subsidization of EV charging stations is premised on the argument that ubiquitous EV charging station infrastructure needs to be present to induce EV market gains. I reject that premise.

Q. Are EV charging stations a market failure?

A. I do not believe so. The argument for government intervention in the EV charging station market is premised on the idea that "range anxiety," that is, a lack of EV charging infrastructure availability in remote locations, is what is preventing the adoption of EV cars. This is despite the fact that an estimated 85% of all EV charging is done at home.[11] Most recently, the US

[9] A wells-to-wheels analysis that considers inputs across the life of the asset is necessary to determine if there is a net environmental benefit at the end of the day. Whether the increased subsidies (costs) is offset by the remaining benefits (net emission benefits from the well-to-wheels analysis) is another issue. I do recognize that recent analysis on this issue tends to favor environmental benefits associate with EV cars "on average." However, the devil is in the details with the crucial factors being both time (when you charge, e.g., charging during peak demand or at 3AM) and place (where you are charging, e.g., in the Ontario with hydropower or Kansas City with fossil fuels).
[10] Dummett, M. (2017) The Dark Side of Electric Cars: Exploitative Labor Practices. Amnesty International https://www.amnesty.org/en/latest/news/2017/09/the-dark-side-of-electric-cars-exploitative-labor-practices/
[11] Blanco. S. (2021) Average EV Owner Drives Half as Many Miles as Other Drivers—Study https://www.caranddriver.com/news/a35498794/ev-owners-low-mileage-study/

Senate's recently approved version of the Infrastructure Investment and Jobs Act allocated an initial investment of $7.5 billion to counter that perceived market failure.

I believe the strongest argument against government intervention in subsidizing EV charging stations centers on locking into an inferior path-dependent technology at the expense of free market solutions. For example, if the federal government mandated slow, Level 2 wired chargers (e.g., Evergy's existing CCN infrastructure) that "crowd outs" superior options or inhibits free market development of cheaper, better options (e.g., wireless charging[12]). It remains to be seen under what conditions future federal funds will be dispersed as it pertains to EV charging stations.

Q. What is the argument for a regulated utility to correct a market failure for a nonessential service such as EV charging stations?

A. Utilities argue that increased load from EVs can put a downward pressure on rates by increasing revenues to cover fixed costs; thus helping all customers in the long run. Utilities further argue that natural monopoly intervention into a non-essential service is necessary because the free market has not supplied the necessary infrastructure to induce the demand needed to increase revenue. Stated differently, the utilities claim that the lack of ubiquitous EV charging infrastructure and the lack of private actors suppling that infrastructure is what is preventing mass adoption of EVs.[13]

Q. Do you agree with these arguments?

A. No. Evergy already has a ubiquitous EV charging infrastructure in place (900+ stations and 1800+ outlets not to mention the many additional private charging stations (Tesla, etc…) in its service territory) and ratepayers have received neither the downward pressure on rates nor mass

[12] Kitman, J.L. (2020) Norwegian Taxis, Wirelessly Charging While They Wait for a Fare. *NY Times* https://www.nytimes.com/2020/08/13/business/jaguar-i-pace-oslo-taxis-charging.html & Pyzyk, K. (2021) Indiana DOT, Purdue developing wireless EV charging for highways. *Snartcitydive* https://www.smartcitiesdive.com/news/indiana-dot-purdue-developing-wireless-ev-charging-for-highways/603774/

[13] Evergy has taken this argument several degrees further in this application by arguing that direct incentives to existing EV drivers, housing developers and marketing efforts that strongly suggest that EV drivers voluntarily charge their cars during non-peak hours are also necessary for funding.

adoption of registered EVs they were promised as compensation for this existing infrastructure buildout. Evergy's CCN investments suggest that ubiquitous EV charging stations are not strongly correlated with EV adoption.

Q. Do you have any empirical data to support that?

A. Yes. Table 1 represents registered battery and plug-in EVs by county in which Evergy Metro and West operate:

Table 1: Breakdown of registered battery and plug-in EVs by Evergy operating county as of end of October 2020:[14]

County	Battery	Plug-in	County	Battery	Plug-in
Andrew	4	-	Holt	-	-
Atchison	3	-	Jackson	859	51
Benton	2	-	Johnson	23	5
Buchanan	19	5	Lafayette	12	1
Carroll	2	-	Livingston	3	2
Cass	83	4	Nodaway	7	1
Chariton	-	-	Pettis	6	2
Clay	25	21	Platte	195	8
Clinton	10	-	Randolph	5	2
Dade	2	-	Ray	6	1
DeKalb	3	-	Saline	7	-
Gentry	1	-	St. Clair	5	-
Grundy	1	-	Vernon	3	-
Henry	4	-	Worth	1	-

1,291 (Battery) + 103 (Plug-in) = 1,394

To be clear there are more EV charging ports (1,800+) then there are registered EV cars (1,394 as of October 2020) in Evergy's service territory.

[14] Data supplied by the Missouri Department of Revenue. I will attempt to update these numbers for surrebuttal testimony if necessary. These numbers are supported by EV registration metrics reported by the US Department of Energy for the end of calendar year 2020 which reported Missouri total EV registrations at 6,740. See also: https://afdc.energy.gov/data/10962

Q. How do these numbers compare to Ameren Missouri that did not use ratepayer funds to put up 900+ EV charging stations in its service territory?

A. Evergy's numbers do not compare well. The combined areas of St. Louis County, St. Louis City and St. Charles County have 3,681 registered battery and plug-in EVs or 2,287 more EVs than Evergy's entire service territory. Stated differently, these three areas serve as a reasonable control that nullifies Evergy's experiment with ratepayer funding.

Q. Do you have any theories why there are almost three times the amount of registered EVs in those three Ameren Missouri counties/city than the entire Evergy Metro and West footprint?

A. The most obvious one that comes to mind would be the price of electricity. Ameren Missouri is much more affordable than either Evergy Metro or West. I cannot help but believe that customers will think twice about investing in an electric vehicle if their electric bills are already cost prohibitive (or becoming more so).

Q. Are there other arguments why Evergy should not be doubling down on building out more EV charging stations?

A. Yes. To state the obvious, if the federal government ultimately extends subsidies for EV charging stations to the State of Missouri there is no compelling argument for further duplicative infrastructure as continuing to invest in EV charging stations on top of EV charging stations will result in diminishing returns.

The Commission should also be mindful that regulating one market failure (natural monopolies) should not be license to correct another perceived market failure (EV charging stations) for a separate non-essential service. Markets will thrive best where there is both the perception and the reality of a level playing field, and that is best accomplished by restricting the ability of regulated utilities from participating. Public utility regulation is supposed to serve as a proxy for market, not as a means to function as a command-and-control economy.

Natural monopolies entering into a competitive market with the backing of captive ratepayer funds will do nothing but inhibit competition and reinforce long-term market failures. The fact

that these are capital investments for non-essential services cannot be stressed enough. Utilities have a perverse incentive to build out rate base under cost-plus regulation, as they will earn a profit if they are allowed to add the ratepayer funded EV charging station investments into their rate base regardless of whether or not said investments generate enough revenues to cover their costs or if they are ever actually used.[15] Today, there are free market actors that put up the capital, provide this service, and accept the risks and rewards accordingly. A subsidized, non-essential rate-base asset disincentives innovation, inhibits private investment, shifts risks to ratepayers, and rewards the utility regardless of the outcome. Such activity would almost assuredly result in regulatory failure and be considered economically inefficient.[16]

Perhaps a few measured charging stations can be rationalized around highway corridors in the past, but it becomes much more difficult (or impossible) to justify additional buildout on top of the 900+ EV stations already in the Evergy Missouri service territories when demand has not materialized by any meaningful metric. This is especially true now that both Volkswagen Trust Funds has announced funding to directly address the remaining highway corridors and the likely aforementioned federal funding from the recent infrastructure bill.[17]

[15] See also the Averch-Johnson effect, which is the tendency of regulated companies to engage in excessive amounts of capital accumulation in order to expand the volume of their profits. Excessive capital accumulation under rate-of-return regulation is informally known as "gold plating." Over-investment (or over-capitalization) has obvious implications for rates paid by consumers and also for the efficiency of resource allocation. Averch, Harvey; Johnson, Leland L. (1962). "Behavior of the Firm Under Regulatory Constraint". American Economic Review. 52 (5): 1052–1069. JSTOR 1812181

[16] Economic Efficiency is the condition whereby a society gets the highest social welfare from its scarce resources. Economic efficiency implies an economic state in which every resource is optimally allocated to serve each individual or entity in the best way while minimizing waste and inefficiency. When you have built out 900 EV charging stations that have not induced adoption, have not covered their cost of service, and are increasingly likely to be obsolete technology, you do not double down with more investment especially when the federal government is going to invest in the technology separate and apart from your actions. Doing so would result in an economic inefficient managerial decision with the social welfare of everyone being worse off (with the notable exception of the utility shareholders who will earn a return on the increased non-essential rate base) as a result.

