Exhibit No.:	_____
Issue:	ChargeAhead Program Tariff
Witness:	James Ellis
Sponsoring Party:	ChargePoint, Inc.
Case No.:	Case No. ET-2018-0132

CHARGE POINT, INC.

Case No. ET-2018-0132

REBUTTAL TESTIMONY

OF

JAMES ELLIS

Campbell, California
October 2018

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

AFFIDAVIT OF JAMES ELLIS

STATE OF TENEESEE)
) **ss.**
COUNTY OF DAVIDSON)

JAMES ELLIS, being first duly sworn on his oath, states:

1. My name is James Ellis. I am the Senior Director for Utility Solutions of ChargePoint, Inc.

2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my personal knowledge, information and belief.

JAMES ELLIS

Subscribed and sworn before me this 29 day of September, 2018.

Notary Public

State of Tennessee
County of Davidson
Sworn to and subscribed before me on
the 29th day of Sept., 2018
Suzanne M. Calvert
Notary Public Signature
My Commission Expires 5/2/2022

SUZANNE M. CALVERT
STATE OF TENNESSEE
NOTARY PUBLIC
DAVIDSON COUNTY

I. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS

Q: Please state your name and address.

A: My name is James Ellis. My business address is 254 E. Hacienda Avenue, Campbell, CA 95008.

Q: Please describe your background, experience, and expertise.

A: Prior to joining ChargePoint, Inc. (“ChargePoint”) I served as the Director of Electrification and Electric Vehicles for Pacific Gas and Electric Company ("PG&E") with a focus on developing products and programs to support customer needs in the fastest growing electric vehicle ("EV") market in the United States. During this time, I also served as a board member for the California Electric Transportation Coalition supporting advocacy for low carbon fuel standards, vehicle and infrastructure incentives and supported policies for an increased utility role in transportation electrification. I also served as board member for the California Plug-In Vehicle Collaborative, working with government and industry stakeholders to identify and advocate for accelerated transportation electrification through education and outreach initiatives. Before PG&E, I was the EV Regional Manager for Nissan North America in the Corporate Planning and Sales and Marketing organizations. At Nissan, I was responsible for market acceptance activities including strategy development and implementation for EV infrastructure in key markets to support the 100% battery electric LEAF. During this time, I developed financial tools and strategies that enabled the deployment of hundreds of DC fast chargers in the US. I also served as Senior Manager for Transportation and Infrastructure at the Tennessee Valley Authority (TVA),

leading research and development activities related to clean transportation technologies, utility plug-in readiness activities across the 80,000 square mile service territory and worked on carbon reduction strategies to enhance economic, environmental and societal benefits. I hold a Master of Business Administration degree from the Massey School of Business at Belmont University and a BS degree from Appalachian State University.

Q: On whose behalf are you testifying?

A: I am testifying on behalf of ChargePoint, where I serve as Senior Director for Utility Solutions.

Q: Please describe your job responsibilities?

A. In my role at ChargePoint, I manage a team that advises electric utilities and other key stakeholders in North America on EV market engagement and investment, and support the development of policies and programs to accelerate the adoption of EVs and EV charging equipment and services.

Q: Have you provided testimony before a utility regulatory body in any previous proceedings in this State or any other?

A: Yes. I have provided written testimony serving as ChargePoint's witness in Michigan for Case No. U-17990 and Case No. U-20134 regarding Consumers Energy, and in California as the Company witness for Application 15-02-009 with PG&E.

Q: Are you sponsoring any exhibits?

A: No.

Q: What is the purpose of your testimony in this proceeding?

