DOCKETED	
Docket Number:	19-SPPE-01
Project Title:	Laurelwood Data Center (MECP I Santa Clara I, LLC)
TN #:	229557
Document Title:	Report of Conversation - Silicon Valley Power Responses to Questions from Staff
Description:	Silicon Valley Power (SVP) Responses to Questions from Staff Conversation between Lisa Worrall of the CEC and Kevin Kolnowski, SVP
Filer:	Marichka Haws
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	8/27/2019 3:14:23 PM
Docketed Date:	8/27/2019

CALIFORNIA ENERGY COMMISSION

REPORT OF CONVERSATION

Siting, Transmission and Environmental Protection Division

FILE: n/a

PROJECT TITLE: Laurelwood Data Center | **Docket:** 19-SPPE-01

TECHNICAL AREA(s): Air Quality

☐ Telephone	☒ Email	☐ Meeting Location:	
NAME(s):	Lisa Worrall, CEQA Lead Project Manager	**DATE:** 8/23/19	**TIME:** 12:17 pm
WITH:	Kevin Kolnowski, Assistant Director, SVP		
SUBJECT:	**Silicon Valley Power (SVP) Responses to Questions from Staff**		

COMMENTS:

California Energy Commission staff received information about the Silicon Valley Power system and responses to staff's questions from July 2, 2019 (TN 229077) and August 5, 2019 follow-up questions and responses (TN 229077). Staff saw that there was a discrepancy as to where the project would connect with the SVP system. The applicant stated the project would connect with the northwest loop, while SVP stated the project would connect with the south loop.

Energy Commission staff followed up with SVP and received confirmation that the project would connect with the northwest loop. Staff requested SVP's previous answers be evaluated and corrected where necessary to reflect the connection with the northwest loop.

The following attachments are the updated responses received from SVP.

cc:	**Signed:** |s| Lisa Worrall
	Name: Lisa Worrall, Planner II

Outlined below is information related to MECP1's proposed substation located in the City of Santa Clara's Silicon Valley Power's service territory. The proposed substation will be located at 2201 Laurelwood Road under SVP's nomenclature, San Tomas Junction. This facility is designated as a Junction as the customer has elected to receive electric service from SVP at the 60,000V level.

1. Please provide for the 60 kV loop on the SVP system that will serve the MECP1 data center:
   a. A physical description

      San Tomas Junction is a three-50MVA (60kV:12.47kV) transformer bank substation on SVP's 60kv Northwest Loop. It is located between SVP's two 60kV Substations, Central (CEN) and Juliette (JUL). Each Transformer has a proposed rating of 30/40/50 MVA. The final buildout of San Tomas Junction will have a capability of 99 MVA, with 150 MVA of installed capacity which increases its reliability. The customers Single Line Diagram (SLD) "LAUREL SITE SINGLE LINE DIAGRAM SIMPLIFIED" is attached.

   b. The interconnection points to SVP service

      The Interconnection points to SVP will be the three high-side transformer gang switches. SVP's nomenclature will be drafted as GS36, GS26, and GS16.

   c. The breakers and isolation devices and use protocols

      There are four 60kV Breakers at San Tomas Junction shown on customer SLD, CB1, CB2, CB3 and CB4 which will enable various isolation schemes to insure a transformer bank can be isolated while the other two transformers remain in service. The system is designed such that one of the transformers can be taken out of service for repairs or maintenance while the other two can fully support customer load.

   d. A list of other connected loads and type of industrial customers

      See attached Excel Spreadsheet, Loop Customer and Loading Peak 8-1-19.xlsx

   e. A written description of the redundant features that allow the system to provide continuous service during maintenance and fault conditions

      SVP's Northwest Loop is fed from Northern Receiving Station (NRS) and Scott Receiving Station (SRS). Both NRS and SRS are 115/60 kV receiving stations. NRS has five 115kV lines connected to the bulk electric system, two are connected to SRS, two are connected to PG&E's Newark Substation (NEW), and one is connected to PG&E's Nortech Substation (NOR). NRS also has one 230kV line connected to SVP's Switching Station (SSS) which is also connected to the greater bulk electric system (BES). SRS is connected to SVP's Duane Substation (DUA). The DUA Substation is connected to the City's 147 MW Donald Von Raesfeld Combined Cycle Power Plant. Both NRS and SRS have two 115/60kV transformers for redundancy and reliability. This arrangement allows for a high reliability electrical system.

      The 60kV loop is designed to maintain power to all customers when any line on the loop is out of service due to either maintenance or an unplanned outage. Each Receiving

Station on the loop ends, NRS and SRS, is capable of delivering power to the entire loop. The full redundancy design of the system allows any line segment on the loop to be taken out of service for regular maintenance activities without causing a service interruption to any customers. Additionally, the protection systems on the loop are designed to detect fault conditions and isolate the fault to a single line segment. The isolation of the fault allows for continuous service for all customers during fault conditions.

