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IN THE MATTER OF THE APPLICATION OF ARIZONA PUBLIC SERVICE COMPANY FOR PROPOSED ELECTRIC VEHICLE READINESS DEMONSTRATION PROJECT	DOCKET NO. E-01345A-10-0123 APPLICATION

With this Application, Arizona Public Service Company ("APS" or "Company") is seeking approval of its Electric Vehicle Readiness Demonstration Project ("ev-READY Project" or the "Project") in compliance with Arizona Corporation Commission ("Commission") Decision No. 71104 (June 5, 2009).

I. BACKGROUND

In Decision No. 71104, the Commission ordered APS to "conduct a vehicle-to-grid feasibility and cost benefit study and file that study ("EV Study"), as well as a proposed vehicle-to-grid program for the Commission's consideration, no later than April 2, 2010." On April 1, 2010, the Company filed in this docket its EV Study, as well as an overview of its Electric Vehicle Readiness Development Program. The overview outlined the Company's approach to effectively prepare its customers and service territory for the availability of electric vehicles and plug-in hybrid electric vehicles (collectively referred to as "EVs") in the coming decade. The Company also committed to submit an EV Program during third quarter 2010 as part of that filing. APS is filing the proposed ev-READY Project to comply with that commitment (attached as Attachment 1 of this filing).

II. ev-READY PROJECT OVERVIEW

APS anticipates the arrival of EVs in Arizona on a limited basis in the near future. In 2011, more than 500 EVs will be available to Arizona consumers.[1] APS's ev-READY Project positions the Company to be an integral player in the successful deployment of EVs and its associated charging infrastructure, which is commonly referred to as Electric Vehicle Supply Equipment ("Charging Station"). The Project will provide participating customers with several options designed to minimize lifestyle impacts and concerns that may arise due to the purchase of an EV. The Project will also allow APS to streamline and coordinate the EV installation and integration process for the participating customer, which in turn will allow the Company to anticipate and minimize any localized distribution system impacts related to the introduction of EVs.

Additionally, the ev-READY Project will help APS leverage the ongoing installation of smart grid technologies by introducing Demand Response ("DR") programs aimed specifically at managing the sharp increase in individual residential customer peak load that may be experienced due to at-home EV charging ("Smart Charging"). These programs are designed to mitigate any adverse impacts to the APS distribution system caused by EV charging patterns. Another component of the Project allows APS to test the feasibility of Vehicle-to-Grid ("V2G") and Vehicle-to-Building ("V2B") smart grid applications. Data collected through this testing will allow APS to study distribution system performance caused

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[1] On August 5, 2009, ECOtality North America, was awarded a $99.8 million grant from the U.S. Department of Energy ("DOE") to embark on The EV Project, which it launched on October 1, 2009 and will last approximately 36 months. On June 16, 2010, The EV Project was expanded and granted an additional $15 million by the U. S. DOE, bringing the total value of The EV Project to approximately $230 million (including public and private financing). The EV Project will collect and analyze data to characterize vehicle use in diverse topical and climatic conditions, evaluate the effectiveness of charge infrastructure, and conduct trials of various revenue systems for commercial and public charge infrastructure. The ultimate goal of The EV Project is to take the lessons learned from the deployment of the first 8,300 electric vehicles, and the charging infrastructure supporting them, to enable the streamlined deployment of the next 5,000,000 electric vehicles. In 2010, charging infrastructure will be deployed in major population areas, including Phoenix and Tucson.

In Arizona, The EV Project focuses solely on the Tucson and Phoenix metropolitan areas. Due to this geographic limitation, a large number of potentially interested EV owners would not have access to the benefits of that program. The ev-READY Project would target not only customers within metro-Phoenix, but also would look at how to spur adoption in other parts of the APS service territory

by the interaction between these advanced technologies, and will provide a better understanding of how to maximize the benefits of this technology in the future.

APS designed the ev-READY Project as a two-year demonstration project, effective from the date of Commission approval; however, the Company may extend the Project beyond the two-year period based on customer participation levels and associated program funding. With the ev-READY Project, APS will be studying significant information regarding the long-range issues related to the development and implementation of EVs and their impact on the electric system. The information obtained from the Project should allow APS to proactively manage the adoption of EVs more effectively in the future.

III. ev-READY PROJECT COMPONENTS

The ev-READY Project will include the following primary program components: (A) Charging Station programs for residential customers, commercial customers, and public Charging Stations; (B) a Smart Charging program; and (C) several experimental rates to support the Charging Station programs.

A. Residential, Commercial and Public EV Charging Programs

The Company's EV charging programs are themselves divided into discreet parts. These include: (1) a residential customer program, which includes incentives for customer-owned Charging Stations, or in the alternative, the use of an APS-owned Charging Station offered at a monthly fee;[2] (2) a commercial program, which includes the use of an APS-owned Charging Station offered at a monthly fee for employee or consumer use; and (3) a public charging program in which APS will install Charging Stations in selected locations within the Company's service territory that will be available to the general public on a point-of-sale fee basis.

[2] To be eligible to participate in the ev-READY Project, customers must own a qualified EV. Customers owning low-speed Neighborhood Electric Vehicles, as defined in A.R.S. § 28-101(36), do not qualify for participation in the Project.

1. Residential Customer EV Charging Program

Although a home use EV Charging Station is not a prerequisite to owning an EV, many EV models require more charging power than is available through a typical residential 120-volt outlet. The average cost of purchasing and installing a residential Charging Station in a customer's garage is an estimated $2,000-$4,000 based on the type and location of the Charging Station. This cost added to the purchase price of the EV may create an economic burden to the residential customer. In addition, the customer will also have to manage the integration of the installation of the Charging Station with multiple parties. The subsequent incremental load associated with EV charging could also lead to adverse system impacts. For these reasons, the residential program is designed to lower the customer's up-front installation costs for a Charging Station and to provide APS with advance notice of EV load impacting the electric grid. This will be accomplished through two options: Option 1 – a residential incentive; and Option 2 – the installation of an APS-owned Charging Station. Customers choosing either option will be eligible to receive service under Experimental Rate Schedule ET-EV (Electric TOU – Electric Vehicles), attached as Exhibit A to Attachment 1 of this filing, and more fully described in paragraph C of this section.

Option 1 – Residential Incentive

The first option offers residential customers a $500 incentive payment toward the installation of a Charging Station at their home, upon proof of purchase of an EV and the corresponding Charging Station.[3] This offering would be limited to the first 500 qualifying participants.[4] The incentive will lower the customer's initial costs for the Charging Station, and provide APS with information about the location of Charging Stations and their load impacts on the electric grid. Such customer disclosure and advance notice of additional load from Charging Stations would help APS proactively manage any potential adverse grid

[3] Customers will be responsible for any tax liability associated with this incentive.

[4] Customers participating in The EV Project, the DOE-funded research project testing deployment and utilization of charging equipment in 13 U.S. cities (including Phoenix), would not be eligible, as they are already receiving a charging station at no cost as part of that program.

impacts, for example, if multiple Charging Stations were located on a specific distribution transformer.

Option 2 – APS-Owned Residential EV Charging Station

The second option allows residential customers to elect to use a Company-installed, Company-owned Charging Station for home use, again upon proof of purchase of a qualifying electric vehicle. The Company would own the Charging Station and be responsible for any maintenance or equipment replacement. The customer would be assessed a flat monthly fee, which will be set based on the term of the service agreement that the customer chooses. The monthly fee would be $68.33 for a 3-year contract term or $48.08 for a 5-year contract term. This monthly fee will recover the revenue requirements of the installed cost of the Charging Station and ongoing operation and maintenance costs of the program pursuant to Experimental Rate Schedule EVC-RES (Electric Vehicle Charging – Residential), attached as Exhibit B to Attachment 1 of this filing.

The Charging Station would be electrically interconnected into the service panel, behind the house meter, such that the usage would be metered through the existing meter. This option eliminates a potentially large up-front cost, which may be an economic barrier to EV adoption. Additionally, this option streamlines the coordination between the customer, the contractor, the municipality, and the utility, providing a seamless installation process. Upon installation of the Charging Station, APS's contractor would train the residential customer on the operation of the station, and would explain any rate options the customer may have chosen. This offer would be limited to the first 500 qualifying residential participants.[5] Customers selecting this option will be placed on Experimental Rate Schedule ET-EV.

APS's direct involvement in Charging Station ownership and Smart Charging protocols (described more fully below in paragraph C of this section) will allow the Company to better understand the operational characteristics of this type of equipment, typical charging

[5] Customers participating in The EV Project would not be eligible as they are already receiving a charging station at no cost as part of that program.

behavior of customers, and how to proactively optimize the integration of these types of resources, while mitigating any potential system impacts.

2. Commercial and Public EV Charging Programs

Option 1 – Commercial EV Charging Program

Under the Commercial EV Charging Program, the Company will offer the use of APS-owned Charging Stations to commercial customers. These Charging Stations would be located behind a commercial customer's meter where the host site would provide the charging services at no cost to their employees or customers. Commercial customers electing to have an APS-owned Charging Station installed behind their meter would pay a fixed monthly fee of $320.92 for a 3-year contract term or $209.64 for a 5-year contract term, pursuant to Experimental Rate Schedule EVC-GS (Electric Vehicle Charging – General Service), attached as Exhibit C to Attachment 1 of this filing. This monthly fee would likewise cover the associated installation cost and ongoing operation and maintenance costs as part of this service offering.[6] APS designed the fixed monthly fee to recover the rate-based cost of the Charging Station over the anticipated life of the asset, including typical anticipated installation and maintenance costs. This offer would be limited to the first 100 qualifying non-residential Level 2 Charging Station[7] installations.

Option 2 – Public EV Charging Program

APS will install and own 100 Level 2 Charging Stations (inclusive of those installed as part of the Commercial EV Charging Program) and ten DC Fast Charging Stations,[8] which would be available to the public to charge their EVs, and will be located across the Company's service territory. The public charging program will provide customers who reside both inside and outside of the metro Phoenix area the ability to charge EVs in convenient and accessible locations outside of the home, and to enable increased longer-

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[6] APS currently estimates the average installation cost of a non-residential Charging Station will be approximately $7,500.

[7] A Level 2 Charging Station is capable of providing between 6-8 kilowatts of power to an EV and can charge an EV in about 4-6 hours.

[8] A DC Fast Charging Station can provide up to 200 kilowatts of power, charging 50% of an EV's battery in about 15 minutes.

distance travel throughout the state. This option will be pursued in conjunction with the Commercial Customer EV Charging Program described above. This option will be preferred by host customers or landowners who desire not to have cost responsibility for the energy consumed by EVs utilizing the Charging Station, but who wish to offer this convenience to their consumers.