A: The purpose of my testimony is to address Union Electric Company d/b/a Ameren Missouri's ("Ameren") application and accompanying tariff sheets seeking approval of two new tariffed programs collectively referred to as the "Charge Ahead" program, as filed at the Commission on February 22, 2018. The application proposes a rebate program for electric vehicle charging stations in the Company's service territory. Section II of my testimony will summarize the proposed rebate program, which appears in the application as Charge Ahead – Electric Vehicles. Section III of my testimony will detail ChargePoint's principles for utility investment in electric vehicle charging infrastructure, focused on the foundation of the competitive market for charging equipment in Missouri. Finally, Section IV of my testimony will explore how the proposed Charge Ahead – Electric Vehicles program aligns with ChargePoint's principles for investment. It will show how the proposal supports the competitive market for EV charging throughout the State and mitigates risk to ratepayers in deploying charging infrastructure.

Q: Please summarize your recommendation for the Commission.

A: I recommend that the Commission approve the application, as it supports charging industry principles detailed in Section III. Under the terms outlined in the application, rebates provided through Ameren will incent development of charging infrastructure in a way that will stimulate technology innovation,

encourage competition in the market, and enable customer choice for EV charging equipment and services. Rebates for EV charging hardware and installation represent an efficient, low-risk model for utility investment and will encourage customer investment in competitive charging technologies and electric vehicle adoption, long-term.

Q: Please describe ChargePoint's expertise in the EV charging market.

A: ChargePoint is a leading manufacturer of EV charging equipment and provider of network, maintenance and associated services. ChargePoint designs, develops, and deploys residential and commercial AC Level 2 ("L2") and DC fast charging ("DCFC") stations, software applications, data analytics, and related customer and driver services aimed at creating a robust, scalable, and grid-friendly EV charging ecosystem. Using ChargePoint products and services, our customers operate more than 54,000 Level 2 and DC fast charging spots, including more than 1,300 publicly available workplace, commercial, and private residential charging spots in Missouri.

Q: What is ChargePoint's business model?

A: ChargePoint's business model is to engineer, manufacture, and sell the hardware, cloud-based network and associated services necessary for EV charging station owners to effectively provide charging services to drivers that patronize their properties. In almost every case, ChargePoint does not own or operate the equipment, but provides a portfolio of products and services to individuals and site hosts.

ChargePoint sells residential charging solutions directly to individuals and EV drivers, and commercial charging solutions to a "site host," such as an employer, business, city, fleet operator, or multi-unit dwelling. In addition, ChargePoint sells "network services" to commercial site hosts to manage their charging infrastructure using cloud-based software tools, as well as preventative maintenance and related customer services. The commercial site host operates the station, including granting access to EV drivers and setting the price that EV drivers pay to use the charging station service on their property. ChargePoint does not set the pricing to drivers at stations that are owned and operated by site hosts and conveys all revenue collected from drivers as a service, other than a small transaction fee, to the site host.

Q: What are the products and services that ChargePoint offers to the market?

A: ChargePoint offers a complete line of L2 and DCFC products and services, including the CT4000 family of Level 2 charging stations for public and workplace charging, ChargePoint Home for single-family residential use, ChargePoint Multi-Family for commercial multi-unit dwellings, ChargePoint Fleet, and both 24 kilowatt ("kW") and 50 kW DC Fast Charging stations for rapid-charging needs. ChargePoint's next generation DCFC platform solutions, ChargePoint Express 250 and Express Plus, are capable of charging from 62.5 kW to 500 kW to meet the needs for today's vehicles and prepare for tomorrow's vehicles, including medium and heavy-duty transportation options.

For drivers, ChargePoint provides a unified mobile and web application for all aspects of public, workplace, and home EV charging. ChargePoint drivers have

access to real-time information, payment, and support services through the information available on the screen of the charging station, in their mobile app, via email and text notifications, or on the ChargePoint website. ChargePoint also provides services to drivers, free of charge, which allow them to easily find and access the EV charging infrastructure provided by station owners through a mobile app, in-vehicle navigation, and our website.

For site hosts, ChargePoint provides subscriptions to our cloud-based platform. This provides the station site host with everything needed to manage EV charging operations, including access control, billing and payment processing, driver queuing and advanced load management, and online management tools for charging utilization data collection and analysis. We connect stations to the ChargePoint cloud over a secure, payment card industry ("PCI") compliant, cellular data network allowing station owners to manage all their charging operations from a single dashboard.

