

**Aliso Canyon Action Plan to
Preserve Electric Reliability for Los Angeles
Issue Briefing and Frequently Asked Questions
April 5, 2016**

The Aliso Canyon natural gas storage facility is a critical gas supply resource necessary for a reliable fuel supply to LADWP's electrical generators. The gas supply is needed to reliably meet high energy demand in the summer months. Aliso Canyon is the only gas storage facility that can immediately respond to potentially rapid changes in gas supply demand for 17 gas-fired generating plants within the greater L.A. area, including LADWP's four local generating stations.

Due to the natural gas leak at Aliso Canyon, there is a moratorium on new injections of gas into the facility until the wells have passed comprehensive tests or been isolated, and deemed safe. This uncertain status will make it challenging to maintain electric reliability this summer, due to the fact that gas is needed to create electricity at the 17 electrical generating plants.

The impacts of the unexpected curtailment of the gas supply impacts Southern California and not just Los Angeles, and will potentially cause electrical service interruptions to LADWP customers and other power customers in the Southern California area including the LA area and parts of Orange County served by other municipal utilities (Glendale, Burbank and Pasadena) and Southern California Edison. These curtailments could interrupt service and affect millions of electric customers during as many as 14 days this summer.

LADWP has a strong record of providing reliable power. Our system is designed with generation and transmission redundancy which allows us to avoid electric service interruptions due to an energy shortage or system equipment failure, except under the most extreme conditions. Even during the energy crisis in the early 2000s, LADWP secured enough energy to meet customer needs.

LADWP is doing everything possible to reduce and avoid electrical interruptions while Aliso Canyon undergoes the necessary safety review. These challenges and mitigation measures are described in the Aliso Canyon Action Plan being made public today. They include:

- Working closely with state electric agencies and SoCalGas to mitigate and reduce the risk of electrical interruptions and preserve reliability this summer.

- Changing operating procedures to maximize flexibility, such as curtailing gas hedging and sales of gas-fired energy to preserve our natural gas supply for critical needs within our service area.
- Maximizing the use of other energy resources including renewable energy.
- Working with Mayor’s office to get out the message to customers to save energy to reduce demand on hot days – including participation in a robust “Flex Your Power” Program.
- Ramping up energy efficiency and demand-response (DR) programs, including several new measures expected to come online this summer.

While LADWP is taking all steps possible to ensure electric reliability this summer, these measures will reduce, but not eliminate, the risk of electricity service interruptions due to gas curtailments.

We encourage customers to do all they can in their homes and businesses to save both gas and electricity. The less electricity is used, the less likely blackouts are to occur.

Our biggest concern is for the health and safety of our customers. If conditions do require electrical interruptions, we will provide as much advance notification as possible so that customers can take measures to protect themselves during blackouts caused by lack of gas supply.

Role of Natural Gas in LADWP Power System

LADWP has 7,959 MW of generation capacity from a diverse mix of energy sources, including natural gas, nuclear, hydropower, coal, and renewable resources (solar, wind, geothermal, and biomass) that are also geographically diverse—inside and outside of the LA basin. LADWP also has a vast electric transmission system spanning five states. This mix of resources and geographic diversity create a high level of redundancy and protect against power outages from either shortage of supply or equipment failure.

LADWP’s power system includes four of the 17 natural gas power plants within the Los Angeles area that serve our customers. LADWP owns 40% of the gas-fired generation capacity in the Los Angeles basin, and uses natural gas for about 24% of our power supply. Newly rebuilt natural gas units generate power more efficiently (using about one-third less fuel per kilowatt-hour generated) than the old turbines they replaced.

The natural gas plants are called upon to serve customer electric needs around the clock, as well as to run on short notice when energy demand spikes, typically on hot summer days when businesses and residents turn up their air conditioners. The gas plants are also the cleanest, most efficient and reliable power generation that provide back up support, or “bridge fuel,” to keep the lights on as LADWP expands the use of renewable energy. Renewable energy cannot yet be a resource that can be fully depended upon; we cannot yet successfully predict when the wind blows and when the sun shines.

LA's goal is to be coal-free by 2025, and LADWP continues to aggressively increase the amount of renewable energy (solar, wind and geothermal power) provided to LA residents and businesses. LADWP is on track to provide 33% renewable energy to customers by 2020, and is mandated to supply 50% renewables by 2030. We are also expecting another 560 MW of large-scale solar to come online by the end of 2016. However, as mentioned, the most abundant renewable resources, solar and wind, are both variable. They do not produce energy if the wind is not blowing or the sun is not shining. Until more storage technology or baseload geothermal power can be developed, natural gas is necessary to firm and back up renewables to ensure continuous, reliable power to our customers 24/7.

