

ELECTRIC VEHICLE CHARGING STATIONS

Roles and responsibilities of connecting an electric vehicle charging station to the local utility system.

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Purpose and Intent

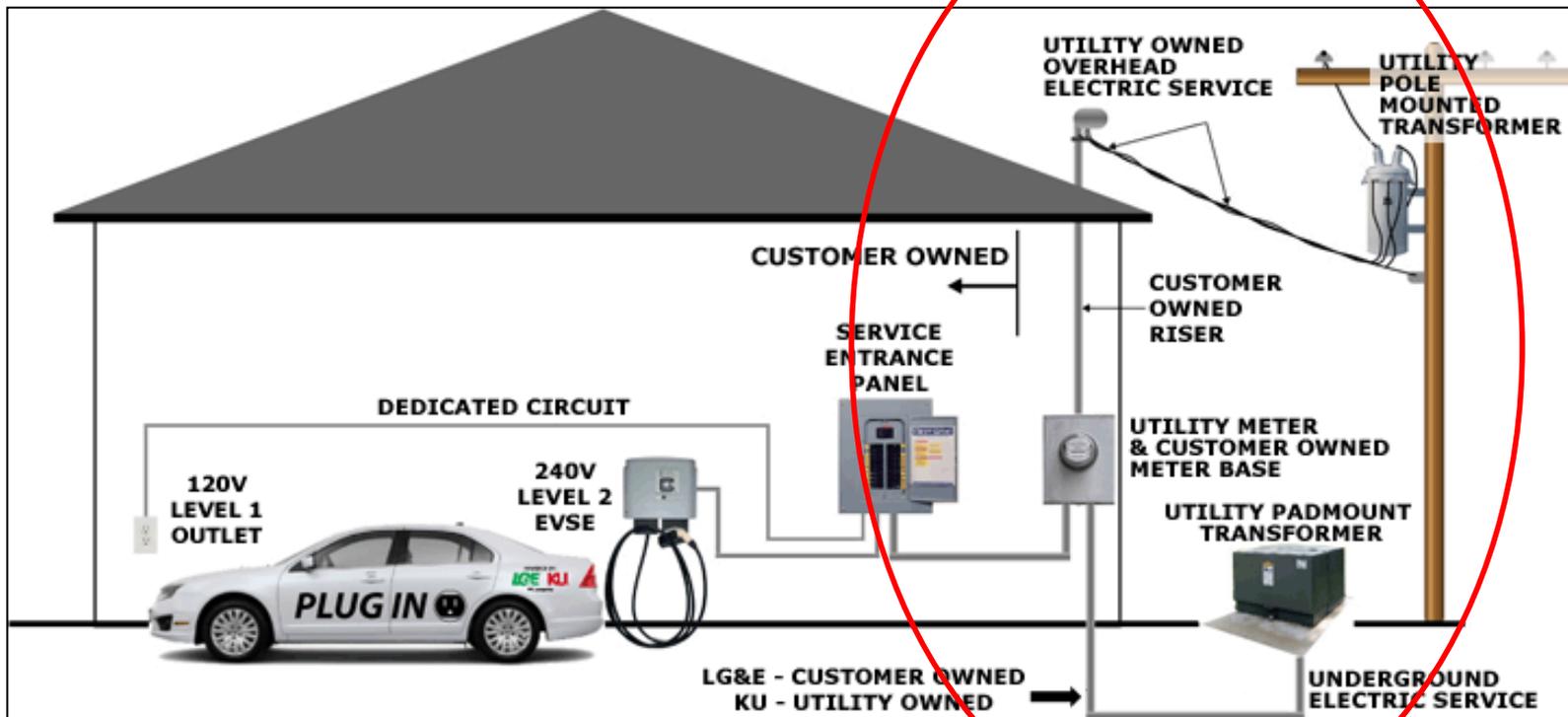
•Purpose

- The purpose of this PowerPoint is to assist the commercial customer with an understanding of the roles and responsibilities of connecting an “electric vehicle charging station” to the local utility system.

