FYI: Natural Gas Issues in California

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Limits in pipeline and storage capacity threaten to impose an effective ceiling on the amount of natural gas that can get into California, which relies heavily on imported supplies of this energy source to fuel the creation of electricity. Deliberate market manipulation also has been accused of squeezing supplies in the face of rising demand.

This paper explores reasons for the wave of price jumps and outlines issues that hinge on the capacity of thousands of miles of pipeline to transport crucial supplies. It also notes other factors, such as patterns in well-drilling, that have played a role in shaping today's natural gas market.

Regional impacts created by these chains of events also are highlighted. We conclude the paper with a series of policy options for addressing these issues.

Methods of Delivery and the Rising Use of Natural Gas

The way natural gas is delivered to a customer depends on the size of the customer.

The largest users of natural gas, called non-core customers by the industry, make their purchases directly from suppliers, marketers and brokers. Some non-core customers take deliveries directly from high-pressure interstate pipelines, bypassing the utility companies that supply other users.

Smaller customers – whether residential, commercial, or small industrial users – have the option of procuring natural gas from the utility companies that serve their areas or from suppliers, marketers or brokers. These customers are the core users.

Three large and two small investor-owned natural gas utilities do business in California. The big three are Pacific Gas & Electric Company (PG&E), Southern California Gas Company (SoCal Gas) and San Diego Gas and Electric Company (SDG&E). Southwest Gas Corporation and Avista are the small companies. Three municipally owned natural gas utilities serve the cities of Palo Alto, Coalinga, and Long Beach.

In 1999, California used just over 6.13 billion cubic feet of natural gas per day. Less than a quarter of that -- 23 percent -- went to electricity generation, while 34 percent went to core users, 25 percent to non-core users, and 18 percent to users who bypassed the natural gas utility system.

Daily consumption rose to an estimated 7 billion cubic feet per day in 2000. Electricity generation now represents about 35 percent of daily use. The rise in natural gas demand is driven by a need to fuel the growth in natural gas-fired power generators.

Interstate Pipeline Capacity and Related Issues

California imports nearly 85 percent of its natural gas from outside the state. Forty-six percent of the imports come from the southwest (Oklahoma, New Mexico and Texas), 28 percent from Canada and 10 percent from the Rockies (Colorado, Wyoming and Idaho). The map below depicts natural gas pipelines in the western United States. (See hard copy for map) The table lists pipeline capacities.

Interstate Pipeline Delivery Capacity and California Receiving Capacity MMcfd				
Interstate Pipelines and Delivery Capacity to California		Take Away Capacity at the Calif. Border		
Pipeline	**Delivery Capacity**	**Mojave**	**PG&E**	**SoCal Gas**
PG&E Gas Transwestern-NW	1,920	400	1,920	1,750

El Paso Natural Gas Co Transwestern Pipeline Co Kern River	3,290 1,090 700		1,140	750
Wheeler Ridge Receipt Point				680
Total	**7,000**	**400**	**3,060**	**3,180**
Tuscarora Pipeline Co	112			

Notes:

- GTN delivery capacity to California is impacted by how much gas is flowing on the Tuscarora Pipeline.
- PG&E may receive up to 1,140 MMcfd from a combination of El Paso, Transwestern, Kern River and Mojave deliveries.
- Mojave receives its supplies from El Paso and Transwestern.
- Wheeler Ridge receives gas from Kern River, Mojave, PG&E and California Production
- Not listed are direct deliveries made by Kern River, Mojave and from California production to industrial, electric generation, and EOR facilities.

Total interstate natural gas pipeline capacity into California is 7.15 billion cubic feet per day, barely above the 7 billion figure for daily consumption last year.

The California Energy Commission last year determined that the state's pipelines and in-state storage could provide sufficient capacity to meet demand. However, for a number of reasons, in-state storage did not reach historic levels last year and may not reach them again this year.

This is happening primarily because rising demands threaten to overtax pipeline capacities. The federal Energy Information Agency estimates California has been using more than 90 percent of its interstate pipeline capacity and, if demand levels continue to rise, could reach the limits of its capacity this year.

As the year 2000 ended, El Paso Natural Gas Company was accused in two lawsuits filed in Los Angeles County Superior Court of colluding with several affiliates and with Sempra Energy, SoCal Gas, and SDG&E to dominate the Southern California power market. The lawsuits charge that company executives worked together to kill the proposed Altamont Pipeline, which would have transported low-cost Canadian gas to Southern California.

Harvey Morris, a California Public Utilities Commission (PUC) lawyer, has said, "What we are seeing is high gas prices that cannot be attributed to the cost of gas but the ability of El Paso to exercise market power and manipulate prices." The impact of the alleged manipulation would have been most apparent last December and January when the "basis spread" – the difference between the price of gas at the California border and the price at Southwestern supply points – soared as high as $48.50 per million BTUs. The average spread over a similar period in the previous four years was 50 cents.

