Facts Concerning the Natural Gas Industry and Its Regulatory Environment, Nationally and in Iowa

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1.0. INTRODUCTION

Natural gas is an important source of energy for Iowans, even though none is produced in Iowa. It provides heating and other domestic uses and serves many industrial uses. Though natural gas can be manufactured from other hydrocarbons, may be liquefied and delivered by ships and/or other vehicles, and may be reclaimed as a waste product from bio-degradables; nearly all natural gas provided to Iowans is collected in North American gas fields and is shipped via interstate pipelines and ultimately by the distribution pipes of Iowa's four investor-owned utilities and 48 municipal utilities.

Natural gas is a combustible, gaseous mixture of simple hydrocarbon compounds, usually found in deep underground reservoirs formed by porous rock. Natural gas is a fossil fuel composed almost entirely of methane, but does contain small amounts of other gases, including ethane, propane, butane and pentane. Methane is composed of a molecule of one carbon atom and four hydrogen atoms.

The production and wholesale supply of natural gas has become competitive. Its prices are no longer regulated. Pricing and several other aspects of pipeline transportation of natural gas is regulated by the Federal Energy Regulatory Commission (FERC). Pipeline Safety issues are the responsibility of the U.S. Dept. of Transportation. Retail natural gas services are regulated by the Iowa Utilities Board[1] (IUB) and/or the governing boards of municipal utilities.

1.1. Purpose and Limitations of This Report

The data presented in this report characterizes the natural gas utility industry for the State of Iowa. This characterization provides a first step in assessing and evaluating the delivery and use of natural gas in Iowa. Any stakeholder group may use the data compiled in this report to determine policy implications and recommendations for Iowa's natural gas industry. This report does not assess or evaluate the data.

[1] Applies only to rate regulated utilities, not to sales by municipal utilities or transactions between non-utility marketers and customers.

1.2. Background

In order to understand the data presented in this report, it is important to have a basic understanding of the natural gas industry. This subsection provides this basic information.

The first use of gas energy in the United States occurred in 1816, when gaslights illuminated the streets of Baltimore, Md. By 1900, natural gas had been discovered in 17 states. Natural gas was first commercially transported in 1859 in Pennsylvania. Many improvements in metallurgy, welding techniques, and pipe rolling technology made it possible to bring natural gas to the major consumer markets of the Northern and Eastern United States beginning in the 1930s. Construction of natural gas pipelines boomed after World War II, making natural gas service available in most parts of Iowa. Natural gas provides about 24 percent of U.S. energy consumption.

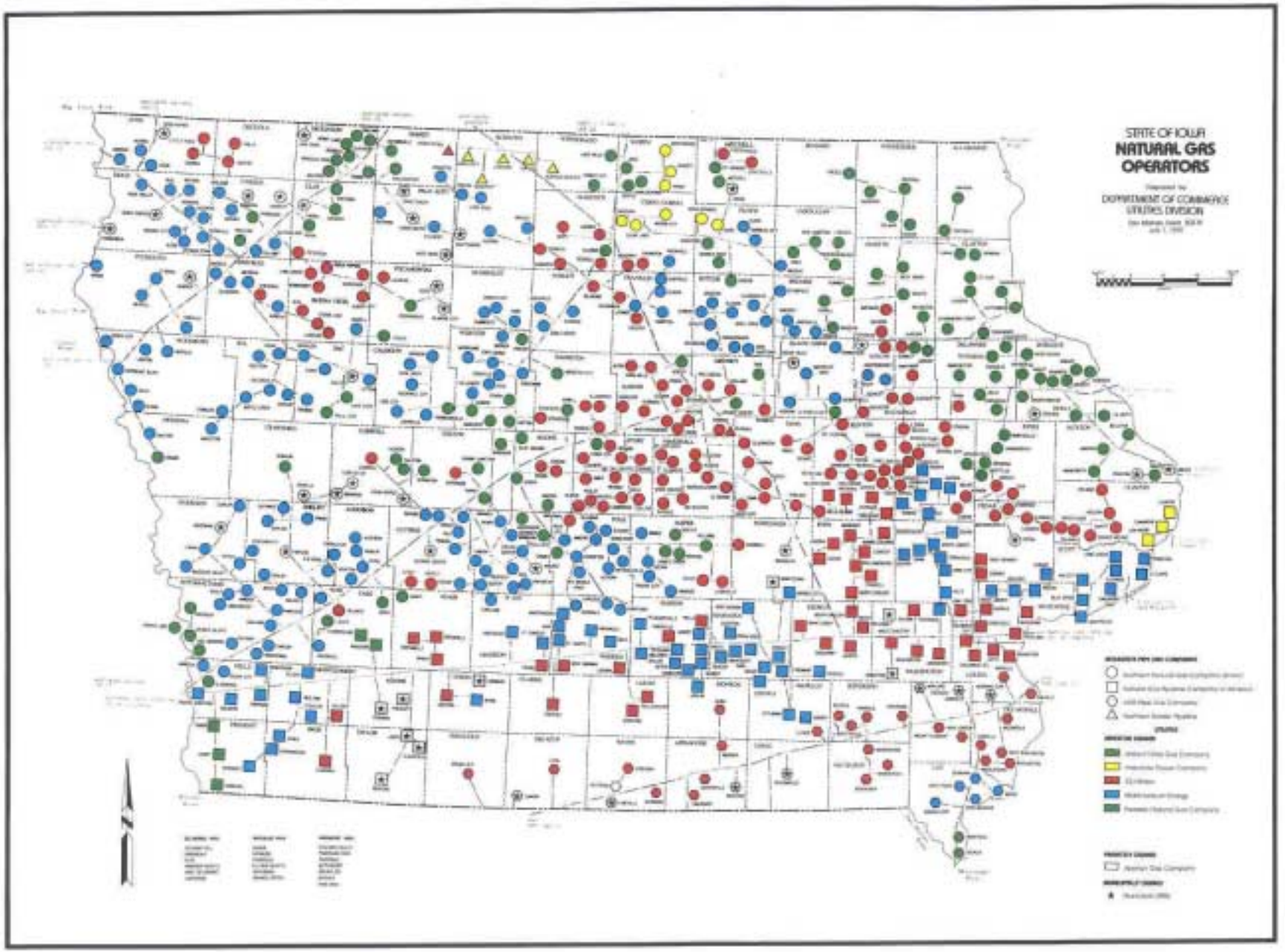
Natural gas, like other forms of heat energy, is measured in British thermal units or BTUs. One Btu is equivalent to the heat needed to raise the temperature of one pound of water by one degree Fahrenheit at atmosphere pressure. A cubic foot of natural gas has about 1,027 Btu. Natural gas is normally sold from the wellhead in the production field to purchasers in standard volume measurements of thousands of cubic feet (Mcf). However, consumer bills are often measured in heat content or therms, but may also be measured in hundreds of cubic feet (Ccf). One therm is a unit of heating equal to 100,000 Btu.

1.2.1. Types of Utilities

Two basic utility types, investor-owned utilities (IOUs) and municipal (or publicly owned) utilities serve Iowa's natural gas customers[2]. Figure 1-1 shows the service territories served by these utilities.

[2] On 9/13/2000, the Board issued an order, "Marshall County Rural Electric Cooperative d/b/a Consumers Energy Proposed Decision and Order Granting Permit," permitting the construction of an intrastate gas pipeline. Thus, upon completion of the pipeline, an electric cooperative will be able to operate a natural gas public utility. Allerton Gas Company is a privately held LDC, but its statistics are included with those of the municipally owned LDCs.

Figure 1-1 Natural Gas Service Territories & Pipelines Serving Iowa



Though there are a few rural gas customers, most gas customers are located in and around communities. IOUs are for-profit companies. Iowa is served by four IOUs -- Alliant Energy (Alliant), MidAmerican Energy Company (MidAmerican), Peoples Natural Gas Division of UtiliCorp United (Peoples), and United Cities Gas, Division of Atmos Energy (United Cities). Alliant is comprised of three operating companies: Interstate Power (Interstate), IES Utilities (IES), and Wisconsin Power and Light (WPL). Interstate and IES primarily serve Iowa. No data regarding WPL is included in the report. Iowa has 48 communities that operate natural gas utilities as a function of local government. Municipal utilities are locally regulated through city councils or through boards of trustees appointed by the mayor and approved by the city council. All municipal utilities operate distribution systems that serve the local community and, in some cases, rural areas that are close in to the community. Appendix A to this report provides a complete list of Iowa towns/cities served by municipal natural gas utilities.

1.2.2. Uses of Natural Gas

In Iowa, natural gas is used for domestic and industrial uses.
Domestic Uses include:

- Space Heating
- Water Heating
- Cooking
- Clothes Drying.

Industrial Uses include:

- Space Heating and Cooling
- Process Heating
- Grain Drying
- Electricity Generation
- Feed Stock for Fertilizer

Commercial Uses include:

- Space Heating and Cooling
- Water Heating
- Restaurant Cooking

1.2.3. Seasonality of Gas Use

A substantial percentage of natural gas usage is weather sensitive. Peak usage occurs during the five cold winter months of November through March, often referred to as the heating season. Figure 1-2 shows the pattern and relationship of seasonal peaks for Iowa customer usage.

1.2.4. Industry Structure

Historically, producers sold natural gas to pipelines; these companies transported the gas to market areas and sold it to local distribution companies (LDCs); the LDCs in turn sold it to end-use retail customers as a bundled service. During the decade of the 1980s, federal regulation opened the markets for sale of gas supply, eventually ending the role of pipelines as buyers and sellers of gas. Today, producers sell gas to marketers, LDCs, and end-users. Pipeline companies provide the transportation function of moving natural gas from point to point. Marketers sell gas to LDCs and end-users. LDCs act both as sellers of gas to end-users and as transporters, moving gas sold by others from a pipeline to an end-user's facilities.

1.2.4.1. Never Vertically Integrated like Electric Utilities

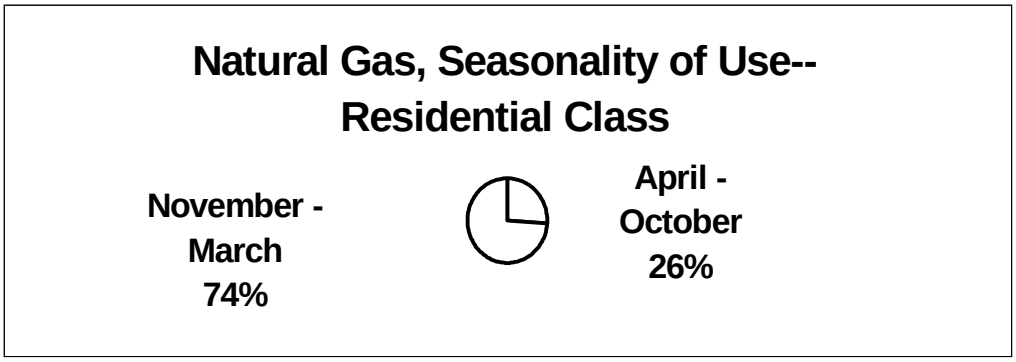
The natural gas industry has long been characterized by separate firms in the production, pipeline, marketing, and LDC sectors of the industry. Unlike the electric utility industry, there has been relative little vertical integration (firms engaged in production, transmission, and distribution) of natural gas firms. This pattern has allowed relatively clean jurisdictional lines between federal regulation of wholesale and transmission functions and state regulation of retail transactions.

