

Decision No. 46537

ORIGINAL

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Investigation upon the Commission's
own motion to ascertain the present
and potential demands for and
availability of gas in California,
and the need for and propriety of
emergency modification of current
rules or practices to facilitate
the supplying of gas service.

Case No. 5272

Appearances and list of witnesses are
set forth in Appendix "1".

INTERIM OPINION

California is facing a shortage in the supply of natural gas sufficient to meet all demands. Prior to World War II there was a surplus supply of natural gas in the state. Subsequent to World War II it has been necessary to import gas from Texas and New Mexico to make up for the deficiencies in local supplies to meet increasing requirements. The situation is aggravated by the imposition of large civilian and military defense loads on top of the steadily growing domestic, commercial and industrial loads of the state. Currently over one-third of our supply of gas is from out-of-state sources. More out-of-state gas must be made available. Critical materials must be furnished to construct additional transmission pipe lines and to expand distribution systems if new defense and civilian loads are to be served without undue curtailment.

Realizing that California is well along on the long-term transition from an area with plenty of natural gas to one of scarcity the Commission on March 13, 1951 instituted an investigation of the natural gas supplies available to California.

This interim report is being made so that California and national defense authorities may be apprised of the current situation pending the completion of the investigation.

Public hearings on this order of investigation were held on July 18, 1951 in Los Angeles and on September 20, 1951 in San Francisco before Commissioner Harold P. Huls and Examiner M. W. Edwards. Representatives of the public utilities, industry and public organizations in California attended these hearings. The record contains detailed information as to the natural gas situation for the state as a whole and for the several utility systems within the state.

The Problem

During the past 16 months the United States has been involved in an armed conflict in Korea. At the same time, it has been mobilizing for defense. That mobilization has created a substantial addition to the sharp rate of natural gas load growth accompanying the rapid postwar gain in population in the state. Industrial production for defense and war is expected to continue to increase over the next year or two because of the new military, industrial, agricultural, commercial, and domestic projects under construction, in the design stage, or projected for development, throughout the state.

The Commission has the responsibility of requiring gas corporations, as defined in the Public Utilities Code to: "furnish and maintain such adequate, efficient, just and reasonable service, instrumentalities, equipment, and facilities as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public."^{1/}

^{1/} Section 451 Public Utilities Code.

Gas Sources

The main sources of natural gas available to consumers in the State of California are: (1) oil well gas obtained in connection with the production of crude oil in the state, (2) dry gas obtained from certain fields in the state of which Rio Vista gas field in Northern California is the principal field, and (3) out-of-state gas transmitted from Texas and New Mexico. While dependent upon one or more of the above, a fourth large source of gas during winter heating peaks is from underground storage projects. Gas is injected into these underground structures, located relatively close to the load centers, during the off-peak summer periods for utilization during the winter, thus equating on an annual basis the availability and load requirements. The Goleta project in southern California is the largest operation of this kind in California. The principal gas companies involved in the distribution, transmission, and/or standby production of natural gas in California are:

Pacific Gas and Electric Company,
Coast Counties Gas and Electric Company,
Southern California Gas Company,
Southern Counties Gas Company of California,
San Diego Gas and Electric Company.

The City of Long Beach maintains its own gas department and obtains its gas supply from nearby sources including the Signal Hill oil field for use within the city. The City of Palo Alto maintains a gas department, serving gas within the city, but purchases all of its gas from Pacific Gas and Electric Company for resale purposes. There are several other gas utilities within the state, but their operations are comparatively so minor as to have relatively little effect upon the picture for the state as a whole, as developed by a summary of the operations of the larger companies above enumerated.

Utility Committees

The problem of preparing statistics of natural gas supply and requirements was handled by members of a working committee composed of representatives of various utilities in the state, under the supervision of a general committee. The membership of these committees is set forth in Appendix "1" herein. Members of these committees prepared a very complete report which was submitted by Messrs. J. S. Moulton and Grove Lawrence as Exhibit No. 3, (including Exhibits Nos. 3A and 3B) entitled "Tables Showing Availability of, and Demands for, Gas in California, Years 1949-1953, Winter Seasons 1948-49 through 1953-54, Construction Programs". They also prepared valuable supplemental information on current load development, all of which was for the purpose of assisting the Commission in this investigation. [The Commission acknowledges and appreciates their assistance.]

