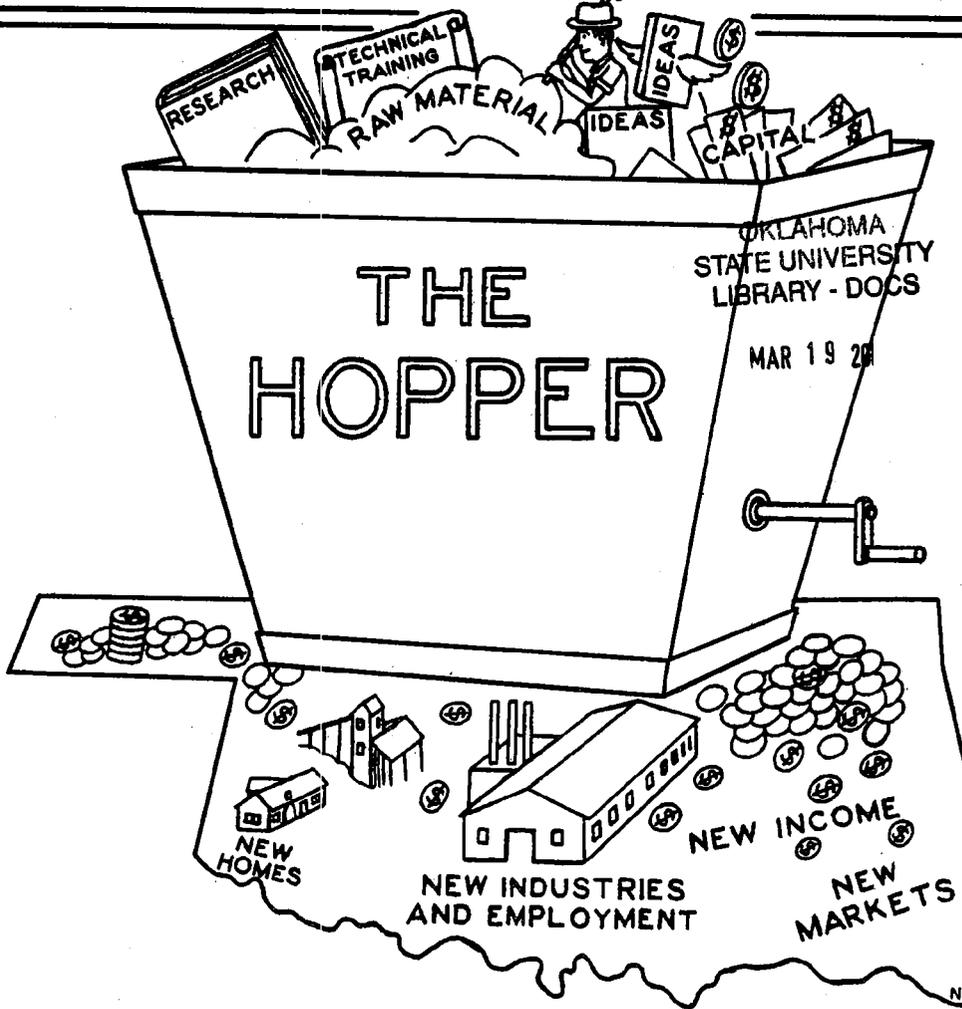


OKLAHOMA MINERAL INDUSTRIES CONFER



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HOPPERATOR'S PAGE

INDUSTRIAL AND MINERAL INDUSTRIES CONFERENCE
OKLAHOMA CITY, OKLAHOMA

R E S O L U T I O N

October 13, 1948

WHEREAS, the "Made-in-Oklahoma" Manufacturers' Exposition at the Oklahoma City Municipal Auditorium, October 12 through 17, is the finest show of this character ever held in Oklahoma and,

WHEREAS, the story its 300 exhibits from 200 state factories tells is one that will hearten any visitor,

THEREFORE, BE IT RESOLVED that this conference expresses its sincere appreciation to the Oklahoma Planning & Resources Board and to the Oklahoma City Chamber of Commerce for scheduling this wonderful show in conjunction with the meeting of the Oklahoma Industrial and Mineral Industries Conference, and thanks the board and the Chamber of Commerce heartily for the great job they have done; and extends particular thanks and commendations to Paul Strambaugh and Sheldon Sterling, of the Industrial Division, Oklahoma City Chamber of Commerce; Clarence Burch and Leonard Sheerar, of the Oklahoma Planning and Resources Board; and Robert H. Dott, of the Oklahoma Geological Survey.

