SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL™ Company

January 3, 2024

Mr. Michael Krause
Assistant Deputy Executive Officer
Planning, Rule Development and Implementation
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Email: MKrause@aqmd.gov

SUBJECT: Proposed Amendments to Rule 1135 - Emissions of Oxides of Nitrogen from Electricity Generating Facilities

Dear Mr. Krause:

Southern California Edison ("SCE") appreciates the South Coast Air Quality Management District's ("SCAQMD" or the "District") further discussions on the proposal to increase propane usage at our Pebbly Beach Generating Station ("PBGS") on Santa Catalina Island ("Catalina"). SCE believes that increasing propane throughput at PBGS to 400,000 gallons per year ("GPY") for power generation is feasible, despite the inability to increase storage capacity, while maintaining tank levels that meet safety requirements and reserve needs, so long as close monitoring of the rates of propane consumption and replenishment is performed. SCE concludes that the propane throughput proposed in the SCAQMD's Best Available Retrofit Control Technology ("BARCT") scenario (of approximately 1.8 million GPY) is not achievable in practice.

This letter explains current constraints on increasing propane allocation, such as restrictions on tank levels that limit the acceptable operating boundary. To help SCAQMD understand PBGS's hesitation for increasing propane throughput beyond SCE's incremental proposal, this letter is divided into three sections.

I. The annual propane allocation available for power generation is limited due to several constraints.

   a. SCE is obligated to serve Catalina with critical utilities and must prioritize distribution of propane to gas customers.

   b. PBGS's propane storage constraints severely limit propane availability.

   c. SCE must maintain at least a 10-day fuel reserve for gas utility service and power generation.

d. Increasing propane consumption for power generation is challenging due to factors outside SCE's control.

e. Increasing fuel delivery increases safety risks.

f. Operational feasibility must be considered for increasing propane deliveries.

II. The District's proposed annual propane throughput of 1,748,532 gallons for power generation is not achievable in practice.

III. SCE estimates the maximum available annual propane throughput available for power generation is 400,000 gallons after considering the factors outlined in Section I.

SCE shares the District's goal of introducing cleaner power generation to Catalina and is committed to incrementally increasing propane usage as it becomes practical from a logistical, operational, and safety standpoint.

I. Several key factors limit the amount of propane available for power generation.

A. SCE is obligated to serve Catalina with critical utilities and must prioritize distribution of propane to gas customers over microturbine generation.

Catalina is home to about 4,100 year-round residents and hosts over 1 million visitors annually, with most visits occurring during the summer. As the sole provider of electricity, water, and gas for the island, SCE must provide safe and reliable utility service at all times. Catalina's water and gas utility operations rely exclusively on electric power production from PBGS. Without safe and reliable electricity, residents and visitors will experience interruptions of these water and gas utility services that are critical to health and safety.

Due to fluctuations in the number of tourists visiting Catalina from year to year, there is high variability in the annual propane demand and usage. Table 1 summarizes Catalina's overall annual propane consumption between 2018 and 2022. Propane consumption in 2020 was significantly lower than in other years due to the reduction in tourist visits during the global pandemic. On average (excluding 2020), the island uses 831,048 gallons of propane annually. Approximately 76% of the total propane (643,018 gallons) is allocated for gas utility service and, on average, approximately 24% (or less than 200,000 gallons) of propane is used in power generation by the microturbines at PBGS.

The historical data in Table 1 provide a basis for propane availability estimation. SCE based its calculations and assumptions on an annual average consumption rate of 650,000 gallons for gas utility demand to help determine a reasonable remainder of propane left for power generation. Given the large variability in annual propane throughput, SCE must factor in higher usage years such as 2022 (970,370 gallons). Because SCE's primary obligation is to serve Catalina customers

with essential services, its need to prioritize propane usage for the gas utility service is a key limit on propane availability for power generation.

Table 1. *Annual Propane Consumption*

Year	Total Consumption (gallons)	Microturbines Consumption (gallons)	Utility Consumption (gallons)	% Utility Consumption
2018	715,055	127,904	587,151	82%
2019	881,728	201,066	680,662	77%
2020	666,730	183,284	483,446	73%
2021	757,037	137,504	619,533	82%
2022	970,370	285,645[1]	684,725	71%
2018-2022 Average	798,184	187,081	611,103	77%
2018-2022 Average (Excluding 2020)	831,048	188,030	643,018	76%

B. PBGS's storage constraints severely limit propane availability.

PBGS has a total of four propane tanks onsite with a nameplate capacity of 30,000 gallons each. The fourth tank is currently out of service and cannot be brought back online due to fire suppression limitations which are discussed further below. The total nameplate capacity is therefore 90,000 gallons with the three tanks currently in service. The tanks are connected in parallel and share a common pipeline for both liquid propane delivery and the vapor draw needed for gas utility service. All three tanks are simultaneously filled from the bottom through the shared liquid propane delivery manifold.

1. The fourth tank cannot be returned to service due to fire risk.

The District has previously inquired about the possibility of SCE bringing the fourth tank back into service. This proposal is not possible due to the inherently hazardous nature of propane and the required safeguards in National Fire Protection Association ("NFPA") standards (which are incorporated into state law). Returning the fourth tank to service is infeasible because: (1) the fire suppression system is insufficient for four tanks; and (2) the distance between the propane system and a potential ignition source is inadequate. These factors prompted SCE to stop using the fourth

[1] The microturbines' high propane consumption in 2022 was due to maintenance outage of the facility's BESS. High usage continued into 2023 for the same reason.

tank in 2014 in conjunction with the City of Avalon Fire Department's approval of a modification to the NFPA 59 requirements in place at that time.

Section 7.4.2 of NFPA 15 states the discharge density required to be provided by a deluge water spray system for an exposure protection system.[2] Section 5.4.1.2 lists permissible locations of non-refrigerated liquefied petroleum ("LP") containers with respect to property lines and other LP containers. The letter from the City of Avalon Fire Chief confirms that bringing the fourth tank back into service is infeasible without substantial modifications to address the two limitations described above.[3] These modifications include increasing the water supply rate to the fire suppression system by approximately 60%, which would require a significant redesign of the facility's water utility infrastructure, and increasing the operational distance between the propane transfer points and a potential ignition source (electrical switchyard). Both modifications do not have a feasible solution at this point in time and would require extensive operational changes and additional space that is not available at PBGS.

2. SCE must operate within specific tank levels to ensure operational safety and reliability.

a) Tank levels must be kept between 25% and 86% full.

Although the nameplate capacity of each tank is 30,000 gallons, they cannot safely store that amount. Safety precautions require SCE to limit working volumes to between a minimum of 25% and a maximum of 86%. Unlike liquid fuels such as gasoline and diesel, propane is a liquid petroleum gas ("LPG"). When stored in liquid form under high pressure, as at PBGS, gaseous vapors fill the space between the liquid and the tank roof (known as "head space"). The inherent danger of propane storage is due to its high thermal expansion rate, which means that temperature fluctuations can trigger sudden changes in tank pressures that in turn can lead to catastrophic equipment failure. Consequently, the tank manufacturer warns against exceeding 86% of the liquified propane volume nameplate capacity during the colder seasons when gas expansion is less prominent, as shown in Figure 1.

---

[2] The 2015 edition of NFPA 59 (which applies here based on when the variance was received from the City of Avalon Fire Department) adopts by reference the 2012 edition of NFPA 15.

[3] *See* Attachment A, Letter from City of Avalon Fire Chief to SCE RE: Southern California Edison Pebbly Beach Generating Station Site Visit (Sept. 6, 2023).

Figure 1. *Photo of Tank #1 depicting maximum propane liquid fill volume*

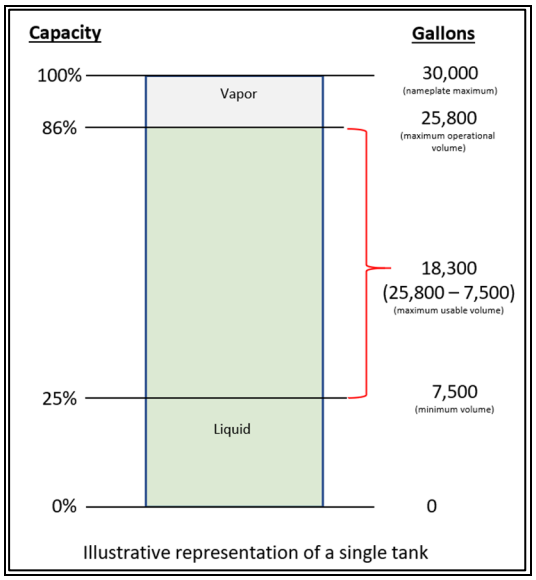
Operationally, the tanks cannot maintain the required pressure to simultaneously support LPG delivery for fuel and vapor for gas utility service if the liquid volume drops below 25%. If propane levels are too low, the gases do not expand enough to fill the space within the tank, which results in insufficient pressure to drive the gas for utility service. This can also result in excess air within the vapor space that can react with moisture on the surface of the tanks, creating rust and weakening their overall integrity. Typically, manufacturers of small tanks (≤ 30,000 gallons) recommend minimum tank levels of 20%.[4] Some manufacturers conservatively recommend at least 25%.[5,6] In alignment with SCE's safety culture, SCE maintains conservative minimum tank levels of at least 25% to ensure proper gas contraction. Figure 2 illustrates possible usable tank working volumes of 18,300 gallons ([86% - 25%] x 30,000 gallons) based on the manufacturer's maximum tank filling level specification and the lower boundary needed for utility services.

[4] *See, e.g.,* Levco, "Your Propane Tank Gauge Shouldn't Fall Below 20%," available at https://www.levco.io/blog/2022/march/your-propane-tank-gauge-shouldnt-fall-below-20-/; Kauffman Gas, "What Happens if I Let the Propane Gauge Go Below 20%?" available at https://www.kauffmangas.com/blog/gas-gauge-guidelines-what-to-do-if-your-propane-gauge-is-below-20/.

[5] Herring Gas Company, "Reading Your Propane Tank Percentage Gauge," available at https://www.herringgas.com/reading-your-propane-tank-percentage-gauge.

[6] Hocon Gas, "How Do I Check Propane Levels in My Tank?" available at https://www.hocongas.com/blog/how-do-i-check-propane-levels-in-my-tank/.

Figure 2. *Possible usable tank volume is limited to between 25% and 86% of capacity.*



b) Tank levels are further restricted by operational and maintenance needs.