[17] Evergy is receiving funding for at least one site in Concordia. Missouri Department of Natural Resources (2021) Volkswagen Trust Funds. https://dnr.mo.gov/env/apcp/vw/index.html see also: Daily Journal (2021) DNR to fund charging stations. Jan. 19. https://dailyjournalonline.com/news/state-and-regional/dnr-to-fund-charging-stations/article_4498ff22-a55c-5e11-95bd-96cd9007142a.html

Q. Do you have a sense of how much funding for EV charging stations will be allocated to Missouri in the near-future?

A. Yes. The US Senate passed a roughly $1 trillion infrastructure package August 10, 2021, advancing a central piece of President Biden's economic agenda that would amount to one of the most substantial federal investments in roads, bridges, rail and EV charging stations in decades. As of this writing, there is still some uncertainty as it pertains to a possible reconciliation bill with the US House, but there is clearly a strong momentum for a substantial investment in the near future.

Missouri was given a preview of its likely allocation of the Infrastructure Investment and Jobs Act several days ago. As it pertains to EV charging station funds in Missouri, the White House stated:

> Under the Infrastructure Investment and Jobs Act, **Missouri would expect to receive $99 million over five years** to support the expansion of an EV charging network in the state.[18] Missouri will also have the opportunity to apply for [an additional] $2.5 billion in grant funding dedicated to EV charging in the bill.[19] (emphasis added)

Q. Is there a compelling public policy argument to move ahead with further EV investment before federal funding is secure?

A. No. To be clear, I do not think there is a compelling argument to move ahead with the Company's proposal even if the federal funding never comes to fruition. Again, there are already 900+ EV charging stations in the Evergy service territory and the demand has not come to date (more on this later), let alone all of the other reasons I have already stated. Nevertheless, even the most pro-EV advocate can recognize the need to exercise managerial prudency and see how things play out at the federal level first before investing further in EV charging stations on top of existing EV charging stations.

[18] These values are estimates and may change based on updated factor data each fiscal year
[19] https://www.whitehouse.gov/wp-content/uploads/2021/08/MISSOURI_Infrastructure-Investment-and-Jobs-Act-State-Fact-Sheet.pdf

Q. Are there countervailing policy and/or economic arguments beyond the uncertainty of federal funding *and* the fact that there are already 900+ EV charging stations being underutilized to suggest the Company should withdraw its application?

A. Yes. In Case No: EU-2020-0350 (Evergy COVID-19 AAO), OPC proposed that Evergy include an arrearage matching program similar to Ameren Missouri, Spire, and Missouri American Water to help struggling customers during the COVID-19 pandemic. The Company rejected this proposal. Mr. Caisley stated:

> We have continued to lead in development of alternative payment arrangement plans, including being one of only a handful of investor-owned utilities in the United States that offered payment programs offering bill credits for customers who made payment arrangements during the pandemic. These actions in combination with our aggressive customer communication and outreach, has reduced residential arrearages below pre-COVID-19 levels by the end of August.

Fast forward approximately one-year and the amount of customers in arrearages have increased at alarming levels along both total and average dollar amounts as seen in Table 2.

Table 2: Evergy Metro and Evergy West Residential Arrearage data July 2019 and July 2020**

**

I find it difficult to justify asking ratepayers to fund approximately $15 million in non-essential services when Evergy management wouldn't concede to a modest portion of its profits to help offset arrearage amounts for its struggling customers like Ameren Missouri, Spire, and Missouri American Water did during COVID-19.[20] The fact that Evergy's arrearage numbers are arguably the worst in the state underscores that there are other pressing priorities that need to be addressed.

Q. Are there any unexpected additional cost increases Evergy customers are going to be asked to absorb?

A. Yes. Evergy West "pass through" fuel costs exceed $300 million from Winter Storm Uri. It also is important to point out that Evergy management has announced an orders of magnitude increase in capital expense over the next couple of years as a result of enabling legislation for Plant-in-Service Accounting and as a result of the Elliott Management induced Sustainability Transformation Plan ("STP") that includes $8.9 billion in investment through 2024. At a minimum, Evergy is making it awfully difficult for prospective buyers to choose EVs if they perceive their electric bills are approaching double digit increases in the near future.

Q. Your testimony has focused primarily on EV charging stations so far. Is that the only problem Evergy is trying to solve for in this application?

A. It is not the only problem the application is trying to solve. It is true that Evergy wants to expand its CCN infrastructure by requesting decisional preapproval to build out further investment; however, the bulk of the application is centered on attempting to modify charging habits through direct subsidies to various customers including: existing EV drivers, home developers, and commercial customers as well as marketing and optional TOU rates.[21] Stated differently, the bulk of the explicit requested budget in this application would not result in an increase to rate base but would be a pass-through expense funded by captive customers.[22]

[20] It should not be lost that a matching arrearage program would have been funds that would have gone right back to the Company.
[21] $2.8 million is requested for "specific" CCN build out in this case.
[22] Positive affirmation of the decisional preapproval to continue building out the CCN notwithstanding which would result in many more dollars and increased build-out of rate base with non-essential capital investments.

Q. Is there some other policy lever available to the Commission besides direct subsidies or marketing that would encourage charging during off-peak hours?

A. The most direct and influential incentive to customers is provided by pricing the service appropriately with TOU rates. Efficient energy consumption requires that prices charged to consumers reflect the social cost of producing and delivering energy. The most clear-cut and efficient way to induce energy consumers to charge at socially desirable levels comes from correct pricing. Most industries rely exclusively on prices to achieve optimal levels of consumption. Consequently, the Commission should place primary importance on eliminating pricing distortions and creating easily understood and transparent price signals to ratepayers.

Q. Isn't the Company proposing TOU rates in this case?

A. They are proposing the inclusion of an optional commercial TOU rate outside of a rate case. The Company points to the fact that there are existing pilot TOU rates that customers could elect to go onto if they are so inclined. Putting aside the legality of changing rates outside of a rate case, it is important to note that the Company has no plans to require EV customers to be charged under TOU rates. Evergy's preferred method is to continue to spend their ratepayers' money on marketing and direct incentives that hopes to nudge customers into "doing the right thing," without providing any real incentive (via either carrot or stick) to compel actual action.

Q. Do you support that proposed approach?

A. No. Consider for a moment that Evergy's customers have been paying a return on and return of hundreds of millions of dollars in capital investments in a state-of-the-art customer information system and Advanced Metering Infrastructure ("AMI") but effectively getting none of the espoused benefits (e.g., TOU rates) to date and Evergy wants to keep it that way. The most obvious and cost-effective method to induce benefits to all customers is by utilizing the already invested AMI hardware/software to charge customers for increasing peak demand if they elect to charge during those high demand hours. Coincidently, increase peak demand is highly correlated with increase fossil fuel usage (i.e., expensive peaker plants being fired up to meet demand). The answer is not, "let's give more subsidies to those customers who are driving up peak demand in the hope that they will change their charging habits."

V. EVERGY'S PROPOSED PORTFOLIO

Level 2 Home Installation for Existing EV Drivers

Q. Please describe Evergy's Residential Customer EV Outlet Rebate.

A. Evergy proposes a targeted budget of $1 million for its Residential Customer EV Outlet Rebate, which incentivizes the installation of a 240V outlet at residential locations to enable L2 EV charging. Customers are eligible for one rebate per residence to cover 50% of the installation cost, up to $500 per outlet, to install a dedicated 240V circuit (40A or greater, including a NEMA 14-50 outlet). These are rebates to existing EV drivers to allow them to charge their EVs quicker. It is believed that the incentive will be an opportunity to educate customers on the existence of TOU rates and/or encourage these customers to charge at off-peak hours.

Q. Do you agree with this proposal and premise?

A. No. A more direct efficient response would be to price EV drivers more for on-peak usage and less for off-peak. This could easily be accomplished in Evergy's next rate case and at no additional costs. Just giving up to $500 to existing EV drivers to get a more powerful charger without any repercussions or conditions if they elect to charge during on-peak hours will result in cost increases to all customers from both the direct subsidy and the increased energy costs during peak demand.

Housing Developer Subsidies

Q. Please describe Evergy's Housing Developer proposal.

A. Evergy proposes a targeted budget of $87,500 for a Residential Developer EV Outlet Rebate of up to $250 per home to incentivize developers to pre-wire new homes with adequate circuit capacity to accommodate L2 EV charging by future residents. The Residential Developer EV Outlet Rebate is designed to incentivize the installation of a dedicated 240V circuit (40A or greater, including a NEMA 14-50 outlet) to enable L2 EV charging. By targeting new homes, Evergy hopes to ensure that homes are pre-wired for EV charging, which will save customers the cost of upgrading later.

Q. Do you agree with this proposal and premise?

A. No. Ratepayers should not be subsidizing electricians working on new homes to install something that they might already be planning to install based on the mere *possibility* that some prospective owner of the home might get an EV at some point in the future. If Evergy feels strongly about the building codes and standards within its service territory it should be an issue they should address with the local government and construction contractors. Captive ratepayers' cost of service should not be extended as a conduit to solve problems outside "the cost of service" let alone problems deemed unnecessary by local governments and housing developers. Moreover, there is an extremely high chance that the money spent on this endeavor will *never* be used to charge an EV as there is no requirement whatsoever that the outlet be used for that purpose or that the proposed homeowner even own an electric vehicle.

Commercial Rebates

Q. Please describe Evergy's Commercial Rebates proposal.

A. Evergy is proposing a targeted budget of $10 million to provide rebates of various amounts to commercial customers including destination such as workplaces, fleet-parking sites, public destinations such as retail sites, multi-family dwellings, and along highway corridors. Figure 2 provides a reprint of the Evergy's proposed commercial EV rebates by site.