Intent

- The PowerPoint is intended for the layperson to help increase their knowledge base in order to make better decisions and build a safety-first working environment.

The Utility & The Customer – Safety First



Safety and Rules

Electric Service Upgrades

- Adding electric charging station is adding electrical load.
- Therefore you must notify your utility for safety purposes, including passing all local codes.
- If you are upgrading your panel or adding a second panel, a service upgrade may be required.
- Service upgrades are necessary when the service wire to your facility has inadequate capacity to meet the needs of your panel.

The Basic Steps

- Contact your electrician or engineer to assess existing panel capabilities.
- Contact the utility in your area to start your application to assess utility side based on your new electrical load.
- Your utility identifies service upgrade requirements and costs.
- Your electrician installs your charging station

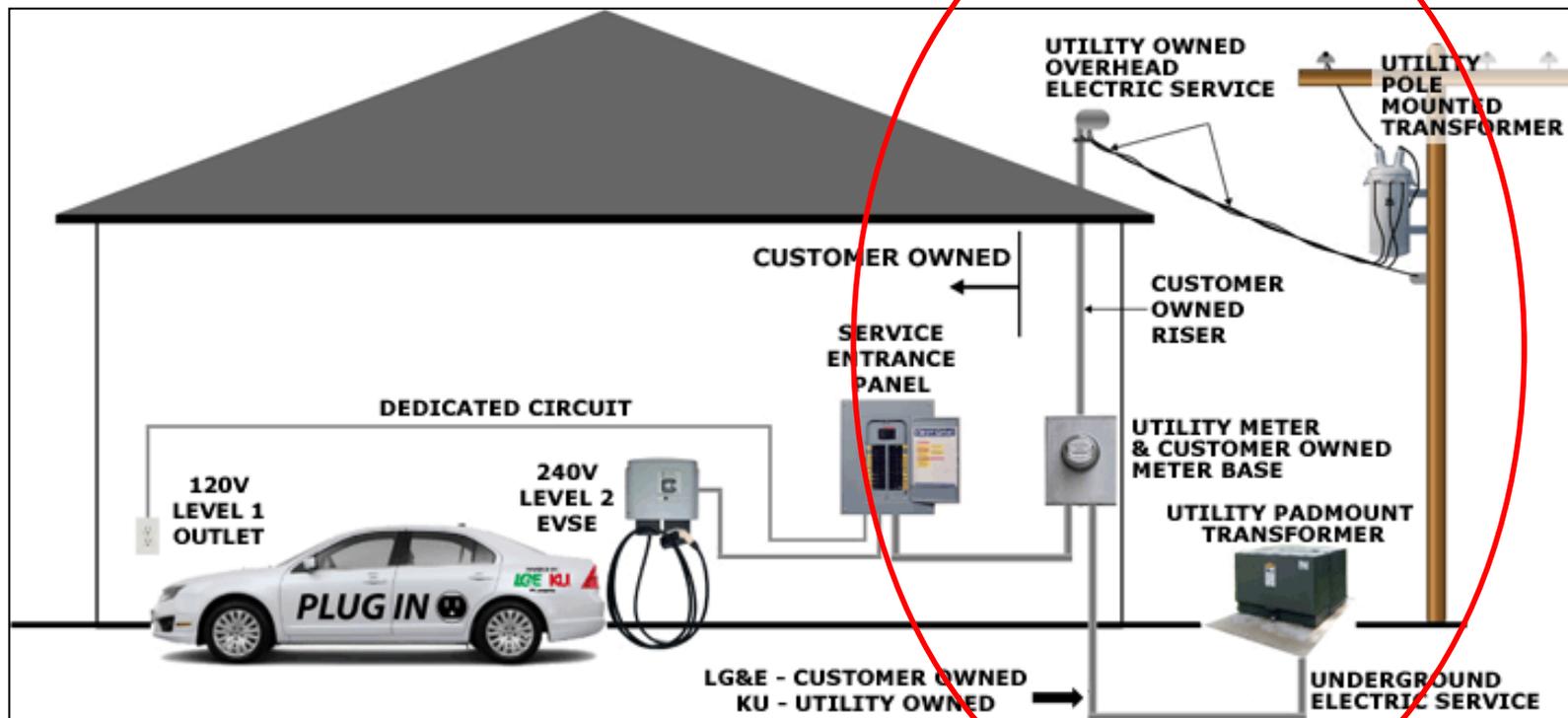
Information To Have Ready

- Charging level? AC Level 1 or AC Level 2.
- Charging load - Based on the charging system's voltage and amperage.
- Does the dedicated circuit require a panel upgrade?
- Who is your electrical engineer, consultant or contractor?
