

Corporate Realignment and Investments in the Interstate Natural Gas Transmission System

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This article is adapted from the Energy Information Administration (EIA) report *Corporate Realignments and Investments in the Interstate Natural Gas Transmission System* published on the EIA web site at: <<http://www.eia.doe.gov>>. The report examines the financial characteristics of current ownership in the natural gas pipeline industry and of the major U.S. interstate pipeline companies that transported the bulk of the natural gas consumed in the United States between 1992 and 1997, focusing on 14 parent corporations. It also examines the near-term investment needs of the industry and the anticipated growth in demand for natural gas during the next decade.

Corporate ownership of interstate natural gas pipeline companies has changed substantially since the Federal Energy Regulatory Commission's (FERC) issuance of Order 636 in 1992. Corporations with strong ties to the electric power industry have gained significant ownership of natural gas pipelines while corporations heavily engaged in natural gas exploration and production have made some of the largest divestitures of pipeline assets. Fourteen corporations currently account for over 85 percent of interstate natural gas pipeline activity. Although some changes in pipeline ownership may be expected in the future, these 14 corporations will be the source of a substantial portion of the future capital expenditures for interstate natural gas pipelines and associated facilities.

The 14 parent corporations discussed in this report are: Coastal Corporation; Columbia Energy Group; Consolidated Natural Gas; Duke Energy Corporation; El Paso Energy; Enron Corporation; KN Energy Corporation; MDU Resources Group; Northern States Power Company; PG&E Corporation; Reliant Energy Corporation; Questar Corporation; Sonat Corporation; and The Williams Companies, Incorporated.

This report reviews the financial characteristics of current ownership within the natural gas pipeline industry and of the major interstate pipelines that transport the bulk of natural gas consumed in the United States between 1992 and 1997. It looks at how these corporations have changed in recent years and how they have reformed themselves to meet the demands of doing business in today's marketplace. It also includes an analysis of the near-term investment needs of the industry and the anticipated growth in demand for natural gas over the next decade. The potential natural gas transmission investment capabilities in the near term for the 14 parent

corporations relative to the investment potential of large U.S. corporations are examined.

Main points and findings of the report include:

- ! Companies with significant involvement in electric power have been generally making the largest investments in interstate natural gas pipelines.
- ! Energy marketing (natural gas and electric) is an important enterprise within the 14 pipeline parent corporations.
- ! Within the 14 parent corporations, the lines of business that include natural gas pipelines have been more profitable than the parent corporations' other lines of business on average.
- ! As measured by revenue and assets, the 14 parent corporations grew nearly twice as fast as other large U.S. corporations (represented by the Standard & Poor's Industrials) between 1992 and 1997. However, earnings growth and stock market valuations of the 14 parent corporations have been well below those of other U.S. corporations overall.

Regulatory and Market Developments

In the 1990's, a number of regulatory and energy market developments profoundly affected the operations and structure of the natural gas transmission industry. Primary among these developments was the issuance of the Federal Energy Regulatory Commission's Order 636 in April 1992 which became effective on November 1, 1993. Order 636 required interstate pipeline companies to unbundle their sales and transportation services and revised how rates are determined for transportation services. While the Order had the effect of reducing pipeline revenues (although not necessarily profitability) because interstate pipelines

no longer were sellers of natural gas, the revised rate design allowed them to collect most of their costs in fixed demand charges, which reduced the risk of recovering these costs. Order 636 also established a release (reseller) market for transportation and storage capacity, which provided a mechanism for the marketing of unused or underutilized pipeline capacity.¹

These measures, among others, fostered competition in the natural gas commodity market, paved the way for the gradual introduction of competition into the retail purchase of natural gas, and permitted the creation of new transportation and marketing services that have improved the efficiency of the overall natural gas transportation process. Consequently, the interstate pipeline segment of the natural gas industry in the United States has instituted a number of major changes in its operational and business practices over the past decade. In particular, the pipeline industry has significantly changed the transaction processes and mechanisms for transportation services.² FERC Order 636 restructuring has also had a major impact upon the financial and investment profiles of almost all of the major interstate natural gas pipeline operating in the United States today. The restructuring of the transportation industry prompted some pipeline companies to revise their marketing strategy, which probably accounts, in part, for the increased level of mergers and acquisitions within the industry in recent years.

Additionally, the outlook for further and substantial growth in U.S. natural gas demand became more optimistic in the 1990's, lending support to new investments in gas transmission and related facilities to meet expected demand growth in the near-term. The pace of deregulation in U.S. electricity markets is also pushing the gas transmission industry into new operational and ownership configurations. This recent development has created expectations of complementarities and new efficiency gains between electric generation and marketing, on the one hand, and natural gas transport and marketing, on the other.

Demand Growth and Investment

Recent Trends

Between 1992 and 1997, natural gas consumption grew 12 percent, from 19.5 trillion cubic feet (Tcf) to 22.0 Tcf. In 1992, the interstate natural gas pipelines that were owned by the 14 parent corporations (in 1997) delivered 33.3 Tcf of gas through their systems while in 1997 that

total was 22 percent higher, reaching 40.7 Tcf.³ Revenues, however, fell dramatically as pipeline services no longer included revenues from the sale of natural gas, but only transportation revenues, due to Order 636. For a select group of major interstate pipeline companies (representing 88 percent of industry revenues), overall pipeline revenues fell \$7.3 billion (a 41-percent decline) while volumes delivered increased by 5 Tcf (Table SF1).⁴

Since 1992, the last year before the effects of FERC Order 636 were felt on the industry, the investment base in natural gas transmission for the parent corporations increased 85 percent (Table SF2). (As Table SF2 shows, this growth was mainly due to pipeline acquisitions and mergers.) However, the investment base for natural gas pipelines overall, regardless of changes in ownership, declined a slight 3 percent. Despite this lack of growth, investment in complementary facilities grew. Between 1992 and 1997, more than 35 natural gas market centers/hubs were set up across North America to offer trading, transshipment and other services to customers demanding more flexible access to supplies and/or markets. In addition, during the same period, the underground storage market also expanded substantially, as 27 new sites were developed (many in association with market centers) and overall underground storage working gas capacity increased about 6 percent.

Near-Term Developments

While at least 76 new and expansion pipeline projects have been proposed for development in 1999 and 2000, calling for an investment of more than \$8 billion, regulatory authorities had not yet approved all of these projects as of mid-year 1999. It is likely that some proposed projects will eventually be withdrawn due to competitive market pressures. In some instances, several projects are competing for the same markets or the same supply sources.

An example of this latter situation is the drive to provide new pipeline capacity between the Midwestern and the Northeastern United States.⁵ At least three major new routes have been proposed. If all three proposed routes were approved and completed, by 2001 as much as 2.1 billion cubic feet per day of additional natural gas pipeline capacity could enter the Northeast region from sources originating in the Midwestern United States. Much of this new development is premised on the anticipated increase in the demand for natural gas from planned new gas-fired electrical generation plants.⁶ However, while a substantial number of new gas-fired electric plants have

Table SF1. Revenue, Expenses, and Deliveries of Selected Major Interstate Natural Gas Pipelines, 1997 and 1992