Figures 2: Reprint of Evergy's Proposed Commercial EV rebates by site

Site Type	L2 Ports	DCFC Units	Maximum Rebate per Site
Highway	2	2	$45,000
Non-Highway Public	6	2	$55,000
Fleet/Workplace	10	2*	$65,000
Multi-Family	10	0	$25,000

*DCFC is eligible for rebates only in cases where the equipment serves fleet operations.

Importantly, Evergy proposes to utilize Evergy's line extension allowance to offset additional costs for participants.

Q. Do you agree with this proposal and premise?

A. No. First, there are already 900+ EV charging stations in Evergy's service territory not to mention the additional private EV charging stations not funded by ratepayers (and any future EV charging stations that may materialize from federal funding). Allocating a targeted budget of $10 million for further commercial build out will cannibalize the existing public sites and most certainly be utilized by free riders (i.e., commercial customers who would purchase an EV charging station regardless of the rebate). I also have additional concerns about double cost recovery surrounding Evergy's purported complementary line extension subsidy; however, additional discovery is necessary to confirm that this is a valid concern.

Q. What do you mean when you say that "further commercial build out will cannibalize the existing public sites"?

A. There are already more EV ports than registered EV cars in Evergy's service territory. After you factor in that approximately 85% of charging is done at home and that the cost of electricity will most assuredly increase in the near future it is difficult to see how the existing CCN infrastructure will ever cover its cost. Adding additional and/or faster EV charging stations on top of the already abundant supply will merely further insure that the original CCN infrastructure will be stranded. It is merely doubling down on throwing good money at bad investments.

Q. Can you provide an example of the free rider problem you mention?

A. If a Company makes a green pledge to utilize an EV fleet they will invest in EV chargers at their workplace regardless of whether or not Evergy provides ratepayers subsidies.

Q. Are there any ways that the free rider problem might be addressed?

A. If the Commission approves any part of the Commercial electrification section of the application I would highly recommend that, at a minimum, the rebate incentive amounts should also be capped on a percentage basis to not exceed 20% of the total costs for a charger station.

A 20% discount should be enough enticement for customers who are "on the fence" and minimize the impact of the inevitable free riders that will take advantage of the offer.

Electric Transit Service Rate

Q. Please describe the Electric Transit Service Rate proposal.

A. Evergy proposes two new optional rates including the Electric Transit Service ("ETS") pilot rate option for transit bus fleet customers. The rate is designed to increase EV adoption in this vehicle segment and support transit customers. The ETS rate is a two-period TOU rate with a 12-hour off-peak period (6 p.m. to 6 a.m.) that aligns with typical transit fleet depot charging patterns. The rate removes the demand charge, while retaining a small local facility demand charge to incentivize managed charging.

Additionally, Evergy proposes a new Business EV Charging Service ("BEVCS") pilot rate option for commercial customers to increase EV adoption, meet workplace employee and fleet EV charging needs, support public EVSP networks, and maximize grid benefits of EV charging load at commercial locations. The BEVCS tariff is a TOU rate with three time periods designed to address commercial rate challenges for commercial customers and encourage workplace and fleet charging during off-peak times when system costs and grid utilization are lower

Q. Do you agree with this proposal and premise?

A. I support the use of cost based rates; however, my understanding is that there are legal concerns regarding the question of whether new rates can be introduced outside of a rate case. As such, I believe the proper venue for this proposal is in Evergy's next rate case.

Customer Marketing/Education

Q. Please describe Evergy's Customer Marketing/Education proposal.

A. Evergy proposes a targeted budget of $1.6M for customer marketing/education to help stimulate the EV market and inform customers about those benefits and available

incentives, as well as educate customers about managing charging to save money and reduce the potential for negative grid impacts.

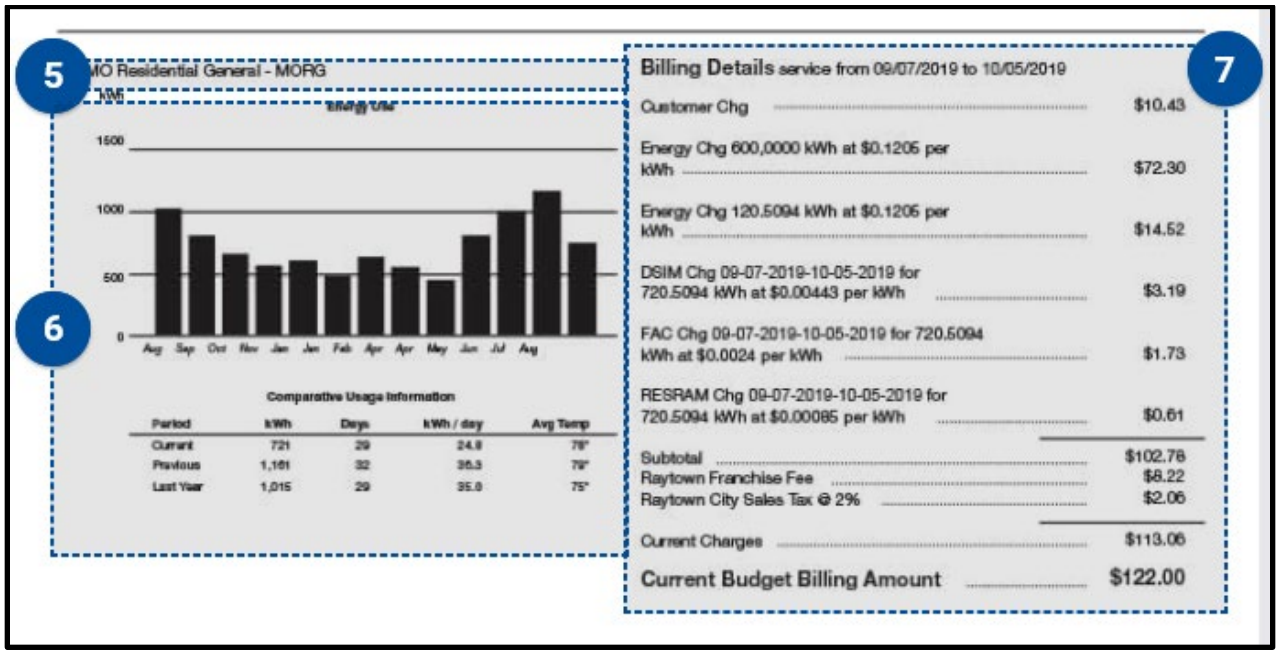
Q. Do you agree with this proposal and premise?

A. The current proposal lacks detail. As such, I cannot support the proposal. I am also skeptical of expending a targeted budget of $1.6M on "education" when pricing electricity appropriately and transparently should accomplish the task. Case in point, the liquid-motor-fuels market in the U.S. is one of the most price-competitive markets in the world. As seen in Figure 3, prices can be seen on big signs from a distance, and drivers aggressively go out of their way to seek savings of just a few cents a gallon.

Figure 3: Example of Price-Competitive Marketing in the liquid-motor-fuels market

Contrast that with Evergy's electric bill as seen in Figure 4.

Figure 4: Example of an Evergy utility bill



I would argue that the lack of clear, transparent, and understandable price signals for the cost of service has historically been in the utilities' best interest; however, it is now an impediment to EV adoption. If Evergy is serious about encouraging EV adoption they need a renewed emphasis not only on correct pricing but affordable, transparent, and easily seen pricing to make the case that EV ownership is cost competitive with internal combustion vehicles. I do not see that level of focus in this proposal.

Clean Charge Network Expansion

Q. Please describe Evergy's Clean Charge Network Expansion proposal.

A. Evergy proposes that the Commission grant decisional prudence to accelerate further capital investment in its CCN infrastructure as well as a targeted budget of $2.8M for non-commercially viable highway corridor expansion, a DOE streetlight grant in the city of Kansas City, and a series of DCFC stations for potential future partnerships with private rideshare companies (e.g., Uber and Lyft).

Q. Do you agree with this proposal and premise?

A. I may be willing to endorse reasonable cost expenditures for make-ready infrastructure and installation expenses for charging equipment related to the US Department of Energy's grant to the Metropolitan Energy Center and the City of Kansas City for a pilot streetlight-charging program in the city's right of way. I would consider this at least potentially reasonable, despite the fact that such a program will most certainly cannibalize existing CCN infrastructure, due exclusively to the unique nature of the pilot and the fact that costs will largely be covered (presumably) by the grant. Presently, it is not entirely clear how much funding is being requested for this specific feature in the Company's application. As such, I reserve the right to amend this recommendation accordingly.

I do not support decisional prudence for further build-out of the CCN for remote highway corridors, exclusive Uber sites, or additional rate base build-out of non-essential services for reasons articulated throughout this testimony.

To address the Uber/Lyft proposal specifically, I would posit that this is merely an excuse to increase the number of fast charging stations in the metro area it can rate base. This will merely cannibalize the existing CCN infrastructure and needlessly increase rates at a time when too many customers are struggling to make ends meet. There is no stated agreement with Uber, Lyft or any other service it is merely aspirational with no repercussions if the revenues do not materialize.

