



City of Palo Alto

City Council Staff Report

(ID # 6139)

Report Type: Consent Calendar

Meeting Date: 10/26/2015

Summary Title: Net Energy Metering Cap Clarification

Title: Adoption of Two Resolutions to: (1) Formally Adopt the Methodology for Calculating the City's Net Energy Metering (NEM) Cap, and (2) Amend Utilities Rule and Regulations 2 and 29; and Delegation of Authority to the City Manager to Update Associated NEM Agreements to Incorporate the NEM Cap Definition, As Needed

From: City Manager

Lead Department: Utilities

Recommendation

Staff recommends that the City Council:

1. Adopt a resolution (Attachment A) to formally adopt the methodology for calculating the City's net energy metering (NEM) cap to be five (5) percent of the City's 2006 historical system peak electric demand of 190 megawatts (MW) or 9.5 MW;
2. Adopt a resolution (Attachment B) to amend Utilities Rule and Regulations 2 ("Definitions and Abbreviations") and 29 ("Net Energy Metering Service and Interconnection") to incorporate the NEM cap definition; and
3. Delegate to the City Manager, or his designee, the authority to update the City's NEM related agreements, with the approval of the City Attorney, as necessary to incorporate the formally adopted NEM cap definition.

Executive Summary

Staff recommends an operational clarification to the City's current practice for calculating the NEM cap as 5% of the City's historical system peak for electric demand of 190 MW achieved in 2006, or 9.5 MW. Staff's recommended methodology for calculation of the NEM cap is consistent with NEM requirements applicable to publicly owned utilities (POUs) set out in the California Public Utilities Code.¹ Staff is seeking formal adoption by Council of staff's current practice of calculating the NEM cap, which will serve to promote transparency for community

¹ Cal. Pub. Util. Code §2827(c)(4)(A).

members contemplating installing distributed renewable energy, such as solar, and for project developers operating within the City.

NEM is a billing mechanism that allows customers with on-site renewable generation to be compensated at the retail rate for the electricity generated by their system. Using the proposed methodology for calculating the NEM cap, the City is approximately 70% toward meeting the NEM cap as of August 2015, and staff estimates that the cap could be reached by the end of 2016. Revisions to Utilities Rule and Regulations 2 and 29 are also needed to define and reference the NEM cap, and such modifications are recommended by staff.

As the City approaches its NEM cap, staff plans to regularly report to the public on progress toward the cap to further support transparency and inform customer decision-making. Staff is developing design guidelines for consideration by the Utilities Advisory Commission (UAC), Finance Committee and Council starting in Fall 2015 for a NEM successor program that would begin after the NEM cap has been reached.

Background

NEM is a billing mechanism that allows customers with on-site renewable generation to be compensated at the retail rate for the electricity generated by their system. State law requires all electric utilities to offer NEM to eligible customers with distributed renewable generation (sometimes referred to as customer-sited, behind-the-meter generation), up to a maximum cap of 5% of the utility's aggregate customer peak demand². NEM does allow customers to reduce or potentially avoid certain charges on their electric bill completely while still remaining interconnected with the utility's electric grid and utilizing grid services. The City is reviewing rate design issues associated with local solar installations, including the implications of NEM, in connection with the cost of service analysis (COSA) that the electric utility has embarked on, which is targeted for completion in in Fiscal Year (FY) 2016.

In principle, customers may install a variety of distributed renewable generation technologies that would be eligible for NEM. In practice, solar is the most feasible technology in Palo Alto. All on-site generation and NEM participation in Palo Alto to date is from solar photovoltaic (PV) systems. Table 1 provides a summary of NEM participation to date.

² Cal. Public Utilities Code, §2827 *et seq.*

Table 1: Summary of NEM Participation in Palo Alto

Year	Annual Capacity (kW CEC-AC)	Cumulative Capacity (kW CEC-AC)	% of 2006 System Peak
1999	16	16	<0.1%
2000	16	32	<0.1%
2001	100	132	<0.1%
2002	73	205	0.1%
2003	40	245	0.1%
2004	45	290	0.2%
2005	74	365	0.2%
2006	233	598	0.3%
2007	213	811	0.4%
2008	1,347	2,158	1.1%
2009	340	2,498	1.3%
2010	503	3,001	1.6%
2011	444	3,445	1.8%
2012	209	3,654	1.9%
2013	433	4,087	2.2%
2014	2,060	6,147	3.2%
2015*	537	6,684	3.5%
Proposed NEM Cap	-	9,500	5.0%

**Data through August 13, 2015*

Discussion

NEM Cap Calculation Methodology

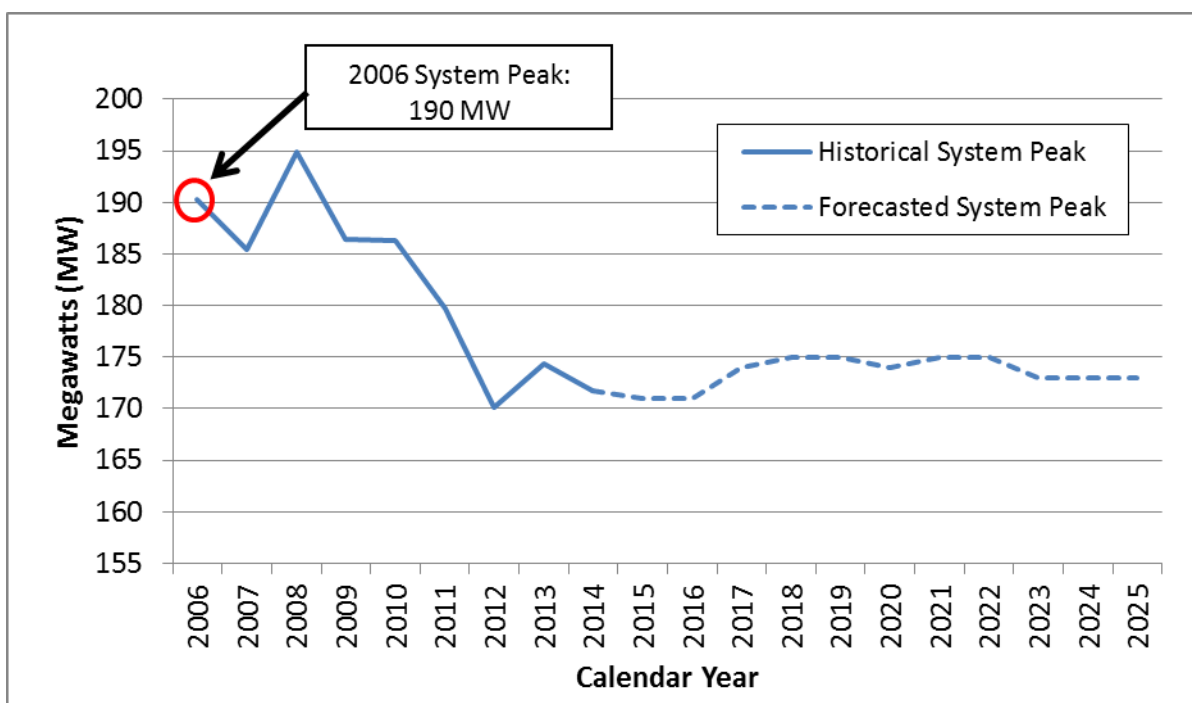
Currently, the California Public Utilities Code affords POUs, like Palo Alto, with flexibility to define the City's 5% NEM cap. Section 2827(c)(4)(A) of the California Public Utilities Code specifies that POUs must offer NEM until "combined total peak demand" of NEM customers exceeds 5% of "aggregate customer peak demand" of the electric utility. The statute is silent as to how to define "aggregate customer peak demand" for POUs, leaving matters such as the best method for calculating aggregate customer peak demand, or what reference year to use to the City to decide.³

Given the flexibility available to POUs and other non-IOUs, there are a variety of differing methodologies for calculating the NEM cap that have developed across the state, resulting in confusion for utility customers and renewable energy installers operating across multiple utility service territories.

³ By contrast, the statute and the CPUC afford Investor Owned Utilities (IOUs) with no discretion for how to calculate "aggregate customer peak demand." The CPUC approved a decision³ requiring the large IOUs to define aggregate customer peak demand as the sum of individual customers' peak demands, or so-called non-coincident peak demands. The Public Utilities Code was later modified to further clarify this definition for the IOUs (Cal. Public Utilities Code, §2827 (c) (4) (B)).