Parent/Pipeline Name	Fortune 500 Ranking	Revenue (Million Dollars)			Expenses (Million Dollars)			Total Gas Deliveries (Billion Cubic Feet)		
		1997	1992	Percent Change	1997	1992	Percent Change	1997	1992	Percent Change
		1997	1992	Percent Change	1997	1992	Percent Change	1997	1992	Percent Change
Coastal Corporation	158									
ANR Pipeline Co		660	1,176	-44	370	787	-53	4,172	2,374	76
Colorado Interstate Gas Co		275	449	-39	153	289	-47	907	677	34
Great Lakes Gas Transmission Co (50% ownership)		270	244	11	42	34	22	987	900	10
High Island Offshore Pipeline Co		45	51	-12	17	28	-40	343	390	-12
U-T Offshore Pipeline Co		4	7	-47	2	3	-18	123	191	-35
Wyoming Interstate Co Ltd		19	16	19	3	2	57	214	96	123
Columbia Energy Group Inc										
Columbia Gas Transmission Corp		677	1,305	-48	333	1,001	-67	3,529	1,603	120
Columbia Gulf Transmission Co		136	185	-26	79	122	-35	3,929	1,447	171
Consolidated Natural Gas Co	278									
CNG Transmission Co		525	684	-23	218	465	-53	1,309	868	57
Duke Energy Corporation	81									
Algonquin Gas Transmission Co ^a		152		--	52		--	346		--
Panhandle Eastern Pipeline Co ^{a,b}		348		--	201		--	747		--
Texas Eastern Transmission Corp ^{ab}		928		--	460		--	1,568		--
Trunkline Gas Co ^{a,b}		168		--	75		--	984		--
El Paso Energy Co	281									
East Tennessee Gas Co ^a		52		--	15		--	121		--
El Paso Natural Gas Co		493	971	-49	181	711	-74	1,373	1,547	11
Midwestern Gas Transmission Co ^a		18		--	8		--	163		--
Mojave Pipeline Co		48	31	5	9	52	63	110	61	80
Tennessee Gas Pipeline Co ^a		774		--	413		--	2,362		--
Enron Corporation	57									
Florida Gas Transmission Co (50% ownership)		310	259	20	85	198	-57	538	371	45
Northern Natural Gas Co		508	1,038	-51	187	770	-76	1,805	1,954	-8
Transwestern Gas Pipeline Co		157	211	-25	50	96	-48	535		--
KN Energy Corporation	--									
KN Interstate Gas Co		80	319	-75	29	254	-89	226	238	5
KN Wattenberg Transmission Ltd		14	N/A	--	10	N/A	--	64	N/A	--
MDU Resources Group Inc	--									
Williston Basin Interstate Pipeline Co		72	99	-27	34	67	-49	108	104	4
Northern States Power Co	498									
Viking Gas Transmission Co		20	61	-69	9	55	-84	172	141	22
PG&E Corporation	85									
PG&E Gas Transmission Co - NW		233	680	-66	59	679	-91	992	516	92
Reliant Energy Corp	230									
Mississippi River Transmission Co		65	230	-72	30	189	-84	393	407	-3
Reliant Energy Gas Transmission Co		225	315	-29	109	239	-54	875	698	25
Questar Corporation	--									
Questar Pipeline Co		107	211	-49	39	146	-73	331	485	-32
Overthrust Pipeline Co		4	5	-23	1	1	-5	45	29	55
Sonat Corporation	352									
Sea Robin Pipeline Co		25	32	-22	13	15	-10	285	290	2
Southern Natural Gas Co		521	689	-24	328	504	-35	928	1,284	-28
Williams Companies, Inc	337									
Kern River Transmission Co		189	128	49	23	18	31	290	185	57
Northwest Pipeline Co		275	398	-31	89	230	-61	722	1,838	-61
Texas Gas Transmission Co ^a		318		--	181		--	2,663		--
Transcontinental Gas Pipeline Co ^a		1,445		--	1,018		--	3,601		--
Williams Gas Pipeline - Central		181	333	-52	100	260	-61	374	740	49
Subtotal: Pipelines owned by parent in both 1992 and 1997		10,597	10,127	5	5,025	7,168	-30	38,234	19,434	97
Subtotal: Pipelines acquired 1992-1997		0	7,729	--	0	5,901	--	0	13,838	--
Total		10,597	17,856^c	-41	5,025	13,069^c	-62	38,234	33,272^c	15

^a Pipeline was not part of the parent corporation in 1992.

^b Pipeline was sold or spun off after 1997 and is no longer a part of the parent corporation.

^c The data show that the majority of the growth in natural gas pipeline's revenue, expenses, and total gas deliveries were due almost entirely to acquisitions and mergers by parent corporations between 1992 and 1997. Revenue including acquisitions and mergers actually declined 41 percent compared to a 5-percent increase when these same transactions were excluded.

Notes: Table is not inclusive of all U.S. interstate pipelines operating in 1992 and 1997. N/A denotes not applicable. -- denotes not meaningful.

Sources: **Fortune 500 Ranking, Revenue and Expenses:** Compustat PC Plus, a service of Standard & Poor's, Inc. **Total Gas Deliveries:** Federal Energy Regulatory Commission Forms 2 & 2A, "Annual Report of Major/Minor Natural Gas Companies" (1992 and 1997).

Table SF2. Operating Income, Capital Expenditures, and Assets of Selected Major Interstate Natural Gas Pipelines, 1997 and 1992
(Million Dollars)

Parent/Pipeline Name	Operating Income			Capital Expenditures			Assets		
	1997	1992	Percent	1997	1992	Percent Change	1997	1992	Percent
Coastal Corporation									
ANR Pipeline Co	153	191	-20	66	42	56	2,951	2,937	1
Colorado Interstate Gas Co	68	87	-22	13	33	-60	885	855	4
Great Lakes Gas Transmission Co (50% ownership)	109	103	6	33	48	-32	1,658	1,335	24
High Island Offshore Pipeline Co	15	12	31	2	c	115	369	369	0
U-T Offshore Pipeline Co	1	1	-68	c	1	-11	62	62	0
Wyoming Interstate Co Ltd	7	5	33	c	1	-93	227	177	28
Columbia Energy Group Inc									
Columbia Gas Transmission Corp	164	196	-16	35	29	23	3,002	2,614	15
Columbia Gulf Transmission Co	18	26	-31	8	2	234	1,237	1,157	7
Consolidated Natural Gas Co									
CNG Transmission Co	142	99	43	9	30	-71	2,202	1,886	17
Duke Energy Corporation									
Algonquin Gas Transmission Co ^a	49	--	--	13	--	--	754	--	--
Panhandle Eastern Pipeline Co ^{a,b}	92	--	--	9	--	--	1,135	--	--
Texas Eastern Transmission Corp ^{a,b}	223	--	--	42	--	--	4,441	--	--
Trunkline Gas Co ^{a,b}	34	--	--	49	--	--	1,139	--	--
El Paso Energy Co									
East Tennessee Gas Co ^a	16	--	--	7	--	--	239	--	--
El Paso Natural Gas Co	172	123	40	67	86	-22	2,041	2,395	-15
Midwestern Gas Transmission Co ^a	4	--	--	2	c	--	105	--	--
Mojave Pipeline Co	23	17	33	c	0	--	241	241	0
Tennessee Gas Pipeline Co ^a	122	--	--	91	--	--	4,643	--	--
Enron Corporation									
Florida Gas Transmission Co (50%)	109	23	282	22	7	212	1,846	728	153
Northern Natural Gas Co	74	73	1	250	18	1,318	2,280	2,510	-9
Transwestern Gas Pipeline Co	56	54	4	41	4	1,028	794	1,019	-22
KN Energy Corporation									
KN Interstate Gas Co	25	28	11	160	26	517	516	548	6
KN Wattenberg Transmission Ltd	2	N/A	N/A	1	N/A	N/A	51	N/A	N/A
MDU Resources Group Inc									
Williston Basin Interstate PI Co	17	16	10	1	3	-68	241	224	8
Northern States Power Co									
Viking Gas Transmission Co	5	3	59	1	1	19	116	80	45
PG&E Corporation									
PG&E Gas Transmission Co - NW	73	-9	--	14	550	-97	1,479	449	229
Reliant Energy Corp									
Mississippi River Transmission Co	13	19	-31	2	1	71	495	470	5
Reliant Energy Gas Transmission Co	56	55	1	13	16	-19	1,083	1,270	-15
Questar Corporation									
Questar Pipeline Co	35	35	3	23	16	53	459	444	3
Overthrust Pipeline Co	1	1	-68	0	0	--	64	63	2
Sonat Corporation									
Sea Robin Pipeline Co	6	10	-39	1	1	38	283	252	12
Southern Natural Gas Co	83	88	-5	57	3	1,619	1,745	1,530	14
Williams Companies, Inc									
Kern River Transmission Co	92	78	17	1	17	-91	1,041	983	6
Northwest Pipeline Co	92	81	13	19	315	-94	1,461	758	93
Texas Gas Transmission Co ^a	61	--	--	8	--	--	1,318	--	--
Transcontinental Gas Pipeline Co ^a	190	--	--	17	--	--	4,815	--	--
Williams Gas Pipeline - Central	34	36	-6	26	14	84	834	790	6
Subtotal: Pipelines owned by parent corporations in both 1992 and 1997	2,436	1,451	68	1,103	1,264	-13	48,252	26,146	85
Subtotal: Pipelines acquired 1992-1997	0	1,212	--	0	273	--	0	23,456	--
Total	2,436	2,663^d	0	1,103	1,537^d	-28	48,252	49,602^d	-3

^a Pipeline was not a part of the parent corporation in 1992.