As discussed above, San Tomas Junction will have three 30/40/50 MVA transformers. The maximum load being requested by the customer is 99 MVA. With 150MVA of transformers, one transformer can be removed from service for maintenance and the load can be provided by the remaining two transformers.

See attached SVP Network Diagram 082319 MECP1 San Tomas Junction (STJ).pdf.

2. Please provide a description of the SVP system in general and the other 60 kV loops that would serve data centers.
    a. Could you provide a one-line diagram and a "*.shp" file of the 60 kV and above lines serving the Silicon Valley Power System? Would you have any concerns with us using either of these in a public document?

    Refer to SVP CA Energy Map 082319 MECP1 San Tomas Junction (STJ).pdf and SVP Network Diagram 082319 MECP1 San Tomas Junction (STJ).pdf.

    b. Are each of the 60 kV loops designed similarly or do some of them have features that make them more or less reliable than the others?

    They are all designed similarly with the same redundancy/reliability philosophy.

3. Please describe any outages or service interruptions on the 60 kV systems that will serve the proposed data centers:
    a. How many 60 kV double looped lines serve data centers in SVP, and how many data centers are on each?

    The City currently has five 60kV Loops. They are as follows:
    - East Loop
    - Northeast Loop
    - Northwest Loop
    - Center Loop
    - South Loop

    Customer location per loop is provided in Question 1 d. above.

    b. What is the frequency of 60 kV double-looped lines having a "double outage" that would require use of backup generators?

    Extremely Rare. There was only one outage between years 2009 current 2019 where SVP lost both 60kV feeds into a substation. The total duration of the outage was 7 hours and 23 min for the outage that occurred on May 28th, 2016 at 9:28 PM.

A balloon released by an individual made contact with the 60kV line between the Northwestern Substation (NWN) and the Zeno Substation (ZEN) at pole NWZ4. The balloon contact caused a pole fire and the bottom phase, bottom insulator and guy wire burned. The circuit breaker at ZEN substation tripped properly, isolating the fault from the ZEN substation and keeping the line from the ZEN substation to the Kiefer Receiving Station energized.

However, on the NWN Substation side, the circuit breaker failed to trip due to a faulty direct current (DC) voltage source which is required for the breaker tripping coil.

Once this breaker failed to open, due to the directional nature of the fault, the fault was picked up at the Scott Receiving Station (SRS) which caused the section of the loop from the ZEN to SRS to be without power. This included the NWN Substation and the Fairview (FVR) substation. Since this was an unusual event, SVP spent the required time determining the root cause and inspecting the system prior to re-energization.

c. How long were any outages and what were their causes?

60kV outage data since 2009 is in the below chart (10 years of data). The items highlighted in yellow indicate that there was some kind of fault associated with the outage. The items highlighted in blue is when we had customers out of power as a result. The non-highlighted items are where an outage was taken to correct an observed situation.

From 2009 through current 2019 there have been:

1. 15-60kV impacted outages due to faults.
2. 4- 60 kV impacted outages that caused customers to be out of power. Only the 12/2/16 outage and 5/28/16 involved data centers.
3. 31- 60kV total outages
4. The average 60kv outage lasts for 2.75 hours

Date	Line(s)	Cause	Duration	Customers out of power
3/30/19	URA-WAL	Bird @ UW43	1 Hour 46 Min	0
11/22/18	HOM-SER	Pole Fire HS9 (force out)	1 Hour 27 Min	0
7/5/18	SER-HOM	Force out to remove balloons	9 Min	0
5/5/18	SER-HOM	Force out to remove balloons	11 Min	0
9/1/17	AGN-NAJ	Force out to cut trees	1 hour 5 min	0
8/8/17	URA-ZEN	Force out to remove balloons	20 Min	0
5/25/17	SRS-FRV	Tripped during SCADA commissioning	1 Min	0
5/8/17	NWN-ZEN	Force out to remove bird	50 Min	0