Q. Throughout this section you have said "targeted budgets." Does Evergy not have hard caps on its programs?

A. No. Evergy wants the ability to divert funds interchangeably between programs at its discretion.

Q. What is your position on the proposed budget flexibility?

A. I am against this proposal in total (with the possible exception of the streetlight program). My thoughts on an application with a suite of programs and a fungible budget is largely negative. Effectively, what Evergy is asking for is a $15 million dollar check from ratepayers to spend

on EV infrastructure, however they see fit. I would reject such flexibility, as it gives literally no incentive for the utility to follow-through with their proposals and could easily be directed at suboptimal actions.

Q. Does this conclude your testimony?

A. Yes.

CASE PARTICPATION OF
GEOFF MARKE, PH.D.

Company Name	Employed Agency	Case Number	Issues
Evergy Missouri West & Evergy Missouri Metro	Office of Public Counsel (OPC)	ET-2021-0151	**Rebuttal:** EV subsidies and EV charging stations
Spire Missouri Inc.	OPC	GR-2021-0108	**Direct:** AMI, Corporate Governance: Workplace Discrimination **Rebuttal**: Subsidized Natural Gas Expansion / Multi-Family Pilot / Energy Efficiency / Rate Design / Low-Income Programs **Surrebuttal**: AMI / AMI Opt-Out / Corporate Governance: Workplace Discrimination / Propane Storage / Research and Development / Bad Debt & Uncollectable / Rate Design
Missouri American Water	OPC	WR-2020-0344	**Direct:** COVID-19 / Future Test Year/ Cost Allocation Manual and Affiliate Transaction Rules for Large Water Utilities **Direct:** Rate Design **Surrebuttal:** Policy / Future Test Year / Affiliate Transactions Rule / Consolidated Tariff Pricing / Rate Design / Lead Line Replacement
Evergy Missouri West & Evergy Missouri Metro	OPC	EO-2020-0227	**Rebuttal:** Inefficient Management / Residential Demand Response **Surrebuttal:** Demand Response Programs
Working Case: To consider best practices for recovery of past-due utility customer payments after the COVID-19 pandemic	OPC	AW-2020-0356	**Memorandum:** Response to Staff Report on COVID-19 Past-Due Utility Customer Payments
Spire Missouri Inc.	OPC	GO-2020-0416	**Memorandum:** Notice of prudency concerns regarding natural gas Advanced Metering Infrastructure ("AMI") investment
Evergy Missouri West & Evergy Missouri Metro	OPC	EU-2020-0350	**Rebuttal:** Authorized Accounting Order for: Lost Revenues /COVID-19 Expenses / Bad Debt Expense **Surrebuttal:** Disconnection Moratorium / Arrearage Management Plans / Economic Relief Pilot Program / Outreach / Energy Efficiency / Administrative Procedures
Empire District Electric Company	OPC	EO-2020-0284	**Memorandum:** Customer Savings Plan / Stateline Combined Cycle Upgrade / DSM /

			COVID-19 Impact on Modeling / Executive Order on Securing the US Bulk-Power System / SPP Effective Load Carrying Capability / All-Source RFP
Evergy Missouri West	OPC	EO-2020-0281	**Memorandum:** Wind Power PPAs / DSM / COVID-19 Impact on Modeling / Executive Order on Securing the US Bulk-Power System / SPP Effective Load Carrying Capability / Utility-Scale Solar / All-Source RFP
Evergy Missouri Metro	OPC	EO-2020-0280	**Memorandum:** Wind Power PPAs / DSM / COVID-19 Impact on Modeling / Executive Order on Securing the US Bulk-Power System / SPP Effective Load Carrying Capability / Utility-Scale Solar / All-Source RFP
Empire District Electric Company	OPC	ER-2019-0374	**Direct:** Cost and Quality of Service, Stranded Asset, AMI/CIS deployment **Rebuttal**: Customer Experience / Weather Normalization Rider / Energy Efficiency / Low-Income Pilot Program **Rebuttal:** Class Cost of Service / Rate Design / Low Income Pilot Program **Surrebuttal:** Cost and Quality of Service / Reliability Metrics / Asbury Power Plant / Rate Design & CCOS / DSM Programs
Union Electric Company d/b/a Ameren Missouri	OPC	EA-2019-0371	**Rebuttal:** Solar + Storage
Union Electric Company d/b/a Ameren Missouri	OPC	ER-2019-0335	**Direct:** Keeping Current Bill Assistance Program **Rebuttal**: Smart Energy Plan, Keeping Current, Coal Power Plants, CCOS, Rate Design, Pure Power RECs **Surrebuttal**: Coal Power Plants
Rule Making	OPC	AW-2020-0148	**Memorandum:** Residential Customer Disconnections and Data Standardization **Presentation:** Service Disconnection Data Standardization Virtual Rulemaking Workshop
Empire District Electric Company /Kansas City Power & Light & KCP&L Greater Missouri Operations Company/Union Electric Company d/b/a Ameren Missouri	OPC	EO-2020-0047 EO-2020-0046 EO-2020-0045 EO-2020-0044	**Memorandum:** Additive Manufacturing, Cement Block Battery Storage, Virtual Power Plant, Customer-Side Renewable Generation, Historical Review of energy forecasts (KCPL, GMO and Empire-Specific) and Rush Island and Labadie Power Plant Environmental Retrofits (Ameren specific)

Union Electric Company d/b/a Ameren Missouri	OPC	EA-2019-0309	**Rebuttal:** Need for the Wind Project/ Economic Valuation / Pre-Site Energy Assessment Omissions
KCP&L Greater Missouri Operations Company & Kansas City Power and Light Company	OPC	EO-2019-0132	**Rebuttal:** Response to KCPL's MEEIA application, Equitable Energy Efficiency Baseline, WattTime: Automated Emissions Reduction, PAYS, Urban Heat Island Mitigation **Surrebuttal**: Market Potential Study, Single Family Low-Income
KCP&L Greater Missouri Operations Company	OPC	EC-2019-0200	**Surrebuttal:** Deferral Accounting and Stranded Assets
Union Electric Company d/b/a Ameren Missouri	OPC	ED-2019-0309	**Memorandum:** on the "Aluminum Smelter Rate"
Empire District Electric Company	OPC	EO-2019-0046	**Memorandum:** Response to The Empire District Electric Company d/b/a Liberty Plant In Service Accounting (PISA) Report
KCP&L Greater Missouri Operations Company	OPC	EO-2019-0067	**Rebuttal:** Renewable Energy Credits
Union Electric Company d/b/a Ameren Missouri	OPC	EO-2019-0314	**Memorandum:** Notice of Deficiency to Annual IRP Update
Rule Making	OPC	WX-2019-0380	**Memorandum:** on Affiliate Transaction Rules for Water Corporations
Working Case: Evaluate Potential Mechanisms for Facilitating Installation of Electric Vehicle Charging Stations	OPC	EW-2019-0229	**Memorandum:** on Policy Surrounding Electric Vehicles and Electric Vehicle Charging Stations
Rule Making	OPC	EX-2019-0050	**Memorandum** on Solar Rebates and Low Income Customers
Union Electric Company d/b/a Ameren Missouri	OPC	GR-2019-0077	**Direct:** Billing Practices **Rebuttal**: Rate Design, Decoupling, Energy Efficiency, Weatherization, CHP
Empire District Electric Company	OPC	EA-2019-0010	**Rebuttal:** Levelized Cost of Energy, Wind in the Southwest Power Pool **Surrebuttal**: SPP Market Conditions, Property Taxes, Customer Protections
Empire District Electric Company /Kansas City Power & Light & KCP&L Greater Missouri Operations Company/Union Electric Company d/b/a Ameren Missouri	OPC	EO-2019-0066 EO-2019-0065 EO-2019-0064 EO-2019-0063	**Memorandum:** Additive Manufacturing and Cement Block Battery Storage (IRP: Special Contemporary Topics)

Working Case: Allocation of Solar Rebates from SB 564	OPC	EW-2019-0002	**Memorandum** on Solar Rebates and Low Income Customers
Rule Making Workshop	OPC	AW-2018-0393	**Memorandum:** Supplemental Response to Staff Questions pertaining to Rules Governing the Use of Customer Information
Union Electric Company d/b/a Ameren Missouri	OPC	ET-2018-0132	**Rebuttal:** Line Extension / Charge Ahead – Business Solutions / Charge Ahead – Electric Vehicle Infrastructure **Supplemental Rebuttal:** EV Adoption Performance Base Metric
Union Electric Company d/b/a Ameren Missouri	OPC	EO-2018-0211	**Rebuttal:** MEEIA Cycle III Application **Surrebuttal:** Cost Effectiveness Tests / Equitable Energy Efficiency Baseline
Union Electric Company d/b/a Ameren Missouri	OPC	EA-2018-0202	**Rebuttal:** Renewable Energy Standard Rate Adjustment Mechanism/Conservation **Surrebuttal:** Endangered and Protected Species
Kansas City Power & Light & KCP&L Greater Missouri Operations Company	OPC	ER-2018-0145 ER-2018-0146	**Direct:** Smart Grid Data Privacy Protections **Rebuttal:** Clean Charge Network / Community Solar / Low Income Community Solar / PAYS/ Weatherization/Economic Relief Pilot Program/Economic Development Rider/Customer Information System and Billing **Rebuttal:** TOU Rates / IBR Rates / Customer Charge / Restoration Charge **Surrebuttal:** KCPL-GMO Consolidation / Demand Response / Clean Charge Network / One CIS: Privacy, TOU Rates, Billing & Customer Experience
Union Electric Company d/b/a Ameren Missouri	OPC	ET-2018-0063	**Rebuttal:** Green Tariff
Liberty Utilities	OPC	GR-2018-0013	**Surrebuttal:** Decoupling
Empire District Electric Company	OPC	EO-2018-0092	**Rebuttal:** Overview of proposal/ MO PSC regulatory activity / Federal Regulatory Activity / SPP Activity and Modeling / Ancillary Considerations **Surrebuttal** Response to parties **Affidavit** in opposition to the non-unanimous stipulation and agreement
Great Plains Energy Incorporated, Kansas City Power & Light Company, KCP&L Greater Missouri Operations Company, and Westar Energy, Inc.	OPC	EM-2018-0012	**Rebuttal:** Merger Commitments and Conditions / Outstanding Concerns