^b Pipeline was sold or spun off after 1997 and is no longer a part of the parent corporation.

^c Less than half of a million dollars.

^d The data show that the majority of the growth in natural gas pipeline's operating income, capital expenditures, and assets were due almost entirely to acquisitions and mergers by parent corporations between 1992 and 1997. In particular, assets including acquisitions and mergers declined 3 percent compared to an 85-percent increase when these same transactions were excluded.

Notes: Table is not inclusive of all U.S. interstate pipelines operating in 1992 and 1997. N/A denotes not applicable. -- denotes not meaningful.

Sources: Federal Energy Regulatory Commission, FERC Forms 2 & 2A, "Annual Report of Major/Minor Natural Gas Companies" (1992 and 1997).

been proposed to be built between 2000 and 2003 in the Northeastern region of the United States,⁷ it is impossible to predict how many of the currently proposed plants will actually be built. The changing nature of power generation economics under restructuring, and changes in the economy itself over this period, will certainly bring about some revisions to current plans.

Long-Range Outlook

Projections of natural gas demand growth in the first two decades of the 21st century (between 2001 and 2020) suggest that gas consumption could reach between 30 and 35 Tcf by the end of the period.⁸ To meet this potential level of demand, it is estimated that an investment of between \$40 and \$80 billion in new pipeline and/or expansion of current transmission infrastructure would need to occur.⁹ Indeed, the Energy Information Administration (EIA) estimates that natural gas pipeline investments in the United States could exceed a combined total of \$8 billion during 1999 and 2000 (Figure SF1). The largest growth in capacity is expected to occur primarily due to the increased use of natural gas in the generation of electrical power. In addition, the growth in industrial demand is expected to be a secondary contributor to the growth in capacity.¹⁰

Corporate Changes in the Natural Gas Transmission Sector

Mergers and Acquisitions

The corporate makeup of the natural gas pipeline industry, subsequent to Order 636, has changed. A number of pipeline companies were involved in acquisitions or mergers as major natural gas industry players developed new marketing strategies and/or corporately aligned themselves to better respond to the possible outcomes of Order 636 restructuring. In several cases, for example, El Paso Energy Corporation and The Williams Companies, one of the apparent primary aims of the merger was to extend the natural gas business unit nationwide.¹¹ In others, for example, PG&E Corporation, the apparent aim was to set up an integrated energy business (Figure SF2) which would extend the marketing of energy as a commodity, regardless of fuel type or method of production.¹²

Most of the growth in the natural gas pipelines operations of the 14 parent corporations included in this review was accomplished through mergers and acquisitions. The total natural gas transmission assets

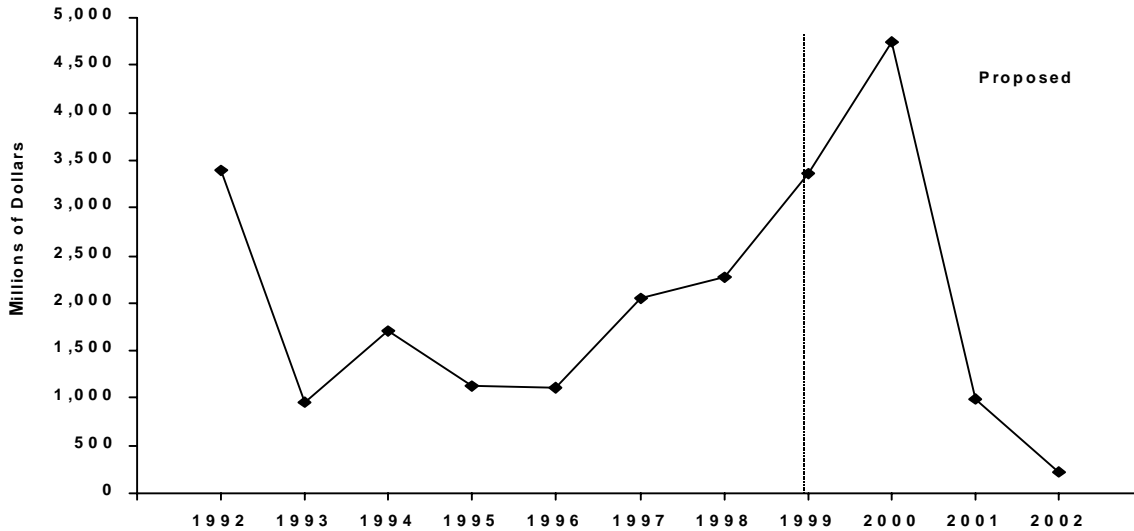
owned by the 14 parent corporations increased by 85 percent between 1992 and 1997 (Table SF2). Nearly 90 percent of this growth is attributable to the acquisition of natural gas pipeline assets not owned by the parent corporations in 1992, the last year before full implementation of Order 636. Three parent corporations were primarily responsible for most of these acquisitions: Duke Energy, El Paso Energy, and The Williams Companies.

Acquisition of additional interstate pipeline operations allowed these parent corporations in particular (who controlled one or more pipelines already) to expand into new service territories or to strategically complement other parts of the corporate enterprise. For example, El Paso Energy Corporation's acquisition of Tenneco Energy Corporation in December 1996 brought three more interstate pipelines (Tennessee Gas Pipeline, Midwestern Gas Transmission and East Tennessee Gas Company) under its umbrella. This action extended its traditional service territory, located in the southwestern and western United States, to include the midwestern and eastern part of the United States. Transportation access to these markets also provided El Paso Energy's gas marketing subsidiary a vehicle to complement their national natural gas trading business and their delivery of natural gas to customers in these regions.

Likewise, The Williams Companies' purchase of Transco Energy Company (Transcontinental Gas Pipeline Company and Texas Gas Transmission Company) in May 1995 also expanded its transportation services to the midwestern and eastern parts of the United States. This merger also made The Williams Companies the largest transporter of natural gas in the nation. Duke Energy's acquisition of Pan-Energy Inc. in June of 1997 also brought with it a nationwide interstate system. In November 1998, however, Duke announced it was selling two of the former Pan-Energy interstate pipelines, Panhandle Eastern and Trunkline, to CMS Energy Corporation. Nevertheless, even with that sale, Duke Energy will still retain access to interstate natural gas transportation within its primary service territory, the east coast and the southeast region.

PG&E Corporation, which owns Pacific Gas and Electric Company, one of the largest distributors of electricity and natural gas in the United States, and a major pipeline serving California, extended its reach by acquiring Valero Energy's natural gas transmission assets in August 1997, along with several natural gas market centers located in west Texas. This action was undertaken to complement the growing presence of PG&E in the electric power generation sector in the

Figure SF1. National Levels of Interstate Natural Gas Pipeline Construction Expenditures, 1992-2002



Note: Estimated expenditures for several pipeline projects that extend between the U.S. and Canada only reflect that portion of project cost that is expected to be spent within the United States.

Source: **Estimated Capacity Additions 1999-2000:** Energy Information Administration, EIAGIS-NG Geographic Information System, Natural Gas Pipeline **Construction Database: Construction Expenditures:** Federal Energy Regulatory Commission, FERC Forms 2 & 2A, Annual Report of Major/Minor Natural Gas Companies, 1992-1997 and filings under CFR 157:20(c)(4); Energy Information Administration, EIAGIS-NG Geographic Information System, Natural Gas Pipeline Construction Database.

Southwest, particularly in the development of gas-fired generating capacity. Pacific Gas Transmission Company, a wholly owned subsidiary of PG&E (renamed PG&E Transmission - Northwest effective January 1, 1998) links the PG&E California market to gas supplies located in Canada.

Energy Marketing

As the interstate natural gas pipeline companies went from being sellers of gas to primarily transporters of the commodity during the latter 1980's and early 1990's,¹³ they had to reorganize their business operations. In many instances, parent corporations set up affiliated marketing subsidiaries (which were usually the pipeline's prior marketing unit) to manage the buying and selling of natural gas for customers who previously purchased gas directly from the pipeline (Figure SF2).