Tank levels are further constrained by pressure, temperature, and periodic maintenance needs. PBGS has additional restrictions on nominal tank levels beyond what is required for safety because the vapor head above the liquid propane within the tanks is used to supply gas utility service to the City of Avalon. Although the maximum allowable working pressure of the tanks is approximately 240 pounds per square inch gauge (psig), each tank has an alarm set to trigger at 115 psig to ensure proper propane delivery into the City of Avalon's utility system. Propane is delivered into the utility system at 7.5 psig as a propane vapor/air mix with a Wobbe Index similar to natural gas. The tanks are also equipped with multiple pressure relief valves set to 232 psig to relieve excess pressure during emergencies. In colder winter months, heaters are often used to raise internal tank temperatures and in turn increase internal tank pressures as needed. On the high side, if the pressure exceeds 115 psig, an alarm will notify SCE personnel to make the necessary changes to prevent an interruption to the utility supply. Although this alarm is not a safety feature, it is necessary to ensure efficient use of the gas-delivery system currently in place.

Due to propane's high thermal expansion rate, tank pressures are highly sensitive to external temperatures. During the hotter summer months, the maximum fill volume must be significantly reduced to avoid over-pressurization. This can be observed in SCE's data when the average tank level drops during the summer months to accommodate the higher temperatures. The Labor Day 2022 heatwave provided a demonstration of the tanks' pressure sensitivity to temperature. The elevated temperatures caused propane expansion in the tanks that triggered the pressure alarms when the tanks were at approximately only 47% of their rated liquid fill volume. The temperature constraints are further compounded by expected rising temperatures across California due to

climate change. Although temperature increases on Catalina are not expected to be large relative compared to the rest of SCE's service territory, where the average July maximum temperatures are projected to increase from 93°F to 98°F from 1995 to 2050 (under RCP 8.5, 50th percentile), Catalina's average maximum July temperatures are projected to increase from 75°F to 78°F.

Tank maintenance requirements are also relevant when determining tank working capacity. This periodic maintenance, which requires advanced operational planning, involves drawing down tank levels on all three tanks to provide enough capacity to empty the subject tank prior to commencing work. During maintenance on one tank, SCE relies on the remaining two for adequate storage. The tank system is not equipped with separate feedlines. The units work as an aggregate to supply fuel, which is critical given the need for redundancy. Isolating individual tanks to support specific systems would jeopardize SCE's ability to reliably provide gas utility service.

c) The tanks are interconnected, resulting in a maximum aggregate tank capacity of approximately 83%.

The District has previously inquired whether SCE can segregate the tanks by dedicating a single tank to gas utility service and the remaining two tanks to power generation. This proposed configuration is not physically possible because the tanks are connected in parallel and separation would cause an unacceptable loss of supply redundancy, which is critical due to SCE's obligation to serve customers with gas utility service.

The tanks' interconnectedness further restricts their average aggregate level due to the uneven levels that arise from vapor balancing and equalization issues. Several factors can cause this discrepancy, including differences in regulator calibration and vaporization rates among the tanks, temperature and pressure variations potentially due to differences in sun exposure, or imbalances in withdrawal rates due to the internal fluid dynamic interactions within the tank system. PBGS's center tank typically has a higher average level compared to the two tanks between which it sits. During normal operations between 2018 and 2022, there were only 42 deliveries completed (out of 430 total)[7] where this was discrepancy was not observed.

Although the maximum tank level according to the manufacturer's specification is 86%, due to the parallel configuration of the three propane tanks, a maximum aggregated tank level of 83% should be used. In practice, the tanker delivery operators do not ordinarily fill the propane tanks to 86% of their capacity. Consistent with SCE's safety-focused work culture, we operate PBGS in a manner that respects safety margins to avoid elevated risks and catastrophic incidents. Between 2018 and 2022, there was only one instance where a single tank was filled up to 86%. During loading, all tanks are filled simultaneously, and the operator stops filling once any one of the tanks reaches 85% of its capacity (to avoid getting over 86%). SCE's tank records indicate that typically,

[7] All three tanks' maximum levels were restricted to around 58% from 4/19/2022 to 12/31/2022 in preparation for major inspection and maintenance activities.

Tank 2 fills up first, prompting the operator to stop even though Tanks 1 and 3 would have slightly lower levels. As shown in Table 2, the maximum fill levels for Tanks 1, 2, and 3 between 2018 and 2022 were 85%, 86%, and 84%, respectively. On average, the fill levels for Tanks 1, 2, and 3 were 64%, 70%, and 64%, respectively. Out of the 430 deliveries between 2018 and 2022, there was only a single day (12/11/2020) when Tank 2 was filled to 86%, resulting in a three-tank aggregated average level of 77.7%. The highest three-tank aggregated average level was 83% as shown in Table 3. Figure 3, which depicts tank levels after the fill event on 3/18/2020, provides a graphical illustration of the imbalance.

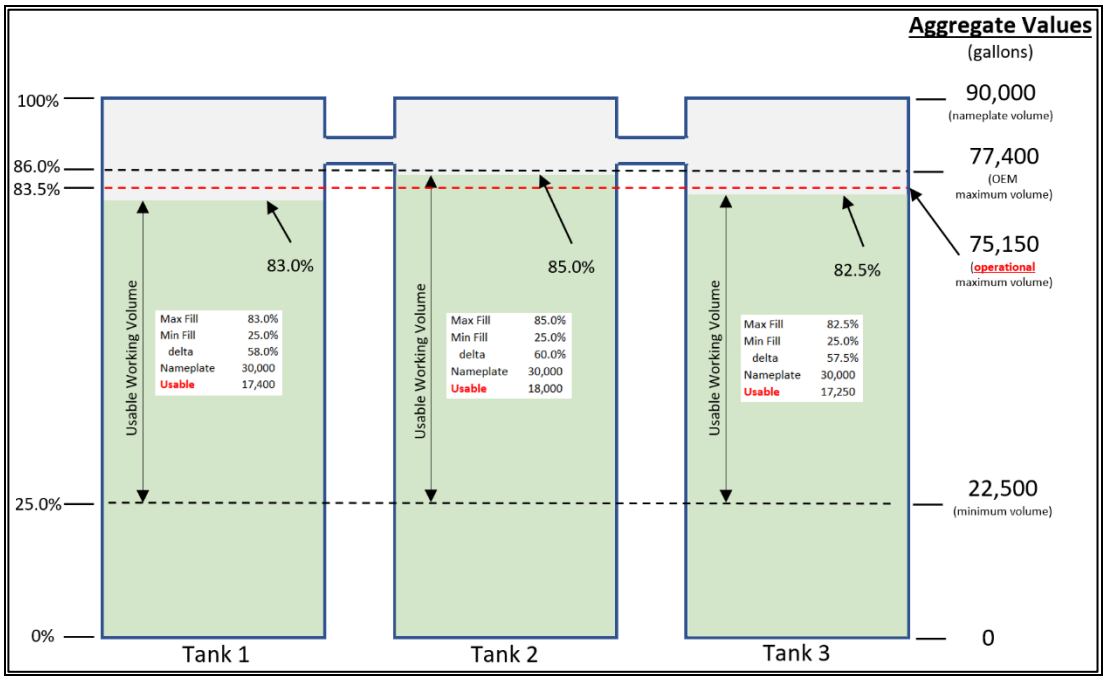
Table 2. *Historical Tanks Levels Between 2018 and 2022 Immediately After Refueling*

Tank	Maximum Fill Level	Average Fill Level
1	85%	64%
2	86%	70%
3	84%	64%
All	86%	66%

Table 3. *Historical Highest Aggregate Tanks Levels Between 2020 and 2022*

Date	Tank 1	Tank 2	Tank 3	Average Fill Level
3/18/2020	83%	85%	82.5%	83.5%
5/22/2020	85%	82%	83%	83.3%

Figure 3. *Tank Levels on 3/18/2020*



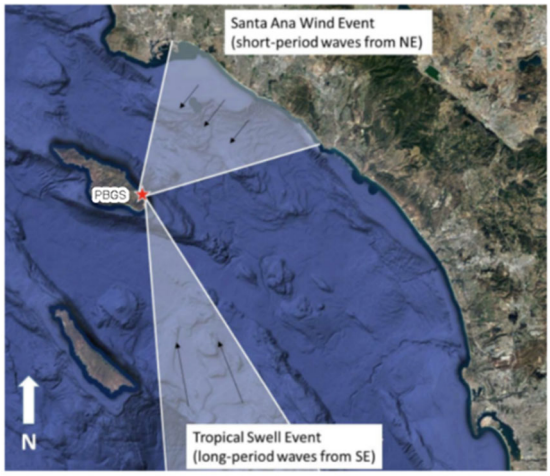
C. SCE must maintain at least a 10-day fuel reserve for gas utility service and power generation.

Due to Catalina's remote location, SCE must maintain at least 10 days' worth of fuel reserve to ensure sufficient power generation, the safety and reliability of the gas utility service, and compliance with established permit limits. This reserve is necessary to allow continued service during unforeseen circumstances such as extreme weather events, roadway erosion, mud/rockslides, labor shortages, and equipment failure. The 10-day fuel reserve provides PBGS with an adequate buffer to execute contingency plans during such emergencies.

Like other parts of California, Catalina faces additional risks due to climate change, including wildfires, hurricanes, rising sea levels, drought, extreme heat, and heavy precipitation. The island's remote location and rural setting further increase its vulnerabilities and pose unique challenges that require adequate planning to respond to these risks. One such vulnerability is the lack of access to critical resources during emergencies that are typically available on the mainland. Climate risks such as rising sea levels and storm surges present a significant challenge for propane delivery and storage due to the proximity of PBGS and the local access road (Pebbly Beach Road) to the shoreline. Pebbly Beach Road connects PBGS and adjacent developments with the rest of Avalon. The figures below are from the City of Avalon's 2019 Sea Level Rise Vulnerability Assessment. Figure 4 illustrates the wave exposure events of concern and Figure 5 depicts the proximity of Pebbly Beach Road to the coastline.

Examples of extreme weather events include Tropical Storm Maria, which battered the southern shoreline of Catalina in August 2014. The storm demolished piers, damaged boats, and eroded a section of beach adjacent to SCE's saltwater wells. More recently in August 2023, Tropical Storm Hillary was forecast to impact Catalina at a similar and more destructive level as the 2014 Tropical Storm Maria, prompting emergency preparations and evacuations days before the forecasted event. Emergency preparations included the closure of Pebbly Beach Road, sequestering of PBGS employees, and the installation of a temporary surge barrier between the shoreline and the PBGS gas utility infrastructure (the LPG Tank Farm, LPG piping system, and Generation Control Room). Similar storm events in the future will not only prove to be a risk to PBGS and Catalina, but also for the barges and delivery trucks transporting propane from the mainland.

Figure 4. *Primary Wave Exposure Windows for Avalon*



Source: City of Avalon, Sea Rise Vulnerability Assessment Report[12]

Figure 5. *Pebbly Beach Road, Near Industrial Area*

Because of the unique risks and challenges that PBGS faces due to the Catalina's remote location, SCE must minimize risks within its control by maximizing fuel supply contingency to the extent possible. The 10-day fuel reserve applies to the total volume of propane needed for gas utility

service and power generation. The diesel-fired generators, propane-fired microturbines, and battery energy storage system (BESS) are designed and optimized as an integrated system. When one component is out of service, the system is operated at a suboptimal level that leads to inefficient fuel consumption, surplus electric power, and higher emissions.

