BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Approval of Efficient Electrification Program	))))	Case No. ET-2018-0132

INITIAL BRIEF OF THE OFFICE OF THE PUBLIC COUNSEL

COMES NOW the Office of the Public Counsel ("OPC") and for its *Initial Brief*, states as follows:

1. Should the Commission approve, reject, or modify Ameren Missouri's Charge Ahead – Electric Vehicles Program?

The Commission should approve Ameren Missouri (Ameren)'s Charge Ahead – Electric Vehicle program (EV program), but only on the condition that Ameren modify its proposed tariffs to incorporate the OPC's "performance based metric" recovery mechanism. This performance based metric links Ameren's recovery of the costs to run the EV program to the adoption rate of electric vehicles within its service territory, thus ensuring the materialization of actual benefits to Ameren's customers and, by extension, the prudence of the program itself.

a. Has Ameren Missouri provided sufficient evidence that there is a need for the program?

There is some initial difficulty in answering this question given that it can be interpreted one of two different ways. For example, this question could be read broadly as asking whether Ameren has proven that there is a need for the proposed EV program in order for it to meet its statutory mandate to provide safe and adequate service. *See* RSMo. § 393.130.1 ("[E]very electrical corporation . . . shall furnish and

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provide such service instrumentalities and facilities as shall be safe and adequate and in all respects just and reasonable"). Alternatively, this question might be read narrowly as an inquiry into whether Ameren has provided sufficient evidence to show the EV program is necessary to encourage electric vehicle adoptions within its service territory (which is how Ameren justifies asking that ***all*** of its ratepayers pay for the program). Fortunately, any ambiguity is quickly resolved because the answer to both questions is a resounding "no."

Let us begin our analysis with the first question: is the EV program necessary for Ameren to provide safe and adequate services to its consumers? In answering this quandary, it is important to understand that this is a "load building" program. Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 2 lns. 2 – 3. It is premised on the concept that, by increasing the number of electric vehicle charging stations within its service territory, Ameren will encourage more people to adopt electric vehicles, which will in turn lead to increased load. *See* Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 18 ln. 22 – pg. 19 ln. 1 ("[B]y ensuring that the [charging station] infrastructure is developed, more EV adoption than would otherwise occur is likely to be spurred."); *Id.* pg. 21 lines 3 – 6 ("EVs are a flexible load that can charge during periods when demand on the system is low. When this occurs, the retail revenues derived from charging significantly exceed the marginal cost of serving the EV load, which in turn drives down retail rates for all customers."). Put simply, the EV program is based on a "[i]f you build it, they will come" concept, as noted by Commissioner William Kenney during the evidentiary hearing. Tr. Vol. IV pg. 262, lns. 7 – 22.

Without answering the question of whether encouraging more electric vehicle adoptions is a good thing, it is clear that this program is not something that Ameren ***needs*** to engage in as a matter of law. Increasing the number of electric vehicles driving on Missouri's roads is obviously not necessary for Ameren to provide adequate service to its current customers, nor could it possibly be considered essential to the safe distribution of electricity. Instead, this is plainly a program that Ameren is ***voluntarily*** undertaking because it believes doing so will boost its revenues. However, this program also carries a genuine risk that the benefits Ameren predicts may not come to fruition despite Ameren's best efforts. This is what makes Ameren's EV program an example of a "speculative value added service." *See* Tr. Vol. IV pg. 396 ln 4 – pg. 397 ln 14 (Dr. Marke's explanation that a "speculative value added service" is a service offered by a utility that is unnecessary to meet its goals of providing safe and reliable service and which bears the risk of failing to provide the promised benefits.).

Understanding the EV program's nature as both a voluntary and speculative value added service is important given Ameren's attempt to raise an alternative justification for the program. Specifically, Ameren argues that the EV program is needed to provide charging station infrastructure to support an increase in the number of electric vehicles in its service territory that Ameren claims will occur ***independently*** of the EV program.[1] *See* Ex. 6, *Direct Testimony of Steven M. Wills*,

[1] It is important to recognize that Ameren is definitely claiming that electric vehicle adoptions in the State of Missouri are going to dramatically increase ***regardless*** of whether the EV program is implemented. This can be seen two ways. First, it can be implicitly inferred from the fact that Ameren is relying on predictions found in IRP data that was developed and submitted ***prior*** to this case; and

pg. 18 lns. 17 – 22. ("[N]ew EVs purchased by Ameren Missouri customers represent new electric loads that are coming and will continue to come onto the system, which have a specific infrastructure need (i.e. charging). The development of that infrastructure is lagging, and . . . will likely continue to lag without direct utility support. As a result, the utility should fill its traditional role as a developer of infrastructure to meet the needs of its customers and the public."). However, this "they are coming, so we must build" alternative explanation is inherently illogical, incompatible with their proffered "if you build, it they will come" justification, and incapable of explaining why ***all*** of Ameren's rate payers should be funding the EV program.

To see why Ameren's alternative argument is illogical, consider the following: Ameren claims that charging station infrastructure development is lagging in Missouri because there aren't enough electric vehicles in the state to make charging stations profitable. Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 19 lns. 18 – 21. ("Third party charging providers simply will not focus their efforts and investments in markets like Missouri - without incentives to do so - for years to come due to low EV adoption rates relative to other markets."). Yet at the same time, Ameren points to its prediction regarding a rapid increase in the number of Missourians using

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second, Ameren's witnesses explicitly state that the EV program will drive EV adoptions even higher than those figures predicted in its IRP, Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 28 lns. 19 – 21 ("[I]t is worth pointing out at this time, that recent observations suggest that 2017 adoption is generally in line with the pace suggested by [Ameren's 2017 IRP] base forecast, so it remains the most likely case in the Company's view."); *Id.* at pg. 30 lns. 7 – 8 ("I would reiterate that the current adoption already appears to be in line with the base case ***and approval of the Charge Ahead - Electric Vehicles program will make higher levels of adoption even more likely to occur in the future***." (emphasis added)).

electric vehicles in the near future as the reason for why it needs to develop more charging station infrastructure. *See* Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 19 lns. 19 – 23 ("[I]t is worth pointing out at this time, that recent observations suggest that 2017 adoption is generally in line with the pace suggested by [Ameren's 2017 IRP] base forecast . . . . Looking forward to the level of vehicles contemplated over the first decade of the proposed program, the Company's base forecast suggests almost 25,000 electric vehicles will be in the service territory by 2028."); *Id*. at pg. 18 lns. 21 – 22 ("As a result, the utility should fill its traditional role as a developer of infrastructure to meet the needs of its customers and the public."). However, it should be obvious that, if electric vehicle adoption takes off as Ameren predicts, then the reason for the lagging deployment of charging stations by third parties (the low electric vehicles adoption rates that Mr. Wills identifies) will have been assuaged. Therefore, if the Ameren's electric vehicle adoption predictions come true, we can expect the development of more charging infrastructure without the need for Ameren's intervention. Stated differently, if there are enough electric vehicles in the state to make owning a charging station economically reasonable or profitable to third parties, then those third parties will begin building them without needing an economic incentive from Ameren. Thus, it is illogical for Ameren to assume that ***it*** needs to be funding current charging station construction based on a speculative uptick in future electric vehicle sales.

Ameren's alternative "they are coming, so we must build" justification is not just illogical though; it also directly conflicts with its "if you build it, they will come"

concept of load building by inducing more electric vehicle adoptions. The "if you build it, they will come" argument is based on the idea that a lack of charging stations around towns and on the I-70 corridor will leave potential electric vehicle buyers afraid of running out of power before reaching their destination and thus make them unlikely to purchase, a problem that Ameren refers to as "range anxiety." *See* Ex. 2, *Direct Testimony of Patrick E. Justis*, pg. 20 lns. 11 – 21 (discussing reports that showed lack of electric vehicle charging stations as a major concern among potential buyers); Tr. Vol. II pg. 106, lns 6 – 10 ("Q: I know it mentioned about th-- does this program -- what does this program do for that homeowner? A: Well, I think range anxiety is a big problem. It's a big barrier."); Tr. Vol. II pg. 269, lns 1 – 3 ("If -- certainly, you know, without Charge Ahead, if we're in that world, range anxiety is going to be a major barrier."). However, Ameren cannot simultaneously argue that Missourians are ***not*** buying electric vehicles because of range anxiety ***and*** claim that it needs to fund the development of more charging stations to deal with an increase in electric vehicles that it predicts will naturally occur.[2] Clearly, if Ameren's predictions regarding increased electric vehicle adoptions are correct, then the market is sure to respond by constructing more charging stations, thus negating the issue of "range anxiety." Conversely, if "range anxiety" is really as big a barrier to electric vehicle adoption as Ameren suggests, then there is no reason to expect the

[2] If it did, then Ameren would be engaged in circular reasoning. They would be simultaneously claiming that more electric vehicle charging stations result in more electric vehicle adoptions and that more electric vehicle adoptions necessitate the construction of more electric vehicle charging stations.

rapid adoption of electric vehicles that Ameren cites as the reason for needing to provide more charging station infrastructure.