Missouri American Water	OPC	WR-2017-0285	**Direct:** Future Test Year/ Cost Allocation Manual and Affiliate Transaction Rules for Large Water Utilities / Lead Line Replacement **Direct:** Rate Design / Cost Allocation of Lead Line Replacement **Rebuttal**: Lead Line Replacement / Future Test Year/ Decoupling / Residential Usage / Public-Private Coordination **Rebuttal**: Rate Design **Surrebuttal**: Affiliate Transaction Rules / Decoupling / Inclining Block Rates / Future Test Year / Single Tariff Pricing / Lead Line Replacement
Missouri Gas Energy / Laclede Gas Company	OPC	GR-2017-0216 GR-2017-0215	**Rebuttal:** Decoupling / Rate Design / Customer Confidentiality / Line Extension in Unserved and Underserved Areas / Economic Development Rider & Special Contracts **Surrebuttal:** Pay for Performance / Alagasco & EnergySouth Savings / Decoupling / Rate Design / Energy Efficiency / Economic Development Rider: Combined Heat & Power
Indian Hills Utility	OPC	WR-2017-0259	**Direct:** Rate Design
Rule Making	OPC	EW-2018-0078	**Memorandum:** Cogeneration and net metering - Disclaimer Language regarding rooftop solar
Empire District Electric Company	OPC	EO-2018-0048	**Memorandum:** Integrated Resource Planning: Special Contemporary Topics Comments
Kansas City Power & Light	OPC	EO-2018-0046	**Memorandum:** Integrated Resource Planning: Special Contemporary Topics Comments
KCP&L Greater Missouri Operations Company	OPC	EO-2018-0045	**Memorandum:** Integrated Resource Planning: Special Contemporary Topics Comments
Missouri American Water	OPC	WU-2017-0296	**Direct:** Lead line replacement pilot program **Rebuttal:** Lead line replacement pilot program **Surrebuttal:** Lead line replacement pilot program
KCP&L Greater Missouri Operations Company	OPC	EO-2017-0230	**Memorandum** on Integrated Resource Plan, preferred plan update
Working Case: Emerging Issues in Utility Regulation	OPC	EW-2017-0245	**Memorandum** on Emerging Issues in Utility Regulation /

			Presentation: Inclining Block Rate Design Considerations **Presentation**: Missouri Integrated Resource Planning: And the search for the "preferred plan." **Memorandum**: Draft Rule 4 CSR 240-22.055 DER Resource Planning
Rule Making	OPC	EX-2016-0334	**Memorandum** on Missouri Energy Efficiency Investment Act Rule Revisions
Great Plains Energy Incorporated, Kansas City Power & Light Company, KCP&L Greater Missouri Operations Company, and Westar Energy, Inc.	OPC	EE-2017-0113 / EM-2017-0226	**Direct**: Employment within Missouri / Independent Third Party Management Audits / Corporate Social Responsibility
Union Electric Company d/b/a Ameren Missouri	OPC	ET-2016-0246	**Rebuttal**: EV Charging Station Policy **Surrebuttal**: EV Charging Station Policy
Kansas City Power & Light		ER-2016-0285	**Direct:** Consumer Disclaimer **Direct:** Response to Commission Directed Questions **Rebuttal:** Customer Experience / Greenwood Solar Facility / Dues and Donations / Electric Vehicle Charging Stations **Rebuttal:** Class Cost of Service / Rate Design **Surrebuttal:** Clean Charge Network / Economic Relief Pilot Program / EEI Dues / EPRI Dues
Union Electric Company d/b/a Ameren Missouri	OPC	ER-2016-0179	**Direct:** Consumer Disclaimer / Transparent Billing Practices / MEEIA Low-Income Exemption **Direct**: Rate Design **Rebuttal:** Low-Income Programs / Advertising / EEI Dues **Rebuttal:** Grid-Access Charge / Inclining Block Rates /Economic Development Riders
KCP&L Greater Missouri Operations Company	OPC	ER-2016-0156	**Direct:** Consumer Disclaimer **Rebuttal:** Regulatory Policy / Customer Experience / Historical & Projected Customer Usage / Rate Design / Low-Income Programs **Surrebuttal:** Rate Design / MEEIA Annualization / Customer Disclaimer / Greenwood Solar Facility / RESRAM / Low-Income Programs

Empire District Electric Company, Empire District Gas Company, Liberty Utilities (Central) Company, Liberty Sub-Corp.	OPC	EM-2016-0213	**Rebuttal:** Response to Merger Impact **Surrebuttal:** Resource Portfolio / Transition Plan
Working Case: Polices to Improve Electric Regulation	OPC	EW-2016-0313	**Memorandum** on Performance-Based and Formula Rate Design
Working Case: Electric Vehicle Charging Facilities	OPC	EW-2016-0123	**Memorandum** on Policy Considerations of EV stations in rate base
Empire District Electric Company	OPC	ER-2016-0023	**Rebuttal:** Rate Design, Demand-Side Management, Low-Income Weatherization **Surrebuttal:** Demand-Side Management, Low-Income Weatherization, Monthly Bill Average
Missouri American Water	OPC	WR-2015-0301	**Direct:** Consolidated Tariff Pricing / Rate Design Study **Rebuttal:** District Consolidation/Rate Design/Residential Usage/Decoupling **Rebuttal**: Demand-Side Management (DSM)/ Supply-Side Management (SSM) **Surrebuttal:** District Consolidation/Decoupling Mechanism/Residential Usage/SSM/DSM/Special Contracts
Working Case: Decoupling Mechanism	OPC	AW-2015-0282	**Memorandum:** Response to Comments
Rule Making	OPC	EW-2015-0105	Missouri Energy Efficiency Investment Act Rule Revisions, Comments
Union Electric Company d/b/a Ameren Missouri	OPC	EO-2015-0084	Triennial Integrated Resource Planning Comments
Union Electric Company d/b/a Ameren Missouri	OPC	EO-2015-0055	**Rebuttal**: Demand-Side Investment Mechanism / MEEIA Cycle II Application **Surrebuttal**: Potential Study / Overearnings / Program Design **Supplemental Direct:** Third-party mediator (Delphi Panel) / Performance Incentive **Supplemental Rebuttal:** Select Differences between Stipulations **Rebuttal:** Pre-Pay Billing
The Empire District Electric Company	OPC	EO-2015-0042	Integrated Resource Planning: Special Contemporary Topics Comments

KCP&L Greater Missouri Operations Company	OPC	EO-2015-0041	Integrated Resource Planning: Special Contemporary Topics Comments
Kansas City Power & Light	OPC	EO-2015-0040	Integrated Resource Planning: Special Contemporary Topics Comments
Union Electric Company d/b/a Ameren Missouri	OPC	EO-2015-0039	Integrated Resource Planning: Special Contemporary Topics Comments
Kansas City Power & Light	OPC	ER-2014-0370	**Direct** (Revenue Requirement): Solar Rebates **Rebuttal:** Rate Design / Low-Income Weatherization / Solar Rebates **Surrebuttal:** Economic Considerations / Rate Design / Cyber Security Tracker
Rule Making	OPC	EX-2014-0352	**Memorandum** Net Metering and Renewable Energy Standard Rule Revisions,
The Empire District Electric Company	OPC	ER-2014-0351	**Rebuttal:** Rate Design/Energy Efficiency and Low-Income Considerations
Rule Making	OPC	AW-2014-0329	Utility Pay Stations and Loan Companies, Rule Drafting, Comments
Union Electric Company d/b/a Ameren Missouri	OPC	ER-2014-0258	**Direct:** Rate Design/Cost of Service Study/Economic Development Rider **Rebuttal:** Rate Design/ Cost of Service/ Low Income Considerations **Surrebuttal:** Rate Design/ Cost-of-Service/ Economic Development Rider
KCP&L Greater Missouri Operations Company	OPC	EO-2014-0189	**Rebuttal:** Sufficiency of Filing **Surrebuttal:** Sufficiency of Filing
KCP&L Greater Missouri Operations Company	OPC	EO-2014-0151	Renewable Energy Standard Rate Adjustment Mechanism (RESRAM) Comments
Liberty Natural Gas	OPC	GR-2014-0152	**Surrebuttal:** Energy Efficiency
Summit Natural Gas	OPC	GR-2014-0086	**Rebuttal:** Energy Efficiency **Surrebuttal:** Energy Efficiency
Union Electric Company d/b/a Ameren Missouri	OPC	ER-2012-0142	**Direct:** PY2013 EM&V results / Rebound Effect **Rebuttal:** PY2013 EM&V results **Surrebuttal:** PY2013 EM&V results **Direct:** Cycle I Performance Incentive **Rebuttal:** Cycle I Performance Incentive
Kansas City Power & Light	Missouri Public Service Commission Staff	EO-2014-0095	**Rebuttal:** MEEIA Cycle I Application testimony adopted
KCP&L Greater Missouri Operations Company	Missouri Division of Energy (DE)	EO-2014-0065	Integrated Resource Planning: Special Contemporary Topics Comments
Kansas City Power & Light	DE	EO-2014-0064	Integrated Resource Planning: Special Contemporary Topics Comments

