CIBC World Markets

Equity Research

Natural Gas

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Enron Corp.

Broadband Communications Strategy Unfolding

Investment Conclusion

- Enron, the industry leader in wholesale energy products and an emerging leader in retail energy services, is now aggressively moving forward with major initiatives in communications. ***Year 2000 is expected to mark a major push into broadband communications services, a business enterprise offering the potential for significant value creation.*** Notwithstanding this weeks correction in many technology sectors, investors are clearly placing high valuations on companies targeting well-conceived broadband communication strategies. Accordingly, we expect ENE shares to sustain solid momentum during the first half of 2000 as the company's broadband strategy is more clearly defined. In December 1999 we raised our target price to $55 from 48. While ENE shares moved to a market premium during 1999, Enron's asset and earnings mix continues to transition to value-added higher growth businesses in energy and communications.
- **Management to highlight communications efforts at January analysts' meeting.** Enron's annual analysts' meeting is scheduled for 1/20/00 in Houston, TX. At the full day presentation, management is expected to provide further clarification and details on its strategy to operate a dominant platform for delivery of premium broadband communication services. Enron's communications strategy will draw strong parallels with its success in electricity marketing/trading. Namely, management will focus on the delivery of premium data content by controlling (via software and servers) data flow at key "market hubs". Ownership or control (lease/swaps) of in-ground fiber will complement the strategy.
- While still too early to accurately quantify, based on publicly traded valuations for competing strategies, Enron's business model could, *in time*, potentially be valued at $15-$30 per ENE share. We estimate the current share price includes only $5-6 per share for communication initiatives; *accordingly, we*

Rating: BUY

ENE-NYSE (1/5/2000):	$44
52-week Range:	$44 7/8-25
Shares Outstanding:	782 Million
Float:	700 Million Shares
Market Capitalization:	$34 Billion
Dividend/Yield:	$0.50/1.1%
Fiscal Year Ends:	December
Book Value:	$9.90 per Share
1999E ROE:	10.5%
LT Debt:	$9 Billion
Preferred:	$1 Billion
Common Equity:	$9.2 Billion

Earnings per Share

1998	$1.00
1999E	$1.17
2000E	$1.35
2001E	$1.53

P/E Ratio

1998	44.0X
1999E	37.6X
2000E	32.6X
2001E	28.8X

*Earnings Per Share are fully diluted

Cash Flow per Share

1998	$2.18
1999E	$2.45
2000E	$2.60
2001E	$2.90

P/CF Ratio

1998	19.3X
1999E	15.5X
2000E	14.6X
2001E	13.1X

Company Description:
Enron is a diversified global energy company with operations in natural gas pipelines, natural gas and power marketing/supply management, and the development and operation of international power plants.

expect the meeting to represent a potential strong catalyst for ENE. For those interested, we will be hosting a conference call on Friday morning, 1/7 at 10:30 AM "The potential of Communications at Enron".

Momentum at Enron Energy Services, Enron Europe. While Enron Communications is now seen as a primary driver in 2000, management continues to make important strides in developing new growth opportunities at Enron Energy Services (retail marketing) and Wholesale Energy Services (Europe, Asia, South America). With sizable investments in targeted growth markets now in place, return on capital employed is expected to trend higher in these important market segments.

Enron Communications: *Enron Intelligent Network Business Model*

Utilizing a highly unique, proprietary business model that does not rely on heavy ownership of physical assets (i.e. in-ground fiber), the *Enron Intelligent Network* is designed to introduce a new level of control and quality critical for high bandwidth applications. The Network is designed to optimize physical reach and develop market opportunities.