4/29/17	SRS-HOM	Force out to remove balloons	2 hours 22 min	0
03/20/17	JUL-CEN	Third Party got into 60kV	9 hours 55 min	0
01/22/17	SER-BRO	Tree in wires	3 hours 31 min	0
01/22/17	NAJ-PLM	A phase contact guy wire when winds pick up	1 hour 47 min	0
01/19/17	KRS-PLM	Palm frond between phases	41 min	0
01/18/17	NAJ-PLM	A phase contact guy wire when winds pick up	1 Hour 44 min	0
12/02/16	RAY T1 & T2	Dropped both transformers during restoration switching due to relay not reset	12 minutes	257
09/06/16	SRS-CEN	Bird Contact	40 Min	0
06/30/16	WAL-FIB	Bird nest contact	12 hours and 4 min	0
5/28/16	SRS-FRV-NWN-ZEN	Balloons in line and breaker fail	7 hours 23 min	28
02/17/16	SRS-FRV	Palm tree with fire	7 hours	0
11/18/15	SER-BRO	Arcing wires forced	2 hours 59 min	0
11/16/15	SER-BRO	Rotten Pole- forced	22 hours 32 min	0
11/09/15	JUL CB32	Possible lightning	53 min	0
10/29/15	SER-BRO	Roller arcing-forced	3 hours 33 min	0
08/12/15	BRO-DCJ, BRO T1	Squirrel on CB100	3 hours 55 min	2155
06/24/15	CCA CB22	Bad JMUX card	3 hours 23 min	0
05/30/15	SER-BRO	No cause found	3 hours 12 min	0
03/31/15	BRO-DCJ 12KV BUS 1 & 2	Squirrel across 12kv bus tie	3 hours 26 min	2927
01/28/15	Mission CB12	Shorted control cable	6 hours 29 min	0
04/24/14	DCJ CB42	Tripped during relay work. BF wired as TT	1 Hour 30 Min	0
10/14/13	URA_WAL	Sheared Hydrant hit 60kV above	2 hours 26 min	0
12/06/12	Jul CB 32	Tripped due to cabinet vibration	2 min	0

d. Have there been any changes to the SVP system that would prevent these types of outages from occurring in the future?

Every outage is analyzed for root cause. Most of the outages that occur on the 60kV system are outside SVP's control, e.g. Mylar balloon, squirrels or animals, car accidents, and similar events. If the outage is suspected to be caused by a failure of the intended protection scheme or equipment, then further analysis is performed and appropriate changes are implemented to minimize impact of future outages. After the outage in May,

2016, SVP performed additional circuit breaker testing and DC wire checks to maintain the reliability of its system.

e. Given the large number of data centers with backup generators being developed in the SVP service area, would future outages likely affect more than one data center or are there elements of the SVP system design that might limit the impact of transmission outages?

Adding more data centers on the 60kV looped system would not make it more or less likely that an outage will occur. A "double outage," which has occurred only once in the last ten years, has the potential to cause multiple data centers to go to back up generators depending on the locations of both line segments that are out of service.

f. Are there data center customers served by SVP (ie, legacy data centers) that are not on the 60kV loops? How are they served and what are the expected service outage types and rates?

No, ALL data center customers are inherently part of our 60kV loop. The voltage level these data center customers are on our 12kV distribution system, which power is provided from our 60kV substations.

4. During the proceeding for the McClaren Backup Generating Facility, the project owner described a 5/29/2016 outage at their Vantage Santa Clara Campus. The project owner provided information that six backup generators operated during that outage; of those, two operated for 7 hours while four others operated approximately 19 hours.
   a. What was the reason for the outage?

Balloons made contact with the NWN-ZEN 60kV Line at Pole NWZ4. Original fault was A Phase and GRD due to contact with the Guy wire. NWN CB 32 failed to trip due to a bad DC power source to the breaker trip coil. FRV CB12 tripped as a result of NWN CB32 not tripping. FRV CB42 and SRS CB572 also tripped due to 3 phase differential fault that occurred which is believed to have been caused by the amount of time the A phase and ground fault lasted.

   b. How long did it last for the Vantage customer? For other customers on that loop?

The outage occurred on 5/28/2019 at 2128. On 5/29/19 @ 0429- Fairview was restored, @ 0434 NWN 60kV bus restored. The system outage was 7 hours and 23 minutes. We are not privileged to the information as to why the data center may have chosen to continue to operate on their back-up generators.

   c. Is the anything about the location or interconnection of the proposed data centers that protect against a similar outage?

No difference with this location.

5. Pacific Gas and Electric Company and other utilities have developed Public Safety Power Shutoff protocols that could disconnect electrical services during periods of concern in order to prevent their equipment from starting wildfires. These potential shutoffs could last hours or even days. How would these new protocols potentially affect SVP's service territory or access to bulk transmission assets?

   The City of Santa Clara's SVP is not located in a California Public Utilities Commission/Cal Fire Tier 2 or Tier 3 high fire risk zone. Therefore, SVP does not have a Public Safety Power Shutoff as part of their Wildfire Mitigation Plan. However, we do receive power from PG&E through six interconnection points. Based on our discussion with PG&E, Santa Clara may be requested by PG&E or the California Independent System Operator (CAISO) to curtail load. This request may be because of the reduced capacity somewhere within the system which will require overall system load reduction. This experience may be similar to the energy crisis of the early 2000's when rolling black-outs were require to maintain electric grid reliability. SVP has the capability to provide 200 MW of generation in the City with its Donald Von Raesfeld Combined Cycle Power Plant (147 MW) and the Gianera Peaker Plant (49 MW) and Cogen Facility (6 MW), we may be requested to curtail load.