Currently, the propane-fired microturbines play a critical role in balancing power generation operations at PBGS, including use in peak shaving. The selective catalytic reduction (SCR) emission control systems on the current diesel engines do not function when the engines operate below 80% capacity. The current microturbines provide necessary generation when demand would otherwise require the startup of additional diesel engines. PBGS's Title V permit condition F67.1 requires SCE to maintain the microturbines' availability and generate at least 635,000 kilowatt-hour (kWh) annually, while condition A195.8 requires PBGS to maintain NOx emissions below the facility annual average of 6.5 lbs/megawatt-hour (MWh). Compliance with both conditions requires SCE to maintain an adequate propane supply.

Based on ongoing discussions related to propane availability, SCE expects the District to impose a minimum annual power generation requirement (like condition F67.1) using propane technology when SCE eventually replaces the microturbines with an alternative. Because propane usage for power generation will become an increasingly integral part of compliance with permit requirements, it is critical for SCE to include additional propane usage for power generation in the 10-day reserve. District staff have previously mentioned that SCE could seek a variance if it violated the permit condition, but SCE considers variance relief to be a last resort option only to be used in cases of extreme need; when planning future operations, it is certainly not appropriate to assume variance relief will be readily available.

D. Increasing propane use is limited by logistical factors outside SCE's control.

Maintaining a steady propane supply to the island is challenging within current usage rates due to Catalina's remote location, propane market availability, and propane delivery logistics. Increasing fuel supply includes several factors outside SCE's control and will pose additional safety risks from increased deliveries. SCE is committed to increasing propane, but not to an extent that jeopardizes safety and reliability.

Securing additional barge shipments of propane will always remain an obstacle for PBGS due to its isolated location and the finite resources available for transport. Procuring and transporting propane requires advanced planning and involves several factors outside SCE's control. PBGS receives its propane supply in propane tankers via periodic barge deliveries. SCE's third-party vendor, California Fuel & Lubricants ("CFL"), directly coordinates fuel deliveries with Avalon Freight Services ("AFS"), an independent barge services company. AFS is the sole provider of all barge services for Catalina and transports all necessary daily supplies, including groceries, medicine, and other essentials needed by Catalina residents. Barge prioritization and operation are not within SCE's control. It would be unreasonable to expect AFS to prioritize propane over food.

To determine PBGS's propane needs, AFS contacts SCE daily to check tank levels and evaluate whether there is sufficient headspace and demand to warrant scheduling a delivery. If so, AFS then contacts CFL, who in turn contacts a local refinery to determine if propane is available. Once availability is confirmed, CFL sends a driver to take one of two available propane tankers to queue at the local refinery's loading rack for filling.[8] Typically, preparing a tanker for transport could take several hours, depending on local demand and fuel availability. Because barge service runs only during the day, drivers must have the tankers ready to be shipped prior to 4 p.m., which provides only a limited window. Propane shipments are also at risk of being canceled or postponed at the last minute due to other factors such as inclement weather or other more urgent barge prioritization needs as determined by AFS.

Other factors outside CFL's control have disrupted fuel deliveries. Propane shortages have periodically occurred, especially during the winter months when demand is typically the highest and inclement weather disrupts barge traffic. PBGS has experienced occasional issues procuring propane, including a severe shortage in December 2022. During this event, CFL had difficulty procuring propane due to factors outside its and SCE's control and experienced issues securing supply to maintain sufficient reserve, including:[9]

- High local demand for propane supply;
- Refinery operational issues or planned/unplanned outages affecting production;
- Refineries' decision to optimize propane consumption in lieu of natural gas for fuel gas production (driven by their cost pressures); and
- Driver/tanker issues impeding deliveries, such as labor strikes, and vehicle and equipment failures.

Propane orders are made based on the number of cargo tankers needed for transport. Based on delivery records between 2018 and 2022, each tanker delivers on average 9,395 gallons per delivery (corrected to PBGS's local tank temperature). Because purchases are made based on the number of tankers available, it is extremely rare for a partial delivery to occur. Between 2018 and 2022, there was only one instance (on 8/25/2021) when the cargo tanker was not completely emptied. Based on examining an operator log from the loading event and noting the prolonged loading time of two hours to unload just 2,700 gallons,[10] a mechanical issue is suspected. In short, partial deliveries are not practical and rarely if ever performed. When considering how much and how often to refill PBGS's tanks, there must be the equivalent of one full tanker available within the tanks to justify scheduling a delivery.

---

[8] CFL uses two tankers owned by Alliance Propane to transport and deliver propane to Avalon.

[9] *See* Attachment B for details.

[10] Typically, it takes around an hour to empty the 10,000-gallon cargo tank.

Table 4. *Monthly Propane Deliveries From 2018 Through 2022*

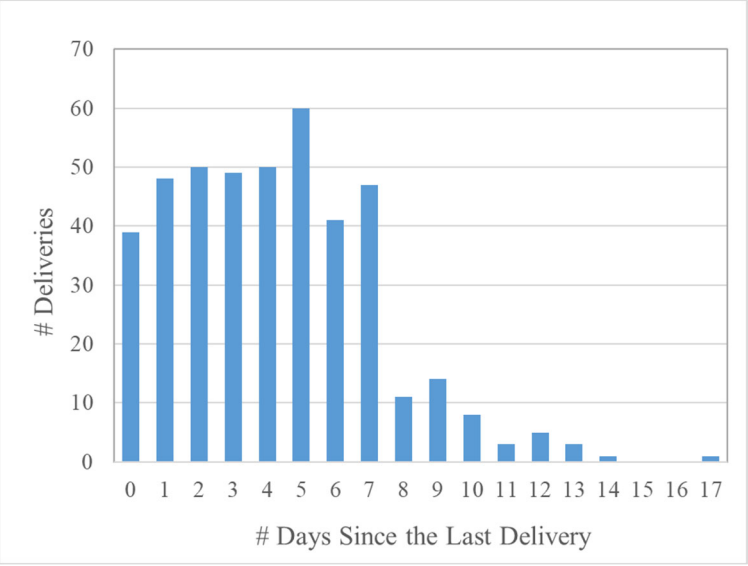
Month	Year					
	2018	2019	2020	2021	2022	5-year Average
January	6	6	12	6	8	7.6
February	6	7	9	5	6	6.6
March	7	7	7	6	10	7.4
April	7	5	5	6	5	5.6
May	6	7	5	6	7	6.2
June	6	8	6	9	9	7.6
July	8	10	5	9	10	8.4
August	7	9	7	8	10	8.2
September	6	8	6	9	7	6.8
October	6	8	6	7	7	6.8
November	5	7	6	7	10	7
December	7	8	5	7	10	7.4
Total	77	90	79	85	99	86
Average/month	6.4	7.5	6.6	7.1	8.3	7.1

Table 4 above summarizes the average number of monthly deliveries from 2018 through 2022. PBGS receives an average of seven propane deliveries per month at current usage rates. On average, PBGS receives a cargo tanker every 4.3 days, while the median delivery frequency is 4 days, meaning most fuel deliveries occur once every 4 days. Table 5 and Figure 6 illustrate historical delivery trends from 2018 through 2022. The data show that approximately one-third of the time subsequent deliveries are made within two days. Approximately half of the time, subsequent deliveries are made within four days. In other words, although average deliveries are made every four to five days at current usage rates, in practice, half of the time, deliveries are made within one to four days. This appears to be primarily driven by logistical and fuel availability at the time of ordering. Increase propane throughput for power generation would increase the need for propane deliveries within one to two days to maintain a steady fuel supply for prolonged periods, even when there are procurement difficulties.

Table 5. *Propane Delivery Frequency From 2018 Through 2022*

# Days Since Last Delivery	# Deliveries	% Total	% Cumulative Total
0	39	9.1%	9.1%
1	48	11.2%	20.2%
2	50	11.6%	31.9%
3	49	11.4%	43.3%
4	50	11.6%	54.9%
5	60	14.0%	68.8%
6	41	9.5%	78.4%
7	47	10.9%	89.3%
8	11	2.6%	91.9%
9	14	3.3%	95.1%
10	8	1.9%	97.0%
11	3	0.7%	97.7%
12	5	1.2%	98.8%
13	3	0.7%	99.5%
14	1	0.2%	99.8%
15	0	0.0%	99.8%
16	0	0.0%	99.8%
17	1	0.2%	100.0%
Total	430	100%	

Figure 6. *Propane Delivery Frequency From 2018 Through 2022*



As summarized in this section, increasing barge deliveries of fuel relies on several factors outside SCE's control. These factors must be considered especially as propane usage becomes an increasingly integral part for maintaining PBGS compliant with permit requirements. SCE would like the District to appreciate the challenges and effort put in by PBGS operations and our third-

party vendors in maintaining the current propane usage rates and recognize the heavy burden that a substantial increase would impose.

E. Increasing fuel deliveries increases safety risks.

While marine LPG transportation and storage are generally safe in the U.S. due to well-designed infrastructure and operation,[11] accidents related to LPG tank operation can cause a major disaster. Several studies have cited human errors during fuel loading and unloading as the main causes.[12,13,14,15] With limited onsite personnel at PBGS and at the barge receiving site, SCE believes that substantially increasing deliveries would impose a severe strain on the operators (increasing the risk of fatigue, which can lead to human error-based accidents, as documented by the US Occupational Safety and Health Administration (OSHA).[16] Additionally, as discussed in a meeting with SCAQMD and SCE representatives, the City of Avalon Fire Chief opposes any increase in propane fuel deliveries to PBGS due to the inherent risk and hazardous nature of handling and transporting propane. SCE agrees and requests that the District consider the safety risks associated with increasing propane fuel deliveries.

F. Operational feasibility must be considered when increasing propane deliveries.

Maintaining a steady propane supply to the island is challenging due to Catalina's remote location, propane market availability, delivery logistics, and safety issues. SCE is already facing significant challenges in supplying an annual average of approximately 200,000 gallons of propane for power generation.

In practice, no plant always operates its equipment at maximum capacity. Deriving an achievable throughput based on theoretical maxima cannot yield realistic outcomes. Figure 7 details historic daily tank level variability between 2020 and 2022. This data represents the acceptable operational

---

[11] U.S. Dept. of Energy. (1980). Fire Safety of LPG in Marine Transportation. https://www.osti.gov/servlets/purl/5358293

[12] European Commission. Chemical Accident Prevention & Preparedness: Learning from incidents involving liquefied petroleum gas (LPG) on fixed sites. Accessed: December 2023. https://minerva.jrc.ec.europa.eu/en/shorturl/minerva/14_lessons_learned_bulletin_on_accidents_involving_lpg

[13] Hart, T., Bea, R., & Roberts, K. (1994). Human and organizational errors in loading and discharge operations at marine terminals. Tech. Rep. Ser. California Sea Grant Coll. Program. University of California at Berkeley.