Finally, Ameren's alternative validation of the EV program fails to explain why ***all*** of Ameren's ratepayers should be funding the EV program. The idea that the EV program is necessary to provide charging opportunities to meet the needs of electric vehicle owners plainly benefits only those Ameren ratepayers who actually own electric vehicles. *See* Tr. Vol. II, pg. 108 ln. 20 – pg. 109 ln. 4 (Q: And those benefits arise from the adoption of new EVs. Correct? A: I -- I think that's one benefit. As I said, I also think this is an emerging -- regardless of whether we incentivize any new electric vehicles, this is a need of our customers. . . . Q: It's a need of all your customers? A. No. It's a need of the customers that have electric vehicles."). Yet, despite only some of its customers owning electric vehicles (and a small number at that),[3] Ameren is insisting that ***all*** of its ratepayers pay for the program. Tr. Vol. II, pg. 108 lns. 14 – 19 ("Q. Yes. But the program is being -- all of your ratepayers would be paying for the program. Correct? . . . A: They would . . ."). Ameren's justification for this fact has always been that non-electric vehicle owners would still benefit from the increased load brought on by the adoption of more electric vehicles that the program ***itself*** would induce, *i.e.* the results of the "if you build it they will come" argument. *See* Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 32 ln. 22 – pg. 33 ln. 3 ("[A]proximately 7,500 new cars over the life of the program would need to be added

[3] According to the testimony of Ameren witness Patrick Justis, there were a little over 3,500 electric vehicles registered in the entire state of Missouri by 2016. Ex. 2, *Direct Testimony of Patrick E. Justis*, pg. 12 Table 1.

to the system for the incremental effect of the program to result in rate benefits *directly* arising from the program for ***all*** customers." (emphasis added)); Tr. Vol. II, pg. 109 lns. 5 - 8 ("Q: For the customers who don't have electric vehicles, the benefit stems from the increased load. Correct? A: That's true."). This means that ***only*** the "if you build it they will come" load building argument can truly provide justification for the program costs being spread across Ameren's entire customer base.

Given the problems with Ameren's attempt to justify their EV program based on the supposed infrastructure needs of potential future electric vehicle owners (the "they are coming so we must build" notion), it should be clear that only the "if you build it, they will come" concept for increasing load by inducing further electric vehicle adoptions is capable of providing any logical foundation for the EV program. This is important because, as previously noted, this type of load building program is not something that Ameren can prove a "need" for as a matter of law. Knowing this, we can easily draw our first major legal conclusion for this case:

(1) The EV Program is a speculative, value added service that Ameren is voluntary choosing to engage in.

Having reached a conclusion regarding the first interpretation of the question of whether there is a "need" for the EV program, we must now consider the second potential interpretation of the question: has Ameren provided sufficient evidence to show the EV program is necessary to encourage electric vehicle adoptions within its service territory? Once again, the answer to this question is "no."

As previously stated, Ameren's EV program is premised on resolving the issue of "range anxiety," which Ameren maintains is a major barrier to electric vehicle adoptions in the state. *See* Ex. 2, *Direct Testimony of Patrick E. Justis*, pg. 20 lns. 11-21 (discussing reports that showed lack of electric vehicle charging stations as a major concern among potential buyers); Tr. Vol. II pg. 106, lns 6 – 10 ("Q: I know it mentioned about th-- does this program -- what does this program do for that homeowner? A: Well, I think range anxiety is a big problem. It's a big barrier."); Tr. Vol. II pg. 269, lns 1 – 3 ("If -- certainly, you know, without Charge Ahead, if we're in that world, range anxiety is going to be a major barrier."). However, Ameren's ability to make this argument is significantly hindered by its decision to raise conflicting justifications for the EV program. In doing so, Ameren's witnesses have repeatedly stated that the market for electric vehicles in Missouri is expected to dramatically increase in the near future ***regardless*** of whether the EV program is put into place. Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 28 lns. 19 – 23 ("[I]t is worth pointing out at this time, that recent observations suggest that 2017 adoption is generally in line with the pace suggested by [Ameren's 2017 IRP] base forecast . . . . Looking forward to the level of vehicles contemplated over the first decade of the proposed program, the Company's base forecast suggests almost 25,000 electric vehicles will be in the service territory by 2028."); *Id*. at pg. 30 lns. 7 – 8 ("I would reiterate that the current adoption ***already*** appears to be in line with the [2017 IRP] base case . . . ." (emphasis added)); *Id.* at pg. 31 ln. 6 – pg. 32 ln. 13 (extensive discussion and defense of Ameren's 2017 IRP electric vehicle adoption predictions including citations

to several sources supporting "the bullish view that many entities have on the future of EVs . . ."). Given all of these predictions, it is difficult to see how the issue of "range anxiety" could possibly be as serious a problem as Ameren suggests it is.

It is also important to consider how the rapid increase in electric vehicles that Ameren is predicting will affect the number of charging stations built independently of Ameren's program. We have already seen how Ameren's prediction undermines the sole reason that it claims charging stations are not being built in Missouri (which one may recall was the low electric vehicle adoption rates in the state). Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 19 lns. 18 – 21. Therefore, we should expect more charging stations will be built regardless of the program as the market grows naturally to meet the demand these new electric vehicles will create. Moreover, simple economics tells us that these new charging stations would naturally be built in places where the demand for them is greatest, *i.e.* in places where electric vehicles would most desperately need to charge. Therefore, to the extent that "range anxiety" ***could*** be an issue, it will quickly resolve itself as the rising number of electric vehicles motivate entrepreneurs to quickly fill the newly created gaps in the market.

Considering the points just addressed, it is plain that Ameren cannot prove that there is a "need" for it to subsidize charging station development in order to ensure greater electric vehicle adoptions in Missouri. However, the OPC does acknowledge that there is at least the ***potential*** for Ameren's EV program to possibly ***accelerate*** the rate of electric vehicle adoption to some degree. This is why the OPC developed the performance based metric it is proposing in this case. The central

concept of the OPC's performance based metric (which will be discussed in greater detail later in this brief) is to take Ameren's predictions regarding the rate of naturally occurring electric vehicle adoptions at face value and then asking how many more electric vehicles Ameren's program can induce based on the "if you build it, they will come" load building mentality. In doing so, the OPC has not only accepted Ameren's "if you build it, they will come" justification, it has also purposely overlooked the concerns that have just now been explained regarding that concept. While the OPC still maintains there is no "need" for Ameren's EV program, we have nevertheless sought a workable solution for implementing the program in a manner that allows Ameren to voluntarily experiment (and thus seek the benefits it claims will result) while still protecting Ameren's customers should the program fail.

b. Has Ameren Missouri provided sufficient evidence that the program is cost effective?

Ameren has failed to provide sufficient evidence to prove that the EV program will be cost effective. As previously discussed, Ameren has attempted to demonstrate that the EV program is cost effective based on the number of additional electric vehicles that the program ***itself*** will induce Ameren customers to buy. In fact, Ameren's witness Mr. Steve Wills offers up an exact number of electric vehicle purchases by Ameren customers that need to be induced in order to justify the program costs. Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 32 ln. 22 – pg. 33 ln. 3 ("[A]proximately 7,500 new cars over the life of the program would need to be added to the system for the incremental effect of the program to result in rate benefits *directly* arising from the program for all customers." (emphasis in original)); *Id.* at pg.

34 n. 24 ("Applying the attribution concept in order to arrive at the minimum number of incremental vehicles that would have to come on to the system as a direct result of the Charge Ahead - Electric Vehicles program for the RIM test to exceed 1.0 suggests that . . . between approximately 7 and 10 thousand EVs would be sufficient to produce a favorable RlM."). He later updated this number to approximately 8,900 electric vehicle adoptions in reply to concerns raised by Commission Staff. Ex. 7, *Surrebuttal Testimony of Steven M. Wills*, pg. 39 lns. 1 – 3 ("Using the conservative end of that range, the $11 million Charge Ahead-Electric Vehicles budget can be expected to be covered by the net margin arising from 8,890 EVs ($11 million/ $1,237/EV)."). From this, we can easily draw a second important legal conclusion:

(2) The EV program needs to induce approximately 8,900 new electric vehicle adoptions to be cost effective.

Of course, having reached this conclusion does not mean that Ameren's prediction is correct. In fact, the evidence actually suggests that the Ameren's estimate may be far from accurate. In both her pre-prepared testimony and the testimony elicited on cross-examination, Staff witness Sarah L.K. Lange lays out the problems surrounding Ameren's "RIM" analysis, which Ameren relied upon in calculating the estimated number of electric vehicles necessary to justify the program. Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 34 fn. 24. These issues include, among others, failing to justify a $259 a year estimated incremental margin per electric vehicle, miscalculating the proper charging speed utilized in the determination, and irregularity in the treatment of particular variables and

terminologies. Tr. Vol. IV pg. 439 ln. 6 – pg. 446 ln. 23; Ex. 101, *Rebuttal Testimony of Sarah L.K. Lange*, pg. 4 ln. 18 – pg. 11 ln. 19.

While the OPC does not dispute any of the problems Staff has pointed out in Ameren's RIM analysis, it chose not to focus on those issues in this case. Tr. Vol. IV pg. 376 lns. 18 – 19 ("The issue wasn't us quibbling over the specific inputs of the RIM -- RIM test."). Instead, the OPC's concern lies with the very real possibility that Ameren might fail to induce the number of electric vehicle adoptions that it claims is necessary to justify the program even if one accepts those numbers at face value. This apprehension is driven by the wide range of issues that could potentially curtail the rate of electric vehicle adoptions.

To illustrate, OPC witness Dr. Geoff Marke's rebuttal testimony points out how the current electric vehicle market is highly dependent on rare materials like cobalt, which is largely acquired from places such as the Democratic Republic of Congo. Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 18 ln. 12 – pg. 20 ln. 16, GM-5. This means that a geo-political shift that might occur halfway around the world could significantly affect Ameren's ability to induce the adoption of the number of electric vehicles here in Missouri that it needs to justify its program. At the evidentiary hearing, Ameren attempted to downplay this particular risk by pointing to the possibility of technological innovations that could replace the need for cobalt in car batteries in the future. Tr. Vol. IV, pg. 361 ln. 11 – pg. 362 ln. 9. In doing so however, Ameren has completely missed the point of Dr. Marke's testimony. What Dr. Marke was trying to demonstrate is that because there are so many variables involved, there

is simply no way of knowing ***for certain*** whether the EV program will actually be capable of inducing the 8,900 electric vehicle adoptions that Ameren claims is necessary.

