VERIFIED DIRECT TESTIMONY OF ADRIANE E. JAYNES

I. PERSONAL BACKGROUND

Q1. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A1. My name is Adriane E. Jaynes. My business address is 212 E 6th St, Tulsa, Oklahoma 74119.

Q2. PLEASE DESCRIBE YOUR EMPLOYMENT AND EDUCATIONAL BACKGROUND.

A2. I am employed by American Electric Power Service Corporation (AEPSC) and my position is Electric Vehicle Program Manager.

I earned a Bachelor of Arts Degree from Texas A&M University in 2002 and a master's in social work from the University of Oklahoma in 2010. Prior to my current role, I was the Energy Programs and Clean Cities Manager at INCOG, the Council of Government/Metropolitan Planning Organization for the Tulsa, Oklahoma metro region. In this role I worked closely with local, state, and federal agencies on policies, plans, and programs to develop access to alternative transportation fuels (electric, CNG, propane, hydrogen), new mobility technologies, and energy efficiency. I started at INCOG in 2011 and was promoted to Program Manager in 2013. I continued to expand the portfolio of programs and technologies supported by my department throughout my tenure. I joined AEP in my current role in 2021.

Q3. WHAT ARE YOUR RESPONSIBILITIES AS ELECTRIC VEHICLE PROGRAM MANAGER?

A3. As the Electric Vehicle Program Manager, my responsibilities include monitoring industry technologies, participating in program design and policy development, and supporting all AEP operating companies, including I&M, in their electric transportation efforts. I work with AEP's operating companies to create or enhance their electric vehicle (EV) programs, and with various departments across the organization on electric transportation as they plan for increased utilization of electricity as a transportation fuel.

Q4. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A4. The purpose of my testimony is to address certain issues identified by the Commission for this proceeding. Specifically, my testimony addresses allocation considerations with respect to electric vehicle (EV) rate designs, and implications of such allocation considerations. My testimony is offered on behalf of Indiana Michigan Power Company and the "Utility Group", which consists of AES Indiana, CenterPoint, Duke Energy Indiana, Indiana Michigan Power Company, and Northern Indiana Public Service Company.

Q5. ARE YOU SPONSORING ANY ATTACHMENTS TO YOUR DIRECT TESTIMONY?

A5. No.

II. APPROPRIATE ALLOCATION CONSIDERATIONS

Q6. WHAT IS THE PRIMARY OBJECTIVE OF EV SUPPORTIVE RATE DESIGN?

A6. According to the Alliance for Transportation Electrification EV rate design should fairly recover costs to serve customers while optimizing the use of the electric system and providing overall benefits to customers.[1]

The Alliance further notes that EV rate design should do the following:

- support beneficial electrification, such that all customers can benefit from transportation electrification from both an economic and environmental perspective;
- support state environmental, economic, and electric and transportation system policy goals;
- allow individuals, fleets, mass transit, school districts, and medium and heavy-duty truck operators to make economic decisions on electrification based on their needs;
- support equitable cost recovery based on class cost of service and,
- encourage optimal management and use of the electric grid and power supply system.

Q7. WHAT ARE THE RATE CLASS SPECIFIC COSTS AND BENEFITS FOR ELECTRIC VEHICLE RATES, AND HOW ARE THESE CATEGORIZED AS DIRECT AND INDIRECT?

A7. Specific costs associated with EV rates may include line extension policies, make-ready costs, cost to serve, cost of incremental load, rebates/incentives, program administration, managed charging software, and distribution and transmission upgrades. How these costs are categorized as direct or indirect can vary depending on the utility's service area and policy objectives of the commission. Direct costs are generally those associated with

[1] Phase-1-Rate-Design-paper-July-2021.pdf (evtransportationalliance.org).

infrastructure investments and are identifiable as incremental costs of serving the EV market. Indirect costs, on the other hand, are associated with the impact of EV adoption on the power system and are often not immediately observable.

Indirect benefits of EV rate design may include flattening load shapes and avoiding transmission and distribution additional spending (known as "Peak Avoidance"), as well as reduced greenhouse gas emissions.

Q8. IS THERE A STANDARDIZED MODEL UTILITIES USE TO ALLOCATE DIRECT AND INDIRECT RATE CLASS SPECIFIC COSTS AND BENEFITS FOR EV-ADOPTION-SUPPORTIVE RATE DESIGNS?