- Who to leverage within DGS?

Responsible Parties

- **The customer** is responsible for informing the utility about any added electrical load; paying any fees for additions or rearrangements.
- **Your utility** is responsible for upgrading the utility electrical service on the utility side to meet any new electric loads.
- These upgrades may require advanced engineering fees for planning and construction scheduling.
- Additional costs may be involved. Cost of ownership, advanced engineering fees.

The Utility and the Customer

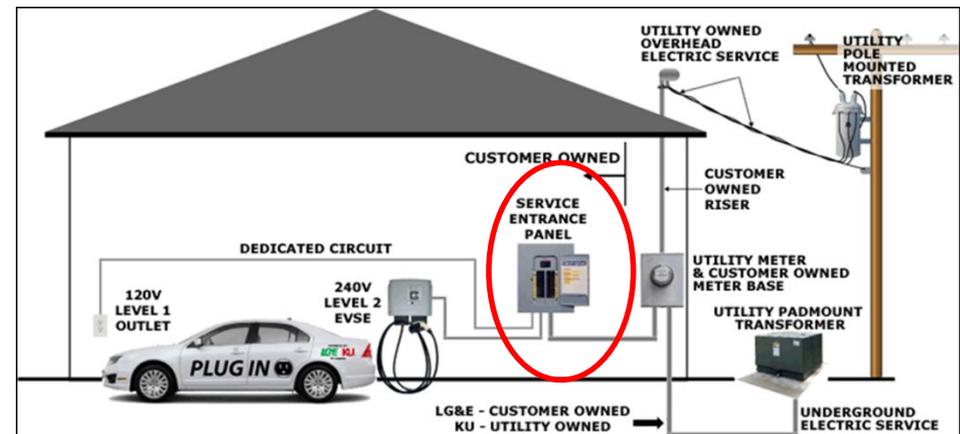


Consulting With Your Electrician or Engineer – Seek Advice

- Consult an electrician to assess the capacity of your electrical panel.
- Your electrician will determine if panel upgrades are needed, what permits may be required to complete the work and how much the project will cost you.
- A panel upgrade or second panel installation may result in a service upgrade cost.

The Electrical Panel

- Capacity Matters
- An electrician will determine whether the current electrical panel has capacity.
- If an upgrade is required, the electrician will arrange an inspection and obtain a permit from the city/county. This applies to all customers, regardless of rates.