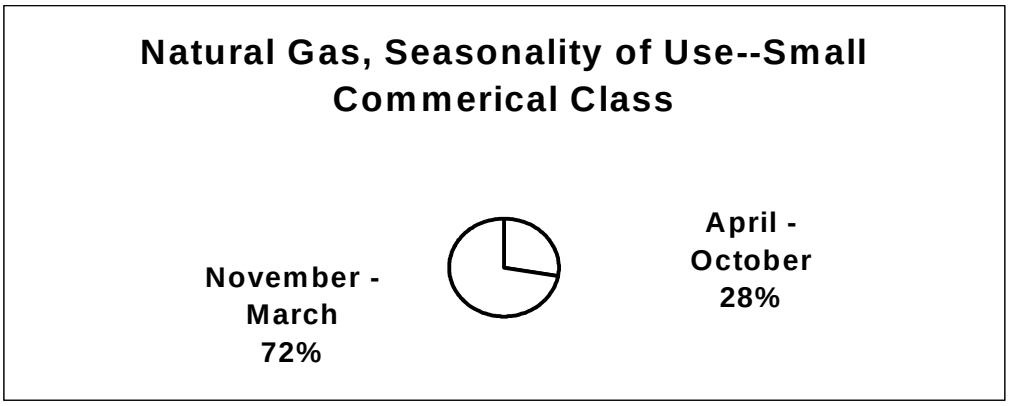
1.2.4.2. Production

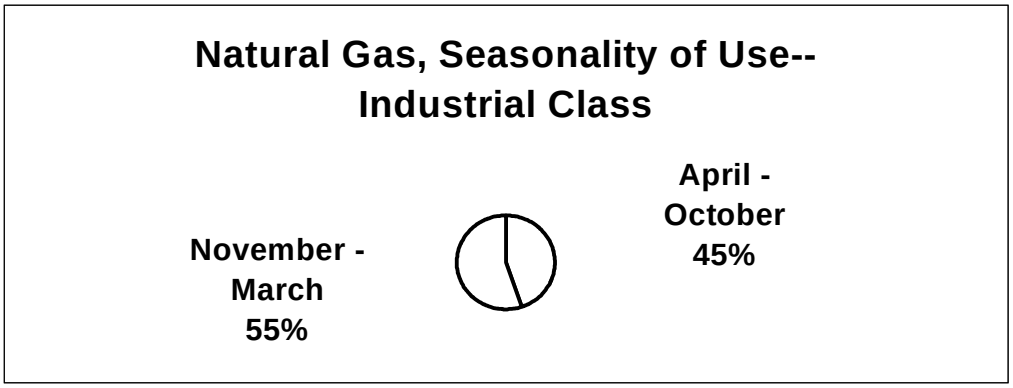
Natural gas is a colorless and odorless, combustible, gaseous mixture of simple hydrocarbon compounds (mostly methane), usually found in deep underground reservoirs formed by porous rock. Drilling into the earth's crust to extract pockets of natural gas that were

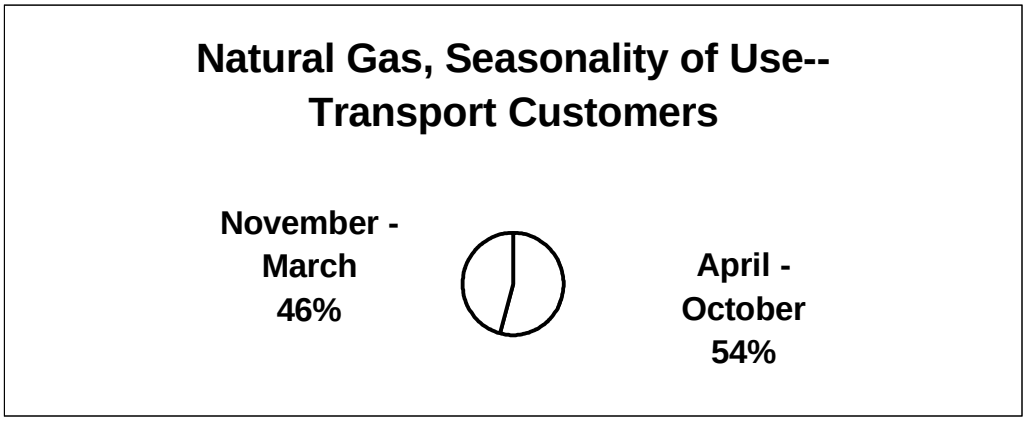
trapped hundreds of thousands of years ago produces this fossil fuel. Once gas is brought to the surface, it is collected through gathering networks and refined to remove impurities such as water, other gases, and sand.

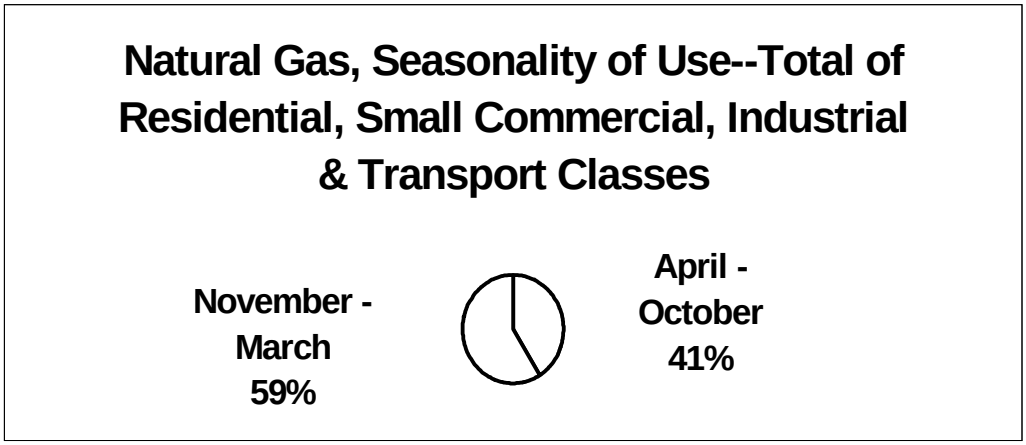
Figure 1-2 Set of Five Charts (pp. 6-7). Seasonality of Natural Gas Use by Customer Classes of Investor-Owned Utilities









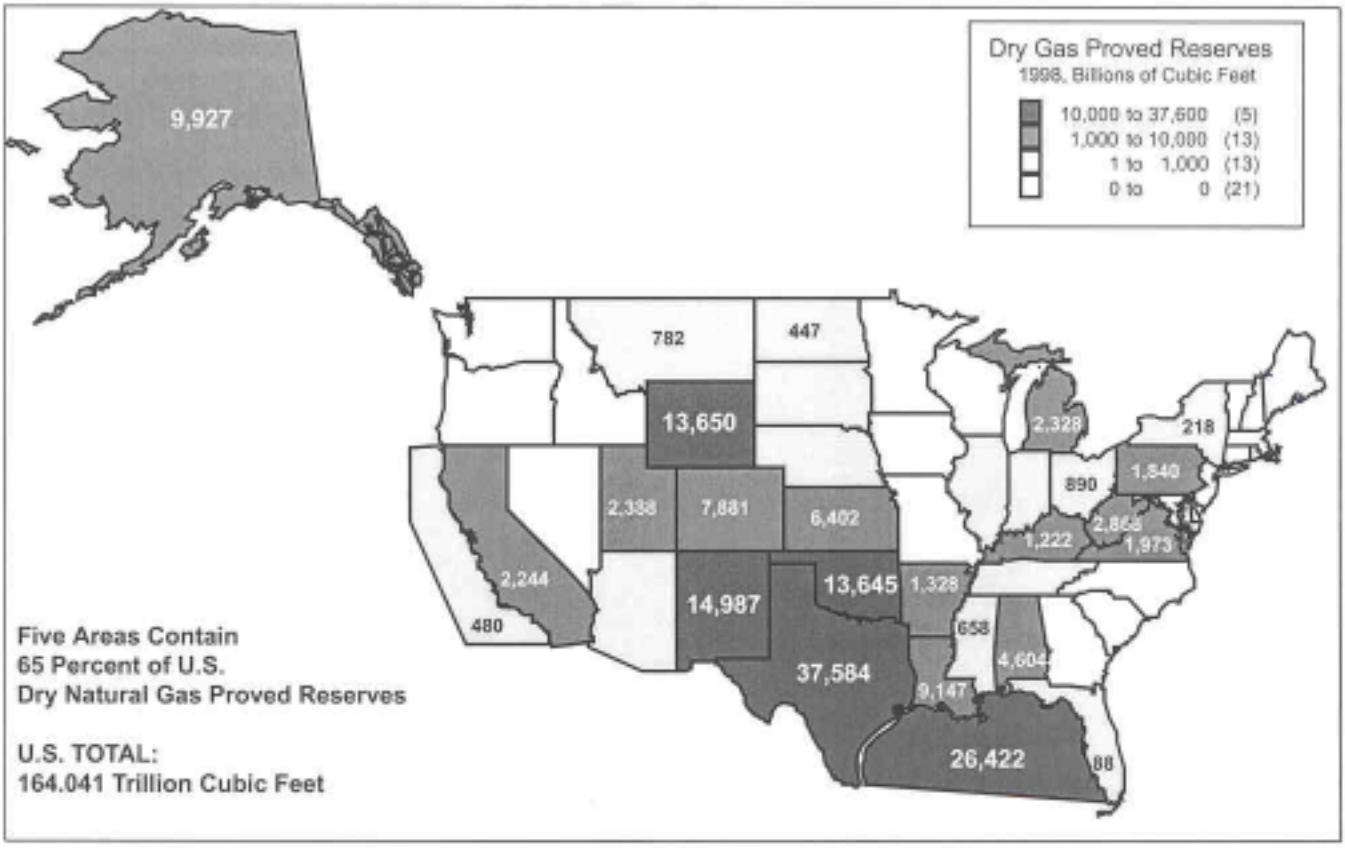


Source: Filings by MidAmerican Energy and Alliant Energy (both Interstate and IES Utilities.

1.2.4.2.1. Regions

Iowa has traditionally received most of its natural gas supply from Oklahoma and Texas producing areas, with some gas coming from Louisiana production. Recent years have seen more natural gas coming to Iowa from Alberta and Western Canada.

Figure 1-3.
Natural Gas Production Regions in U. S.[3]



As shown on the map, Texas (#1) and Oklahoma (#5) are two of the five largest areas of proven natural gas reserves in the United States.

[3] Source: "1998 Natural Gas Reserves Data and Analysis by State;" U.S. DOE, EIA website page: http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/crude_oil_natural_gas_reserves/current/pdf/ch4.pdf

1.2.4.2.2. Processing

Most natural gas requires little processing to bring it to pipeline quality. Sometimes liquid hydrocarbon components, such as propane, are extracted from the gas before it is delivered to LDCs.

1.2.4.3. Interstate Pipelines -- 5 in Iowa

Four pipeline companies serve customers in Iowa (see map in Figure 1-4). ANR Pipeline Company serves the Southeastern corner of Iowa, including Keokuk and Fort Madison. Natural Gas Pipeline Company of America serves Southern and East Central areas of the state, including Cedar Rapids, Iowa City, and the Quad Cities area. Northern Natural Gas historically served the balance of the state, including Sioux City, Mason City, Council Bluffs, Dubuque, Fort Dodge, and Des Moines. Northern Border Pipeline Company now provides service for some towns in the North Central part of the state. A fifth pipeline, Alliance Pipeline, crosses the state en route from Alberta to Chicago, but provides no service to Iowa LDCs.

1.2.4.4. Storage

Natural gas is storable in a variety of locations. The five types of underground storage are:

- Salt Caverns
- Mines
- Aquifers
- Depleted Reservoirs
- Hard-rock Caverns

In Iowa, storage was traditionally used for meeting short-term peak requirements, plus supply reliability. These peak periods can last for a few hours or a few days. In addition to storage locations such as those listed above, LDCs may have peaking storage devices such as liquified natural gas or propane injection facilities. (See Figure 1-5.) More recently, storage has been used more and more as a way to hedge against price volatility.

Figure 1-4. Map of Transmission Pipelines in Iowa

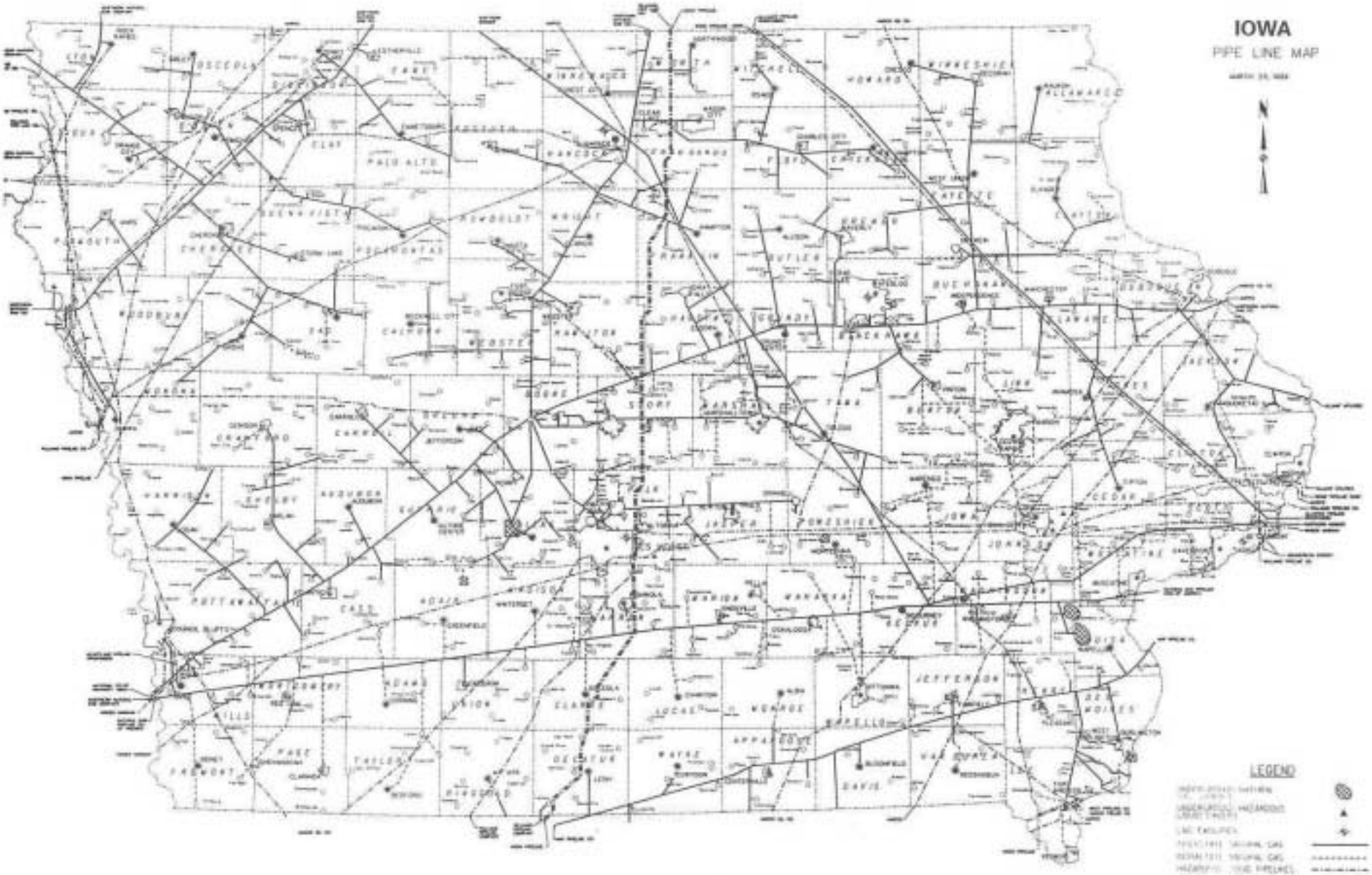


Figure 1-5. Current Peaking Facility Capabilities By Investor Owned Utility - By Pipeine