The public charging program will be priced on a point-of-sale basis under Experimental Rate Schedule EV-PS (Electric Vehicle – Point of Sale), attached as Exhibit D to Attachment 1 of this filing. This rate will be computed as follows:[9]

May – October Billing Cycles (Summer)	November – April Billing Cycles (Winter)
$0.32382 per kWh during On-Peak hours, plus $0.23662 per kWh during Off-Peak hours	$0.30439 per kWh during On-Peak hours, plus $0.23662 per kWh during Off-Peak hours

Under this rate schedule, the customer will render payment for the transaction amount at the point and time of purchase via a pre-paid card, credit card, or other method acceptable to APS. This rate schedule is an energy-only rate and has been designed to recover the fixed and variable costs associated with the purchase, installation, and on-going operations and maintenance of Charging Stations in a variable manner. The public EV charging program will complement The EV Project, the DOE's research project, which is focused solely on the testing of charging stations within the Phoenix and Tucson metropolitan areas and the Interstate 10 corridor between those cities.

B. Smart Charging

APS has designed the Project to leverage the ongoing installation of smart grid technologies by introducing DR programs aimed specifically at managing the sharp increase in individual residential customer peak load caused by at-home EV charging. By proactively managing this increased load, APS will be able to minimize overall system impacts. These impacts can include a higher cost of generation to meet the increased demand, as well as, increased costs to upgrade distribution equipment. APS will require certain participating

[9] These rates will also be subject to all applicable Adjustment Schedules, taxes and service fees.

customers to participate in a test Smart Charging DR program. The testing of Smart Charging protocols is designed to reduce energy usage during peak system times or under stressed system conditions. The limited tests would typically occur during the hours of 5 p.m. and 9 p.m. on weekdays and non-holidays during the months of June through September.[10] By incorporating a DR element in the early stages of EV adoption, APS could substantially reduce or eliminate unwarranted service interruptions caused by the high kilowatt requirements of EV charging. This approach will not only help the customers who own EVs save money, but the overall customer base as a whole. The Smart Charging DR program will be limited to customers being served on Experimental Rate Schedule ET-EV.

C. Experimental Rates

In support of the ev-READY Project, the Company is proposing the following four new experimental rate schedules that will be available to participating customers: (1) ET-EV; (2) EVC-RES; (3) EVC-GS; and (4) EV-PS.

Experimental Rate Schedule ET-EV provides a residential "Super Off-Peak" time period designed to encourage off-peak EV charging, and incorporates a Smart Charging DR program in which the Company will have the ability, under specific circumstances, to directly control the amount of energy the customer will use to charge an EV during critical peak load hours. The customer retains the ability to override the control signal. The "Super Off-Peak" pricing period will be from 11 p.m. to 5 a.m. Monday through Friday, a time period during which APS residential customers traditionally use the least amount of energy, and APS's marginal generation resources are the least expensive. This offering will allow the Company to better understand the operational characteristics of this type of equipment, typical charging behavior of customers, and how to optimize the integration of these types of resources, while mitigating any potential system impacts. Schedule ET-EV will be available to residential

[10] These time periods are typically when the Company experiences extremely high electric demand and exposure to adverse impacts that may affect the distribution system. These adverse impacts can also include a higher cost of generation to serve the increased demand.

customers with a qualifying electric vehicle, including those receiving the monetary incentive option of the program.

Experimental Rate Schedules EVC-RES and EVC-GS will provide the use of APS-owned Charging Stations to residential and commercial customers respectively. Under these rates, APS will charge customers a flat monthly fee that is intended to recover the revenue requirements of the initial installed cost and the ongoing operation and maintenance costs of the Charging Station. Customers can choose a contract term of three or five years, with the longest contract term corresponding to the lowest monthly fee. The customer will have the option to purchase the installed Charging Station at any time, based upon the equipment's remaining depreciated book value. For residential customers, the Schedule EVC-RES may only be used in conjunction with the "parent" rate schedule ET-EV.

The fourth and final EV rate schedule that APS is proposing is the Experimental Rate Schedule EV-PS, which provides the prices for energy purchased at public Charging Stations on a point-of-sale basis. The EV-PS rate schedule is a TOU rate under which the customer would render instantaneous payment for energy utilized to charge an EV, which may require the use of either a personal credit card or a specifically targeted pre-paid card. This rate schedule will send higher price signals to customers during the schedule's on-peak period to encourage customers to utilize the Charging Station during off-peak periods.

The Company requests that the proposed EV Rate Schedules be effective upon Commission approval, and continue to be available for two years from that time. The Company also requests the option to extend the rate availability beyond the two years, with prior notification to the Commission. In addition, the EV-PS Rate Schedule will fall outside of the conventional billing and collection structure set forth in the Commission's Rules; therefore, the Company is also seeking approval to waive its compliance with R14-2-210, to the extent necessary. Finally, the Company is seeking specific Commission approval of these EV Rate Schedules; therefore, APS waives the requirement that the Commission take action within a thirty-day period, as prescribed by A.R.S. § 40-367.

D. Delivery Strategy and Administration

To support the development and acceptance of EVs, it will be important to raise public awareness of their benefits. APS plans to use several communication vehicles to educate consumers on the ev-READY Project, EVs, charging parameters, rate selection, Smart Charging, and interconnection processes. APS will develop and launch a robust website to serve as a one-stop shop for customers to learn the basics of EV ownership.[11] In addition to launching the website, APS will pursue additional consumer outreach channels to promote the Project and broaden awareness, such as providing literature, participating in public educational events, and using cross-promotional opportunities with energy efficiency and renewable programs.

The ev-READY Project is an innovative proposal that involves many complex components. As such, there is the possibility that because of unforeseen circumstances, including customer response, system impacts, administrative or economic considerations, the Company may need to modify, freeze or discontinue some or all aspects of the Project. Discontinuance of the Project could include halting the program prior to completing the entire installation target or unwinding the project and removing the assets. The Company is seeking authorization to modify or discontinue the Project, if necessary, upon thirty days written notice to the Commission.

IV. PROGRAM COSTS AND COST RECOVERY THROUGH DSMAC

Pursuant to Decision No. 67744, the Demand Side Management Adjustor Clause ("DSMAC") is the appropriate mechanism to recover program costs for DR programs. By testing and utilizing inherent DR capabilities, the ev-READY Project will proactively manage the effects of adding increased customer load during peak or critical times. This demand-side reduction will result in both reduced customer and system costs; therefore, the DSMAC is the appropriate cost recovery mechanism for this project. APS estimates that the ev-READY Project will require an investment of approximately $5 million, which includes all program

[11] www.aps.com/cars.

development and management costs as well as all capital investments on items such as Charging Stations and system integration efforts. APS is requesting the ability to recover the revenue requirements associated with the capital investments via the DSMAC until such time as these assets are incorporated into rate base during a future rate proceeding. The impact to an average residential customer's bill is estimated to be $0.05 per month, if the Commission approves this Application to allow for cost recovery beginning in 2011. If the Commission does not approve the inclusion of this Project's cost as part of the DSMAC effective the first billing cycle in March 2011, then APS proposes to recover all actual 2011 expenditures in addition to the forecasted 2012 Project costs via the 2012 DSMAC.

V. CONCLUSION

For the reasons set forth above, APS respectfully requests that the Commission issue an order that:

- Approves, as described herein, the ev-READY Project;
- Approves Experimental Rate Schedule ET-EV (Electric TOU – Electric Vehicles), attached as Exhibit A to Attachment 1 of this filing;
- Approves Experimental Rate Schedule EVC-RES (Electric Vehicle Charging – Residential), attached as Exhibit B to Attachment 1 of this filing;
- Approves Experimental Rate Schedule EVC-GS (Electric Vehicle Charging – General Service), attached as Exhibit C to Attachment 1 of this filing;
- Approves Experimental Rate Schedule EV-PS (Electric Vehicle – Point of Sale), attached as Exhibit D to Attachment 1 of this filing;
- Approves the request to waive compliance with R14-2-210, to the extent necessary, for Experimental Rate Schedule EV-PS;
- Approves the proposed ev-READY Project budget of up to $5 million;
- Acknowledges that DSMAC is an appropriate cost-recovery mechanism for costs of the ev-READY Project; and
- Approves a new DSMAC effective for the first billing cycle in March 2011 that will recover all development, marketing, and research costs and the revenue

requirements associated with capital investments required to implement the ev-READY Project, or in the alternative, approves the recovery of all actual 2011 Project expenditures in addition to the forecasted 2012 Project costs via the 2012 DSMAC.

RESPECTFULLY SUBMITTED this 30th day of September, 2010.

By: _____
Linda J. Arnold
Deborah R. Scott
Attorneys for Arizona Public Service Company

ORIGINAL and thirteen (13) copies of the foregoing filed this 30th day of September, 2010, with:

Docket Control
ARIZONA CORPORATION COMMISSION
1200 West Washington Street
Phoenix, Arizona 85007

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ATTACHMENT 1

Arizona Public Service Company

ev-READY Project

9/30/2010

Electric Vehicle Readiness Demonstration Project

APS

Table of Contents

APS ev-READY Project

ELECTRIC VEHICLE READINESS DEMONSTRATION PROJECT

I. OVERVIEW

In compliance with Decision No. 71104,[1] Arizona Public Service Company ("APS" or the "Company") filed its *PHEV/EV and V2G Impacts and Valuation Study* ("EV Study") with the Arizona Corporation Commission ("ACC" or the "Commission") on April 1, 2010.[2] As part of that filing, APS committed to develop an effective and appropriate program designed to support early adoption of electric vehicles and plug-in hybrid electric vehicles (collectively referred to as "EVs") in the Company's service territory, using information gathered through collaboration with industry stakeholders. APS discussed its intention to evaluate several fundamental topics, including the impact of a comprehensive program on the Company's distribution system and the development of procedures to manage customer vehicle charging habits, that must be addressed and resolved prior to finalizing an EV program. Since the time of that filing, APS has defined a strategy that the Company believes will both proactively encourage customer adoption of EVs in Arizona and ensure that any potential impacts to the reliability of the distribution system are addressed.

The Company's proposed Electric Vehicle Readiness Demonstration Project (the "ev-READY Project" or the "Project") will provide participating customers with several options designed to minimize lifestyle impacts and concerns that may arise due to the purchase of an EV. The ev-READY Project will also allow APS to streamline and coordinate the EV installation and integration process for the participating customer, which will in turn allow the Company to anticipate and minimize any localized distribution system impacts related to the introduction of EVs.

Additionally, the ev-READY Project will provide an opportunity for APS to leverage the ongoing installation of smart grid technologies by introducing Demand Response programs aimed specifically at managing the sharp increase in individual residential customer peak load experienced as a result of at-home EV charging. These targeted programs are known as "Smart Charging", and the Project will allow APS to assess customer use and acceptance of rate schedules incorporating such programs. Another component of the Project is designed to allow APS to test the feasibility of Vehicle-to-Grid ("V2G") and Vehicle-to-Building ("V2B") smart

[1] Issued June 5, 2009.