   SVP is working with PG&E and the CAISO as to how this situation may occur.

PLOTTED: 5/10/2019 10:30 AM BY LBROOKS
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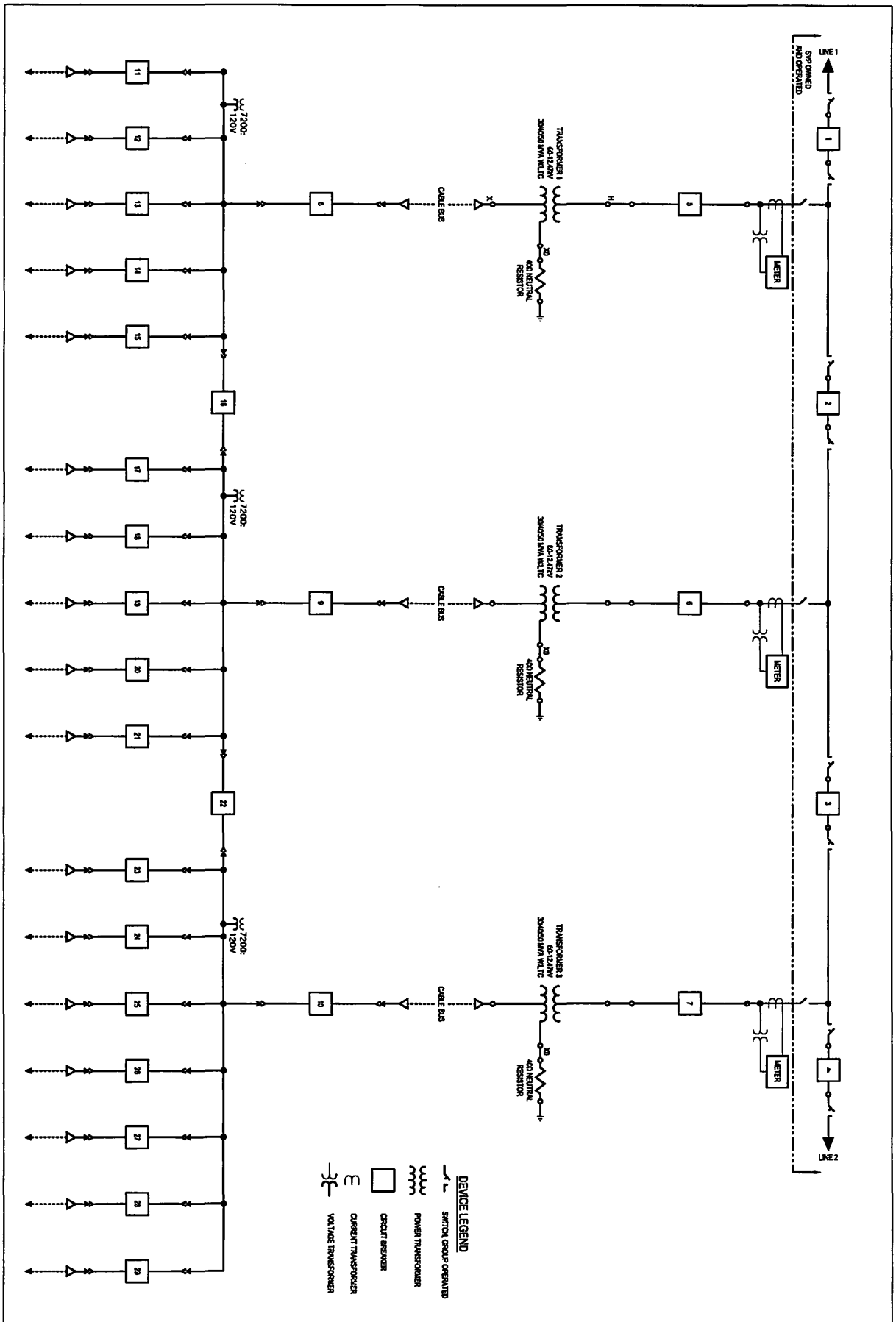