Interstate Power Company

	Location	Pipeline	Type of Facility	Max Daily Capacity	Cost of Facility ($)	Operated on Peak Day
1.	Clinton	NGPL	LPG	4,000	455,243	No
2.	Mason City	NNG	LPG	9,600	1,288,030	No
	Total Company			13,600	$1,743,273	

IES Utilities Inc.

	Location	Pipeline	Type of Facility	Max Daily Capacity	Cost of Facility ($)	Operated on Peak Day
1.	Burlington	ANR	Propane-Air	4,800	201,069	No
2.	Washington	NGPL	Propane-Air	800	86,492	No
3.	Grinnell	NNG	Propane-Air	1,200	95,880	No
	Total Company			6,800	$ 383,441	

MidAmerican Energy

	Location	Pipeline	Type of Facility	Max Daily Capacity	Cost of Facility ($)	Operated on Peak Day
1.	Sioux City	NNG	LPG	24,000	1,608,407	No
2.	Des Moines	NGPL,NNG	LPG	35,000	3,038,590	No
3.	Waterloo	NNG	LNG	33,600	13,453,272	No
4.	Des Moines	NGPL,NNG	LNG	36,000	3,643,375	Yes
5.	Bettendorf	ANR,NBPL,NGPL,NNG	LNG	40,000	2,969,661	Yes
	Total Company			168,600	$ 24,713,305	

United Cities Gas Co.

Not applicable to Iowa

Peoples Natural Gas Co.

	Location	Pipeline	Type of Facility	Max Daily Capacity	Cost of Facility ($)	Operated on Peak Day
1.	Council Bluffs	NNG	LPG	11,800	2,559,768	No
2.	Dubuque	NNG	LPG	7,200	2,094,085	No
3.	Newton	NNG	LPG	2,700	152,656	No
	Total Company			21,700	$ 4,806,509	

Source: p. 517 of the 1999 IG-1 report for each utility

1.2.4.5. Local Distribution Companies, Four IOUs and 48 Munis

In Iowa, four investor-owned utilities and 48 municipal utilities (see Figure 1-1) provide local distribution service. MidAmerican Energy Company serves Bettendorf, Cedar Rapids, Davenport, Des Moines, Fort Dodge, Fort Madison, Iowa City, Sioux City, Waterloo, and many other communities. Alliant Energy serves Ames, Burlington, Clinton, Marshalltown, Mason City, Ottumwa, and many other towns. Peoples Natural Gas division of UtiliCorp United serves Council Bluffs, Dubuque, and many other towns. United Cities Gas division of Atmos Energy serves Keokuk and nearby towns. Cedar Falls is the largest municipal gas utility, serving over 11,000 customers.

1.2.4.6. Marketing

1.2.4.6.1. Commodity Sold Separately From Delivery

Federal legislation and regulation now allows natural gas commodity transactions to be made without regulatory restriction in wholesale markets. Growth in competition has come in part from allowing sales of gas as a commodity to be made apart from sales of transportation service of the gas.

1.2.4.6.2. LDC Bundles/Aggregates Commodity and Delivery for Some Retail Customers

In Iowa and in most states, LDCs are allowed to offer a fully bundled service, that is, one that provides gas on a delivered basis for retail customers. Buying gas in the aggregate for many customers gives LDCs the chance to achieve economies of scale in retail gas supply.

1.2.4.6.3. Some Retail Customers Take Unbundled Transportation Service

Iowa and most other states require LDCs to offer unbundled transportation service. Iowa opened all retail markets to transportation service in 1986 through the adoption of administrative rules (199 IAC 19.13) in Docket No. RMU-86-11. To implement

transportation service, the LDCs filed tariffs in accordance with Board rules.

1.2.4.6.3.1. Large Volume Transportation Service Commenced in 1986

As discussed above, the Iowa Utilities Board first provided for unbundled transportation service in 1986. This experience achieved cost savings for industrial and some commercial customers without diminished reliability. With this service, larger end-users, usually industrial customers, can buy gas in competitive markets and use the LDC's transportation service to deliver it. Currently, Iowa is one of 32 states in which 75 percent or more of industrial natural gas is sold by a non-utility supplier and then is delivered by a utility[4].

1.2.4.6.3.2. Small Volume Transportation Service-status

Although transportation service has made significant choices available for large volume customers, it has brought no real choices for most small volume customers. One group of school customers, working through the Iowa Association of School Boards, arranged an experimental "I-JUMP" transportation service with several utilities.

The Board has investigated small volume transportation in a multi-step process. In 1997, it adopted rules designed to remove barriers to competition for small volume customers. At the suggestion of Alliant, the Board initiated a series of workshops to examine issues of customer education, codes of conduct, and marketer certification. The workshops, with 21 industry participants, reached significant agreement on several points and outlined several points where the participants felt Board decisions were needed for consistent state-wide implementation of small volume competition, such as billing, customer education, and penalties.

Based on the workshop process and comments on the resulting staff report, the Board in August 2000 required rate-regulated gas utilities

[4] Source: American Gas Association website, page--
http://www.aga.org/PublicInfo/NaturalGasBackground/ChoosingaSupplier/1138.html

to file draft tariffs implementing small volume transportation programs. Those tariffs are being filed this fall.

The Board has proposed rules for the certification of natural gas marketers as required by 1999 legislation.

1.2.5. Federal Regulation

1.2.5.1. The Federal Energy Regulatory Commission (FERC)[5]

The FERC was created by the Department of Energy Organization Act on October 1, 1977, to replace the Federal Power Commission. It is made up of five members who serve staggered five-year terms and are appointed by the President and confirmed by the Senate. The Commission's current membership consists of James J. Hoecker (chairman), Linda Key Breathitt, Curt Hebert, Jr., William L. Massey, with one vacancy.

No more than three commissioners may belong to the same political party. The chairman, designated by the President, serves as the Commission's administrative head.

The Commission's legal authority comes from the Federal Power Act of 1935, the Natural Gas Act (NGA) of 1938, the Natural Gas Policy Act (NGPA) of 1978, the Public Utility Regulatory Policies Act of 1978, and the Energy Policy Act of 1992.

1.2.5.2. Historic Evolution of the Industry

The growth of the natural gas industry into separate production, pipeline, and distribution sectors provided easy boundaries for federal regulation of wholesale supply transactions, production, and interstate transmission service; and state regulation of retail sales and local distribution service. Since the early 1980s, the Federal Energy Regulatory Commission (FERC) has encouraged the development of competitive markets in the segments of the industry it regulates. With Congressional approval, it has ended regulation of gas supply sales and reduced regulation of gas transmission.

[5] Source: FERC website, page-- http://www.ferc.fed.us/intro/intro2.htm

1.2.5.3. Applicable Legislation and Orders

1.2.5.3.1. Natural Gas Act (NGA), 1938

Passed to provide a regulatory structure for the emerging natural gas industry, the NGA authorizes the FERC to regulate both the construction of pipeline facilities and the transportation of natural gas in interstate commerce.

1.2.5.3.2. Natural Gas Policy Act, 1978

In response to real and projected shortages of deliverable natural gas in interstate markets during the 1970s—to incent increasing amounts of natural gas supplies to the interstate market, Congress put the supply of natural gas on a path for eventual pricing decontrol. The NGPA established market-oriented requirements for transportation and sales of natural gas by pipelines.

1.2.5.3.3. Natural Gas Wellhead Decontrol Act, 1989

After the success of the competitive movement of the 1980s, Congress removed all price controls on the wellhead sales of natural gas as of January 1, 1993. As a result, neither the FERC nor the Iowa Utilities Board has regulatory authority over the wholesale pricing of natural gas.

1.2.5.3.4. Orders 436 & 636

These FERC rules first encouraged, then required pipelines to offer open access transportation on a first-come, first-served basis. The rules led to the unbundling of sales and transportation services.

1.2.5.3.5. Order 637

This FERC rule extended Order 636 principles to allow holders of pipeline capacity some opportunities to trade their rights in secondary market transactions.

1.2.5.4. Federal Certificates, Contracts, Tariffs, Rates, Discounting

Remaining regulation under the NGA requires each pipeline to obtain a certificate from the FERC to construct or operate an interstate pipeline; and to file tariffs containing the rates, terms, and conditions for service. Certificates are usually based on contracts for specified volume levels of service. FERC allows pipelines to negotiate discounts from the tariff rates for transportation service in response to competitive conditions.

1.2.5.5. Federal Actions Affecting Delivery Systems

Although the FERC does not directly regulate distribution systems, many of its actions have indirect effects on local markets.

1.2.5.5.1. Pipeline Expansion, New Construction, include siting section

When new pipeline capacity is authorized into a market area, the increase in supply often results in competitive pressures and lower prices for consumers. The Chicago area has become a major gas hub, served by more than half a dozen pipelines. Excess capacity on pipelines traversing Iowa has given Iowa LDCs opportunities to achieve cost savings. New pipeline construction comes with a price tag, however, in actual financial cost to be recovered and in the form of environmental/land disruption caused by the construction process itself.

1.2.5.5.2. Secondary Market

Holders of pipeline capacity, such as marketers or LDCs, are now able to negotiate direct with potential buyers to sell capacity during periods the capacity holder does not need it. Marketers, industrial customers, and other gas users can negotiate to buy capacity from such holders without involving the pipeline. These transactions are subject to a market cap of the pipeline's regulated rate, but that cap has been waived for an experimental period through September 30,

2002. Secondary market transactions allow LDCs a measure of control over their pipeline transmission costs.

1.2.5.5.3. Gas Industry Standards Board (GISB)

The growth of trading in natural gas and pipeline capacity has increased the need for efficient scheduling of gas shipments by many entities. GISB has been created to develop industry standards for trading capacity rights and reserving and scheduling capacity for shipments.

1.2.5.5.4. Codes Of Conduct

There are inherent conflicts of interest when a pipeline or an LDC must schedule capacity for an affiliated firm and competing firms. Codes of conduct have been developed to assure fairness in competitive markets—to prevent favoritism toward affiliates or others.

1.2.6. State Regulation in Iowa, Explanation

1.2.6.1. Beginning of Regulation in 1930s

Authority to regulate the construction of natural gas pipelines was granted to the Board of Railroad Commissioners in the early 1930s. Because of its expanded authority, the agency was renamed the Iowa State Commerce Commission in 1937. The Iowa Utilities Board continues to perform this work.

1.2.6.2. Price and Service Regulation in 1963

Iowa allowed municipalities to regulate utility prices into the 1960s. At that time, it followed the national trend to centralize that regulatory function in a state agency.

1.2.6.3. Current Regulatory Responsibilities

Under Chapter 476 of the Code of Iowa, the Iowa Utilities Board establishes appropriate levels of natural gas service and just and reasonable levels of rates. It does not set exclusive service areas for natural gas service. It requires transportation service be available on

an unbundled basis[6]. It represents Iowa consumer interests in FERC cases. Under Chapters 479 and 479A and federal programs, it inspects natural gas construction and facilities for adequacy of service and for safety.

2.0. Natural Gas Market

2.1. Update on Current Commodity Pricing Environment

As mentioned above, through the Natural Gas Wellhead Decontrol Act (passed in 1989), Congress removed all price controls on the wellhead sales of natural gas as of January 1, 1993.