Estimated Gas Supply and Requirements

Exhibit No. 3, which was submitted on July 18, 1951, contains a tabulation for the recorded years 1949 and 1950, and for the estimated years 1951, 1952, and 1953, of gas supply, and firm and interruptible requirements. The summary for the state as a whole contains a tabulation of the annual usage each year by classes of service as well as for the peak day of the year. Table 1, attached hereto, is a summary of the data contained in Exhibit No. 3.

For the year 1951, the estimated supply is 662,836,000,000 cubic feet, the firm load being supplied is 339,333,000,000 cubic feet, and the interruptible load being supplied is 323,494,000,000 cubic feet. Also during 1951, the utilities estimate that total requirements under average conditions amounted to 725,997,000,000 cubic feet. Therefore, a curtailment of 63,170,000,000 cubic feet

is indicated. Similar figures for 1952 show estimated supply, 700,635,000,000 cubic feet, firm load 369,324,000,000 cubic feet, interruptible load, 331,270,000,000 cubic feet, and curtailment, 112,091,000,000 cubic feet; for 1953 the estimated supply is 742,681,000,000 cubic feet, firm load, 392,493,000,000 cubic feet, interruptible load, 350,131,000,000 cubic feet, and curtailment, 116,107,000,000 cubic feet.

It is evident that California industry under present conditions would consume considerably more natural gas than can be delivered to it. The ratio of the curtailments to the total supply for the years 1948-1953 is:

<u>Year</u>	<u>Supply</u> M.M.C.F.	<u>Curtailment</u>	
		<u>Quantity</u> M.M.C.F.	<u>Ratio to</u> <u>Supply</u>
1949	535,100	61,480	11.5%
1950	586,403	51,451	8.8
1951 (Est.)	662,836	63,170	9.5
1952 (Est.)	700,635	112,091	16.0
1953 (Est.)	742,681	116,107	15.6

With an indicated rise in the ratio of curtailment to supply, from about 9% to about 16%, the need for expanded future gas supplies is evident. New discoveries of natural gas in California have not kept pace with the growing demand and increasing use of gas for oil field repressuring, thus the state has had to rely on out-of-state gas to an ever-increasing extent.

Out-of-State Gas

The out-of-state gas is purchased from the El Paso Natural Gas Company at the state border near Topock and Blythe. The El Paso Company obtains the gas in Texas and New Mexico and by means of high pressure transmission lines delivers the gas to the state's eastern border. The Southern California Gas Company and the Southern Counties Gas Company of California have built

a transmission line from Elythe to the vicinity of the Los Angeles market, and the Pacific Gas and Electric Company has built a transmission line from Topock to the vicinity of the San Francisco market.

The degree of dependence of the inhabitants of California upon out-of-state gas may be visualized from the following tabulation of gas supply by sources:

Year	Total Supply M.M.C.F.	In-State Supply		Out-of-State Supply	
		Quantity M.M.C.F.	Ratio to Total	Quantity M.M.C.F.	Ratio to Total
1949	535,100	441,002	82.4%	94,098	17.6%
1950	586,403	438,364	74.8	148,039	25.2
1951	662,836	418,201	63.1	244,635	36.9
1952	700,635	403,220	58.3	292,415	41.7
1953	742,681	387,421	52.2	355,260	47.8

By 1953, the estimated firm load exceeds the estimated in-state supply of gas and the total potential load is 2.2 times the in-state supply. The trend shown by the above tabulation indicates that within three or four years over one-half of the state's supply of natural gas will have to come from outside sources. In the face of this growing dependence on out-of-state sources to supply the growing civilian as well as defense loads, it is apparent that critical materials must be made available to the systems in California if they are to expand to meet the load growth and provide the extra transmission facilities to bring in an ever-increasing quantity of out-of-state gas.

Military Load

While the estimates furnished by the utilities included an allowance for growth in defense and military load, it is of interest to consider the large probable load foreseen by the

representative for the Army, Navy, and Air Force. Exhibits Nos. 4 and 4-B show the following totals for gas usage by the 11th and 12th Naval Districts, the 6th Army and the 4th Air Force in California:

Military Load - Natural Gas Requirements

<u>Class</u>	<u>Present Annual Load MMcf</u>	<u>Probable Near Future Annual Load MMcf</u>
Firm general service	3,994	5,746
Firm industrial	1,205	1,099
Housing	271	316
Interruptible	<u>1,229</u>	<u>8,040</u>
	6,699	15,201

The figures under the probable column represent the addition of loads now being reactivated under the present defense program and do not contemplate a full war status. An all-out conflict would mean that many new stations might be added in the area. With an increase of over 100% indicated in the military defense load alone it is apparent that if a similar condition should develop with reference to the civilian defense load a very critical condition might result.