Palo Alto staff has interpreted “aggregate customer peak demand” to be the City’s coincident system peak demand and uses a fixed reference year of in 2006. Figure 1 shows the CPAU’s historical electric system peak from 2006 through 2014 and a forecast for the system peak for 2015 through 2025⁴.

Figure 1: Historical and forecasted annual system peak load



Staff Recommendation

Staff recommends setting the City’s methodology for calculating the NEM cap as 5% of the City’s system peak for electricity demand in 2006 of 190 MW, or 9.5 MW. The reference year (2006) has been utilized by staff since California Senate Bill 1 (SB1) took effect on January 1, 2007, which set a statewide goal of deploying 3,000 MW of new solar PV systems by 2017 and concurrently modified the California Public Utilities Code to raise the NEM cap from 0.5% to 2.5%⁵. Staff recommends fixing the cap in time, since increasing or decreasing the cap with future shifts in our electric load would result in erratic market dynamics and confusing messaging. For example, if the NEM cap was based on 5% of the prior year’s peak load, it could rise or fall on a yearly basis with changes in the utility’s peak load. However, certainty about the cap is necessary for customer decision making. The 9.5 MW value for the City’s NEM cap has been referenced in multiple staff reports⁶, but staff now recommends that Council formally

⁴ The displayed annual system peak forecast is from the FY15 electric utilities long-term financial plans.

⁵ The NEM cap was later raised from 2.5% to the current 5% in 2010 by Assembly Bill 510.

⁶ For instance, in 2014 the City’s NEM cap of 9.5 MW is referenced in the staff reports on the Local Solar Plan and Net Energy Metering Aggregation, respectively: <https://www.cityofpaloalto.org/civicax/filebank/documents/39981> and <https://www.cityofpaloalto.org/civicax/filebank/documents/40192>.

adopt the NEM cap as it nears the cap for the reasons set forth below. The City’s NEM installations are currently approximately 70% of the proposed 9.5 MW NEM cap and staff estimates that the cap will be reached by the end of 2016.

In addition to adopting an explicit NEM cap calculation methodology, communicating Palo Alto’s progress toward the NEM cap is critical so as to not impede the marketplace for solar PV and other on-site renewable energy generation technologies⁷. As the City approaches its NEM cap, staff will begin reporting regularly on progress toward the cap on the City’s main solar webpage⁸ and in the Utilities Quarterly Update in order to further support market certainty and inform customer decision-making.

Alternative NEM Cap Calculation Methodologies that Were Evaluated

Table 2 below shows the proposed methodology and three alternatives that were evaluated by City staff but ultimately not recommended here, and the resultant NEM caps for each.

Staff does not recommended the alternative approaches because the proposed NEM cap calculation methodology satisfies the City’s regulatory obligations, is straightforward to calculate, promotes continued deployment of distributed generation, is consistent with all prior references to the City’s NEM cap, and will establish steady market dynamics and consistent messaging for customers and installers within CPAU service territory. Staff’s proposed methodology for calculation of the NEM cap is also consistent with our POU peers. The Sacramento Municipal Utility District (SMUD) and the fourteen POUs that comprise the Northern California Power Agency are all interpreting “aggregate peak demand” as coincident system peak⁹. Our fellow POUs are all using the proposed methodology, Alternative #1, Alternative #2 or slight variations to calculate their respective NEM caps.

Table 2: Alternative methodologies for calculating the NEM cap

Methodology Name	Description	Resultant NEM Cap
Proposed (Current Practice)	5% of 2006 system peak	9.5 MW
Alternative #1	5% of prior year system peak (2014)	8.6 MW
Alternative #2	5% of 10-year historical system peak (2008)	9.8 MW
Alternative #3	5% of the sum of individual customers’ peak demands (IOU methodology)	Unknown

⁷ Both adopting a clear NEM cap calculation methodology and regularly communicating the progress toward the cap are identified as key findings by the National Renewable Energy Laboratory in a survey of state best practices and experiences on important policy design considerations for net energy metering.

(<http://www.nrel.gov/docs/fy14osti/61858.pdf>)

⁸ <http://www.cityofpaloalto.org/solar>

⁹ SMUD recently clarified their NEM cap calculation methodology for their service territory, which is consistent with the proposed NEM cap calculation methodology for Palo Alto. See “3. Net Energy Metering Language Change” on page 41: <https://www.smud.org/assets/documents/pdf/2015-GM-Rate-Report-Vol-1.pdf>.

For Palo Alto, Alternatives #1 and #2 would result in a slightly lower and higher NEM cap, respectively. Staff does not recommend changing the cap calculation methodology to either Alternative #1 or Alternative #2 because the difference is small compared to the proposed methodology, and it would be a change from the cap and methodology referenced in prior staff reports.

The IOU methodology is included in Table 2 as “Alternative #3”; however, the value of CPAU’s NEM cap using the IOU methodology is not straightforward to calculate without full deployment of advanced metering infrastructure or a cost of service analysis. Staff’s initial estimates of a NEM cap using the IOU methodology is between 8.6 and 17 MW. Should such a methodology be imposed on Palo Alto and other POUs, staff will undertake the necessary steps to ensure proper implementation. Adopting the IOU methodology (Alternative #3) to calculate the NEM cap could result in a significantly higher NEM cap compared to the staff’s proposal. Without a legal mandate to do so, the City would need to carefully examine a higher cap in the context of the department’s upcoming COSA.

Rule & Regulation 29, Net Energy Metering Service and Interconnection

Modifications to Utilities Rule and Regulation 2 (RR2), Utilities Rule & Regulation 29 (RR29) and the NEM and Interconnection Agreements for NEM and NEM Aggregator customers are required to clarify the NEM cap. Staff’s proposed amendments to RR2 and RR29 include, without limitation, addition of the definition of “NEM Cap” and “Total Rated Generating Capacity.” RR2 and RR29 apply to all customers that have signed a NEM and Interconnection Agreement, as required, when interconnecting their system to the electric utility.

Policy Impact

Formally adopting a methodology for calculating the NEM cap will promote greater market certainty and transparency for customers and renewable energy installers operating within the community and is consistent with NEM legislative and regulatory obligations and the Council-adopted Local Solar Plan to promote distributed solar projects.

Next Steps

Staff plans to bring proposed design guidelines for a NEM successor program for all on-site generation systems installed after the NEM cap has been reached to the UAC, Finance Committee, and Council starting in Fall 2015.

Resource Impact

Formal adoption of the proposed NEM cap calculation methodology and modifications to the rules and regulations are not expected to impact staff or budget resources. If a different NEM cap methodology was adopted that increased the NEM cap, the additional costs would increase the Electric Fund budget and rates.

Environmental Impact

Formal adoption of the City's existing practice for calculating the NEM cap calculation and associated amendments to Utilities Rules and Regulations 2 and 29 do not meet the California Environmental Quality Act's (CEQA) definition of "project" pursuant to California Public Resources Code Sec. 21065, thus no environmental review is required.

Attachments:

- Attachment A: Resolution to Formally Adopt NEM Cap (PDF)
- Attachment B: Resolution to Modify Rule and Regulation 2 and 29(PDF)
- Attachment B-1: Proposed Rule and Regulation 2 (redlined) (PDF)
- Attachment B-2: Proposed Rule and Regulation 29 (redlined) (PDF)

NOT YET APPROVED

Resolution No. _____

Resolution of the Council of the City of Palo Alto to Formally Adopt a
Net Energy Metering Cap Calculation Methodology

RECITALS

- A. Net energy metering (NEM), is a billing arrangement that provides credit to customers for the full retail value of the electricity their system generates.
- B. State law requires all electric utilities to offer NEM to eligible customers with distributed renewable generation up to a maximum cap of 5% of the utility's aggregate customer peak demand.
- C. The California Public Utilities Code affords publicly owned utilities (POUs), like Palo Alto, with the discretion to define "aggregate customer peak demand," leaving matters such as the best method for calculating "aggregate customer peak demand" and what reference year to use up to the City.
- D. Given the flexibility available to POUs and other non-Investor Owned Utilities, there are a variety of differing methodologies in use for calculating the NEM cap across the state, resulting in confusion for utility customers and renewable energy installers operating across multiple utility service territories.
- E. Palo Alto staff's current practice is to define the NEM cap to be 5% percent of the City's peak demand achieved in 2006, or 9.5 megawatts (MW) fixed in time, and referenced this NEM cap in multiple staff reports. The City's NEM installations are currently approximately 70% of the proposed 9.5 MW NEM cap and staff estimates that the cap will be reached by the end of 2016.
- F. Formally adopting the City's current methodology for calculating the NEM cap in Palo Alto will promote greater market certainty and transparency for customers and renewable energy installers operating within the community and is consistent with NEM legislative and regulatory obligations and the Council-adopted Local Solar Plan to promote distributed solar projects.