[2] APS retained Navigant Consulting, Inc. to prepare the EV Study. The EV Study assessed the impacts and likely adoption timelines of plug-in hybrid electric vehicles ("PHEVs") and other electric vehicles ("EVs") in the Company's service territory. Vehicle-to-Grid ("V2G") energy services were also analyzed. The EV Study was filed in Docket No. E-01345A-10-0123.

grid applications. Data collected through this testing will provide APS with the opportunity to study distribution system performance as a result of the interaction between these advanced technologies, and will provide a better understanding of how to maximize the benefits of this technology in the future.

This report presents the framework of the ev-READY Project and its various components, including proposed customer incentives, the preliminary Project deployment budget, and the Project timeline. APS believes that the ev-READY Project provides benefits to all EV stakeholders, and demonstrates the Company's commitment to be an active proponent for, and participant in, the long-term viability of EVs.

II. COMPONENTS OF A SUCCESSFUL EV PROGRAM

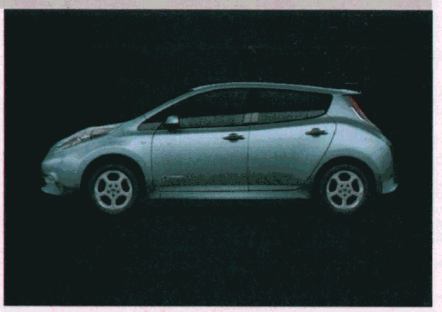
A number of issues must be examined and addressed to ensure an effective integration of EVs into the both the customer's lifestyle and the Company's distribution operations. In developing the ev-READY Project, APS sought the expertise of industry stakeholders in several areas.

A. Cost Estimates

Vehicle Costs

In the upcoming months, several EV purchase options will be available. Among them are the EV models as shown in Figure 1 below:

Figure 1. Available EV Models

Manufacturer/ Model	Type of Vehicle	Charging Time	All Electric Distance	MSRP	Picture
Chevy Volt[3]	PHEV	Level 1: 10 hours Level 2: 4 hours	40 miles	$41K	
Nissan LEAF[4]	EV	Level 2: 8 hours	100 miles	$32.8K	
Tesla Roadster[5]	EV	3.5 hours (using Tesla 240 V, 70 amp EVSE)	245 miles	$109K	

[3] http://www.chevrolet.com/pages/open/default/future/volt.do
[4] http://www.nissanusa.com/leaf-electric-car/index#/leaf-electric-car/index
[5] http://www.teslamotors.com/

A multitude of assumptions impact the total cost of ownership for EVs. In general, though, three key items are likely to drive the overall economics and subsequent adoption rates for EVs: gasoline prices per gallon, tax credits for EV purchases, and battery cost per kWh. Battery costs and tax credits have a direct impact on the instantaneous cost of the EV. For battery costs (often expressed in $/kWh) the global production capabilities of lithium-ion are anticipated to expand greatly over the next decade and should result in significant economies of scale. Tax credits are essentially governmental incentives aimed at driving adoption of EVs. Gasoline prices will impact the long-term operational cost efficiencies of owning an EV.

Tax Credits

Currently, consumers could be eligible for up to $7,500 in tax credits for the purchase of an EV.[6] These tax credits are instrumental in offsetting the higher costs of EVs in the near term. In addition, through the end of 2010 there is an Investment Tax Credit on the purchase of charging equipment (typically referred to as Electric Vehicle Supply Equipment, or "EVSE") of 50% up to $50,000 per location. The extension of this tax credit is critical to the deployment of the public infrastructure needed to establish a robust network of potential charging locations. Without such an infrastructure, there is significant concern in the industry about consumers experiencing "range anxiety," effectively preventing them from purchasing an EV.

EVSE Equipment & Installation Costs

Based on research conducted with both charging equipment suppliers, as well as other utilities, the average cost today of purchasing and installing a residential EVSE in a customer's garage is approximately $2,000 - $4,000 based on the type and location of the charger. This cost assumes that no electrical upgrades (of customer-owned or utility-owned equipment) or additional metering are needed in order for that equipment to be energized. A typical EVSE requires a dedicated 40-amps and 240-volt service (resulting in a maximum draw of approximately 6 to 8 kW). If a customer does not have the capacity in their existing service entrance to accommodate an additional 40 amps, then a service upgrade will be required. Most EVSE installations assume 25 feet of conduit being run to support the installation. Any conduit above and beyond this amount (for example, when a meter panel is on the opposite side of the house from the garage), would result in additional costs. It is important to note that these costs are above and beyond the cost of the EV itself, and must be borne by the customer in order for the vehicle to be charged at home in a reasonable time period.

B. Availability of Charging Infrastructure

Another prevalent factor that consumers weigh when contemplating the purchase of an EV is their specific driving patterns and how/where they will be able to charge their vehicles. "Range Anxiety" and the "fear of being stranded" are two of the major concerns for consumers, and one of the leading obstacles for the EV industry. Although the primary source of charging will be at home during the evening, consumers will have the need to charge publically for either convenience or necessity. If the public infrastructure is not present to support the industry,

[6] http://www.irs.gov/businesses/article/0,,id=214841,00.html

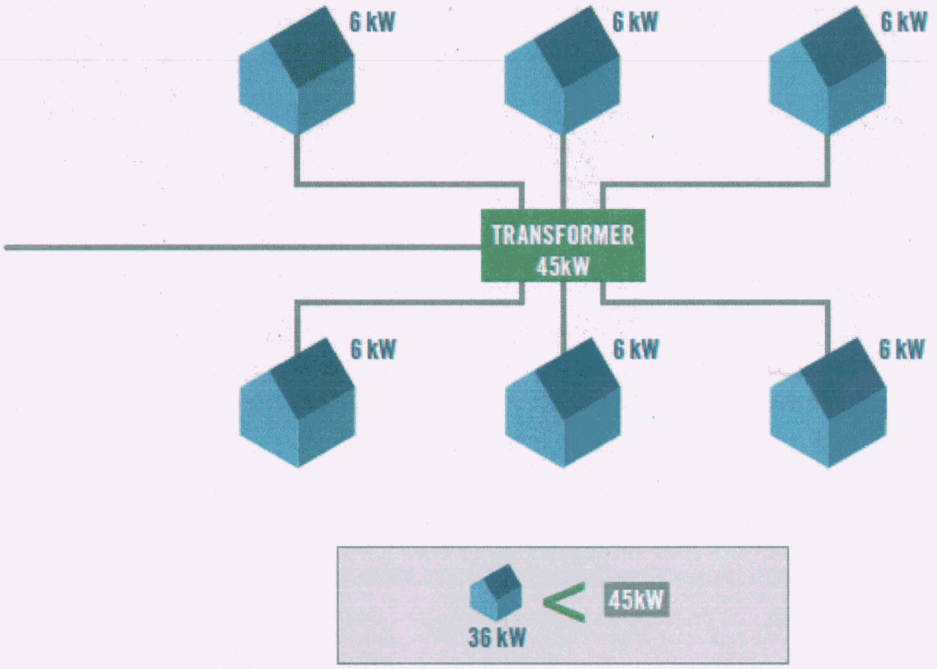
consumers will be less likely to move forward with the purchase of these vehicles. If a certain volume of vehicles on the road are needed in order to support the installation of the public charging, both sides may be waiting for the other to act, with no "win-win" in sight.

C. Impacts to the Distribution System

As discussed in the EV Study, there is not anticipated to be a large-scale cost to APS associated with the introduction of EVs onto the system; however, it is anticipated that localized issues could arise resulting in the need to upgrade certain distribution system assets.[7] These upgrades could be necessary if multiple customers served off of the same facilities were to purchase EVs. Although vehicle adoption rates are initially projected to be low in terms of the total number of EVs in the APS service territory, this "clustering" may occur.

For example, in a typical residential application, APS may serve up to six residential customers off of a single distribution transformer. The size of the house, as well as the corresponding electrical loads (the number/size of the air conditioners, computers, refrigerators, pool pump or electric water heater) and when each of these may be operating, will dictate how much power will be required to serve each home. The average demand for a home in the metro Phoenix area is approximately 6 kW. Assuming the average individual demands of each home coincide, the average demand on that transformer would be approximately 36 kW (six homes x 6 kW/home). This load would be well within normal operating limits of a typical 50 kVa transformer (an average residential power factor of 90% results in a rating of 45 kW – see Figure 2).

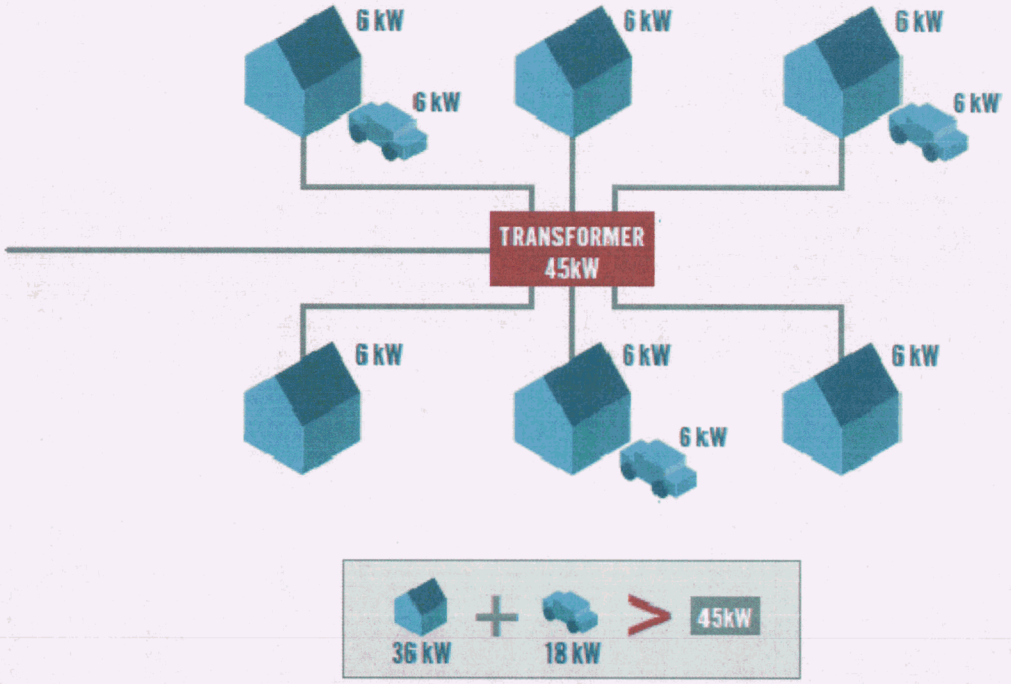
Figure 2. Standard Residential Transformer Load



[7] See EV Study at p. 44.