The Empire District Electric Company	DE	EO-2014-0063	Integrated Resource Planning: Special Contemporary Topics Comments
Union Electric Company d/b/a Ameren Missouri	DE	EO-2014-0062	Integrated Resource Planning: Special Contemporary Topics Comments
The Empire District Electric Company	DE	EO-2013-0547	Triennial Integrated Resource Planning Comments
Working Case: State-Wide Advisory Collaborative	OPC	EW-2013-0519	**Presentation:** Does Better Information Lead to Better Choices? Evidence from Energy-Efficiency Labels **Presentation:** Customer Education & Demand-Side Management **Presentation:** MEEIA: Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis
Independence-Missouri	OPC	Indy Energy Forum 2014	**Presentation:** Energy Efficiency
Independence-Missouri	OPC	Indy Energy Forum2015	**Presentation:** Rate Design
NARUC – 2017 Winter, Washington D.C.	OPC	Committee on Consumer Affairs	**Presentation:** PAYS Tariff On-Bill Financing
NASUCA – 2017 Mid-Year, Denver	OPC	Committee on Water Regulation	**Presentation:** Regulatory Issues Related to Lead-Line Replacement of Water Systems
NASUCA – 2017 Annual Baltimore,	OPC	Committee on Utility Accounting	**Presentation:** Lead Line Replacement Accounting and Cost Allocation
NARUC – 2018 Annual, Orlando	OPC	Committee on Consumer Affairs	**Presentation:** PAYS Tariff On-Bill Financing Opportunities & Challenges
Critical Consumer Issues Forum (CCIF)—New Orleans	OPC	Examining Polices for Delivering Smart Mobility	**Presentation:** Missouri EV Charging Station Policy in 4 Acts: Missouri Office of the Public Counsel Perspective
Michigan State, Institute of Public Utilities, 2019	OPC	Camp NARUC: Fundamentals	**Presentation:** Revenue Requirement
NARUC/US AID, Republic of North Macedonia, Skopje 2019	OPC	NARUC /US AID: Cybersecurity	**Presentation:** Case Study: The Missouri Experience, Cybersecurity and Data Privacy
Kansas, Clean Energy Business Council ("CEBC"), 2020	OPC	Climate and Energy Project	**Presentation:** Energy Efficiency and Pay as You Save (PAYS)
Michigan State, Institute of Public Utilities, 2020	OPC	Camp NARUC: Fundamentals	**Presentation:** Fundamentals of Economic Regulation / Performance Base Regulation
Renew Missouri	OPC	MoBar Continued Learning Education Credit	**Presentation:** Regulatory Incentives and Utility Performance
Missouri Bar Association	OPC	MoBar Fall Environmental & Energy Law Committee	**Presentation:** The Virus, The Economy and Regulated Utility Service: An Overview of Utilities and Stakeholders Response to COVID-19 and the Recession to Date

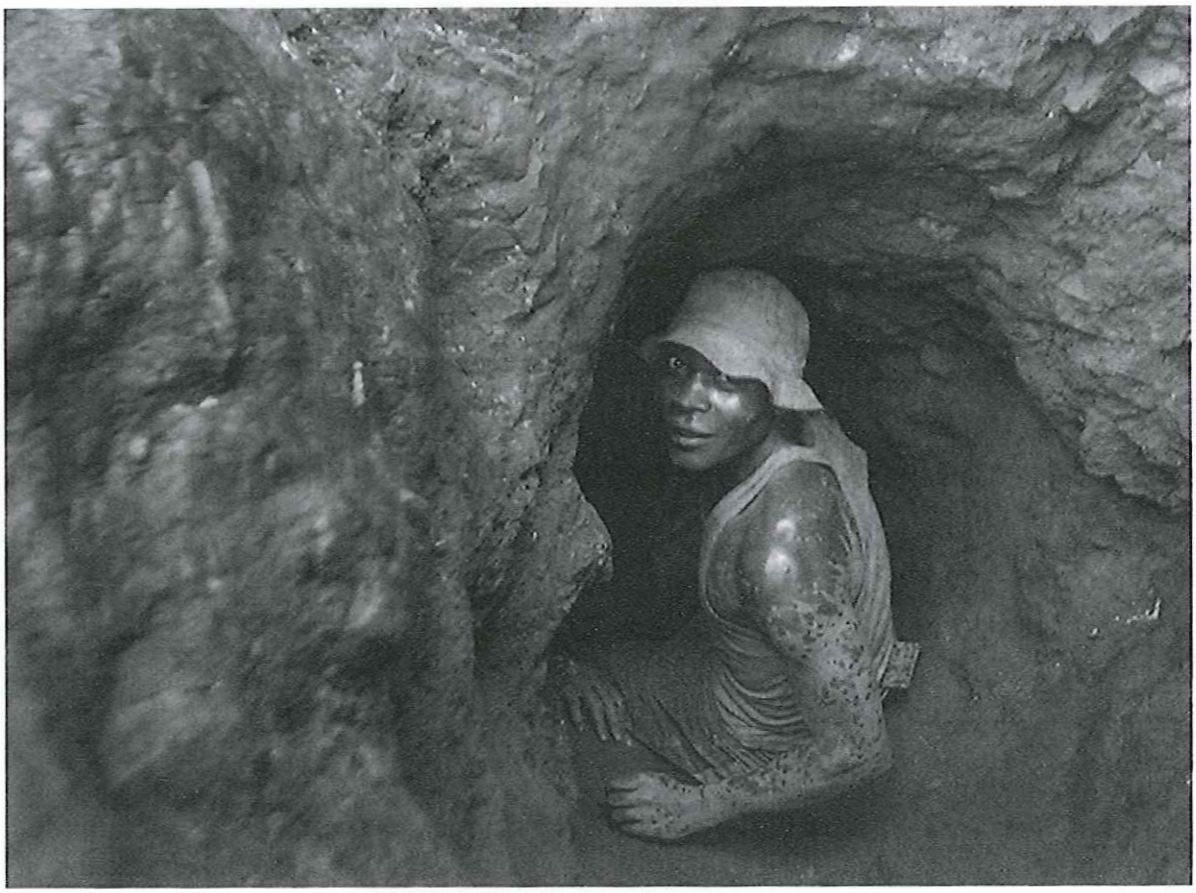
University of Missouri and City of Columbia, MO., 2021	OPC	Advancing Renewables in the Midwest	**Presentation:** The Heat Is On: Demand Side Management of Urban Heat Islands
NARUC/US AID, Indonesia, Jakarta 2021	OPC	Indonesia Ministry of Energy and Mineral Resources (MEMR)	**Presentation**: Introduction to Tariff Setting & Review: Utility Revenue Requirement, Cost Allocation & Rate Design
Michigan State, Institute of Public Utilities, 2021	OPC	Camp NARUC: Fundamentals	**Presentation**: Fundamentals of Economic Regulation

S&P Global

Cobalt key to electric vehicles but automakers hushed on risks

Tuesday, June 05, 2018 8:06 AM CT

By Michael Copley and Garrett Hering



A man enters a hand-dug tunnel at a cobalt mine in the Democratic Republic of the Congo.
Source: Associated Press

Automakers spending fortunes on a bet that electric vehicles are the industry's future are virtually silent on the mining risks tied to cobalt, a key metal for the batteries on which their plans depend.

Car companies expect evolving technology will eventually reduce or even eliminate their need for the blue metal ore, but, in the meantime, they could face pressure from investors who are asking questions about the new "blood diamond" and wondering why companies are not disclosing more information about their involvement with it.

A critical ingredient in lithium-ion batteries and a core enabling material in electric cars, energy storage systems, smartphones and other electronics, cobalt is chiefly mined in the Democratic Republic of the Congo, which accounted for 58% of global production in 2017 and 49% of world reserves, according to the U.S. Geological Survey. Tight global supplies recently have sent cobalt prices soaring to over $90,000 per metric ton on the London Metal Exchange, almost

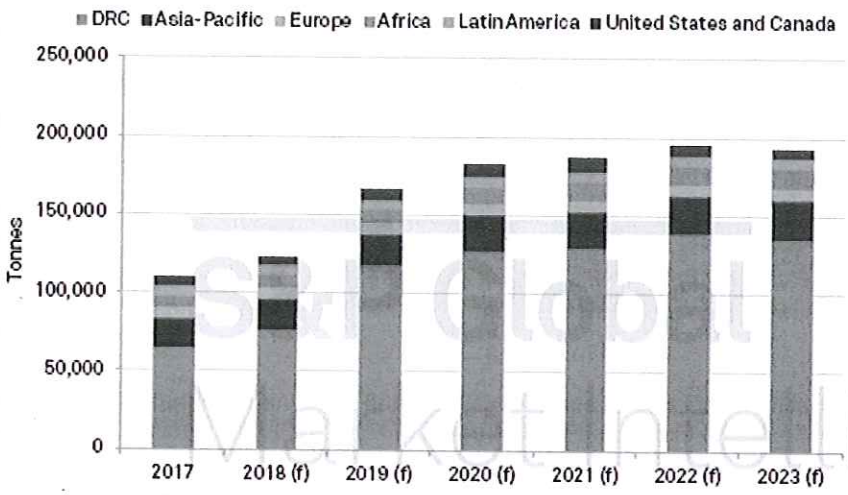
tripling since January 2017.