The Council of the City of Palo Alto does hereby RESOLVE as follows:

SECTION 1. The City Council adopts the methodology for calculating the City's NEM cap to be five (5) percent of the City's aggregate customer peak demand, which is defined as 2006 historical system peak electric demand of 190 megawatts (MW) or 9.5 MW.

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NOT YET APPROVED

SECTION 2: The Council finds that the formal adoption of the NEM cap does not meet the California Environmental Quality Act's definition of a "project" under Public Resources Code Section 21065, thus no environmental review is required.

INTRODUCED AND PASSED:

AYES:

NOES:

ABSENT:

ABSTENTIONS:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

APPROVED:

Senior Deputy City Attorney

City Manager

Director of Utilities

Director of Administrative Services

NOT YET APPROVED

Resolution No. _____
Resolution of the Council of the City of Palo Alto to Amend
Utilities Rule and Regulations 2 and 29

RECITALS

A. On October 26, 2015, the Council of the City of Palo Alto adopted a Resolution determining that Net Energy Metering (NEM) cap is 9.5 megawatts (MW).

B. The City must update its Rules and Regulations in order to incorporate the NEM cap definition into the City’s customer eligibility requirements for NEM.

The Council of the City of Palo Alto does hereby RESOLVE as follows:

SECTION 1. Pursuant to Section 12.20.010 of the Palo Alto Municipal Code, Utility Rule and Regulation 2 (Definitions and Abbreviations) is hereby amended as attached and incorporated. Utility Rule and Regulation 2, as amended, shall become effective October 26, 2015.

SECTION 2. Pursuant to Section 12.20.010 of the Palo Alto Municipal Code, Utility Rule and Regulation 29 (Net Energy Metering Service and Interconnection) is hereby amended as attached and incorporated. Utility Rule and Regulation 2, as amended, shall become effective October 26, 2015.

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NOT YET APPROVED

SECTION 3: The Council finds that the amendment of Utility Rules and Regulations 2 and 29 does not meet the California Environmental Quality Act's definition of a "project" under Public Resources Code Section 21065, thus no environmental review is required.

INTRODUCED AND PASSED:

AYES:

NOES:

ABSENT:

ABSTENTIONS:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

APPROVED:

Senior Deputy City Attorney

City Manager

Director of Utilities

Director of Administrative Services

ATTACHMENT B-1

DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

A. ABBREVIATIONS

AMR	-	Automated Meter Reading
AER	-	Advance Engineering Request
Btu	-	British Thermal Unit
ccf	-	Hundred Cubic Feet
CEC	-	California Energy Commission
CPAU	-	City of Palo Alto Utilities
CPUC	-	California Public Utilities Commission.
ERU	-	Equivalent Residential Unit
FERC	-	Federal Energy Regulatory Commission
kVar	-	Kilovar
kVarh	-	Kilovar-hours
kW	-	Kilowatt
kWh	-	Kilowatt-hour
MW	-	Megawatt
MMBtu	-	One million Btus.
NEC	-	National Electric Code, Latest Version
NEM	-	Net Energy Metering
NEMA	-	Net Energy Metering Aggregation
NEMIA	-	Net Energy Metering Interconnection Agreement
NRTL	-	Nationally Recognized Testing Laboratory
PAMC	-	Palo Alto Municipal Code
PSIG	-	Per square inch gauge
PST	-	Pacific Standard Time
RWQCP	-	Regional Water Quality Control Plant
UUT	-	Utilities Users Tax

B. GENERAL DEFINITIONS

Account

The identification number in CPAU's billing system for Utility Services.

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UTILITIES RULES AND REGULATIONS
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DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

Agency

Any local, county, state or federal governmental body or quasi-governmental body, including, without limitation, the CPUC, the FERC and any joint powers agency, but excluding the City and any board, commission or council of the City.

Aggregation Customer

A Customer with a Renewable Electrical Generation Facility wishing to install an eligible Renewable Electrical Generation Facility that is sized to offset separately metered electric loads on adjacent or contiguous properties that are solely owned, leased, or rented by them, and who have signed the Net Energy Metering Interconnection Agreement for NEM Aggregation.

Applicant

An individual, corporation, partnership, Agency, or other legal entity or authorized agent of same, requesting CPAU to supply any or all of the following:

1. Electric Service
2. Water Service
3. Gas Service
4. Wastewater Collection
5. Refuse Service
6. Storm and Surface Water Drainage Service
7. Fiber Optics Service

Or, an entity submitting an Application for Interconnection pursuant to Rule 27.

Application (for Interconnection of Generating Facilities)

An approved standard form (Load Sheet) submitted to CPAU for Interconnection of a Generating Facility.

Beneficiary Account

The Electric Service Meter(s) serviced by an Aggregation Customer's Generating Facility, as listed on the Aggregation Customer's NEMA-IA form.

Bidweek Price Index

The price reported in Natural Gas Intelligence "NGI's Bidweek Survey", California "PG&E Citygate" under the column "avg." for the calendar month.

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DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

Billing Period

Also “service period” or “billing cycle”. The normal Billing Period for CPAU Customers is approximately 30 days, with variations occurring due to staff availability, holiday scheduling, field verification of Meter readings, or any other billing-related issues requiring additional investigation prior to issuance of the bill..

British Thermal Unit

Also “Btu”. The standard sub-unit of measurement comprising a Therm of natural Gas. One (1) Therm equals 100,000 Btu.

Business Day

Any day, except a Saturday, Sunday, or any day observed as a legal holiday by the City.

Certification Test

A test pursuant to Rule 27 that verifies conformance of certain equipment with approved performance standards in order to be classified as Certified Equipment. Certification Tests are performed by NRTLs.

Certification; Certified; Certificate

The documented results of a successful Certification Test.

Certified Equipment

Equipment that has passed all required Certification Tests.

Charge

Any assessment, cost, fee, surcharge or levy for Utility Service other than a Tax, including metered and unmetered Utility Service, capacity, connections, construction, penalties, and mandated or required Customer financial obligations for Service.

Charter

The Charter of the City of Palo Alto.

City Attorney

The individual designated as the City Attorney of the City under Section 2.08.120 of Chapter 2.08 of Title 2 of the Palo Alto Municipal Code, and any Person who is designated the representative of the City Attorney.

City’s Collector

The Person(s) authorized under Section 5.20.040 of the Palo Alto Municipal Code to provide collection,

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UTILITIES RULES AND REGULATIONS
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DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

processing and disposal of solid waste, Compostable Materials and Recyclable Materials pursuant to one or more written contracts with the City.

City Manager

The individual designated as the City Manager of the City under Section 2.08.140 of Chapter 2.08 of Title 2 of the Palo Alto Municipal Code, and any Person who is designated the representative of the City Manager.

City of Palo Alto, or City

The government of the City of Palo Alto, a chartered City and a municipal corporation duly organized and validly existing under the Laws of the State of California, with a principal place of business located at 250 Hamilton Avenue, Palo Alto, County of Santa Clara. For the purposes of these Rules and Regulations, the term "City" may include services provided by both the City of Palo Alto Utilities Department and the City of Palo Alto Public Works Department.

City of Palo Alto Public Works Department (Public Works)

The City Department responsible for providing Refuse Service, Wastewater Treatment and Storm and Surface Water Drainage Utility Services. Other Utility Services such as Water, Gas, Electric, Wastewater Collection, and Fiber Optics are provided by the City of Palo Alto Utilities Department.

City of Palo Alto Utilities Department (CPAU)

The City Department responsible for providing Water, Gas, Electric, Wastewater Collection and Fiber Optic Utility Services. Other Utility Services such as Refuse Service, Wastewater Treatment and Storm and Surface Water Drainage are provided by the City of Palo Alto Public Works Department.

Code

The words "the Code" or "this Code" shall mean the Palo Alto Municipal Code.

Commercial Service

Commercial Utility Service is provided to businesses, non-profit organizations, public institutions, and industrial Customers. The term also applies to Utility Services through Master Meters serving multi-family Residential dwellings and common areas of multi-family facilities.

Compostable Materials

Organic materials designated by the City as acceptable for collection and processing.



DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

Container

Any receptacle used for storage of solid waste, Recyclable Materials, Compostable Materials or other materials designated by the City to be collected by the City's Collector. Examples of containers include carts, bins, compactors and drop boxes.

Cubic Foot of Gas (cf)

The quantity of Gas that, at a temperature of sixty (60) degrees Fahrenheit and a pressure of 14.73 pounds per square inch absolute, occupies one cubic foot.

Curtailement

The act of reducing or interrupting the delivery of natural Gas.

Customer

The Person, corporation, Agency, or entity that receives or is entitled to receive Utility Service(s) from the City of Palo Alto, or in whose name Service is rendered for a particular Account as evidenced by the signature on the Application, contract, or agreement for Service. In the absence of a signed instrument, a Customer shall be identified by the receipt of any payment of bills regularly issued in the name of the Person, corporation, or Agency regardless of the identity of the actual user of the Utility Service(s).

Customer-Generator:

An "eligible customer-generator," as that term is defined by the California Public Utilities Code section 2827, as the same may be amended from time to time.

Dark Fiber

A Fiber Optic cable provided to end-users or resellers by CPAU without any of the light transmitters, receivers, or electronics required for telecommunications over the Fiber. Infrastructure for Fiber Optic activation is provided by the reseller or end-user.

Dark Fiber Infrastructure

Components of the CPAU Fiber Optic Distribution System required to provide Service to Customers (licensees), that are attached, owned, controlled or used by the City, located overhead or underground within the Public Right-of-Way, the Public Utility Easements and Leased Service Properties.

Dedicated Distribution Transformer

A Distribution Transformer that is dedicated to serving a single premise.

Demand

The highest rate of delivery of Electric energy, measured in Kilowatts (kW) or kilovolt amperes (kVA)



DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

occurring instantaneously or registered over a fixed time period (normally fifteen minutes unless otherwise specified within a monthly billing cycle).

Demand Charge

An electrical Charge or rate that is applied to a metered Demand reading expressed in Kilowatts to compute a Demand Charge component of a Customer's Electric bill.

Demarcation Point

The Demarcation Point for a project shall be the Customer side of the panel onto which the CPAU Fiber terminates within the Customer Premises, unless otherwise specified in the Proposal for Dark Fiber Services.

Distribution Services

Includes, but is not limited to, Utility Service provided by the Distribution System and other Services such as billing, meter reading, administration, marketing, and Customer Services. Does not include Services directly related to the Interconnection of a Generating Facility as per Rule 27.

Distribution System

The infrastructure owned and operated by CPAU which is capable of transmitting electrical power, other than Interconnection Facilities, or transporting Water, Wastewater, or Gas within the City of Palo Alto. The Electric Distribution System transmits power from the City's Interconnection with PG&E to CPAU's Meter located on the Customer's Premises. The Gas Distribution System transports Gas from PG&E receiving stations to CPAU's Meter located on the Customer Premises. The Water Distribution System transports Water from the San Francisco Water Department receiving stations and CPAU wells to the meter located on the Customer Premises. The Wastewater Collection System transports sewage from the Customer's Premises to the Water Quality Control Plant.

Effluent

Treated or untreated Wastewater flowing out of a Wastewater treatment facility, sewer, or industrial outfall.

Electric, Electric Service

Utility Service provided to residents and business owners in the City of Palo Alto consisting of generation, transmission, and distribution of electrical power for retail use. Electric Service is provided by the City of Palo Alto Utilities Department.

Emergency

An actual or imminent condition or situation, which jeopardizes CPAU's Distribution System Integrity.

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DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

Emergency Service

Electric Service supplied to, or made available to, Load devices which are operated only in Emergency situations or in testing for same.

Energy Services

Energy commodity and any applicable ancillary Services used to generate and transport such commodity from its origin to the City's Point of Receipt. May also mean the sale of value added Services associated or related to the Provision and/or usage of energy commodity.

Equivalent Residential Unit (ERU)

This is the basic unit for computing storm and surface water drainage fees. All single-family Residential properties are billed the number of ERU's specified in the table contained in Utility Rate Schedule D-1, according to parcel size. All other properties have ERU's computed to the nearest 1/10 ERU using this formula: No. Of ERU = Impervious Area (sq. ft.) / 2,500 sq. ft.

Fiber Optic, Fiber Optic Service

A solid core of optical transmission material. Fiber Optic Service that is provided by the City of Palo Alto Utilities Department is referred to as Dark Fiber.

Fiber Optic Backbone

The high-density portion of the Dark Fiber Infrastructure installed and owned by the City.

Force Majeure

The occurrence of any event that has, had or may have an adverse effect on the design, construction, installation, management, operation, testing, use or enjoyment of the City's Utility Services, which is beyond the reasonable control of the parties and which event includes, but is not limited to, an Act of God, an irresistible superhuman cause, an act of a superior governmental authority, an act of a public enemy, a labor dispute or strike or a boycott which could not be reasonably contemplated by the City or Customer affected thereby, a defect in manufactured equipment (including, but not limited to, the Dark Fibers), fire, floods, earthquakes, or any other similar cause.

Function

Some combination of hardware and software designed to provide specific features or capabilities. Its use, as in Protective Function, is intended to encompass a range of implementations from a single-purpose device to a section of software and specific pieces of hardware within a larger piece of equipment to a collection of devices and software.



DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

Gas

Any combustible gas or vapor, or combustible mixture of gaseous constituents used to produce heat by burning. It shall include, but not be limited to, natural gas, gas manufactured from coal or oil, gas obtained from biomass or from landfill, or a mixture of any or all of the above.

Gas, Gas Service

Utility Service provided to residents and business owners in the City of Palo Alto consisting of procurement, transmission, and distribution of Gas for retail use. Gas Service is provided by the City of Palo Alto Utilities Department.

Generating Facility

All Generators, electrical wires, equipment, and other facilities owned or provided by Producer for the purpose of producing Electric power. This includes a solar or wind turbine Renewable Electrical Generation Facility that is the subject of a Net Energy Metering and Interconnection Agreement and Rule and Regulation 29.

Generator

A device converting mechanical, chemical or solar energy into electrical energy, including all of its protective and control Functions and structural appurtenances. One or more Generators comprise a Generating Facility.

Gross Nameplate Rating; Gross Nameplate Capacity

The total gross generating capacity of a Generator or Generating Facility as designated by the manufacturer(s) of the Generator(s).

Initial Review

The review by CPAU, following receipt of an Application, to determine the following: (a) whether the Generating Facility qualifies for Simplified Interconnection; or (b) if the Generating Facility can be made to qualify for Interconnection with a Supplemental Review determining any additional requirements.

Inspector

The authorized Inspector, agent, or representative of CPAU.

Interconnection; Interconnected

The physical connection of a Generating Facility in accordance with the requirements of the City's Utilities Rules and Regulations so that Parallel Operation with CPAU's Distribution System can occur (has occurred).



DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

Interconnection Agreement

An agreement between CPAU and the Producer providing for the Interconnection of a Generating Facility that gives certain rights and obligations to effect or end Interconnection. For the purposes of the City's Utilities Rules and Regulations, the Net Energy Metering and Interconnection Agreement (for NEM and NEM Aggregation Customers), and the Power Purchase Agreements authorized by the City Council may be considered as Interconnection Agreements for purposes of defining such term.

Interconnection Facilities

The electrical wires, switches and related equipment that are required in addition to the facilities required to provide Electric Distribution Service to a Customer to allow Interconnection. Interconnection Facilities may be located on either side of the Point of Common Coupling as appropriate to their purpose and design. Interconnection Facilities may be integral to a Generating Facility or provided separately.

Interconnection Study

A study to establish the requirements for Interconnection of a Generating Facility with CPAU's Distribution System.

Internet Exchange

Any Internet data center for telecommunications equipment and computer equipment for the purposes of enabling traffic exchange and providing commercial-grade data center services.

Island; Islanding

A condition on CPAU's Electric Distribution System in which one or more Generating Facilities deliver power to Customers using a portion of CPAU's Distribution System that is electrically isolated from the remainder of CPAU's Distribution System.

Junction

A location on the Dark Fiber Infrastructure where equipment is installed for the purpose of connecting communication cables.

Junction Site

The area within the Transmission Pathway at which a Junction is located.

Kilovar (kVar)

A unit of reactive power equal to 1,000 reactive volt-amperes.