Electric Charging – Charging Capacity

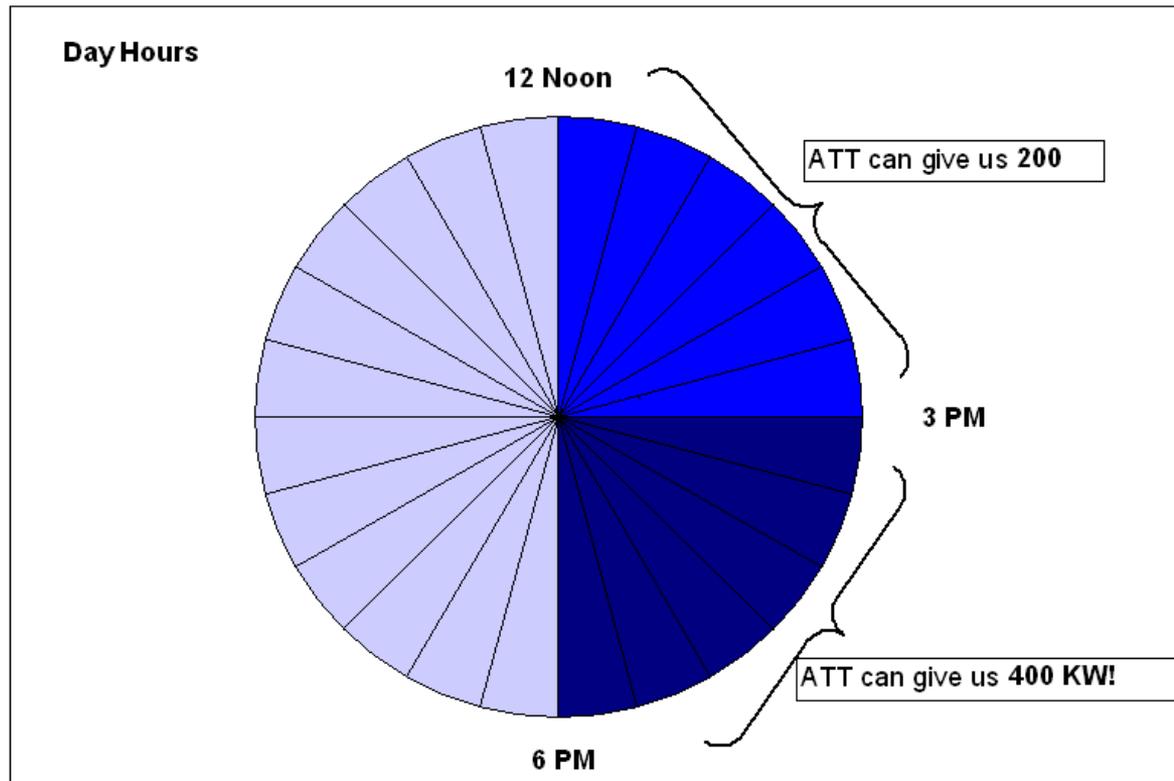
- DC Fast Charging requires 480 volts and you will need to contact your utility in advance of installation to determine if this voltage is readily available at your location.
- Beyond Level 1 and Level 2 charging, non-residential customers can install a DC Fast Charging station that operates at rates of between 20 kW to 80 kW – enough to charge a battery to 80% capacity in 30 minutes or less.

Electric Charging and Rates

- Commercial Time of Use Rates
- Charging at Night vs. Day
- Understand your local utility rates
- Education - users and local policies

Charging Level	Circuit Rating	Time to Charge Battery ²		
		16kWh	24kWh	53kWh
AC Level 1	120V/15A	10 hrs	20 hrs	N/A
AC Level 2 ³	240V/30A-70A ¹	3-4 hrs	7 hrs	3-4 hrs

