BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Tariff Filings of Union Electric Company d/b/a Ameren Missouri, to Increase Its Revenues for Retail Electric Service.	)))	File No. ER-2022-0337

RESEARCH AND DEVELOPMENT PROJECT NOTICE

COMES NOW Union Electric Company d/b/a Ameren Missouri ("Company" or "Ameren Missouri"), and as provided for in Tariff Sheet No. 71.22, which is part of its Rider FAC, provides this notice of a project that may[1] constitute an R&D[2] project as defined in said tariff sheet, costs of which will impact the amounts for Factors FC, PP, or OSSR in the Company's next FAR filing, as follows:

1. Tariff Sheet No. 71.22 requires that notice be given no fewer than 60 days prior to any FAR filing if Factors FC, PP, or OSSR in that filing will be impacted by an R&D project.

2. In December 2023 Ameren Missouri placed equipment into service that it is using to manage the charging of its electric service vehicles ("fleet EVs"), which have begun replacing internal combustion engine-powered vehicles used by its employees in providing service to its customers.

3. This project is being undertaken both for charging of the Company's fleet EVs and as a demonstration for non-residential retail customers of the potential benefits of utilizing a micro grid of battery storage, solar generation and associated control systems to manage the

[1] As discussed below, it is not clear that the subject project is an R&D project given that it does not involve developing any new or untested equipment, substance, or technology but rather, will use proven technologies to, among other things, gain learnings about managed charging by charging the Company's electric fleet service vehicles.
[2] Capitalized terms not otherwise defined herein have the meaning given them in Rider FAC.

charging of their own electric fleet vehicles. All energy consumed by the project will be used to charge the Ameren Missouri's fleet EVs, either directly from the grid, or from energy that is first stored in the battery array. Absent this project, fleet EVs would be charged directly from the grid.

4. Managed charging provides incremental benefits which include:

a. Resiliency in the form of emergency backup to charge electric fleet vehicles;

b. Shifting of peak demand (which for non-residential retail customers would take the form of avoided increases in monthly billing demand);

c. Grid reliability benefits, including demand response (interrupting the consumption of energy from the grid, and either discharging the stored energy in the main battery to charge electric fleet vehicles or shifting such charging to a period following the reliability events); and

d. Time of use considerations (non-residential customers could charge the main battery during periods of lower tariff rates and discharge when their electric fleet vehicles would otherwise be charged at a higher rate).

5. In the first phase of the project, the Company installed charging equipment consisting of eight DC fast charging stalls (fed two at a time by two inverters), 15 AC Level 2 charging stalls, a micro-grid controller, and a 1.5 megawatt-hour lead acid battery array, all located in a new parking area for the electric service vehicles. In phase 2 of the project (~Q1/2025), a 500-kW solar array will be added. Energy produced by the solar array, in excess of charging needs, will be returned to the distribution grid.

6. It is expected that 98% of the energy consumed by the project will be used to directly charge the Company's fleet EVs – that is to say that it will not flow through the battery storage. Such energy is of the same nature as the energy used to charge any other Company fleet EV, the associated costs and revenues for which are included in the Company's fuel adjustment clause. This energy consumption would exist regardless of whether or not this

project was undertaken. The remaining 2% will be used to charge (and recharge) the project's battery array in support of four specific use cases listed above: resiliency, demand charge management, demand response, and optimal (in terms of time) charger dispatch. Regardless of use case, the energy discharged from the batteries (less charging/discharging losses)[3] is ultimately utilized to charge the Company's fleet EVs.

7. The first of these use cases, resiliency, is the use of the battery for emergency backup, allowing for the charging of EVs when energy from the distribution grid is unavailable due to a service interruption. This use of energy is of the same nature as that which is used to charge the Company's uninterrupted power supply (UPS) system at various locations, including Ameren Headquarters, the associated costs and revenues for which are included in the FAC.

8. The second use case, demand charge management, emulates the management by non-residential retail customers of the demand charge component of their bill. This is accomplished through the use of software algorithms to identify periods when additional charging would reasonably be expected to increase the monthly billing demand. A combination of load displacement (charging the EVs in a period which would not be expected to increase the monthly billing demand) and energy discharged from the batteries is used to avoid this increase. As with the initial charge, any recharging of the batteries following such an event would ultimately be used to charge the fleet EVs.

9. The third use case, demand response, allows the Company (and would allow the non-residential customer) to interrupt the charging of EVs (and/or the battery storage), in response to a reliability event, such as a MISO emergency. Such actions do not affect total

[3] The Company estimates losses will be about 20% of the energy used to charge the battery and that is then discharged from the battery, meaning that 99.6% of the energy consumed will be used to charge the fleet EVs.

consumption, rather it displaces it from the time period when the reliability event occurred, to a time period following the event. However, to the extent that this interruption capability can be relied upon to reduce the Company's peak demand, any resulting reduction in Ameren Missouri's planning reserve margin requirement in a given Planning Resource Auction would reduce the amount of Capacity expense included in the FAC for that given accumulation period.

10. The final use case, optimal charger dispatch, utilizes a software platform to allow the fleet operator to manage EV charging based on factors including Time of Use Rates and how quickly an EV needs to be charged. As with the second and third use cases, this results in a beneficial change in when the energy consumed.

11. After the solar array is installed, the output of the array will serve to offset energy needs from other sources. During periods when this output is greater than the energy needed within the project to charge fleet EVs and/or the battery storage, this excess will flow back onto the distribution grid. This offset of energy needs from other sources is of the same nature as the output of any other behind the meter generator, (e.g. the O'Fallon Renewable Energy Center), the associated costs and revenues for which are included in the FAC

WHEREFORE, Ameren Missouri hereby submits this Notice.

Respectfully submitted,

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ATTORNEYS FOR UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI

Dated: January 15, 2024

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing document was served on all parties of record via electronic mail (e-mail) on this 15th day of January, 2024.

/s/ James B. Lowery
James B. Lowery