DEFINITIONS AND ABBREVIATIONS

RULE AND REGULATION 2

Kilovar-hours (kVarh)

The amount of reactive flow in one hour, at a constant rate of Kilovar.

Kilowatt (kW)

A unit of power equal to 1,000 watts.

Kilowatt-hour (kWh)

The amount of energy delivered in one hour, when delivery is at a constant rate of one Kilowatt; a standard unit of billing for electrical energy.

Law

Any administrative or judicial act, decision, bill, Certificate, Charter, Code, constitution, opinion, order, ordinance, policy, procedure, Rate, Regulation, resolution, Rule, Schedule, specification, statute, tariff, or other requirement of any district, local, municipal, county, joint powers, state, or federal Agency, or any other Agency having joint or several jurisdiction over the City of Palo Alto or City of Palo Alto Utilities or Public Works Customers, including, without limitation, any regulation or order of an official or quasi-official entity or body.

Licensed Fibers

One or more fibers comprising a part of the Dark Fiber Infrastructure that are dedicated to the exclusive use of the Customer under the Provisions of the Dark Fiber License Agreement, Proposal to Dark Fiber Services Agreement and the Utilities Rules and Regulations.

Licensed Fibers Route

A defined path of Licensed Fibers that is identified by specific End Points.

Load(s)

The Electric power Demand (kW) of the Customer at its Service Address within a measured period of time, normally 15 minutes, or the quantity of Gas required by a Customer at its Service Address, measured in MMBtu per Day.

Main Wastewater Line

Any Wastewater line not including a building connection (Service) sewer.

Master-metering

Where CPAU installs one Service and Meter to supply more than one residence, apartment dwelling unit, mobile home space, store, or office.



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Maximum Generation

For a customer with a non-utility generator located on the customer's side of the Point of Common Coupling, the Maximum Generation for that non-utility generator during any billing period is the maximum average generation in kilowatts taken during any 15-minute interval in that billing period provided that in case the generator output is intermittent or subject to violent fluctuations, the City may use a 5-minute interval.

Meter

The instrument owned and maintained by CPAU that is used for measuring either the Electricity, Gas or Water delivered to the Customer.

Metering

The measurement of electrical power flow in kW and/or energy in kWh, and, if necessary, reactive power in kVar at a point, and its display to CPAU as required by Rule 27.

Metering Equipment

All equipment, hardware, software including Meter cabinets, conduit, etc., that are necessary for Metering.

Meter Read

The recording of usage data from Metering Equipment.

Minimum Charge

The least amount for which Service will be rendered in accordance with the Rate Schedule.

Momentary Parallel Operation

The Interconnection of a Generating Facility to the Distribution System for one second (60 cycles) or less.

Nationally Recognized Testing Laboratory (NRTL)

A laboratory accredited to perform the Certification Testing requirements under Rule 27.

Net Electricity Consumer

A Customer-Generator whose Generating Facility produces less electricity than is supplied by CPAU during a particular period, as such definition may otherwise be modified or supplemented by any definition in California Public Utilities Code section 2827(h)(2), as the same may be amended from time to time.



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Net Energy Metering

Net Energy Metering means measuring the difference between the electricity supplied through CPAU's Electric utility Distribution System and the electricity generated by the customer-generator's facility and delivered to CPAU's Electric utility Distribution System over a specified twelve-month period.

Net Energy Metering Cap (NEM Cap)

Five (5) percent of the historical system peak of 190 MW from 2006, or 9.5 MW, using the CEC's Alternating Current (AC) capacity rating. Where the CEC AC rating is not available, CPAU will multiply the inverter AC nameplate rating by 0.86.

Net Generation Metering

Metering of the net electrical power of energy output in kW or energy in kWh, from a given Generating Facility. This may also be the measurement of the difference between the total electrical energy produced by a Generator and the electrical energy consumed by the auxiliary equipment necessary to operate the Generator.

Net Nameplate Rating

The Gross Nameplate Rating minus the consumption of electrical power of a Generator or Generating Facility as designated by the manufacturer(s) of the Generator(s).

Net Surplus Customer-Generator

A Customer-Generator who's Generating Facility produces more electricity than is supplied by CPAU, during a particular period, as such definition may otherwise be modified or supplemented by any definition in California Public Utilities Code section 2827(h)(3), as the same may be amended from time to time.

Net Surplus Electricity Compensation

A per kilowatthour rate offered by CPAU to the Net Surplus Customer-Generators (excluding Aggregation Customers) for net surplus electricity, as such definition may otherwise be modified or supplemented by any definition in California Public Utilities Code section 2827(b)(8), as the same may be amended from time to time.

Non-Islanding

Designed to detect and disconnect from an Unintended Island with matched Load and generation. Reliance solely on under/over voltage and frequency trip is not considered sufficient to qualify as Non-Islanding.

Occupied Domestic Dwelling

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Any house, cottage, flat, or apartment unit having a kitchen, bath, and sleeping facilities, which is occupied by a Person or Persons.

Parallel Operation

The simultaneous operation of a Generator with power delivered or received by CPAU while Interconnected. For the purpose of this Rule, Parallel Operation includes only those Generating Facilities that are Interconnected with CPAU's Distribution System for more than 60 cycles (one second).

Performance Test, Performance Tested

After the completion of any Fiber Interconnection work, the City will conduct a Performance Test of each Fiber constituting a part of the proposed leased fibers to determine its compliance with the Performance Specifications.

Performance Specifications

These specifications will include, but not be limited to, criteria relating to end-to-end optical time domain reflectometer data plots that identify the light optical transmission losses in each direction along the leased fibers whenever the testing is possible, measured in decibels at a wavelength of 1310 or 1550 nanometers for singlemode Fiber, as a Function of distance, measured in kilometers.

Person

Any individual, for profit corporation, nonprofit corporation, limited liability company, partnership, limited liability partnership, joint venture, business, family or testamentary trust, sole proprietorship, or other form of business association.

PG&E Citygate

The PG&E Citygate is the point at which PG&E's backbone transmission system connects to PG&E's local transmission system.

Point of Common Coupling (PCC)

The transfer point for electricity between the electrical conductors of CPAU and the electrical conductors of the Producer.

Point of Common Coupling Metering

Metering located at the Point of Common Coupling. This is the same Metering as Net Generation Metering for Generating Facilities with no host load.

Point of Delivery (POD)

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Unless otherwise specified, the following definitions apply: For Electric, that location where the Service lateral conductors connect to the Customer's Service entrance equipment; for overhead Services, the POD is at the weather-head connection; for under-ground Services, the POD is located at the terminals ahead of or at the Meter; for multiple Meter arrangements with connections in a gutter, the POD is at the Meter terminals (supply-side); for multiple Meter arrangements in a switchboard, the POD is typically at the connectors in the utility entrance section; for Natural Gas, the POD is the point(s) on the Distribution System where the City delivers natural Gas that it has transported to the Customer.

Point of Interconnection

The electrical transfer point between a Generating Facility and the Distribution System. This may or may not be coincident with the Point of Common Coupling.

Point of Service (POS)

Where CPAU connects the Electric Service lateral to its Distribution System. For Fiber Optics Service, this is where CPAU connects the Fiber Service to the backbone. This point is usually a box located in or near the street or sidewalk and can be in the Public Right-of-Way. This point is at a mutually agreed upon location established at the time of installation.

Pole Line

Overhead wires and overhead structures, including poles, towers, support wires, conductors, guys, studs, platforms, cross arms braces, transformers, insulators, cutouts, switches, communication circuits, appliances attachments, and appurtenances, located above ground and used or useful in supplying Electric, communication, or similar or associated Service.

Power Factor

The percent of total power delivery (kVA) which does useful work. For billing purposes, average Power Factor is calculated from a trigonometric function of the ratio of reactive kilovolt-ampere-hours to the Kilowatt-hours consumed during the billing month. Power Factor is a ratio that reflects the reactive power used by a Customer. CPAU maintains an overall system Power Factor above 95% to reduce distribution system losses caused by low Power Factor.

Power Factor Adjustment

CPAU must install additional equipment to correct for Customers that maintain a low Power Factor, and may make a Power Factor Adjustment to a Customer's bill to account for those costs and the additional energy costs and losses incurred by CPAU due to the Customer's low Power Factor.

Premises

All structures, apparatus, or portion thereof occupied or operated by an individual(s), a family, or a



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business enterprise, and situated on an integral parcel of land undivided by a public street, highway, or railway.

