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Consumer Protection, Technology, and Utilities Committee
Pennsylvania House of Representatives

Submitted via email

Re: SWTCH comments for Informational Meeting on Electric Vehicle Infrastructure

Dear Majority Chair Matzie, Minority Chair Marshall, and Members of the Committee:

SWTCH appreciates the Committee's interest in electric vehicle (EV) infrastructure and is pleased to share these comments.

The topic of EV infrastructure is a broad one that implicates a range of stakeholders, from EV charging providers like SWTCH, to the electric distribution companies (EDCs) that deliver the power, to the legislators and utility commissioners who establish the policy and regulatory frameworks that govern the investment and operation of the chargers. SWTCH offers the following three general comments to inform this broader conversation:

1. Certain sectors such as multifamily properties warrant special attention.
2. Load management has an important role to play and should be incentivized.
3. Open communication standards should be encouraged and harmonized across jurisdictions.

About SWTCH

SWTCH is a leading provider of electric vehicle (EV) charging and energy management solutions for multi-tenant properties across North America, with a focus on multifamily condominium and apartment buildings. SWTCH's end-to-end solution optimizes EV charging usage and manages load to benefit drivers, property owners, and the grid. SWTCH's platform is built using open communication standards to support interoperability, scalability, and cross-platform integrations.

Comments

1. Certain sectors such as multifamily charging warrant special attention.

The multifamily sector is uniquely challenging when it comes to EV charging, and as a result, is underserved. There are a number of reasons for this. The multifamily property sector is diverse, with ownership structures ranging from rental apartments to condominiums to co-operatives. Considerations about who pays, who benefits, and who has access, are much more complicated than for a single-family house. Decision-making rarely rests with one person and is instead spread out among resident associations, property management firms, and/or the property ownership. Even within a category of one particular ownership model – such as condominiums – levels of interest and concerns about EV charging can vary greatly from one condo association to another. These different internal dynamics, combined with electrical constraints unique to each property, all

contribute to a market environment in which the preferred approach for deploying chargers at one multifamily property may be different at another.

From a public policy standpoint this matters because one in five Pennsylvania households is in a multifamily property.¹ Renters comprise a disproportionately high percentage of multifamily households, as do low- and moderate-income (LMI) households. So to enable charging for renters and LMI households in multifamily properties – and the associated transportation cost savings that come from driving electric – intentional policy attention is warranted.

To ensure that multifamily households can fully benefit from EV adoption, they need access to at-home charging. It's insufficient for multifamily residents to only have access to publicly available charging, such as nearby curbside charging or charging in public lots or garages. While such public charging plays an important role in the ecosystem, it does not allow drivers to enjoy either the significant or convenience savings associated with charging one's vehicle overnight at home. Charging is about more than access; it is also about affordability and convenience.

One of the challenges associated with incentivizing chargers at multifamily properties is that the properties are not publicly accessible. Government funding incentives such as the federal government's National EV Infrastructure (NEVI) Formula Program often condition their funding upon a public access requirement. This eliminates these funding programs as a tool to incentivize multifamily charging. The Commonwealth and its EDCs have the ability to step in and address this funding gap.

SWTCH believes a variety of approaches can and should be taken to enable customers to install electric vehicle charging. Both utility-owned and privately owned charging programs are valuable tools in the proverbial toolbox for expanding charging access at multifamily properties. Indeed, utility-owned infrastructure can serve as an effective complement to privately deployed charging infrastructure in many markets.

2. Load management has an important role to play in mitigating grid impacts, and it should be incentivized.

Intelligent load management is often an undervalued solution that can reduce expenses both at the facility level and also system-wide on the grid. SWTCH Control® is SWTCH's proprietary automated load management system (ALMS) that can help property owners avoid the need for costly upgrades to the master panel and/or service to the property while still dispensing the full amount of energy a vehicle needs during its charging session. SWTCH Control® does this by dynamically managing charging load, not just within the constraints of a residential dwelling unit's load or even of a dedicated sub-panel for EV chargers, but for a property's overall load.