This past summer has seen a very significant increase in the spot prices of natural gas. Table 2-1, on p. 20, demonstrates the magnitude of the price change. Average weekly natural gas spot prices[7] increased by 67 percent, from $3.12 to $5.20 per MMcf.

Additionally, as of October 12, 2000 (3:23 PM CST), New York Mercantile Exchange (NYMEX) Options Contract Prices for Henry Hub Natural Gas for delivery in the five months (each) of the 2000-01 and 2001-02 heating seasons were:

	2000-01 Season	2001-02 Season
• November	$5.625/MMcf	$4.890/MMcf
• December	$5.715/MMcf	$4.990/MMcf
• January	$5.700/MMcf	$4.965/MMcf
• February	$5.455/MMcf	$4.795/MMcf
• March	$5.205/MMcf	$4.545/MMcf

[6] Applies only to rate regulated natural gas utilities.
[7] Henry Hub Prices, means were calculated by adding the five daily highs to the five daily lows for a week, dividing the sum of those 10 prices by 10.

In comparison, month-ahead NYMEX Options Contract Prices[8] for Henry Hub Natural Gas were at the following levels for the 1999-2000 heating season.

	1999-2000 Season
• November	$2.906/MMcf
• December	$2.627/MMcf
• January	$2.303/MMcf
• February	$2.259/MMcf
• March	$2.552/MMcf

[8] Source: U.S. DOE, EIA, Natural Gas Weekly Market Updates (mid-month week), Oct. 1999-Feb. 2000—Average of five days' listed month-ahead prices

Figure 2-1. Natural Gas Spot Price Increases, Weeks of 5/1-10/9/2000

Henry Hub Natural Gas Spot Prices In Dollars per MMBtu			
Week Of	High	Low	Mean
01-May-00	3.04	3.17	3.12
08-May-00	3.07	3.22	3.15
15-May-00	3.09	3.38	3.26
22-May-00	3.34	3.78	3.66
29-May-00	3.81	4.31	4.04
05-Jun-00	4.13	4.44	4.32
12-Jun-00	3.89	4.57	4.20
19-Jun-00	4.16	4.48	4.29
26-Jun-00	3.97	4.45	4.28
03-Jul-00	4.61	4.21	4.40
10-Jul-00	4.38	3.97	4.19
17-Jul-00	4.30	4.04	4.18
24-Jul-00	4.17	3.85	3.99
31-Jul-00	3.90	3.56	3.72
07-Aug-00	4.29	3.74	4.00
14-Aug-00	4.50	4.35	4.44
21-Aug-00	4.46	4.21	4.33
28-Aug-00	4.85	4.41	4.61
05-Sep-00	4.79	4.57	4.66
11-Sep-00	4.91	4.64	4.80
18-Sep-00	4.79	5.33	5.06
25-Sep-00	5.04	5.24	5.17
02-Oct-00	5.06	5.37	5.20
09-Oct-00	5.01	5.26	5.20

Source: U. S. Department of Energy
Energy Information Administration
Natural Gas Weekly Market Updates

Commodity market (NYMEX) Options Contract Prices give no hint that natural gas prices are likely to ease prior to the end of the upcoming heating season.

Natural gas wellhead prices (in nominal terms) are at historic highs, as can be demonstrated by keeping in mind current prices and comparing them to the chart in Figure 2-2, below. Where these prices were at approximately $0.15/Mcf in 1969, they are now at approximately $5.00/Mcf.

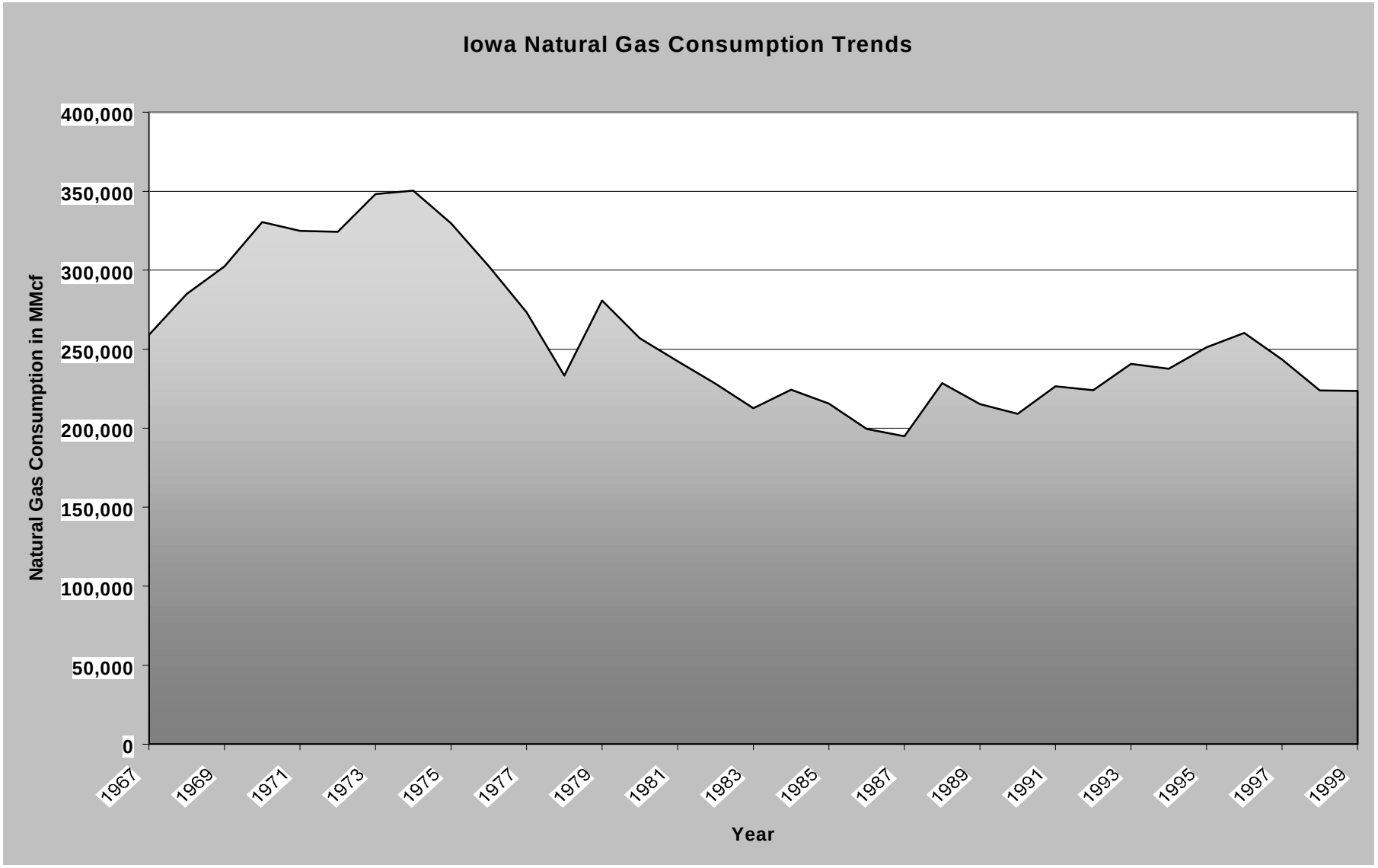
Figure 2-2. Historic Natural Gas Wellhead Prices[9]

2.2. Natural Gas Consumption and Customer Characteristics

As demonstrated in Figure 2-3[10], below, natural gas consumption in Iowa has declined markedly since the 1973-75 era.

[9] Source: http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/historical_natural_gas_annual/historical/1999/pdf/hnga99.pdf
[10] Source: U.S. DOE, E.I.A., "Historical Natural Gas Annual 1930 Through 1999, Table 14, Iowa data.

Figure 2-3.


Iowa Natural Gas Consumption Trends
Natural Gas Consumption in MMcf
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
Year

2.3. Natural Gas Transmission Pipeline Siting

Interstate Pipelines. 15 U.S.C. Subsection 717f empowers the FERC to control the siting of interstate natural gas transmission pipelines.

Intrastate Pipelines. IOWA CODE Chapter 479 requires a permit from the IUB to construct, maintain, or operate a pipeline or lines in the state, except interstate pipelines. To obtain a permit, a petition containing route, design (including materials and manner of construction), and purpose data must be filed with the Board. For larger projects, public meetings must be held in each county in which real property or property rights will be affected at least 30 days before the petition is filed. Before granting the permit, the IUB must hold a public hearing and must find that the project is necessary to promote the public convenience and necessity. In the process, the Board must accept the proposed route, and may grant the right of eminent domain where necessary. Notice of the petition is published in some newspaper of general circulation in each county through which the pipeline will extend.

2.4. Pipeline Safety

The Natural Gas Pipeline Safety Act of 1968 as amended (NGPSA) authorizes the U. S. Department of Transportation (DOT) to regulate pipeline transportation of natural (flammable, toxic, or corrosive) gas and other gases as well as the transportation and storage of liquefied natural gas (LNG). The Office of Pipeline Safety (OPS) is the U.S. DOT office specifically charged with this function.

Interstate Pipelines. Federal statutes grant exclusive authority to the federal government, but the states are empowered to act as the federal government's agents (in Iowa, the IUB fulfills this function) to inspect interstate pipelines. The states must be certified by the federal government to act as agents. However, while the state agency, under such an agency agreement, will inspect pipeline operators to ascertain compliance with Federal safety regulations, any probable violations are reported to OPS for enforcement action.

Intrastate Pipelines (including both transmission and distribution piping). While the Federal government is primarily responsible for developing, issuing, and enforcing pipeline safety regulations, the pipeline safety statutes provide for State assumption of the intrastate regulatory, inspection, and enforcement responsibilities under an annual certification. To qualify for certification, a state must adopt the minimum Federal regulations and may adopt additional or more stringent regulations as long as they are not incompatible. A State must also provide for injunctive and monetary sanctions substantially the same as those authorized by the pipeline safety statutes.

IOWA CODE Chapter 479A was passed with the dual purposes of (1) having the State assume intrastate responsibility with the Board being the designated agency, and (2) providing for the Board to act as an agent for the federal government, as discussed immediately above, including responsibility for construction and land restoration inspection.

2.5. Leak Tracking

The following methods of tracking natural gas leaks are used by Iowa LDCs.

MidAmerican: MidAmerican's Gas Leak System is a windows-based system that provides a common database to collect and analyze accurate, complete, and consistent information pertaining to all Customer Service System (CSS) generated Gas Leak or Hit Line Trouble Orders. It also tracks all distribution and transmission leak orders found when conducting leak surveys according MidAmerican's Gas Standards Manual, Section G55.

The interface between the CSS, Mobile Data Terminal (MDT), and Gas Leak creates a single database that can produce all required reports for the Federal Government, Department of Transportation, Iowa Utilities Board, Illinois Commerce Commission, and the Nebraska State Fire Marshall. It also provides MidAmerican Energy management reports, which include response time reports, scheduling of repairs according to Gas Standards, and creates a management tracking analysis tool.

Alliant: Data is collected manually on paper and is then entered into a database for reporting purposes.