DRAWING NO.	CAECLAUR100		
SCALE	NONE		
DATE	4-25-19		
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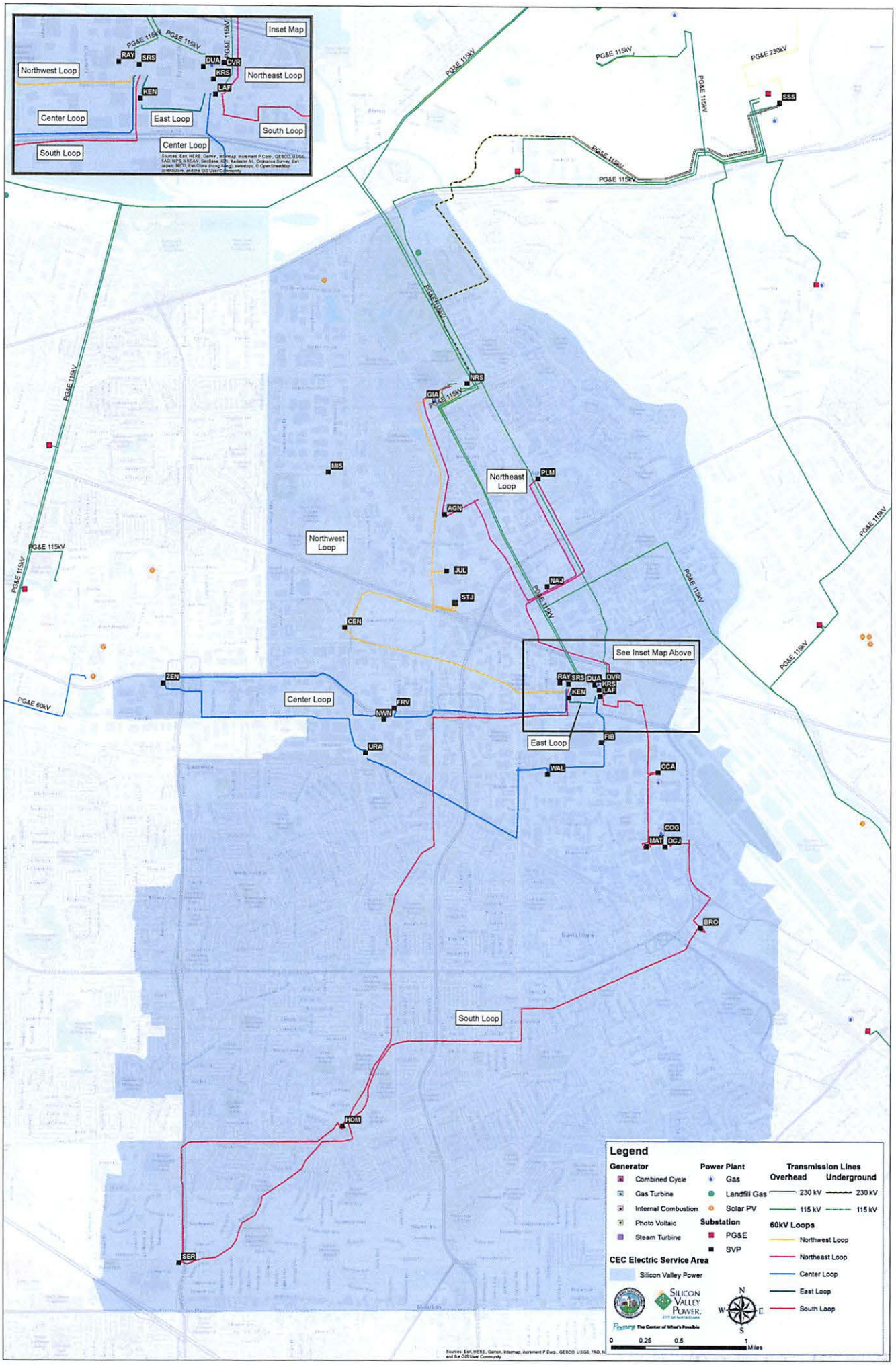
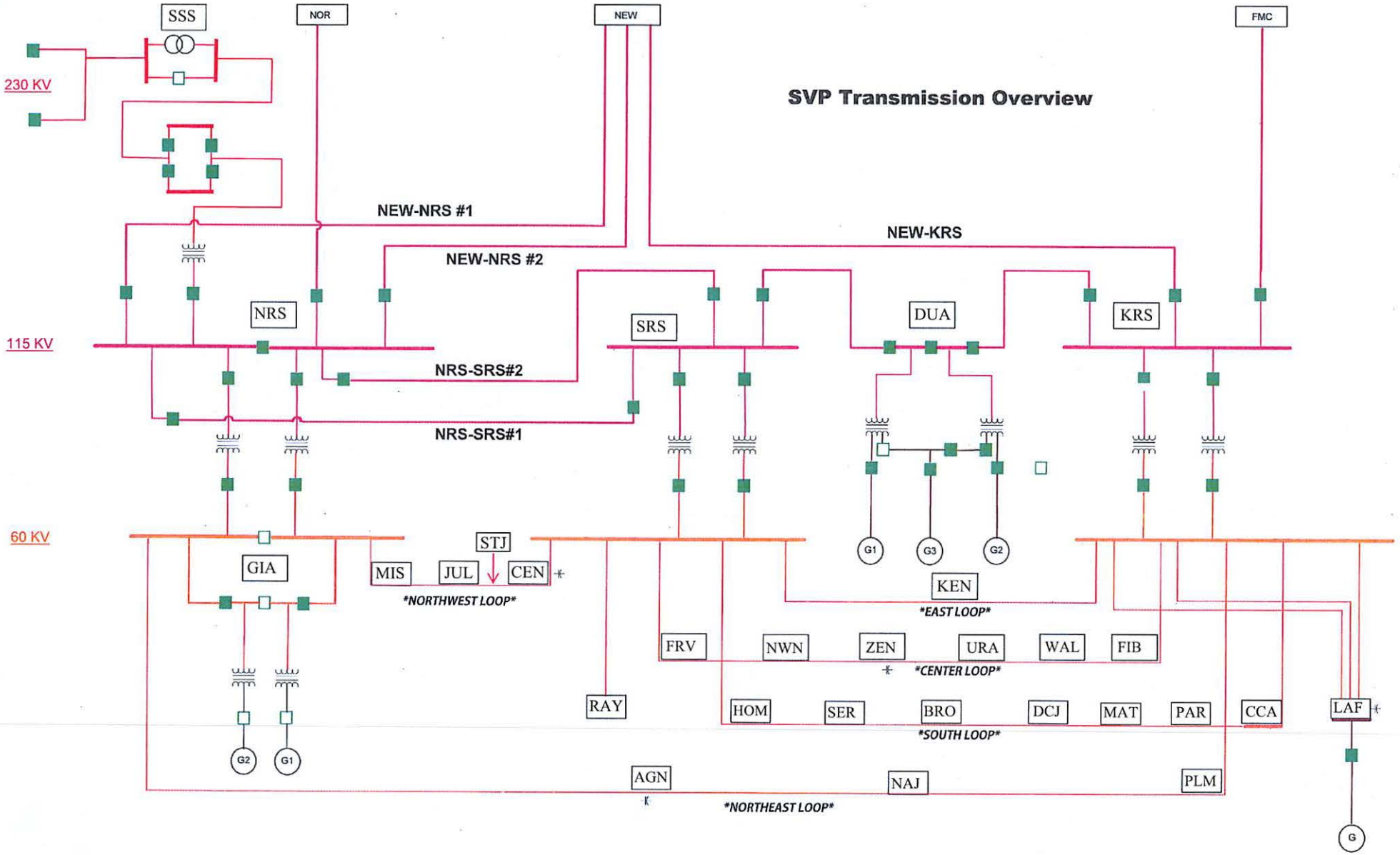
EDGECORE