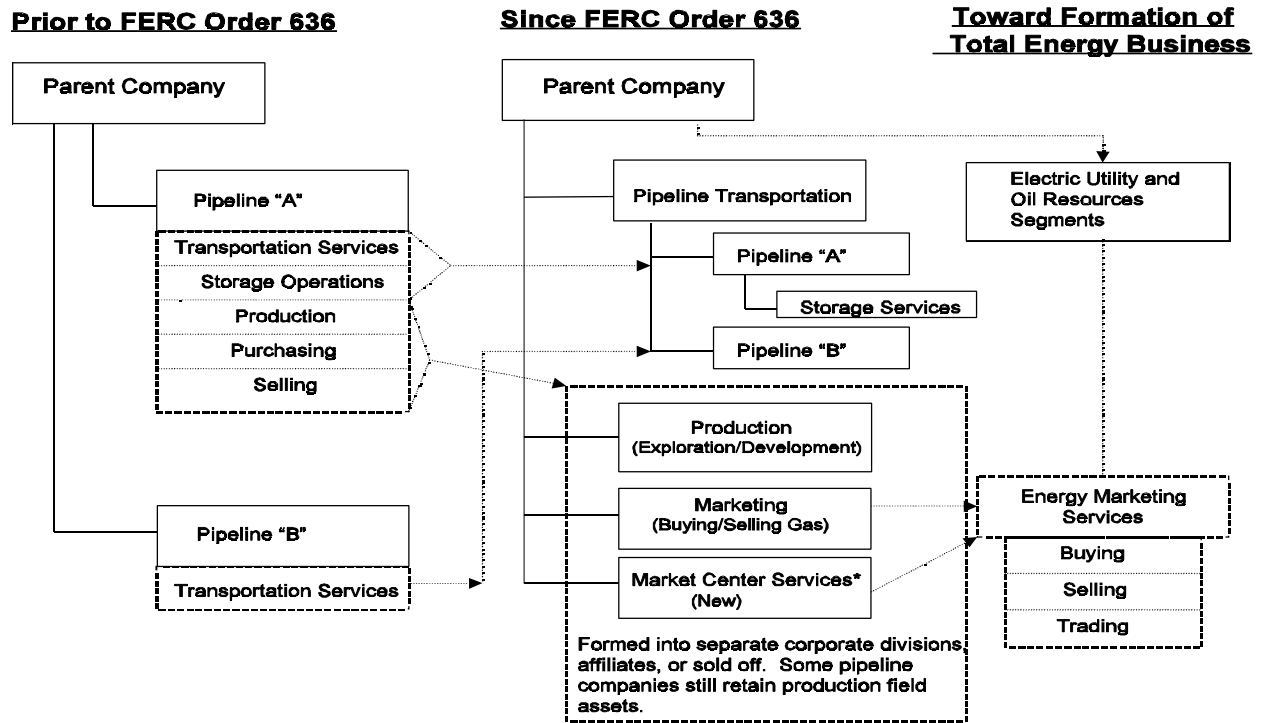
Today, these marketers have become major operations in their own right, many doing business well beyond the service territories of their pipeline affiliates. Enron Capital and Marketing Inc. (affiliated pipelines - Northern Natural Gas Company, Transwestern Pipeline Company, and Mid-Louisiana Gas Company), for instance, has become the largest natural gas marketer in

North America, transacting more than \$11 billion in business in 1997, and accounting for about 58 percent of Enron Corporation's total operating revenues. Similarly, Duke Energy Company (Texas Eastern Gas Transmission Corporation, Algonquin Gas Transmission Company) and El Paso Marketing Company (El Paso Energy Company, Tennessee Gas Pipeline Company, Midwestern Gas Transmission) today rank 5th and 16th, respectively, among *Natural Gas Intelligence's* list of major U.S. energy marketers.¹⁴

Parent Corporation Profiles

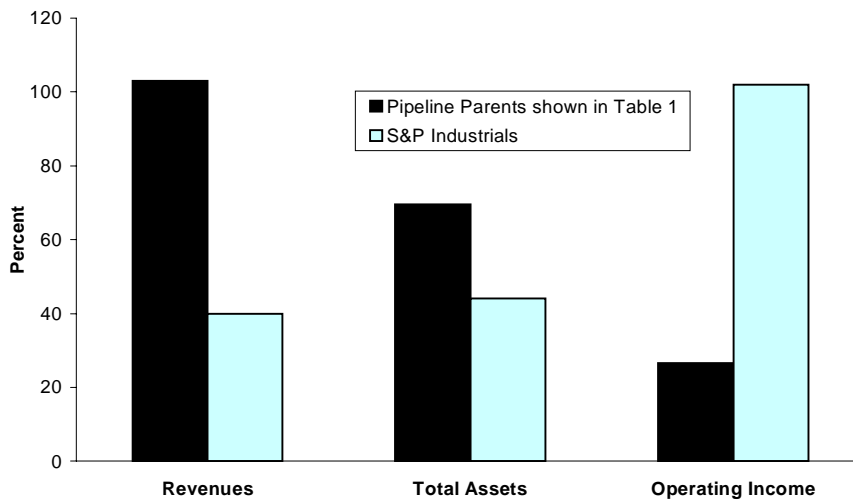
In contrast to the decline of interstate pipeline companies' revenue shown at the bottom of Table SF1 (the total including acquisitions and mergers), both the revenue and total assets (pipeline assets and other assets) of the 14 parent corporations owning these pipelines have been growing more rapidly in general since 1992 (parent corporations listed in bold on Table SF1). Further, these parent corporations' revenue and total assets have outpaced other large U.S. industrial companies' revenue and total assets from 1992 to 1997. Revenue growth for the 14 parent corporations was 104 percent (Figure SF3) compared to 40 percent for the

Figure SF2. Corporate Restructuring in the Natural Gas Interstate Pipeline Industry



Note: Some market center services may remain under the jurisdiction of the Federal Energy Regulatory Commission (FERC).
 Source: Energy Information Administration, Office of Oil and Gas.

Figure SF3. Growth Rates (from 1992 to 1997) for Pipeline Parent Corporations and the S&P Industrials



Source: Compustat PC Plus, a service of Standard & Poor's.

Table SF3. Parent Corporation Main Lines of Business

Parent Corporation	Primary SIC Code	Natural Gas and Related Natural Gas Operations					Electric & Related Electric Service Operations			
		Natural Gas			Other		Electric Services		Other Energy	
		Transmission & Storage ^a	Oil & Gas Production	Gathering & Processing	LDCs	Energy Marketing & Services	Generation, Transmission & Distribution	Energy Marketing & Services	Cogen-eration	Independent Power Plants
Coastal Corp.	4922	X	X	X		X			X	
Columbia Energy Group	4923	X	X	X	X	X		X	X	
Consolidated Natural Gas Co.	4923	X	X		X	X		X		
Duke Energy Corp.	4911	X		X		X	X	X		X
El Paso Energy Corp.	4922	X				X		X		
Enron Corp.	5172	X	X			X	X	X		
KN Energy Inc.	4923	X		X	X	X		X		
MDU Resources Group Inc.	4931	X	X	X	X		X			
Northern States Power	4931	X			X		X			
PG&E Corp.	4931	X		X	X	X	X	X		X
Questar Corp.	4923	X	X	X	X	X		X		
Reliant Energy Inc.	4911	X		X	X	X	X	X		X
Sonata Inc.	4922	X	X			X		X		
Williams Companies Inc.	4922	X	X	X		X		X		
Total		14	8	9	8	12	6	11	2	3

^aThe parent companies in this category have separate operations in transmission and in storage.

Notes: The following SIC Codes denote primary business operations: SIC Code 4911, electric services; SIC Code 4922, natural gas transmission; SIC Code 4923, natural gas transmission and distribution; SIC Code 4931, electric and other services combined; and SIC Code 5172, wholesale-petroleum and petroleum products (no bulk stations). Four companies have natural gas liquid plants: Coastal, KN Energy, PG&E, and Williams Company. Other lines of operations include chemical operations, coal operations, construction, downstream petroleum, and real estate.

Source: Lines of Business were compiled from companies' individual *Securities and Exchange Commission Form 10-K, 1997*.

S&P Industrials.¹⁵ Total asset growth for these parent corporations was 76 percent compared to 44 percent for the S&P Industrials. However, rapid corporate growth may have come at the expense of profits, as operating income for the parent corporations grew at 20 percent versus 102 percent for the S&P Industrials (Figure SF3). In 1997, eleven of the parents were listed on the Fortune 500, based on annual revenue.¹⁶ There were three parent corporations discussed in this review that were ranked in the top 100. Enron ranked 57th, followed by Duke Energy at 81st and PG&E at 85th (Table SF1).