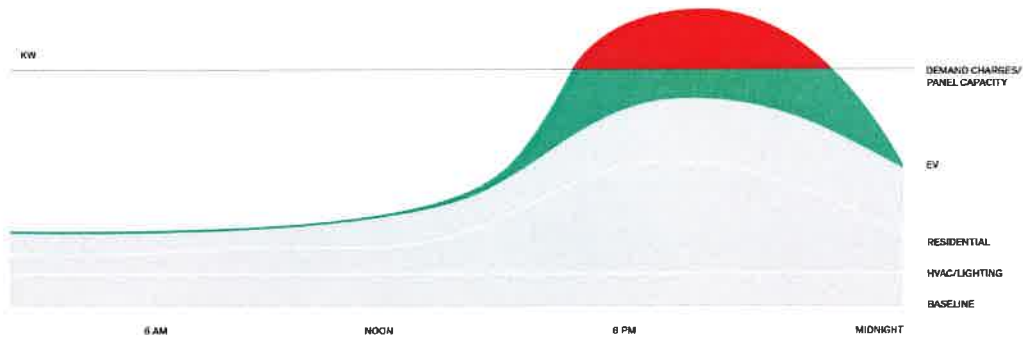
The two graphics below illustrate how a SWTCH Control®-type of ALMS can manage load for a typical multifamily apartment or condominium building. The X axis represents 24

¹ United States Census Bureau, American Community Survey, S2504, Physical Housing Characteristics for Occupied Housing Units, <https://data.census.gov/table?q=Housing&g=040XX00US08&y=2019&tid=ACSS71Y2019.S2504>

hours in a weekday from midnight to midnight. The Y axis represents the building's overall load.

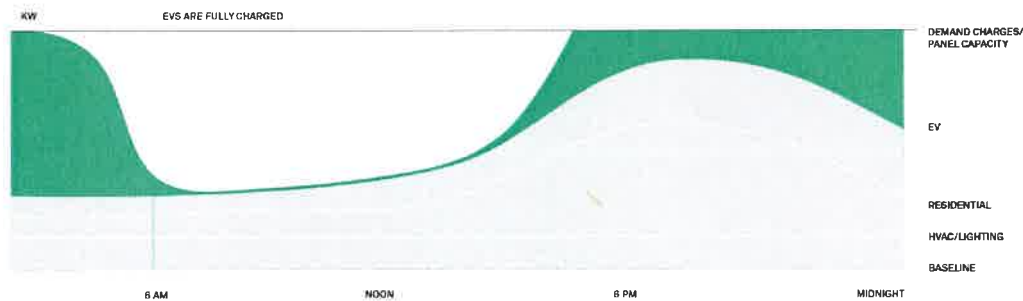
In the Unmanaged Charging Scenario below, the gray load curves represent the non-EV charging load. This includes the building's baseline load, its HVAC and lighting load, and its residential load. As people return home after work and school, this residential load of electric stove tops, clothes dryers, vacuums, and other appliances and devices has an evening peak. The load shown in green is the EV charging load. Similar to residential load, when drivers return home from work and plug in, the EV charging load adds to the evening peak. If left unmanaged, the combined load can exceed the building's overall electrical capacity for its master panel and utility service to the property. This excess load is shown in red.

EV Charging Scenario: Unmanaged Charging



In the Managed Charging Scenario below, an ALMS senses when the building's overall load risks exceeding its panel capacity. The ALMS automatically throttles down the EV charging load and shifts it to overnight hours when the building's residential and other loads diminish, thereby making capacity available once again to charge the EVs.

EV Charging Scenario: Managed Charging



Note that in both scenarios, the total amount of energy dispensed to the EVs is the same, and all EVs are fully charged and ready to go in the morning. The difference is in how the

ALMS system enables the facility owner to shift the EVs' evening peak load (shown in red in the unmanaged charging scenario) to periods of ample supply during the late-night and early morning hours (shown in green in the managed charging scenario).