Aliso Canyon Action Plan

LADWP has been working closely with the California Energy Commission (CEC), California Public Utilities Commission (CPUC), and California Independent System Operator (CAISO) to develop the Aliso Canyon Reliability Action Plan that is being made public today (April 5) and will be discussed in the public workshop on Friday, April 8, from 1:00 p.m. to 9:00 p.m. at Warner Center Marriott Woodland Hills, 21850 Oxnard Street, Woodland Hills, CA 91367.

Without the use of Aliso Canyon, the Los Angeles area and parts of Orange County are vulnerable to electrical interruptions due to gas shortages. This includes not just LADWP's service area, which covers the City of Los Angeles, but the greater Los Angeles area served by other municipal utilities (Glendale and Burbank) and also portions of Southern California Edison service territory.



Mitigation Measures

The action plan includes several measures that will mitigate, but not eliminate, the risk of gas curtailments large enough to cause electricity interruptions. The measures are not cost free and some require regulatory approval. The plan includes LADWP-specific measures that could cost upwards of \$100 million with the details still being determined. These measures include:

- Halting the sales of excess energy to other market participants when LADWP is able to generate electricity at a lower cost than others.
- Curtailing physical hedging of gas supply to avoid being locked into commitments where we are required to buy gas in advance - enables LADWP to vary the use of gas power to preserve it for critical periods.
- Curtailing block energy and forward capacity sales to retain flexibility and reduce gas use.
- Working with Mayor's office to get out the message to customers to save energy to reduce demand during peak hours on hot days – includes participation in a robust "Flex Your Power" Program.
- Ramping up energy efficiency and demand response (DR) programs, including several new measures expected to come online this summer.
- Calling on customers to voluntarily engage in demand-response targeting air conditioning and large commercial use. LADWP has a total of 60 MW that can be reduced by customers participating in existing demand-response programs. These include a price discount offered to participating large commercial customers (45 MW) and a pilot DR program (15 MW) targeting a broader segment of commercial customers.

Risk of Gas Curtailments

According to the plan the risk of curtailment exists when the following combinations/circumstances occur:

- Scheduled, flowing gas does not match actual gas demand;
- Pipeline outages reduce delivery capacity; and
- Outages at the SoCalGas' other storage facilities reduce remaining storage capacity.

Residential Power Saving Tips:

- **Adjust Your Thermostat:** During peak hours or when you're not home, remember to set your thermostat at 78° or higher.
 - Setting your air conditioner 5° higher can save up to 20% on cooling costs.
- **Close Windows and Doors:** Keep windows and doors closed during the heat of the day to prevent the loss of cooled air.

- **Adjust Window Coverings:** Tilt blinds up and close drapes and shades on windows that receive direct sunlight.
- **Clean or Replace Your A/C Filter:** A dirty filter forces your air conditioner to work harder, wasting money and energy.
- **Keep Cool With Ceiling Fans:** Running a ceiling fan while your A/C is on (when you're at home) will allow you to raise your thermostat about 4°F while experiencing the same level of comfort.
 - Most ceiling fans use less energy than a light bulb!
- **Be Smart About Lighting:** Turn off unnecessary lighting and use task or desktop lamps with CFLs instead of overhead lights.
- **Power Down Your Computer:** Enable "power management" on all computers and make sure to turn them off when not in use.
- **Cool Off Your Home at Night:** On cool nights, safety-permitting, open windows to let cooler air in. In the morning before the day starts to heat up, close windows and blinds to keep warm air out.
- **Delay Heat-Producing Activities:** To avoid heating up your home on hot days, postpone using heat-producing appliances like the oven, dishwasher, clothes washer and clothes dryer until cooler times of the day.
- **Inspect Your Home for Air Leaks:** Caulk or seal around air vents, registers, doors and windows to help keep hot air out of your home during the summer. Pay close attention to the connections where vents and registers meet floors, walls and ceilings as these are common places for leaks.
- **Wash Clothes in Cold Water:** When possible, wash clothes in cold water. About 90% of the energy used in a clothes washer goes to water heating.
- **Run Full Loads and After 6pm:** Run your dishwasher and clothes washer only when fully loaded. During summer, wait until after 6pm to use these and other major appliances.
- **Program Your Thermostat:** Fully utilize a programmable thermostat to help keep your A/C costs low during the day when you're not at home.
- **Use the Bathroom Fan:** After showers, remove heat and humidity from your home or apartment with the bathroom vent.
- **Unplug Electronics:** Unplug battery chargers, power strips (those without a switch) and other equipment when not in use. Taken together, these small items can use as much power as your refrigerator.
- **Adjust Your Water Heater:** Turn your water heater down to 120° or the "normal" setting when home, and to the lowest setting when away.
 - Water heating accounts for about 13% of home energy costs.
- **Head Somewhere Cool:** On hot afternoons, consider leaving home, adjusting your thermostat accordingly, and going someplace cool like the pool or the library. Better yet, let nature be your A/C and take a trip to the park, forest or beach.
- **Get Rewarded for Saving:** Learn about incentives and bill credits offered by [SCE](#), [PG&E](#) and [SDG&E](#) to save energy on days when conservation is needed.