Now consider a situation where three customers on this same transformer purchased EVs. The addition of three EVSEs, depending on the time of charge, depth of charge, and size of each EVSE, could add an additional 18 kW to the peak, thus resulting in a potential overloading of the transformer (36 kW + 18 kW = 54 kW – see Figure 3).

Figure 3. Residential Transformer Load with EVs



The magnitude and duration of such an overload would determine the corresponding effect and impact to the customers being served from that transformer (*i.e.* power quality issues, shortened transformer life, or unplanned customer outages). It is also important to note that larger homes can draw significantly more power and subsequently compound the aforementioned scenario. As the rate of EV adoption increases, so does the likelihood of such a scenario occurring. In order to proactively manage this situation, APS must be aware of these EV purchases prior to EVSEs being installed.

Existing Time-of-Use rate plans may help to mitigate some of these concerns; however, based on the time of the individual peak loads, their relationship to jointly served customers, and the customers' willingness to delay charging, additional strategies may be needed to minimize system impacts.

Ease of Installation and Coordination

Since many EVs require an EVSE for charging, the customer will have to manage the installation and integration process with multiple parties. Although it is installed behind a customer's meter, it is not as simple as "plugging in" an appliance. Most EVSEs, by nature of their electrical draw, will require professional installation. Because of this, a customer will need to select a qualified installer (licensed contractor), who in turn will need to work with the respective municipality and obtain the applicable permits. They will also need to integrate with the respective electric utility to ensure that there are no system impacts. Because of all the parties involved, timely project coordination is critical. Unforeseen expenses, time delays, and potential unplanned electrical outages are all factors that will negatively affect the customer experience. In order for the industry to thrive, initial customer experiences need to be positive; therefore, processes should be streamlined and stakeholders need to be engaged.

D. Market Penetration

There is much uncertainty nationally as to the percentage of annual car sales that will be comprised of EVs over the next two decades. For example, the Obama Administration has set a target of 1 Million EVs one the road by 2015.[8] Deloitte, on the other hand, estimates 75,000 EVs sold in 2015 in their most aggressive forecast, which translates to less than 200,000 total EVs on the road in 2015.[9] How does this translate into EV sales within the APS service territory? Based on several different forecasts analyzed, including the one created by Navigant Consulting for APS in the EV Study, APS is currently estimating that between 1,000 – 2,000 total EVs will be in the APS service territory in 2015. By 2020, the range becomes much wider – ranging between 9,000 and 21,000 vehicles. That delta between forecasts becomes much more pronounced over time.

E. Battery Life & Capabilities

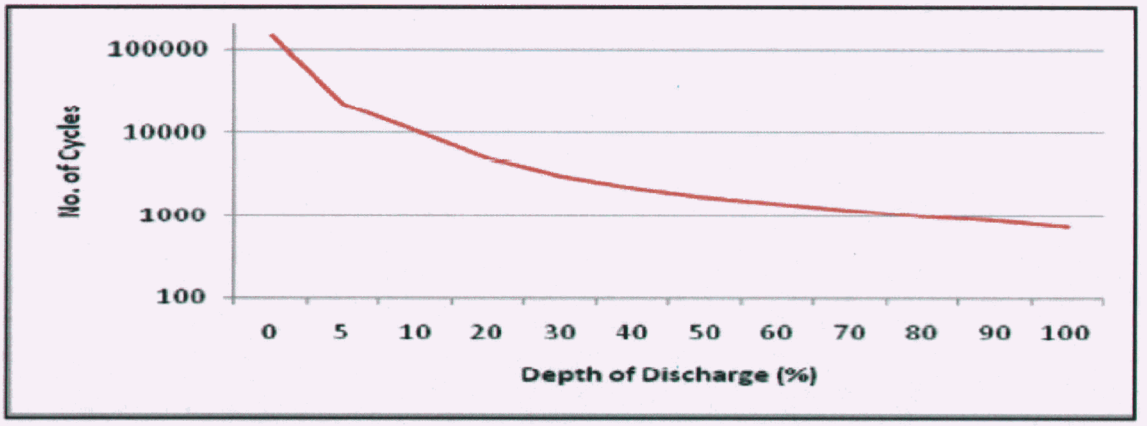
The primary technology currently being deployed for EV batteries is Lithium Ion ("Li-ion"). Much work is presently being done to maximize the overall life of these batteries as well as their storage capabilities. The life of a battery has two components, which are inversely related: depth of discharge and number of cycles:[10]

[8] http://au.ibtimes.com/articles/44444/20100821/electric-car-oil-prices-carbon-emission-ford-2012-focus-plug-in-hybrid-consumer-obama-gm-ford-daimle.htm

[9] *Gaining traction: A customer view of electric vehicle mass adoption in the U.S. automotive market*, Deloitte Consulting LLP (July 2010). This document can be found at the following site: http://www.deloitte.com/view/en_US/us/industries/Automotive-Manufacturing/c3b1a4c65c948210VgnVCM100000ba42f00aRCRD.htm

[10] See EV Study, Figure 23: Deep Discharge Li-ion Battery Cycle Life vs. Depth of Discharge at p. 85.

Figure 4. Battery Life Components



Depth of discharge is a term used to describe how much of the battery's stored energy is dispensed at a given time. As seen in Figure 4 above, if a Li-ion battery were to provide 80% of its stored energy in each usage, it could only be expected to last for 1,000 cycles (where each cycle represents one round-trip discharge and charge). After this point, the battery's useful capacity has likely been degraded to below 80% of its initial rated capacity.

Another factor working against battery life is the detrimental impact of ambient temperature on battery performance. Based on NREL research into the impact of ambient temperatures on Li-ion batteries, the excessive temperatures experienced in Phoenix could lead to a much more rapid loss of useful capacity.[11] One solution currently being pursued is for the vehicle manufacturers to require a substantially larger battery size in the EV so that this degradation would have limited impact after long-term vehicle deployment.[12] As noted earlier, advancement in battery technology (life, performance, cost, and weight) will play a significant role as to the economics and viability of the industry.

F. EV Rates & Metering

EVs represent a significant addition to a typical household's energy requirements. A typical APS residential customer living in a single family home in the metro-Phoenix area uses approximately 17,000 kWh per year. The addition of an EV to their annual load could add 4,800 kWh or more per year and an additional 6 kW of peak demand. With this amount of load increase – both instantaneously as well as cumulatively – many utilities are focusing on the proper ways to incentivize customers to charge in off peak hours, which is a difficult undertaking in regions with little or no current Time-of-Use ("TOU") rate participation.[13] In addition,

[11] "PHEV Battery Trade-Off Study and Standby Thermal Control", National Renewable Energy Laboratory ("NREL"). http://www.nrel.gov/vehiclesandfuels/energystorage/pdfs/45048.pdf at slides 23 and 26.

[12] Boston Consulting Group, "Batteries for Electric Cars: Challenges, Opportunities, and the Outlook to 2020", 2010. http://bcg.com/documents/file36615.pdf at p. 4.

[13] APS is the leading utility in the country with regards to TOU rate participation with over 50% of all Residential customers currently served on a TOU rate.

utilities are independently reviewing whether or not EV load should be separately metered or viewed simply as an additional end-use appliance behind the customer's house meter.

San Diego Gas & Electric is offering multiple EV-specific rates for their customers. Each one contains time-based pricing with discounted rates during "Super Off-Peak" hours (Midnight to 5am). In addition, they are offering an option for an EV-only rate where a separate meter is installed as well as a "whole house" rate limited to customers owning an EV.[14] DTE Energy is offering both a TOU option as well as a "flat-rate" option where the customer pays a bundled price for a utility-subsidized EVSE installed at their home and unlimited charging.[15] Utilities vary across the country as to their approach on the requirement of a second meter. In some cases, a utility may offer rate options for both whole house and EVSE only meters. The separate meter option may provide additional ratemaking flexibility; however, it requires additional up-front costs for the both the consumer and utility.

G. Smart Charging

In the EV Study, Navigant looked at several potential charging profiles compared to a typical load shape for APS:[16]

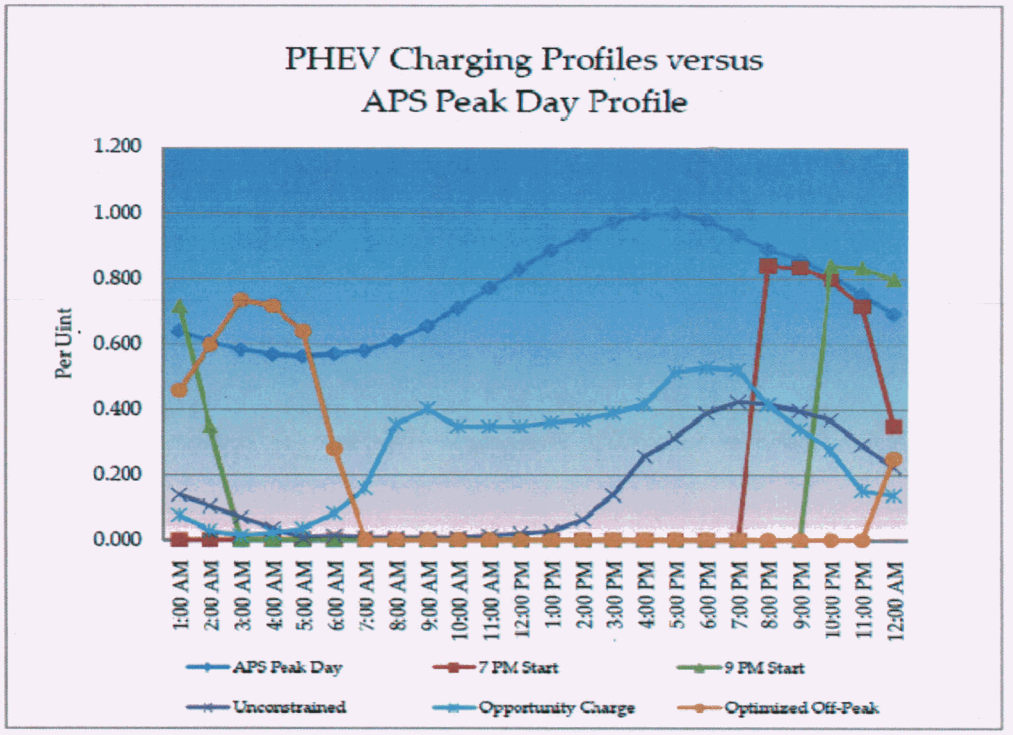


Figure 5. PHEV Charging Profiles v. APS Peak Day Profile

[14] http://www.sdge.com/environment/cleantransportation/evRates.shtml.
[15] http://www.dteenergy.com/residentialCustomers/productsPrograms/electricVehicles/pevRates.html. The flat-rate option is limited to a small subset of all EV rate participants.
[16] See EV Study Figure 11 – PHEV Charging vs., APS Load Profile per Unit of Maximum Aggregate PHEV/EV Demand at p. 47.