Maintenance and customer service are a priority for our company. ChargePoint offers a comprehensive set of support services for both EV drivers and station hosts, including: a 24/7/365 hotline for drivers, the industry's first parts and on-site labor warranty, site qualification, installation and station validation services and help line for site host specific questions.

Q: How do ChargePoint stations communicate to ChargePoint Network for drivers?

A: All of the stations deployed with ChargePoint are connected via cloud to form a data-driven, cohesive global network. Stations with cloud connectivity and data collection features can be referred to as smart, connected, and/or networked charging stations.

Q: What are the capabilities of smart, connected EV charging stations?

A: "Smart" EV charging stations is a broad term, but generally refers to the electric vehicle supply equipment ("EVSE") having at least the ability to meter electricity passing through the unit, provide load management and scheduled charging features, provide for point of use payment and access control, and incorporate two-way communication from the EVSE to the driver as well as the station operator. These capabilities can be of significant importance to a utility as it can provide a wealth of information related to charging behaviors and load profiles and enable various program designs, including demand side management. Those programs could include interval data collection, emergency curtailment via demand response, or modulated vehicle charging rates. The associated communication, back office, and technology platform can also be leveraged to provide enhanced station management features for site hosts and well as an improved driver experience through greater visibility and interaction.

Q: Who are ChargePoint's typical customers?

A: Customers include workplaces, governments, hotels, colleges and universities, hospitals, electric utilities and other energy companies, parking garages, airports, multifamily housing, auto dealerships, and other businesses.

II. SUMMARY OF THE CHARGE AHEAD – ELECTRIC VEHICLES PROGRAM AND RECOMMENDATION

Q: What does Ameren propose to do in the EV charging station market?

A: On February 22, 2018, Ameren filed an application for the Charge Ahead program, a proposal of financial incentives to customers to own and operate charging equipment. The rebate incentives proposed would be offered to offset the project costs for multifamily, workplace, public around town, and long distance corridor market segments. The program offerings are designed to incent installation of both L2 and DCFC infrastructure. Additionally, the Company proposes to amend distribution line extension policies to accommodate 100% allowance for new charging service.

Q: What is Ameren's stated goal for the Charge Ahead – Electric Vehicles program?

A: Ameren's objective is to stimulate the private market for charging infrastructure to establish a holistic charging ecosystem throughout the Company's service territory.

Q: Will the utility own and operate EV charging infrastructure under the demonstration program?

A: No. The utility is not proposing to own and operate charging infrastructure under the rebate program.

Q: What is the total cost of the rebate program?

A: The total cost of the incentives in the rebate program is estimated to be $10 million, and incentives are allocated to different market segments according to the number of ports expected and level of charging in each segment. The program includes an additional proposed $1 million budget for marketing and promotional program activities.

Q: How does the Company propose to allocate incentives among market segments?

A: Ameren proposes the following allocations among market segments:

- Multifamily – $4 million
- Workplace – $1 million
- Public Around Town – $1 million
- Long Distance Corridor – $4 million

Q: What is the expected number of ports developed in each category as a result of the incentives?

A: Ameren projects the following expected ports:

- Multifamily – 800 Level 2 ports
- Workplace – 120 Level 2 ports and 16 DCFC ports
- Public Around Town – 120 Level 2 ports and 16 DCFC ports
- Long Distance Corridor – 10-12 DCFC ports

Q: What are market segments covered and incentive amounts for Level 2 charging station rebates?

A: Ameren proposes to offer $5,000 per port towards the project cost for Level 2 charging stations located at multifamily, workplace, and public around town locations in the Company's service territory. The incentives for Level 2 stations are capped at 50% of the project cost.

Q: What are market segments covered and incentive amounts for DC fast charging station rebates?