Peak Periods – Time of Use Rates



Rate Schedule	Customer Charge	Season	Time-of-Use Period	Demand Charge (per kW)			Time-of-Use Period	Total Energy Charge (per kWh)			
A-1	Single Phase Service per meter/day = \$0.32854 Polyphase Service per meter/day = \$0.65708	Summer				-		\$0.21706			
		Winter				-		\$0.15014			
A-1 TOU	Single Phase Service per meter/day = \$0.32854 Polyphase Service per meter/day = \$0.65708	Summer				-	On peak	\$0.23592			
							Part Peak	\$0.22764			
							Off Peak	\$0.20244			
		Winter				-	Part Peak	\$0.15944			
							Off Peak	\$0.14138			
A-6 TOU	Single phase service per meter/day = \$0.32854; Polyphase service per meter/day = \$0.65708. Plus Meter charge = \$0.20107 per day for A6 or A6X; = \$0.05914 per day for A6W ^{6/}	Summer				-	On peak	\$0.54053			
							Part Peak	\$0.25139			
							Off Peak	\$0.14103			
		Winter				-	Part Peak	\$0.16045			
							Off Peak	\$0.13103			
					Secondary	Primary	Transmission		Secondary	Primary	Transmission
A-10 (Table A)	\$4.59959 per meter per day	Summer			\$13.36	\$12.61	\$8.94		\$0.14911	\$0.13939	\$0.11550
		Winter			\$6.26	\$6.48	\$4.84		\$0.11077	\$0.10552	\$0.09255
A-10 TOU (Table B)	\$4.59959 per meter per day	Summer			\$13.36	\$12.61	\$8.94	Peak	\$0.16506	\$0.15271	\$0.12759
								Part-Peak	\$0.15784	\$0.14756	\$0.12288
								Off-Peak	\$0.13588	\$0.12785	\$0.10505
		Winter			\$6.26	\$6.48	\$4.84	Part-Peak	\$0.12044	\$0.11342	\$0.09981
								Off-Peak	\$0.10161	\$0.09800	\$0.08566
E-19 TOU	Meter charge: = \$4.7700/day for E19 V or X; = \$4.63507/day for E19W ^{4/} ; = \$19.71253/day for E19S mandatory; = \$32.85421/day for E19P mandatory; = \$59.13758/day for E19T mandatory	Summer	Max. Peak	\$16.78	\$16.67	\$15.28	Peak	\$0.15255	\$0.14013	\$0.08870	
			Part Peak	\$3.87	\$3.56	\$3.38	Part Peak	\$0.10461	\$0.09849	\$0.08453	
			Maximum	\$12.24	\$9.72	\$5.95	Off Peak	\$0.07321	\$0.07369	\$0.06998	
		Winter	Part Peak	\$0.21	\$0.38	\$0.00	Part Peak	\$0.09824	\$0.09380	\$0.08305	
			Maximum	\$12.24	\$9.72	\$5.95	Off Peak	\$0.07681	\$0.07666	\$0.07152	