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INDUSTRIAL FUEL

By

D. W. Reeves

Oklahoma Natural Gas Company, Tulsa

(Address delivered at the Oklahoma Industrial and Mineral Industries Conference, October 13, 1948)

I would first of all like to take this opportunity to say that I appreciate the invitation to talk to you and to meet so many of our good friends from all over Oklahoma. I note that my talk is to be on the subject "Availability of Natural Gas", but I am taking the liberty of talking about "Industrial Fuel." Being in the natural gas business my comments will, of course, apply principally to gas. Natural gas is generally available throughout Oklahoma and is furnished by many companies, large and small. In a number of cases my references apply to the activities of my own company; however, I think they will be applicable generally to the gas service in any community in the state.

Our company serves something over 125 communities in Oklahoma, ranging from villages to the two largest cities in the state. In every one of these communities, and I am sure in those served by other companies, the members of the local organizations consider themselves citizens of their communities and do everything possible to assist in promoting the growth and development of their community and their state. When I get caught in the cross fire of two of our local managers in competition with each other in securing some industrial development for their respective communities, I realize how true this is.

Oklahoma is blessed with great resources in fuel. For the long pull, that is for future generations, perhaps coal is more important. As you know and have been told time and again, our known coal resources in Oklahoma are adequate for some-

thing like a thousand years. That will certainly take care of our children and a lot of their descendants. Our resources in oil and gas are of immediate concern.

I am sure that all of you remember the stories that we have heard for years about the imminent depletion of our oil and gas reserves. We have heard them ever since oil became of importance, and, with the increasing importance of natural gas, such stories relative to that fuel have come with greater and greater frequency.

In order that we may get a true picture of the reserve situation with respect to oil and gas, I would like to give you some figures taken from the April, 1948, issue of the Oil World.

Back in 1928, twenty years ago, the known oil reserves totaled some eleven billion barrels, which was adequate for about 12.2 years at the then going rate of annual production of some 901 million barrels. We find that in 1947, production was some 1,856 million barrels and the United States known reserves are something like 22 billion barrels. Without any new additions these reserves are adequate for a little better than 11.6 years at the existing rate of production.

It is interesting to note that during the year 1947, 2,470 million barrels of new reserves were added and production during the same year was 1,856 million barrels of oil. In other words, proved reserves increased 614 million barrels during 1947. Certainly, this does not indicate that we will run out of oil for some time to come. Suppose we do. Processes are now being developed which indicate that oil and gas can be produced from coal at an economical figure in the foreseeable future. This is not an idle dream when you realize that during the recent war, Germany produced a great percentage of its gasoline from coal. Oklahoma should have

nothing to fear from such a development since we have such an enormous reserve of coal. When our oil and gas reserves are depleted, in the distant future, we can make use of our supply of coal.

Now let us look at the gas picture. It is a whole lot like that of oil, only that the immediate picture is much better. The estimated proved recoverable reserve of natural gas in the United States as of December 31, 1946, was some 160 trillion cubic feet. Extensions, revisions, and discoveries during 1947 added eleven trillion cubic feet. Net production was 5.6 trillion feet, so that we ended up with about 5.4 trillion cubic feet more proved gas reserves as of December 31, 1947, than we had at the start of the year. I say we are in no danger of running out of gas for a long time to come. Looking at this picture another way, 5.6 trillion cubic feet was the net production during the year 1947. At this rate we have some thirty years known supply, and if we are going to add reserves at a greater rate than we produce we certainly shouldn't run short during the time that this generation shares the responsibility for the economic and social development of our nation. I think we can count on the availability of gas.

It is interesting to note the greatly increased use of gas and oil as compared to coal over the past two decades. In 1925, the nation consumed some 18 quadrillion B.t.u.'s of coal and in 1947 the consumption of this fuel was practically the same. While in 1925, 2.5 quadrillion B.t.u.'s of crude oil were consumed and in 1947 a little over 10 quadrillion B.t.u.'s were used, which was four times as much. And in 1925, the nation consumed 0.8 quadrillion B.t.u.'s of natural gas and in 1947, 5 quadrillion B.t.u.'s were used, or over six times as much. In 1925, natural gas was used for 3.75 per cent of the total of the three fuels and in 1947, natural gas used was 15 per cent of the total.