Primary Service

CPAU Electric distribution Service provided to a Customer's Premises at a voltage level equal to or greater than 1000 volts.

Producer

The entity that executes an Interconnection Agreement with CPAU. The Producer may or may not own or operate the Generating Facility, but is responsible for the rights and obligations related to the Interconnection Agreement.

Proposal for Dark Fiber Services

A project-specific Service agreement that acts as a supplemental document for the Dark Fiber License Agreement. This Service agreement shall include the proposed Interconnection fees, applicable Fiber licensing fees, term of the Service, and summary of licensed Fiber elements.

Protective Function(s)

The equipment, hardware and/or software in a Generating Facility (whether discrete or integrated with other Functions) whose purpose is to protect against Unsafe Operating Conditions.

Provision

Any agreement, circumstance, clause, condition, covenant, fact, objective, qualification, restriction, recital, reservation, representation, term, warranty, or other stipulation in a contract or in Law that defines or otherwise controls, establishes, or limits the performance required or permitted by any party.

Prudent Utility Practices

The methods, protocols, and procedures that are currently used or employed by utilities to design, engineer, select, construct, operate and maintain facilities in a dependable, reliable, safe, efficient and economic manner.

Public Right-of-Way

The areas owned, occupied or used by the City for the purposes of furnishing retail and/or wholesale Electricity, Gas, Water, Wastewater, Storm and Surface Water Drainage, Refuse Service or communications commodity and/or distribution Service, and the means of public transportation, to the general public, including but not limited to, the public alleys, avenues, boulevards, courts, curbs, gutters, lanes, places, roads, sidewalks, sidewalk planter areas, streets, and ways.



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Public Utility Easements

The areas occupied or used by the City for the purpose of providing Utility Service to the general public, and all related Services offered by the City's Utilities Department and/or Public Works Department, the rights of which were acquired by easements appurtenant or in gross, or are other interests or estates in real property, or are the highest use permitted to be granted by the nature of the City's interest in and to the affected real property. This term incorporates all public Service easements for Utility Services that have been recorded by the City with the Recorder of the County of Santa Clara, California.

Public Works Department

See City of Palo Alto Public Works Department.

Rate Schedule

One or more Council-adopted documents setting forth the Charges and conditions for a particular class or type of Utility Service. A Rate Schedule includes wording such as Schedule number, title, class of Service, applicability, territory, rates, conditions, and references to Rules.

Recyclable Materials

Materials designated by the City as acceptable for recycling collection and processing.

Refuse Service

Refuse Service includes weekly collection, processing and disposal of materials properly deposited in the City Collector's provided Containers for solid waste, as well as weekly collection and processing of Recyclable Materials, weekly collection and processing of Compostable Materials, ongoing maintenance of the closed Palo Alto Landfill, zero waste programs, street sweeping service, the household hazardous waste program, and the annual Clean Up Day.

Renewable Electrical Generation Facility

A Generation Facility eligible for NEM under California Public Utilities Code section 2827 *et seq.* as the same may be amended from time to time.

Reserved Capacity

For a customer with one or more non-utility generators located on the customer's side of the Point of Common Coupling, the Reserved Capacity for each billing period is the lesser of 1) the sum of the Maximum Generation for that period for all non-utility generation sources; or 2) the maximum average customer demand in kilowatts taken during any 15-minute interval in the billing period provided that in case the load is intermittent or subject to violent fluctuations, the City may use a 5-minute interval.

Residential Service

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Utility Service provided to separately metered single family or multi-family, domestic dwelling.

Rules and Regulations

See **Utilities Rules and Regulations**

Scheduling Coordinator

An entity providing the coordination of power schedules and nominations to effect transportation and distribution of Gas, Electric power and energy.

Secondary Service

CPAU Electric distribution Service provided to a Customer's Premises at a voltage level less than 1000 volts.

Service(s)

Utility Services offered by the City of Palo Alto include Electric, Fiber Optics, Gas, Water, Wastewater Collection services provided by the Utilities Department (CPAU); and Refuse Service, Wastewater Treatment, and Storm and Surface Water Drainage Services provided by the Public Works Department.

Service Address

The official physical address of the building or facility assigned by CPAU's Planning Department, at which Customer receives Utility Services.

Service Charge

A fixed monthly Charge applicable on certain Rate Schedules that does not vary with consumption. The Charge is intended to recover a portion of certain fixed costs.

Service Drop

The overhead Electric Service conductors from the last pole or other aerial support to and including the splices, if any, connecting to the service entrance conductors at the building or other structure. Or, in the case of Fiber Optic Drops, the overhead Fiber Optics cable from the last pole or other aerial support to the building or other structure to and including the termination box.

Services or Service Lines

Facilities of CPAU, excluding transformers and Meters, between CPAU's infrastructure and the Point of Delivery to the Customer.

Service Territory

The geographic boundaries within the City of Palo Alto limits served by the physical Distribution

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System of the CPAU.

Short Circuit (Current) Contribution Ratio (SCCR)

The ratio of the Generating Facility's short circuit contribution to the short circuit contribution provided through CPAU's Distribution System for a three-phase fault at the high voltage side of the distribution transformer connecting the Generating Facility to CPAU's system.

Simplified Interconnection

An Interconnection conforming to the minimum requirements as determined under Rule 27, Section I.

Single Line Diagram; Single Line Drawing

A schematic drawing, showing the major Electric switchgear, Protective Function devices, wires, Generators, transformers and other devices, providing sufficient detail to communicate to a qualified engineer the essential design and safety of the system being considered.

Special Facilities

See CPAU's Rule and Regulation 20 governing Special Facilities.

Splice

A point where two separate sections of Fiber are physically connected.

Standard Refuse Container

A Standard Refuse Container shall have the meaning described in the Palo Alto Municipal Code. A Standard Container shall also include a wheeled container with a capacity of not to exceed 32 gallons.

Standby Service

Back-up Energy Services provided by CPAU.

Storm and Surface Water Drainage

Utility Service provided to residents and business owners in the City of Palo Alto.

Storm and Surface Water Drainage Service is provided by the City of Palo Alto Public Works Department.

Supplemental Review

A process wherein CPAU further reviews an Application that fails one or more of the Initial Review Process screens. The Supplemental Review may result in one of the following: (a) approval of Interconnection; (b) approval of Interconnection with additional requirements; or (c) cost and schedule for an Interconnection Study.

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System Integrity

The condition under which a Distribution System is deemed safe and can reliably perform its intended Functions in accordance with the safety and reliability rules of CPAU.

Tax

Any assessment, Charge, imposition, license, or levy (including any Utility Users Tax) and imposed by any Agency, including the City.

Telemetry

The electrical or electronic transmittal of Metering data in real-time to CPAU.

Temporary Service

Service requested for limited period of time or of indeterminate duration such as, but not limited to, Service to provide power for construction, seasonal sales lots (Christmas trees), carnivals, rock crushers or paving plants. Temporary Service does not include Emergency, breakdown, or Standby Service.

Therm

A Therm is a unit of heat energy equal to 100,000 British Thermal Units (Btu). It is approximately the energy equivalent of burning 100 cubic feet (often referred to as 1 ccf) of natural Gas. Since Meters measure volume and not energy content, a Therm factor is used to convert the volume of Gas used to its heat equivalent, and thus calculate the actual energy use. The Therm factor is usually in the units therms/ccf. It will vary with the mix of hydrocarbons in the natural Gas. Natural Gas with a higher than average concentration of ethane, propane or butane will have a higher Therm factor. Impurities, such as carbon dioxide or nitrogen lower the Therm factor.

Total Rated Generating Capacity

Total Rated Generating Capacity will be calculated as the sum of the rated generating capacity of all installed Renewable Electrical Generation Facilities participating in NEM or NEM Aggregation. The rated generating capacity for each individual Renewable Electrical Generation Facility participating in NEM or NEM Aggregation will be calculated as follows:

1. For Solar: For each Renewable Electrical Generation Facility that is a solar photovoltaic generating facility, CPAU will use the CEC's Alternating Current (AC) rating; or where the CEC AC rating is not available, CPAU will multiply the inverter AC nameplate rating by 0.86; and
2. For Non-Solar: For all other Renewable Electrical Generation Facilities, CPAU will use the



DEFINITIONS AND ABBREVIATIONS

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AC nameplate rating of the generating facility.

Transfer Trip

A Protective Function that trips a Generating Facility remotely by means of an automated communications link controlled by CPAU.