The lack of certainty surrounding the number of electric vehicle adoptions that the EV program will actually induce is so important that it deserves its own legal conclusion:

(3) It is not certain that the EV program will actually induce approximately 8,900 new electric vehicle adoptions and thus there is a serious risk that the program will not be cost effective.

Again, it was this risk that led the OPC to develop its performance based metric. Tr. Vol. IV pg. 376 lns. 20 – 25 ("Ours was more of a principle issue in that you say you're going to do something by having 11 million dollars thrown at it. Have some follow through. Show that you're actually going to execute on it. Absent that, then we're just writing a blank check and just hoping things will just happen."). In doing so, the OPC chose to look past the issues Commission Staff noted about Ameren's RIM analysis and instead took Ameren at its word regarding the number of additional electric vehicles that would need to be adopted for the program to be cost effective. All the OPC asked of Ameren, and all it asks now of the Commission, is to require Ameren to bear the risk if it fails to induce the number of electric vehicle adoptions that it itself claims the program requires to be cost effective.

c. If the program is approved, what is the appropriate cost recovery mechanism?

In order to deal with the problems so far shown in Ameren's EV charging program, the OPC has developed a "performance based metric" system of recovery. This performance based metric ties Ameren's ability to recoup the EV program costs to its ability to induce new electric vehicle adoptions. The exact mechanics of the performance based metric will be explained in the OPC's answer to subpart (d). In answer to the question posed by this subpart, the appropriate cost recovery mechanism would be the one laid out in Ameren's application after incorporating the OPC's "performance based metric" modification.

d. If the program is approved, what conditions, if any, should be imposed by the Commission?

If the Commission approves Ameren's EV program, then it should do so only on the condition that Ameren modify its proposed tariffs to incorporate the OPC's suggested "performance based metric." The central goal of this performance based metric is to link Ameren's recovery of the costs to run the EV program to the adoption rate of electric vehicles within its service territory. As we have already established, the primary risk regarding the cost effectiveness of the EV program is the question of whether Ameren can induce the necessary number of electric vehicle adoptions within its service territory to justify the program. Therefore, the performance based metric effectively places the risk of the EV program not being cost effective onto Ameren itself. If we add to this our first legal conclusion that found the program was voluntary, we have enough to draw our fourth conclusion:

(4) The OPC's proposed performance based metric will place the risk that the EV program will not be

cost effective onto Ameren, the party who voluntarily undertook to provide it.

In order to ensure a full understanding of the OPC's performance based metric, let us consider how it operates. The exact mechanics of the performance based metric are laid out in the supplemental rebuttal of Dr. Geoff Marke and are as follows:

- All prudently incurred program spending within the first five years (subject to a $10 million cap on subsidies to promote EV charging stations and a $1 million cap on associated program administration and marketing costs) would be booked into a deferred account;
- All expenses so booked would begin accruing interest from the date booked at a rate equal to the cost of short-term debt in effect at the time of the expenditure;
- During any general rate case initiated within ten years of the start of the program, Ameren would be entitled to recover (as an amortization expense) the balance of this deferred account pro-rated by the number of actual EV adoptions within its service area at the time of filing, less pre-2019 EV adoptions and projected EV adoptions for that year, divided by 7,500;
- The deferred account will then be reduced by the same amount of any such recovery and all amortization expense recovered in this manner will be amortized over five years;
- If the deferred account has not been fully exhausted within ten years of the start of the program, during the next general rate case immediately following ten years after the start of the program, Ameren will be entitled to recover (as

an amortization expense) the remaining balance of the deferred account pro-rated by the number of actual EV adoptions within its service area as of ten years past the commencement of the program less pre-2019 EV adoptions and projected EV adoptions for the tenth year, divided by 7,500; and

- All amortization expense recovered in this manner will be amortized over five years. Any remaining portion of the deferred account not recovered in this rate case will be deemed irrecoverable.

Ex. 201, *Supplemental Rebuttal Testimony of Geoff Marke, PhD*, pg. 3 ln. 4 - pg. 5 ln. 3. It should be noted that at the time Dr. Marke prepared his supplemental testimony, the OPC understood Ameren's estimates for the number of electric vehicles that the EV program would need to induce to be cost effective to be 7,500. *See* Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 32 ln. 22 – pg. 33 ln. 3. As previously stated, however, Ameren later increased that number to approximately 8,900. Ex. 7, *Surrebuttal Testimony of Steven M. Wills*, pg. 39 lns. 1 – 3. At the evidentiary hearing, Dr. Marke made clear that the OPC is not concerned with which of these two numbers are used for the purpose of this metric and is prepared to accept the higher number if Ameren believes that it is a more accurate representation of the facts. Tr. Vol. IV pg. 376 lns. 14 – 18 ("Now, in Surrebuttal [Mr. Wills] raises the number up to 8,900. And if -- if that's a number that Ameren feels comfortable with that that's a more legitimate number than the 7,500, we're not going to take issue with that.").

Having examined how the performance based metric works, we now turn to consider a number of smaller issues that have cropped up regarding it, starting with

the argument Ameren has made that the performance based metric is unnecessary because Ameren is already exposed to some risk. *See* Ex. 7, *Surrebuttal Testimony of Steven M. Wills*, pg. 70 lns. 8 – 10 ("I would once again reference the fact that the Company only succeeds in recovering the first dollar of financing costs associated with the program if it succeeds in growing load that will benefit all customers for the long term."). This argument is rather flimsy, however, because even under its own theory the "risk" that Ameren claims to be exposed to is equal only to its financing costs. *Id.* If we accept that the correct measure of Ameren's financing costs is its weighted average cost of capital (which is highly debatable), that means that they have a risk exposure of approximately just 8% of the program costs. *See* Ex. 7, *Surrebuttal Testimony of Steven M. Wills*, pg. 46 table 2 (showing Ameren's current weighted average cost of capital is 8.29%). Further, basic mathematics tells us that, if Ameren is only risking 8% of the total EV program costs and Ameren claims that 8,900 induced electric vehicle adoptions are required to cover the program costs, then Ameren only needs to see 8% of the necessary 8,900 induced electric vehicle adoptions in order for Ameren itself to be made whole. In other words, if Ameren induces a little more than just 700 electric vehicles to be adopted at any time over the life of its EV program, then it will have completely eliminated its risk exposure from that point forward. Obviously, such a minuscule number can hardly be said to constitute a real risk to Ameren, which is why the OPC's performance based metric remains essential.

Another issue that Ameren raises regarding the performance based metric is that it prevents Ameren from collecting its program costs within a reasonable time.

See e.g. Tr. Vol. II pg. 45 lns. 7 – 22 (Ameren's response to a question from the Commission during opening arguments wherein Ameren claims the performance based metric will result in a "huge delay" in recovery.); Ex. 7, *Surrebuttal Testimony of Steven M. Wills*, pg. 68 ln. 18 – pg. 69 ln. 4 (claiming similar issue). This allegation is simply wrong. The OPC's performance based metric clearly allows for recovery "[d]uring ***any*** general rate case initiated within ten years of the start of the program." Ex. 201, *Supplemental Rebuttal Testimony of Geoff Marke, PhD*, pg. 3 ln. 11 (emphasis added). This means that Ameren could file for a rate case within the first year of the program and would be entitled to start collecting immediately. What is more, there is no limit on the metric's pro-ration mechanism. *Id.* at lns. 12 – 15. This means that if Ameren achieves its goal of inducing the adoption of 8,900 electric vehicles within that first year then it can begin collecting the ***entire amount*** of the program costs in that year.

In addition, the OPC's performance based metric allows the accrued program costs to be flowed back over five years as opposed to the seven used in Ameren's proposal, meaning that Ameren actually has the potential to recoup its expenditures ***faster*** under the performance based metric than under their own proposal. *Compare Id.* at 16 – 18 ("The deferred account will then be reduced by the same amount of any such recovery and all amortization expense recovered in this manner will be amortized over five years[.]"), *with* Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 29 lns. 18 – 19 ("the Company is proposing to defer and amortize its investments over a seven year time frame."). Further, the OPC's performance based metric also permits

Ameren to recover its carrying costs in the form of short-term cost of debt, a design feature specifically meant to account for any potential lag that the company might experience as the result of this program. Ex. 201, *Supplemental Rebuttal Testimony of Geoff Marke, PhD*, pg. 3 lns. 9 – 10 ("All expenses so booked would begin accruing interest from the date booked at a rate equal to the cost of short-term debt in effect at the time of the expenditure[.]"). The OPC also notes that even under Ameren's own design it still must wait for a general rate case in order to begin recovery of the program costs due to the legal prohibition on single-issue ratemaking. *See* Ex. 6, *Direct Testimony of Steven M. Wills*, pg. lns. 1 – 13 (discussing how the design of Ameren's program was necessitated in part by prohibition on "single-issue ratemaking."). Finally, the OPC points out that Ameren's concern about a delayed return on their investment is rather duplicitous given that is ***exactly*** what Ameren is asking of its own customers. If Ameren is truly unwilling to finance the project under the terms of the OPC's performance based metric because the benefits arising from it may not materialize for several years, why should Ameren be allowed to force their captive customers to do so in its stead?