[14] Triana Cedeno, G.A. (2000). Identification of Possible Human Errors that can Result in Fire/Explosions during Tankers' Cargo Loading/Unloading Operations. https://www2.uwstout.edu/content/lib/thesis/2000/2000trianag.pdf

[15] Chang. J. I. & Lin C. (2006). A Study of Storage Tank Accidents. *Journal of Loss Prevention in the Process Industries, 19*(51 – 59). https://technokontrol.com/pdf/report-history-jumbo-tanks-explosions.pdf

[16] US OSHA. Long Work Hours, Extended or Irregular Shifts, and Worker Fatigue. Accessed: December 2023. https://www.osha.gov/worker-fatigue/hazards

boundary of tank levels for current usage rates. The data provide insight into SCE's current operation of the tanks, which balances multiple requirements: operating them safely, maintaining tank pressures to ensure sufficient utility supply, and ensuring a 10-day reserve for contingencies. SCE performs major tank maintenance every five years, during which the aggregate tank levels must be kept significantly lower than during normal operation, as illustrated in Figure 7 (which depicts the period from 4/19/2022 to 12/31/2022). This practice is required to provide enough storage capacity to draw down each tank, one at a time, for maintenance work while still ensuring sufficient supply to meet gas utility service and electricity demand. The two modes of operation (normal and maintenance) yield a bimodal statistical distribution curve, as shown in Figure 8. To depict fuel availability during normal operations, SCE created histograms and a Pareto chart reflecting its statistical analysis (see Figures 7, 8, and 9 and Table 6).

Figure 7. *Scatter Plot of PBGS Tank Levels Between 2020 and 2022*

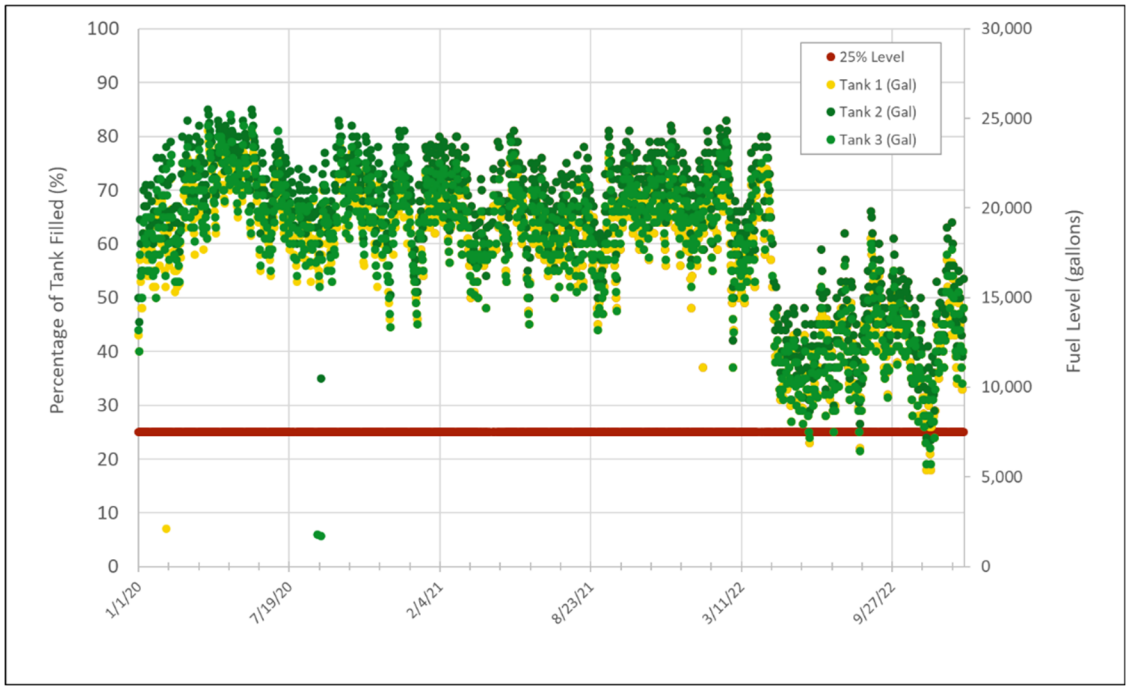


Figure 8. *Histogram of PBGS Tank Levels Between 2020 and 2022*

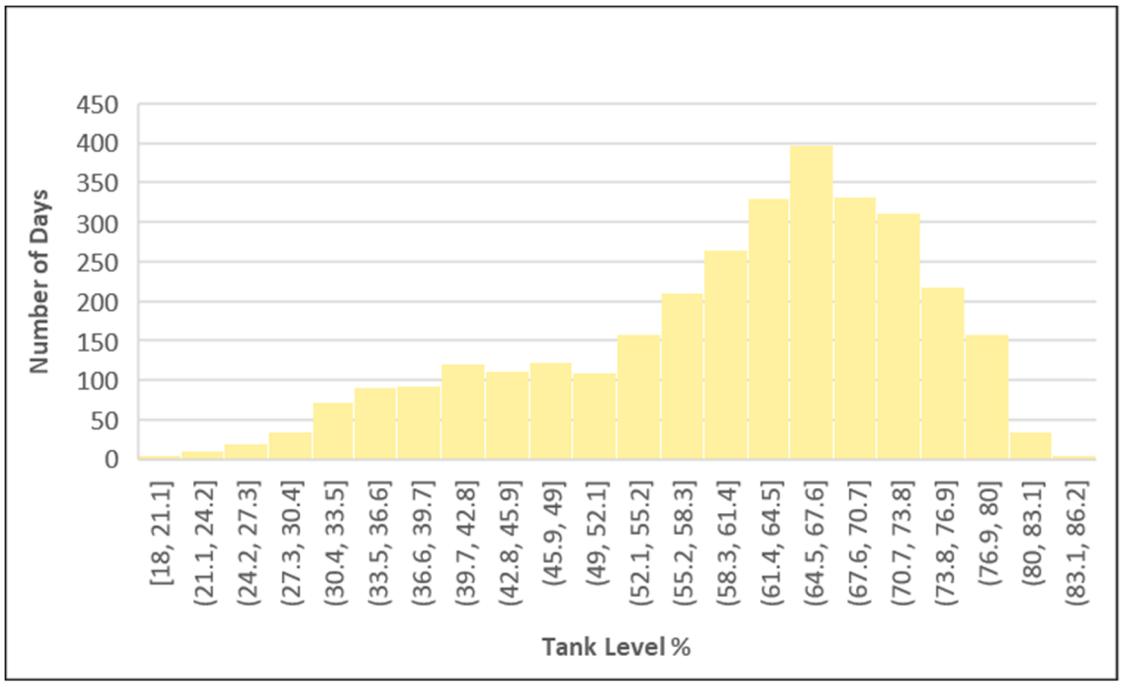


Figure 9. *Histogram of Tank Levels Between 2020 and 2022 During* ***Normal Operation***

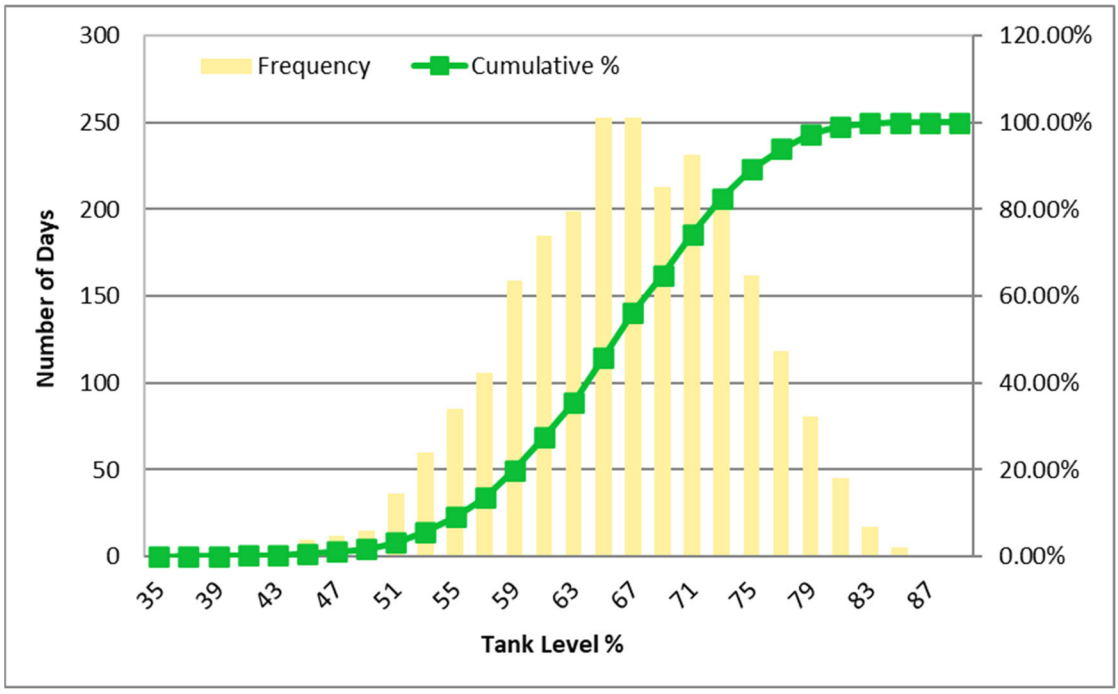


Figure 10. *Pareto Chart of Tank Levels Between 2020 and 2022 During* ***Normal Operation***