In addition, the PUC filed a case with the Federal Energy Regulatory Commission (FERC) in April 2000 that claimed El Paso Natural Gas Company had unfairly hoarded gas by awarding its affiliate, El Paso Merchant Energy, about 40 percent of its pipeline's capacity at a steeply discounted price.

El Paso Merchant Energy's two-year contract to use that pipeline to California expires June 1, 2001, and it has decided not to exercise its right of first refusal. That capacity will now be shared with 30 companies. El Paso Merchant Energy, Enron Corporation, Duke Energy and PG&E will pick up the largest shares of the 1.2 billion cubic

feet per day of available space.

Furthermore, there are several pipeline projects on the drawing boards that could benefit California.

Questar, a pipeline company that operates in the Rocky Mountains area, has received FERC approval to convert its Four Corners Pipeline from crude oil to natural gas. This pipeline extends from the San Juan Basin in Colorado and New Mexico to Long Beach and could deliver 90 million cubic feet per day. The conversion is expected to be completed toward the end of this year.

Kern River Gas Transmission Company has proposed a system expansion of 122 million cubic feet per day in capacity from Wyoming to California for 2002. It's testing the market for a further expansion of 380 million cubic feet per day that could be in place in 2003. The company is also studying the feasibility of building an extension of its pipeline from Kern County to Long Beach.

Finally, El Paso Natural Gas Company has purchased the crude-oil All American Pipeline that extends from Santa Barbara to Texas. The company plans to convert the pipeline to transport natural gas from Texas to the California border. This would add 500 million cubic feet per day to California's capacity.

The federal Energy Information Agency believes that a need for expanded capacity may not rest entirely with the interstate pipeline system. The capacity of in-state companies to receive natural gas is also an issue. For instance, the delivery capacity from El Paso Natural Gas Company to California is 4.38 billion cubic feet per day. But this is 340 million cubic feet more than the combined daily receiving capacity in California of PG&E, SoCal Gas and Mojave Pipeline Company.

PG&E and SoCal Gas have 10 active underground storage sites for holding natural gas. These sites can store approximately 203 billion cubic feet, with a daily withdrawal capacity of 4.7 billion cubic feet. PG&E can withdraw 68 billion cubic feet per year and SoCal Gas can withdraw a little less than 100 billion cubic feet per year.

SDG&E does not have any underground storage of its own but can pressurize its system pipes to carry an additional 64 million cubic feet per day.

Reasons for Recent High Prices

There are three main reasons for the rising natural gas prices in California.

The first is connected to the tight supply-and-demand balance of natural gas nationally. Low wellhead prices and buyers' over-reliance on spot-market purchases over the last several years did not stimulate sufficient drilling to match the growth in demand. Over the last 10 years, an average of 454 rigs were drilling for gas each year. That number dropped to 371 in April 1999 and, with higher natural gas prices, has recently risen to over 800.

The second cause is the lack of extra pipeline capacity for delivering added natural gas to California. Until a rupture on the El Paso pipeline on August 19, 2000, pushed prices up in California, they had been in line with the rest of the nation. Then they rose again with perceived supply shortages in SoCal Gas's service area at a time when pipelines were running at full capacity, spurring withdrawals from storage.

When SDG&E was forced by these circumstances to curtail supplies to its non-core customers on November 13, 2000, natural gas prices rocketed up to over $60 per million BTUs. These prices impacted the entire West Coast from California to British Columbia.

The California Independent System Operator then placed a $250 per megawatt hour soft cap on electric prices. This limited the cost of electricity Cal ISO would pay to $250 per megawatt hour but would allow higher prices if their cost could be verified. Within a week, natural gas prices fell from the $60 range to between $10 and $20 per million BTUs.

The third cause is related to the purchase strategy for natural gas employed by one or more of the state's natural gas utilities. Past natural gas purchase-cost disallowances by the PUC, gas cost-incentive rate mechanisms, and the low spot-market prices lulled buyers away from a portfolio approach to supply and pipeline-capacity management.

There are also other underlying reasons for the current high prices:

- A lack of competition as pipelines filled to capacity to meet winter heating needs. A rising demand for natural gas to generate electricity and the El Paso pipeline rupture strained SoCal Gas's ability to build up storage for the winter peak demand. This put the utility in a weakened position with natural gas marketers.
- Use of natural gas more than doubled from the average of the previous five years, driven by electric-power generation.
- Electricity imports in November were down an average of 2,600 megawatts compared with the year before.
- Exports of electricity from California in November were 1,500 megawatts higher than the year before.
- El Paso Gas, as has been alleged in court filings, may have been exercising market power.

Finally, but perhaps most importantly of all, most fossil-fueled generating plants that produce electricity in California have no practical alternative to burning natural gas.