Office Power Saving Tips:

- **Lighting:** Turn off unnecessary office lights, and use natural lighting where possible.
- **Thermostat:** Set your zone thermostat to 78° or higher, when possible.
- **Prevent Leaks:**
 - Check window vents to make sure they are clear of paper and other debris.
 - Adjust the blinds on windows that receive direct sunlight.
 - Keep windows and doors closed to prevent the loss of cooled air.
- **Equipment:** Turn off any office equipment that is not currently in use. Alternately, look for sleep or power-saving modes in-between uses during the day.
- **Computers:** Enable power management settings on all computers, so that they go to sleep and turn off screens when not in use.
- **Break room:** Plug electronics such as coffee-makers and microwaves into power strips and switch them off when the day is done.
- **End-of-the-Day:** As you leave the office, get in the habit of checking to make sure computers, printers/copiers, and other office equipment is fully shut down. If possible, switch them off at the power strip to ensure they are no longer draining energy.

More tips for electricity savings and electrical efficiency rebate information can be found on www.ladwp.com/rebatesandprograms.

Frequently Asked Questions

What is the problem at Aliso Canyon?

Background:

- The Aliso Canyon natural gas storage facility belongs to the Southern California Gas Company. It was an oil and gas field discovered in 1938 and converted into a natural gas storage facility in 1972. It is located near Porter Ranch.

Current Situation:

- On October 23, 2015, a significant natural gas leak was detected at Aliso Canyon. It continued for four months.
- The State's Division of Oil, Gas and Geothermal Resources then issued emergency orders directing SoCalGas to stop gas injections into the storage facility, and to immediately work on alternatives to stop the leak and seal the broken well.
- Governor Brown issued an Emergency Proclamation which included a moratorium on gas injections at Aliso Canyon.

Why would the problem Aliso Canyon affect LADWP customers?

- The Southern California Gas Co. serves natural gas to meet needs such as home heating or cooking, as well as gas to supply fuel for electric generating plants that provide electricity to customers and for other industrial uses. Electric generating plants are the first to be curtailed under shortage conditions.
- The Aliso Canyon natural gas storage facility is critical for meeting high gas demand in the summer months because it provides storage for necessary reserve fuel for electric generation. Aliso Canyon is the only gas storage facility that can immediately respond to potentially rapid changes in gas supply demand for 17 gas-fired generating plants within the greater L.A. area, including LADWP's four in-basin generating stations. No other storage facility exists that can reliably serve the needs of so many people and businesses each and every day.
- For these reasons, LADWP and other electric utilities in Los Angeles County and parts of Orange County expect to face considerable challenges in maintaining electric and gas supply reliability this summer.

Why does LADWP use natural gas for power generation?

- LADWP's power system includes four of the 17 natural gas power plants within the Los Angeles area. LADWP owns 40% of the gas-fired generation capacity in the Los Angeles basin, and uses natural gas for about 24% of its power supply. Newly

rebuilt natural gas units generate power more efficiently (using about one-third less fuel per kilowatt-hour generated) than the old turbines they replaced.

- Natural gas-fired generating stations are critical to providing reliable power to our customers. Natural gas is the cleanest and most efficient fossil fuel for power generation at this time. It is cleaner than coal, does not produce nuclear waste, and is not impacted by drought conditions. It is used to run power plants at a moments' notice – unlike renewable energy such as solar and wind, which do not produce energy if the sun does not shine and the wind does not blow.
- Natural gas power plants are necessary to serve our customers since they can run “all day” or on short notice, when energy demand levels spike and as people return home from work and turn on their air conditioning on hot summer days.

Isn't LADWP increasing renewable energy like solar power? Why do we still need to use natural gas?