A: Ameren proposes to offer $25,000 towards the development of DCFC stations (≥50 kW capacity) located at workplaces and public around town locations in the Company's service territory. The incentives for DCFC stations in those locations are capped at 50% of the project cost. For the long distance corridor segment, Ameren proposes a request for proposals for a reverse auction process to develop a network of fast charging islands along key corridors and communities.

Q: Does Ameren propose limitations on incentives applicable per site?

A: Yes. The Company proposes the following per site limitations for incentive applicability among market segments:

- Multifamily – Up to 10 total Level 2 ports
- Workplace – Up to 20 total Level 2 ports
- Public Around Town – Up to 4 total Level 2 ports, and up to 2 total DCFC ports

Q: What EV infrastructure development costs will the Charge Ahead – Electric Vehicles program seek to offset?

A: The incentives are directed at the costs of the charging equipment, as well as other installation-related costs, such as line extension and site development.

Q: Where will the charging stations be located?

A: The rebates are designed to incent deployment of charging infrastructure throughout Ameren's service territory at multifamily, workplace, and public around town sites where customers are willing to provide the required 50% cost share. The program is driven by private investment and competitive market activities, and the utility will not select specific locations for charging stations.

Q: Will Ameren enable multiple providers of EV charging infrastructure to participate in the Charge Ahead program?

A: Yes. Ameren proposes to establish an "EV trade ally network" to ensure that multiple contractors are available to perform installations of equipment from various EV charging manufacturers.

Q: Would EV charging site hosts have a choice of the charging stations installed on their premises under the Charge Ahead program?

A: Yes. Site hosts will have a choice of electric vehicle charging products that will be eligible for rebates in the program.

Q: Would the EV charging site hosts have control over the charging stations installed on their premises under the Company's proposal?

A: Yes. Site hosts receiving rebates under the Charge Ahead program will operate and maintain the charging infrastructure installed on their premises and interact directly with the drivers that use the stations.

III. PRINCIPLES OF UTILITY INVESTMENT IN ELECTRIC VEHICLE CHARGING

Q: Should utility commissions be considering utility investment in EV charging infrastructure?

A: Yes. ChargePoint believes that there is a need for commissions to consider the full range of roles for utilities that will help support and encourage transportation electrification, both in Missouri and nationwide. Investments should be thoughtful, deliberate, and risk averse to help develop a robust and sustainable EV market that promotes grid benefits for all ratepayers. ChargePoint believes that through consideration of the various models for EV charging station deployment that involve utility investment commissions can support near- and longer-term goals for wider EV adoption.

Q: Should the utilities be playing a role in the EV charging market?

A: Yes. Utilities are well situated to help address some of the obstacles currently preventing wider deployment of EV charging equipment. Commissions should authorize strategic, risk averse activities and cost-effective ratepayer-funded infrastructure investments that will help accelerate expansion of EV charging and EV adoption. Critically, utilities should engage in program designs that support

the diverse and competitive market for electric vehicle charging infrastructure and site hosts' choice in investing in charging solutions.

Q: Why do charging station site hosts invest in EV charging solutions available in the competitive market?

A: EV charging station site hosts choose to invest in EV charging for a wide range of reasons, and each site host has its own business model for providing charging services. For many employers, it may be a low-cost benefit provided to employees to encourage adoption of clean transportation technologies that support corporate sustainability. Apartment building owners may provide charging as an amenity and will typically charge for the service as they do for a coin-operated laundry. Cities and counties may deploy charging stations to encourage low-emission driving and support local air quality, and they may charge cost-recovery fees in order to avoid giving away charging services at taxpayer expense. Fleet operators seek a lower total cost of ownership using electricity as a transportation fuel.

Q: Why is it important for site hosts to have a choice in the type of EV charging equipment and services?