Transmission Pathway

Those areas of the Public Right-of-Way, the Public Utility Easements and the Leased Service Properties in which the Dark Fiber Infrastructure is located.

Trap

Any approved equipment or appliance for sealing an outlet from a house-connection sewer to prevent the escape of sewer Gas from a main line through a building connection (service) sewer.

Underground Utility District

An area in the City within which poles, overhead electric or telecommunication wires, and associated overhead structures are prohibited or as otherwise defined in Section 12.04.050 of the PAMC.

Unintended Island

The creation of an Island, usually following a loss of a portion of CPAU's Distribution System, without the approval of CPAU.

Unsafe Operating Conditions

Conditions that, if left uncorrected, could result in harm to personnel, damage to equipment, loss of System Integrity or operation outside pre-established parameters required by the Interconnection Agreement.

Utilities Department

See City of Palo Alto Utilities Department.

Utilities Director

The individual designated as the Director of Utilities Department under Section 2.08.200 of Chapter 2.08 of Title 2 of the Palo Alto Municipal Code, and any Person who is designated the representative of the director of utilities.

Utility(ies) Rules and Regulations, Rules and Regulations

The compendium of Utilities Rules and Regulations prepared by the City's Utilities and Public Works Departments and adopted by ordinance or resolution of the Council pursuant to Chapter 12.20 of the

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Palo Alto Municipal Code, as amended from time to time.

Utility(ies) Service(s), Service(s)

Electric, Fiber optics, Water, Gas, Wastewater collection services provided by the City of Palo Alto Utilities Department (CPAU) and Refuse Service, Wastewater Treatment and Storm and Surface Water Drainage services provided by the City of Palo Alto Public Works Department.

Utilities User Tax (UUT)

City of Palo Alto Tax imposed on Utility Charges to a Water, Gas, and/or Electric Service user. This may include Charges made for Electricity, Gas, and Water and Charges for Service including Customer Charges, Service Charges, Standby Charges, Charges for Temporary Services, Demand Charges, and annual and monthly Charges, as described in Chapter 2.35 of the Palo Alto Municipal Code.

Wastewater

Utility Service provided to residents and business owners in the City of Palo Alto. Wastewater Utility Services include collection and treatment of Wastewater. Wastewater Collection Service is provided by the City of Palo Alto Utilities Department, and Wastewater Treatment Service is provided by the City of Palo Alto Public Works Department.

Water

Utility Service provided to residents and business owners in the City of Palo Alto for retail use. Water Service is provided by the City of Palo Alto Utilities Department.

Water Column (WC)

Pressure unit based on the difference in inches between the heights of water columns as measured in a manometer. 6" WC = 0.217 psi; 7" WC = 0.25 psi.

(END)



ATTACHMENT B-2

NET ENERGY METERING SERVICE AND INTERCONNECTION

RULE AND REGULATION 29

A. APPLICABILITY

This Rule and Regulation is applicable to any City of Palo Alto Utilities (“CPAU”) Customer that is an eligible Customer-Generator under the California Public Utilities Code that desires to participate in Net Energy Metering (“NEM”) -or Net Energy Metering Aggregation (“NEM Aggregation”) with a Renewable Electrical Generation Facility, not to exceed 1 MW on premises within CPAU service territory to operate in parallel with the CPAU distribution system, so long as there is availability remaining within the NEM Cap as defined in Rule 2.

B. SCOPE

Notwithstanding the requirements and charges set forth in this Rule 29, CPAU reserves the right to impose any requirements set forth in Rule 27 that are additional to or more stringent than those set forth in this Rule 29, including those related to billing and charges, on NEM and NEM Aggregation Customers to the maximum extent permitted by state law (Cal. Pub. Util. Code § 2827 *et seq.*, as the same may be amended from time to time).

C. CUSTOMER ELIGIBILITY

1. General Requirements. In order to be eligible to participate in NEM or NEM Aggregation, a Customer must:
 - a. Be a Customer-Generator, pursuant to the definition set forth in Rule and Regulation 2.
 - b. Construct, design, install, interconnect, operate and maintain a Renewable Electrical Generation Facility (or combination of such facilities) that is:
 - i. On the Customer-Generator’s owned, leased or rented Premises,
 - ii. Of a total capacity of not more than one (1) MW (or 1,000 kW),
 - iii. Intended primarily to offset part or all of the Customer-Generator’s own Electric Service requirements, and
 - iv. Is not used to sell to any third person, or otherwise provide Electric



NET ENERGY METERING SERVICE AND INTERCONNECTION

RULE AND REGULATION 29

Service to any real estate parcel, premise, or location other than those that are the subject of the Customer-Generator's Interconnection Agreement (IA)

- c. Complete and provide CPAU with all required agreements, supporting documents, and any payments related to interconnection

~~e2. NEM Cap. Complete and provide CPAU with all required agreements, supporting documents, and any payments related to interconnection. Customers remain eligible for NEM and NEM Aggregation until such time as the Total Rated Generating Capacity used by NEM and NEM -Aggregation Customers combined reaches CPAU's NEM Cap. NEM is available on a first-come, first-served basis. Once the NEM Cap has been reached, Net Energy Metering NEM Service and Interconnection will be closed to new customers.~~

23. Additional Requirements for NEM Aggregation. In addition to those eligibility requirements set forth in Section 1(a) of this Rule and Regulation 29, a CPAU Customer is only eligible to participate in NEM Aggregation where:

- a. The Customer-Generator elects to aggregate Electric Service of the meters located on the property where the Renewable Electrical Generation Facility is located across properties that are adjacent or contiguous with that property; and
- b. All properties across which the Customer-Generator elects to aggregate are solely owned, leased, or rented by the eligible Customer.

D. BILLING FOR NEM

1. General Rules

a. Twelve Month True Up Period

i. At the end of each twelve-month period following:

- aa. The date of Interconnection of the Renewable Electrical Generation Facility, or



NET ENERGY METERING SERVICE AND INTERCONNECTION

RULE AND REGULATION 29

- bb.** For a Customer with a date of Interconnection of the Generating Facility commencing prior to February 1, 2010, the day after CPAU’s receipt of the Customer’s net surplus electricity election form
 - ii.** CPAU will determine whether the Customer-Generator is a Net Electricity Consumer or a Net Surplus Customer-Generator during that period.
- b.** CPAU will bill the Customer-Generator for the electricity used during that twelve-month period, whether the Customer-Generator is considered a Net Electricity Consumer or a Net Surplus Customer-Generator.
- c.** CPAU shall provide the Customer-Generator with net electricity consumption information with each monthly bill; that information shall include either the current monetary balance owed to CPAU or the current amount of excess electricity produced since the last twelve-month period.
- d.** If the Customer-Generator terminates the contractual relationship with CPAU, then CPAU shall reconcile the Customer-Generator’s consumption and production of electricity during any part of the twelve-month period following the last annual settlement and reconciliation, using the procedures as outlined in this Rule.
- e.** For a Customer-Generator who has submitted an affirmative election, CPAU will provide either Net Surplus Electricity Compensation in accordance with Electric Utility Rate Schedule E-NSE-1, for any net surplus electricity generated during the prior twelve-month settlement period, or bill credits resulting from net surplus electricity generation to be applied against electricity-related charges subsequently incurred by the Customer-Generator.
- f.** If the Customer-Generator fails to make an affirmative election to receive Service pursuant to Net Surplus Electricity Compensation, then CPAU shall retain any excess electricity (expressed in Kilowatt-hours) generated during the prior twelve-month settlement period, and it shall not be obligated to pay Net Surplus Electricity Compensation, nor shall it be obligated to allow the application of net surplus electricity credits to be used against Energy charges subsequently incurred by the Customer-Generator.



NET ENERGY METERING SERVICE AND INTERCONNECTION

RULE AND REGULATION 29

- g. CPAU will allow a Customer to change the election option once each twelve-month settlement period provided that the Customer provides notice to CPAU one month prior to the beginning of new settlement period.

2. Monthly Billing

- a. Medium and large commercial Customer-Generators will be required to pay any balances due to CPAU on a monthly basis.
- b. Except as annual billing is provided for in this Rule 29, residential and small commercial Customer-Generators will default to owing balances due on a monthly basis, but may request annual billing as allowed for in California Public Utilities Code sections 2827 (g) and (h)(2)(c).
- c. Standby service charges for backup or maintenance electric service will be waived, provided that the Customer-Generator qualifies for participation in net energy metering at the Service Address
- d. For a Net Surplus Customer-Generator in a given month, any credits created will be carried forward to future months, to be used for future electric charges, until the end of the Customer-Generators Twelve Month True-Up Period.