Lines of Business

Operations of the parent corporations range from vertically integrated natural gas operations to electric services (Table SF3). Following natural gas transmission and storage operations, energy marketing and services was the most frequently occurring line of business activity for the parent corporations. Other lines of business that the parent corporations have are (listed in terms of frequency): natural gas gathering and

processing, oil and gas production, natural gas distribution, and integrated electric services (operations in generation, transmission, distribution). Five of the fourteen corporations have electricity supply and distribution as their primary industry.

Each of the parent corporations owns both interstate natural gas transmission and storage operations. The pipelines owned by the parent corporations are significant contributors to the natural gas pipeline industry. According to data reported to FERC, the revenue generated by these pipelines accounted for more than 88 percent of the total revenue generated by the interstate natural gas pipeline industry. In addition, their deliveries accounted for 86 percent of the total gas delivered in the United States in 1997.

Energy marketing and services is the second most frequent line of business engaged in by the 14 parent corporations. Twelve of these corporations have energy marketing and services operations. Of these twelve parent corporations, four engage in integrated electric

services (operations in generation, transmission, and distribution).

Why are these parent corporations involved in integrated electric services? Through electricity restructuring and natural gas deregulation, energy marketing and services have become more dominant as consumers now have greater flexibility to choose their provider of energy services. Corporations have begun to sell both electricity and natural gas interchangeably to attract new customers, or to retain previous customers. Consequently, these parent corporations (with both energy marketing and services and integrated electric services) have strategically acquired assets to increase their competitiveness through lowered operating costs, diversified operations, increased marketing areas, and larger customer bases. This trend, the combination of natural gas assets and electric services and marketing, can be expected to progress as corporations realize potential synergies and complementarities gained from marketing both sources of energy.¹⁷

A number of recent mergers combined downstream natural gas operations with integrated electricity operations. In 1997, Enron purchased Portland General Corporation, a wholly owned subsidiary of Portland General Electric, resulting in Enron becoming the largest wholesaler of gas and electricity in North America. As a result of this transaction, Enron also became the largest investor-owned electric utility company in 1997 based on revenue, primarily due to its wholesale energy marketing activities. Duke Energy acquired PanEnergy, and then sold a 40-percent interest in its marketing division to Mobil, a major producer of natural gas. Houston Energy merged with Noram Energy in 1997 and renamed the company Reliant in 1998. Pacific Gas and Electric acquired Valero Energy's natural gas transmission assets.¹⁸ A recent merger proposal between Dominion Resources and Consolidated Natural Gas in 1999¹⁹ indicates a continued movement toward this trend. Other corporations, such as Sonat,²⁰ have created marketing divisions to take advantage of the opportunities in wholesale power marketing.

This recent trend has resulted in more parent corporations shifting from traditional vertically integrated operations to operations from natural gas production through local distribution to electricity-related operations. Although eight parent corporations report oil and gas production, only two of these

corporations that have operations in electric services (MDU Resources and Enron) also have natural gas production operations (Table SF3). Recently, Enron announced its intention to sell its oil and gas exploration assets, but later ended negotiations citing the company will continue to explore opportunities to maximize the value of this investment.²¹

The pattern of recent large divestitures of interstate natural gas pipeline assets reinforces the view that the focus of synergies and complementarities has tended to shift away from vertically integrated wellhead-to-city-gate corporate structures. Burlington Resources, a major U.S. oil and gas producer, spun off their interstate natural gas operations in the form of El Paso Energy in 1992. Occidental Petroleum, a major international oil and gas producer with sizable chemical operations, sold their MidCon subsidiary and associated natural gas transmission assets in 1998.²² Tenneco, a former major integrated petroleum company, sold their natural gas transmission assets to El Paso Energy in 1996.

In 1997, eight of the fourteen parent corporations owned local distribution companies (LDCs). Of these eight, four had interstate natural gas transmission operations as their primary industry while the remaining four corporations had electric services and other related services as their primary industry (Table SF3). Prior to Order 636, five of the corporations owned local natural gas sales and distribution services. LDCs are generally not core assets but rather a line of business that corporations acquire in conjunction with natural gas pipeline assets through acquisitions/mergers. However, it appears that parent corporations that have LDC systems and/or engage in retail natural gas marketing services retain this line of business primarily because it is expected to complement future or expanded marketing of overall energy services such as electricity.

Investment Targets

Total capital expenditures by the 14 parent corporations varied based on lines of business (Table SF4). However, capital expenditures for the line of business containing natural gas transmission represented the largest share of their total investment outlays in 1997, at 23 percent.²³ Expenditures in both oil and gas production and electric services were almost equal percentages of

Table SF4. Parent Company Financial Position in Lines of Business

Company / Line of Business	Percent of Total Revenue	Percent of Total Operating Income	Percent of Total	Percent of Total Assets
Coastal Corporation				
Natural Gas Transmission ^a	21	61	23	47
Refining & Marketing	70	11	17	34
Oil & Gas - Production	6	23	58	14
Other	3	5	2	5
Columbia Energy Group				
Natural Gas Transmission	10	51	42	41
Natural Gas Distribution	45	43	28	41
Energy Marketing/Services	44	-1	3	9
Other	1	7	27	9
Consolidated Natural Gas				
Natural Gas Transmission	6	32	8	22
Natural Gas Distribution	35	47	25	43
Oil & Gas - Production	6	25	49	20
Energy Marketing/Services	51	-3	2	11
Other	2	-1	16	4
Duke Energy Corporation				
Electric Service	27	60	37	54
Natural Gas Transmission	9	31	12	21
Energy Marketing/Services	45	2	1	8
Other	19	7	50	17
El Paso Energy Corp/DE				
Natural Gas Transmission	23	107	67	74
Energy Marketing/Services	76	7	24	18
Other	1	-14	9	8
Enron Corp				
Natural Gas Transmission	7	--	24	33
Oil & Gas - Production	4	--	44	11
Energy Marketing/Services	86	--	24	49
Other	3	--	8	7
KN Energy Inc				
Natural Gas Transmission	1	25	41	23
Gathering Processing & Marketing Services	87	52	51	54
Retail Natural Gas Services	12	23	8	23
Other	0	0	0	0
MDU Resources Group Inc				
Natural Gas Transmission	33	35	20	33
Electric	27	30	17	30
Oil & Gas - Production	11	22	27	15
Construction Materials & Mining	29	13	36	22
Northern States Power/MN				
Natural Gas	19	10	19	12
Electric Operations	81	90	81	88
Other	0	0	0	0
PG&E Corp				
Natural Gas Transmission	12	18	18	18
Electric Operations	50	86	64	62
Other	38	-4	18	20
Questar Corp				
Natural Gas Transmission	4	30	15	21
Natural Gas Distribution	48	34	31	31
Market Resources	48	34	43	33
Other	0	2	11	15
Reliant Energy, Inc				
Natural Gas Transmission	2	3	3	10
Natural Gas Distribution	13	5	10	10
Electric Operations	61	93	41	33
Energy Marketing/Services	23	2	2	4
International Operations	1	2	40	3
Other	0	-5	4	40
Sonat Inc				
Natural Gas Transmission	8	60	21	
Oil & Gas Production	12	35	77	44
Energy Marketing/Services	79	4	2	17
Other	1	1	0	1
Williams Cos Inc				
Natural Gas Transmission	37	66	36	56
Oil and Gas Production	0	3	5	2
Field Services	15	18	14	15
Petroleum Services	11	10	4	7
Energy Marketing Services	4	8	3	5
Other	33	-5	38	15
Percentage of Total Capital Expenditures				
Natural Gas Transmission			23	
Natural Gas Distribution			4	
Oil and Gas Production			20	
Electric Operations			21	
Energy Marketing/Services			11	
Other			21	

Source: Compustat PC Plus, a service of Standard & Poor's, Inc

overall capital expenditures, 20 percent and 21 percent, respectively, while expenditures in energy and marketing services accounted for 11 percent.

According to FERC regulations, interstate natural gas pipelines are allowed a rate of return on interstate transmission operations that permits them to minimize their risks in a regulated business environment (see the box entitled, "Regulating Pipeline Construction"). Based on the Energy Information Administration's forecasted demand growth for natural gas (reported in the *Annual Energy Outlook 1999*) new and/or expansions of the current pipeline infrastructure will be required. One question for the industry is to what extent will the regulated rate of return designated by FERC for the proposed pipelines be sufficiently lucrative for current owners to invest in new pipeline projects instead of other lines of business?