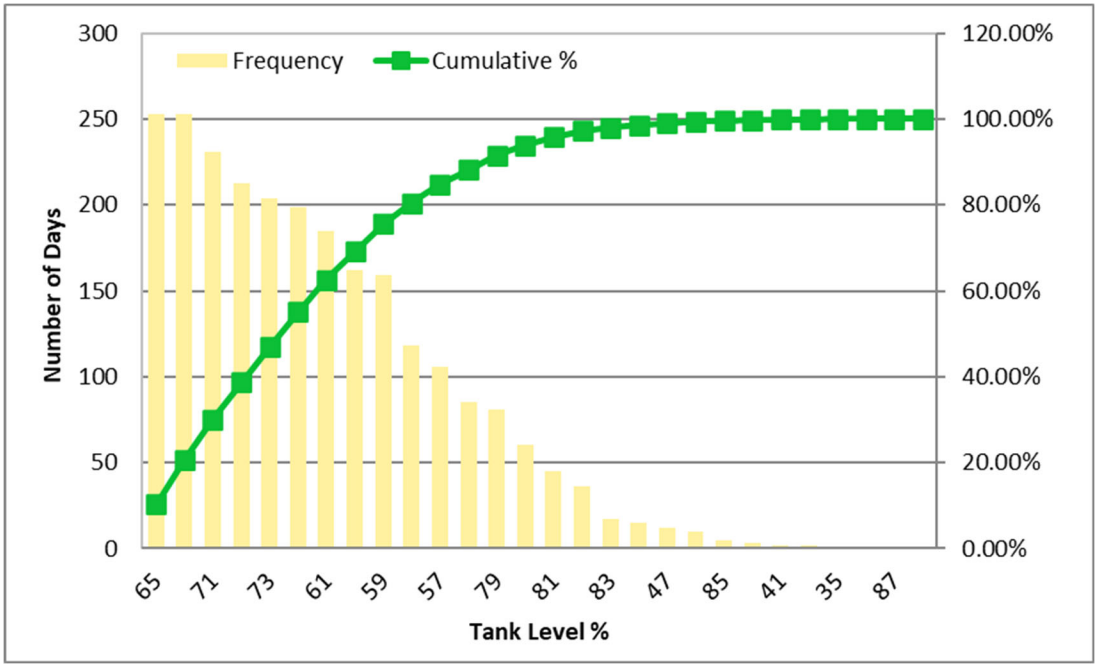


Table 6. *Statistical Analysis of Tank Levels During* ***Normal Operation***

Histogram			Pareto		
Bin	Frequency	Cumulative %	Bin	Frequency	Cumulative %
35	1	0.0%	65	253	10.3%
37	3	0.2%	67	253	20.6%
39	0	0.2%	71	231	30.0%
41	2	0.2%	69	213	38.7%
43	2	0.3%	73	204	47.0%
45	10	0.7%	63	199	55.1%
47	12	1.2%	61	185	62.6%
49	15	1.8%	75	162	69.2%
51	36	3.3%	59	159	75.7%
53	60	5.7%	77	118	80.5%
55	85	9.2%	57	106	84.8%
57	106	13.5%	55	85	88.2%
59	159	20.0%	79	81	91.5%
61	185	27.5%	53	60	94.0%
63	199	35.6%	81	45	95.8%
65	253	45.9%	51	36	97.3%
67	253	56.2%	83	17	98.0%
69	213	64.9%	49	15	98.6%
71	231	74.3%	47	12	99.1%
73	204	82.6%	45	10	99.5%
75	162	89.2%	85	5	99.7%
77	118	94.0%	37	3	99.8%
79	81	97.3%	41	2	99.9%
81	45	99.1%	43	2	100.0%
83	17	99.8%	35	1	100.0%
85	5	100.0%	39	0	100.0%
87	0	100.0%	87	0	100.0%
More	0	100.0%	More	0	100.0%

The statistical analysis above reveals notable trends. Table 6 demonstrates that historical tank levels during normal operation were maintained between 51% and 83% (based on a 97% confidence level).[17] In other words, approximately 97% of the time, tank levels were maintained between 51% and 83% (which is visible in the blue area). This is consistent with the need to always maintain at least a 10-day fuel reserve, which is represented by a tank level of approximately 51% (see Table 7 below). Tank levels also rarely exceeded 83% (this occurred less than approximately 0.2% of the time), which is consistent with the maximum aggregate tank level discussed previously in Section I(B) above.

[17] 99.8% - 3.3% = 96.5%

Table 7. *Minimum Propane Tank Level Needed to Maintain 10-Day Reserve at Current Usage*

Current Propane Usage	**Current (gallons)**
Power Consumption	200,000
Utility Consumption	650,000
Total Annual Consumption	850,000
Average Daily Consumption	2,329
10-day reserve	23,288
Tank Farm Nameplate Volume	90,000
Minimum Tank Farm Volume @ 25%	22,500
Minimum Volume w/ 10-day Reserve	45,788
Minimum Tank Level w/10-day Reserve / Nameplate Volume (%)	**51%**

As previously established, SCE must maintain a 10-day fuel reserve for contingency purposes. Because the bottom 25% of tank capacity is unavailable due to operational and safety factors, the calculated 10-day fuel reserve total must be added to an already 25% full tank (which equates to 22,500 gallons). Table 7 above calculates the minimum tank levels required to maintain a 10-day reserve at the current usage rate (2,329 gallons daily for gas utility service and power generation). The 10-day reserve is 23,288 gallons (2,329 gallons multiplied by 10 days). As mentioned above, the minimum tank volume (at the 25% minimum tank level) is 22,500 gallons. Thus, SCE must maintain a minimum tank level of 51% to account for the additional 10-day reserve of 45,788 gallons (22,500 + 23,288). Table 6 shows that PBGS operations have maintained this minimum level more than 95% of the time during normal operations. Any increase in daily fuel consumption would require raising this minimum tank level to continue maintaining the 10-day reserve, which would cause an unacceptable reduction in tank level margins.

The histogram presented in Figure 8 shows the distribution curve during normal operations over the 2020-2022 period, when the average annual propane throughput was approximately 800,000 gallons. The median tank level is located at the peak of the normal distribution curve: 65-67%. Because tank capacity and tank level ranges (represented by the X axis) are fixed due to the safety and operational reasons discussed, the only remaining option for increasing overall annual propane

throughput is to increase fuel deliveries and maintain higher average tank levels. Ultimately, deriving a feasible and realistic throughput would require examination of the operational feasibility of increasing these two factors.

To help determine operational feasibility, SCE examined tank drawdown rates (using average daily consumption values) to develop a metric representing the number of days between when the tanks are full (i.e., at their maximum operating volume of 54,900 gallons) and when they would reach the minimum level triggering refueling (e.g., at their minimum volume plus a 10-day reserve). On average, this metric represents the required frequency of fuel deliveries. The analysis is presented in Appendix C and compares multiple scenarios, including the current state (200,000 gallons of propane per year for power generation). One key limit is the average capacity of a propane tanker, which is approximately 9,395 gallons per delivery (see Section I(D)). At the current rate, PBGS averages 4.3 days between fuel deliveries. As previously noted, the City of Avalon Fire Chief has expressed opposition to any increases in propane deliveries due to the increase in fire safety risks.

This section has outlined several operational considerations that need to be incorporated when determining the maximum available annual propane throughput. The next section provides details on why the District's proposed BARCT scenario is not feasible on these grounds.

II. The District's proposed annual propane throughput of 1,748,532 gallons for power generation is not achievable in practice.

The District has proposed and provided calculations for interim and final BARCT scenarios in which the annual proposed throughput for power generation is 1,748,532 gallons per year, as shown below:

Figure 12. *SCAQMD's Propane Calculation (provided December 5, 2023)*

Figure 12. *SCAQMD's Propane Calculation (provided December 5, 2023)*

Annual gallons of propane for gas utility service	650,000
Daily gallons of propane for utility service	1,781
Ten days of propane for utility service	17,808
Annual gallons of propane for Final BARCT scenario	1,748,532
Daily gallons of propane for Final BARCT scenario	4,790
Daily total gallons of propane for utility service and Final BARCT scenario	6,571
Reduction in 90,000 gallon propane capacity assuming 25% fuel reserve minimum	22,500
Annual gallons of propane for Interim BARCT scenario	1,003,750
Daily gallons of propane for Interim BARCT scenario	2,750
Daily gallons of propane for utility service and Interim BARCT scenario	4,531

Days of Propane Storage Assuming 10-Day Utility Fuel Reserve, 25% Fuel Reserve Minimum, and Three Storage Tanks			
	Days at 47% Capacity	**Days at 67% Capacity**	**Days at 86% Capacity**
Interim BARCT Scenario	0.4	4.4	8.2
Final BARCT Scenario	0.3	3.0	5.6

Note: Interim BARCT Scenario includes NZE units only on the microturbine pad and the Final BARCT scenario includes NZE units on the microturbine pad and as replacements for Units 7, 12, and 14

SCE identified several incorrect assumptions. The calculations do not:

- Consider tank temperature/pressure limitations due to operational constraints;
- Include a 10-day reserve; or
- Reflect the tanker truck capacity limit of 10,000 gallons;

In Section I, SCE explained why tank operational constraints further restrict tank levels beyond the safety levels used in the District's calculation. PBGS operations regulate the tank pressure to ensure proper propane delivery to the gas utility system, requiring further tank level restrictions PBGS operations need to maintain. Pressure fluctuations are highly sensitive to temperature changes, adding further variability to the operational constraints.

As previously discussed (see Table 7), SCE must maintain a 10-day fuel reserve for contingency purposes; this reserve total must be added to the bottom 25% of tank capacity to derive the minimum tank capacity necessary to maintain the 10-day reserve. Table 8 below compares the minimum tank levels required to maintain a 10-day reserve at SCE's current usage rate to the District's proposed usage rate.

Table 8. *Minimum Tank Levels Needed to Maintain 10-Day Reserve: Comparison of Current Usage to SCAQMD Proposal*

Parameter	Scenario	
	Current (gallons)	**SCAQMD Proposed (gallons)**
Power Consumption	200,000	**1,748,532**
Utility Consumption	650,000	**650,000**
Total Annual Consumption	850,000	**2,398,532**
Average Daily Consumption	2,329	**6,571**
10-day reserve	23,288	**65,713**
Tank Farm Nameplate Volume	90,000	**90,000**
Tank Farm Usable Volume	54,900	**54,900**
Minimum Tank Farm Volume @ 25%	22,500	**22,500**
Minimum Volume w/ 10-day Reserve	45,788	**88,213**
Minimum Tank Level w/10-day Reserve / Nameplate Volume (%)	**51%**	**98%**

NOTE: The District's scenario (added to a 10-day reserve) is 120% of the maximum usable volume and 114% of the maximum fill limit.

In the District's BARCT scenario above, a 10-day reserve is equal to 65,710 gallons of storage (based on a daily consumption rate of 6,571 gallons). Considering that the maximum safe storage capacity is 54,900 gallons (using the 86% maximum fill level), including a 10-day fuel reserve of 65,710 gallons brings the total to 120% of the maximum usable storage capacity value of 54,900 gallons and 114% of the maximum storage limit of 77,400 gallons. Table 8 also shows that the District's proposed BARCT scenario, when a 10-day reserve is included, would require tank levels to be maintained at 98% or above. As stated in Section I, the maximum fill level of the tanks is 83%. The District's scenario, when including the necessary 10-day reserve, yields a value that is 118% of the maximum fill value. This is unacceptable because it would compromise the safe operation of the propane tanks at PBGS and put personnel at risk.