Enron's business concept in broadband communications is to control the flow of data traffic or content at key "market hubs" along the most efficient route. As with most Enron network initiatives where the goal is to rapidly build market presence, management expects to benefit from a "first to market" strategy. Enron's strategy is also betting on the belief that bandwidth capacity will quickly become a commodity and that the real value-added service will be in optimizing the "flow of traffic" on a national bandwidth network largely owned by others. The strategy has strong parallels with the company's successful strategy in gas and power. Enron is the recognized industry leader in gas and power, but far from the number one owner of gas pipelines, power plants or transmission lines. Enron's successful strategy in wholesale gas and power was never based on ownership of physical pipelines and wires. Rather, via advanced computer systems, software and personnel, the key was to control and manage the most efficient delivery of energy commodities. A similar strategy is now unfolding in a communications bandwidth industry growing significantly faster (100% annually) than gas and electricity did during the 1990s. We note the following:

- **Powerful software level.** Powerful software system now in place will dynamically route packets of information, reconfigure and differentiate service routers at critical points of presence (PoPs). By year-end 2000, Enron expects to have a presence in 45 U.S. and European cities.
- **Enron intelligent network.** Utilizing proven commercial technology, proprietary software layer will optimize data traffic flow independent of system (fiber) ownership. Through messaging between servers, the system determines optimum route, then transfers data faster and more reliably. The system allows metering of system use and usage-based billing and creates important partnerships with ISPs, functioning as system interconnect and product delivery point.
- **Fiber fallback.** The goal is not to own significant in-ground fiber, but to control the wholesale routing of traffic. However, to guarantee reliability, Enron will lease or own dark fiber along key routes. Management expects the value of dark fiber to fall rapidly as the “commoditization” of bandwidth capacity intensifies in the years ahead.
- **Bandwidth trading**. Building on its success in gas and power, Enron is seen quickly emerging as a leader in bandwidth trading, a skill-set seen increasingly important as bandwidth requirements grow and become more complex.
- **Transfer of technology**. Over the past five years, Enron has invested $1.3 billion in computers and systems to ensure leadership in wholesale gas and power trading/marketing. Most of the technology is transferable to the communications market in efficiently moving bandwidth capacity, which has strong similarities to electricity.

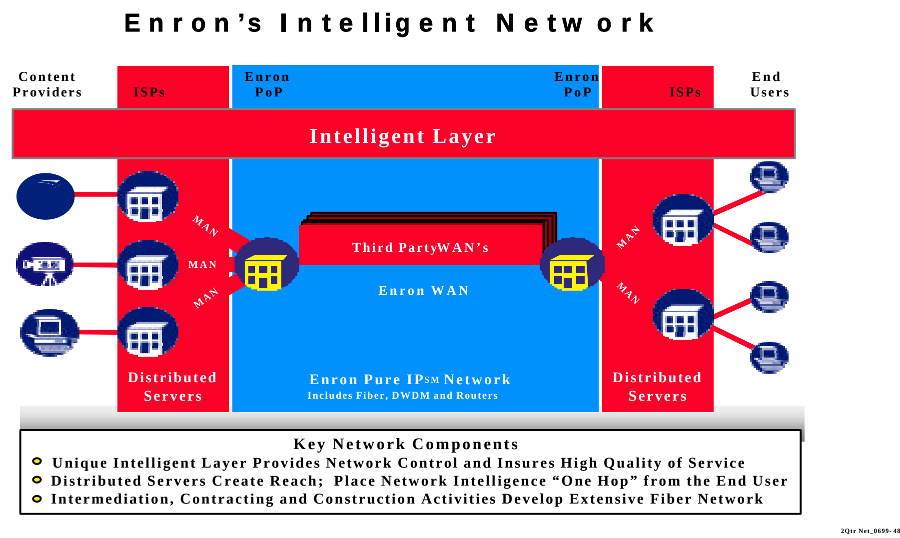
The Enron Intelligent Network is comprised of three components:

1. Enron’s Pure IP™fiber network (19,000 miles, ½ owned, ½ leased/swapped)
2. Community of “One Hop” servers (45 cities year-end 2000)
3. Enron Communications’ patented InterAgent® software that enables application services.

The Enron Intelligent Network is designed to allow both partners and customers deploy products and services that will revolutionize the delivery of rich media and other delay-sensitive, high-bandwidth solutions to the desktop. The approach provides a highly reliable, pay-for-what-you-need, bandwidth-on-demand method to deliver data and streaming media to three constituencies:

1. content and application providers
2. network service providers,
3. end-users who want more from the public Internet.