At least two conditions will make investment in rate-regulated natural gas pipelines attractive to a company. First, if the other lines of business in a corporation can generate complementaries, such as new marketing strategies designed to increase business volumes, or synergies, such as lower-cost provision of energy services when combined with midstream (the intermediate stages between natural gas wellhead production to the consumer burner tip) natural gas operations, then a corporation's effective rate of return on natural gas transmission assets will exceed the regulated rate of return on natural gas transmission assets. In fact, it appears that the recent pattern of mergers, acquisitions, and divestitures involving interstate natural gas transmission facilities were premised on achieving synergies in the combination of midstream natural gas operations with electricity operations.

Second, if the rate of return to natural gas pipeline assets, though regulated, is generally higher than the rate of return to investment in a company's other lines of business, then natural gas pipeline investment will be relatively attractive. As Figure SF4 shows, 12 of the 14 parent corporations reviewed in this report have a higher return on investment (ROI) for pipeline investments when compared to the composite ROI for all other lines of business, at least for 1997. (Due to data availability, the return on investment for natural gas transmission shown in Figures SF4 and SF5 is for the

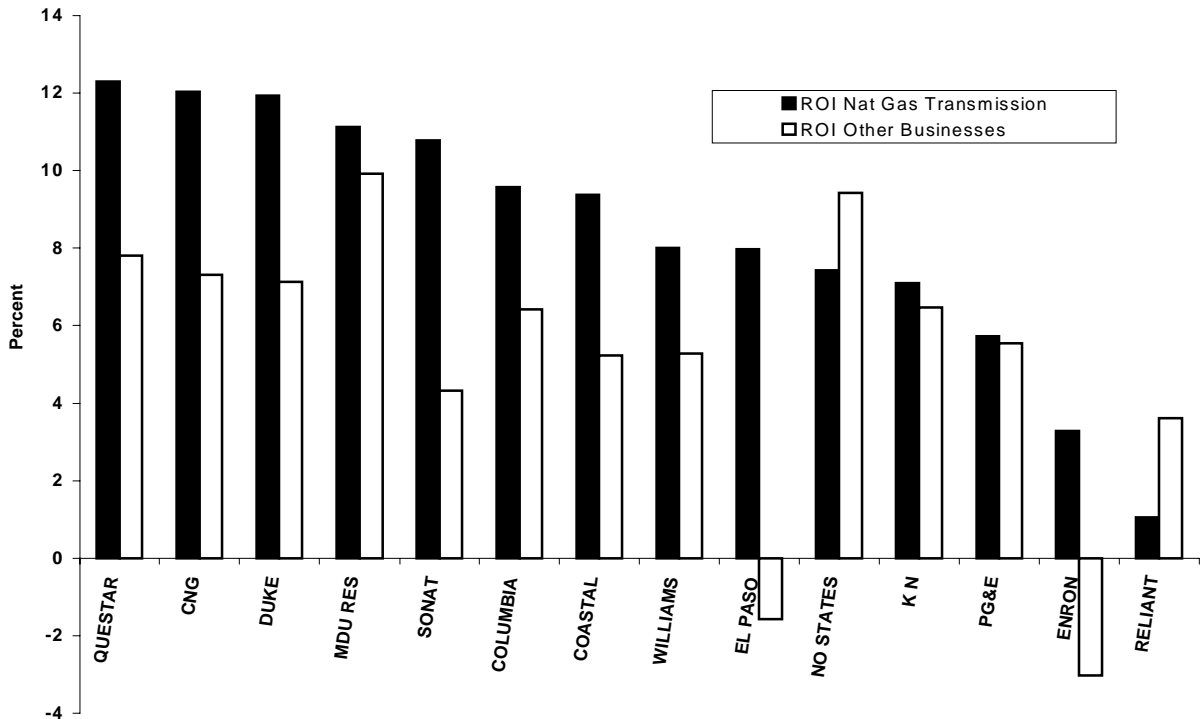
Regulating Pipeline Construction

In most cases, interstate natural gas pipeline companies are required under Section 7c of the Natural Gas Act of 1938 to obtain a certificate of public convenience and necessity before constructing pipeline facilities. Besides review of operational aspects of the system, other legislation requires extensive review of the financial and environmental aspects of the projects. These requirements have resulted in a sometimes lengthy and complex process.

Once a project is approved and constructed under a Section 7c certificate, the costs of the facilities are eligible for inclusion in the pipeline company rate base (when the company files its next general rate case) and the risks associated with recovery of those costs are minimized. Other options are also available to pipeline companies for capacity expansion, depending on the size of the project and the amount of risk the company is willing to assume. These options include:

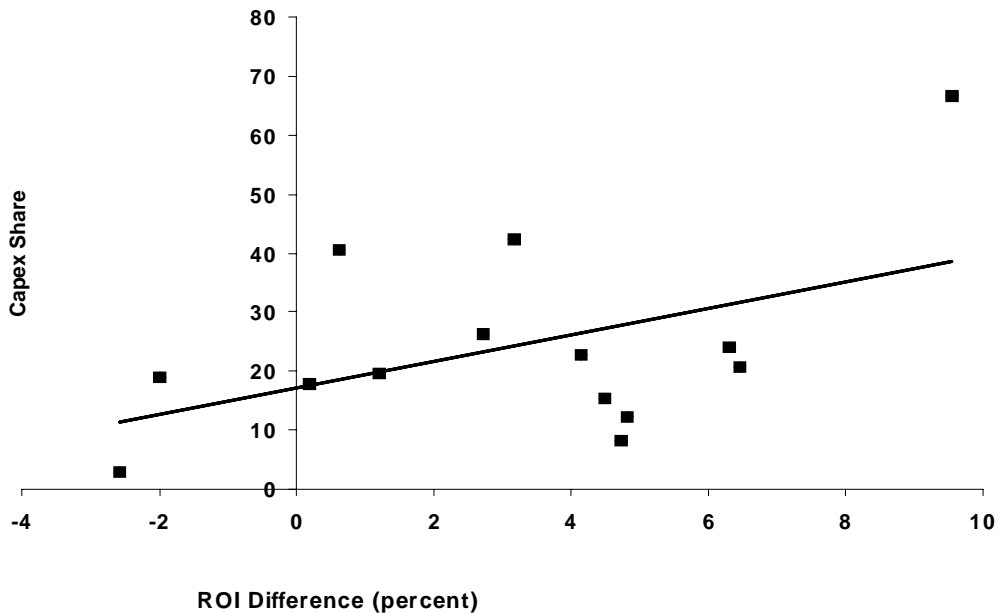
- ! **Blanket Certificate.** Blanket certification can be used for relatively small projects. A blanket certificate approves a series of similar actions in one authorization. For instance, construction of small additions to a natural gas pipeline may be authorized by a blanket certificate, provided the total cost does not exceed some threshold level and other eligibility criteria are met.
- ! **Optional Certificate** (formerly known as Optional Expedited Certificate). In 1985, under Order 436, FERC introduced optional certificates whereby construction could be approved without assessment of its financial soundness. In return, the pipeline company would agree to bear the majority of the risk of the project.
- ! **NGPA Section 311.** Section 311 of the Natural Gas Policy Act (NGPA) of 1978 allows an interstate pipeline company to sell or transport gas "on behalf of" any intrastate pipeline or local distribution company. FERC has exempted the construction of facilities used solely for Section 311 transportation from certificate requirements.

Figure SF4. Return on Investment for Natural Gas Transmission Segment and All Other Businesses for Pipeline Parent Corporations, 1997



Notes: NO STATES means Northern States Power Company; Return on investment = operating income/total assets. Source: Compustat PC Plus, a service of Standard and Poor's, Inc.

Figure SF5. Pipeline Capital Expenditure Share vs. Pipeline ROI Minus Other ROI, 1997



Notes: Capex share means capital expenditure share. ROI means return on investment. ROI = Operating income/total assets. Data represent values for the parent corporation's pipeline capital expenditures and their pipeline return on investment minus return on investment for other lines of business.