As previously shown in Appendix C, SCE examined tank drawdown rates to help determine the operational feasibility of the District's BARCT scenario (even though this scenario cannot accommodate a 10-day reserve). A simple calculation[14] with a starting point of 74,700 gallons that uses a drawdown rate 6,571 gallons per day yields a theoretical value of 1.4 days between deliveries. That frequency is unrealistic for managing daily operations because of propane delivery logistics. For a relative comparison, the delivery interval of 1.4 days is 3.1 times as frequent as the current delivery frequency of 4.3 days. More frequent deliveries would increase worker exposure to the hazardous activity of transporting and offloading propane. The scenario requires an average daily consumption of 6,571 gallons, which equates to roughly 66% of the capacity of a tanker truck (or less than two days' worth when full). The current average daily consumption of 2,329 gallons equates to roughly 23% of the capacity of a tanker truck (or four days' worth when full). To maximize efficiency (and reduce transportation-related emissions), trucks should be shipped full and returned empty. This is a significant drawback to the District's scenario, which would require the use of partially full tanker trucks, and results in suboptimal use of the delivery service, increased trip frequency (and associated safety, environmental, and cost impacts), and increased potential for logistical challenges (due to requiring deliveries nearly every day). Planning scenarios with requirements that presume nearly flawless execution of all input assumptions (e.g., fuel delivery requirements without sufficient margin for reasonably expected contingencies) are academic and are not representative of good utility practice.

Additionally, the actual daily values of propane consumption are not identical to the annual average daily values: some are lower and others are higher. When a tanker truck can transport multiple days' worth of fuel (i.e., the daily value consumed is less than 50% of the tanker truck's capacity), these more discrete daily consumption values allow for optimizing the delivery of fuel, reducing complexity in scheduling, and providing an increased margin for contingencies impacting deliveries. In contrast, when the daily value consumed is more than 50% of the capacity of the tanker truck (acknowledging that the tanker truck must arrive full and leave empty), a 10-day reserve cannot be maintained.

To support findings from the tank drawdown analysis, Table 9 below examines barge delivery frequency based on total annual volume and an average tanker delivery of 9,395 gallons (as noted in Section I(D) above) to determine the total required deliveries. This barge analysis aligns with and supports the conclusions from the tank drawdown rate calculations shown in Appendix C. On average, the District's BARCT scenario would require propane delivery every 1.4 days, or two deliveries of propane every three days; even if this was feasible, it would significantly increase the risks associated with transporting and unloading a hazardous fuel.

Table 9. *Barge Delivery Frequency Comparing Current Usage vs SCAQMD Proposed Scenario*

Scenario	Propane for Generation (gal/year)	Propane for Utility Service (gal/year)	Total Propane (Generation + Utility) (gal/year)	Required Annual Barge Deliveries (9,395 gallons/delivery)	Delivery Frequency (days)
Current	200,000	650,000	850,000	90	4.0
SCAQMD Proposed	1,748,532	650,000	2,398,532	255	1.4

SCE urges the District to consider the operational constraints described in Section I when determining the maximum annual propane throughput. Based on institutional knowledge and operational experience, PBGS operators know how to operate the propane tanks within temperature and pressure constraints without jeopardizing gas utility service. The next section describes a more realistic maximum annual propane throughput (using historical nominal tank level data) that accommodates safety and operational constraints.

III. The maximum available annual propane throughput available for power generation is 400,000 gallons.

SCE is committed to increasing propane-based power generation and has proposed to the District an annual throughput of 400,000 gallons, which is more than double the current five-year average amount of 188,030 gallons. This higher throughput would require PBGS to install an alternative propane-based technology with a higher consumption rate, which adds further complexity to the achievability aspect of this analysis.

Like the analysis presented previously for the current and District-proposed scenarios in Table 8, the calculated minimum tank level for SCE's proposed scenario (which includes the required 10-day fuel reserve) is 57% (see Table 10 below). This would raise the minimum tank level requirement from 51% to 57%, further restricting the acceptable tank level boundary and reducing usable capacity to approximately 23,433 gallons based on the calculations presented in Table 11. With a fixed storage capacity, increasing throughput leads to increasing the rate of change within this limited operational boundary, requiring PBGS personnel to increase the monitoring and maintaining of tank levels to ensure reliable and safe operations. SCE believes its proposed scenario is feasible if propane deliveries can be increased safely and reliably.

Table 10. *Calculated Working Capacity During Normal Operations*

Parameter	Scenario		
	Current (gallons)	**SCE Proposed (gallons)**	**SCAQMD Proposed (gallons)**
Power Consumption	200,000	**400,000**	1,748,532
Utility Consumption	650,000	**650,000**	650,000
Total Annual Consumption	850,000	**1,050,000**	2,398,532
Average Daily Consumption	2,329	**2,877**	6,571
10-day reserve	23,288	**28,767**	65,713
Tank Farm Nameplate Volume	90,000	**90,000**	90,000
Minimum Tank Farm Volume @ 25%	22,500	**22,500**	22,500
Minimum Volume w/ 10-day Reserve	45,788	**51,267**	88,213
Minimum Tank Level w/10-day Reserve / Nameplate Volume (%)	**51%**	**57%**	**98%**

Table 11. *Calculated Working Capacity During Normal Operations*

Parameter	SCE Scenario	Units
Tank Farm Nameplate Volume	90,000	gallons
Maximum Tank Fill Level	83%	--
Minimum Tank Fill Level	57%	--
Maximum Fuel Volume	74,700	gallons
Minimum Fuel Volume	51,267	gallons
Maximum Working Volume (Max Volume - Min Volume)	23,433	gallons

To further help determine operational feasibility and determine delivery frequency for SCE's scenario, tank drawdown rates were examined (see Appendix C). This analysis shows that SCE's proposed scenario would on average decrease the time between deliveries from 4.3 days to 3.3 days. This yields an increase in annual deliveries of approximately 30%. Barge delivery frequencies (shown in Table 12 below) support this finding, in which the SCE-proposed scenario would increase delivery frequency from 4 days to 3.3 days. SCE believes this incremental increase is feasible and can be safely managed without significant changes to current logistical and operational processes.

Table 12. *Barge Delivery Frequency (With SCE's Proposed Scenario)*

Scenario	Propane for Generation (gal/year)	Propane for Utility Service (gal/year)	Total Propane (Generation + Utility) (gal/year)	Required Annual Barge Deliveries (9,395 gallons/delivery)	Delivery Frequency (days)
Current	200,000	650,000	850,000	90	4.0
SCE Proposed	400,000	650,000	1,050,000	112	3.3
SCAQMD Proposed	1,748,532	650,000	2,398,532	255	1.4

To provide a better understanding of whether SCE can increase the fuel delivery from current usage levels to the SCE-proposed scenario (i.e., increasing the average of fuel deliveries from every four to five days to every three to four days), SCE used an annual average of historical propane delivery data between 2018 and 2022 to project the needed deliveries (shown in Figure 10 below). The figure illustrates that although the proposed delivery frequency does not equate to consistently delivering propane every three to five days based on averages, there is an expected increase of about 23 percent in the need for deliveries between one and three days in SCE's proposed scenario. Statistically, increasing the overall average means SCE having to deliver fuel within the same day or one to two days of the last filling, which will be challenging due to logistical and operational constraints described previously. SCE anticipates needing to deliver fuel more often on the same day or 1-2 days in order to offset the times PBGS cannot procure fuel to meet compliance, safety or reliability.

Figure 10. *Projected Annual Delivery Frequency for SCE's Proposed Throughput*

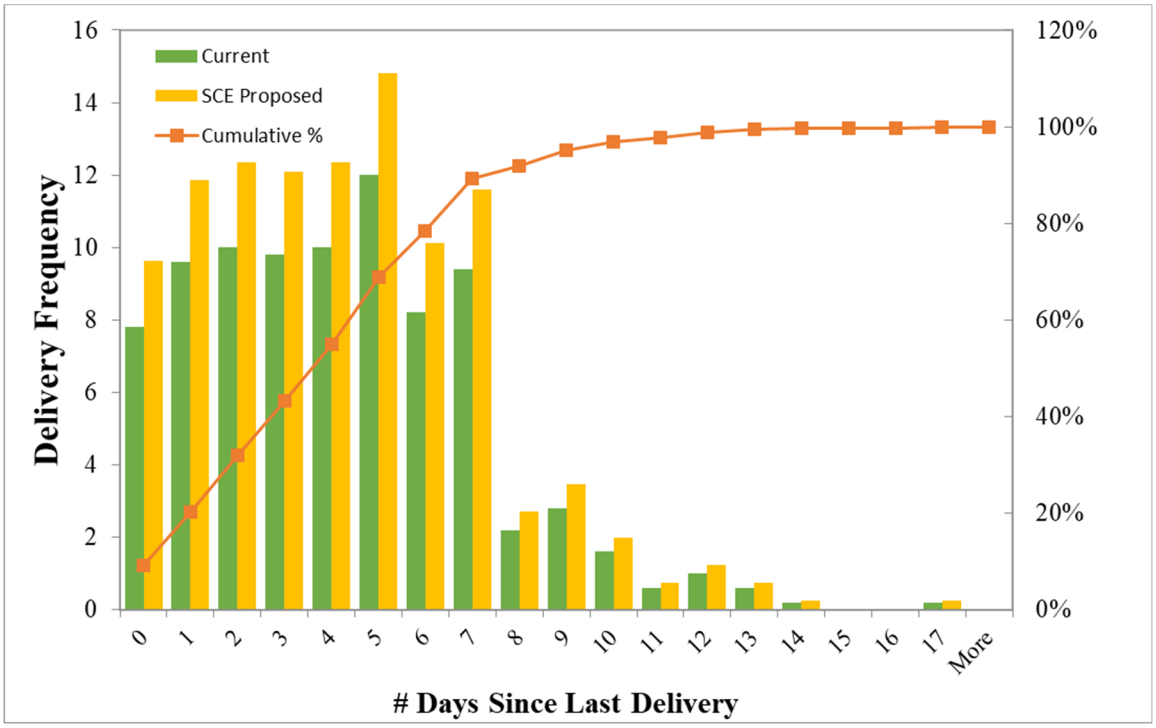


Table 13 further demonstrates the challenges of increasing fuel delivery frequency and throughput when increasing propane for power generation. SCE provides electricity and gas utility service based on customer demand, which can be highly variable from year to year and month to month due to being driven primarily by tourism. Historically, high usage periods have been noted during spring break and the summer. To meet the proposed throughput, SCE estimates PBGS would have to increase propane delivery to 11 to 12 cargo tanks monthly during these periods, with a peak in July when a delivery every 2.5 days would be needed. With propane usage being primarily driven by tourism leading to large variations in propane demand and usage, SCE anticipates potential issues being able to supply the additional propane for power generation beyond the proposed 400,000 gallons.