Ameren also takes issue with the performance based metric's use of the ***base forecast*** from its 2017 IRP filing as the predictive model for electric vehicle adoption in Missouri. *See* Ex. 7, *Surrebuttal Testimony of Steven M. Wills*, pg. 68 ln. 15, pg. 69 lns. 10 – 12. ("Reasons that the OPC's [performance based metric] is inappropriate include: . . . [i]t uses the Company's base forcast of EVs in the service territory as a baseline that must be exceeded before the Company would get a single dollar of cost

recovery."). This is a rather pitiful rejoinder and we need not dwell on it long. The OPC chose the base forecast in the 2017 IRP because Ameren itself ***repeatedly*** claimed that it was the most likely to be achieved. Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 28 lns. 19 – 21 ("[I]t is worth pointing out at this time, that recent observations suggest that 2017 adoption is generally in line with the pace suggested by [Ameren's 2017 IRP] base forecast, ***so it remains the most likely case in the Company's view***." (emphasis added)); *Id*. at pg. 30 lns. 7 – 8 ("I would reiterate that the current adoption already appears to be in line with the ***base case*** and approval of the Charge Ahead - Electric Vehicles program will make higher levels of adoption even more likely to occur in the future." (emphasis added)). The OPC has nothing more to say other than to point out how Ameren's position regarding the likelihood of electric vehicle adoptions changes dramatically the very second that it is asked to put its own money at risk.

Finally, the OPC will touch on the legality of its performance based metric. As far as the OPC is aware, no witness in this case has challenged the legality of the OPC's proposal. Nevertheless, during opening arguments Ameren raised a claim in response to questioning from the Commission that the performance based metric would deny Ameren the opportunity to recover its prudently incurred expenses. Tr. Vol. II pg. 46 lns. 20 – 24. As with the other issues Ameren has raised, this is plainly wrong. The OPC's performance based metric clearly permits Ameren to fully recover the costs of the EV program ***in addition to*** the financing cost of those expenditures, provided the EV program successfully induces the adoption of the number of electric

vehicles that Ameren itself claims is necessary to justify the program. Further, Ameren has already claimed that it can easily meet this goal. Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 33 lns. 4 – 6. ("Q: Is it reasonable to believe that more than 7,500 new vehicles will result from the Charge Ahead - Electric vehicles program? A: Absolutely.").

The US Supreme Court has clearly held that the Constitution protects only a public utility's ***opportunity*** to earn a return but does not guarantee that return. *FPC v. Nat. Gas Pipeline Co.*, 315 U.S. 575, 590 (1942) ("regulation does not insure that the business shall produce net revenues[.]"); *Fed. Power Com. v. Hope Nat. Gas Co.*, 320 U.S. 591, 603 (1944) (same). The Commission has specifically acknowledged this legal point in previous cases. *See In the Matter of Union Electric Company, d/b/a Ameren Missouri's Tariff to Increase Its Revenues for Electric Service*, 2015 Mo. PSC LEXIS 380, *47, 320 P.U.R.4th 330 ("The utility is not guaranteed a profit, just an opportunity to earn that profit."). The OPC's performance based metric clearly provides the legally required ***opportunity*** for Ameren to recoup its costs.[4]

Conclusion

In the course of presenting its opening arguments, counsel for Ameren stated that "a lack of a guarantee of a particular outcome is not a reason to reject the [EV]

[4] The OPC also notes that Ameren's own proposal does not guarantee the recovery of costs associated with the EV program because such recovery would require a general rate case and would thus be subject to a review for prudence. In other words, even if the Commission should permit Ameren to amend the requested tariffs in the present case, Ameren would still not be able to recover any program costs that the Commission later determined were imprudently incurred. This could, in theory, include the costs of the entire program if a later Commission were to agree with the concerns that the OPC and the Staff of the Commission have raised. Ironically, the OPC's performance based metric removes this concern because it permits recovery of only those costs that Ameren has proven to be cost neutral to the ratepayers and thus prudently incurred.

program[]." Tr. Vol. II, pg. 40 lns. 15 – 17. On this point, the OPC generally agrees. However, this statement misinterprets the real problem that the OPC has raised regarding the EV program. The OPC's issue is not the lack of a ***guarantee*** that the EV program will prove successful, but rather, it is a concern over ***who bears the risk*** if the program fails.

While Ameren has attempted to argue that its proposal is no different from any other form of infrastructure development, the harsh reality is that this is simply not true. Ameren does not ***need*** to subsidize electric vehicle charging station development; Ameren ***is choosing to***. More specifically, Ameren is wagering that subsidizing electric vehicle charging stations will be a way for it to boost revenues while incidentally benefiting its customers. The OPC has no problem if Ameren wants to voluntarily undertake this kind of gamble, but then ***Ameren*** should be the one to bear the risk of the program failing, not its captive customers.

This is why the OPC has developed its proposed performance based metric as a means of moving forward with Ameren's proposal while still ensuring Ameren's customers are protected. The performance based metric was designed by taking every calculation Ameren performed at face value, accepting every number it produced as correct, and granting Ameren every reasonable inference while simultaneously overlooking the myriad of problems and self-contradictions that exist in Ameren's proposal. The result is a program that achieves the best of both worlds in that it allows Ameren to experiment with methods of increasing the general public's appetite

for electric vehicles while simultaneously preventing its ratepayers from paying for failed programs.

The OPC's performance based metric represents a true balance between the interests of the utility and its ratepayers. Moreover, it most accurately reflects the economic reality that exists outside of the regulatory world where business are required to engage in risky decision making on a daily basis without the guarantee that their customers will bail them out if their decision backfires. This reality represents a fundamental facet of regulation as noted by numerous economists including Steve Kihm and Janice Beecher:

> Regulated utilities should not be viewed as entirely different from private firms operating in the competitive environment. For utilities, the state supplies regulatory risk in the absence of market risks. The state could choose to shift all risks to ratepayers, guaranteeing full recovery of all costs incurred and ensuring realization of authorized returns, but this would negate the value of a structural model centered on private investment and prompts the question of whether the state should instead assume public ownership and operation of the utility.

Steve Kihm & Jancie Beecher, *Regulatoy Incentives and Disincentives for Utility Investments in Grid Modernization*, Future Electric Utility Regulations, report No. 8, pg. 38, (2017). As well as James C. Bonbright:

> Regulation, at best, is a pallid substitute for competition. It cannot prescribe quality, force efficiency, or require innovation, because such action would invade the sphere of management. But when it leaves these matters to the discretion of industry, it denies consumers the protection that competition would afford. Regulation cannot set prices below an industry's cost however excessive they may be. Competition does so, and the highest-cost company is compelled to discover means whereby its cost can be reduced. Regulation does no enlarge consumption by setting prices as the lowest level consistent with fair return. Competition has this effect. Regulation fails to encourage performance in the public interest by offering rewards and penalties. Competition offers both.

James C. Bonbright, *Principals of Public Utility* Rates, pg. 30 (1988); *see also In the Matter of the Tariffs of Aquila, Inc., d/b/a Aquila Networks -- MPS and Aquila Networks -- L&P Increasing Electric Rates for the Services Provided to Customers in the Aquila Networks -- MPS and Aquila Networks -- L&P Service Areas*, 2007 Mo. PSC LEXIS 686, *10, 257 P.U.R.4th 424 ("The Commission's guiding purpose in setting rates is to protect the consumer against the natural monopoly of the public utility, generally the sole provider of a public necessity. '[T]he dominant thought and purpose of the policy is the protection of the public … [and] the protection given the utility is merely incidental.'"). For all these reasons, the Commission should approve Ameren's requested tariff only on the condition that Ameren incorporate the performance based metric.

2. Should the Commission approve, reject, or modify Ameren Missouri's Charge Ahead – Business Solutions Program?

The Commission should reject Ameren's poorly designed Charge Ahead – Business Solutions Program (business program) because Ameren has not shown a need for the program, has not shown that the program would be cost effective, and has not shown that the program is generally in the public interest.

a. Has Ameren Missouri provided sufficient evidence that there is a need for the program?

Much like the first subpart under issue (1), this question can easily be understood in two different manners. First, this question can be understood as asking whether Ameren has proven that there is a need for the proposed business program

in order for Ameren to meet its statutory mandate to provide safe and adequate service. *See* RSMo. § 393.130.1 ("[E]very electrical corporation . . . shall furnish and provide such service instrumentalities and facilities as shall be safe and adequate and in all respects just and reasonable"). Alternatively, this first subpart might simply be questioning whether Ameren has provided sufficient evidence to show the business program is necessary to encourage greater industrial and commercial electrification within its service territory. Fortunately, we need not worry about this uncertainty because the answer to both queries is unquestionably "no."

Beginning with the first interpretation, we must once again recognize that the proposed business program is a "load building" program. Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 2 lns. 2 – 3. It is once again premised on the concept that, by increasing the rate of electrification of various industrial and commercial applications, Ameren will be able to increase its load. *See* Ex. 4, *Direct Testimony of David K. Pickles*, pg. 8 lns. 12 – 14 ("[T]he proposed [business] program will result in increased electricity sales . . . . [T]he sales will more than cover the increased cost of supply."). Just as with the EV program, however, increasing the rate of electrification of various industrial and commercial applications is obviously not something that Ameren ***needs*** to engage in as a matter of law. Specifically, Ameren does not need to increase the rate of electrification in certain industrial or commercial applications in order to provide adequate service to its current customers, nor is doing so required for the safe distribution of electricity. Instead, the business program is obviously a program that Ameren is ***voluntarily*** undertaking with the assumption that it will

result in real benefits to it and its customers. *See* Ex. 4, *Direct Testimony of David K. Pickles*, pg. 8 lns. 14 – 16 ("In the language of energy efficiency program benefit cost testing, the program will pass the ratepayer impact measure or "RIM" test with a benefit cost ratio of [1.81]."). Yet, once again, the business program also carries a genuine risk that the benefits Ameren claims may not come to fruition despite its best efforts. Thus, the business program is another example of a "speculative value added service." *See* Tr. Vol. IV pg. 396 ln 4 – pg. 397 ln 14 (Dr. Marke's explanation that a "speculative value added service" is a service offered by a utility that is unnecessary to meet its goals of providing safe and reliable service and which bears the risk of failing to provide the promised benefits.).