To implement the new architecture, Enron Communications has formed strategic alliances with hardware suppliers such as Cisco Systems, Ciena Corporation, and Sun Microsystems. For example, Cisco Systems' high speed backbone routers are used to determine which path the IP bits will take across the Enron Communications backbone. Dense Wave Division Multiplexing (from Ciena) creates the high-speed optical circuits. Sun Microsystems will provide the servers required to handle to store and transfer the large volume of data.



Source: Enron

While the list is naturally subject to change as Enron's strategy is more clearly defined, we have attempted to provide some comparative telecom plays and current valuation metrics below. Enron is expected to provide revenue goals at its upcoming analyst meeting on January 20, 2000.

Comparative Telecom Plays (Preliminary)

Content Delivery	Symbol	Last	Annhigh	Annlow	Shares	Mkt Cap	Revenues	Mult Rev.
Broadcast.com*					37	$4,500	$60	75.0X
Interview.com	ITVU	$91	$124	$13	15	$1,365	$13	105.0X
Digital Island	ISLD	$99	$157	$9	35	$3,465	$46	76.2X
Akami	AKAM	$284	$346	$110	91	$25,799	$100	258.0X
Intenap	INAP	$169	$198	$39	66	$11,171	$165	67.7X
* Bought by Yahoo in 1999								
Fiber Plays								
Williams Comm. Group	WCG	$29	$35	$23	460	$13,311	$440	30.3X
Level 3 Comm	LVLT	$77	$100	$39	341	$26,236	$424	61.9X
Global Crossing	GBLX	$48	$64	$19	795	$38,160	$761	50.1X

Source: CIBC World Markets, industry consensus

Akamai Technologies provides a global delivery service for Internet content that improves Web site speed and reliability and protects against Web site crashes due to demand overloads, utilizing a worldwide server network that locates content geographically closer to users.

Broadcast.com is an aggregator and broadcaster of streaming media programming on the Web. The Co. broadcasts programming from over 385 radio stations, 40 TV stations & cable networks & sports for over 420 college & professional teams

Digital Island offers a global network and related services for companies that are using the Internet to deploy key business applications worldwide. Its services make it easier for companies to globalize their operations and to provide a higher quality of service and more functions than on the public Internet. The Company targets corporations that are increasingly relying on the Internet to conduct business but are constrained by its unreliability, slow performance and limited range of functions. Its global private network and services enable customers to effectively deploy and manage global applications by combining the reliability, performance and broad range of functions available in private Intranets operated by individual companies for their own users, with the global access of the public Internet.

InterNAP Network Services is a provider of fast, reliable and centrally managed Internet connectivity services targeted at businesses seeking to maximize the performance of mission-critical Internet-based applications.

InterVU provides Website owners and content publishers with feature-rich, cost-effective services for the delivery or streaming of live and on-demand video and audio content over the Internet. InterVU's streaming media services allow Internet users to, among other things, view news, sports and other events from around the world, listen to live radio broadcasts, watch and listen to specialized content not widely available on television or radio, hear a company's quarterly earnings report live, accompanied by a graphical presentation, view a movie trailer before purchasing a movie ticket, videotape or DVD and watch music videos or listen to songs on demand. InterVU has also developed a suite of services that automate the publishing, distribution and programming of video and audio content. InterVU Service solutions include InterVU Workbench, the InterVU Audience, InterVU Presents, V-Banner, Production Services and Encoding Services.

The following is an excerpt from Daily DataTimes, CIBC Telecom Services:

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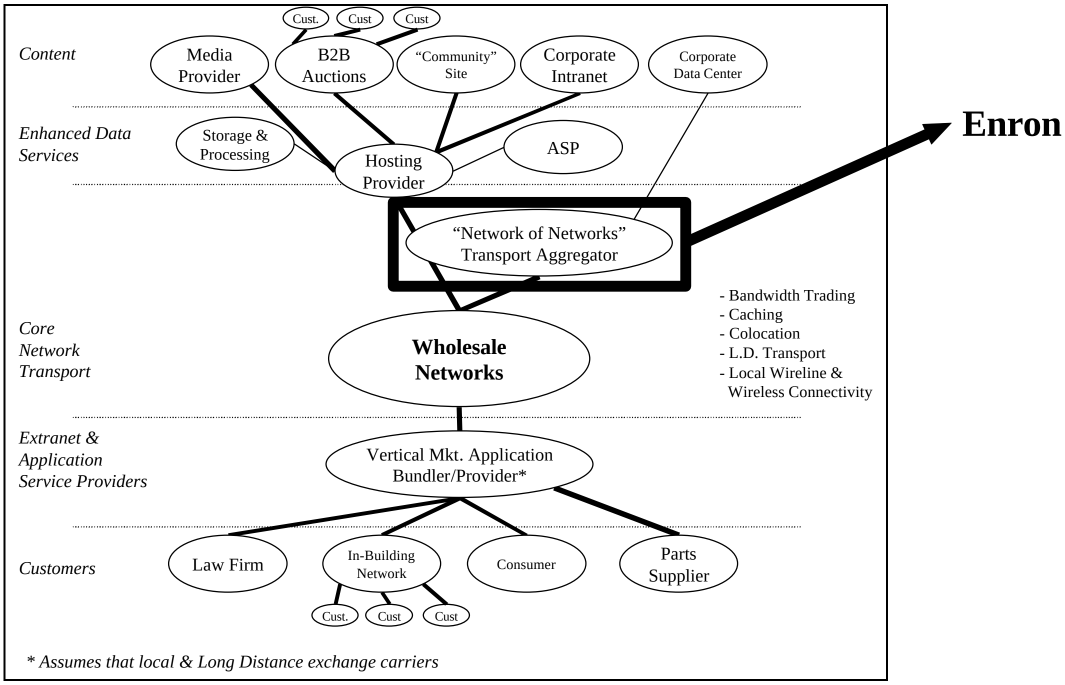
Enron Communications is working to put itself in position to catch the wave of growth promised by telecom's transformation into datacom (as discussed in out recent "Global 2000" piece). We believe that this transformation will lead to the horizontal segmentation of the industry, with companies specializing on specific market segments or niches. Enron appears to be concentrating on serving local ISP's, carriers, enhanced data providers and large business users, but with a very different offering than current wholesale providers such as Williams Communications Group (WCG).

- Enron is planning to offer long-haul transport through a unique combination of owned and traded bandwidth. This "network of networks" architecture has significant potential as a low-cost, robust transport option producing substantial trading income to Enron.
- Across that network, Enron is also planning to offer data traffic management applications in the same vein as Akamai and its competitors. Enron intends, however, to target premium broadband content, including live content delivery. The combination of premium content management with a proprietary transport solution could prove a powerful force in this market.

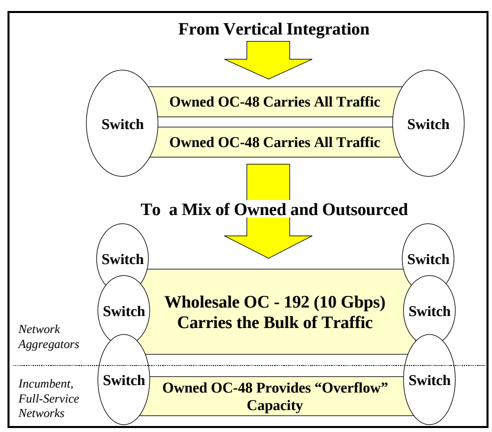
This combination of bandwidth trading, content/traffic management, and differentiated wholesale telecom services puts Enron in three markets areas with tremendous potential for growth. For reasons discussed below, Enron does have several competitive advantages may enable it to become a major supplier of access to long-haul transport. Of course, the ultimate value of the business will depend on execution. However, we do believe that the vision and value proposition are appealing at this stage of the game. We expect that the company will do a great deal to flesh out their vision at their January 20th investors meeting in Houston.