A8. EV rate design is influenced by a variety of factors and objectives and there is no one-size-fits-all approach to design and cost allocation. Approaches vary and are frequently dependent on the policy objectives of a jurisdiction or utility. These rates may have different cost allocation methods than the general service rates, depending on the policy objectives of the utility and regulators, and characteristics of the local EV market. For example, some EV rates may allocate more costs to fixed charges or demand charges, while others may allocate more costs to energy charges or time-of-use pricing.

Q9. HOW ARE THESE COSTS AND BENEFITS CALCULATED AND ALLOCATED AMONG DIFFERENT RATE CLASSES AND CUSTOMER SEGMENTS?

A9. Allocation of costs for EV rates may benefit from nontraditional rate-making methods. These include the unique needs and characteristics of EVs, as well as how charging infrastructure can best benefit all grid users across various use cases, such as residential, public, and fleet settings. By taking these factors into account, utilities can develop EV rate designs that effectively support EV adoption while also balancing the needs of all grid users.

Q10. ARE THERE FACTORS THAT MAKE EV RATE DESIGN DISTINCT FROM OTHER RATE CATEGORIES?

A10. Yes, the variability and potential flexibility in EV usage patterns compared to traditional loads adds a layer of complexity to the rate design process. This variability and flexibility are highly dependent on use case (residential, public, fleet, etc.), but understanding the various use cases and offering corresponding rate designs can benefit all users of the grid.

It should be noted, however, that some EV stakeholders argue that EV charging should be a separate rate class. The Alliance for Transportation Electrification counters this argument noting:

> This would be a significant departure from traditional utility practice that does not assign rate classes to specific technologies, but rather bases such assignment on load profiles of the customer class. [Electric Vehicle Service Providers] EVSPs do not have significantly different load profiles than other members of commercial or general service rate class. But perhaps more importantly, developing a separate rate class would likely end in a worse outcome for customer EVSPs, because in the process of allocating total costs to rate classes, EVSPs would not get the benefit of diversity of load that they get by being in a larger class, and thus would have more costs assigned in a cost-of-service study. And being a separate rate class would not by itself solve any of the problems that currently exist in deciding between volumetric versus rates based on demand charges. And it is important to note that utilities can and do offer special rates within rate classes that don't require the recipients of such rate treatment to be a separate class.[2]

[2] RATE DESIGN FOR EV FAST CHARGING: DEMAND CHARGES, White Paper, Alliance for Transportation Electrification, May 2022 https://evtransportationalliance.org/wp-content/uploads/2022/06/Rate.Design.TF_.Demand-Charge-Paper-Final-5.25.22.pdf

Q11. HOW DOES EV SUPPORTIVE RATE DESIGN VARY BY RATE CLASS?

A11. EV-supportive rate designs should vary by use case and consider the needs and interests of different rate classes. Residential rate designs typically incentivize off-peak charging by offering lower rates or incentives that shape charging behavior and move most charging events off peak. Commercial and industrial customers may also benefit from off-peak rates but have unique business-specific needs that may require tailored EV rate design. Public charging operators seek to avoid demand charges, while fleet operators have diverse needs and opportunities. For instance, some fleet operators must balance building load and fleet charging needs, some may have flexibility to only charge off-peak while others may need to charge at variable times. By understanding the unique needs of each rate class, utilities and regulators can provide rate options that benefit all stakeholders.

Q12. ARE THERE EXAMPLES OF EV SUPPORTIVE RATE DESIGN IN OTHER STATES THAT THE COMMISSION SHOULD STUDY?

A12. Please refer to the testimony of Kevin Kirkham, NIPSCO Exhibit No. 1, pages 6 through 13.

III. POTENTIAL ASSET LIFE IMPACTS OF CHANGING BEHIND-THE-METER (BTM) TECHNOLOGY.

Q13. HOW DO NEW BTM TECHNOLOGIES IMPACT ASSET LIFE?

A13. New BTM technologies such as electric vehicles (EVs) can potentially reduce the useful life of existing electric utility assets and infrastructure in three primary ways:

- Increased demand: As more customers purchase EVs and add to the load behind existing meters, this can result in increased demand for electricity and potentially strain existing distribution infrastructure. For example, studies indicate that 80%[3] of residential EV charging occurs at home. Without an incentive to do otherwise, a significant portion of that load will occur in early evening hours (as commuters return home from work and plug-in their EVs). That timing is coincident with peak loads for many distribution circuits and transformers. As a result, especially in the absence of TOU rates, off peak incentives, or managed charging, transformers may become overloaded an require replacement at a pace that is not currently predicted.