3. Annual Billing

- a. Customers may request annual billing as allowed for in California Public Utilities Code sections 2827 (g) and (h)(2)(c)..
- b. Bill payment will not be considered delinquent, unless the Customer-Generator does not pay a final billing statement within twenty (20) days of the date of issuance of that final billing statement.
- c. For annually billed residential or small commercial Customer-Generators, the net balance of money owed to CPAU will be carried forward until the end of the twelve-month period.



NET ENERGY METERING SERVICE AND INTERCONNECTION

RULE AND REGULATION 29

- d. To accommodate annual billing, a Customers Electricity Service may be transferred to a separate Utility Account so as not to interrupt monthly billing for other recurring, non-electric Utility Services.

4. Additional Billing Rules Applicable to NEM Aggregation Customers

- a. For each monthly billing period, the amount of electricity generated from the Aggregation Customer's Generating Facility during that billing period will be accounted for on a per kWh basis.
- b. The Aggregation Customer's energy consumption will be totaled for each Beneficiary Account that is listed to receive kwh energy credits from the Generating Facility per the Customer's Interconnection Agreement.
- c. Each Beneficiary Account will be allotted a portion of the Generating Facilities energy equal to that Beneficiary Accounts relative share of Aggregation Customer's total usage for the billing period.
- d. The total amount of energy produced by a Generating Facility will be allotted in each billing period.
- e. The billing for Beneficiary Accounts will be the same as NEM customers, as outlined in Section 2(a) above, with the restriction that no Beneficiary Account is eligible for Net Surplus Electricity Compensation in accordance with Electric Utility Rate Schedule E-NSE-1, but may only carry forward energy credits.

DE. APPLICATION AND INTERCONNECTION PROCESS

1. Application Process

CPAU shall process a request for the establishment of NEM and Interconnection from the Customer-Generator within the time period not exceeding that for Customers requesting new Electric Service; provided, however, that such time period will not exceed thirty (30) days from the date of (1) receipt of a completed Application form for Net Energy Metering Service and Interconnection from the Customer-Generator, (2) Electric inspection clearance from CPAU in accordance with California Public Utilities Code 2827(c)(2), and (3) building



NET ENERGY METERING SERVICE AND INTERCONNECTION

RULE AND REGULATION 29

inspection clearance from the City of Palo Alto Building Inspection Division. If CPAU is unable to process the request within the thirty-day period or other applicable period, then CPAU shall notify the Customer-Generator of the reason for its inability to process the request and the expected completion date.

2. Interconnection Process

The Customer-Generator will be required to sign either an Interconnection Agreement, as applicable, or an agreement containing substantially the terms and conditions of the above referenced agreements and agree to be subject to applicable Utility Rates and Charges and Utility Rules and Regulations in order to be eligible for NEM Service provided by CPAU. CPAU will make available all necessary forms and contracts for NEM Service for download from the Internet.

DE. GENERATING FACILITY DESIGN AND OPERATING REQUIREMENTS

1. Safety Standards

The facility will meet all applicable federal, state and local safety and performance standards, including those established by the National Electrical Code (NEC), the Institute of Electrical and Electronic Engineers, and accredited testing laboratories such as Underwriters Laboratories (UL) and, as applicable, the rules of the California Public Utilities Commission regarding safety and reliability. The Customer-Generator whose facility meets those standards and rules will not be required to install additional controls, perform or pay for additional tests, or purchase additional liability insurance.

2. Design Standards

In addition to the requirements more generally set forth in section D.1, Customer-Generator will:

- a. Conform to the applicable National Electric Code (NEC) Standards [NEC 690] and applicable building codes.
- b. Have a dedicated circuit from the inverter to the Service panel with a circuit breaker or fuse [NEC 690-64(b)(1)].



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- c. Have an overcurrent device at the Service panel will be marked to indicate solar power source [NEC 690-64(b)(4)].
- d. Establish the following minimum specifications for Parallel Operation with CPAU's Electric utility Distribution System.
- e. Install a visible break, lockable AC disconnect switch in the dedicated circuit to the inverter. This switch will be located where it is easily accessible by CPAU personnel and will be equipped with a CPAU padlock [CPAU Rule and Regulation 27].
- f. Use an inverter that is UL 1741-approved and have the following specifications for Parallel Operation with CPAU's Electric utility Distribution System:
 - i. Inverter output will automatically disconnect from CPAU's utility source upon the loss of CPAU's utility voltage and will not be reconnected until at least five (5) minutes after normal utility voltage and frequency have been restored [UL 1741].
 - ii. Inverter will automatically disconnect from CPAU's utility source within 120 cycles (2 seconds) if CPAU's utility voltage isles than 106 volts or greater than 132 volts on a 120-volt base [UL 1741].
 - iii. Inverter will automatically disconnect from CPAU's utility source within 10 cycles (0.17 seconds) if CPAU's utility frequency fluctuations is less than 59.3 hertz or greater than 60.5 hertz [UL 1741] cycle.
 - iv. Inverter output will comply with IEEE 519 standards for harmonic distortion [CPAU Rule and Regulation 27].

EG. METERING

1. NEM may be accomplished by using a single Meter capable of registering the flow of electricity in two different directions. If the Customer-Generator's existing Meter is not capable of measuring the flow of electricity in two directions, then the Customer-Generator shall be responsible for all expenses involved in purchasing and installing a Meter that is able to measure electricity flow in two directions.
2. In lieu of one Meter, an additional Meter to monitor the flow of electricity in each direction may be installed with the consent of the Customer-Generator, at the expense of CPAU. The



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additional Meter shall be used only to provide the information necessary to accurately bill or credit the Customer-Generator and/or to collect solar or wind Electric generating system performance information for research purposes.

3. Customer-Generator grants to CPAU, its officers, employees, agents and representatives the non-exclusive right of ingress and egress on, over and across the Premises upon reasonable prior notice for the purpose of inspecting and approving the installation and operation of the Facility and authenticating the accuracy of the meter(s), or in the event of an emergency or in regard to a disconnection of the Facility, without notice, if in CPAU's Director of Utilities' sole judgment, a condition hazardous to life or property exists, and immediate action is necessary to protect life or property from damage or interference directly caused by the Equipment or as a result of the lack of properly operating protective devices.

FH. GENERAL REQUIREMENTS

1. Customer-Generator will obtain and maintain the required governmental authorizations, permits, and any policy or policies of insurance, including, without limitation, commercial general liability, property, and professional liability insurance, as may be required by applicable laws, subject only to subsection c below.
2. CPAU will not be obligated to accept or pay for, and it may require Customer-Generator to interrupt or reduce, the delivery of available energy generated by the Facility under the following: (a) whenever CPAU in its sole judgment determines that the interruption or reduction is necessary in order for CPAU to construct, install, maintain, repair, replace, remove, investigate, or inspect any part of CPAU's electric utility distribution system; or (b) if CPAU determines that the interruption or reduction is necessary on account of an emergency, voluntary or involuntary outage, event of force majeure, or compliance with prudent electrical practices.
3. Notwithstanding any other provision of this Agreement, if CPAU determines that either (a) the operation of the Facility may threaten or endanger the health, safety or welfare of CPAU's personnel or CPAU's or its personnel's property, or (b) the continued operation of the Facility may endanger the operational integrity of CPAU's electric utility distribution system, CPAU will have the right to temporarily or permanently disconnect the Facility from CPAU's electric utility distribution system upon the delivery of reasonable notice to Customer-Generator; provided, however, CPAU may act without



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giving prior notice to Customer-Generator, if CPAU determines that it is impracticable to provide the notice. The Facility will remain disconnected until such time as CPAU's Director of Utilities is reasonably satisfied that the conditions referred to in this subsection have been corrected or sufficiently addressed.

4. Customer-Generator will (a) maintain the Facility, which interconnects with CPAU's electric utility distribution system, in a safe and prudent manner and in conformance with all applicable laws, rules and regulations, including, without limitation, the requirements of this Section 3, and (b) obtain any governmental approvals, authorizations and permits required for the construction and operation of the Facility.
5. Customer-Generator will reimburse CPAU for any and all losses, damages, claims, penalties, or liability that CPAU may incur or sustain as a result of Customer-Generator's failure to obtain and maintain any and all governmental approvals, authorizations and permits that may be required for the construction, installation, operation, repair and maintenance of the Facility.