Rates – Small to Medium to Large

•A1



A10



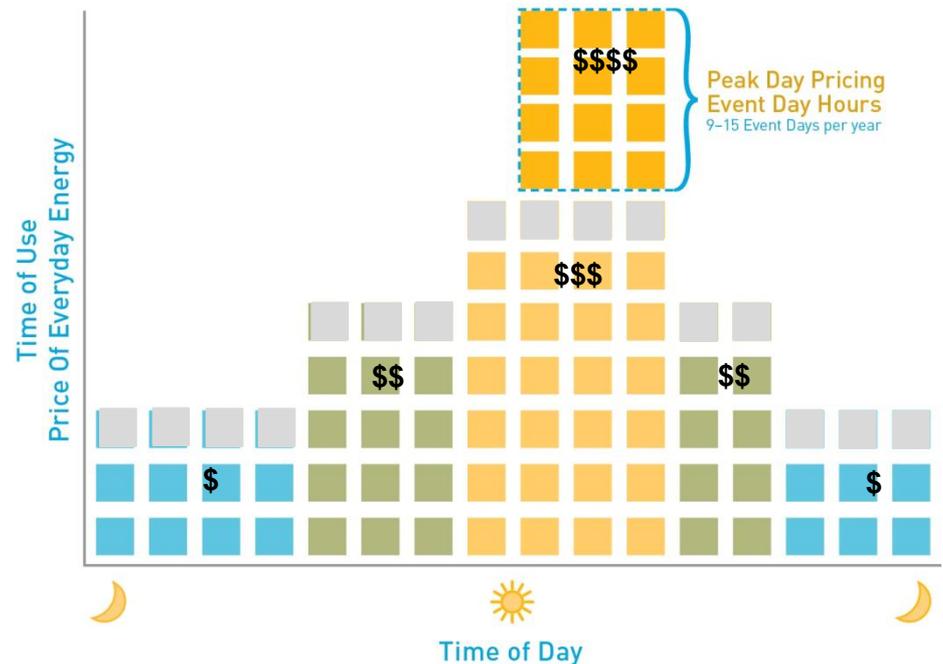
E19

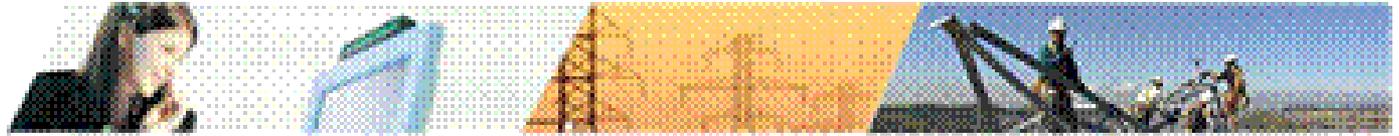


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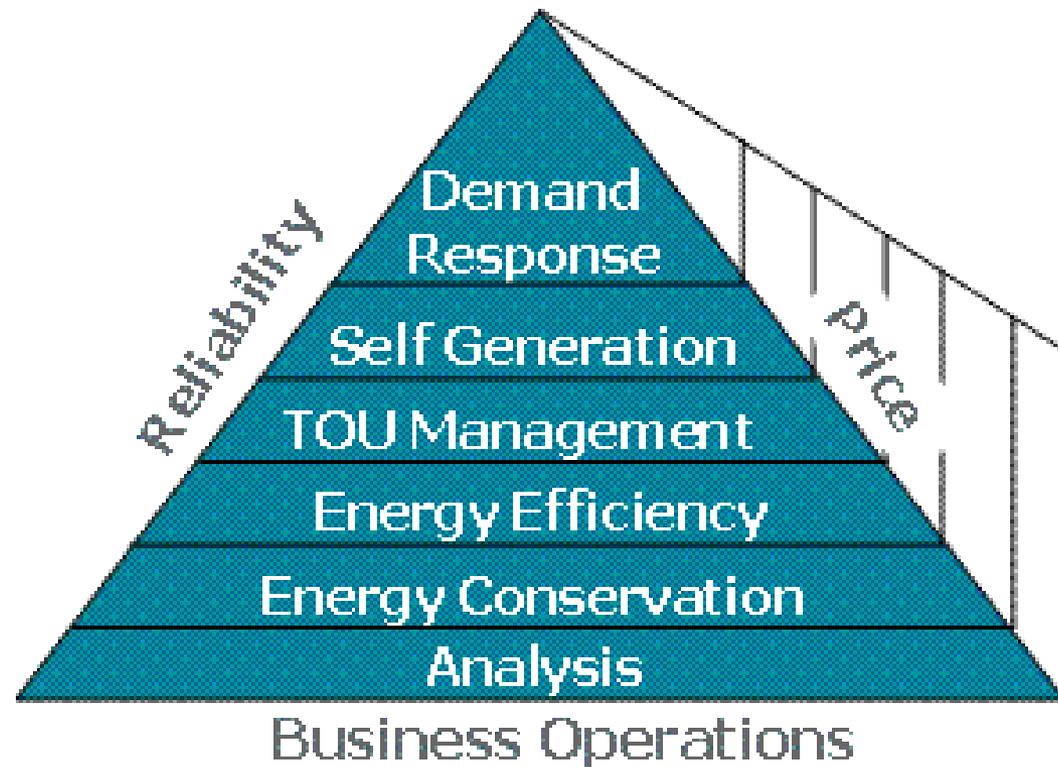
Time Varying Pricing Today

- **Time of Use (TOU)** = prices change two to three times each day based on when power is consumed also seasonal (summer and winter)





Integrated Demand Side Management



Site Planning - Important Considerations

- The number of chargers required, and the impact that will have on your energy infrastructure, depends on the number of electric vehicles you estimate will be using the facility and the desired charging rate.
- Consider space and installation requirements when planning a charging area. DC Fast Charging stations generate a much larger electric load that will raise the cost of your service infrastructure, while potentially reducing the amount of land required.