In each scenario, shown in Figure 5, the total amount of energy charged is the same; however, the coincident peak demand and sustained level of charging is different based on the limitations of charging within a set time period.

Due to the large potential impacts to a customer's house load and subsequently to the local distribution system, many advocates for EV adoption are looking at incorporating Demand Response intelligence into EVSEs and utility EV programs. Demand Response programs target the peak hours of consumption on a utility's system and attempt to reduce each participating customer's contribution to that peak. Historically, this has been accomplished by focusing on large end-use appliances like air conditioners or water heaters. Due to the potential for EVs to literally more than double the typical Residential customer's peak demand, the incorporation of Smart Charging, or Demand Response targeted at vehicle load, is critical to a utility's ongoing reliable operations of their grid.

Conceptually, a utility would send signals to the EVSE or the car itself either limiting the charging level or delaying the start time of a charge altogether. For example, the utility could remotely signal the chargers to provide only 1-2 kW of charge to the EV during a specific time period. This would allow the customer to continue charging while limiting the impacts to the utility's peak demand or their local distribution network. Some EVSE manufacturers are actively promoting the potential to integrate EVSEs across feeders and allow for them to randomly begin charging – essentially, they work in tandem to minimize system impacts while still ensuring that the vehicles are charged. This capability provides utilities with the means to manage a large penetration of EVs into their service territory without sacrificing system reliability.

H. Public Charging Infrastructure

As customers begin to transition away from gasoline-powered cars and EV adoption grows, the need for a robust charging infrastructure to support transportation becomes apparent. Due to Range Anxiety, it is almost a prerequisite that a geographically diverse population of EVSEs arrive to support early adoption of EVs. The exact amount of chargers that will be required is a matter of debate; however, several industry sources indicate the need for approximately 1.2 to 1.7 EVSEs per EV. For example, for every 10 EVSEs in APS's territory, this would indicate the need for 10 in-home chargers and approximately two to seven EVSEs outside the home.

Separately, there is no national consensus regarding how the energy sold to end-consumers from these non-Residential EVSEs will be billed. Several industry participants are pushing for subscription programs, where customers effectively pay a monthly fee for the right to charge at certain EVSEs. Others are touting "Point-of-Sale" electricity sales, or charging flat fees for the right to park in more advantageous EV parking spots. Still others believe that the host site or utility should not charge for the electricity sold, at least in the near-term. As no national standard has been established, it is very likely that each state, jurisdiction, and/or utility will create their own set of requirements and guidelines.

III. THE ELECTRIC VEHICLE READINESS DEMONSTRATION PROJECT

The APS ev-READY Project is designed to advance customer adoption of EVs in the Company's service territory by providing customers with vehicle charging options, including incentives, that will minimize some of the traditional barriers to acceptance of EVs. The proposed Project is also designed to minimize impacts to the Company's distribution system as a result of the deployment of EVs. In addition, the ev-READY Project will assess customer acceptance of Demand Response pricing developed specifically to encourage off-peak EV charging, allowing the Company to effectively manage the peak load impacts related to EVs.

APS also expects to obtain valuable information from the deployment of the ev-READY project. Through smart grid technologies, the Company will gather load information and charging profiles for individual residential EVs in order to compare data from different EV models, track differences between non-charging and charging usage patterns, and assess the impact of EVs on distribution transformers. This detailed information will also provide the Company with the ability to modify Demand Response programs and pricing to influence customer charging behavior.

The Project includes four primary program components: a residential program where customers would receive an incentive toward purchase and installation of a charging station for home use, a residential program where customers would allow APS to install an APS-owned EV charging station at no up-front cost to the customer, a commercial program which will offer installation of an APS-owned EV charging station on the customer side of the meter for employee or customer use, and a public charging program in which APS will install separately metered vehicle charging stations in strategic locations within the Company's service territory which will be available to the general public.

In support of the ev-READY Project, the Company is proposing four new experimental rate schedules that will be available to participating customers. Experimental Rate Schedule ET-EV provides a residential "Super Off-Peak" time period designed to encourage off-peak EV charging, and incorporates a Smart Charging demand response program in which the Company will have the ability to directly control the amount of energy being used to charge an EV during critical peak load hours. Experimental Rate Schedule EV-PS contains an energy-only pricing methodology that will be applied to energy purchased at public charging stations. Experimental Rate Schedules EVC-RES and EVC-GS contain fixed monthly fees which will apply to customers who choose an APS-owned and installed EV charging station.

Figure 6 represents the proposed primary program components, associated rate schedules, and participation levels as described in further detail below.

Figure 6. APS ev-READY Project Components

Program	Option	Quantity	Rate(s)
Residential Vehicle Charging Program[17]	Option 1 – Residential Incentive	500 Customers	ET-EV Optional
	Option 2 – APS-Owned Residential EV Charging Station	500 Customers	ET-EV and EVC-RES mandatory
Commercial & Public Vehicle Charging Program	Option 1 – Commercial EV Charging Program	100 Level 2 Charging Stations	EVC-GS mandatory
	Option 2 – Public EV Charging Program	10 DC Fast Chargers	ET-PS

The ev-READY Project is designed as a two-year demonstration project, effective from the date of Commission approval; however, the Company may extend the Project beyond the two-year period based on customer participation levels and associated program funding. APS will be closely monitoring and reviewing the deployment of the Project in order to effectively manage the separate programs offered. Additionally, as is true with any new program offering, unforeseen circumstances (such as safety concerns) may require the Company to discontinue the Project prior to the expected completion date. If ongoing reviews suggest that modifications may be necessary to achieve the goals and objectives of the Project, or that program continuation is no longer justified, APS will notify Commission Staff prior to the implementation of any changes to the ev-READY Project.

A. Residential Vehicle Charging Program

Although a home use vehicle charging station is not a prerequisite to owning an EV, many EV models require more charging power than is available through a typical residential 120 volt

[17] Residential customers participating in The EV Project, a DOE-funded research project which is testing deployment and utilization of charging equipment in 13 U.S. cities (including Phoenix), would not be eligible to participate in the ev-READY Project as those customers are already receiving a charging station at no cost as part of the DOE program.

outlet. Even for those models that can be charged without additional specific infrastructure, the length of time required to obtain a full battery charge under those conditions (8 to 12 hours) may create a barrier to EV adoption. APS currently estimates the average cost to install a residential EV charging station (excluding the cost of the charging station itself) to be approximately $1,500 (for a typical installation by a licensed electrician), which when added to the cost of the vehicle and charging infrastructure may create an economic burden on the residential customer. For these reasons, the residential portion of APS's ev-READY Project centers around the provision of vehicle charging infrastructure at the customer's premise, either through an incentive or through the installation of an APS-owned charging station.[18]

Option 1 – Residential Incentive

Residential customers selecting this option would be provided with a $500 incentive payment toward the installation of a vehicle charging station upon proof of purchase of an EV and corresponding proof of installation of charging infrastructure at the residence.[19] This option would be limited to the first 500 qualifying participants.

While the purpose of customer incentives is primarily to assist in lowering the initial costs of a particular program or technology for the early adopter, in this case the incentive offering serves another equally important purpose; namely, it provides APS with advance notice of the addition of a significant amount of load to a specific distribution transformer. As discussed earlier, advance notice of additional load is of critical importance to APS in order to allow the Company to proactively analyze and manage any potential distribution system impacts that may be caused by the EV load. Overall costs are minimized and potential customer service related issues, such as the failure of local transformers or other distribution assets due to the addition of a load spike attributable to EVs, may also be minimized.

Participating customers choosing the residential incentive option will be eligible to receive service under Experimental Rate Schedule ET-EV (Electric TOU – Electric Vehicles, attached as Exhibit A), a Demand Response TOU rate designed to encourage overnight residential EV charging. This rate schedule includes a Super Off-Peak pricing period from 11 p.m. to 5 a.m. Monday through Friday, a time period during which APS residential customers traditionally utilize the least amount of energy and APS's marginal generation resources are the least expensive. During this Super Off-Peak period, the customer will pay lower rates than during off-peak periods in the Company's currently effective TOU rates, and will pay higher rates during other periods. Encouraging customers to charge EVs during this time period will "smooth out" the impact of both the instantaneous increase to peak loads on the distribution system due to the power necessary to charge an EV as well as the cumulative effect of EV peak load requirements on the system infrastructure.

[18] To be eligible to participate in the ev-READY Project, customers must own a qualified PHEV or EV. Customers owning low-speed Neighborhood Electric Vehicles ("NEVs"), as defined in A.R.S. §28-101(36), do not qualify for participation in the Project.

[19] Customers would be responsible for any tax liability associated with this incentive.

Additionally, as a condition to receiving service under Experimental Rate Schedule ET-EV, the residential incentive customer agrees to participate in a Smart Charging Demand Response program in which APS will remotely control the amount of energy being used for EV charging. The Company will send a signal to reduce energy usage only if the customer is charging an EV during the hours of 5 p.m. to 9 p.m. on weekdays during the months of June through September. These time periods are those in which the Company experiences extremely high electric demand and detrimental impacts on the distribution system due to increased system load are most likely to occur. Remote Company control will be limited to no more than 10 times annually, and the customer retains the ability to override the control signal.

Although APS believes Experimental Rate Schedule ET-EV will provide benefits to the participating customer, adoption of this rate schedule is entirely optional for the customer who chooses to receive the residential EV incentive.

Option 2 – APS-Owned Residential Charging Infrastructure

Upon proof of purchase of an EV, participating residential customers may choose to allow APS to place a Company-owned charging station in the customer's residence at no up-front cost to the customer.[20] Eliminating the up-front cost of residential charging infrastructure will encourage adoption of EVs. Additionally, this option streamlines the coordination between the customer, the contractor, the municipality, and the utility, providing a seamless installation process. This option would be limited to the first 500 qualifying residential participants.

APS will utilize qualified contractors to install the charging infrastructure and perform any ongoing associated maintenance. When a residential customer chooses to pursue this option, contractors would schedule a site visit with the prospective customer to conduct an evaluation of the residence to determine placement of the charging station and to confirm compliance with applicable building codes. Should the site evaluation determine that the customer's existing equipment requires an upgrade to accommodate the charging station or meet applicable codes, or for any reason the cost of the charging installation exceeds the standard installation allowance, the customer may elect to either discontinue participation in the program without penalty or pay the incremental difference in cost.