Table 13. *Forecasted Monthly Throughput and Deliveries for SCE Proposed Scenario*

	Delivered Propane (gallons)							Proposed SCE Scenario	
Mon.	**2018**	**2019**	**2020**	**2021**	**2022**	**5-Year Avg**	**5-Year Avg (Exc. 2020)**	**Expected (gallons)**	**Expected # Deliv.**
Jan	59,700	56,100	108,300	54,150	73,800	70,410	60,938	77,589	9
Feb	55,650	61,950	84,450	46,050	55,500	60,720	54,788	69,758	8
Mar	66,150	61,200	64,200	59,700	94,650	69,180	70,425	89,669	10
Apr	65,700	45,750	46,800	58,800	48,300	53,070	54,638	69,567	8
May	58,050	66,150	45,300	52,950	68,400	58,170	61,388	78,162	9
Jun	56,850	73,500	53,250	83,700	88,500	71,160	75,638	96,305	11
Jul	75,600	91,350	43,950	85,500	100,800	79,440	88,313	112,444	12
Aug	66,450	82,500	65,850	66,300	98,400	75,900	78,413	99,839	11
Sepr	58,350	74,400	55,950	88,050	66,150	68,580	71,738	91,340	10
Oct	53,250	72,150	57,150	63,600	70,650	63,360	64,913	82,650	9
Nov	45,900	59,700	56,400	66,000	99,000	65,400	67,650	86,135	10
Dec	67,650	75,750	43,800	64,800	95,100	69,420	75,825	96,544	11
Total	**729,300**	**820,500**	**725,400**	**789,600**	**959,250**	**804,810**	**824,663**	**1,050,000**	**118**

To address the District's reference to the high usage in 2022 as an indicator of the feasibility of its proposed increase, SCE has previously explained that 2022 was an atypical year operationally. In 2022, PBGS's BESS was out of service for an extended period due to maintenance issues. During this time, PBGS increased reliance on the microturbines to make up for the excess power that would have been otherwise been absorbed and dispatched by the BESS. Subsequently, the total annual propane usage was at an all-time high (970,370 gallons in comparison to the five-year annual average of 831,047 gallons). Based on SCE's experience, meeting the propane demand during the summer of 2022 proved to be challenging from both a logistical and operational standpoint and represents a near upper-boundary in terms of maximizing available propane, especially during the high-demand summer months.

As detailed in Section I, the logistics of procuring and delivering propane requires complex collaboration among multiple entities, i.e., SCE, AFS, Alliance Propane, and CFL, as well as reliance on propane availability from the local refineries. SCE believes there would be safety concerns with increasing propane deliveries, such as operator fatigue, which could lead to additional risks, especially due to the ongoing concerns expressed in the letter from the City of Avalon Fire Chief.

Nevertheless, SCE believes the incremental increase is feasible assuming a commensurate acceptable fuel delivery frequency increase and is willing to aim for a higher annual propane throughput than the facility has historically achieved.

IV. Conclusion

SCE appreciates the District's proposal for increasing propane and transitioning to cleaner fuels at PBGS. However, SCE does not support increasing the annual propane usage for power generation beyond 400,000 gallons because it would jeopardize SCE's ability to provide safe and reliable electric, water, and gas utility services to Catalina's residents and visitors. After evaluating the District's maximum propane allocation for power generation, SCE has concluded that although the calculations are arithmetically error free, they rely on numerous incorrect assumptions and fail to account for a multitude of operational and logistical constraints that are reflected in SCE's more refined analysis.

SCE appreciates the opportunity to collaborate with the District to bring alternative cleaner power generation solutions to Catalina. If you have questions or concerns regarding this propane availability evaluation, please contact Yung Chung, Senior Air Quality Advisor, at (626) 613-2821 or Yung.Chung@sce.com.

Sincerely,

DocuSigned by:
Anthony Hernandez
0E23597734E47B...

Anthony Hernandez, SCE
Director of Catalina Operations & Strategy
Southern California Edison

CC: Chris Perri, SCAQMD
Michael Morris, SCAQMD
Anthony Hernandez, SCE
Ron Hite, SCE
Joy Brooks, SCE
Yung Chung, SCE

Attachments

A – Letter from City of Avalon Fire Chief to SCE

B – Propane Supply Communication

C – Tank Drawdown Rate Analysis

Attachment A

Letter from City of Avalon Fire Chief to SCE

CITY OF AVALON

September 6, 2023

SCAQMD
21865 Copley Dr.
Diamond Bar, CA. 91765

RE: Southern California Edison Pebbly Beach Generating Station Site Visit

To Whom It May Concern:

On behalf of the City of Avalon Fire Department ("AFD") I wanted to identify a few fire and safety concerns with regard to increasing propane storage and deliveries at the Pebbly Beach Generating Station ("PBGS"):

NFPA Standard 15 specifies the required water flow rate in a water deluge system to protect fixed structures such as storage tanks in the case of a fire. The amount of required water depends on the size of the area protected. The AFD calculated that the deluge system must be capable of supplying 3,000 gallons per minute (gpm) to control a fire in the propane tank farm for PBGS to comply with NFPA 15. PBGS's water flow system is 1,800 gpm, or 60% of the NFPA 15 required flow rate.

Even if the fourth tank were relocated elsewhere within the facility, SCE does not have sufficient water storage or delivery systems for fire suppression. At this time, SCE does not have enough space to install a new water tank within its property.

There is also an inherent risk associated with propane transportation and unloading. As such, increasing the number of deliveries increases the overall fire and safety risk.

PBGS propane storage tanks are located in the center of the facility. The propane tank relief valve vents and the propane loading area (locations where incidental propane emissions can occur) are located approximately 50 feet from the 12-kV and 2.4-kV switch yard fences. Due to the close spacing between the two propane venting locations and the two switchyards, PBGS is unable to meet the National Fire Protection Association (NFPA) Standard 59 (Utility Liquid Propone-Gas Plant Code) that establishes a minimum offset distance required between a transfer point of a flammable substance (i.e., a vent location) and an uncontrolled source of ignition (switchyard). The offset distance required by NFPA-59 is 75 feet, but site constraints limit the available offset to 60 feet. The AFD granted PBGS a variance from the NFPA-59 standard, allowing a 60-foot offset. A second variance further reducing the offset distance would not be possible.

Please feel free to reach out to me with any other questions.

Michael Alegria
Fire Chief, City of Avalon

Attachment B

Propane Supply Communication

From: John Martin
To: Trevor S Krasowsky
Subject: FW: (External):Propane Fuel Shortage
Date: Tuesday, December 20, 2022 4:02:26 PM
Attachments: image001.png
image002.png

FYI – Good info concerning propane deliveries etc. See below

John "Jay" Martin
Production Supervisor
Catalina, PBGS
T. 928-503-3902 | M. 626-646-6822
1 Pebbly Beach Rd, Avalon, CA, 90704

From: Carlos Arevalo <Carlos.Arevalo@sce.com>
Sent: Tuesday, December 20, 2022 4:00 PM
To: John Martin <john.martin@sce.com>
Subject: Fw: (External):Propane Fuel Shortage

Jay here is the email from the propane vendor.

From: anne@alliancepropanelp.com <anne@alliancepropanelp.com>
Sent: Tuesday, December 20, 2022 3:56 PM
To: Carlos Arevalo <Carlos.Arevalo@sce.com>; abelvaldez@avalonfreightservices.com <abelvaldez@avalonfreightservices.com>
Cc: 'Mike Mowad' <mike@alliancepropanelp.com>; 'Brad Allinson' <brad@alliancepropanelp.com>; anne@alliancepropanelp.com <anne@alliancepropanelp.com>
Subject: (External):Propane Fuel Shortage

***** EXTERNAL EMAIL - Use caution when opening links or attachments *****

Dear Carlos:

We have found ourselves in a situation where propane has been difficult to obtain. In the almost ten years of supplying propane to Catalina we have never experienced these problems simultaneously. We are in the middle of the perfect storm.

There are several factors that are affecting the current availability as follows:

1. Multiple refineries have experienced machinery issues which have required them to stop production.
2. The remaining refineries are using propane to fuel their refining process due to natural gas being at a higher cost. This is limiting how much propane is available.
3. Railcars are not arriving due to line interruptions and repairs.
4. Because tankers are prohibited from being stored overnight at the port, we have a small window for delivery. Tankers must be filled and shipped before 4:00 pm. There is no opportunity to fill tankers and stage ready to be shipped.
5. Finally, in the winter months we experience a much higher demand for propane throughout the industry resulting in a turbulent supply issue.

We are working diligently to get through this supply issue.

Yours truly,

Anne Beall

LOGO_NEW_&_number

PH 951-676-1916 FX 951-676-5373

Attachment C

Tank Drawdown Analysis

SCE Current State 200,000 gallons for Power Generation		
Tank Nameplate Volume (gallons)	90,000	**Note**: 10-day reserve maintained.
Max. Tank Operational Volume (83%) (gallons)	74,700	
Min. Tank Volume (25%+10 day reserve) (gallons) refill trigger	45,788	
Annual Consumption (gallons)	850,000	
Daily Consumption (gallons)	2,329	

Day	Volume (gallons)	Full Tanker Fuel Delivery (gallons)	Days of Reserve
1	74,700		22.4
2	72,371		21.4
3	70,042		20.4
4	67,714		19.4
5	65,385		18.4
6	63,056		17.4
7	60,727		16.4
8	58,399		15.4
9	56,070		14.4
10	53,741		13.4
11	51,412		12.4
12	49,084		11.4
13	56,150	9,395	14.4
14	53,821		13.4
15	51,492		12.4
16	49,163		11.4
17	56,230	9,395	14.5
18	53,901		13.5
19	51,572		12.5
20	49,243		11.5
21	56,310	9,395	14.5
22	53,981		13.5
23	51,652		12.5
24	49,323		11.5
25	56,390	9,395	14.6
26	54,061		13.6
27	51,732		12.6
28	49,403		11.6
29	56,470	9,395	14.6
30	54,141		13.6
31	51,812		12.6
32	49,483		11.6
33	56,549	9,395	14.6
34	54,221		13.6

SCE Proposed 400,000 gallons for Power Generation		
Tank Nameplate Volume (gallons)	90,000	**Note**: 10-day reserve maintained.
Max. Tank Operational Volume (83%) (gallons)	74,700	
Min. Tank Volume (25%+10 day reserve) (gallons) refill trigger	51,267	
Annual Consumption (gallons)	1,050,000	
Daily Consumption (gallons)	2,877	