Source: CIBC World Markets

Enron already has some 19,000 route miles of built, swapped, and leased fiber in the ground. However, Enron plans to focus largely on seamlessly integrating capacity bought through bandwidth trading to create a "network of networks" out of other carriers' fiber. While ENE does plan to use its own fiber to carry traffic, it will do so largely to back up the capacity it sources through trading.

Operationally, this multi-sourced network architecture boils down to a very smart switching system that gives customers the capabilities and reliability of a single network at the front-end while integrating capacity sourced from *multiple* networks on the back end. ENE believes that this integration of multiple networks will offer greater path diversity and reliability than any single-network solution. Equally importantly, ENE believes that trading will allow it to buy excess capacity on other networks at marginal (i.e. near-zero) cost, aggregate it, and re-sell at solid margins even at very low prices.



Perhaps more importantly, Enron's multi-sourcing approach is tailor-made to foster the development of a robust capacity trading market (as discussed in our recent bandwidth trading report). The potential of this market is tremendous. We estimate that some $12 billion in traffic could be sourced through bandwidth trading within five years, with the potential for traded contract volumes several orders of magnitude greater. Given Enron's dominance of the electricity and natural gas markets, we believe that there is no better positioned company to create and capitalize on such a market in bandwidth.

ENE plans to build out 45 traffic distribution points (25 built) and some 500 streaming/caching/traffic routing servers (200 built). While it still remains unclear how industry-leading the technology is or, importantly, whether it will allow ENE to help set standards in this arena, the same proprietary control layer used to manage Enron's "Network of Networks" is now being put to use to facilitate delivery of third party premium broadband content. Certainly the high market valuation accorded to Akamai points to the potential of this market segment.

At present, significant elements of Enron's business model remain to be proven. However, Enron brings several critical advantages to the table:

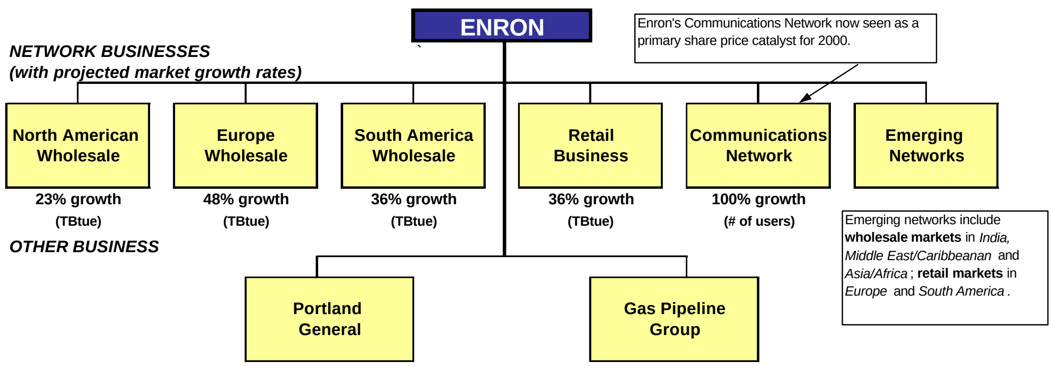
- ***Systems/POPs:*** The company believes it has proprietary data routing and management systems that give it a lead in building a robust network-of-networks.
- ***Fiber In The Ground:*** Enron's owned network gives it a solid backstop on which to build quality assurance and, equally importantly, customer perceptions of it. It also gives them alternative to traded markets if disruptions occur.
- ***Unmatched Trading Experience:*** Enron played a major role in developing traded markets in gas and electricity. While bandwidth presents new challenges, no other company can draw upon deeper the trading and market-building experience.
- ***Capital:*** Enron Communication's parent is a $30 Bn. company with a track record of investing in visionary, but lucrative business ideas. This will be a tremendous advantage in a market segment populated with less established companies.
- ***First-Mover Advantage:*** Enron is coming to the market at a time of incredible change. If ENE can define the model for its market segment, it will be hard for others to catch up.

We await further details and emphasize that much remains to be proven in the marketplace. However, the vision behind Enron communications is very much in line with our own view of how this industry is evolving. Depending on execution, we believe the business could be worth anywhere between $3 and $30 billion ($4-$37 per share). We await further news on the 20th and thereafter.