- LA's goal is to be coal-free by 2025, and LADWP continues to aggressively increase the amount of renewable energy (solar, wind and geothermal power) provided to LA residents and businesses. LADWP is on track to provide 33% renewable energy to customers by 2020, and 50% by 2030. We are also expecting another 560 MW of large-scale solar to come online by the end of 2016. However, the most abundant renewable resources, solar and wind, are both variable. They do not produce energy if the wind is not blowing or the sun is not shining. Until more storage technology or baseload geothermal power can be developed, natural gas is necessary to firm and back up renewables to ensure continuous, reliable power to our customers 24/7. Batteries are good, but they are not yet ready technologically, to play a major role in the solution.

What is LADWP doing to protect customers from blackouts this summer?

LADWP is doing everything possible to reduce and avoid electrical interruptions while Aliso Canyon undergoes the necessary safety review. Specific measures include:

- Working closely with state electric agencies to reduce the risk of electrical interruptions and preserve reliability this summer. The challenges and mitigation measures are described in the Aliso Canyon Action Plan being made public today.
- Working with local power grid operators (the California Independent System Operator) and SoCalGas to closely balance natural gas supply and demand needs.
- Changing operating procedures to maximize flexibility, such as curtailing hedging and sales of gas-fired energy to preserve our natural gas supply for critical needs within our service area.
- Increasing customer outreach and education efforts to urge customers to save energy to reduce demand on hot days – includes participation in a robust “Flex Your Power” Program.

- Ramping up energy efficiency and demand-response (DR) programs, including several new measures expected to come online this summer.

How will LADWP protect hospitals, the elderly, and other vulnerable customers?

- Hospitals and other emergency/critical facilities may be impacted by electrical service interruptions and will have to rely on their own back-up power generation supply.
- LADWP will conduct outreach and education to prepare our vulnerable customers (those susceptible to heat, dependent up on healthcare equipment).
- For information on what customers can do to help prevent summer outages: <http://www.flexalert.org/save-energy> or www.ladwp.com/save.
- Implementing new or expanding existing energy conservation and demand response (where customers are encouraged to reduce or shift electricity usage during peak periods) programs to minimize gas demand.

What are the risks of blackouts occurring, when would they occur and for how long?

- LADWP is taking all steps possible to ensure electric reliability this summer. However, based on technical analysis by state electricity agencies, we believe these measures will reduce, but NOT eliminate, the risk of gas curtailments large enough to cause electricity interruptions.
- The gas curtailments could interrupt service and cause power outages affecting millions of electric customers throughout Southern California during as many as 14 days this summer.
- However, it is too early to know when and for how long an electrical interruption might be necessary. If required, electrical interruptions will be limited only for the minimum duration necessary and may be rotated so that no area or community is unduly or unfairly burdened.
- Our biggest concern is for the health and safety of our customers. If conditions do require electrical interruptions, we will provide as much advance notification as possible so that customers can take measures to protect themselves during blackouts.

What can customers do to avoid blackouts?

- While the possibility of blackouts cannot be avoided, customers should respond to flex alerts when issued by turning off all unnecessary lights, postponing the use of

major appliances until the evening, and keeping air conditioning thermostats to 78 degrees or higher.

- Also, there is no better time for customers to implement energy efficiency measures at home. To help better manage energy use, LADWP customers can participate in myriad rebates and programs like the refrigerator exchange program, the pool pump rebate and other consumer rebate programs and Energy Upgrade California, among others. Visit www.ladwp.com/energyefficiency for more information.

What is the Aliso Canyon Action Plan?

- On Tuesday, April 5, the Aliso Canyon Action Plan will be released by state energy agencies and LADWP. It details significant challenges that Southern California electric utilities face this summer in maintaining electric grid reliability given the uncertain operating status of Aliso Canyon, as well as mitigation measures to help avoid power outages. The media will be briefed on the Action Plan on Tuesday morning and we expect that news outlets will carry stories about it – prompting inquiries to utilities from the media and our customers.

Is the plan available to the public?

Yes, It will (or has been) posted online at

http://www.energy.ca.gov/2016_energy/policy/documents/index.html#04082016

What does the Aliso Canyon Action Plan say?

- The region's natural gas supply reliability is likely to be threatened from 23 to 31 days this year.
- Natural gas service could be subject to interruption for as many as 12 to 21 days in a manner that is potentially large enough to force limiting electricity service to customers; 14 of those days could occur this summer. More to be expected in the winter; the high use season for SoCalGas.
- Numerous mitigation measures in the Plan are intended to reduce the likelihood of power outages this summer, including: customer education campaigns; strict new "balancing requirements" for the gas pipeline system; potential use of the little remaining gas at Aliso Canyon to prevent summer electricity interruptions; and possibly allowing for natural gas reinjections at the facility if needed and deemed to be safe.

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