Under this option, customers will be charged a flat monthly fee under Experimental Rate Schedule EVC-RES (Electric Vehicle Charging – Residential, attached as Exhibit B), which will recover the cost of the charging station over the anticipated life of the asset and will include expected operation and maintenance costs. Customers can choose a contract term of three or five years, with the longest contract term corresponding to the lowest monthly fee.[21] The customer will be given the option to purchase the installed charging equipment at the end of the contract period at the equipment's remaining depreciated book value.

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[20] APS will also provide a standard construction allowance of $1,500 toward the cost of installing the equipment. *The allowance is based on the estimated average cost of station installation by a licensed electrical contractor.*

[21] For Experimental Rate Schedules EVC-RES, EVC-GS, and EV-PS, APS has assumed for ratemaking purposes that the Investment Tax Credit related to the purchase of electric vehicle charging equipment will not terminate at the end of the calendar year 2010. If this credit is not extended, APS will revise prices where applicable.

Participating customers choosing to install APS-owned charging infrastructure will be required to receive service under Experimental Rate Schedule ET-EV. This rate schedule is outlined in residential Option 1 above.

B. Commercial & Public Vehicle Charging Program

Perhaps the most prevalent barrier to adoption of EVs is the consumer concern regarding the availability of vehicle charging stations in areas outside of the home. The fear of being stranded away from home while driving an EV, with no options to recharge the battery and return home (dubbed "range anxiety"), continues to shadow the EV industry as vehicles continue to have limited range capabilities. To ease customer concerns with this issue, public charging stations need to be readily available in accessible and convenient locations while battery technology development progresses. APS's proposed non-residential vehicle charging program is designed to provide EV owners with access to charging stations away from home, either at their place of business or at other business locations in publicly accessible areas. The charging stations that will be made available to non-residential customers are typically sized to be able to charge an EV in four to six hours. There will be a total of 100 Level 2 EVSEs and 10 DC Fast Chargers installed as part of this effort, with the Level 2 charging stations segmented between Options 1 and 2 outlined below, based on customer and land owner preference. All DC Fast Chargers will be installed as part of Option 2 below.

Option 1 – APS-Owned Commercial Charging Stations

Under this option, a participating non-residential customer will allow APS to place a Company-owned and installed charging station on the customer side of the meter at no up-front cost.[22] Elimination of the up-front cost of a charging station will encourage non-residential customers to install EVSEs for their employees or customers, helping to alleviate range anxiety concerns of early adopters. Because the infrastructure will be installed on the customer side of the meter, any usage will automatically flow through the customer's standard electric meter and no specialized rate schedule for energy usage is necessary. APS will utilize qualified contractors to install the charging infrastructure. Contractors will follow the same steps for determination of station location and site suitability as outlined in the APS-owned residential charging program. Customers will have the choice of discontinuing participation in the program or paying any incremental cost differential if the site evaluation determines upgrades or other costs above the standard installation allowance are required.

As with the APS-owned residential charging program, participating non-residential customers will be charged a flat monthly fee which will recover the cost of the charging station over the life of the asset, including operation and maintenance costs. Under Experimental Rate EVC-GS (Electric Vehicle Charging – General Service, attached as Exhibit C), customers may choose a contract term of three or five years. The customer will be given the option to purchase the

[22] APS will also provide a standard construction allowance of $7,500 toward the cost of installation of the equipment. This amount is based on the expected average cost of station installation by a licensed electrical contractor.

installed station at the end of the contract period at the equipment's remaining depreciated book value.

Option 2 – APS-Owned Public Charging Stations

At the participating non-residential customer's request, APS will place the Company owned and installed charging station on the Company side of the meter in a publicly accessible location such as a parking lot or other open area. The station will then be available for use by the customers and employees of the participating business. This option will provide an opportunity for the business to promote a "green" platform, and through its advertising the business may encourage additional interest in EVs.

The Company is proposing a Point-of-Sale pricing methodology for energy usage at a non-residential customer's publicly available charging station. Experimental Rate Schedule EV-PS (Electric Vehicle – Point of Sale, attached as Exhibit D) is a TOU rate under which the customer would render instantaneous payment for energy utilized to charge an EV, which may require the use of either a personal credit card or a specifically targeted pre-paid card.[23] The rate schedule will send higher price signals to customers during the schedule's on-peak period to encourage customers to utilize the charging station during off-peak periods.

APS will install and own 10 DC Fast Chargers, capable of charging an EV to 50% battery capacity in as little as 15 minutes, across the Company's service territory in varying locations around the state. The public charging program is designed to provide customers with the ability to charge EVs in convenient and accessible locations outside of the home, and to encourage increased long-distance travel throughout the state. This program will complement the Department of Energy's research project (The EV Project), which is focused solely on the testing of charging stations within the Phoenix and Tucson metropolitan areas.

C. V2B and V2G Testing

As part of the ev-READY Project, APS will test the V2B and V2G potential of EVs using select APS fleet vehicles. Although V2G protocols have a long-term development horizon, it is beneficial to begin the study of the specific impacts of this technology on both the vehicle and the distribution system. APS expects to test the effectiveness of various V2G and V2B applications, along with any potential impacts to the EV battery (in terms of performance and/or life) and any potential impacts to the delivery system (for both the customer and utility). APS anticipates the majority of V2G testing will focus on designing appropriate monitoring and measurement applications and associated infrastructure development, and the potential impacts of cycling procedures which will charge and discharge vehicle batteries under a variety of environmental and system conditions. APS will continue to collaborate with other utilities and industry stakeholders to share information, identify ways for customers to benefit from the use of EVs, and show how these distributed resources might allow utilities to more effectively operate the utility grid.

[23] The ultimate form of payment is contingent upon a forthcoming solicitation, as APS has not yet contracted with a supplier for the public charging stations.

D. Smart Charging

As mentioned earlier, Project participants who are served under Experimental Rate Schedule ET-EV will also participate in a Demand Response test program aimed at managing sharp increases in customer load caused by at-home EV charging. As part of the Smart Charging program, APS will develop and test protocols necessary to control charging station energy usage and manage the impact of control equipment on the greater distribution grid. APS will collect and analyze data related to distribution system performance and the interaction between the EV, the distribution system transformer(s), utility grid operations, and the charging station itself. Valuable information the Company expects to obtain from this component of the ev-READY Project includes:

- Hourly charging profiles of EVs as they compare to both customer usage patterns and distribution feeder load;
- The extent to which use of charging stations might be limited to lower the peak demand impacts for the customer and the local distribution system;
- Customer acceptance of remotely randomizing the start times of vehicle charging where multiple EVs exist on the same distribution transformer; and
- Any necessary infrastructure or software requirements to integrate the ability to control charging stations with overall APS distribution system operations.

The information gathered as part of the Smart Charging program will allow APS to better understand how to maximize the benefit of this technology in the future and will provide operational experience which the Company can utilize as EVs become more prevalent. For these reasons, APS views the Smart Charging program as a critical component in the ev-READY Project, one that is key to the overall success of EVs in the state of Arizona.

E. Customer Information & Outreach

APS is currently developing several methods of communication in order to reach and inform customers regarding the availability of electric vehicles, the need for charging stations and issues surrounding installation of those stations, rate schedules available to ev-READY Project participants, and the benefits of the Smart Charging Demand Response program. First and foremost, APS is launching a robust website (www.aps.com/cars) which is intended to become a "one-stop shop" for customers to learn the basics of EV ownership. Information planned for incorporation into this website includes:

- Description of EVs and associated terminology;
- Requirements and processes for installing charging equipment at a home or business;
- Upon Commission approval, an overview of ev-READY Project program offerings and rate schedules;
- Helpful industry links; and
- Frequently Asked Questions related to the electric vehicle industry.

In addition to the website, APS will pursue additional consumer outreach channels to broaden awareness of the Company's ev-READY Project upon approval from the Commission. The Company is exploring a variety of methods to communicate information including email notifications, literature, public educational events, and cross-promotional opportunities with conservation and renewable programs. Finally, a thorough packet of information will be made available to EV dealerships to educate the sales force regarding the availability of the Project to APS customers.

F. Benefits of a Demonstration Project

APS has developed the ev-READY Project specifically to test various measures which will lead to long-term success in transitioning towards a clean automotive fuel source. The information gained in this demonstration project will lead to:

- Advancement of EV adoption in Arizona;
- Refinement of rate schedules to influence consumer behavior;
- Well-designed Smart Charging Demand Response programs;
- Increased precision in planning future infrastructure deployment;
- Minimization of distribution system impacts; and
- Enhanced customer experiences.

Current market penetration studies forecast the adoption of 1,000 to 2,000 EVs in the APS service territory by 2015. This number does not include the expected 500 to 700 EV Project participants likely to live in the metropolitan Phoenix area.[24] The ev-READY Project is expected to shift that market curve several years forward. It is important to note that the EV Project is focused solely on the Tucson and Phoenix metropolitan areas. Due to this geographic limitation, a large number of potential EV owners will not have access to the benefits of that program. The ev-READY Project allows APS to target not only customers within metropolitan Phoenix, but also would encourage EV adoption in other parts of the APS service territory as well.

G. Budget & Cost Recovery

APS's preliminary budget for the Company's ev-READY Project as proposed in this report is estimated to be approximately $5 million. Table 1 below provides a summary of anticipated spending for this demonstration program. This estimate represents residential incentive spending as proposed for 500 residential customers, the deployment of 610 APS-owned vehicle charging stations, program development, marketing, and research costs.

At this time, the budget is based on preliminary cost estimates. The Company has not yet contracted with vendors to supply the necessary equipment, software platforms, and installation expertise required for the Project to proceed.

[24] The DOE's EV Project is expected to deploy EV charging infrastructure to support this number of EVs for the Phoenix and Tucson metropolitan areas and the connecting Interstate 10 corridor in 2010 and 2011.

Table 1. APS ev-READY Budget Components

	$000s	
	Consumer Products	**% of Cost by Category**
Rebates & Incentives	$250	5.1%
Training & Tech Assistance	$0	0.0%
Consumer Education	$175	3.6%
*Program Implementation**	$3,950	80.7%
Program Marketing	$200	4.1%
Plan & Admin	$320	6.5%
Program Total Cost	**$4,895**	100.0%
Measurement, Evaluation & Research	$100	
Performance Incentive	$0	
TOTAL	**$4,995**	

*Includes all Capital expenditures (equipment, installation, and software upgrades)

The budget includes approximately $3.95 million in capital costs which will be incurred as vehicle charging stations are deployed and the Company's software systems are upgraded and enhanced. Pursuant to Decision No. 67744,[25] the Demand Side Management Adjustment Clause ("DSMAC") is the appropriate cost recovery mechanism for this demonstration project as the Project manages the effects of adding sharply increased customer load during critical hours. APS is proposing to recover the operations, maintenance, and carrying costs for capital investment for the ev-READY Project through the DSMAC on an annual basis until such capital costs can be recovered through base rates in a subsequent rate case. Budgeted carrying costs related to expected capital expenditures are estimated at $250,000 for calendar year 2011, and are based on the Company's currently assumed future pre-tax cost of debt of 7.0% and the 11.0% cost of equity allowed in the Company's most recent rate case settlement. This cost treatment is consistent with the Commission's treatment of capital cost recovery for the Community Power Project – Flagstaff Pilot project expenditures through the RES adjustment mechanism.