Deleveraging of balance sheet seen accelerating entry into growth businesses. The announced sale of Portland General should allow Enron to continue to build its market presence in deregulating wholesale and retail energy and communication markets. In November, Enron entered into a purchase and sale agreement to sell Portland General Electric (PGE) to Sierra Pacific for $2.1 billion. Sierra Pacific will also assume $1.0 billion in PGE debt and preferred stock. The transaction is expected to close in 2H00. The improved balance sheet should allow ENE to more aggressively pursue new opportunities in higher growth businesses such as communications.

In measuring the merits of investing in Enron, investors should consider that large-cap leaders within industry sectors have seen marked relative multiple expansion in recent *years. Higher multiple companies also have gained more flexibility to use high-P/E stock (i.e., a lower cost of capital) in targeting growth opportunities.*

- **Wholesale energy markets**. Enron has built a formidable presence in North American wholesale energy markets. With power market restructuring still in its early stages, divisional earning power should continue to build over the next five years. Rising momentum in a deregulating European energy market—a market that rivals North America's in size—should further accelerate growth beyond 2000.
- **Enron Energy Services (EES).** The addition of major new contracts in 1999 and a continued rise in business backlog suggest that management's retail strategy is succeeding. EES is aggressively targeting 10% penetration in the $200 billion retail commercial/industrial market for commodity and facility management/related services Assuming a 10% market share, EBIT potential five years out is projected to reach $725 million, with EPS power of $0.55-$0.60.



Source: Enron

Enron Energy Services (EES)

Total Energy Expenditures (TEE) - Measure of Undiscounted Future Est. Revenues

TEE Statistic	1996	1997	1998	1999E	2000E
$ Billions	$0.0	$1.2	$3.8	$12.0	$16.0
Avg Contract Term			3.5	6.0	6.0
EES Employees (YE)	-	3,000	4,000	5,360	

SMSA Enron Coverage*	# Locations
Top 25 Areas:	**24**
Top 50 Areas:	**40**

*Standard Metropolitan Statistical Area

Decline in "commodity only" indicates management is successfully transitioning existing customers to higher margin bundled services/outsourcing.

Segmentation: Prospect Backlog

	Q1-98	Q2-98	Q3-98	Q4-98	Q1-99	Q2-99
Bundled Services/Outsourcing	$4.6	$7.5	$11.0	$17.2	$18.0	$20.0
Commodity Only	$2.8	$3.0	$1.0	$0.8	$0.8	$0.8
	$7.4	$10.5	$12.0	$18.0	$18.0	$18.0

Source: Company

Retail Energy Marketing* - Five Year Potential

Commercial and Light Industrial market		2004
Market Size Opened Up $Billion - Energy Sales		$70
Facility Mgmt $Billion		$90
Market Size Opened Up $Billion-Related Services (HVAC,		$40
Total Market Size (Annual Revenues)		$200
EES Revenue Share - 8% penetration		10%
Enron Target Revenues (EES) $Billions		**$20.0**
Projected Gross Margin		5.0%
Gross Margin Target ($ Million)		$1,000
Allocated Expenses		$275
EBIT		**$725**
Taxes		$254
Net Income		$471
Fully Diluted Shares		824
EPS potential		**$0.57**
Valuation		
Target EBIT Multiple		**13.0X**
Terminal Value		**$9,425**
Implied P/E		**20.0**
Present Value	**12.5% discount**	**$5,230**
	Per Share	**$6.35**

Source: Company data, CIBC World Markets estimates

Enron Energy Services (EXPECTED TO TURN PROFITABLE IN Q4-99).
Management is aggressively targeting a 10-15% share of the growing commercial and light industrial retail energy market. Enron estimates the total potential market at $200 billion. Our 10% penetration (5 years), suggests $20 billion in incremental revenue potential, $725 million in EBIT potential and a potential $0.55-$0.60 in incremental EPS power.