Day	Volume (gallons)	Full Tanker Fuel Delivery (gallons)	Days of Reserve
1	74,700		18.1
2	71,823		17.1
3	68,947		16.1
4	66,070		15.1
5	63,193		14.1
6	60,316		13.1
7	57,440		12.1
8	54,563		11.1
9	61,081	9,395	13.4
10	58,205		12.4
11	55,328		11.4
12	61,846	9,395	13.7
13	58,969		12.7
14	56,093		11.7
15	62,611	9,395	13.9
16	59,734		12.9
17	56,858		11.9
18	63,376	9,395	14.2
19	60,499		13.2
20	57,622		12.2
21	54,746		11.2
22	61,264	9,395	13.5
23	58,387		12.5
24	55,511		11.5
25	62,029	9,395	13.7
26	59,152		12.7
27	56,275		11.7
28	62,794	9,395	14.0
29	59,917		13.0
30	57,040		12.0
31	54,164		11.0
32	60,682	9,395	13.3
33	57,805		12.3
34	54,928		11.3

SCAQMD Proposed 1,748,532 gallons for Power Generation		
Tank Nameplate Volume (gallons)	90,000	**Note**: 10-day reserve cannot be met. Chart below uses minimum # of days reserve (6) that can be accomodated.
Max. Tank Operational Volume (83%) (gallons)	74,700	
Min. Tank Volume (25%+6 day reserve) (gallons) refill trigger	61,928	
Annual Consumption (gallons)	2,398,532	
Daily Consumption (gallons)	6,571	

Day	Volume (gallons)	Full Tanker Fuel Delivery (gallons)	Days of Reserve
1	74,700		7.9
2	68,129		6.9
3	70,952	9,395	7.4
4	64,381		6.4
5	67,205	9,395	6.8
6	70,028	9,395	7.2
7	63,457		6.2
8	66,281	9,395	6.7
9	69,104	9,395	7.1
10	62,533		6.1
11	65,357	9,395	6.5
12	68,180	9,395	7.0
13	61,609		6.0
14	64,433	9,395	6.4
15	67,257	9,395	6.8
16	60,685		5.8
17	63,509	9,395	6.2
18	66,333	9,395	6.7
19	59,761		5.7
20	62,585	9,395	6.1
21	65,409	9,395	6.5
22	68,232	9,395	7.0
23	71,056	9,395	7.4
24	73,880	9,395	7.8
25	67,308		6.8
26	70,132	9,395	7.2
27	72,956	9,395	7.7
28	66,384		6.7
29	69,208	9,395	7.1
30	72,032	9,395	7.5
31	65,460		6.5
32	68,284	9,395	7.0
33	71,108	9,395	7.4
34	64,536		6.4

SCE Current State 200,000 gallons for Power Generation		
Tank Nameplate Volume (gallons)	90,000	**Note**: 10-day reserve maintained.
Max. Tank Operational Volume (83%) (gallons)	74,700	
Min. Tank Volume (25%+10 day reserve) (gallons) refill trigger	45,788	
Annual Consumption (gallons)	850,000	
Daily Consumption (gallons)	2,329	

Day	Volume (gallons)	Full Tanker Fuel Delivery (gallons)	Days of Reserve
35	51,892		12.6
36	49,563		11.6
37	56,629	9,395	14.7
Over 30-Day Period (days 8-37)			
Average Days of Reserve	13.2		
Average Tank Volume	53,130		
# of Fuel Deliveries	7		
Days Between Deliveries	4.3		

SCE Proposed 400,000 gallons for Power Generation		
Tank Nameplate Volume (gallons)	90,000	**Note**: 10-day reserve maintained.
Max. Tank Operational Volume (83%) (gallons)	74,700	
Min. Tank Volume (25%+10 day reserve) (gallons) refill trigger	51,267	
Annual Consumption (gallons)	1,050,000	
Daily Consumption (gallons)	2,877	

Day	Volume (gallons)	Full Tanker Fuel Delivery (gallons)	Days of Reserve
35	61,447	9,395	13.5
36	58,570		12.5
37	55,693		11.5
Over 30-Day Period (days 8-37)			
Average Days of Reserve	12.5		
Average Tank Volume	58,573		
# of Fuel Deliveries	9		
Days Between Deliveries	3.3		

SCAQMD Proposed 1,748,532 gallons for Power Generation		
Tank Nameplate Volume (gallons)	90,000	**Note**: 10-day reserve cannot be met. Chart below uses minimum # of days reserve (6) that can be accomodated.
Max. Tank Operational Volume (83%) (gallons)	74,700	
Min. Tank Volume (25%+6 day reserve) (gallons) refill trigger	61,928	
Annual Consumption (gallons)	2,398,532	
Daily Consumption (gallons)	6,571	

Day	Volume (gallons)	Full Tanker Fuel Delivery (gallons)	Days of Reserve
35	67,360	9,395	6.8
36	70,184	9,395	7.3
37	63,612		6.3
Over 30-Day Period (days 8-37)			
Average Days of Reserve	6.7		
Average Tank Volume	66,826		
# of Fuel Deliveries	21		
Days Between Deliveries	1.4		

Note: Blue shaded area is a 30-day period (over days 8-37 excluding days 1-7 which start from a "black start" period and are not useful for a representative example) provided as an illustrative example of various metrics using annual average consumption rates

DocuSign

Certificate Of Completion

Envelope Id: 72B1BC3C0C80426391522D85BB0DB534
Status: Completed
Subject: Complete with DocuSign: 202311 SCE PBGS Propane Letter.pdf
Custom Envelope Field:
Source Envelope:
Document Pages: 38
Signatures: 1
Envelope Originator:
Certificate Pages: 4
Initials: 0
Sugie Gilmore-Paul
AutoNav: Enabled
P.O. Box 700
EnvelopeId Stamping: Enabled
Rosemead, CA 91770
Time Zone: (UTC-08:00) Pacific Time (US & Canada)
SUGIE.GILMOREPAUL@SCE.COM
IP Address: 163.116.248.33

Record Tracking

Status: Original
1/3/2024 3:41:56 PM
Holder: Sugie Gilmore-Paul
SUGIE.GILMOREPAUL@SCE.COM
Location: DocuSign

Signer Events	Signature	Timestamp
Anthony Hernandez Anthony.Hernandez@sce.com Principal Manager, PSS&I SCE Security Level: Email, Account Authentication (None)	DocuSigned by: Anthony Hernandez 0E235977344E47B... Signature Adoption: Pre-selected Style Using IP Address: 76.87.208.18 Signed using mobile	Sent: 1/3/2024 3:46:43 PM Viewed: 1/3/2024 4:05:20 PM Signed: 1/3/2024 4:05:49 PM
Electronic Record and Signature Disclosure: Accepted: 2/12/2021 3:07:14 PM ID: 3dce2872-4ce9-4daf-9bf7-9dbe1e0f5808		

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	1/3/2024 3:46:43 PM
Envelope Updated	Security Checked	1/3/2024 4:05:57 PM
Certified Delivered	Security Checked	1/3/2024 4:05:20 PM
Signing Complete	Security Checked	1/3/2024 4:05:49 PM
Completed	Security Checked	1/3/2024 4:05:58 PM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

ELECTRONIC RECORD AND SIGNATURE DISCLOSURE

From time to time, Southern California Edison Company (we, us or Company) may be required by law to provide to you certain written notices or disclosures. Described below are the terms and conditions for providing to you such notices and disclosures electronically through the DocuSign system. Please read the information below carefully and thoroughly, and if you can access this information electronically to your satisfaction and agree to this Electronic Record and Signature Disclosure (ERSD), please confirm your agreement by selecting the check-box next to 'I agree to use electronic records and signatures' before clicking 'CONTINUE' within the DocuSign system.

Getting paper copies

At any time, you may request from us a paper copy of any record provided or made available electronically to you by us. You will have the ability to download and print documents we send to you through the DocuSign system during and immediately after the signing session and, if you elect to create a DocuSign account, you may access the documents for a limited period of time (usually 30 days) after such documents are first sent to you. After such time, if you wish for us to send you paper copies of any such documents from our office to you, you will be charged a $0.00 per-page fee. You may request delivery of such paper copies from us by following the procedure described below.

Withdrawing your consent

If you decide to receive notices and disclosures from us electronically, you may at any time change your mind and tell us that thereafter you want to receive required notices and disclosures only in paper format. How you must inform us of your decision to receive future notices and disclosure in paper format and withdraw your consent to receive notices and disclosures electronically is described below.

Consequences of changing your mind

If you elect to receive required notices and disclosures only in paper format, it will slow the speed at which we can complete certain steps in transactions with you and delivering services to you because we will need first to send the required notices or disclosures to you in paper format, and then wait until we receive back from you your acknowledgment of your receipt of such paper notices or disclosures. Further, you will no longer be able to use the DocuSign system to receive required notices and consents electronically from us or to sign electronically documents from us.

All notices and disclosures will be sent to you electronically

Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through the DocuSign system all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

How to contact Southern California Edison Company:

You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:
To contact us by email send messages to: IGInformationgovernance@sce.com

To advise Southern California Edison Company of your new email address

To let us know of a change in your email address where we should send notices and disclosures electronically to you, you must send an email message to us at IGInformationgovernance@sce.com and in the body of such request you must state: your previous email address, your new email address. We do not require any other information from you to change your email address.

If you created a DocuSign account, you may update it with your new email address through your account preferences.

To request paper copies from Southern California Edison Company

To request delivery from us of paper copies of the notices and disclosures previously provided by us to you electronically, you must send us an email to IGInformationgovernance@sce.com and in the body of such request you must state your email address, full name, mailing address, and telephone number. We will bill you for any fees at that time, if any.

To withdraw your consent with Southern California Edison Company

To inform us that you no longer wish to receive future notices and disclosures in electronic format you may:

i. decline to sign a document from within your signing session, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;

ii. send us an email to IGInformationgovernance@sce.com and in the body of such request you must state your email, full name, mailing address, and telephone number. We do not need any other information from you to withdraw consent.. The consequences of your withdrawing consent for online documents will be that transactions may take a longer time to process..

Required hardware and software

The minimum system requirements for using the DocuSign system may change over time. The current system requirements are found here: https://support.docusign.com/guides/signer-guide-signing-system-requirements.

Acknowledging your access and consent to receive and sign documents electronically

To confirm to us that you can access this information electronically, which will be similar to other electronic notices and disclosures that we will provide to you, please confirm that you have read this ERSD, and (i) that you are able to print on paper or electronically save this ERSD for your future reference and access; or (ii) that you are able to email this ERSD to an email address where you will be able to print on paper or save it for your future reference and access. Further, if you consent to receiving notices and disclosures exclusively in electronic format as described herein, then select the check-box next to 'I agree to use electronic records and signatures' before clicking 'CONTINUE' within the DocuSign system.

By selecting the check-box next to 'I agree to use electronic records and signatures', you confirm that:

- You can access and read this Electronic Record and Signature Disclosure; and
- You can print on paper this Electronic Record and Signature Disclosure, or save or send this Electronic Record and Disclosure to a location where you can print it, for future reference and access; and
- Until or unless you notify Southern California Edison Company as described above, you consent to receive exclusively through electronic means all notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you by Southern California Edison Company during the course of your relationship with Southern California Edison Company.