Conclusion

Through 1952 the in-state supply of gas appears greater than the firm requirements, but in 1953 California must look to out-of-state sources for help in meeting its firm load. This conclusion results from the assumption that the firm defense and military load will not expand faster than estimated by the utilities. California is dependent on out-of-state gas to the extent of an estimated 36.9% of all gas supplied in 1951 which will expand to 47.8% in 1953. By 1953 curtailment of interruptible loads is estimated to equal nearly one-sixth of the total supply.

It must be realized that a large portion of the extremely important military and civilian defense load is served through the interruptible classification of service. The interruptible customers are required to have standby fuel facilities in order to be able to switch over to this source of heat supply during the peak period when the firm customers use all of the available gas, or during other times when the supply of gas is low. During World War II it was found that fuel oil was in short supply and consequently a large part of the interruptible class of business was forced to transfer to the firm schedules. If such a situation should reoccur during the next year or two it is probable that curtailment of the firm customers would result. In addition new connections could not be permitted except for essential loads. It is our opinion that the utilities' plans for obtaining additional out-of-state gas and expanding systems to meet the growing military and defense load are sound and that the critical materials to accomplish such expansion should be made available by the national defense authorities.

INTERIM ORDER

This Commission, on its own motion, having instituted an investigation to ascertain the present and potential demands for and availability of natural gas, makes the foregoing report to the citizens of the State of California and to their legislative representatives.

IT IS ORDERED that pending completion of this investigation, the Secretary of the Commission shall send copies of this interim decision to members of the Senate and Assembly of the State of California, to members from California of the Senate and the House of Representatives of the United States of America,

to members of the Senate-House Defense Production Committee, to Mr. Charles E. Wilson, Director, Office of Defense Mobilization, to Manly Fleischman, Administrator, National Production Authority, and to 12 industry experts retained by Petroleum Administration for Defense, as follows:

Potice C. Avant, Division Engineer, Atlanta Gas Light Company, Atlanta, Georgia; Roy M. Bauer, Gas Supply Supervisor, Southern California Gas Company, Los Angeles, California; Robert D. Brunet, Engineer in Charge of Gas System Forecasting, Columbia Gas System Service Corporation, New York, New York; Gordon C. Griswold, Manager, Economic Research Department, Brooklyn Union Gas Company, Brooklyn, New York; Hall M. Henry, Vice President and Director of Gas Operations, New England Gas and Electric Association, Cambridge, Massachusetts; Dewey B. Larson, General Superintendent, Portland Gas and Coke Company, Portland, Oregon; Preston Parks, Assistant to the Vice President in Charge of Pipe Line Operations, Colorado Interstate Gas Company, Colorado Springs, Colorado; L. T. Potter, Assistant to the President, Lone Star Gas Company, Dallas, Texas; W. Lawrence Shomaker, Vice President in Charge of Sales, Northern Natural Gas Company, Omaha, Nebraska; T. J. Strickler, Vice President in Charge of Kansas City, Missouri, Operations, Gas Service Company, Kansas City, Missouri;

Henry Tuttle, Executive Vice President, Michigan Consolidated Gas Company, Detroit, Michigan; and Otto E. Zwanzig, Director, Bureau of Statistics, American Gas Association, New York, New York.

The effective date of this order shall be twenty (20) days after the date hereof.

Dated at San Francisco, California, this 11th day of December, 1951.

A. J. Morrison
President.
James J. O'Connell
Harold P. Hyde
Samuel P. Patton
John E. Mitchell
Commissioners.

APPENDIX "1"
Sheet 1 of 2

LIST OF APPEARANCES

Respondents: Southern California Gas Company and Southern Counties Gas Company of California by T. J. Reynolds and Milford Springer; Pacific Gas and Electric Company by R. W. DuVal; Coast Counties Gas and Electric Company by W. E. Johns.

Respondent and Interested Party: San Diego Gas and Electric Company by W. B. Pattee and Sherman Chickering of Chickering & Gregory.