Non-earning segments offer significant upside potential. ENE currently trades at ~32X projected 2000 EPS, approximately 2X the diversified gas average and a premium to the market. However, we note that EES and Enron Communications, two high-growth business units currently not contributing earnings (after allocated expenses), offer high-growth potential, and, in our view, significant present value. While we expect to raise our valuation estimates after the January 20 presentation, we have previously estimated the present value of EES and Communications at a combined $12 per share. Netting off $12 from the current $44 stock price, one could argue that ENE trades at ~$32, or a more reasonable 23X estimated 2000 EPS from Wholesale Energy Services and Transportation/Distribution businesses.

Our quarterly EPS estimates are shown below.

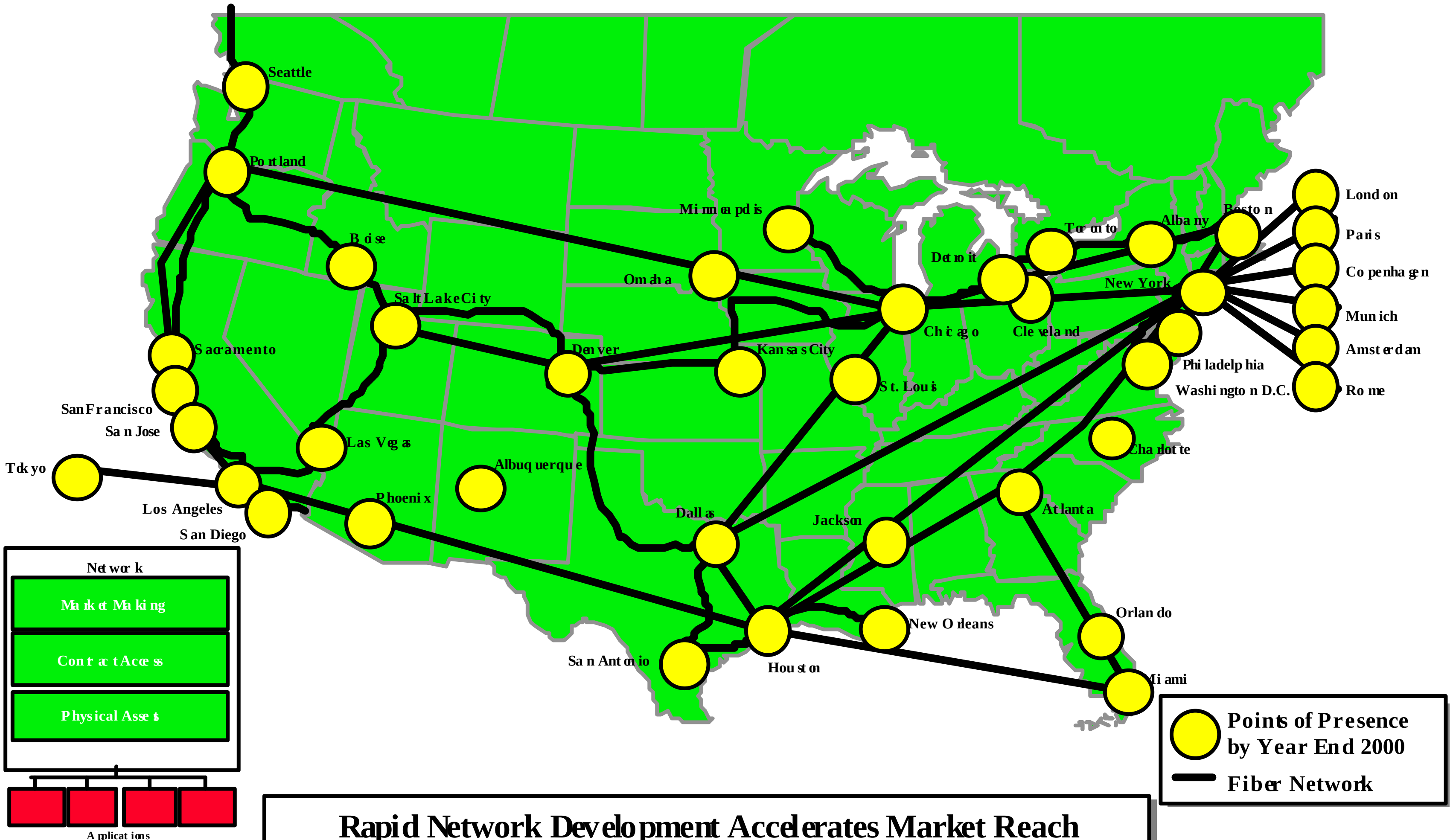
		1 Qtr.	2 Qtr.	3 Qtr.	4 Qtr.	Year
1998	Actual	$0.32	$0.21	$0.23	$0.24	$1.00
1999E	Current	$0.27A	$0.27A	$0.27A	$0.30E	$1.17E
2000E	Current	---	---	---	---	$1.35E
2001E	Current	---	---	---	---	$1.53E