Ameren has offered no real alternative justification that would otherwise prove that their business program is anything but a voluntary and speculative value added service.[5] Therefore, we may quickly draw the first legal conclusion for this issue:

[5] Ameren does point out several public policy goals that it suggests will be furthered by the business program including claimed environmental benefits and improvements to the productivity of its customer's facilities. Ex. 4, *Direct Testimony of David K. Pickles*, pg. 5 ln. 4 – pg. 6 ln. 1. However, these public policy goals (while potentially admirable) do not in any way affect the statutory mandate to provide safe and adequate service and therefore cannot be considered as justifications for requiring Ameren's ratepayers to pay for this program. In addition, the OPC points out that while the business program may have the potential to benefit some policy goals, it also has the potential to run contrary to several other important policy goals such as the goal of managing demand side investment found in Ameren's MEEIA proposals. Tr. Vol. IV pg. 377 ln. 11 – pg. 378 ln. 11 ("Q: Ameren also asked you a question regarding adding load and how that can be beneficial to a company. Is it always beneficial to add load? A: I think it's important to figure out what your policy objectives are. And OPC has taken issue with an all-the-above yes objective. Because when we say yes to everything, we tend to cancel out other policy objectives. And MEEIA is a very good example. Two weeks ago, a week ago, I was up here in front of the Commission defending the stipulation entered into by parties for Ameren's MEEIA 3. The questions that we got from the Commission at that point were but this isn't going to defer any supply side investment, is it? No, it's not. They're very long on capacity. And then the hope was, well, will this retire future supply side investment that's already in line quicker? Well, if that's a policy objective, to go ahead and get a coal plant down earlier, this is clearly not going to do that. This is going to go ahead and maintain those. Now, again, the policy objective is important. I'm not advocating

(1) The business program is a speculative, value added service that Ameren is voluntary choosing to engage in.

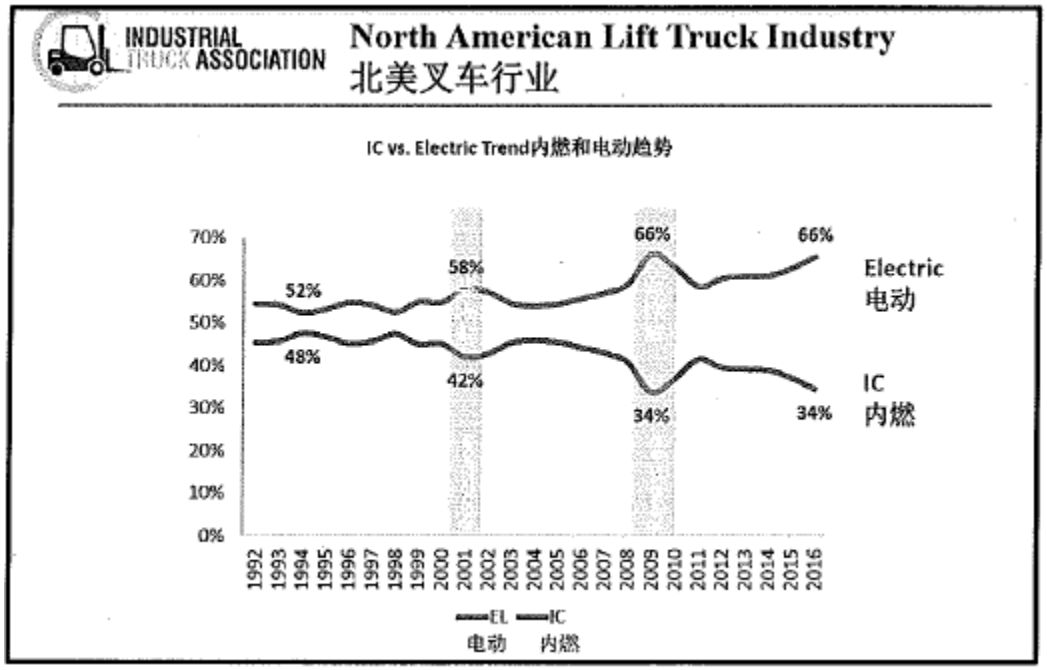
Having reached this conclusion, the next step is to consider the alternative possible interpretation of this first subpart: has Ameren provided sufficient evidence to show that the business program is necessary to encourage greater industrial and commercial electrification within its service territory? Once again, the answer is definitely "no."

Understanding why the business program is unnecessary to encourage further electrification of certain industrial and commercial applications is made significantly easier if one considers these applications separately. For example, one of the major focuses of the business program is the electrification of forklifts. Ex. 4, *Direct Testimony of David K. Pickles*, pg. 4 ln. 21 – pg. 5 ln. 1, pg. 11 ln. 18 – pg. 12 ln. 3. However, Ameren's own data clearly shows that more than half of the forklift population in the counties Ameren serves are already electric. *Id.* at Schedule DP-D2-12. This means that the majority of the people who have considered whether to purchase an electric forklift have already made the decision to do so without Ameren having spent a single dime. This plainly negates any argument that there is a "need" for Ameren to subsidize electric forklifts in order to promote their adoption.

The rising rate of electric forklift adoptions that Ameren's data alludes to is further supported by the testimony of the OPC's expert witness Dr. Geoff Marke.

for one or the other. It's just that we're -- we're moving forward with things that are canceling out each other, which negates the benefits ultimately to customers.").

Figure 4 of Dr. Marke's testimony (reproduced below for the Commission's convenience) compares the percentage market share between electric and internal combustion forklifts in North America and plainly shows how the gap between these two propulsion mechanisms has continued to expand with each passing year.



Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 7 Fig. 4. Ameren attempts to rebut this data using their own formulated graph that purports to remove so called "class 3" forklifts from the mix of electric forklifts found in Dr. Marke's figure 4. Ex. 5, *Surrebuttal Testimony of David K. Pickles*, pg. 9 ln. 16 – pg. 10 ln. 13, pg. 11 fig. 1. However, Ameren's graph crucially fails to include the adoption rate for internal combustion forklifts and thus completely misses the point that Dr. Marke was trying to make. Again, that point is that the difference between electric and internal combustion forklifts is continuing to grow ***without Ameren supplying subsidies***. Tr. Vol. IV pg. 386, lns. 8 – 21. ("I would ask the Commission just to look at the

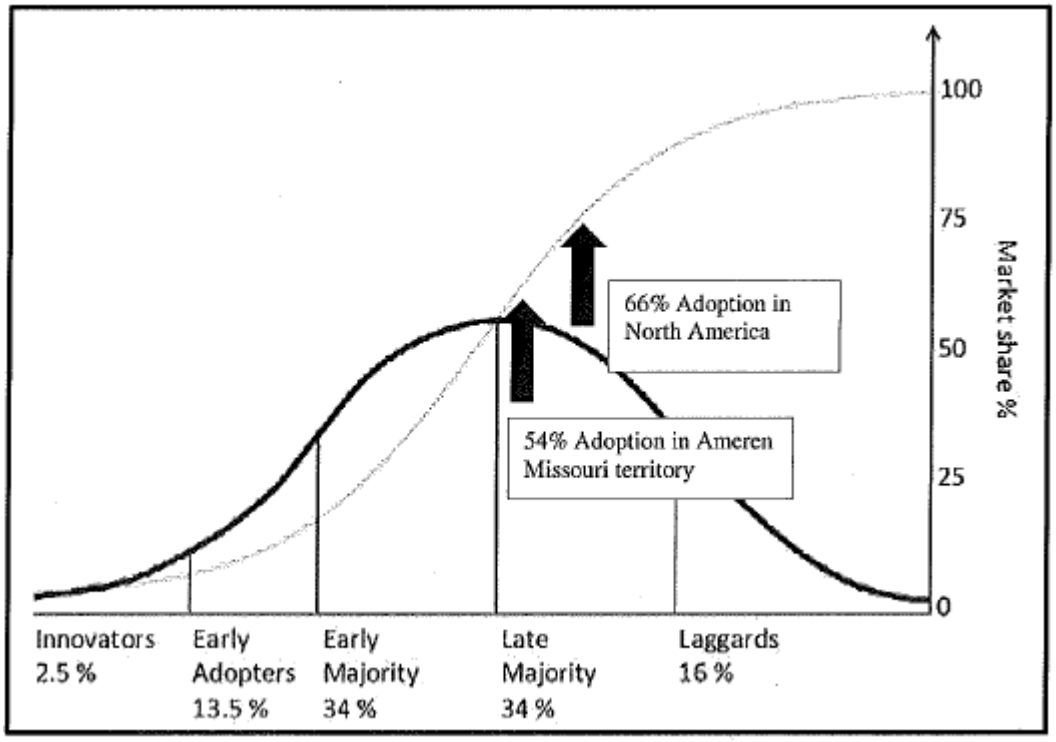
numbers [in Ameren's Ex. 12]. You've got four columns. One column is years. It's between '94 and 2016. The second column is electric riders, Classes I and II, that's electric. . . . And then the last column is Class IV and V and that's internal combustion. If you just compare column 2 to column 4 on a year by year basis, what you'll see is the gap is narrowing. Year over year you're getting more and more electric compared to the internal combustion."), *Id.* pg. 388 lns. 19 – 22. ("[T]he take-away point that you should look at this is that the electric forklift share is becoming more and more dominant year over year.").