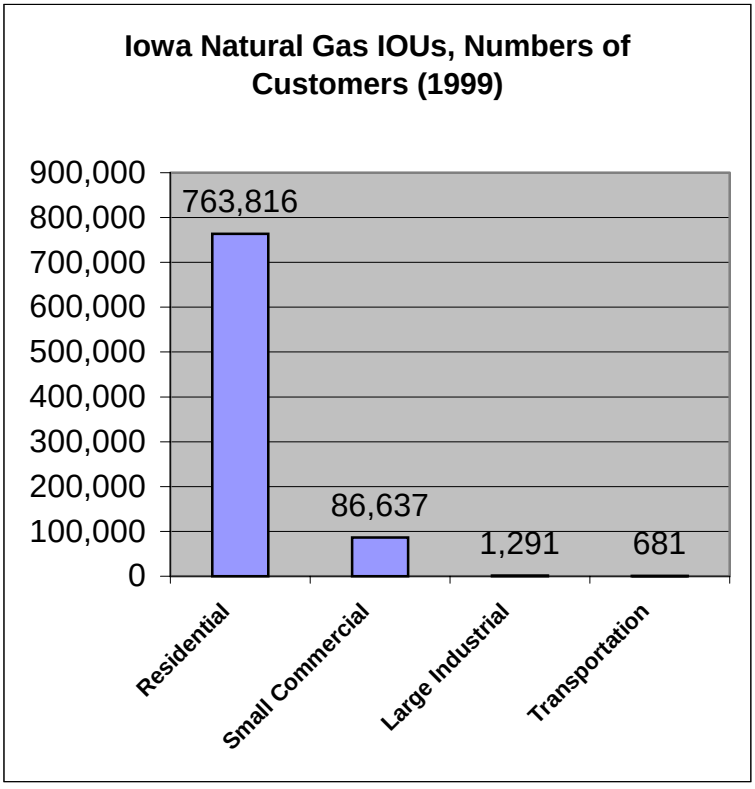
Peoples: A Leak Log, Form 48-798, and Field Leak Call Report, Form 48-1125, are retained at each local office for the purpose of recording and reporting all leaks found. Peoples annually reports a summary of leak data using DOT Form RSPA F7100.11-1 and DOT Form RSPA F7100.2-1

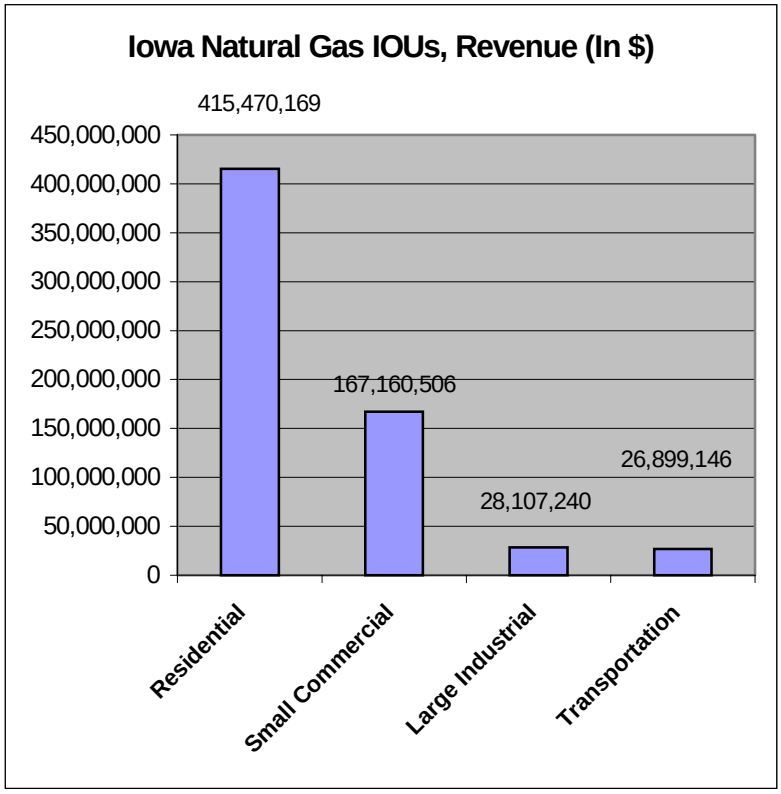
United Cities: Report not available at this time.

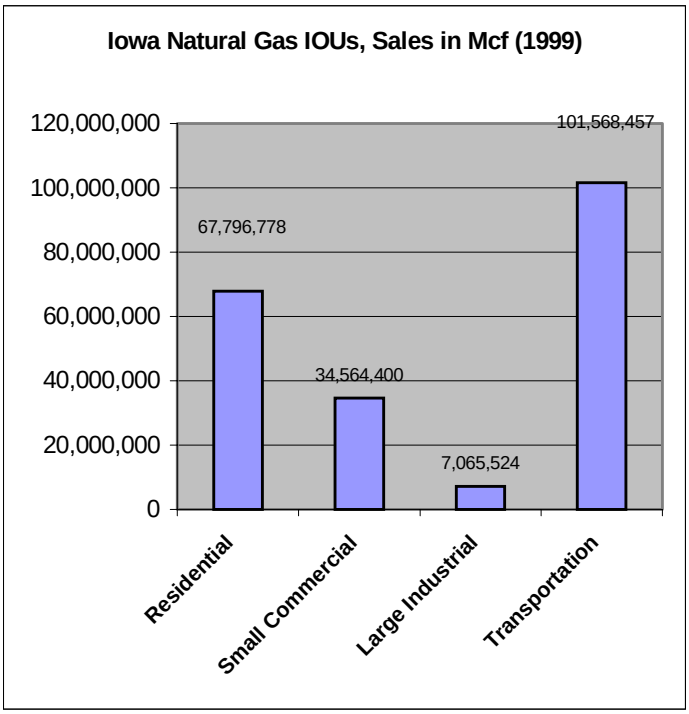
Municipals: Various.

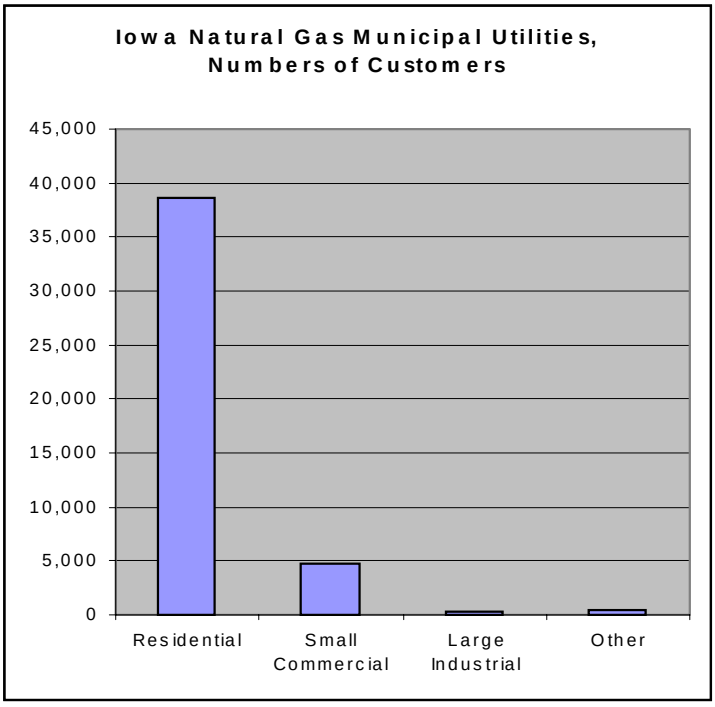
2.6. IOU/Municipal Utility Data

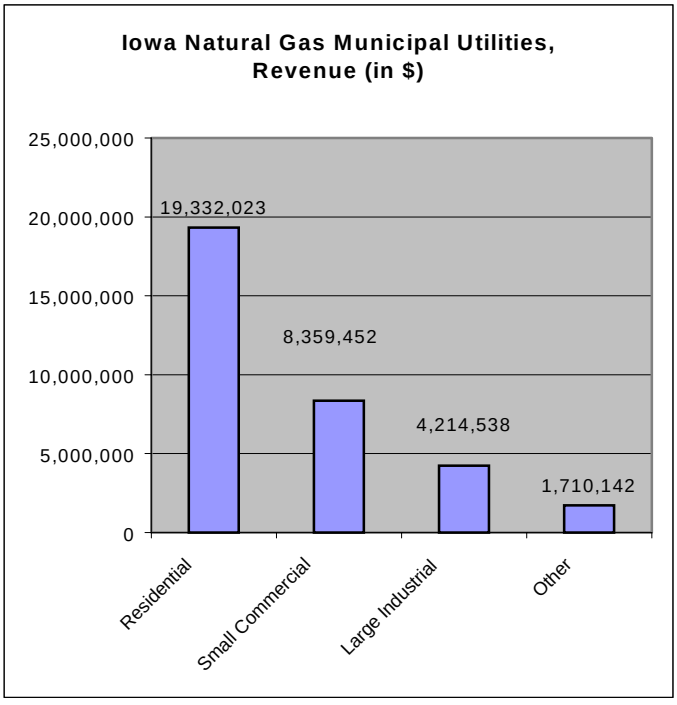
Figure 2-4 (Set of Six Charts, pp. 25-7). Data on IOUs/Municipal Utilities Customers, Revenue, and Sales

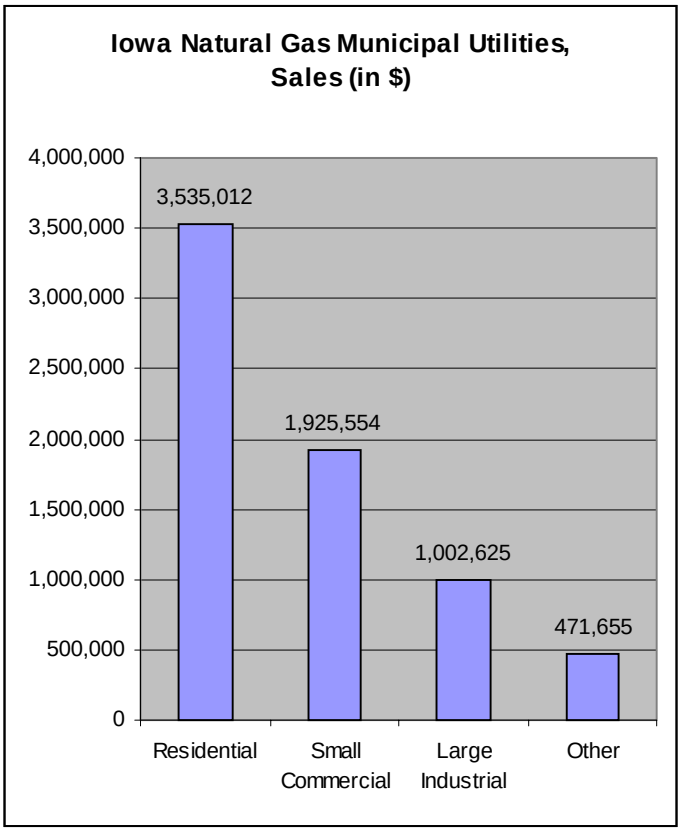





Iowa Natural Gas IOUs, Sales in Mcf (1999)
120,000,000
100,000,000
80,000,000
60,000,000
40,000,000
20,000,000
0
67,796,778
34,564,400
7,065,524
101,568,457
Residential
Small Commercial
Large Industrial
Transportation


Iowa Natural Gas Municipal Utilities, Numbers of Customers
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Residential
Small Commercial
Large Industrial
Other


Iowa Natural Gas Municipal Utilities, Revenue (in $)
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
19,332,023
8,359,452
4,214,538
1,710,142
Residential
Small Commercial
Large Industrial
Other



Sources: 1999 IG-1s for IOU Data and 1999 MG-1 for Municipal Data

2.7. Natural Gas Energy Efficiency and Load Management

2.7.1. Program Descriptions and Discussion

Iowa Code Sections 476.6(17) and 476.6(19) authorize a variety of initiatives intended to improve the energy efficiency of Iowa homes and businesses. Energy Efficiency Programs now being implemented by IOUs include:

- **Energy Efficiency programs** save annual use of energy (Dth) and reduce peak day use (Dth/day). Examples include: 1) residential programs providing rebates and loans for home insulation, high efficiency furnaces, water heaters and other gas-saving technology; and 2) nonresidential programs providing

rebates for commercial heating, new building efficiency or high-efficiency industrial manufacturing processes.

- **Low-Income programs** target low-income customers for weatherization and other energy efficiency measures.

- **Tree Planting programs** provide assistance to customers and communities to plant and care for trees.

- **Load management programs** provide incentives to customers to change their patterns of energy use. Typical programs include discounts for commercial and industrial customers willing to interrupt their usage during times of peak gas use.

- **Research and development programs** are carried out through the Iowa Energy Center and the Center for Global and Regional Environmental Research. These programs are funded by a surcharge on all utilities, including municipal utilities and RECs.

In addition to the energy efficiency programs, natural gas utilities offer other programs for peak day load management, typically achieved through programs that offer customers lower rates or rebates for reducing the customer's use of gas at a certain point in time. The customer agrees to reduce load by a certain amount (interruptible load) when the utility calls on the customer to do so, typically during peak load periods.

2.7.2. Natural Gas Energy Efficiency Expenditures & Savings

Figure 2-5. Investor-Owned Utilities - Expenditures for Natural Gas Energy Efficiency Programs (in $1,000s)

YEAR	1990	1991	1992	1993	1994
Expenditures	470	2,467	9,062	14,105	14,883

YEAR	1995	1996	1997	1998
Expenditures	16,425	12,558	11,343	10,236

Notes:

- Numbers compiled by IUB Staff came from utilities' formal filings in energy efficiency cost recovery dockets.
- Amounts for MEC in 1990-93 have been adjusted for the settlement agreement between OCA and Midwest Gas, which disallowed all costs for gas interruptible programs, and reduced Rock Valley costs.