APS will provide updated budgets in subsequent Energy Efficiency Implementation Plan filings, and will report on the progress of the ev-READY Project in the progress reports required in the proposed Energy Efficiency Standard Rules.[26]

[25] Issued April 7, 2005 in ACC Docket No. E-01345A-03-0437.
[26] Proposed A.A.C. R14-2-2405.

APPENDIX A

Review of Terminology

Electric Vehicle ("EV") – a vehicle whose battery is charged solely from the grid

Hybrid Electric Vehicle ("HEV") – a vehicle whose battery is recharged from a combination of dynamic braking and the traditional ICE

Internal Combustion Engine ("ICE") – traditional gasoline-powered vehicle

Plug-in Hybrid Electric Vehicle ("PHEV") – an HEV that can also have its battery recharged from the grid

Electric Vehicle Supply Equipment ("EVSE") – power control station or equipment required to charge a vehicle

Level 1 – basic charging type utilizing 120 VAC, 15-20 amp circuit, where charging typically takes between 8-12 hours at 1-2 kW of peak demand

Level 2 – 240 VAC, 40 amp circuit charging station where a battery can be recharged in 4-6 hours at between 6-8 kW of peak demand (likely to be the primary Residential application)

DC Fast Charging – also referred to as "Level 3" charging, this EVSE requires 480 VAC, 3-phase service, where 50% of a battery can be recharged within 10-15 minutes at up to 200 kW of peak demand

Vehicle-to-Building ("V2B") – a concept where the vehicle's battery could be used as a source of back-up power and/or offset to a building's load

Vehicle-to-Grid ("V2G") – an extension of V2B where the vehicle's stored energy is exported to the grid

APPENDIX B

APS Efforts to Date

APS has a long history in the evaluation and promotion of the electrification of the transportation sector. Many milestones and accomplishments have been enjoyed by the Company over the years, including:[27]

- 1967: APS Purchases MARS II EV and drives cross country back to Phoenix.
- 1979: DOE Awards APS EV Testing Contract as a "Site Operator".
- 1979 - 1991: APS uses Jet Industries Battery Electric Vehicle (BEV) in daily operations (meter reading, maintenance, pool cars). APS purchased about 25 vehicles.
- 1991: APS wins the Solar & Electric 500 car race at Phoenix International Raceway (PIR) with the APS/SCE Honda CRX conversion powered by a Zinc-Air/NiCad Battery hybrid vehicle. APS won the race going 106 miles during the 2 hour race. APS receives national recognition in magazines and newspapers.
- 1992: APS participates at the first SAE & Institute of Electrical and Electronic Engineers (IEEE) joint conference (Convergence) in Dearborn MI. The APS Saturn with other OEM prototype BEVs were available for Ride & Drives at Ford's Proving Ground. The Saturn demonstrated significantly higher power (150 kW) and higher performance with its advanced variable speed drive using IGBT's. Proving higher performance than the GM Impact. Five VP's from GM rode in this APS Race Car, which demonstrated that EV could outperform gasoline power car when the weight to horsepower ratio were the same.
- 1993: APS wins a competitive solicitation to test Battery Electric Vehicles (BEV) for the U.S. DOE; and secures several BEV for testing.
- 1994: APS is selected as one of 10 sites in the nation for the GM PrEView Drive Program. Through this program APS was provided 10 GM "Impact" electric vehicles to test and evaluate with 40 APS customers including residential charging installation, electric load data collection, etc.
- 1994: APS creates "EV America" which is a formal invitation supported by the 12 largest electric utilities and the DOE for BEV. Specifications were developed and vehicle testing was performed under APS direction at Phoenix Area Proving Grounds.
- 1996: Arizona is chosen as one of four sites in the nation for the sale of the new GM EV1 electric vehicle. APS installs 15 public charging stations, helps with legislation for EV travel in HOV lanes, and legislation for State incentive on EVs.
- 1996: APS receives Valley Forward Crescordia Award for its EV Program.
- 2009-ongoing: APS participating in EPRI EV working group.
- 2009: APS deploys first hybrid line truck.

[27] For a more complete list of APS's efforts with Electric Vehicles, *see PHEV/EV and V2G Impacts and Valuation Study* (March 20, 2010) prepared by Navigant Consulting, Inc., filed in Docket No. E-01345A-10-0123 ("EV Study") at pp. 67-69.

- 2009: APS sponsors Utility Standards Board White Paper on EV Billing and Settlement Issues.
- 2010: APS commissions Navigant Consulting to evaluate the EV and V2G economics/opportunities, battery technologies, utility impacts, and overall market potential with respect to the APS service territory. APS files the EV Study with the ACC as part of its Electric Vehicle Readiness Development Program.
- 2010-ongoing: APS is a participant in The EV Project, a DOE-funded research project testing deployment of charging equipment and their utilization across 13 U.S. cities.[28]
- 2010-ongoing: APS participates in several utility stakeholder groups to discuss technical and policy issues and/or approaches with respect to supporting the electric vehicle industry.

[28] http://www.theevproject.com/

EXHIBIT A
EXPERIMENTAL RATE SCHEDULE ET-EV
RESIDENTIAL SERVICE TIME-OF-USE
ELECTRIC VEHICLE CHARGING RATE

AVAILABILITY

This rate schedule is available in all territory served by the Company at all points where facilities of adequate capacity and the required phase and suitable voltage are adjacent to the sites served.

APPLICATION

This rate schedule is applicable to Standard Offer and Direct Access electric service required for residential purposes in individual private dwellings and in individually metered apartments when such service is supplied at one site through one point of delivery and measured through one meter. This rate requires the customer to have an Advanced Metering Infrastructure meter, or AMI meter, in place at time of service. Availability of this rate is subject to the availability and installation of required metering equipment and completion of necessary enhancements to the Company's billing system.

Schedule ET-EV shall be available two years after approval by the Arizona Corporation Commission (ACC). The Company may extend the availability beyond that time, at their discretion, with prior notification to the ACC.

This rate schedule is only applicable to customers who own a qualified electric vehicle as determined by the Company. At Company's request, customer must show proof of ongoing electric vehicle ownership. Neighborhood ElectricVehicles as described in A.R.S. § 28-966 do not qualify for this rate schedule.

This schedule is not applicable to breakdown, standby, supplemental or resale service.

SMART CHARGING

Customer agrees to participate in experimental smart charging events where APS may on occasion send a signal to the customer's electric vehicle charging station to control the amount of energy being used for charging. Such events may occur from 5 p.m. to 9 p.m., weekdays, excluding holidays, June through September. Events will be limited to a maximum of 10 per year. Events may be triggered by severe weather, high wholesale prices, or a major generation or transmission outage, as determined by the Company. Up to 2 events per year may be invoked for testing purposes regardless of conditions. Customer will retain the ability to override the control signal.

TYPE OF SERVICE

The type of service provided under this schedule will be single phase, 60 Hertz, at a single standard voltage (120/240 or 120/208 as may be selected by customer subject to availability at the customer's site). Three phase service may be furnished under the Company's Schedule 3 (Conditions Governing Extensions of Electric Distribution Lines and Services) and is required for motors of an individual rated capacity of 7-1/2 HP or more.

RATES

The customer's bill shall be computed at the following rates, plus any adjustments incorporated in this schedule:

Bundled Standard Offer Service

Basic Service Charge: $ 0.556 per day

Energy Charge:

May – October Billing Cycles (Summer)	November – April Billing Cycles (Winter)
$ 0.24777 per kWh during On-Peak hours, plus $0.06458 per kWh during Off-Peak hours, plus $0.04194 per kWh during Super Off-Peak hours	$0.20159 per kWh during On-Peak hours, plus $0.06458 per kWh during Off-Peak hours, plus $0.04194 per kWh during Super Off-Peak hours

Bundled Standard Offer Service consists of the following Unbundled Components:

Unbundled Components

Basic Service Charge:	$ 0.238	per day
Revenue Cycle Service Charges:		
Metering	$ 0.186	per day
Meter Reading	$ 0.062	per day
Billing	$ 0.070	per day
System Benefits Charge:	$ 0.00210	per kWh
Transmission Charge:	$ 0.00520	per kWh
Delivery Charge:	$ 0.03084 $ 0.01200	per On-Peak and Off-Peak kWh per Super Off-Peak kWh

Generation Charge:

May – October Billing Cycles (Summer)	November – April Billing Cycles (Winter)
$0.20963 per kWh during On-Peak hours, plus $0.02644 per kWh during Off-Peak hours, plus $0.02264 per kWh during Super Off-Peak hours	$0.16345 per kWh during On-Peak hours, plus $0.02644 per kWh during Off-Peak hours, plus $0.02264 per kWh during Super Off-Peak hours

DIRECT ACCESS

The bill for Direct Access customers will consist of the Unbundled Components Basic Service Charge, the System Benefits Charge, and the Delivery Charge, plus any applicable adjustments incorporated in this schedule. Direct Access customers must acquire and pay for generation, transmission, and revenue cycle services from a competitive third party supplier. If any revenue cycle services are not available from a third party supplier and must be obtained from the Company, the Unbundled Components Revenue Cycle Service Charges will be applied to the customer's bill.

TIME PERIODS

The On-Peak time period for this rate schedule is 12 noon to 7 p.m., Monday through Friday, excluding the qualifying holidays listed below.

The Off-Peak time period for this rate schedule is 7 p.m. to 11 p.m. and 5 a.m. to 12 noon, Monday through Friday, excluding qualifying holidays listed below, and all day for Saturday and Sunday and qualifying holidays.

The Super Off-Peak time period for this rate schedule is 11 p.m. to 5 a.m., Monday through Friday, excluding qualifying holidays.

Qualifying holidays include: New Year's Day (January 1), Memorial Day (last Monday in May), Independence Day (July 4), Labor Day (first Monday in September), Thanksgiving Day (fourth Thursday in November), and Christmas (December 25). When any holiday listed above falls on a Saturday, the preceding Friday will be recognized as the qualifying holiday. When any holiday listed above falls on a Sunday, the following Monday will be recognized as the qualifying holiday. Mountain Standard Time shall be used in the application of this rate schedule.

ADJUSTMENTS

1. The bill is subject to the Renewable Energy Standard as set forth in the Company's Adjustment Schedule RES pursuant to Arizona Corporation Commission Decision No. 70313.