Now to bring the story down to our gas supply in Oklahoma. At the end of 1946 we had 10.7 trillion cubic feet of gas in proved reserves, added some 1.2 trillion cubic feet of known reserves and produced about half that much, so that at the end of the year we had something like 11.4 trillion cubic feet of gas reserves. Based on the 1947 rate of production, the known reserves are adequate for something like twenty years. This checks with my own company's estimates of the gas supply connected to the system. I want particularly to point out to you, however, that these figures as reported by the Oil World were based upon figures supplied by the American Petroleum Institute and the American Gas Association. The complete story indicates that over the entire history of both the oil and gas industries, the rate of discoveries has, on the long term, been approximately equal to or better than the rate of withdrawals. So far as I am concerned, I am not going to worry about the exhaustion of natural gas, oil, or coal in Oklahoma.

At the Oklahoma Mineral Industries Conference in 1945, Mr. Hugh D. Miser, then head of the Section of Mineral Fuels, United States Geological Survey, made the following statement in a speech discussing Oklahoma's fuel resources: "I cannot foresee the time when local supplies of natural gas will fail, but when that time comes, as it inevitably will, the widespread network of gathering and distribution lines throughout Oklahoma, and reaching into the adjacent states of Texas, Louisiana, and Kansas, can supply gas for as long as any industry cares to look ahead." To back up that statement, Mr. Miser quoted estimates showing that over 80 per cent of the nation's natural gas reserves in 1945 were located in the area comprising the four states mentioned, with Oklahoma at the center. Under these circumstances it seems safe to assume that Oklahoma will have gas as long as there is any gas available in any section of the country. I don't expect depletion of our oil and gas reserves

to worry us during our lifetime and certainly other scientific developments may render our known fuels and processes obsolete long before these supplies are exhausted.

Gas shortages in the East and Middle West have probably caused a lot more misunderstanding of the position of the gas industry with reference to available natural gas reserves than anything else. I don't know of a single shortage in the Middle West that is caused by a shortage of natural gas in the fields. It is a shortage of facilities to get the gas to the market. Perhaps before I make any further comments on this I should point out some of the practices which have been accepted as sound and feasible by the natural gas industry.

First of all, gas systems are initially built, with very few exceptions, for the primary purpose of serving the domestic and commercial load. This load cannot be interrupted without causing severe hardships and suffering, and one of its characteristics is that during the winter months of the year, it has a very high demand and loads the facilities of the gas company to the maximum. Naturally it didn't take the gas industry long to realize that they had available capacity to deliver gas for use during summer months and the warmer periods when the customers for whom the service was originally made available did not require the capacity of the lines. As a consequence, it became general practice to sell industrial gas on what we term an interruptible basis. The fundamental and basic concept in making this service available for industrial purposes is that industries can maintain standby fuel or can discontinue taking gas whenever the gas company's facilities are needed to supply service to the residential and commercial users. Residential and commercial consumers pay higher rates for their service in order that the gas utility may make uninterrupted service available to them. The fact that the utility's facilities are used during off-

peak periods to supply industrial service at low rates permits the utility to serve the residential and commercial customers at lower rates than would otherwise be possible. That is fundamental.

Likewise it is fundamental that the availability of excess capacity, installed primarily to serve firm residential and commercial loads, is the only reason that it is possible for gas utilities to furnish industrial gas service at low rates. If a utility could be operated on an ideal basis to give service at the lowest possible rates, every cubic foot of industrial load would be disconnected on the coldest days and the firm load would use all of the capacity of the utility's system during such periods. This is, of course, not practical or possible. The utility's system must have excess capacity to take care of anticipated growth and to protect or assure continuous service to the residential consumers. Consequently, most of the smaller industrial loads are seldom interrupted and the larger loads only during periods of emergency or severe weather.

When a customer purchases gas on the industrial rate he must recognize the possibility of interruptions of service and agree to this in his contract. He then decides either to provide standby fuel or to interrupt his operations in unusually cold weather and in case of emergency. It is simply an economic decision which each of our customers makes as to the installation of a standby fuel. Certainly, under these circumstances, no criticism is due the gas industry for such interruptions or curtailments.

One of the continuing problems which every gas utility faces is that of connecting new reserves to replace those which are being depleted. Many of you have a first-hand knowledge of this since within the memory of those present there were adequate supplies of natural gas within a stone's throw of

the corporate limits of your cities. Today you are facing a different situation. Your gas is now being brought considerable distances.

For purposes of illustration, let me tell you something of what my own company is doing. Other companies have similar expansion programs in progress. Late last year the Oklahoma Natural Gas Company announced that it would spend some seven million dollars on the expansion of its facilities. Of this sum, more than three million is being expended in the extension of its system into new areas of the state in the vicinity of Velma and Pauls Valley. The reserves thus connected will augment and replace those sources from which the company is now obtaining its gas.