Sources:

IES Utilities	Interstate	MEC
ECR-94-2, ECR-96-3	ECR-93-1, Filing of 7/1/93	ECR-94-1, Chap. 32, Sch. 8 (JLS-1), pp. 1-4
TF-97-162, Filed 6/27/97	ECR-93-1, Filing of 2/14/94	ECR-94-3, Filing of 7/25/95, Exh. 5, 2nd Revised
TF-98-159, Filed 6/26/98	ECR-96-1, Filing of 5/1/96	MEC Datafiling of 9/28/99, Item 3, dsmgassep00
TF-99-197, Filed 6/29/99	TF-97-157, Filing of 6/25/97 EEP-94-40, Filing of 9/3/98 Data filed by Alliant	

Peoples Natural Gas	United Cities Gas
ECR-93-3, ECR-96-2 TF-99-253	Company Electronic Data, 9/22/00

Figure 2-6. Municipal Utilities - Expenditures for Natural Gas Energy Efficiency Programs (in $1,000s)

YEAR	1990	1991	1992	1993	1994
Total Expenditures	1,327	1,327	474	474	208
IAMU Filings	1,259	1,259	277	277	107
Munis Filing Separately	68	68	197	197	101

YEAR	1995	1996	1997	1998
Total Expenditures	291	96	114	842
IAMU Filings	107	53	53	797
Munis Filing Separately	184	43	61	45

Notes:

- TOTALS ONLY – PROGRAM LEVEL DATA WILL REQUIRE ADDITIONAL EXTRACTION AND COMPILATION.
- IAMU Data for 1990 and 1991 data included spending and results for programs implemented prior to 1990.
- IAMU Data for 1990 and 1991 was used to derive a ratio for gas versus total spending of 0.30.
- This estimate of gas DSM spending was applied to the years 1992, 1993, and 1998, due to lack of specific data or lack of time to compile data.
- The years 1994, 1995, 1996, and 1997 were analyzed using the IAMU database, augmented by filings from individual utilities.
- For the years 1994 –1997, Muni program spending addressing both gas and electricity was divided equally between gas and electric costs.

Sources:

- 1990-91 IAMU Data, EEP-92-8, filing of 7/17/92.
- 1992-1993 IAMU Data – From EEP-94-8, filing of 7/1/94.

- 1994-95 IAMU Data from IAMU Database.
- 1996-97 IAMU Data from IAMU Database.
- 1998 IAMU Data – From EEP-00-33, filed 7/10/00.

Figure 2-7. Investor-Owned Utilities' Cumulative Gas Capacity Savings (in Peak Day Dekatherms/Mcf/MMBtu)

YEAR	1990	1991	1992	1993	1994
Cumulative Savings	5	35	1,968	5,010	9,027

YEAR	1995	1996	1997	1998
Cumulative Savings	13,469	18,080	23,323	27,135

Notes: Utilities' data was converted from units of therms per day.

Sources:

- Email from Steve Mohasci of Alliant, 9/27/99.
- ECR-93-1: Data from filing of 11/14/94, program savings through 2000.
- ECR-96-1: Impact table filed with TF-97-102.
- EEP-94-40: Prudence Review, filed 9/8/99, Tables 1.2-1a, 1b, 1c.
- ECR-94-1, Midwest Gas filing of December 23, 1994.
- ECR-94-3, company filing of May 25, 1995.
- Data provided by letter from Gregory Schaefer of MEC, September 28, 2000.
- ECR-93-3, filing of 8/15/94.
- ECR-96-2, filing of 11/15/96.
- TF-99-253, Prudence Review, Filed Testimony, 11/4/99, Exhibit 1.
- Electronic filing of information by United Cities, 9/22/00.

Figure 2-8. Investor-Owned Utilities' Cumulative Gas Energy Savings. (in Annual Dekatherms/Mcf/MMBtu)

YEAR	1990	1991	1992	1993	1994
Cumulative Savings	389	2,999	253,642	655,208	1,147,302

YEAR	1995	1996	1997	1998
Cumulative Savings	1,607,183	2,059,838	2,569,584	2,982,742

Note: Utilities' data was converted from units of annual total therms.

Sources:

- Email from Steve Mohasci of Alliant, 9/27/99.
- ECR-93-1: Data from filing of 11/14/94, program savings through 2000.
- ECR-96-1: Impact table filed with TF-97-102.
- EEP-94-40: Prudence Review, filed 9/8/99, Tables 1.2-1a, 1b, 1c.
- ECR-94-1, Midwest Gas filing of December 23, 1994.
- ECR-94-3, company filing of May 25, 1995.
- Data provided by letter from Gregory Schaefer of MEC, September 28, 2000.
- ECR-93-3, filing of 8/15/94.
- ECR-96-2, filing of 11/15/96.
- TF-99-253, Prudence Review, Filed Testimony, 11/4/99, Exhibit 2.
- Electronic filing of information by United Cities, 9/22/00.

Figure 2-9. Municipal Utilities' Cumulative Gas Energy Savings (in Annual Dekatherms/Mcf/MMBtu)

YEAR	1990	1991	1992	1993	1994
Cumulative Savings	711,431	1,422,861	1,455,972	1,489,083	1,522,211

YEAR	1995	1996	1997	1998
Cumulative Savings	1,556,416	1,569,191	1,585,047	1,597,768

Notes:

- Data for 1990-91 includes extensive results for years prior to 1990 by Municipal Utilities.
- Staff used estimation techniques to fill in gaps in data, especially for results which were frequently provided on a biennial basis.

Sources:

- 1990-91 IAMU Data, EEP-92-8, filing of 7/17/92.
- 1992-93 IAMU data – From EEP-94-8, filing of 7/1/94.
- 1994-95 IAMU Data from IAMU Database.
- 1996-97 IAMU data from IAMU Database.
- 1998 IAMU Data – From EEP-00-33, filed 7/10/00.

Figure 2-10. Investor-Owned Utilities' Gas Dollar Savings (Dollars & Ratios of Benefits to Costs, Respectively, Valued to End of Period)

Societal Test—Net Benefits

Approximate Years of Programs		
1990-92	1993-95	1996-98
$19,096,472	$40,287,125	$29,601,673

Societal Test—Net Benefits

Approximate Years of Programs		
1990-92	1993-95	1996-98
1.1 – 2.8	1.2 – 1.8	1.3 – 2.2

Note: Differing years for discounting or present valuing of benefits makes direct addition of dollar savings difficult.

Sources:

- IES Filing in ECR-94-2, 4/20/95, describing reward calculation.
- ECR-96-3; Vol. 1, Table 1.2-2.
- IES Energy Efficiency Plan Periodic Status Report, Program Year 1997, filed 9/24/98.
- IPC filing in ECR-93-1, 4/19/94, table of benefits and costs, "Actual Data."
- ECR-96-1, IPC Initial Filing of 5/1/96, tabs for individual programs.
- IPC, EEP-94-40, Filing of 9/8/99, Table 1.2-2a, Benefit/Cost by Program for Electric Programs.
- ECR-94-3 – Initial Filing, not changed by additional filing of 7/10/95, Ex. 8, p. 3.
- MIDWEST GAS – Data for Initial Filing of ECR-94-1, revised by filing of 7/28/94.
- Additional Data for MEC companies from data provided by MEC, November, 1999.
- ECR-93-3, filing of 6/27/94.
- ECR-96-2, Initial filing of 6/3/96, Testimony of Andrew Goett, p. 9.
- TF-99-253, Filing of 11/4/99, Exhibit 2.

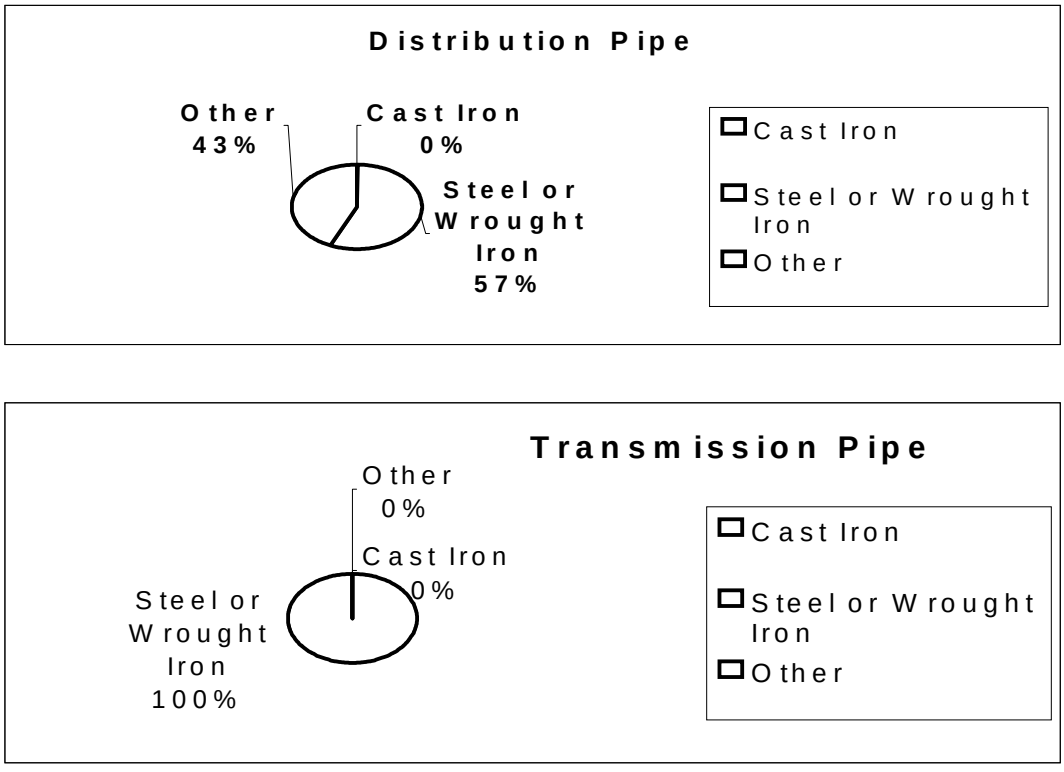
2.8. Existing Distribution Facilities

2.8.1. Remediation of Former Manufactured Gas Plant Sites

Before natural gas reached Iowa markets in the 1940s and 1950s, Iowa's gas utilities supplied their customers with gas manufactured from coal. Wastes of the manufacturing process were disposed of in ways that are now inconsistent with environmental laws, primarily the Resource Conservation and Recovery Act (RCRA)[11]. Iowa's gas utilities have identified dozens of sites in the state that must be remediated under supervision of the Environmental Protection Agency. The EPA has approved the utilities' multi-year programs for these clean-ups. The Iowa Utilities Board has allowed the costs of remediation work to be recovered from customers.

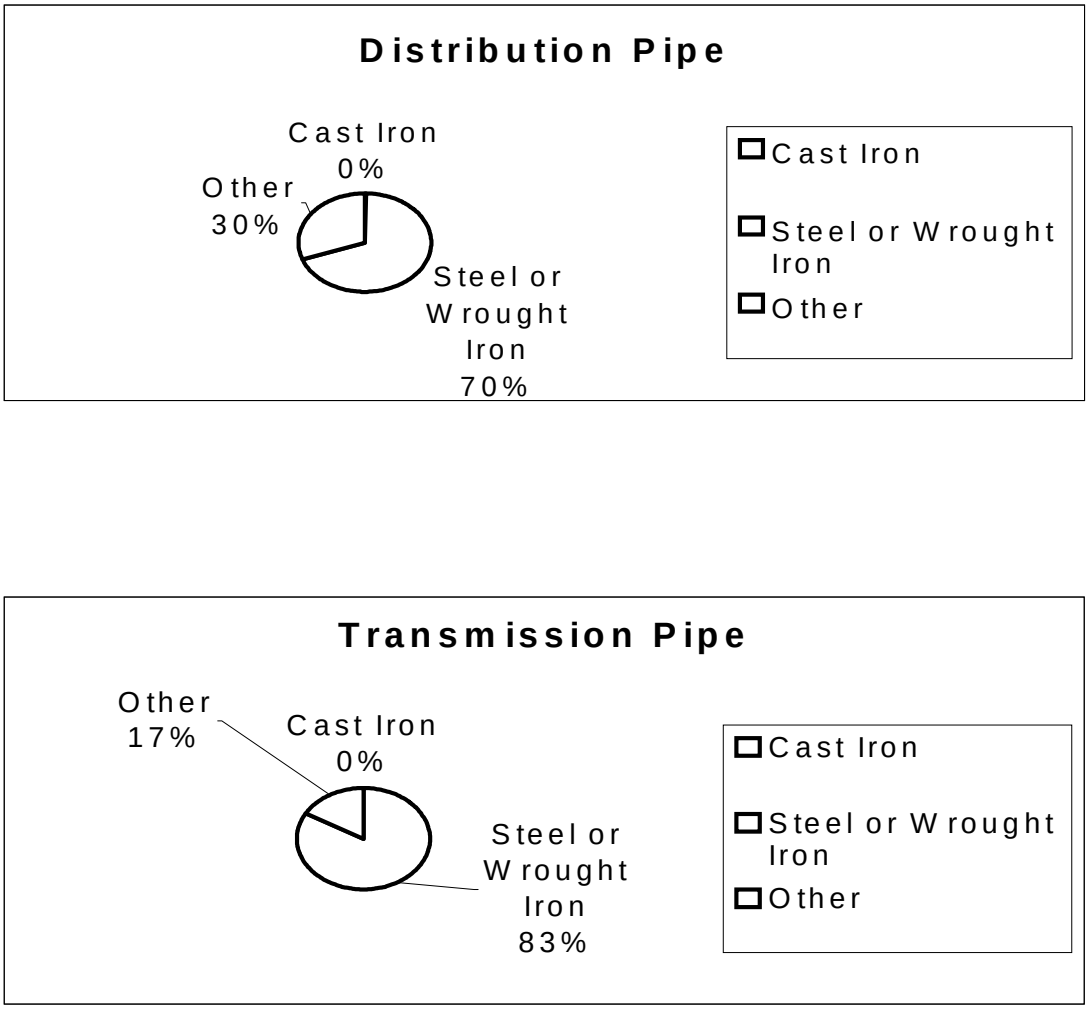
2.8.2. Different Types of Gas Pipe Construction