Source: Compustat PC Plus, a service of Standard and Poor's, Inc.

line of business segment that includes natural gas transmission. Return on investment is measured by segmental operating income divided by segmental total assets rather than stockholder's equity.) Northern States Power and Reliant, the two corporations that have a higher composite ROI for all other lines of business when compared to the ROI for pipeline investments, each has at least 90 percent of its earnings from electric operations. The average return on investment for natural gas pipelines was 7.6 percent compared to 4.2 percent for all other lines of business, about 81 percent higher.

Will parent corporations earmark more capital expenditures to pipeline operations if the return on these assets is higher? Figure SF5 shows a positive correlation between capital expenditures for the natural gas transmission segment as a percent of total company capital expenditures and the difference between the natural gas pipeline ROI and the ROI for all other lines of business.²⁴ That is, parent corporations for whom pipeline investments have yielded higher returns than their other businesses will tend to allocate relatively more capital expenditures to natural gas transmission operations.

Financial Performance

Past financial performance of a corporation is often used to analyze its future performance and its ability to attract investors. Various stakeholders such as stockholders and creditors have different concerns with regard to the company's financial performance. For example, stockholders are concerned with the effectiveness of management, and long-term profitability and dividends, whereas creditors are concerned with the company's ability to repay debt.

The profitability of a corporation, as measured by the return on equity (net income as a percent of stockholders' equity) is often used as an indicator of management's performance. Although the period between 1992 and 1997 has been analyzed in this report thus far, to look at the past profitability of the 14 parent corporations before and after Order 636, the years 1990 to 1997 will be examined. During the 1990 to 1997 period, the return on equity (ROE) for the parent corporations of interstate pipeline companies was less favorable when compared to the S&P Industrials (Figure SF6). The parent corporations' ROE averaged 6

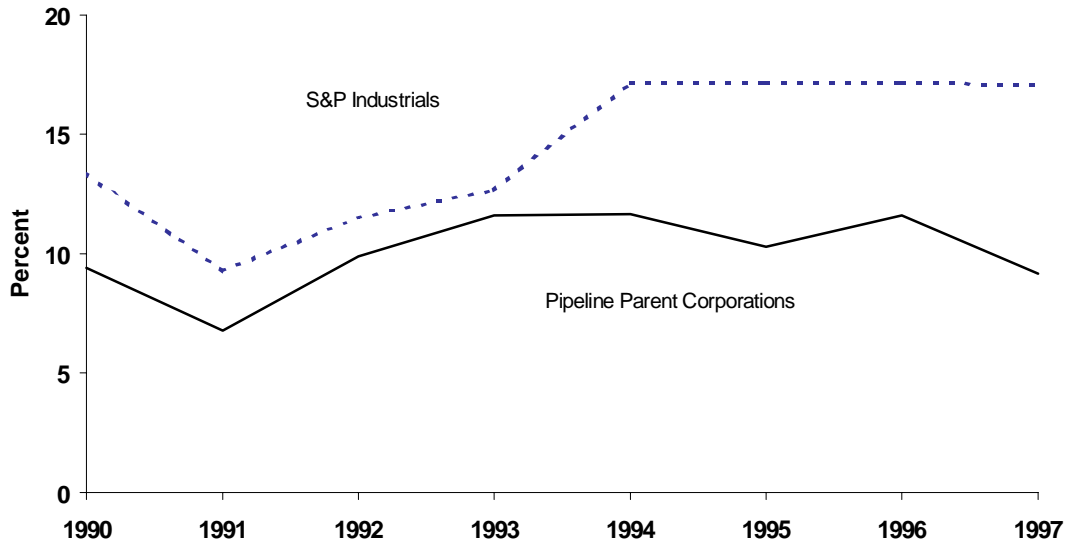
percentage points less than the ROE of the S&P Industrials over the period. However, the parent corporations' ROEs are lower in part because pipeline rates of return are regulated by FERC. Conversely, competitive forces drive the returns for the S&P Industrial's, yielding higher risks and higher returns. Nonetheless, the parent corporations' odds of attracting potential investors over the S&P industrial's group are less favorable based on their ROE. To overcome this obstacle and attract investors, they are much more generous in their dividend payouts to shareholders. In 1997, the dividend yield (i.e., dividends per dollar of share price) to investors was 3.4 percent for the parent corporations, which was more than double the 1.5-percent yield for the S&P Industrials. In 1996, the dividend yield was 4.2 percent compared to a 1.8-percent dividend yield for the S&P Industrials.

The perception of management's ability to operate the firm and to create wealth for its stockholders can affect the company's ability to attract potential investors. The price-earnings ratio, which is an indication of investor expectations of earnings growth, for the parent corporations over the last 7 years was relatively low compared to the S&P Industrials (Figure SF7). The annual growth in the parents' price-earnings ratio was 5.1 percent compared to 8.7 percent for the S&P Industrials over the 1990 to 1997 period.

In 1990 and 1991, the price-earnings ratios for the two groups were nearly equal. However, in the following year, the price-earnings ratio for the parent corporations dropped 7 percentage points relative to the S&P Industrials, reflecting a decline in the market's perception of the corporations' earnings potential. This decline in 1992 coincided with FERC's announcement of Order 636. Because Order 636 would dramatically change the operational and financial structure of the industry, market concerns were heightening. Market speculations of whether the industry would rebound from major adjustments brought about by Order 636 were prevalent.

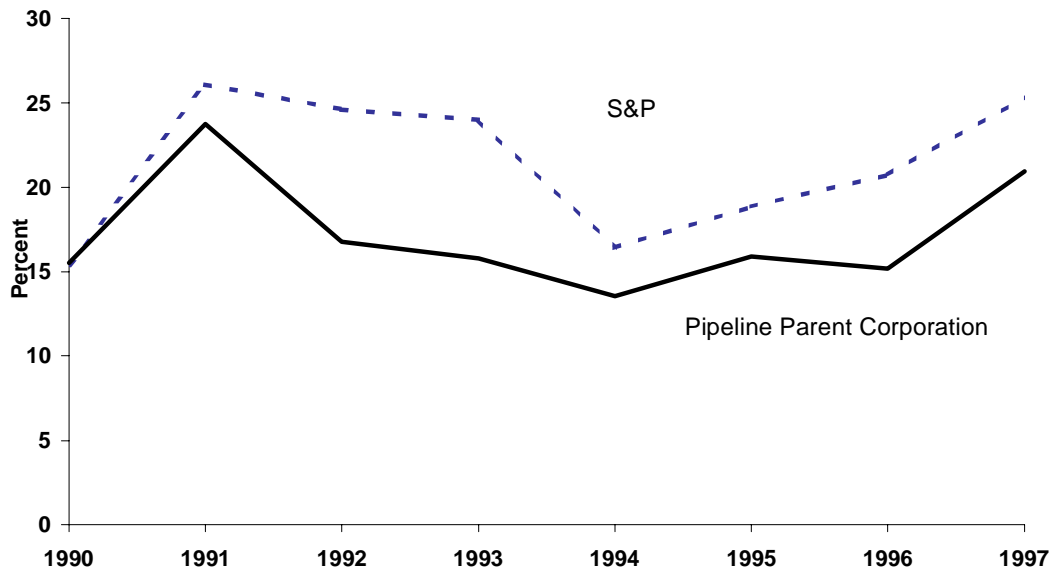
Between 1992 and 1994, the period marking the announcement of the Order and the first year of full compliance, the price-earnings ratio declined sharply, perhaps indicating the market's perception of uncertainty and caution with regard to the impact of Order 636 on the natural gas industry. Although other economic considerations could have affected the

Figure SF6. Weighted Average Return on Equity for Pipeline Parent Corporations and the S&P Industrials, 1990-1997



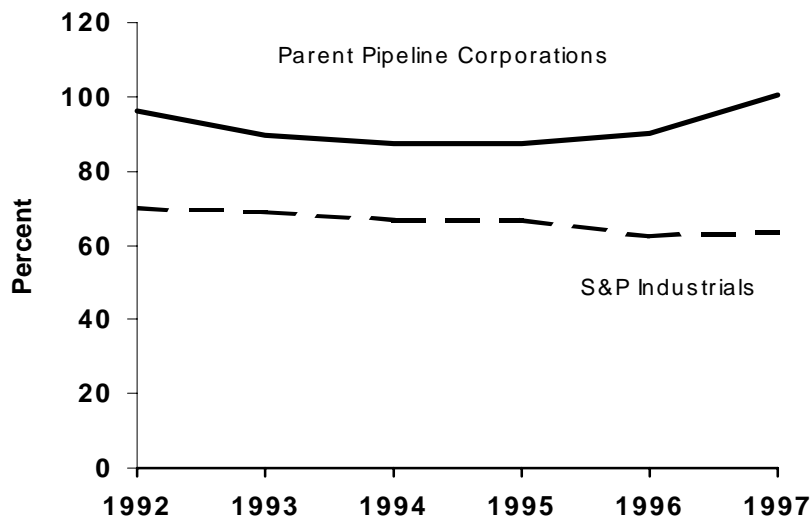
Note: Return on equity = net income/stockholder's equity.
 Source: Compustat PC Plus, a service of Standard and Poor's, Inc.