Another problem with Ameren's own graph is the manner by which Ameren uses it in its attempt to rebut Dr. Marke's testimony regarding the diffusion of innovation curve. *See e.g.* Ex. 5, *Surrebuttal Testimony of David K. Pickles*, pg. 10 ln. 14 – pg. 10 ln. 13, pg. 12 ln. 20. Ameren does so by superimposing the image from Dr. Marke's figure five onto the repurposed data of Dr. Marke's figure four. *Id.* pg. 11 lns. 8 – 10. ("[i]t is perhaps easiest to understand why it is inappropriate by reviewing the information provided in Dr. Marke's Figures 4 and 5, and summarized in my Figure 1 below."). However, even elementary school math teaches that in order to directly compare two graphs it is first necessary that the axis of each graph be measuring the same variable. This makes Ameren's given methodology rather baffling because even Mr. Pickles acknowledges (although only in a footnote found on the immediately successive page of his testimony) that the diffusion of innovation curve found in his figure 1 has no correlation to x-axis found in the same figure. *Id.* pg. 12 n. 8. ("The Diffusion Shape in this example does not have a specific time dimension ***and the***

years shown are not relevant to interpretation of the shape." (emphasis added)); *see also* Tr. Vol. II. pg. 154 lns. 15 – 18. ("Q: You would agree with me that [the diffusion] shape has no correlation to the X axis [] which the graph shows? A: Yes."). This admission is extremely troublesome given that Mr. Pickles testimony ***relies*** on comparing the shape of the line depicting the adoption rate of electric forklifts in North America (which clearly ***does*** rely on the years shown in the graph) to the shape of the diffusion curve itself (which Mr. Pickles fully admits ***does not***). Ex. 5, *Surrebuttal Testimony of David K. Pickles*, pg. 12 lns. 1 – 4 ("While [the diffusion] shape may be appropriate for certain innovations, one can see by inspection that it does not reflect what has happened with the actual North American market share of electric forklifts, as the solid red line shows[.]"). Therefore, Mr. Pickles has essentially admitted that he is making an "apples to oranges" comparison in his figure 1 between the diffusion of innovation curve and North American electric forklift adoptions and thus his attempt to rebut the diffusion of innovation cure is rendered meaningless.

Having addressed Ameren's mischaracterizations, let us take a moment to consider Dr. Marke's actual testimony regarding the diffusion of innovation curve. The diffusion of innovation curve is a widely cited means of understanding market adoptions that was developed by the economist Everett Rogers. Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 7 lns. 6 – 7. In fact, the US Department of Energy has previously utilized the diffusion of innovation curve as part of the central framework for developing impact evaluation studies. *Id.* at lns. 10 – 11. The shape itself (reproduced below for the Commission's convenience) divides out those who

choose to adopt some specific type of technology into five groups in a manner that correlates to the percentage of market share the technology has managed to obtain at the time of the adoption.[6]



Id. at pg. 9 fig. 5. Consequently, by determining what percentage of the total market share a specific technology presently commands, one can easily identify what category future adopters will align with. In the case of electric forklifts, we can plainly see that new adopters will fall into the "late majority" category, which Rogers describes as "skeptics[,]" who "often decide to adopt an innovation due to peer pressure or because of some economic or other necessity to do so." *Id*. at pg. 8 lns. 18 – 20. This is what leads Dr. Marke to determine that most purchasers of new electric forklifts would likely do so regardless of the business program subsidies, thus further

[6] Again, it is worth noting that nothing in the diffusion of innovation curve relates to a time variable and that neither of the axis in Dr. Marke's figure five are labeled according to time.

illustrating the point that the business program is not necessary to ensuring further commercial and industrial electrification. *Id.* at pg. 10 lns. 6 – 10 ("The 'late majority' as characterized by Rogers, are customers who will adopt due to peer pressure ('sustainability concerns') or because of some economic or other necessity to do so. Stated differently, at this point, the 'late majority' electric forklift program participant would largely be considered a 'free rider,' or a participant who would likely purchase the electric forklift regardless of the subsidy.").

In addition, it is important to stop and consider that, while Dr. Marke's testimony acknowledged the adoption rate of electric forklifts in Ameren's service territory fell ***behind*** the North American rates generally, Ameren itself has contradicted this point. *Id.* at lns. 1 – 2. Mr. Pickles' testimony discusses how the 66% North American market share found in Dr. Marke's figure 5 includes class 3 forklifts and thus overstates the electric forklift share.[7] Ex. 5, *Surrebuttal Testimony of David K. Pickles*, pg. 9 ln. 18 – pg. 10 ln. 2. As a result, Mr. Pickles claims the market share for electric forklifts in North America found in Dr. Marke's testimony to be 16% points too high. *Id.* at pg. 9 ln. 22 – pg. 10 ln. 2. This would put the market share of electric forklifts in North America at just about 50%, which means that the rate of electric vehicle adoption within Ameren's service territory (which the reader may recall was at 54% according to Ameren's own data) is actually ***better*** than the national average. Ex. 4, *Direct Testimony of David K. Pickles*, Schedule DP-D2-12. Once again, it is difficult to see how Ameren could possibly claim to have a "need" for subsidizing new

[7] For a quick explanation of the difference between class 3 forklifts and class 1 and 2 forklifts please consider Ex. 204, *US Department of Labor Forklift Classifications.*

commercial or industrial electrification of forklifts given that such electrification appears to be occurring without Ameren's intervention at a rate that exceeds the national average.

There is one final point that is worth discussing regarding the electrification of forklifts. Mr. Pickles states in his surrebuttal testimony that Dr. Marke's analysis was inappropriate because it relied on market data for all of North America instead of data for only those counties severed by Ameren. Ex. 5, *Surrebuttal Testimony of David K. Pickles*, pg. 10 lns. 3 – 6. Then, without citing to any source or providing any other support, Mr. Pickles claims that "using such data" the electric forklift market share in Ameren's service territory is 49.6%. *Id.* at lns. 6 – 7. The problem with this analysis is two-fold. First, Dr. Marke ***did*** make use of Ameren specific market data (see Dr. Marke's figure 5 reproduced above). In fact, Dr. Marke used the exact market data that Ameren ***itself*** supplied showing the market share of electric forklifts in Ameren's service territory was 54%. Ex. 4, *Direct Testimony of David K. Pickles*, Schedule DP-D2-12. Second, on cross examination Mr. Pickles was explicitly asked whether he had updated the market saturations in the two years since the initial study, to which Mr. Pickles responded "I made no updates to the market potential estimates[.]". Tr. Vol. II pg. 164 lns. 13 – 17. This statement directly contradicts the new numbers that Mr. Pickles attempts to supply in his surrebuttal. Of course, Mr. Pickles later attempts to walk back this answer by stating that for "forklifts, the most recent data I have is from June of this year and that was reflected in the actual declining share of electric morklifts [sic] forklift so far this year." Yet, once again,

there is no indication of what data Mr. Pickles is referring to, let alone where it comes from.[8] *Id.*at pg. 164 ln. 25 – pg. 165 ln. 3. As such, there is simply no reason to believe the completely unsubstantiated claim regarding a decline in electric forklift market shares made in Mr. Pickles' surrebuttal.

Having shown the variety of issues surrounding just forklift electrification, it should be clear why there is not a "need" for this program to encourage further commercial and industrial electrification. Therefore, the OPC will only briefly discuss the remaining applications targeted by Ameren's proposed business plan. Regarding standby truck refrigeration units and truck stop electrification, Dr. Marke's testimony points out that "[t]he Missouri Department of Natural Resources ("DNR") idle reduction rules would already enable much of this action." Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 10 lns. 20 – 21. The OPC also notes the testimony of Staff witness Byron Murray who pointed out that "[b]ased on information provided by Ameren Missouri there are approximately 39 bays with truck stop electrification (TSE) capability available in Ameren Missouri's service territory and truck

[8] To understand the OPC's frustration with this point it may perhaps be beneficial to consider Ameren's Ex. 12. The first page of the exhibit depicts the numerical values used to develop the corresponding graph. Ex. 12, *Work Papers*. The values found in the column labeled "North American w/o Class 3" are clearly reproduced from column labeled "Elec. Shares NO 3s" on the second page, which is itself obviously derived from the data provided by the Industrial Truck Association also found on the same page. *Id.* By contrast, the column labeled "Ameren" (which incidentally has no entries for all but the last three years) has no corresponding source data. *Id.* It is as if Mr. Pickles had simply willed these numbers into existence himself. Moreover, the number given for 2016 (52.8%) is clearly different from the 54% found in the 2016 ITA data supplied by Ameren in Mr. Pickles' direct testimony. Compare *Id.*, with Ex. 4, *Direct Testimony of David K. Pickles*, Schedule DP-D2-12 (showing ITA 2016 Forklift sales data for Ameren served Counties at 54%). Therefore, this data plainly did not come from the same source as the data in Mr. Pickles' direct testimony. Given that the data is not from the same source as Mr. Pickle's direct testimony and Mr. Pickles testified under oath that he did not perform any updates himself, The OPC is left guessing as to the source of the numbers supplied in Mr. Pickles' surrebuttal.

refrigeration unit (TRU) dealers reported sales of 1% to 20% of electric stand-by TRUs." Ex. 102, *Rebuttal Testimony of Byron M. Murray*, pg. 5 ln. 20 – pg. 6 ln. 3. Regarding airport ground support equipment, the OPC notes that the primary target of the incentive (Lambert International in St. Louis) "would likely be considered a free rider as well" given that "[t]he airport is currently owned by the City of St. Louis, who on October 27th passed Resolution 124 that committed to 100% clean energy by 2035." Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 11 lns. 15 – 17. The OPC also notes "the St. Louis airport [already] has electric versions of the forklifts, belt loaders and GPUs." Ex. 102, *Rebuttal Testimony of Byron M. Murray*, pg. 5 ln. 19 – 20. In fact, 16 of the 33 GPUs found at Lambert are already electric. *Id.* at lns 11 – 12. As can clearly be seen, neither standby truck refrigeration units and truck stop electrification nor airport ground support equipment electrification need further subsidies in order to occur.