2. The bill is subject to the Power Supply Adjustment factor as set forth in the Company's Adjustment Schedule PSA-1 pursuant to Arizona Corporation Commission Decision No. 67744, Arizona Corporation Commission Decision No. 69663, and Arizona Corporation Commission Decision No. 71448.

3. The bill is subject to the Transmission Cost Adjustment factor as set forth in the Company's Adjustment Schedule TCA-1 pursuant to Arizona Corporation Commission Decision No. 67744.

4. The bill is subject to the Environmental Improvement Surcharge as set forth in the Company's Adjustment Schedule EIS pursuant to Arizona Corporation Commission Decision No. 69663.

5. Direct Access customers returning to Standard Offer service may be subject to a Returning Customer Direct Access Charge as set forth in the Company's Adjustment Schedule RCDAC-1 pursuant to Arizona Corporation Commission Decision No. 67744.

6. The bill is subject to the Demand Side Management Adjustment charge as set forth in the Company's Adjustment Schedule DSMAC-1 pursuant to Arizona Corporation Commission Decision No. 67744 and Arizona Corporation Commission Decision No. 71448.

7. The bill is subject to the applicable proportionate part of any taxes or governmental impositions which are or may in the future be assessed on the basis of gross revenues of APS and/or the price or revenue from the electric energy or service sold and/or the volume of energy generated or purchased for sale and/or sold hereunder.

CONTRACT PERIOD

Any applicable contract period will be set forth in APS' standard agreement for service.

TERMS AND CONDITIONS

Service under this rate schedule is subject to the Company's Schedule 1, Terms and Conditions for Standard Offer and Direct Access Services and the Company's Schedule 10, Terms and Conditions for Direct Access. These schedules have provisions that may affect the customer's bill. In addition, service may be subject to special terms and conditions as provided for in a customer contract or service agreement.

EXHIBIT B
EXPERIMENTAL RATE SCHEDULE EVC-RES
RESIDENTIAL SERVICE
APS-OWNED EVSE RATE RIDER

AVAILABILITY

This rate rider schedule is available in all territory served by the Company at all points where facilities of adequate capacity and the required phase and suitable voltage are adjacent to the sites served.

APPLICATION

This rate rider schedule is applicable to customers who elect for APS to provide electric vehicle supply equipment (EVSE) on their premises and are served under Rate Schedule ET-EV, the Residential Electric Vehicle Charging Rate. All provisions of Rate Schedule ET-EV will apply in addition to the charges in Schedule EVC-RES. This rate rider schedule is limited to the first 500 qualifying installations, as determined by APS, and shall be available for two years after approval by the Arizona Corporation Commission (ACC). The Company may extend the availability beyond that time, at its discretion, with prior notification to the ACC. Availability of this rate is subject to the completion of necessary enhancements to the Company's billing system.

The service provided under this Rate Schedule is subject to Company's Service Schedule 1.

TERMS AND CONDITIONS FOR STANDARD OFFER AND DIRECT ACCESS SERVICES

The EVSE is Company's equipment and will be installed upon Customer's premises. Customer shall exercise all reasonable care to prevent loss or damage to Company property installed on the Customer's site for the purpose of supplying this Service to the Customer. The Customer shall be responsible for payment for loss or damage to Company property on the Customer's site arising from neglect, carelessness or misuse and shall reimburse Company for the cost of necessary repairs or replacements. The Customer shall be responsible for providing satisfactory access to the Company and notifying Company of any failure in Company's equipment.

RATES

The monthly charges for EVSE charging service are provided below for optional three year and five year contract terms. The Company may change these charges from time to time during the customer's contract term, as approved by the ACC. The energy requirements for charging the customer's electric vehicle will be metered and billed according to schedule ET-EV.

Contract Term	EVSE Monthly Charge
Three Years	$68.33 per month
Five Years	$48.08 per month

CUSTOMER AGREEMENT AND CONTRACT PERIOD

Customers accepting service under this rate rider schedule are required to execute a service agreement. The customer may choose a term of three or five years at their discretion. When the contract term expires, billing will continue on a month-to-month basis until the customer executes a new agreement or terminates service.

TERMS AND CONDITIONS

Service under this rate schedule is subject to the Company's Schedule 1, Terms and Conditions for Standard Offer and Direct Access Services and the Company's Schedule 10, Terms and Conditions for Direct Access. Specifically, and without limitation, sections 5.2 (Responsibility: Use of Service or Apparatus) and 5.3 (Service Interruptions: Limitations on Liability of Company) shall apply to the Company's equipment installed to provide this service. These schedules have provisions that may affect the customer's bill. In addition, service may be subject to special terms and conditions as provided for in the customer service agreement.

EXHIBIT C
EXPERIMENTAL RATE SCHEDULE EVC-GS
GENERAL SERVICE
APS-OWNED EVSE RATE RIDER

AVAILABILITY

This rate rider schedule is available in all territory served by the Company at all points where facilities of adequate capacity and the required phase and suitable voltage are adjacent to the sites served.

APPLICATION

This rate rider schedule is applicable to customers who elect to have APS provide electric vehicle supply equipment (EVSE) on their premises and are served under Rate Schedules E-20, E-32XS, E-32S, E-32M, E-32L, E-32TOU XS, E-32TOU S, E-32TOU M, E-32TOU L, E-34, or E-35. All provisions of the customer's applicable rate schedule will apply in addition to the charges in Schedule EVC-GS. This rate schedule is limited to the first 100 qualifiying installations, as determined by APS, and shall be available for two years after approval by the Arizona Corporation Commission (ACC). The Company may extend the availability beyond that time, at its discretion, with prior notification to the ACC. Availability of this rate is subject to the completion of necessary enhancements to the Company's billing system.

The service provided under this Rate Schedule is subject to Company's Service Schedule 1.

TERMS AND CONDITIONS FOR STANDARD OFFER AND DIRECT ACCESS SERVICES

The EVSE is Company's equipment and will be installed upon Customer's premises. Customer shall exercise all reasonable care to prevent loss or damage to Company property installed on the Customer's site for the purpose of supplying this Service to the Customer. The Customer shall be responsible for payment for loss or damage to Company property on the Customer's site arising from neglect, carelessness or misuse and shall reimburse Company for the cost of necessary repairs or replacements. The Customer shall be responsible for providing satisfactory access to the Company and notifying Company of any failure in Company's equipment.

RATES

The monthly charges for EVSE charging service are provided below for optional three year and five year contract terms. The Company may change these charges from time to time during the customer's contract term, as approved by the ACC. The energy requirements for charging the customer's electric vehicle will be metered and billed according to the customer's applicable rate schedule.

Contract Term	EVSE Monthly Charge
Three Years	$320.92 per month
Five Years	$209.64 per month

SERVICE AGREEMENT

Customers accepting service under this rate rider schedule are required to execute a service agreement. The customer may choose a term of three or five years. When the contract term expires, billing will continue on a month-to-month basis until the customer executes a new agreement or terminates service.

TERMS AND CONDITIONS

Service under this rate schedule is subject to the Company's Schedule 1, Terms and Conditions for Standard Offer and Direct Access Services and the Company's Schedule 10, Terms and Conditions for Direct Access. Specifically, and without limitation, sections 5.2 (Responsibility: Use of Service or Apparatus) and 5.3 (Service Interruptions: Limitations on Liability of Company) shall apply to the Company's equipment installed to provide this service. These schedules have provisions that may affect the customer's bill. In addition, service may be subject to special terms and conditions as provided for in the customer service agreement.

EXHIBIT D
EXPERIMENTAL RATE SCHEDULE EV-PS
CLASSIFIED SERVICE
POINT-OF-SALE ELECTRIC VEHICLE CHARGING

APPLICATION

This rate schedule is applicable to Standard Offer electric service furnished for the charging of qualified electric vehicles at an APS point-of-sale charging station. Schedule EV-PS shall be available two years after approval by the Arizona Corporation Commission (ACC). The Company may extend the availability beyond that time, at their discretion, with prior notification to the ACC.

BILLING OF SERVICES

No monthly bill will be provided for this service. The customer will render payment for a transaction amount calculated by the Company in accordance with the rates provided herein at the point and time of purchase via a method acceptable to APS as provided in the program details, which may be revised from time to time.

RATES

The transaction amount shall be computed at the following rate plus any adjustments incorporated in this schedule:

Energy Charge:

May – October Billing Cycles (Summer)	November – April Billing Cycles (Winter)
$0.32382 per kWh during On-Peak hours, plus $0.23662 per kWh during Off-Peak hours	$0.30439 per kWh during On-Peak hours, plus $0.23662 per kWh during Off-Peak hours

TIME PERIODS

Time periods applicable to usage under this rate schedule are as follows:

On-Peak hours: 11:00 a.m. to 9:00 p.m., Monday through Friday.

Off-Peak hours: All remaining hours.

ADJUSTMENTS

1. The transaction amount is subject to the Renewable Energy Standard as set forth in the Company's Adjustment Schedule RES pursuant to Arizona Corporation Commission Decision No. 70313. Adjustment will be based on the kWh charge and not subject to any monthly cap.

2. The transaction amount is subject to the Power Supply Adjustment factor as set forth in the Company's Adjustment Schedule PSA-1 pursuant to Arizona Corporation Commission Decision No. 67744, Arizona Corporation Commission Decision No. 69663, and Arizona Corporation Commission Decision No. 71448.

3. The transaction amount is subject to the Transmission Cost Adjustment factor as set forth in the Company's Adjustment Schedule TCA-1 pursuant to Arizona Corporation Commission Decision No. 67744. Adjustment will be based on the kWh charge for General Service 20 kW or less.

4. The transaction amount is subject to the Environmental Improvement Surcharge as set forth in the Company's Adjustment Schedule EIS pursuant to Arizona Corporation Commission Decision No. 69663.

ADJUSTMENTS (cont)

5. The transaction amount is subject to the Demand Side Management Adjustment charge as set forth in the Company's Adjustment Schedule DSMAC-1 pursuant to Arizona Corporation Commission Decision No. 67744 and Arizona Corporation Commission Decision No 71448. Adjustment will be based on the kWh charge.

6. The transaction amount is subject to the applicable proportionate part of any taxes or governmental impositions which are or may in the future be assessed on the basis of gross revenues of APS and/or the price or revenue from the electric energy or service sold and/or the volume of energy generated or purchased for sale and/or sold hereunder. In addition, the transaction amount is subject to any then-applicable service charges or minimum fees as outlined in the program details.

TERMS AND CONDITIONS

Service under this rate schedule is subject to the Company's Schedule 1, Terms and Conditions for Standard Offer and Direct Access Services, which contains provisions that may affect the customer's bill. In addition, service may be subject to special terms and conditions as provided for in a customer contract or service agreement.