The DRC, which is already plagued by instability, political polarization and deficient infrastructure, could face more trouble with a long-awaited presidential election scheduled for December. The country is at an "inflection point" that could either lead to a "historic" democratic transition or to a "breakdown and ... a great deal of violence," Tom Perriello, a former U.S. special envoy to the Congo and eastern Africa, said in March at the Brookings Institution, a think tank in Washington, D.C.

In addition to supply-chain risks, human rights groups have routinely cited Congolese mines for child labor, forced evictions and water pollution, black marks that may be particularly troublesome for clean energy industries sold on their green credentials.

"We all see this cobalt pinch looming," Chris Berry, founder and president of House Mountain Partners, an advisory firm focused on raw material supply chains, said in an interview. "A large part of it has to do with the fact that it comes from the DRC, and it's just a very challenging place to do business, and there's just no easy solution here if [electric vehicle] adoption continues at its current pace."

Global cobalt production by region, 2017 - 2023



Reported and estimated supply datax.
Data as of April 27, 2018.
African production excludes the DRC.
f = forecast
Source: S&P Global Market Intelligence

The auto industry's reluctance to discuss the issue publicly is striking in light of the information mining companies provide.

General Motors Co., for example, which aims to roll out 20 new all-electric vehicles by 2023, has never mentioned the metal in filings to the U.S. Securities and Exchange Commission, according to a review of company documents by S&P Global Market Intelligence. Neither has Ford Motor Co., which plans to offer 16 electric vehicles by 2022.

Meanwhile, Glencore PLC Chairman Anthony Hayward said in an annual report in March that the Anglo-Swiss mining giant is working on human rights guidance for the commodities sector and on "addressing the challenges associated with the cobalt value chain." China Molybdenum Co. Ltd., another major producer, said in its latest annual report that an affiliate that mines cobalt and copper in the DRC is investing in water infrastructure, agricultural work programs and vocational training there to mitigate risks.

In February, Glencore CEO Ivan Glasenberg was asked how the company's cobalt customers were reacting to proposed DRC mining regulations that Glasenberg said could threaten future supplies: "We haven't heard" from automakers, he said. "But I'm sure they've got to look at it and monitor it just like what we're doing. ... [What] happens in the DRC is going to be very important going forward."

However, while Glencore executives have spoken at length about the relationship between cobalt and electric vehicles during the past two years, auto executives have rarely if ever commented on the subject, according to a review of

transcripts of corporate earnings calls.

Mining companies may operate in closer proximity to the Congo's problems, but electric-vehicle manufacturers are the ones driving demand for cobalt. And as consumer brands, they run the highest risk of a public backlash.

Automakers "can definitely do more to bring this … to the attention of investors and stress more clearly what they're doing" to reduce risks, said Sonja Wallenborn, a research manager at Sustainalytics, an investment consulting firm focused on environmental, social and governance, or ESG, issues. "The main risk really stems from the automakers and not necessarily the companies delivering these resources."

A young man carries cobalt at a mine in the Democratic Republic of the Congo.
Source: Associated Press

Automakers engaging, if not disclosing

At the direction of Congress, the SEC in 2012 began requiring companies to disclose their use of the "conflict minerals" tin, tantalum, tungsten and gold that originate in the DRC or neighboring countries if those materials are "necessary to the functionality or production of a product." While cobalt was omitted from the list, analysts say that, for now, the metal is essential for electric vehicles. The U.S. Department of the Interior recently said cobalt is one of 35 minerals that are "critical" for America's economy and national security.

While some automakers have avoided discussing the topic openly, executives appear to be well aware of the risks in the cobalt supply chain — and are taking actions to avoid them.

At a March battery conference in Florida, Mark Verbrugge, director of General Motors' Chemical and Materials Systems Laboratory, said raw material supplies — particularly of cobalt — pose the biggest threat to battery producers. GM declined to say whether the risks Verbrugge identified also apply to electric vehicle makers. While the company's SEC filings do not flag any risks specifically tied to cobalt, a sustainability report on its website notes "human rights issues"

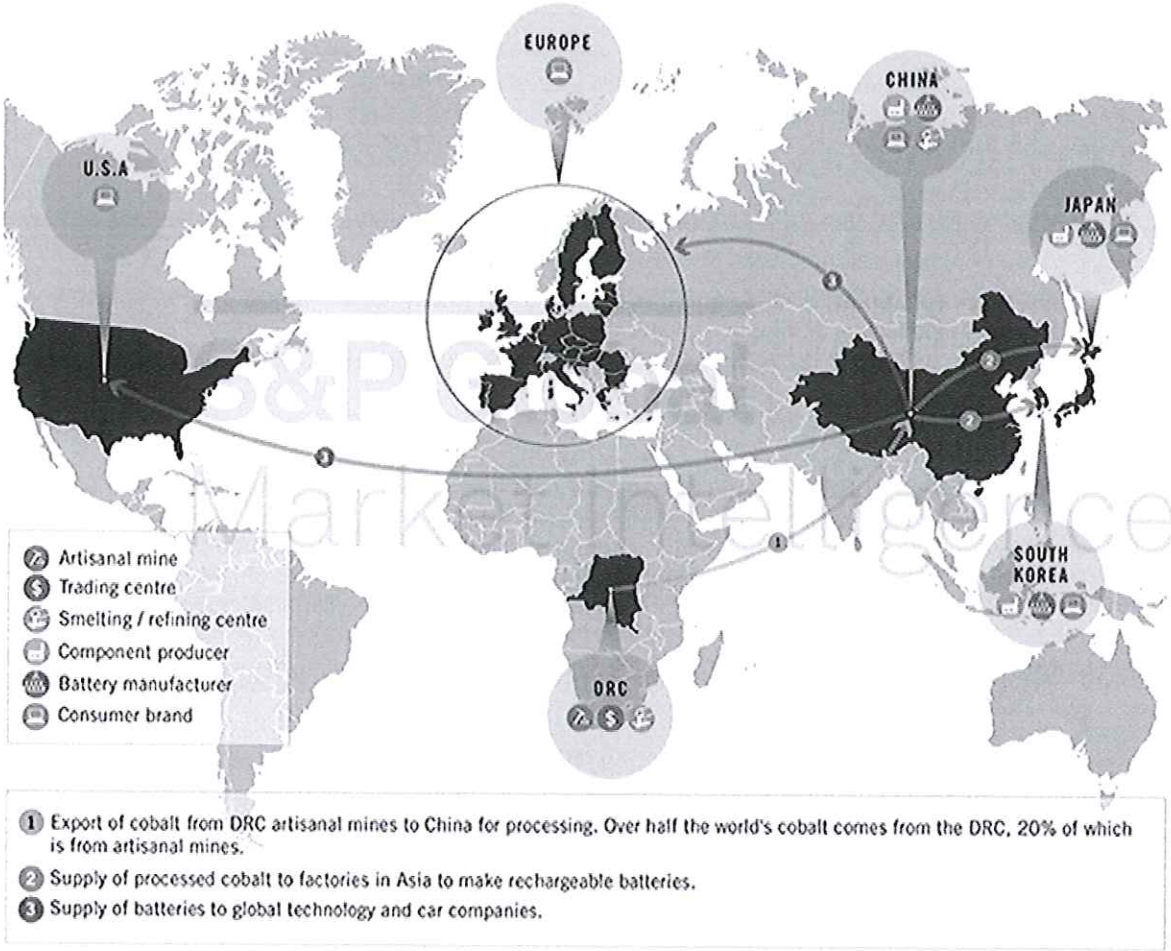
associated with the metal.

"We continue to work with our suppliers to reduce the amount of cobalt in our battery cells," GM spokesman Kevin Kelly wrote in an email. "GM does not source individual cell chemistry materials ourselves but we do assure that our suppliers meet our requirements for responsible sourcing."

Ford did not respond to messages seeking comment.

At a shareholder meeting May 10, Ford executives were asked about a CNN investigation of the cobalt supply chain. Ford is "committed to respecting human rights everywhere we operate," said Bradley Gayton, a vice president and the company's general counsel. "And that includes robust purchasing processes that we have, supplier training and education on human rights issues," as well as third-party social-responsibility audits for suppliers. Gayton referred shareholders to a sustainability report on Ford's website for more information. That document does not mention cobalt.

Movement of cobalt from artisanal mines in the DRC to the global market



Source: Amnesty International

A Tesla Inc. spokesperson said the electric vehicle and energy storage startup conducts "on-site audits to the best of our ability during the sourcing and vetting process for suppliers, to view operations and methods of risk management." Tesla mentioned cobalt twice in its latest annual report to the SEC, as one of a handful of materials that present supply and pricing risk; it did not identify any humanitarian concerns. The company has said that "the overwhelming majority" of its cobalt comes from outside of the DRC.