FINANCIAL DATA $MM	1997	1998	1999E	2000E	2001PF
EBIT					
Transportation & Distribution:					
Gas Pipeline Group/Ventures	$364	$351	$378	$380	$375
Portland General	$114	$286	$280	$300	$0
	$478	$637	$658	$680	$375
Wholesale Energy Operations:	$654	$968	$1,364	$1,474	$1,636
Exploration & Production	$183	$128	$75	$40	$53
Corporate/Other/Aurix	($31)	$7	($8)	$10	$35
Enron Energy Services (EES)	($107)	($119)	($75)	$50	$120
EBIT Totals	$1,177	$1,621	$2,014	$2,254	$2,219
Interest Expense	$401	$550	$697	$700	507.5
Dividends on Preferred Stock (sub)	$69	$77	$77	$80	$85
Minority Interest	$80	$77	$114	$80	$80
Pretax Income	$627	$917	$1,126	$1,394	$1,546
Income Taxes	$112	$219	$169	$251	$255
Tax Rate	18%	24%	15%	18%	17%
Income From Continuing OPS	$515	$698	$957	$1,143	$1,291
Preferred Stock Dividends			$45	$60	$60
	$17	$17	$16	$16	$16
Earnings on Common Shares	$498	$681	$941	$1,127	$1,275
Common Shares Outstanding	544.0	642.0	703.5	730.0	735.5
Fully Diluted Shares	592.0	696.0	770.3	800.0	807.0
EPS FD	**$0.87**	**$1.01**	**$1.17**	**$1.35**	**$1.53**
Non-Recurring	($1.42)	$0.01	$0.00	$0.00	$0.00
Fully Diluted EPS Reported	**($0.55)**	**$1.02**	**$1.17**	**$1.35**	**$1.53**
Cash Flow Per Share	$1.16	**$2.68**	**$2.45**	**$2.60**	**$2.88**
EBITD Per Share	$3.00	**$3.75**	**$3.82**	**$3.88**	$3.83
Price/Earnings Ratio (FD)		**43.3**	**37.5**	**32.5**	**28.8**
Price/Cash Flow Ratio		**16.4**	**17.9**	**16.9**	15.3
EV/EBITD		15.9	15.2	15.3	15.0
Enterprise Value		$38,982	$42,393	$44,201	$44,008
Year-End Book Value	$9.49	$10.13	$11.81	$12.23	$13.35
Price/Book	4.6	4.3	3.7	3.6	3.3
Return on Avg. Equity	-6.7%	10.4%	10.7%	11.3%	11.9%
Return on Capital	8.8%	8.3%	9.8%	9.8%	9.1%
Interest Coverage	3.6	4.0	3.6	**3.7**	**5.0**
Debt	6,254	7,357	7,500	**5,650**	**6,150**
Minority Interest	1,147	2,143	1,160	**1,160**	**1,160**
Pfd Stock	993	1,001	1,001	**1,001**	**1,001**
Equity	5,618	7,048	9,100	**9,783**	**10,774**
% Debt	49%	48%	43%	**34%**	**34%**

ENE's balance sheet and coverage ratios improve following the sale of PGE (expected Q2,Q3 2000).

Source: Company Reports, CIBC World Markets Corp.

Communications Network



Rapid Network Development Accelerates Market Reach

2 Qtr Net_0699-45