Figure SF7. Weighted Average Price-Earnings Ratio for Pipeline Parent Corporations and the S&P Industrials, 1990-1997



Note: Price earnings = market price per share of common stock/annual earnings per share.
 Source: Compustat PC Plus, a service of Standard and Poor's, Inc.

Figure SF8. Long-Term Debt/Equity Ratio for Pipeline Parent Corporations and the S&P Industrials, 1992-1997



Source: Compustat PC Plus, a service of Standard & Poor's.

difference in the price-earnings ratios of parent corporations and the S&P Industrials over this period, the onset of Order 636 clearly appears to be an important contributing factor.

Corporations generally utilize internal cash flow from operations, issue stock, and issue debt to raise capital for their business operations. However, parent corporations of interstate natural gas pipelines strongly favor debt over equity financing compared to U.S. industry generally (Figure SF8). During the 1990's, the ratio of long-term debt to shareholders' equity for parent corporations ranged from 90 percent to 100 percent. When compared to the long-term debt/equity ratio for the S&P Industrials, their leverage ratio was over 60 percent higher in 1997. In theory, a higher debt/equity ratio may hamper the ability of the firm to borrow funds. However, since the rates of return for pipelines are regulated by FERC, creditors are reasonably certain that their ability to repay the debt will not be hindered by their high debt.

To date, the 14 parent corporations with interstate natural gas transmission operations have had no major difficulties in raising the necessary capital to build and expand existing pipelines to meet the recent increases in natural gas demand. The parents finance their lines of business through internal cash flow, stocks, and debt, although they utilize debt financing over equity financing. Parent corporations' return on equity is less attractive compared to the S&P Industrials; however, they have been able to attract investors through the payment of higher dividend yield. The dividend yield to the parent corporation's stockholders was more than double that of the S&P Industrials in 1997.

These parent corporations will continue to allocate capital expenditures toward natural gas transmission operations as long as the return on investment remains favorable compared to the return on investment for their other lines of business.

Endnotes

1. For a more detailed explanation and review of Order 636, see Chapter 2 of Energy Information Administration, *Natural Gas 1994: Issues and Trends*, DOE/EIA-0560(94)(Washington, DC, July 1994). (pdf format)
2. For more information on interstate pipeline expansion during the early 1990's, see Energy Information Administration, *Deliverability on the Interstate Natural Gas Pipeline System*, DOE/EIA-068(98) (Washington, DC, May 1998). (pdf format)
3. The total volume of natural gas delivered by the individual pipeline companies included in this review, 40.7 trillion cubic feet in 1997, includes volumes that may be transshipped via several other interstate pipeline companies prior to reaching their final destination. In addition, total deliveries also include volumes delivered to and from storage sites, gas exchange, and gas delivered for operational use. As a result, there is double and sometimes triple counting of throughput volumes. This accounts for the large difference between the 1997 national natural gas consumption level of 22 trillion cubic feet of gas (Tcf) and the 38 Tcf of deliveries reported by the 37 pipeline companies under review.
4. The interstate natural gas pipelines included in this portion of the analysis (see Table SF1) accounted for nearly 88 percent of the revenues reported by the 100 interstate pipelines that reported to the FERC in 1997 and nearly 86 percent of the total gas deliveries by those reporting.
5. As used in this report, the Northeastern region includes Census Region 1, the New England States (NH, VT, ME, MA, CT, and RI), and Census Region 2, the Middle Atlantic States (NY, NJ, and PA). The Midwestern region consists of Census Region 3, the East North Central States (IN, IL, MI, OH, and WI).
6. A 125-percent increase in natural gas use for electric power generation in the Northeast region is projected between 1998 and 2003 (from 0.401 quadrillion Btu per year in 1998 to 0.901 quadrillion Btu in 2003). Source: The Energy Information Administration, *National Energy Modeling System, AEO99b.d100198a (run October 14, 1998)*, Table 2.
7. Energy Information Administration, *Inventory of Power Plants in the United States as of January 1998* (Washington, D.C., December 1998) for proposed electric utility power plant additions and Form EIA-867, *Annual Nonutility Power Producer Report* for proposed independent power producer plant additions. Online, http://www.eia.doe.gov/cneaf/electricity/ipp/ipp_sum.html
8. Energy Information Administration, *Annual Energy Outlook 1999* (Washington, D.C., December 1998). Online, <http://www.eia.doe.gov/oiaf/aeo99/overview.html>
9. Energy Information Administration, *Natural Gas 1998: Issues and Trends* (Washington, D.C., May 1999), Chapter 5. (pdf format)
10. Energy Information Administration, *Annual Energy Outlook, 1999* (Washington, D.C., December 1998). Online, <http://www.eia.doe.gov/oiaf/aeo99/overview.html>
11. El Paso Energy Corporation, "Company Profile," Online, <http://www.epenergy.com/about/profile.htm> and The Williams Companies, "Natural Gas Services," Online, <http://www.williamsenergy.com/Energy/ngs/frameset/naturalgas.htm>
12. PG&E Corporation, "About PG&E Energy Trading." Online, <http://www.pge-energy.com/about/default.htm>
13. FERC Order 436, issued in 1987, was the first attempt by FERC to address the growing use of transportation-only gas transactions that developed as the pipeline companies tried to relieve their gas contract take-or-pay problem. One way they were doing this was by arranging direct deals between producers and end users for the gas that they were unable to buy for resale. Order 636, issued in 1992, formerly addressed the contract and operational problems that developed under Order 436, and made all interstate pipelines transporters and opened underground storage capacity to third-parties.
14. *NGI's Daily Gas Price Index*, Natural Gas Intelligence Press (Arlington, VA, February 8, 1999).
15. The Standard and Poor's (S&P) Industrials is a well-recognized database that includes nearly 400 of the largest U.S. industrial companies. Financial statistics for the pipeline parents and the S&P Industrials were obtained by accessing Compustat PC Plus, a service of Standard & Poor's, Inc.

16. The Fortune 500 is a list that combines industrial and service companies ranked in size based on revenue. Source: Standard and Poor's Industrials.
17. For a more in-depth discussion on synergies and complementarities gained through the combination of natural gas assets and electric services see "Special Topic: Electricity Restructuring Attracts the U.S. Majors," in Energy Information Administration, *Performance Profiles of Major Energy Producers 1997*, DOE/EIA-0206(97) (Washington, DC, January 1999), pp. 56-58. Online, http://www.eia.doe.gov/emeu/perfpro/chapter4.html#elec_restr
18. "Consolidated Natural Gas Announces Amended Merger Agreement with Dominion Resources" (May 11, 1999).
19. Sonat Corporation, *1997 Securities and Exchange Commission Form 10-K*, p. I-21. Online, <http://www.sec.gov/Archives/edgar/data/92236/0000950144-97-002708.txt>
20. Sonat Corporation, *1997 Securities and Exchange Commission Form 10-K*, p. I-21. Online, <http://www.sec.gov/Archives/edgar/data/92236/0000950144-97-002708.txt>
21. "Enron Withdraws Proposal to Sell Interest in Enron Oil & Gas Company." Online, <http://www.enron.com/pressrel/1999/ene/13DEOG.html> (May 7, 1999).
22. "KN Energy Completes MidCon Corp. Acquisition." Online, <http://www.knenergy.com/pages/news/complete.html> (January 30, 1998).
23. The data in Table SF4, Figure SF3, and Figure SF4 are based on business segment financial data reported by the companies in their 1997 filings of Securities and Exchange Commission *Form 10-K*, as compiled by Compustat PC Plus, a service of Standard & Poor's, Inc. Data labeled as natural gas transmission in Table SF4 and Figures SF3 and SF4 are for the business segment that contains interstate natural gas transmission operations.
24. The t-statistic of the coefficient of the difference in ROI is 1.84.