LAUREL SITE
SINGLE LINE DIAGRAM
SIMPLIFIED

No.	DATE	REVISION	BY
B	5-10-19	REVISED SWITCHGEAR BREAKER NUMBERS	PWH
A	04-30-19	ISSUED FOR REVIEW	PWH

Designed By: PWH | Drawn By: CED | Checked By: PWH


Inset Map
Northwest Loop
Northeast Loop
Center Loop
East Loop
South Loop
Center Loop
South Loop
PG&E 115kV
PG&E 230kV
RAY
SRS
DUA
DVR
KRS
LAF
KEN
SSS
NRS
GIA
MIS
PLM
AGN
JUL
NAJ
STJ
CEN
ZEN
FRV
NWV
URA
See Inset Map Above
FIB
WAL
CCA
COG
MAT
DCJ
BRO
HOM
SER
PG&E 60kV
Legend
Generator
Combined Cycle
Gas Turbine
Internal Combustion
Photo Voltaic
Steam Turbine
Power Plant
Gas
Landfill Gas
Solar PV
Substation
PG&E
SVP
CEC Electric Service Area
Silicon Valley Power
Transmission Lines
Overhead
Underground
230 kV
115 kV
60kV Loops
Northwest Loop
Northeast Loop
Center Loop
East Loop
South Loop
N
W
E
S
0
0.25
0.5
1
Miles


SVP Transmission Overview
230 KV
115 KV
60 KV
SSS
NOR
NEW
FMC
NEW-NRS #1
NEW-NRS #2
NEW-KRS
NRS
SRS
DUA
KRS
NRS-SRS#2
NRS-SRS#1
GIA
STJ
MIS
JUL
CEN
NORTHWEST LOOP
G1
G3
G2
KEN
EAST LOOP
FRV
NWN
ZEN
URA
WAL
FIB
CENTER LOOP
RAY
HOM
SER
BRO
DCJ
MAT
PAR
CCA
LAF
SOUTH LOOP
G2
G1
AGN
NAJ
PLM
NORTHEAST LOOP
G