Interested Parties: California Manufacturers Association by George D. Rives of Brobeck, Phleger and Harrison; U. S. Navy, Department of Defense, the General Services Administration and all executive agencies of the U. S. Government by Charles Goodwin, Commander Lewis N. Evans and Howard L. Minister; Inspector, Navy Petroleum Reserves in California by Lt. Commander F. M. Tully; City of Oakland by John W. Collier and Loren W. East; City of Long Beach, Bureau of Franchises and Public Utilities by Henry E. Jordan; Long Beach Gas Department by L. L. Bendinger; Challenge Cream and Butter Association and Gentry, Inc. by W. D. MacKay; Air Force representation, Joint Utilities Board, Western Area Joint Committee by John D. McLaughlin; City of Berkeley by Fred C. Hutchinson, Robert T. Anderson and Lester C. Uren; City of Pasadena by Clarence A. Winder; City of Los Angeles by Roger Arnebergh, T. M. Chubb and Robert Russell; Southern California Edison Company by Bruce Renwick and Rollin E. Woodbury; City of San Francisco by Dion R. Holm and Paul L. Beck.

Commission Staff: R. P. O'Brien, Supervising Engineer, and Lloyd E. Cooper, Gas Engineer.

LIST OF WITNESSES

Evidence was presented on behalf of the General Committee by J. S. Moulton; on behalf of the Working Committee by Grove Lawrence; on behalf of the Coast Counties Gas and Electric Company by Charles Grunsky; on behalf of the San Diego Gas and Electric Company by Frank Porath; on behalf of the Southern Counties Gas Company of California by Raymond Work; on behalf of all of the United States Armed Forces by Howard L. Minister; and by W. D. MacKay, interested party.

APPENDIX "1"
Sheet 2 of 2

LIST OF MEMBERS OF COMMITTEES

<u>Name</u>	<u>Title</u>	<u>Company</u>
<u>GENERAL COMMITTEE</u>		
J. S. Moulton, Chairman	Vice President	Pacific Gas and Electric Company
W. J. Herrman, Vice-Chairman	Vice President	Southern California Gas Company
H. G. Dillin	Vice President	San Diego Gas & Electric Company
F. A. Hough	Vice President	Southern Counties Gas Company of California
Grove Lawrence	Vice President	Southern California Gas Company
D. L. Bell	Assistant Manager, Pipeline Division	Coast Counties Gas & Electric Company
R. S. Fuller	Manager, Gas Department	Pacific Gas and Electric Company
A. B. Gilbertson	Property Engineer	California-Pacific Utilities Company
C. Grunsky	Chief Engineer	Coast Counties Gas & Electric Company
R. P. Work	Rate Engineer	Southern Counties Gas Company of California
<u>WORKING COMMITTEE</u>		
Grove Lawrence, Chairman	Vice President	Southern California Gas Company
D. L. Bell	Assistant Manager, Pipeline Division	Coast Counties Gas & Electric Company
S. A. Bradfield	Administrative Engineer	Southern California Gas Company
C. P. de Jonge	Superintendent, Gas Department	San Diego Gas & Electric Company
J. W. Ellis	Engineer	Pacific Gas and Electric Company
C. Grunsky	Chief Engineer	Coast Counties Gas & Electric Company
S. A. Haavik	Field Engineer	Pacific Gas and Electric Company
W. C. Mosteller	Assistant to Vice President	Southern Counties Gas Company of California
J. L. Obeseider	Gas Transmission Engineer	Southern California Gas Company
F. Porath	Rate Engineer	San Diego Gas & Electric Company