A: As stated above, each site host has different reasons and preferences regarding the hardware and services related to EV charging. The Yale Center for Business and the Environment reviewed a range of EV charging equipment and business models and concluded that "[n]o single technology or business model available today is exactly right for all charging scenarios. There are pros and cons to each alternative, depending on the location and the driver base that the charging station

aims to serve."[1] The range of choices in EV charging goods and services is a strength indicating that the quickly evolving market is meeting the varied needs of its wide range of consumers. Site hosts are able to tailor the particular options for station fees, driver authentication, accessibility, payment collection and other transaction capabilities, advertisement, and data management and output (e.g., energy, station usage, and environmental benefits). Site hosts are also the best suited to make choices about the number of charging stations needed on their site. This is especially true when site hosts participate in the purchase of the charging station, which will help ensure that charging stations are deployed efficiently and in places where they will get the most use and be well maintained.

Q: Based on successful utility programs, what is ChargePoint's preferred approach for utility investment in charging infrastructure?

A: In ChargePoint's experience, the rebate-based approach has been successfully employed in other utility service territories. Rebate-based programs have the fastest deployments of charging stations, greatest competitive choice for customers, and least administrative burden to utilities and customers.

Q: Explain the rebate-based approach to utility investment in charging stations.

A: In a rebate model, utility investment is directed toward the hardware, services, and installation of charging infrastructure. In incenting hardware, services, and installation, a utility can decrease barriers for private investment in EV charging.

[1] Yale Center for Business and the Environment, 2015, "Financing Electric Vehicle Markets in New York and Other States" page 6, *available at* http://cbey.yale.edu/files/YALE-CBEY-EVSE%20PAPER_FINAL.pdf.

For rapid deployment, the site make-ready work can be performed by a licensed electrician, as scheduled by a participating site host, and the utility may offset the costs of that installation in lieu of scheduling, performing the construction management and carrying higher program costs.

Q: Does the rebate model preserve customer choice and competition in EV charging markets?

A: Yes. In this program design, utilities provide a direct financial incentive to site hosts for the installation of the qualified EV charging equipment of their choice. Since utility investment is directed to offset the costs of deploying charging stations to customers, site hosts can choose, purchase, own, and operate charging stations on their properties. This arrangement allows for competitive market participants to continue to meet unique customer demands and serve the evolving market, while also allowing utilities to invest in charging deployments without the risks of large-scale ownership and operation. Additionally, rebate programs may allow utilities to gain insights into the grid through data collection from networked charging, without building and maintaining the complex networking capabilities already offered in the competitive market. Overall, this program design reduces risks and lowers the cost barrier to EVSE deployment, allows the charging station site host to determine which equipment and services best meet their needs, and builds a sustainable EV charging marketplace to help accelerate EV adoption.

Q: Are there any examples of proposed and approved rebate-based utility programs in other jurisdictions?

A: Yes. There are many proposed or approved programs in diverse jurisdictions that offer rebates for EV charging infrastructure, including programs from Pacific Gas & Electric (CA), Southern California Edison (CA), AEP Ohio (OH), DTE Energy (MI), Consumers Energy (MI), NV Energy (NV), National Grid (NY), and Rocky Mountain Power (UT).

Q: Does ChargePoint have a position on the choice between networked and non-networked charging stations in utility investments?

A: Yes. ChargePoint believes smart and connected charging infrastructure can enhance the effectiveness of utility program investments. Networked charging provides visibility into load growth, giving the utility better data to plan system upgrades, support reliability, and enable grid benefits over traditional load management. Based on the data collected from smart charging stations, new processes can be created to better integrate electric vehicle charging with the increasing renewable generation interconnected with the grid – helping balance intermittent loads and reduce costs of providing clean energy.

IV. SUPPORT FOR THE CHARGE AHEAD – ELECTRIC VEHICLES PROGRAM AND ALIGNMENT WITH UTILITY PROGRAM PRINCIPLES

Q: Does ChargePoint have a position on the Charge Ahead – Electric Vehicles program offerings?