The annual report that Fiat Chrysler Automobiles NV filed with the SEC did not mention cobalt. However, a sustainability report posted on the company's website mentioned some of the "undesirable practices" related to cobalt and other raw materials. Fiat Chrysler, which is based in the U.K. but lists shares on the NYSE, did not respond to messages seeking comment.

Risk disclosures by electric-vehicle manufacturers listed outside of the U.S. have also been limited.

Germany's Volkswagen AG, which recently ordered €20 billion worth of lithium-ion batteries, mentioned cobalt once in its annual report, saying the metal carries pricing risk due to "political and economic uncertainty." In a sustainability report, the company said it directs suppliers to ensure their use of minerals, including cobalt, does not "directly or indirectly promote or support armed conflicts, and are in no way connected to human rights violations." Fellow German automakers Daimler AG and BMW AG did not address cobalt in their annual reports but did mention it in sustainability reports.

A young man carrying cobalt at a mine in the Democratic Republic of the Congo.
Source: Associated Press

Quietly, automakers have joined in partnerships intended to address some of cobalt's problems. One of the groups is working with Chinese refiners on a pilot program to improve supply chain transparency and reduce harm in the DRC. Another group, which includes Samsung SDI Co. Ltd., a battery affiliate of the South Korean electronics giant, is targeting "the worst forms of child labor."

However, initiatives like those are only "a start," said Nicholas Garrett, the CEO of RCS Global, a battery supply chain audit and advisory firm. Consumer brands "want to be seen on the right side of history," Garrett said. But "it would be extremely difficult to back up any child labor-free cobalt claim right now."

Amnesty International, a human rights group, said corporate due diligence alone cannot fix the human rights abuses in the cobalt supply chain. But "companies that are not performing due diligence in line with international standards risk contributing to, and benefiting from, those abuses," the group said in a 2017 report.

According to Amnesty International, GM and Daimler have made "minimal" efforts to detect, disclose and remediate human rights risks and abuses in their cobalt supply chains. Detection and disclosure efforts by Tesla, Fiat Chrysler and Volkswagen have also been minimal, though the companies have taken "moderate" steps to mitigate risks. BMW scored slightly better, taking moderate steps to detect and mitigate risks; however, disclosure by the company is still minimal,

Amnesty International said. The group did not evaluate Ford.

Amnesty International said it accounted for input from automakers who disputed their rankings before the report was published. GM, Daimler, Fiat Chrysler, Volkswagen and BMW did not respond to requests for comment. A Tesla spokesperson said the company has a human rights and conflict minerals policy for its suppliers and is "committed to only sourcing responsibly-produced materials."

Kristina Friedman, an ESG research analyst at Calvert Research and Management, said corporate initiatives around cobalt "significantly lag other conflict minerals disclosures where regulations, international frameworks, and reporting standards exist."

Congolese boys take part in a protest against President Joseph Kabila's refusal to step down from power in Kinshasa in 2017.
Source: Associated Press

New blood diamond

The stakes are high for the DRC, where the economics of resource extraction have been a major source of the country's woes, according to Omékongo Dibinga, a lecturer at American University's School of International Studies.

"It's not like people in eastern Congo ... want to stop producing the minerals that are in our phones and in our televisions," Dibinga said, but "they want to get paid for it. They want to get a livable wage. They want health insurance. They want to be able to not have to work sun up to sunset without a mine collapsing on them. And that's what people are in the street fighting for."

For many in the industry, though, avoiding the need for the mineral is exactly the plan.

"We think we can get the cobalt [usage] to almost nothing," Tesla Chairman and CEO Elon Musk told investors May 2.

Tesla's main battery cell supplier, Panasonic Corp., is reportedly working on a cobalt-free technology.

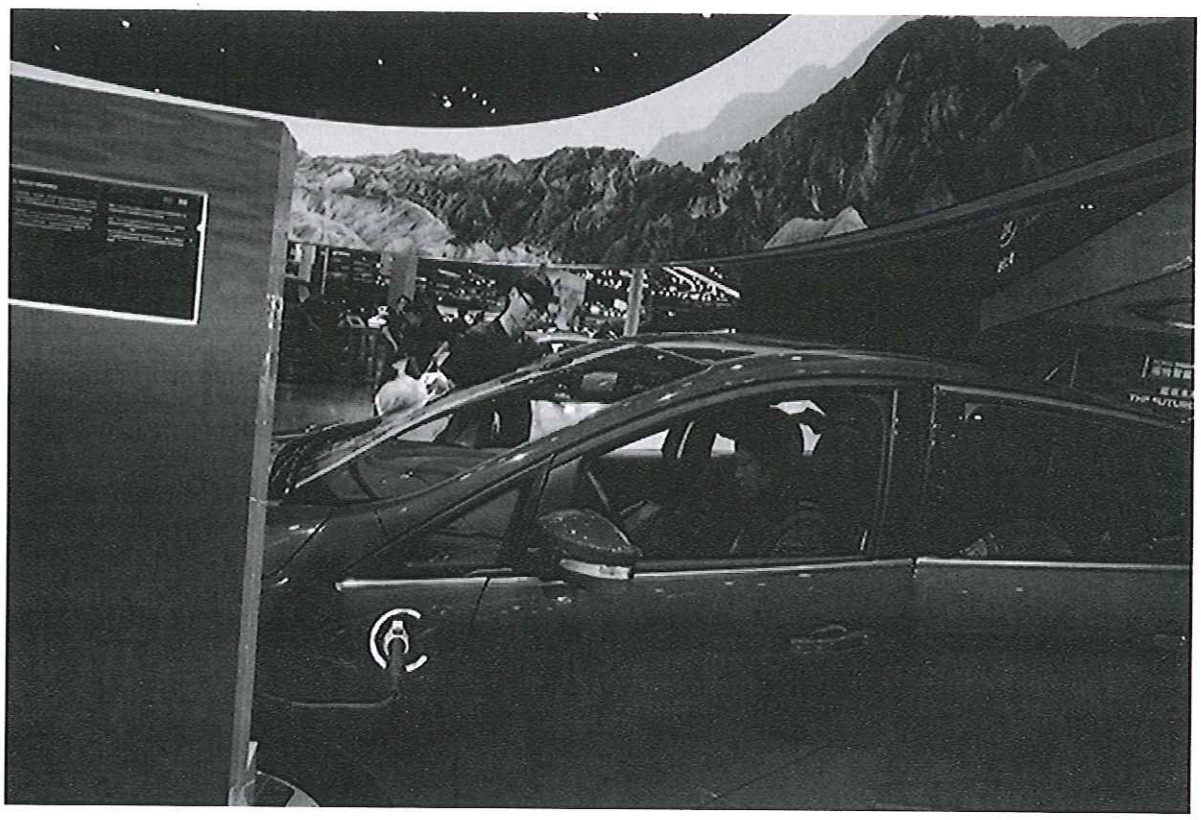
BYD Co. Ltd., a China-based manufacturer of electric vehicles, energy storage systems and batteries, relies on cobalt-free lithium-iron-phosphate batteries, in addition to batteries that use cobalt sourced from nickel mines it owns in China.

The company "has a roadmap to a sustainable future," Micheal Austin, vice president of subsidiary BYD America Corp., said. In addition to being "chemistry neutral," BYD advocates for comprehensive battery recycling programs.

Additionally, electric vehicle producers, including Nissan Motor Co. Ltd., Renault SA, Mitsubishi Motors Corp., Volkswagen and BMW, as well the U.S. Department of Energy's Advanced Research Projects Agency-Energy, are funding research and startups focused on low- to no-cobalt batteries.

Such alternatives, however, could take years to commercialize. In the meantime, big consumer electronics and auto brands are trying to lock up as much cobalt as possible in long-term supply deals, ensuring years of exposure to the metal's risks.

"There will be no electric vehicle industry without DRC cobalt," said Simon Moores, managing director of Benchmark Mineral Intelligence, an independent research firm. "It's really the new blood diamond. If investors start talking with their feet, these companies will start to take action."



A visitor sits in a Ford electric vehicle during the Shanghai International Automobile Industry Exhibition in China in 2017.
Source: Associated Press

'Why don't you start disclosing?'

The tension between the potential benefits and risks of electric vehicles is a familiar one to ESG investors, said Christopher Ailman, chief investment officer of the California State Teachers' Retirement System.

"That's what makes ESG [investing] so hard," Ailman said. "Sometimes the energy issues come with environmental

problems and social problems. So it's got to be balanced and all together." The key is for companies to identify those risks and explain "How do they see this, how are they adjusting, how are they planning for the future?" he said.

While companies in the U.S. are unlikely to face new requirements to report on their cobalt supplies any time soon — President Donald Trump in 2017 reportedly considered suspending the rule requiring companies to disclose their use of conflict minerals from the DRC — the risks related to cobalt are "increasingly getting on investors' radar," said Wallenborn of Sustainalytics.

As a result, automakers could find themselves under more pressure from investors.

"The question I'm always asking when I deal with companies is, are they learning from these errors, or [do] they just [not] care and ... see it as a cost of doing business? Do they really understand that there's an issue here with the branding or around their brand and the value of their brand?" Jeremy Cote, a research analyst at Trillium Asset Management LLC, said of companies exposed to ESG-related risks.

Cote added: "We need to show them these are our concerns ... and go through our process, which starts off with, 'Hey, why don't you start disclosing stuff?'"