Regional Issues

San Diego

Here the natural gas transmission system is approaching the limits of its capacity to deliver natural gas. The situation is compounded by the fact that since June 2000, SDG&E has been delivering natural gas to Mexico to meet power-generation gas demand at the Rosarito Beach facilities. SDG&E's service area is at the end of a very long pipeline system and the company has no underground storage facilities within it service area. Stored natural gas must come from the SoCal Gas Company service areas and through the same constrained line from the north.

Southern California

For the past couple of years SoCal Gas has had to depend more often and for longer periods on its storage to meet summer demand. This is because natural gas demand in the company's service area is greater than the company's ability to take delivery of natural gas.

Northern California

PG&E has adequate storage to meet its gas requirements for its residential, commercial and small industrial customers. It also has available 35 billion cubic feet for the growing electric-generation sector. As noted above, additional non-utility-owned storage is being developed in Northern California.

Policy Options to Relieve High Prices and Availability of Natural Gas

Briefly, here are several policy options that could help alleviate the high cost and restricted availability of natural gas:

Increase Pipeline Capacity

More interstate and in-state pipeline is needed to increase the capacity of natural gas pipelines to not only bring more supplies into the state but help create real gas-on-gas market competition.

The PUC is responsible for the approval of utility-owned intrastate pipelines. PUC processes are very time-consuming, running from two to three years in the regulatory phase alone. By comparison the FERC regulatory phase is about 18 months. The PUC and FERC could be encouraged to more rapidly propose and approve pipeline expansion within and into California.

Increase Storage Capacity and Storage Requirements

The PUC approves the storage requirements for gas utilities to serve core customers but has deregulated storage requirements for non-core customers and electric generators. The PUC could evaluate the feasibility of expanding utility-owned storage capacity to enable the utilities to take advantage of lower summer prices to benefit core customers. In addition, the state could determine if expedited permitting processes are needed to accelerate the

development of non-utility-owned underground storage capacity. Competition between utility and non-utility providers could benefit natural gas customers.

Curtail the Exercise of Market Power

The state attorney general could investigate allegations that natural gas pipeline companies and their marketing arms have improperly exercised market power to manipulate the price of natural gas. Such an investigation could also look into whether there have been any illegal business practices, under state law, by these companies and the unregulated electric generators. The FERC could be urged to review recent prices charged by the non-regulated generators both within and outside the state to determine if some prices were not just and reasonable under federal law.

Encourage Balanced Portfolio Approach to Natural Gas Procurement

The PUC could evaluate whether the state's investor-owned utilities have become overly reliant on the spot market in trying to avoid possible PUC gas cost disallowances.

The Legislature could direct the PUC to transition the utilities away from hindsight reviews to 100 percent recovery of natural gas purchase costs.

In addition, the PUC could remove any barriers to encouraging all customers of the natural gas utilities to evaluate the options available to them from non-utility suppliers of natural gas. This could give gas utilities the necessarily incentives to provide cost-competitive services to their customers rather than risk losing their customers to competitors.

In addition, the Legislature could encourage natural gas users to aggregate their purchases. This could achieve improved economies of scale for small customers and overcome the barriers now faced by new suppliers.

Increase Dual Fuel Requirements

In an August 1999 report, Cal ISO noted that to ensure that there was adequate natural gas for electric generation during periods of peak winter demand, the state could require dual fuel capability at some facilities. This means that an alternative fuel, such as residual fuel oil, could be used when gas becomes scarce or too expensive. Dual fuel requirements could be limited to certain generation facilities in the PG&E and SDG&E service areas, Cal ISO said, and recommended that at least nine power-generation units maintain dual fuel capability.

The PUC and FERC could study whether additional facilities should maintain or retrofit to dual fuel capability, and they could require certain generation facilities to have dual fuel capability.

It **must** be noted that the use of residual fuel oil to power generation plants **would** have an adverse effect on air quality.

Strengthen Assessment of Regional Short-Term and Long-Term Supply and Demand

Since the gas and electric utilities are no longer doing assessments of short- and long-term market aberrations, the California Energy Commission (CEC) should take over this function. This would allow state decision-makers time to take corrective actions. The CEC could develop natural gas demand, supply and price forecasts for the short term (one to three years) in addition to its present long-term forecasts. This could include seasonal demand estimates and in-state and out-of-state pipeline needs assessments.

Monitor Regional Circumstances Beyond the State's Borders

As long as California depends on imports of natural gas and electricity to meet its needs, we must be cognizant of what is happening to supply and demand in the regions that supply our needs. California could expand its energy-assessment capabilities to take into account that it operates in a multi-state regional market for electricity and natural gas.

The CEC could be encouraged to develop a collaborative energy supply-and-demand forecasting effort in concert with representatives of states throughout the western region, plus Canada and Mexico.

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