- Changes in load shape: EV charging patterns can differ significantly from typical residential or commercial loads and can place different stress on electric utility assets. For example, a delivery company with a fleet of electric trucks may require a significant amount of energy to charge their vehicles at a single location. While unlikely because of the inherent rate structure impact of demand charges and time-variant costs, if unmanaged, this could result in a concentrated spike in demand during a short period of time, placing stress on the electric utility assets and potentially requiring upgrades to existing infrastructure. If managed, this increase will still occur, but it will ideally be distributed more evenly during off peak hours. Managed or unmanaged, the load shape will change. Further, the entity managing the charging may have additional impact. If a fleet is managing their own charging, they will likely manage to optimize their costs. If the utility is managing all the EV

[3] Incorporating Residential Smart Electric Vehicle Charging in Home Energy Management Systems, National Renewable Energy Lab (NREL), published 2021.

charging in its territory, it will more likely be optimized for system benefits while balancing the needs of customers.

- Changing customer preference and technology evolution: Changing BTM technologies could lead to building new utility infrastructure to support technology that may be obsolete in a few years. An example of this is the transit industry. Ten years ago, compressed natural gas (CNG) was a popular fuel choice for transit fleets. As a result, pipelines may have been upgraded to deliver larger volumes of gas to fuel these fleets – or fueling facilities were located to access higher capacity lines. Now many of these fleets are beginning to electrify. As a result, these pipeline upgrades may not be as profitable over the long term, or excess capacity will emerge on higher capacity pipelines accommodating CNG fueling.

Q14. WHAT CHARACTERISTICS OF EVS CAN BE LEVERAGED TO MITIGATE THESE IMPACTS?

A14. Fortunately, many types of electric vehicle load are proving to be flexible. When incentivized, customers are generally agreeable to moving their charging times off peak or curtailing charging speeds as long as they receive the required charge before the morning commute. This has led to what the Smart Electric Power Alliance (SEPA) has called "massive potential" to manage residential charging to move EV loads off peak. SEPA explained:

> Most personal vehicles are stationary for 22 or more hours daily and are likely within a few hundred feet or less from existing electrical infrastructure. Combined with the fact that the typical EV requires 15 kWh (PHEV) and 22 kWh (BEV) or less per residential charging session on average, which

> can be delivered in 2-3 hours on a level 2 charger, there is a massive potential to manage residential charging. Importantly, this can be done without any disruption in the driver's ability to meet their transportation needs. Similarly, many fleet vehicles operate on a fixed or predictable schedule that leaves them unused for significant portions of the day.[4]

Q15. WHAT TOOLS DO UTILITIES AND REGULATORS HAVE TO MITIGATE THESE IMPACTS?

A15. Proactive electric utilities can manage the impact that EVs have on assets and infrastructure to continue to provide safe, reliable, and affordable electricity to customers. EV supportive rate design is an important tool in mitigating asset life impacts, and these designs can vary by use case. For instance, residential and fleet rates may include Time of Use (TOU) components along with managed charging requirements. TOU rates combined with managed charging can maximize the life of existing assets like distribution transformers by encouraging customers to move the bulk of their charging load to off-peak periods. This has the dual effect of putting downward pressure on rates by creating more system throughput during times of low demand and extending the life of the distribution network assets.

To mitigate the cost burden of stranded assets caused by changing customer preferences, it is important that the fixed costs are collected appropriately over a set time horizon through rates, and that resources are allocated for equipment upgrades and replacements. This permits upgrades and replacements to happen more quickly if needed

[4] Smart Electric Power Alliance (SEPA): The State of Managed Charging in 2021 at 7 (Nov. 2021), available at https://sepapower.org/resource/the-state-of-managed-charging-in-2021/.

and helps protect the utility and rate base if technology or customer preferences evolve rapidly.

These approaches can help electric utilities recover costs associated with changing behind-the-meter technology because collecting fixed costs separately from the kWhs allows for accurate funding of needed upgrades and ensuring the 'system' is made whole. Regular reassessment of EV-supportive rates will likely be necessary as more EVs are adopted and the form factors and utilization of EVs change as the market evolves.

IV. CONCLUSION

Q16. DOES THIS CONCLUDE YOUR PREPARED DIRECT TESTIMONY?

A16. Yes.

VERIFICATION

I, Adriane E. Jaynes, Electric Vehicle Program Manager for American Electric Power, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information, and belief.

Adriane E. Jaynes

Date: June 12, 2023