A: Yes. ChargePoint supports the Charge Ahead program structure. ChargePoint believes that the program's proposed rebate incentive program enables customer choice of charging equipment and will promote the competitive market for

electric vehicle charging stations and significantly advance the adoption of electric vehicles in Ameren's service territory and throughout Missouri.

Q: Please explain why you support an incentive program for an estimated 1,040 Level 2 and 42 DC fast charging ports.

A: The Charge Ahead program's approach to utility investment in EV infrastructure aligns and satisfies the principles laid out in the previous section. As noted above, the rebate-based approach represents an efficient and cost-effective model to deploy charging stations through utility investment. We strongly believe that the program design the parties advance will foster a scalable and sustainable competitive market for electric vehicles and charging stations in Missouri.

Q: Does the rebate program acknowledge the role of site hosts in selecting technologies most appropriate for their properties?

A: Yes. Under the program description, site hosts will choose among a range of charging technologies. In maintaining customer choice, the program supports the competitive market for EV charging solutions and allows site hosts to choose the solution that is best for site circumstances.

Q: Does the proposed rebate program's approach to site host pricing align with ChargePoint's principles for utility investment in charging stations?

A: Yes, the Charge Ahead program allows for site host pricing control. In maintaining site hosts' ability to set pricing for charging services they provide, the program may enable site hosts to manage their charging assets more effectively. Through pricing tools, site hosts can motivate EV drivers to visit their facility,

utilize the charging stations as needed and encourage responsible charging behavior. Furthermore, site host pricing will improve the quality of data collected and the conclusions drawn about charging station investments in the Company's service territory.

Q: Would the Company's rebate program encourage innovation in Missouri's EV charging market?

A: Yes. Site hosts will have a choice among multiple vendors of charging technologies, including smart charging offerings, enabling a market that is dynamic, competitive, and innovative. The rebate program will allow for the introduction of new, more innovative products and solutions as they become available to the market and concurrently decrease cost barriers to adoption of those solutions.

Q: Will the rebate program result in the efficient and effective siting of EV charging infrastructure?

A: Yes. As the rebates are designed to cover a range of costs of equipment and installation, a majority of site hosts may still be required to invest in EV charging stations in this program. This investment gives site hosts "skin in the game," which mitigates risks to ratepayer funding and gives motivation to choose appropriate sites for the greatest utilization. Site hosts receiving rebates will be invested in the management, use, and maintenance of EV charging stations on their properties, which will increase the overall benefits and success of the Charge Ahead program.

Q: Does the rebate program structure help to avoid risk in ratepayer investment in charging infrastructure?

A: Yes. The program is designed to leverage and enhance private investment and competitive market activities. In providing a financial incentive, the utility maintains a competitive market where vendors take on the risk of seeking and converting opportunities. The utility is not required to procure a set number of stations in specific locations, which may result in additional site acquisition costs, marketing to potential site hosts, and costs of permitting or leased space. Instead, the rebate provides a signal for competitive market vendors to engage potential customers, thereby accelerating charging station deployments in the Missouri market at a low cost of program administration to ratepayers.

The incentive also achieves deployment without the need for ratepayers to take on the full cost of building out and maintaining infrastructure. In most cases, site hosts will be providing 50% of the cost of an onsite EV charging project, significantly reducing the amount ratepayers might otherwise cover under alternative utility investment models that do not require site host contribution. Furthermore, the costs of operation and maintenance of charging equipment remains with the site host after the project is fully installed and operational, further reducing ratepayer risk.

Q: Will smart charging station deployments resulting from the rebate program provide useful data for future deployments?

A: Yes. The program provides the opportunity for gaining valuable data from networked charging stations. As noted in Section III above, networked charging provides grid benefits over traditional load management, and valuable data can be collected to inform better utility planning decisions and help maintain reliability and affordability. The data collected from smart chargers incented in the rebate program may include utilization insights, price signals to drivers, load profiles, and preferred features. These insights will be key to assessing the effect of the program and advancing beneficial EV adoption in Missouri.

Q: Does this conclude your testimony?

A: Yes.