SVP Loop Customers and Loading Peak - Substation:

Substation	Loop	Customer/Industry	Substation	Loop	Customer/Industry
Fairview	Center	Mfg1	Central	Northwest	Medical2
Fairview	Center	Datacenter1	Central	Northwest	Real Estate2
Fairview	Center	Datacenter2	Central	Northwest	Real Estate3
Fairview	Center	Datacenter3	Central	Northwest	Real Estate4
Fairview	Center	Datacenter4	Central	Northwest	Datacenter24
FIB	Center	Mfg2	Central	Northwest	Datacenter25
Lafayette	Center	Mfg3	Central	Northwest	R&D2
Lafayette	Center	Datacenter5	Central	Northwest	Real Estate5
Lafayette	Center	Mfg4	Central	Northwest	Real Estate6
Lafayette	Center	Mfg5	Central	Northwest	Healthcare equipment
Lafayette	Center	Datacenter6	Central	Northwest	Education13
Lafayette	Center	Mfg6	Central	Northwest	Semiconductor/R&D
NWN	Center	Datacenter7	JUL	Northwest	Datacenter26
Uranium	Center	Datacenter8	Mission	Northwest	Property Management7
Uranium	Center	R&D1	Mission	Northwest	Computer hardware/software 2
Uranium	Center	Property Management1	Mission	Northwest	Real Estate7
Uranium	Center	Datacenter9	Mission	Northwest	Datacenter27
Uranium	Center	Datacenter10	Mission	Northwest	Software1
Uranium	Center	Datacenter11	Mission	Northwest	Computer hardware/software 3
Uranium	Center	Property Management2	Mission	Northwest	Cyber Security 2
Uranium	Center	Education1	Mission	Northwest	Conventions 2
Uranium	Center	Education2	Mission	Northwest	Hotel3
Uranium	Center	Education3	Mission	Northwest	Medical3
Uranium	Center	Education4	Mission	Northwest	Cyber Security 3
Uranium	Center	Semiconductor/ Telecommunications	Mission	Northwest	Education14
Uranium	Center	Gaming/AI/ Semiconductors1	Mission	Northwest	Datacenter28
Uranium	Center	R&D/Mfg	Mission	Northwest	R&D3
Uranium	Center	Mfg7	Mission	Northwest	Semiconductor6
Walsh	Center	Semiconductor1	Mission	Northwest	Storage1
Walsh	Center	Gaming/AI/ Semiconductors2	Mission	Northwest	Entertainment3
Walsh	Center	Mfg8	Mission	Northwest	Property Management8
Walsh	Center	Gaming/AI/ Semiconductors3	Mission	Northwest	Medical4
Walsh	Center	Datacenter12	Mission	Northwest	Telecommunications2
Walsh	Center	Education5	Mission	Northwest	NFL5
Walsh	Center	Government1	Raymond	Northwest	Datacenter29
Walsh	Center	Government2	Raymond	Northwest	Datacenter30
Walsh	Center	Semiconductor2	Raymond	Northwest	Datacenter31
Walsh	Center	Semiconductor/R&D/Mfg	Raymond	Northwest	Datacenter32
Walsh	Center	Mfg9	Raymond	Northwest	Telecommunications3
Walsh	Center	Telecommunications1	Raymond	Northwest	Datacenter33
Walsh	Center	Datacenter13	Raymond	Northwest	Gaming/AI/Semiconductors5
Walsh	Center	Education6	Raymond	Northwest	Datacenter34
Walsh	Center	Datacenter14	Brokaw	South	Government3
Zeno	Center	Education7	Brokaw	South	Education15
Zeno	Center	Education8	Brokaw	South	Education16
Zeno	Center	Semiconductor3	Brokaw	South	Education17