Considering all of the forgoing, there is a single simple legal conclusion to be drawn:

(2) The industrial and commercial applications that Ameren's business program targets are already undergoing extensive electrification absent any incentive offered by Ameren.

With this in mind, we can now safely say that the answer to the question of whether there is a "need" for the proposed business program is most definitively "no" regardless of how it is interpreted.

b. Has Ameren Missouri provided sufficient evidence that the program is cost effective?

Ameren has not provided sufficient evidence that the business program is cost effective. This is based on two separate issues surrounding the program. The first is the problem regarding "free riders" alluded to in the preceding section. The second is the breakdown of the business program's administrative costs when compared to the amount of actual subsidies being provided. We will examine both.

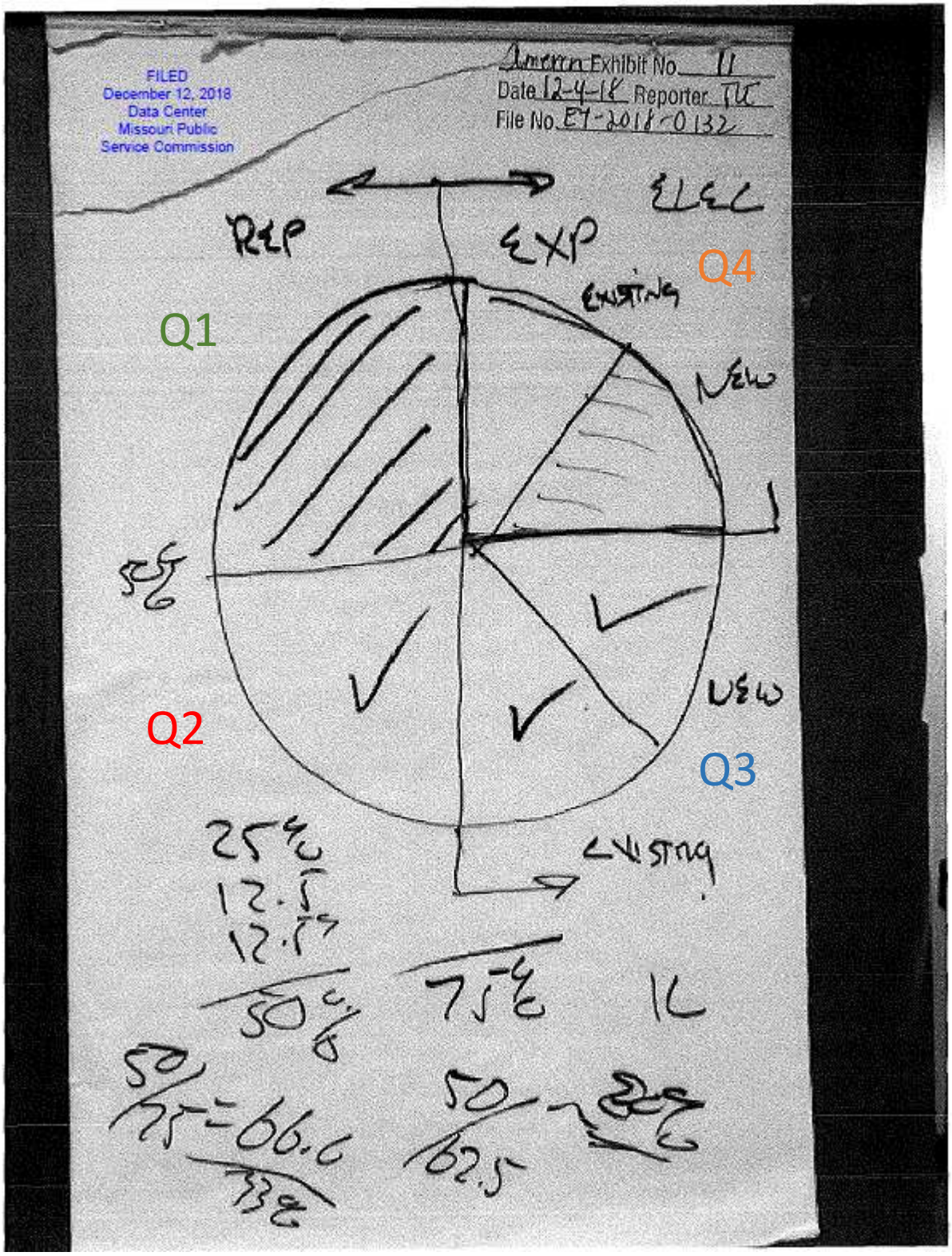
Let us begin with the concerns regarding free riders. Ameren's witness Mr. Pickles provided a workable definition for free rider during the evidentiary hearing: "If [a] person would have purchased [an] electric forklift in the absence of the program, yet they did participate in the program, they went through the qualification process and screening, if they received an incentive, then in that case, yes, that would be the definition of a free rider."[9] Tr. Vol. II. pg. 160 ln. 23 – pg. 161 ln. 3. Accordingly, to determine the number of free riders the program would produce we must first determine how many of the potential future adopters who would be eligible to receive incentives under the business program are expected to electrify regardless. Because we have previously determined that the industrial and commercial applications that Ameren's business program targets are already undergoing extensive electrification ***without*** any incentive being offered, we can conclude that the answer to this question is an exceptionally large amount if not the majority of potential future adopters.

Ameren attempts to rebut this conclusion a number of different ways. First, it points to several so-called "barriers to adoption" that it suggests will prevent new electrification absent an incentive. *See e.g.* Ex. 5, *Surrebuttal Testimony of David K.*

[9] While Mr. Pickles was talking in terms of forklifts, the definition would obviously hold true for any of the applications targeted in the business program.

Pickles, pg. 13 ln. 1 – pg. 14 ln. 10. In the case of forklifts, for example, these supposed barriers include price, unfamiliarity, skepticism and fear, and a dealers desire to close the sale quickly. *Id.* However, Mr. Pickles admits that none of these theoretical barriers could be considered new or recent developments. Tr. Vol. II pg. 159 lns. 1 – 20. Mr. Pickles also stated that electric forklifts have been around for thirty years. Tr. Vol. II pg. 199 lns. 17 – 23. Given that electric forklifts already make up 54% of the market in Ameren's service territory despite these hypothetical barriers having been in place for thirty years, it should be obvious that these barriers are not curtailing any future electrification. These barriers plainly have either already been overcome or else rendered meaningless in the oncoming wave of commercial and industrial electrification.

The second argument that Ameren raises relies on non-existent provisions within its exemplar tariff as a means of preventing free riders. Mr. Pickles attempted to illustrate this point during the evidentiary hearing using the hand-drawn pie chart reproduced below for the Commission's convenience.



Mr. Pickles developed this chart by first drawing a circle to represent the market for forklifts and then dividing that circle in half horizontally to represent the split

between the electric and internal combustion markets. Tr. Vol. II. pg. 187 lns. 4 – 10. He then divided the circle in half again with a second vertical line to represent the division between buyers who are replacing existing forklifts and those expanding their fleet. *Id.* at 15 – 21. By doing so, Mr. Pickles created four quarters or quadrants, which the OPC has labeled Q1 through Q4. Turing to the top left first quadrant (Q1) Mr. Pickles states that these individuals are replacing electric forklifts and are thus ineligible under the program. *Id.* at pg. 188 lns. 4 – 12. This is the only point on which the OPC agrees, given that the exemplar tariff does clearly state that "electric equipment replacing existing electric equipment does not qualify for this program[.]" EFIS, ET-2018-0132, *Tariff Revision (YE-2018-0104)*, pg. 166.

After addressing the first quarter, however, Mr. Pickles' line of reasoning quickly goes off the rails. For example, Mr. Pickles suggests that all of the potential buyers in the second quadrant (Q2) "can't be considering electric[] [forklifts]" without offering any explanation beyond those individuals having not purchased electric forklifts in the past. Tr. Vol. II pg. 188 ln. 13 – 18. ("We also know that these people down here [Q2], when we go out and we see that they've got internal combustion, we see that they don't have a battery room and they really can't be considering electricity, we know that those are good participants, right, they're good net people.") However, any business owner who managed a fleet of internal combustion forklifts and who was considering how to replace one would most certainly consider ***all*** of her options including electric forklifts. In fact, there is simply no reason to assume that any such owner would ***not*** choose an electric forklift given all of the benefits that Ameren

argues they possess. *See* Ex. 4, *Direct Testimony of David K. Pickles*, pg. 5 ln. 20 – pg. 6 ln. 1 (listing benefits that electric forklifts provide their owners). Mr. Pickles' bold assertion that the second quadrant could not possibly result in free riders simply because those owners have not purchased electric forklifts in the past is therefore clearly wrong.