Figure 2-11. Percentages of Different Types of Construction, Iowa IOUs



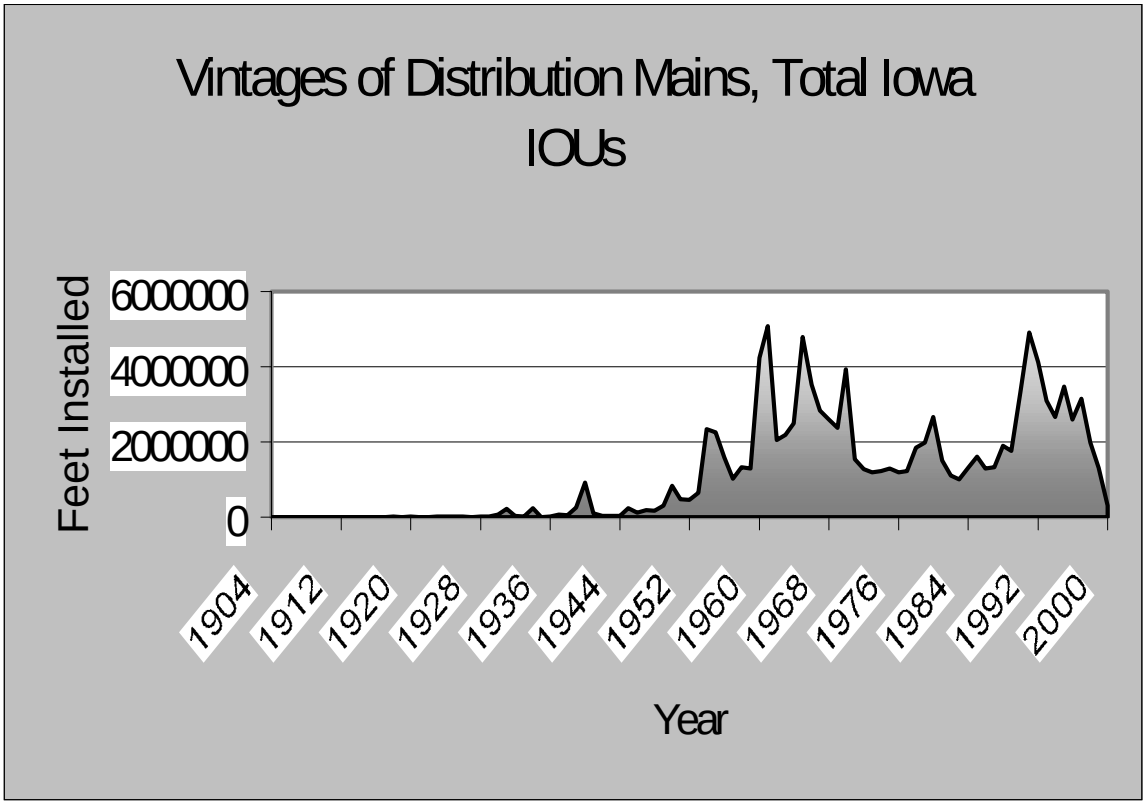
[11] Public Law 94-580, 90 Stat. 2795, as amended (42 U.S.C. 6901-6907)

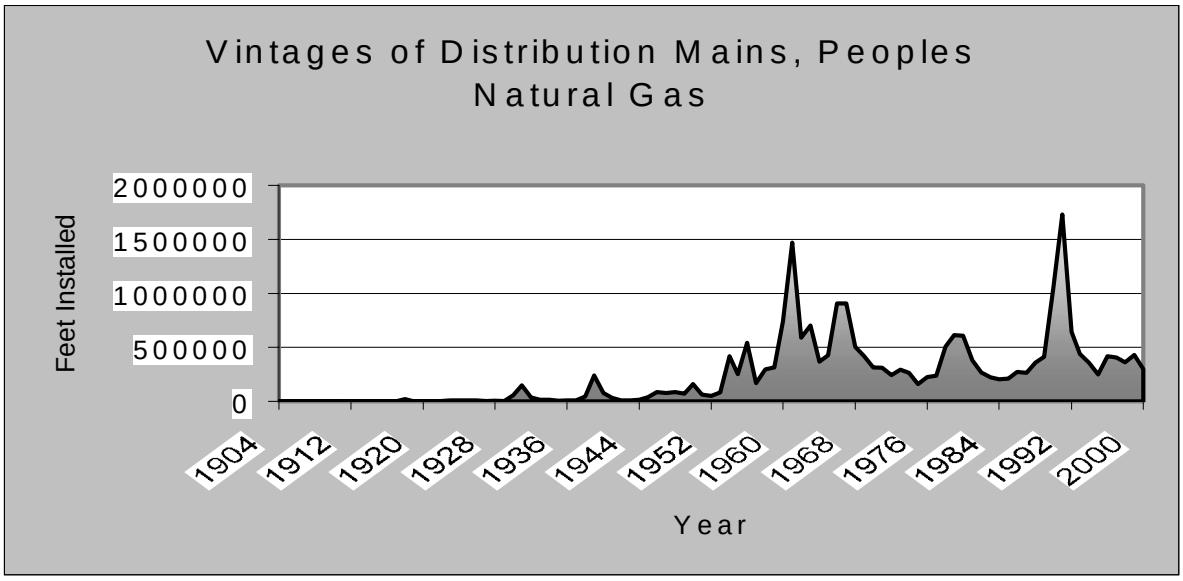
Figure 2-12. Percentages of Different Types of Construction, Iowa Municipal Utilities

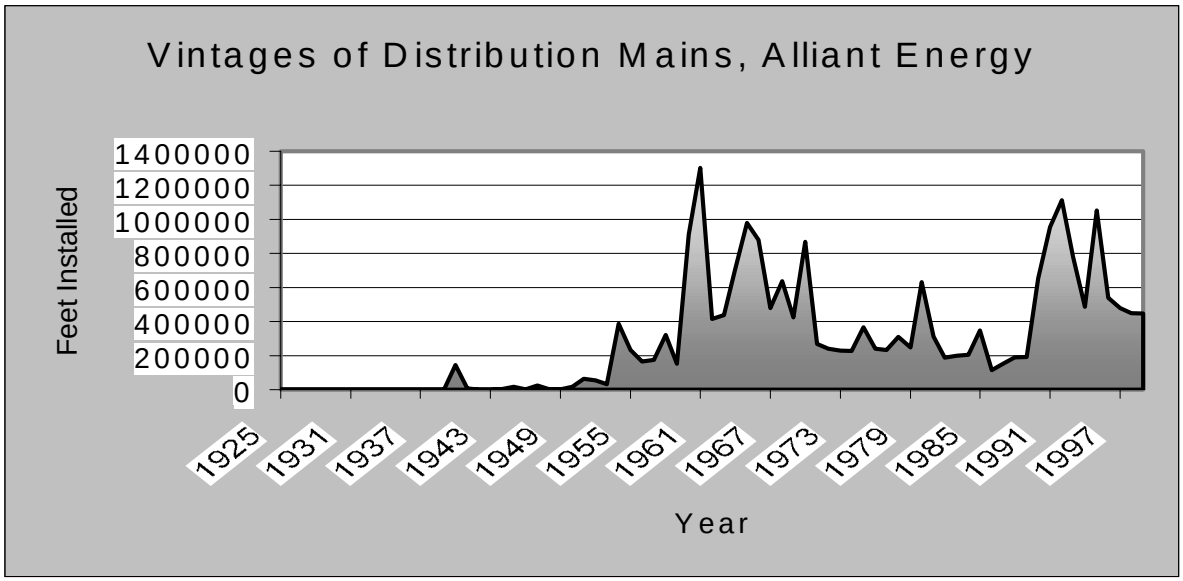


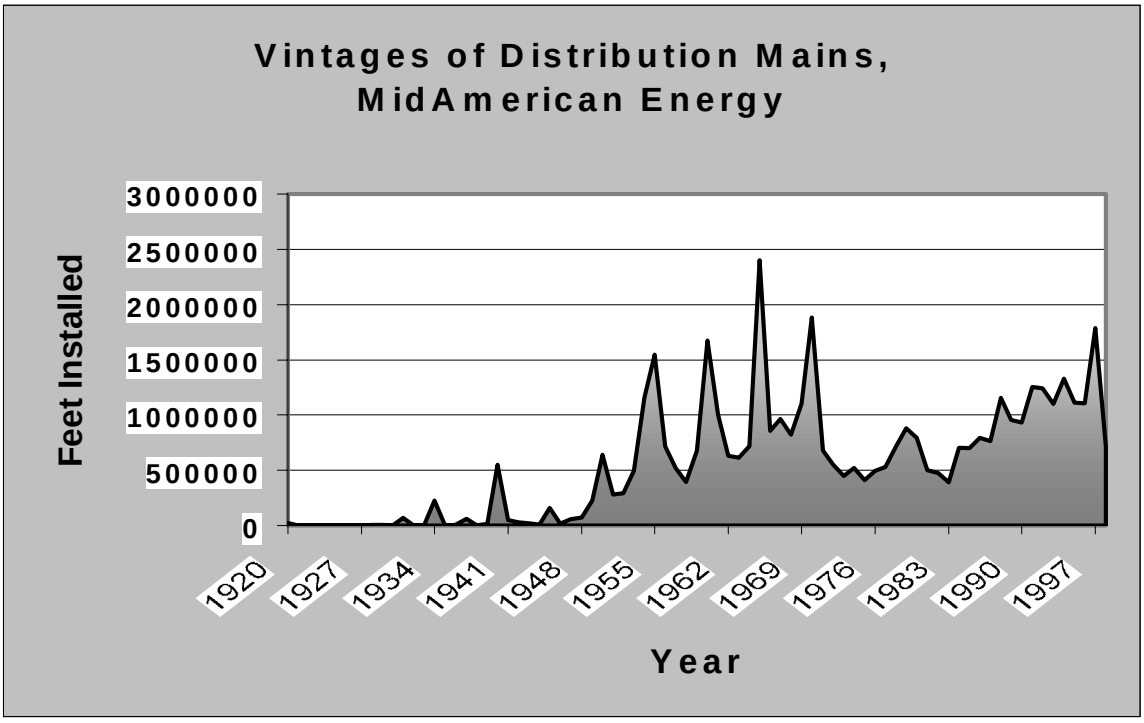
2.8.3. Vintages of Distribution Main, Iowa IOUs

Figure 2-13. Set of Four Charts, pp. 37-8). Data on Vintages of Distribution Mains for Iowa IOUs









Note: Accounting records were used to determine the ages of facilities in the figures. Due to accounting procedures, these figures may underestimate the actual ages of facilities that remain in service.

3.0. Customer Service

Customer service primarily refers to billing, metering, and customer contact. This section of the report provides a brief description of recent changes in billing and metering.

3.1. Billing Systems

Alliant: Alliant is considering implementation of a front-end enterprise application that will allow it to access data, regardless of the legacy system that houses the data. Once the front-end implementation is in place, this tool will enable Alliant to select and install customer billing applications/systems to meet billing needs in a changing industry. Alliant Energy will begin the functional analysis early next year, with system selection and implementation to follow. Alliant's current systems are able to bill for gas, electric and steam commodity, and a minimal level of other services.

MidAmerican: MidAmerican implemented a new Customer Service System (CSS) in November 1998. The new system replaced legacy systems. The conversion process took approximately two years and was a collaborative effort between Anderson Consulting, MidAmerican's Information Technology Department, and subject matter experts from MidAmerican's customer service, accounting, and other departments. CSS has the capability of billing gas, electricity, lighting, and any non-service product offered by MidAmerican. CSS bills over 1.2 million service points each month and has the ability to bill several times that amount.

Peoples: The UtiliCorp system is a "real time" system. Customer accounts are updated immediately when transactions are completed. On the system, a customer will retain their own unique account number as long as they are on the USU system. As the customer moves, his/her pay history, credit history go with the account. UtiliCorp can bill multiple utility types on one account (i.e., both gas and electric). Customers can have multiple service agreements on one account.