STATE OF CALIFORNIA
ANNUAL GAS SUPPLY AND REQUIREMENTS
IN BILLION CUBIC FEET

	: Recorded Years :		: Estimated Years :		
	: 1949 :	1950 :	1951 :	1952 :	1953 :
<u>GAS SUPPLY</u>					
California Oil Wells Gas	260.9	241.7	241.5	206.8	183.1
California Dry Gas	163.9	162.7	162.3	188.2	191.0
Out-of-State Gas	94.1	148.0	244.6	292.4	355.3
Underground Storage Withdrawal	11.2	12.2	14.3	12.1	12.4
California Gas for Firm Peaks Only	4.0	1.6	-	0.9	0.6
Standby Gas (Mfd & L.P.)	1.0	0.2	0.1	0.2	0.2
TOTAL SUPPLY	535.1	586.4	662.8	700.6	742.6
<u>REQUIREMENTS</u>					
<u>FIRM</u>					
General Service	250.4	247.7	264.7	287.2	306.1
Industrial	25.8	32.1	38.1	42.2	44.0
Wholesale	1.3	1.3	1.4	2.0	2.2
Unaccounted for and Inventory Change	20.6	16.8	18.0	18.6	18.9
Company Incidental and Comp. Fuel	4.1	4.7	5.6	7.8	8.8
Underground Storage Injection	14.6	16.2	11.5	11.5	12.5
Subtotal	316.8	318.7	339.3	369.3	392.5
<u>INTERRUPTIBLE</u>					
Co.'s Incl. Customers & Interrup.Exch.	151.3	188.8	236.0	237.2	243.4
Co.'s Own Gas Plants	0.8	0.8	0.8	0.6	0.6
Co.'s Own Steam-Electric Plants	50.3	57.6	74.6	92.8	104.7
Co.'s Own Steam Heat Plants	0.6	1.0	0.9	0.7	0.7
Sales to Others for Steam-Elec. Gen.	15.3	19.5	11.2	-	0.7
Wholesale	-	-	-	-	-
Subtotal	218.3	267.7	323.5	331.3	350.1
TOTAL SEND-OUT	535.1	586.4	662.8	700.6	742.6
<u>CURTAILMENT</u>					
Industrial	25.8	12.8	11.8	30.0	31.2
Steam Plants	35.2	38.5	51.2	81.6	84.5
Other	0.5	0.2	0.2	0.5	0.4
Subtotal	61.5	51.5	63.2	112.1	116.1
TOTAL POTENTIAL GAS REQUIREMENTS	596.6	637.9	726.0	812.7	858.7

STATE OF CALIFORNIA
PEAK DAY GAS SUPPLY AND REQUIREMENTS
IN MILLION CUBIC FEET PER DAY

	: Recorded Years :		: Estimated Years :		
	: 1949 :	1950 :	1951 :	1952 :	1953 :
<u>GAS SUPPLY</u>					
California Oil Wells Gas	714.8	662.2	661.7	564.3	501.7
California Dry Gas	449.1	500.5	444.5	514.9	523.4
Out-of-State Gas	257.9	405.5	670.1	798.9	973.3
Underground Storage Withdrawal	30.7	33.4	39.2	33.2	34.1
California Gas for Firm Peaks Only	11.0	4.4	-	2.5	1.6
Standby Gas (Mfd & L.P.)	2.7	0.4	0.4	0.5	0.6
TOTAL SUPPLY	1,466.2	1,606.4	1,815.9	1,914.3	2,034.7
<u>REQUIREMENTS</u>					
<u>FIRM</u>					
General Service	686.0	678.6	725.3	784.9	838.7
Industrial	70.5	87.9	104.4	115.2	120.5
Wholesale	3.7	3.5	4.0	5.6	5.9
Unaccounted for and Inventory Change	56.5	46.1	49.0	50.9	52.0
Company Incidental and Comp. Fuel	11.2	12.8	15.4	21.2	24.0
Underground Storage Injection	40.0	44.2	31.5	31.4	34.2
Subtotal	867.9	873.1	929.6	1,009.2	1,075.3
<u>INTERRUPTIBLE</u>					
Co.'s Incl. Customers & Interrup.Exch.	414.5	517.2	616.4	648.0	666.6
Co.'s Own Gas Plants	2.1	2.3	2.2	1.7	1.7
Co.'s Own Steam-Electric Plants	137.9	157.6	204.6	253.6	286.9
Co.'s Own Steam Heat Plants	1.8	2.7	2.5	1.8	2.0
Sales to Others for Steam-Elec. Gen.	41.9	53.5	30.6	-	2.0
Wholesale	0.1	-	-	-	0.2
Subtotal	598.3	733.3	886.3	905.1	959.4
TOTAL SEND-OUT	1,466.2	1,606.4	1,815.9	1,914.3	2,034.7
<u>CURTAILMENT</u>					
Industrial	70.8	34.9	32.3	82.1	85.5
Steam Plants	95.5	105.5	140.2	222.8	231.5
Other	2.0	0.5	0.4	1.4	1.2
Subtotal	168.3	140.9	172.9	306.3	318.2
TOTAL POTENTIAL GAS REQUIREMENTS	1,634.5	1,747.3	1,988.8	2,220.6	2,352.9