These two scenarios illustrate the value afforded by a dynamic ALMS-based EV charging solution. By dynamically managing load in the manner illustrated above, an ALMS solution can enable a property owner to install higher-powered chargers on shared circuits. This can unlock significant cost savings while still enabling installation of a full complement of EV chargers by reducing the number of circuits needed to serve the chargers, and also by mitigating the need to pay for often costly utility-side service upgrades. These savings are not just theoretical; SWTCH delivers these cost savings regularly to customers.

At a more macro level, one can see how ALMS also provides value to the grid more broadly and its ratepayers. By managing when and how EVs charge at scale, they can shift and shape load on the system, charging when electricity is more plentiful and cheap, and enabling utilities to spread out their often-significant fixed system costs over a greater volume of kilowatt hours sold. This in turn applies downward pressure on rates to benefit all ratepayers. (Indeed, SWTCH is currently participating in a utility-scale demand response pilot that leverages the volume of EV charging energy not dispensed during a demand response event at scale to provide value to the grid.) Other states' experience has conclusively demonstrated the value of such managed EV charging on the grid.²

Utilities in other jurisdictions have recognized the importance of a wide range of load management tools. In New York, for example, utilities recently launched a Load Management Technology Incentive Program that offers incentives for energy storage as well as advanced load management software and energy management systems.³ The program also provides flexibility for other technologies that can effectively manage load to participate. Since the New York incentive is structured as a percentage of technology costs, it pushes participants toward lower-cost solutions that can achieve similar outcomes.

3. Open communication standards should be encouraged and harmonized across jurisdictions.

Open communication standards future-proof investments in infrastructure, avoid stranded assets, and ensure maximum customer choice. Open Charge Point Protocol (OCPP) serves as the intermediary between charging hardware and network management software, enabling station operators to leverage a single network provider to manage multiple hardware options. This level of flexibility is crucial to effectively deploy EV charging, particularly in the multi-unit dwelling contexts that SWTCH supports. Building owners often install charging equipment sequentially over time to meet growing demand from their residents. OCPP can ensure interoperability across providers and over time to

² See, e.g. Fitch, T., Frost, J., and Whited, W., (2022, December). *Electric Vehicles Are Driving Electric Rates Down. December 2022 California Update*. Synapse Energy Economics. <https://www.synapse-energy.com/sites/default/files/EV%20Impacts%20December%202022.pdf>.

³ State of New York Public Service Commission. Case 22-E-0236. Proceeding to Establish Alternatives to Traditional Demand-Based Rate Structures for Commercial Electric Vehicles. Joint Utilities' Electric Vehicle Load Management Technology Incentive Program.

SWTCH comments to the House Consumer Protection, Transportation, and Utilities
Committee
March 6, 2024
Page 5 of 5

reduce the risk of stranded charging assets. Additionally, OCPP supports continued innovation and competition even after initial purchase and installation, because as customers will not be locked into one hardware or software provider.

SWTCH is also believes it is important that the industry as a whole shift toward use of the ISO 15118 standard. Ensuring that EVs can effectively communicate with the grid will be critical to maintain reliability in light of the anticipated growth of EV charging load on the grid.

At a more macro level, as the legislature, the Public Utility Commission, and other agencies consider what standards are warranted for any taxpayer or ratepayer-funded investments, SWTCH encourages harmonization of standards across jurisdictions. Many states have a shared interest in promoting a consistent and reliable charging experience for drivers and have instituted proceedings and working groups to consider various standards. Harmonization of standards can help enable the industry and its supply chain to provide equipment, software, and services in a cost-effective and timely way.

In Closing

SWTCH appreciates the Committee's longstanding interest in transportation electrification. SWTCH looks forward to continuing to collaborate and inform the Committee's deliberations.

Thank you for your consideration of these comments. If you have questions or if I can provide more information, please contact me at josh.cohen@swtchenergy.com or 202.998.7758.

Respectfully,

A handwritten signature in blue ink, appearing to read "Josh Cohen", with a long horizontal flourish extending to the right.

Josh Cohen
Head of Policy