United Cities: United Cities uses a single unified system, its Banner/CIS system, for billing. This newly installed customer information system, which also addressed Y2K issues present in previous customer information systems, allows United Cities to use one system to perform customer accounts receivables and billing, remittance processing, as well as customer inquiry and support. It also accommodates an expanded billing format.

Municipals: Consumers of Iowa's municipals are billed utilizing either a paper bill mailed within an envelope or a postcard type bill. The systems supporting these billing processes vary from utility to utility. Some utilities utilize their own billing systems and processes while other utilities use a wide variety of systems and processes. Electronic billing is an option that is being investigated by some municipals.

3.2. Metering

Alliant: The Alliant meter reading functions are managed as part of its customer care organization. This organization houses customer information and manages customer contact. Alliant is currently assessing and expanding the use of metering technology. Alliant currently uses hand-held devices for meter reading and has implemented some pilot automated meter reading programs. A web-enabled information center at the customer premise is an option being explored.

MidAmerican: MidAmerican has approximately 511,000 meters installed within Iowa. Approximately 95 percent of those meters are residential installations. Meter information is collected through various technologies such as handheld computers and radio technology. MidAmerican presents meter information on the Internet via a web site and is looking to expand those capabilities. Additionally, automated meter reading (AMR) technology has been studied and will be pursued if a solid business case presents itself.

Peoples: Peoples currently reads meters utilizing an Itron meter reading system that was upgraded in the second half of 1999 to be

Y2K compliant. Peoples normally reads meters every month, except for unusual circumstances. Currently a meter reading pilot program allows the estimate of meter reads on a bi-monthly basis during the months of May through November.

United Cities: United Cities currently reads meters utilizing an Itron meter reading system.

Municipals: A variety of meter reading methodologies, including hand-held and automated meter reading systems are in place among municipal utilities.

Glossary of Terms

Aggregation. The collection of units (commodity, transportation, distribution, and/or services) into a whole or larger piece of the whole. The resulting group of units is then sold to another party, either in wholesale or retail transactions.

ANR Pipeline Company (ANR). A FERC regulated company with interstate natural gas transmission pipelines that serve Iowa and other states.

Automated Meter Reading (AMR). "Real time" monitoring of natural gas quantities/characteristics as the gas passes through a specific location.

British Thermal Unit (Btu). The quantity of heat necessary to raise the temperature of one pound of water one degree Fahrenheit from 58.5 to 59.5 degrees Fahrenheit under standard pressure of 30 inches of mercury at or near its point of maximum density. One Btu equals 252 calories, (gram), 778 foot-pounds, 1055 joules or 0.293 watt hours.

Bundled Service. Natural gas sold on an as-needed basis, without prior scheduling to the LDC at FERC-approved rates. Prior to implementation of various transportation programs, this constituted all gas delivered to a LDC.

Commodity. Natural gas, the product that is collected and made available for shipment/delivery.

Cubic Foot. A common unit of measurement of gas volume. It is the amount of gas required to fill a volume of one cubic foot under stated conditions of temperature pressure, and water vapor.

Curtailment. Curtailment of gas service is a method to balance a utility's natural gas requirements with its natural gas supply. Usually there is a hierarchy of customers for a curtailment plan. Customers may be required to partially cut back or totally eliminate their take of gas depending on the severity of the shortfall between gas supply and demand and the customers' position in the hierarchy.

Delivery. The transmission and distribution of gas, from the processing point to the point of delivery to a consumer.

Department of Energy (DOE). The United States Department of Energy is a department of the United States government consisting of the Office of the Secretary of Energy and the Federal Energy Regulatory Commission. It was created on August 4, 1977 as a result of the Department of Energy Organization Act of 1977. There are many subdivisions within the DOE, but the Economic Regulatory Administration and Energy Information Administration are two groups which have significant bearing on gas utility operations.

Department of Transportation (DOT). The United States Department of Transportation is a department of the United States government. It is important to the natural gas industry in that it (through its Office of Pipeline Safety) is responsible for the regulation of [safe] pipeline transportation of natural (flammable, toxic, corrosive) gas and other gases as well as the transportation and storage of liquefied natural gas (LNG).

Dry Gas. Gas whose water content has been reduced by a dehydration process and which contains little or no hydrocarbons commercially recoverable as liquid product.

Energy Information Administration (EIA). The Energy Information Administration is the statistical information collection and analysis branch of the Department of Energy.

Environmental Protection Agency (EPA). The Environmental Protection Agency is an agency of the United States government. It was created in 1970 to coordinate protection of the environment by the systematic abatement and control of pollution; and through integration of research monitoring, standard setting, and enforcement activities.

Federal Energy Regulatory Commission (FERC). The FERC is an agency of the United States government that regulates the interstate transmission of natural gas (including interstate pipeline siting) and producer sales of natural gas in intrastate commerce.

Firm Service. Service offered to customers (regardless of Class of Service) under schedules or contracts that anticipate no interruptions. Certain firm service contracts may contain clauses that permit unexpected interruption [see definition of curtailment above] in case the supply to residential customers is threatened during an emergency.

Gas Industry Standards Board (GISB). An organization formed to create standard terms and conditions for natural gas transactions.

Henry Hub. A pipeline interchange, located in Vermilion Parish, Louisiana, which serves a defined delivery point in the process of defining pricing of natural gas futures contracts.

Interchangeability. A measure of the degree to which combustion characteristics of one gas are compatible with those of another gas. Two gases are said to be interchangeable when one gas may be substituted for the other gas without interfering with the operation of gas burning appliances or equipment.

Interruptible Service. Low priority service offered to customers under schedules or contracts which anticipate and permit interruption on short notice, generally in peak-load seasons, by reason of the claim of firm service customers and higher priority users. Gas is available at any time of the year if the supply is sufficient and the supply system is adequate.

Investor-Owned Utility (IOU). A public utility owned by investors and serving natural gas.

Liquefied Natural Gas (LNG). Natural Gas which has been liquefied by reducing its temperature to minus 260 degrees Fahrenheit at atmospheric pressure. It remains a liquid at –116 degrees Fahrenheit and 673 psig. In volume it occupies 1/6000 of that of the vapor at standard conditions.

Local Distribution Company (LDC). A company which obtains the major portion of its gas operating revenues from the operation of a retail gas distribution system, and which operates no transmission system other than incidental connections within its own system or to the system of another company.

Mobile Data Terminal. A computer, usually vehicle mounted, which is used by a utility's field operating and/or customer service personnel. The terminal is generally used for receiving, accepting, providing status updates, and completing service orders and/or construction orders. The terminal may also be used for other generally available computing functions (e.g., e-mail, mapping, etc.).

Municipal Utility. A city enterprise engaged in the production, delivery, service, or sales of energy established pursuant to Code of Iowa Chapter 388.

Natural Gas. A naturally occurring mixture of hydrocarbon and non-hydrocarbon gases found in porous geologic formations beneath the earth's surface, often in association with petroleum. The principal constituent is methane.

Natural Gas Act of 1938. A federal law giving the FERC (as successor to the Federal Power Commission) jurisdiction over companies engaged in interstate sale (for resale) or transmission of natural gas.

Natural Gas Pipeline Company of American (NGPL). A FERC regulated company with interstate natural gas transmission pipelines that serve Iowa and other states.

Natural Gas Pipeline Safety Act (NGPSA). A federal law authorizing the U. S. DOT to regulate [safe] pipeline transportation of natural (flammable, toxic, or corrosive) gas and other gases as well as the transportation and storage of LNG.

New York Mercantile Exchange (NYMEX). The commodities futures exchange/ trading forum for energy, and precious metals, at which natural gas is among the commodities whose futures and options contracts are traded.

Northern Border Pipeline Company (NBPL). A FERC regulated company with interstate natural gas transmission pipelines that serve Iowa and other states.

Northern Natural Gas (NNG). A FERC regulated company with interstate natural gas transmission pipelines that serve Iowa and other states.

Office of Pipeline Safety (OPS). An agency of the United States government, under the Department of Transportation, that is responsible for the regulation of [safe] pipeline transportation of natural (flammable, toxic, or corrosive) gas and other gases as well as the transportation and storage of liquefied natural gas (LNG).

Option. A contract that gives the holder the right, but not the obligation, to purchase or sell the underlying commodity, which could be a futures contract, a swap, or the commodity itself.

Pipeline Quality Gas. A term used to designate a fuel gas (including natural gas itself) compatible with natural gas from pipelines. With respect to other gases (including synthetic pipeline gas), a gas that meets the specifications for methane interchangeability. [See definition of interchangeability above.]

Proven Reserves. An estimated quantity of natural gas that analysis of geologic and engineering data demonstrates with reasonable certainty to be recoverable in the future from known oil and gas reservoirs under anticipated economic and current operating conditions. Reservoirs that have demonstrated the ability to produce by either actual production or conclusive formation test are considered proved.

Public Utility. Any person, partnership, business association, or corporation, domestic or foreign, owning or operating any facilities for furnishing natural gas by piped distribution system to the public for compensation.

Rate Regulated Utility: A public utility furnishing natural gas services (to not less than 2,000 customers) to the public for compensation and subject to rate and service jurisdiction of the Board pursuant to Code of Iowa Chapter 476.

Remediation. The process of remedying (as used in this report) waste disposal from the process of manufacturing gas, which [disposal] was accomplished in ways that are now inconsistent with environmental laws.

Retail. The sale of commodities (i.e., natural gas) and services to consumers.

Societal Test. An economic test comparing present values of utility energy efficiency program costs, the participants' costs, and any increased utility supply costs to the utility avoided supply and energy costs including externalities.

Therm. A unit of heating value equivalent to 100,000 British thermal units.

Transportation Service. The act of moving gas from a receipt point to a delivery point pursuant to a contract between the shipper and the transporter. Transportation services can be contracted for on either a firm or interruptible basis. [See definitions of firm service and interruptible service above.]

Unbundling. The separation of the various components of gas sales-commodity, storage, transmission, delivery, etc. into ala carte menus of services from which a customer(s) may choose only those desired.

Wet Gas. Wet natural gas is unprocessed natural gas or partially processed natural gas produced from strata containing condensable hydrocarbons.

Sources of definitions include:
American Gas Association, "Glossary for the Gas Industry," Sixth Edition,
Natural Gas Intelligence, "Natural Gas Glossary" Revised, April 1994.

List of Acronyms

AMR	Automated Meter Reading
ANR	American Natural Resources
Btu	British Thermal Unit
Ccf	Hundred Cubic Feet
DOE	United States Department of Energy
DOT	United States Department of Transportation
Dth	Dekatherm
EIA	Energy Information Administration
EPA	United States Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
GISB	Gas Industry Standards Board
IAC	Iowa Administrative Code
IAMU	Iowa Association of Municipal Utilities
IJUMP	Iowa Joint Utility Management Program
IUB	Iowa Utilities Board
IOU	Investor-owned Utility
IES	IES Utilities Inc.
LDC	Local Distribution Company
LNG	Liquefied Natural Gas
LPG	Liquefied Propane Gas
Mcf	Thousand Cubic Feet
MDT	Mobile Data Terminal
MMBtu	Million British Thermal Units
MMcf	Million Cubic Feet

NBPL	Northern Border Pipeline Company
NGA	Natural Gas Act
NGPL	Natural Gas Pipeline Company of America
NGPSA	Natural Gas Policy Safety Act
NNG	Northern Natural Gas
NYMEX	New York Mercantile Exchange
OPS	Office of Pipeline Safety
REC	Rural Electric Cooperative
RSPA	Resource Conservation and Recovery Act

Appendix A
List of Iowa Towns Served by Municipal Natural Gas Utilities

1. **Bedford**
2. **Bloomfield**
3. **Brighton**
4. **Brooklyn**
5. **Cascade**
6. **Cedar Falls**
7. **Clearfield**
8. **Coon Rapids**
9. **Corning**
10. **Emmetsburg**
11. **Everly**
12. **Fairbank**
13. **Gilmore City**
14. **Graettinger**
15. **Guthrie Center**
16. **Harlan**
17. **Hartley**
18. **Hawarden**
19. **Lake Park**
20. **Lamoni**
21. **Lenox**
22. **Lineville**
23. **Lorimar**
24. **Manilla**
25. **Manning**
26. **Montezuma**
27. **Morning Sun**
28. **Moulton**
29. **Osage**
30. **Prescott**
31. **Preston**
32. **Remsen**
33. **Rock Rapids**
34. **Rolfe**
35. **Sabula**
36. **Sac City**
37. **Sanborn**
38. **Sioux Center**
39. **Tipton**
40. **Titonka**
41. **Wall Lake**
42. **Waukee**
43. **Wayland**
44. **Wellman**
45. **West Bend**
46. **Whittemore**
47. **Winfield**
48. **Woodbine**

Note: Allerton is served by Allerton Gas Company, a privately owned gas public utility. Because of Allerton Gas Company's small size and the fact that it is not rate regulated, it's statistics are included with those of municipally owned utilities in this report.