Thinking Ahead

- Future Expansion Plans?
- DGS Services and Statewide Energy Efficiency Plan
- Timelines and planning – anticipate deadlines
- 16 to 22 Weeks timeline

Utility Resources

SCE: Planning Your Charging Installation

RESEARCH *Electric Vehicle Charging:*

- Visit [sce.com/EV4Business](https://www.sce.com/EV4Business)
- Research charging equipment options (Level I vs. Level II) and equipment installers/electrical contractors
- Understand how electric vehicle charging may affect your energy management programs
- Look for available funding opportunities or incentives

EVALUATE *Your Charging Needs:*

- Select a qualified electrical contractor
- Have your electrical contractor evaluate your site for possible charging locations
- Contact SCE at 1-800-438-4639 to request new or expanded electrical service
- Request SCE prepare a customized rate analysis. SCE offers two EV rates EV-3 and EV-4.

PREPARE *to Install Your Charging Equipment*

- Contact SCE at 1-800-438-4639 to create a service order for new or expanded service
- If multiple sites will be involved a separate Service Request will be created for each site
- A SCE Service Planner familiar with that location will evaluate SCE's electrical service serving your facility
- If necessary and based on your request and approval SCE will install a meter and update your account to your new electric rate plan
- Don't forget to have your electrical contractor/installer obtain the necessary permits

San Diego Gas & Electric (SDG&E)

web: SDGE.com/EV email: EV@SDGE.com

- Project Application Process - same for all new projects submitted to utility, coordinated by your contractor (e.g. service upgrades, disconnects, etc.)
- Facilitation – EE on staff as a resource - questions and location reviews, internal process monitoring – not for customer project design/review
- Customer’s Electrical Contractor/DGS - customer side of meter design coordinate applications and inspections on behalf of the customer
- SDG&E - streamlined process for projects < 400 Amp vs. > 400 Amp (based on contractor calculations)
- New transformers may incur longer timeline for obtaining easements (have contractor file application ASAP)

Applicable Tariffs (two commercial rates) – Account review

A Rate – below 20 kW load (no demand charges no TOU)

AL TOU Rate – 20 kW or above (demand charges and TOU)

PG&E

- Contacting PG&E To Start An Application
- [Customer Connections Online](#).
- Phone: **1-877-743-7782**, M-F from 7 a.m. – 6 p.m.
- Information To Have Ready
 - Charging level: AC Level 1 or AC Level 2.
 - Charging load - Based on the charging system's voltage and amperage.
 - Does the dedicated circuit require a panel upgrade?
 - After submitting your application, a PG&E service planning representative will contact you to discuss next steps and complete your service application.

Corporate Account Managers

- **Michael K. Cook**
- **Southern California Edison**
- **Account Manager**
- **Office: 626-633-3222 / PAX 43222**
- **Cell: 626-261-1492**
- **Email: Michael.K.Cook@SCE.com**

- **Felix Lopez**
- **Strategic Account Manager**
- **Corporate Accounts**
- **Pacific Gas and Electric Company**
- **245 Market Street, 843A**
- **San Francisco, CA 94105**
- **Office 415-973-1387**
- **Cell 415-407-2315**
- **FAL1@PGE.COM**

Joey Penneman
Energy Advisor
Customer Programs & Services
Sacramento Municipal Utility District
6301 S Street, Mail Stop A102, Sacramento, CA 95817
P.O. Box 15830, Sacramento, CA 95852-1830
w.916-732-6595 | c.209-732-6850
joseph.penneman@smud.org

Thank you.