We know that the availability of natural gas at reasonable rates with the assurance of a long time supply has been one of the major factors in causing several new industries to locate in our state recently. We can be certain that our gas companies, with their large residential and commercial loads, will always have large capacities available to serve industry.

To get back to the subject I adopted for my talk, "Industrial Fuel", we have coal for nearly a thousand years, probably more. We have every indication that there will be plenty of gas and oil during our lifetime. We have the further assurance of knowing that if and when oil and gas become depleted we always have the coal to fall back on and we also know that present processes will make it possible to produce both gas and oil products from coal at reasonable cost within the next few years. There can be no question of the adequacy of fuels--gas, oil, and coal--for industry in Oklahoma.

INDUSTRIAL EXPANSION HELPS REGAIN POPULATION

Importance of industrial expansion is revealed in employment trends in the State since the end of the war. Studies of industrial employment and population shifts made by the Bureau of Business Research at the University of Oklahoma under the direction of Francis R. Cella indicate that in the post-war period, Oklahoma population has increased at a more rapid rate than in the surrounding states. The following table and discussion from "Studies in Business and Economics", No. 2, published by the Bureau of Business Research, indicates the trends in population for selected states:

Relative Changes in Population of
Selected States

	Percentage Change		
	1940-47	1940-45	1945-47
Arkansas	- 2.4	- 5.0	2.8
Louisiana	7.8	1.5	6.2
Texas	11.0	4.4	6.3
Kansas	6.3	- 0.9	7.3
Missouri	1.8	- 6.5	8.4
Nebraska	- 1.1	- 7.0	5.8
Colorado	3.2	- 4.4	7.7
Oklahoma	- 1.1	-10.0	8.8

"The pattern of population shifts developed in the table should clarify the changes in the population of Oklahoma and correct some misapprehensions. It will be noted that Oklahoma experienced the greatest relative decline in population between 1940-45 of any of the states compared. This decline was the result of a sizeable labor force but lack of industrialization. Furthermore, between 1945 and 1947 the relative increase in Oklahoma's population was greater than any of the states analyzed. A greater decline than the others in 1940-45 offsets the State's tremendous recovery in 1945-47.

"It is evident, therefore, that the population of Oklahoma is not changing unfavorably in comparison with other states, but rather that the effect of wartime readjustments has not yet been attained. It is likely that Oklahoma will recover all the population it lost subsequent to 1940 if the rate of increase since 1945 is maintained to any degree. The population may stabilize at a level higher than in previous years if Oklahoma participates to the fullest extent of her resources and capabilities in the industrial expansion of the Southwest."

An analysis of employment trends in manufacturing industries in Oklahoma would indicate a rather rapid growth in peace-time industrial employment in Oklahoma following the immediate post-war decline with the shutting down of war industries. Using the 1940 census figures reporting industrial employment for 1939, and estimates for later years, some of them by the U. S. Department of Labor, Dr. Cella compiled the following table on employment in Oklahoma's manufacturing industries:

Industrial Employment in Oklahoma
for Selected Years

Year	Number Employed in Industries
1939	38,000
May 1945	103,000
May 1946	51,700
Oct. 1947	64,334
Oct. 1948	67,823

In May, 1945, wartime plants were in operation and a big share of the labor force was engaged in production of materials for war. By 1946, most of the wartime plants had closed, and industrial employment in Oklahoma was only about half what it had been during the latter years of the war.

The increase of better than 75 percent in employment from 1946 through 1948 reflects the indus-

trial expansion that has taken place in Oklahoma. This expansion includes enlargement of several manufacturing plants and the building of a number of new manufacturing establishments.

Much of the industrial expansion in Oklahoma has been in industries that utilize minerals as raw materials, and is evidence of the importance of industrial minerals to the economy of the state. The rate of expansion of the glass manufacturing industry has been more rapid in Oklahoma than in any other state. This expansion has included enlargement of established plants and building of three new plants, to increase the relative importance of Oklahoma as a glass manufacturing state.

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INDUSTRIAL AND MINERAL INDUSTRIES CONFERENCE
OKLAHOMA CITY, OKLAHOMA

R E S O L U T I O N

October 13, 1948

WHEREAS, many busy Oklahomans contributed exceedingly worthwhile papers to the program of the Oklahoma Industrial and Mineral Industries Conference, and,

WHEREAS, more than three hundred Oklahoma business firms participated in the great "Made in Oklahoma" Manufacturers' Exposition in Oklahoma City, covering the meeting dates of the conference,

THEREFORE, BE IT RESOLVED, that the conference expresses its sincere appreciation to these speakers and exhibitors and invites their continued cooperation in all such organized efforts for the advancement of Oklahoma.