Mr. Pickles next turns his attention to the third quadrant (Q3), which is made up of those owners of internal combustion forklifts who are looking to expand. Mr. Pickles further subdivides this quarter into two sections based on owners who are expanding existing facilities and those who are building new facilities. Tr. Vol. II, pg. 188 19 – 22. Despite this subdivision, however, Mr. Pickles nevertheless advocates that we should expect that neither group of owners would have purchased an electric forklift without an incentive because the members of both groups have not previously purchased electric forklifts. *Id.* at pg. 188 ln. 23 – pg. 189 ln. 3. ("So again, we know if we go out -- they say they're expanding their fleet from 60 to 70 forklifts, but they're all currently internal combustion, they're not batteries. We know that these people are likely to be kind of the good participants, the -- that we want to have."). Yet, just as with quadrant two, there is just no reason to assume that owners who have purchased internal combustion forklifts in the past are therefore unlikely to consider electric forklifts in the future without rebates. As a result, Mr. Pickles argument regarding this third quadrant also fails.

Mr. Pickles seems to understand the weakness of his argument at some level and so suggests an alternative reason for why owners in the third quadrant who

would otherwise have purchased an electric forklift will not be given incentives. Specifically, Mr. Pickles' suggests that any owner that ICF (the third-party firm who will be operating the business program) suspects would have purchased electric forklifts regardless of the subsidies being offered will consequently not be given a subsidy. *Id*. at pg. 189 lns. 14 – 17. ("We ask them a variety of questions that screen them to really demonstrate that no, this person was not considering electric. They really would have been going internal combustion."). This concept is also found in Mr. Pickles' surrebuttal testimony. Ex. 5, *Surrebuttal Testimony of David K. Pickles*, pg. 16, lns. 12 – 15. ("Buyers who are expanding a fleet or constructing a new facility will be asked a series of questions to establish their intent prior to the purchase, to attest to the fact that absent the program they would have been less likely to purchase an electric forklift, and in certain circumstances investigations into corporate policies and procurement practices will be conducted.") The problem with Mr. Pickles' claim is that it either misinterprets provisions of the business program tariff or relies on requirements that simply do not exist.

The specific section of the exemplar tariff on which Mr. Pickles cites to states as follows:

> The Program will conduct Customer and Measure eligibility verification for 100 percent of applications. The Program will conduct on-site post-installation equipment verification inspections for at least 25 percent of each measure type to ensure the Measures are installed and operating as intended.

Id. at pg. 16 lns. 7 – 11; EFIS, ET-2018-0132, *Tariff Revision (YE-2018-0104)*, pg. 166.1. Starting with the first line of this provision, the ***only*** "customer and measure

eligibility" requirements found in the business program tariff are those in the numbered list on page 166 and the table found on page 166.1. However, the table on page 166.1 is just a description of the eligible equipment and the incentives that each may receive, and the only real limitation on customers in the number list on page 166 is the requirement that the "[e]quipment must be replacing a gasoline, diesel or propane unit OR be a new addition OR expansion to an existing fleet[.]" EFIS, ET-2018-0132, *Tariff Revision (YE-2018-0104)*, pg. 166.1. Nothing in either of these two sections (or anywhere else in the tariff) require the type of investigation to discourage free riders that Mr. Pickles describes or otherwise prevents the subsidies being supplied by the tariff from being given to would-be free riders. This point is so important that it is worth drawing a legal conclusion for:

(3) There is absolutely nothing in Ameren's business solutions program tariff that would require the anti-free rider investigation that Mr. Pickles claims and there is nothing to prevent would-be free riders from being eligible to receive incentives.

As for the second sentence found in the business program tariff, this concerns only ***post***-installation inspections and only serves to ensure that the equipment is ***installed and operating as intended***. Obviously, this provision can't supply the missing link that Mr. Pickles needs to substantiate his claim that ICF will be guarding against free riders.

In addition to relying on either misinterpretations of or non-existent provisions in the business program tariff, there is another major issue that undermines Mr. Pickles argument. **

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At the end of the day, Mr. Pickles' argument as to why members of the third quadrant of his diagram will not become free riders is simply unsubstantiated. There is neither a reason to assume that members of that section will not buy electric forklifts nor a reason to believe that ICF will engage in a monitoring program that is not required in any capacity by the tariff. Instead, as with the second quarter, it is highly likely that this quarter will see significant free rider activity given the market trends toward increased electrification so far discussed. Further, because the same

arguments regarding ICF monitoring that Mr. Pickles relies on for the third quadrant are repeated as the sole argument made regarding the fourth quadrant, we can safely rule out Mr. Pickles' suggestion that there will not be any free riders in the fourth quadrant as well. *See*, *e.g.*, Tr. Vol. II, pg. 191. lns. 5 – 15.

As we have now seen, Ameren's arguments as to why the business program will not result in significant free riders are incurably flawed. This allows us to draw yet another important legal conclusion for this case:

(4) The majority of participants in the business solutions program would most likely have chosen to electrify regardless of Ameren's incentives and thus would be free riders.

Having considered the issue of free riders, let us now turn to considering the problem created by the business program's inordinately high administrative costs.

The OPC's expert witness Dr. Geoff Marke points out in his discussion of the proposed business solutions program as it pertains to the airport ground support equipment "[t]hat [the] 3rd party program administrator [costs] ($213,200) and [the] commercial subsides ($204,200) are essentially equal." Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 11 lns. 10 – 11. Based on these numbers, we can calculate that for every dollar Ameren intends to give away as part of its program it will be spending an additional $1.04 just running the program. A similar result occurs for the forklift and truck stop program, which has an administrative cost of $2,888,000 and actual subsidies of $3,607,500. *See Id.* pg. 6 table 1. This means that for every dollar spent on subsidies for the electrification of forklift and truck stops, Ameren will

be spending eighty cents on just administration. When combined, these figures mean that Ameren will be spending approximately 44% of the ***total*** program budget just running the program, as acknowledged by Staff witness Byron Murray. Ex. 102, *Rebuttal Testimony of Byron M. Murray*, pg. 5 lns. 5 – 7.

It should go without saying that any program designed to distribute free money to individuals should not need to be spending nearly as much money as it is giving away in order to cover its operating costs. Ameren nonetheless attempts to respond to this point by presenting a pie chart that divides the administrative costs into individual segments; clearly hoping that the visual representation will beguile the Commission into overlooking the reality that the combined administrative costs are almost half of the total program costs. Ex. 5, *Surrebuttal Testimony of David K. Pickles*, pg. 24 fig 2. However, this pie chart only further illustrates the problems with Ameren's proposal.

For example, given the total program costs of $6,912,900, we can easily see from the pie chart that Ameren intends to spend $414,774 (6% of $6,912,900) on travel alone. Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 6 table 1; Ex. 5, *Surrebuttal Testimony of David K. Pickles*, pg. 24 fig 2. Stop and consider the significance of that fact. Ameren is claiming that it will need to spend nearly half a million dollars on travel for a program that would only require contact with the counties that Ameren serves, meaning less than half the state of Missouri. Similarly, we can calculate that Ameren will be spending $1,175,193 on something labeled "account management," which means that nearly one seventh of the program's total

budget will be spent just managing the budget. There is also an additional $483,900 earmarked for something called "program management," $622,161 for IT and "analysis," and $414,774 spent on marketing, startup, and other direct costs. *Id.* These numbers, hard to believe on their own, are rendered all the more ridiculous when compared to Ameren's EV program, which will be giving away ***more than twice the total subsidies*** of the business program using a ***combined*** administrative cost of just $1,000,000.00.

Between the free riders problem previously discussed and the business program's administrative costs, there is enough evidence to draw one final legal conclusion for this case:

(5) Ameren's business solutions program is simply not cost effective.

The Commission should therefore deny Ameren's proposed business program.

c. If the program is approved, what is the appropriate cost recovery mechanism?

Because the OPC staunchly oppose the proposed business program, it does not opine on the proper cost recovery mechanism.

d. If the program is approved, what conditions, if any, should be imposed by the Commission?

The Commission should not approve Ameren's business program under any circumstances. The OPC did consider attempting to construct a performance based metric for the business program similar to the one suggested for the EV program. However, the OPC was unable to do so due to the significant dissimilarities between

these two programs. For illustration, while the EV program does suffer from the risk of possible free riders, the number of electric vehicle's currently in Missouri is small enough to justify believing that Ameren's EV program might have an actual impact on accelerating adoption rates. By contrast, the data shows that the industrial and commercial electrification markets in Missouri are already substantially saturated and it is unreasonable to think that Ameren's business program would have ***any*** material influence on encouraging further electrification beyond the powerful market forces that are already clearly in play. Similarly, the design of the EV program anticipates $1M in administrative costs used to distribute $10M in subsidies resulting in Ameren spending approximately nine cents for each dollar distributed. Ex. 6, *Direct Testimony of Steven M. Wills*, pg. 22 lns. 7 – 11. The business program by contrast is spending $3,101,200 in administrative costs to provide just $3,811,700 in subsidies, which is patently unreasonable. Ex. 200, *Rebuttal Testimony of Geoff Marke, PhD*, pg. 6, table 1. Because of these differences, the OPC cannot recommend a performance based metric that would work for Ameren's proffered business program.

Conclusion

The Commission should not approve Ameren's poorly designed business program, as it is both unnecessary and not cost effective.

3. Should the Commission grant the variances requested by Ameren Missouri?

No, the Commission should not grant the variances requested by Ameren. Ameren has failed to show good cause for an exception to the promotional practice

rule that its initial application acknowledges will be violated by both its EV program and business program based on the same rational already laid out in the OPC's discussion of issues (1) and (2).

WHEREFORE, the Office of the Public Counsel respectfully submits the forgoing *Initial Brief* for consideration by the Commission and requests the Commission grant the relief requested herein.

Respectfully submitted,
OFFICE OF THE PUBLIC COUNSEL

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CERTIFICATE OF SERVICE

I hereby certify that copies of the forgoing have been mailed, emailed, or hand-delivered to all counsel of record this 7th day of January, 2019.

/s/ John Clizer