Substation	Loop	Customer/Industry	Substation	Loop	Customer/Industry
Zeno	Center	Datacenter15	Brokaw	South	Real Estate8
Zeno	Center	Bio Tech 1	Brokaw	South	Design1
Zeno	Center	Semiconductor/ Telecommunications	Brokaw	South	Security 2
Zeno	Center	Semiconductor/R&D/Mfg	Brokaw	South	Education18
Agnew	Northeast	Security1	Brokaw	South	Education19
Agnew	Northeast	Property Management3	CCA	South	Mfg12
Agnew	Northeast	Property Management4	DCJ	South	Datacenter35
Agnew	Northeast	Entertainment1	Homestead	South	Education20
Agnew	Northeast	NFL1	Homestead	South	Education21
Agnew	Northeast	Property Management5	Homestead	South	Education22
Agnew	Northeast	Entertainment2	Homestead	South	Education23
Agnew	Northeast	Hotel1	Homestead	South	Education24
Agnew	Northeast	Datacenter18	Homestead	South	Education25
Agnew	Northeast	Medical1	Homestead	South	Education26
Agnew	Northeast	Mfg10	Homestead	South	Healthcare1
Agnew	Northeast	Datacenter19	Homestead	South	Telecommunications4
Agnew	Northeast	Datacenter20	Homestead	South	Education27
Agnew	Northeast	Datacenter21	Homestead	South	Education28
Agnew	Northeast	Datacenter22	MAT	South	Datacenter36
Agnew	Northeast	Cyber Security 1	PRK	South	Datacenter37
Agnew	Northeast	Hotel2	Serra	South	Medical device
Agnew	Northeast	Property Management6	Serra	South	Education29
NAJ	Northeast	Mfg11	Serra	South	Education30
Palm	Northeast	Datacenter/software/ cloud computing	Serra	South	Healthcare2
Palm	Northeast	NFL2	Serra	South	Healthcare3
Palm	Northeast	NFL3	Serra	South	Healthcare4
Palm	Northeast	NFL4	Serra	South	Healthcare5
Palm	Northeast	Education9	Kenneth	East	Datacenter16
Palm	Northeast	Education10	Kenneth	East	Datacenter17
Palm	Northeast	Conventions 1	Kenneth	East	Gaming/AI/Semiconductors4
Palm	Northeast	Education11			
Palm	Northeast	Semiconductor4			
Palm	Northeast	Datacenter23			
Palm	Northeast	Education12			
Palm	Northeast	Real Estate1			
Palm	Northeast	Network hardware1			
Palm	Northeast	Semiconductor5			
Palm	Northeast	Computer hardware/software 1			

SVP Loop Customers and Loading Peak - Loop:

Center 141MW	East Loop 15MW	Northeast Loop 28MW	Northwest Loop 112MW	South Loop 65MW
Mfg1	Datacenter16	Security1	Medical2	Government3
Datacenter1	Datacenter17	Property Management3	Real Estate2	Education15
Datacenter2	Gaming/AI/Semiconductors4	Property Management4	Real Estate3	Education16
Datacenter3		Entertainment1	Real Estate4	Education17
Datacenter4		NFL1	Datacenter24	Real Estate8
Mfg2		Property Management5	Datacenter25	Design1
Mfg3		Entertainment2	R&D2	Security 2
Datacenter5		Hotel1	Real Estate5	Education18
Mfg4		Datacenter18	Real Estate6	Education19
Mfg5		Medical1	Healthcare equipment	Mfg12
Datacenter6		Mfg10	Education13	Datacenter35
Mfg6		Datacenter19	Semiconductor/R&D	Education20
Datacenter7		Datacenter20	Datacenter26	Education21
Datacenter8		Datacenter21	Property Management7	Education22
R&D1		Datacenter22	Computer hardware/software 2	Education23
Property Management1		Cyber Security 1	Real Estate7	Education24
Datacenter9		Hotel2	Datacenter27	Education25
Datacenter10		Property Management6	Software1	Education26
Datacenter11		Mfg11	Computer hardware/software 3	Healthcare1
Property Management2		Datacenter/software/cloud computing	Cyber Security 2	Telecommunications4
Education1		NFL2	Conventions 2	Education27
Education2		NFL3	Hotel3	Education28
Education3		NFL4	Medical3	Datacenter36
Education4		Education9	Cyber Security 3	Datacenter37
Semiconductor/Telecommunications		Education10	Education14	Medical device
Gaming/AI/Semiconductors1		Conventions 1	Datacenter28	Education29
R&D/Mfg		Education11	R&D3	Education30
Mfg7		Semiconductor4	Semiconductor6	Healthcare2
Semiconductor1		Datacenter23	Storage1	Healthcare3
Gaming/AI/Semiconductors2		Education12	Entertainment3	Healthcare4
Mfg8		Real Estate1	Property Management8	Healthcare5
Gaming/AI/Semiconductors3		Network hardware1	Medical4	
Datacenter12		Semiconductor5	Telecommunications2	
Education5		Computer hardware/software 1	NFL5	

Center 141MW	East Loop 15MW	Northeast Loop 28MW	Northwest Loop 112MW	South Loop 65MW
Government1			Datacenter29	
Government2			Datacenter30	
Semiconductor2			Datacenter31	
Semiconductor/R&D/Mfg			Datacenter32	
Mfg9			Telecommunications3	
Telecommunications1			Datacenter33	
Datacenter13			Gaming/AI/Semiconductors5	
Education6			Datacenter34	
Datacenter14				
Education7				
Education8				
Semiconductor3				
Datacenter15				
Bio Tech 1				
Semiconductor/Telecommunications				
Semiconductor/R&D/Mfg				